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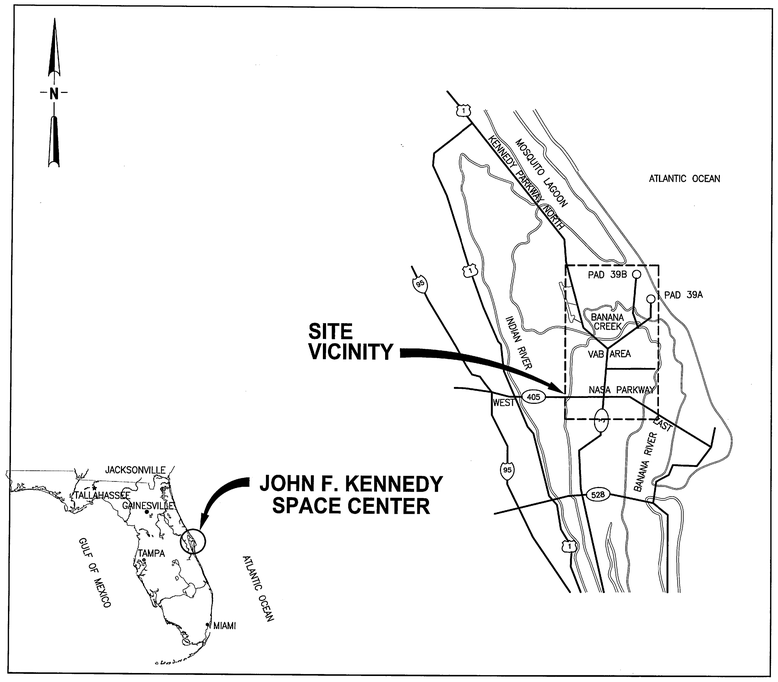
SPECIFICATION REFERENCE NO 79K38878

# REVITALIZE WATER & WASTEWATER SYSTEMS

# VOLUME 2 OF 5 - LIFT STATIONS




## SITE VICINITY MAP

NTS

# NASA

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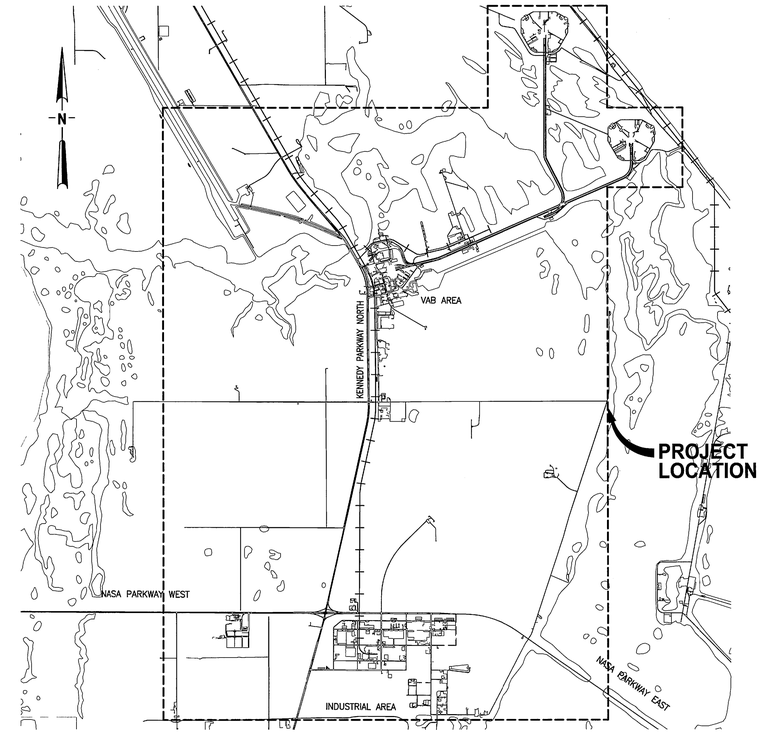


## PROJECT LOCATION MAP

NTS

| Previous Water & Wastewater Packages - For Historical Tracking Only | | | |
|---|---|---|---|
| PCN | Title | Document Type | Associated Study/Drawing/Spec Numbers |
| 901961 | Kennedy Space Center Water Distribution System | System Drawing | 81K00694 |
| 902352 | KSC Sanitary Sewer Collection System | System Drawing | 81K00695 |
| 98307 | Water Consumption Analysis Study | Study Report | KSC–TA–7292 |
| 98497 | Kennedy Space Center Wastewater System Study Phase I | Study Report | KSC–DX–8046 |
| 98497.1 | KSC Wastewater Study Phase II | Study Report | KSC–TA–8906 |
| 96968.2 | Upgrade KSC Water and Wastewater Systems, Phase 3 – Water System Condition Assessment and Regional Modeling Report | Study Report | KSC–TA–10385 |
| 96968 | Revitalize and Upgrade KSC Water & Wastewater Systems | Contract Documents | 79K36173; 79K36174; 79K36255; 79K36256; 79K36257 |
| 96968.1 | Upgrade KSC Water and Wastewater Systems, Phase 2 | Contract Documents | 79K38517; 79K38518; 79K38648; 79K38649; 98K05225 |
| 98814 | Revitalize KSC Water Systems | Contract Documents | 79K38699; 79K38700; 79K38701; 79K38702; 79K38720; 79K38721 |
| 98815 | Revitalize KSC Wastewater Systems | Contract Documents | 79K38703; 79K38704 |
| 96968.3 | Revitalize Water & Wastewater Systems | Contract Documents | 79K38877; 79K38878; 79K38879; 79K38880 |

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| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| APPROVED R. KOLLER | |
| K. MILLER | 3-9-12 |
| P.Y. YU | |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

COVER SHEET

| FILE NO. | SIZE | DWG. NO. | REV |
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| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 SHEET 1 OF 91

V1

KSC FORM 1–11 (3/76)(C/G 3/94)

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
# LIFT STATIONS

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V2

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## GENERAL NOTES

1. TOPOGRAPHIC SURVEY INFORMATION WAS PROVIDED BY KUGELMANN LAND SURVEYING, INC., A REGISTERED PROFESSIONAL LAND SURVEYOR, DATED JULY 26, 2011.
2. THE VERTICAL DATUM IS BASED ON NAVD 1988.
3. THE HORIZONTAL DATUM IS BASED ON NAD STATE PLANE EAST.
4. A KSC EXCAVATION PERMIT IS REQUIRED FOR THIS PROJECT. CONTACT THE CONTRACTING OFFICER AND MISSION SUPPORT AT (321) 861-3840 FOR AN UNDERGROUND UTILITY SCAN.
5. ANY PROPERTY CORNERS, MONUMENTS, OR BENCH MARKS WITHIN THE PROJECT AREA SHALL BE PROTECTED. ANY DAMAGE TO SUCH ITEMS SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GOVERNMENT. IF ANY SUCH ITEMS ARE IN DANGER OF DAMAGE OR HAVE BEEN DAMAGED, THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY.
6. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF AN INDEPENDENT REGISTERED PROFESSIONAL LAND SURVEYOR FOR LAYOUT. PROOF OF REGISTRATION SHALL BE SUBMITTED TO THE CO 14 DAYS PRIOR TO STARTING THE SURVEY.
7. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN BASED ON INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS BUT ARE NOT PURPORTED TO BE CORRECT. THERE MAY BE OTHER IMPROVEMENTS, UTILITIES, ETC. WHICH ARE WITHIN THE PROJECT AREA. CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS, DIMENSIONS, TYPES, AND CONDITIONS OF ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE DRAWINGS) AFFECTING HIS/HER WORK.
8. THE CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITIES (SIZE, MATERIALS OF CONSTRUCTION, OUTSIDE DIAMETER, WALL THICKNESS, ROUNDNESS, ELEVATIONS, ETC.) WHICH IN ANY WAY REFLECT/INCLUDE CONNECTIONS TO OR CONSTRUCTION NEAR EXISTING UTILITIES. CONTRACTOR SHALL INCLUDE FIELD MEASUREMENTS ON SUBMITTALS.
9. THE CONTRACTOR SHALL NOTIFY THE CO IN WRITING IMMEDIATELY IF CONFLICTS BETWEEN THE DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED. THE CONTRACTOR SHALL ACCURATELY RECORD ANY SUCH CONFLICTS ON THE CONSTRUCTION DRAWINGS.
10. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF CONFLICTING UNDERGROUND UTILITIES AS NEEDED WITH THE CO.
11. THE CONTRACTOR SHALL PRESERVE AND MAINTAIN EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES WITHIN THE PROJECT AREA. ANY DAMAGE SHALL BE REPAIRED, BY AND AT THE EXPENSE OF THE CONTRACTOR, TO PRE-EXISTING CONDITIONS FOR APPROVAL BY THE CO.
12. THE CONTRACTOR IS RESPONSIBLE FOR BRACING, SHORING, OR PROVIDING OTHER MEANS NECESSARY TO PROTECT AND SUPPORT EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (EXPOSED OR UNEXPOSED) THAT MAY BE IMPACTED BY HIS/HER WORK.
13. AT THE CONTRACTOR'S EXPENSE, THE CONTRACTOR SHALL RESTORE TO PRE-EXISTING CONDITIONS FOR APPROVAL OF THE CO ALL PAVING, STABILIZED EARTH, DRIVEWAYS, CURBS, SIDEWALKS, FENCES, SOD, LANDSCAPING, CULVERTS, ETC. THAT THE CONTRACTOR HAS DAMAGED DURING CONSTRUCTION. THIS INCLUDES ALL ASPHALT, CONCRETE, GRASS OR SOD REMOVAL NOT SPECIFICALLY IDENTIFIED ON THE DRAWINGS.
14. THE CONTRACTOR SHALL LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS. CONTRACTOR SHALL TAKE CARE TO PROVIDE PROPER GRADE ELEVATIONS AND ALIGNMENTS.
15. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE UNLESS OTHERWISE NOTED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE AS SPECIFIED UNLESS NOTED OTHERWISE.
16. PIPE HANGERS AND SUPPORTS ARE NOT SHOWN UNLESS A SPECIAL TYPE OR CONFIGURATION IS REQUIRED. FINAL SUPPORTS, LOCATIONS, AND TYPES SHALL BE DETERMINED BY THE CONTRACTOR AND INCLUDED IN THE PIPELINE DRAWING SUBMITTALS FOR REVIEW AND APPROVAL BY THE CO PRIOR TO INSTALLATION. MAXIMUM SPACING SHALL BE AS SPECIFIED.
17. ALL PRESSURIZED PIPE/FITTING JOINTS, FLEXIBLE CONNECTORS, FLANGED COUPLING ADAPTERS, ETC SHALL BE FULLY RESTRAINED USING SPECIFIED RESTRAINT SYSTEM UNLESS NOTED OTHERWISE.
18. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE DRAWINGS, WHEREVER APPLICABLE. ALL OF THE VARIOUS PIPING APPLICATIONS ARE NOT NECESSARILY USED IN THE PROJECT. ALL BURIED AND EXPOSED PIPING SHALL BE PRESSURE TESTED AS SPECIFIED.
19. THE CONTRACTOR SHALL NOTIFY THE CO IN WRITING AT LEAST 14 FULL WORKING DAYS IN ADVANCE OF MAKING ANY CONNECTION TO THE WATER AND SEWER SYSTEMS. ADDITIONALLY, THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE CO A MINIMUM OF 14 WORKING DAYS PRIOR TO INTERRUPTING WATER, SEWER, COMMUNICATION, ELECTRICAL, OR OTHER UTILITY SERVICE.
20. ALL JOINTS SHALL BE WATERTIGHT. STANDARD WALL PIPE DETAIL SHALL BE USED WHEREVER PIPING PASSES FROM A LIQUID HOLDING CONCRETE STRUCTURE UNLESS NOTED OTHERWISE ON THE DRAWINGS.
21. NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS ARE ONLY APPROXIMATE. CONTRACTOR TO PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
22. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE USED TO JOIN THE COUPLING ADAPTER.
23. ALL ANCHORS AND FASTENERS SHALL BE 316 STAINLESS STEEL UNLESS NOTED OTHERWISE. ALL PIPE/FITTING BOLT ASSEMBLIES SHALL BE CARBON STEEL AS SPECIFIED AND COATED AS SPECIFIED.
24. CONTRACTOR SHALL PROVIDE MEANS TO DEWATER SOILS FOR ALL CONSTRUCTION WORK INCLUDING WORK TO DRAIN, CLEAN, REHABILITATE, REPAIR, MODIFY, OR CONSTRUCT NEW OR EXISTING STRUCTURES OR UTILITIES.
25. FITTINGS MAY BE USED FOR PIPE ALIGNMENT CHANGES RATHER THAN DEFLECTING AT THE CONTRACTOR'S OPTION AND WITH NO ADDITIONAL COMPENSATION.
26. ALL DRAINAGE AREAS THAT ARE CROSSED BY PIPELINES SHALL NOT BE OBSTRUCTED EXCEPT FOR SHORT PERIODS AS MAY BE NECESSARY DURING ACTUAL CONSTRUCTION HOURS.
27. THE CONTRACTOR SHALL NOT PLACE ANY FILL MATERIAL WITHIN WETTED DITCH OR WETLAND AREAS, AND SHALL INSTALL SILTATION FENCES BETWEEN WORK AND SUCH AREAS WHEN WORKING ADJACENT TO EITHER TYPE OF AREA.
28. THE CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS OBTAINED FOR THIS PROJECT.
29. AT LOCATIONS WHERE A PROPOSED SEWER LINE AND AN EXISTING UTILITY CROSS, THE SEWER LINE SHALL BE INSTALLED BENEATH THE EXISTING UTILITY IN ACCORDANCE WITH THE TYPICAL UTILITY CONFLICT DETAIL.
30. THIS PROJECT HAS THE POTENTIAL TO IMPACT THREATENED, ENDANGERED, AND PROTECTED SPECIES SUCH AS BUT NOT LIMITED TO THE GOPHER TORTOISE. THE CONTRACTOR SHALL CONTACT THE CO AND NASA ENVIRONMENTAL 14 DAYS PRIOR TO CONSTRUCTION ACTIVITIES IN ORDER FOR THE GOVERNMENT TO PERFORM SURVEY AND RELOCATION ACTIVITIES OF THE IDENTIFIED SPECIES.
31. WHERE APPROPRIATE, WATER OBTAINED FROM EXTERNAL SOURCES FOR FILLING, FLUSHING, AND TESTING OF THE NEW INSTALLATION MUST BE OBTAINED FROM A DRINKING WATER SOURCE WITH QUALITY TO BE VERIFIED AS COMPLYING WITH THE RULE REQUIREMENTS.
32. CONTRACTOR TO SURVEY ALL MANHOLES THAT REQUIRE REPLACEMENT TO VERIFY CONTRACT DRAWINGS MATCH EXISTING CONDITIONS, AND REPORT ANY SIGNIFICANT DEVIATIONS TO THE CO.
33. THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE VOLUME OF SOIL DISPLACED WITHIN THE SWMU AREAS. THE CONTRACTOR SHALL PROVIDE THE CO WITH THE APPROXIMATE VOLUME OF CONTAMINATED SOIL SO THAT THE PROPER ARRANGEMENTS CAN BE MADE FOR ITS REMOVAL AND DISPOSITION.
34. SCALE SHOWN ON DRAWINGS IS FOR REFERENCE ONLY. DRAWINGS SHALL NOT BE SCALED & ITEMS SHALL NOT BE CONSTRUCTED FROM SCALED DRAWINGS. CALL CO IF IT CANNOT BE CONSTRUCTED WITH DIMENSIONS SHOWN OR CONFLICTS WITH OTHER DRAWINGS. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.
35. THE CONTRACTOR SHALL MAKE ALL CONNECTIONS TO NEW AND EXISTING UTILITIES AS SHOWN ON THE DRAWINGS AND SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY TO COMPLETE THE WORK.
36. NOT ALL FITTINGS ARE SHOWN ON DRAWINGS. THE MINIMUM PIPE COVER MUST BE MAINTAINED. ADD FITTINGS FOR VERTICAL OFFSETS.
37. ALL MATERIALS, COATINGS, AND CHEMICALS THAT CONTACT RAW AND/OR DRINKING WATER SHALL BE IN CONFORMANCE WITH ANSI/NSF STANDARDS 61.
38. ALL ROADWAY CROSSINGS FOR PIPE SIZES 4 INCHES IN DIAMETER AND SMALLER SHALL BE SLEEVED.
39. ALL EXPOSED CONCRETE SLABS SHALL HAVE CHAMFERED EDGES.
40. THE CONTRACTOR SHALL ADD A CAP OR RESTRAINED PLUG TO THE END OF ALL EXISTING LINES WHICH ARE TO REMAIN ACTIVE.
41. IF EXISTING SOIL IS CONTAMINATED AS INDICATED ON THE SWMU AND PRL CONTAMINANTS TABLES ON EN3, CONTRACTOR IS TO REPLACE SOIL WITH CLEAN FILL.
42. B SEE SPECIFICATION SECTION 33 11 00 FOR PIPE HANGER REQUIREMENTS FOR THIS VOLUME.

## GENERAL ABBREVIATIONS

| | |
|---|---|
| ACM | ASBESTOS CEMENT MATERIAL |
| ADA | AMERICANS WITH DISABILITIES ACT |
| ADJ | ADJUSTABLE |
| ALT | ALTERNATIVE |
| ALUM | ALUMINUM |
| AMPS | AMPERES |
| ANSI | AMERICAN NATIONAL STANDARDS INSTITUTE |
| AR | AIR RELEASE |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| AV | AIR VACUUM |
| AWWA | AMERICAN WATER WORKS ASSOCIATION |
| BF | BLIND FLANGE |
| BFV | BUTTERFLY VALVE |
| BO | BLOW-OFF |
| BTM | BOTTOM |
| BTM/ | BOTTOM OF |
| BV | BALL VALVE |
| BYP | BY-PASS |
| CL, ℄ | CENTERLINE |
| CAT | CATALOGUE |
| CC | CENTER TO CENTER |
| CIP | CAST IRON PIPE |
| CISP | CAST IRON SLIP PIECE |
| CLR | CLEAR |
| CMP | CORRUGATED METAL PIPE |
| CO | CONTRACTING OFFICER |
| CON | CONCENTRIC |
| CONC | CONCRETE |
| CONST | CONSTRUCTION |
| CORP | CORPORATION |
| CONT | CONTINUOUS |
| CPLG | COUPLING |
| CS | CARBON STEEL |
| CV | CHECK VALVE |
| DC | DIRECT CURRENT |
| DI | DUCTILE IRON |
| DIA | DIAMETER |
| DIV | DIVISION |
| E | EAST |
| ECC | ECCENTRIC |
| EF | EACH FACE |
| EG | SUCH AS |
| EL/ELEV | ELEVATION |
| ELL | ELBOW |
| ELB | ELBOW |
| EOP | EDGE OF PAVEMENT |
| EQ | EQUIVALENT |
| EW | EACH WAY |
| EX | EXISTING |
| EXP | EXPANSION |
| FAB | FABRICATED |
| FAC | FLORIDA ADMINISTRATIVE CODE |
| FCA | FLANGED COUPLING ADAPTER |
| FCV | FLOW CONTROL VALVE |
| FDEP | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| FDOT | FLORIDA DEPARTMENT OF TRANSPORTATION |
| FIN | FINISHED |
| FJ | FLANGED JOINT |
| FLG | FLANGE |
| FND | FOUNDATION |
| FM | FORCE MAIN |
| FRP | FIBERGLASS REINFORCED PLASTIC |
| FPS | FEET PER SECOND |
| FT | FOOT |
| GALV | GALVANIZED |
| GPM | GALLONS PER MINUTE |
| GR | GRADE |
| GV | GATE VALVE |
| HP | HORSEPOWER |
| IA | INDUSTRIAL AREA |
| ID | INSIDE DIAMETER |
| IE | INVERT ELEVATION |
| IF | INSULATED FLANGE |
| INV | INVERT |
| JT | JOINT |
| KSC | KENNEDY SPACE CENTER |
| L | LONG |
| LB | POUND |
| LC | LAUNCH COMPLEX |
| LF | LINEAR FEET |
| LG | LONG |
| LR | LONG RADIUS |
| LS | LIFT STATION |
| LSS | LINED SEWER |
| M/F | MALE/FEMALE |
| MJ | MECHANICAL JOINT |
| MNPT | MALE NATIONAL PIPE THREAD |
| N | NORTH |
| NA | NOT AVAILABLE |
| NAD | NORTH AMERICAN DATUM |
| NAVD | NORTH AMERICAN VERTICAL DATUM |
| NC | NORMALLY CLOSED |
| NE | NORTHEAST |
| NEC | NATIONAL ELECTRIC CODE |
| NPT | NATIONAL PIPE THREAD |
| NSF | NATIONAL SANITATION FOUNDATION |
| OC | ON CENTER |
| OS&Y | OUTSIDE STEM & YOKE |
| PE | PLAIN END |
| PI | PRESSURE INDICATOR/GAUGE |
| PL | PLATE |
| P/L | PROPERTY LINE |
| POJ | PUSH ON JOINT |
| PP | POWER POLE |
| PPE | PERSONAL PROTECTIVE EQUIPMENT |
| PR | PRESSURE RELIEF |
| PRL | POTENTIAL RELEASE LOCATION |
| PRV | PRESSURE REDUCING VALVE |
| PSI | POUNDS PER SQUARE INCH |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE |
| PVMT | PAVEMENT |
| PWQ | PROCESS WASTE QUESTIONNAIRE |
| RED | REDUCER |
| REINF | REINFORCED |
| REQ, REQ'D | REQUIRED |
| RJ | RESTRAINED JOINT |
| RMJ | RESTRAINED MECHANICAL JOINT |
| RPM | REVOLUTIONS PER MINUTE |
| RTU | REMOTE TELEMETRY UNIT |
| SE | SOUTHEAST |
| SEC | SHOULDERED-END COUPLING |
| SQ | SQUARE |
| SR | SURGE RELIEF |
| SRV | SURGE RELIEF VALVE |
| SS, SST | STAINLESS STEEL |
| STL | STEEL |
| SW | SOUTHWEST |
| SWJ | SOLVENT WELD JOINT |
| SWMU | SOLID WASTE MANAGEMENT UNIT |
| T/ | TOP OF |
| TBM | TEMPORARY BENCHMARK |
| TGS | THREADED GALVANIZED STEEL |
| TGSP | THREADED GALVANIZED STEEL PIPE |
| TH | TOTAL HEAD |
| THD | THREADED |
| THK | THICK |
| TOC | TOP OF CONCRETE |
| TRP | TECHNICAL RESPONSE PACKET |
| ULC | ULTRASONIC LEVEL CONTROLLER |
| VAB | VEHICLE ASSEMBLY BUILDING |
| W | WEST/ WIDE |
| W/ | WITH |
| WM | WATER MAIN |
| WT | WEIGHT |
| WWF | WELDED WIRE FABRIC |

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED GENERAL NOTE 42 | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| DRAWN J. ALLEN | 12/05/11 |
| CHECKED R. BEST | 12/05/11 |
| SUBMITTED M. CLARK | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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KENNEDY SPACE CENTER, FLORIDA

**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**GENERAL NOTES AND ABBREVIATIONS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 SHEET 3

V3

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SPECIFICATION REFERENCE NO 79K38878

## GENERAL LEGEND

- SANITARY MANHOLE
- DEMOLISH
- ASPHALT PAVEMENT RESTORATION
- LIMEROCK RESTORATION
- CONCRETE RESTORATION
- PIPE SUPPORT
- UTILITY CONFLICT AREA
- SPT BORING LOCATION
- FM — FORCE MAIN
- SAN — SANITARY SEWER
- WM — WATER LINE
- 10 — COORDINATE POINT
- RADIO ANTENNA

## PIPING SYMBOLS

| DOUBLE LINE | SINGLE LINE | |
|---|---|---|
| | | EXISTING PIPE |
| | | NEW PIPE (ABOVE GROUND) |
| | | NEW PIPE (BELOW GROUND) |
| | | EXISTING PIPE TO BE REMOVED |
| | | FLANGED JOINT |
| | | MECHANICAL JOINT OR RESTRAINED PUSH-ON JOINT |
| | | FLEXIBLE COUPLING ADAPTER |
| | | HUB & SPIGOT JOINT |
| | | FLANGED COUPLING ADAPTER W/ THRUST TIES |
| | | FLEXIBLE COUPLING WITH THRUST TIES |
| | | BLIND FLANGE |
| | | 90° ELBOW UP |
| | | 90° ELBOW DOWN |
| | | TEE UP |
| | | TEE DOWN |
| | | FLANGED COUPLING ADAPTER |
| | | PUMP EXPANSION COUPLING |

## MECHANICAL LEGEND

| DOUBLE LINE | SINGLE LINE | |
|---|---|---|
| | | ELBOW UP |
| | | ELBOW DOWN |
| | | CONCENTRIC REDUCER |
| | | ECCENTRIC REDUCER |
| | | UNION |
| | | CAP |
| | | TEE |
| | | TEE W/ RESTRAINED PLUG |
| | | ELBOW, 90 DEGREE |
| | | ELBOW, 45 DEGREE |
| | | ELBOW, 22.5 DEGREE |
| | | ELBOW, 11.25 DEGREE |
| | | ABANDON IN PLACE |
| | | SLEEVE |
| | | TEMPORARY LINE STOP |

## VALVE SYMBOLS

| DOUBLE LINE | SINGLE LINE | |
|---|---|---|
| | | GATE |
| OR | | BUTTERFLY |
| | | BALL |
| | | CHECK |
| OR | | PRESSURE CONTROL |
| | | AIR RELEASE AND/OR VACUUM RELIEF |
| | | PRESSURE SAFETY RELEASE VALVE |
| | NV-01-12 | TYPICAL VALVE IDENTIFICATION NUMBER |
| | | PUMP (WET PIT) |
| | | PRESSURE GAUGE W/ISOLATION VALVE |
| | | PRESSURE GAUGE W/ISOLATION VALVE & DIAPHRAGM SEAL |
| | | SEAT PORT ECCENTRIC PLUG |

## NOTES

A. THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.

B. EXISTING PIPE, EQUIPMENT, AND FEATURES ARE SHOWN LIGHT-LINED AND/OR SCREENED. PROPOSED PIPE AND EQUIPMENT IS SHOWN HEAVY-LINED OR BOLD.

## DESIGNATIONS

A / C1 C1
- DIRECTION OF SECTION
- SECTION DESIGNATION
- SHEET NUMBER SECTION APPEARS ON
- SHEET NUMBER SECTION IS CUT ON

### SECTION DESIGNATION

3 / C1 C26
- DETAIL DESIGNATION
- SHEET NUMBER DETAIL APPEARS ON
- SHEET NUMBER DETAIL IS REFERENCED ON

● INDICATES DETAIL IS REFERENCED ON MORE THAN ONE PAGE

### DETAIL DESIGNATION

A A
- DIRECTION OF SECTION

INDICATES ONE OR MORE SECTIONS CUT AND SHOWN ON THE SAME DETAIL

### SECTION DESIGNATION

## SURVEY LEGEND

| | | | |
|---|---|---|---|
| = BACK-FLOW PREVENTER | = LIGHT POLE | = CONCRETE | |
| = BOLLARD | = MANHOLE, UNKNOWN | = FENCELINE | |
| = CURB INLET, STORM GRATE | = MANHOLE, SANITARY SEWER | = TREELINE | |
| = CONCRETE LIGHT POLE | = MANHOLE, STORM SEWER | = UNDERGROUND CABLE TV | UGTV |
| = CLEAN-OUT (SANITARY) | = MONITORING WELL | = UNDERGROUND COMMUNICATION | COM |
| = CONCRETE POWER POLE | = STORM GRATE | = UNDERGROUND ELECTRIC | UGE |
| = ELECTRIC MARKER | = SIGN | = UNERGROUND FIBER OPTIC CABLE | FOC |
| = ELECTRIC BOX | = SEWER VALVE | = UNDERGROUND UNKNOWN UTILITY | |
| = ELECTRIC HANDHOLE | = SPRINKLER HEAD | = UNDERGROUND GAS | G |
| = ELECTRIC METER | = TELEPHONE HANDHOLE | = RAILROAD | |
| = ELECTRIC MANHOLE | = TELEPHONE BOX | = SANITARY SEWER | SAN |
| = ELECTRIC TRANSFORMER | = TELEPHONE MARKER | = SANITARY FORCEMAIN | FM |
| = FIRE DEPARTMENT CONNECTION | = TELEPHONE MANHOLE | = SITE FEATURE | |
| = FIRE METER | = TELEPHONE PEDESTAL | = STEAMLINE | STM |
| = FIBER OPTIC CABLE MARKER | = TRAFFIC SIGNAL BOX | = STORM SEWER | S |
| = FIBER OPTIC CABLE HANDHOLE | = TRAFFIC SIGNAL | = UNDERGROUND WATER | WM |
| = GAS MARKER | = WATER METER | = EXISTING CONTOUR | 5 |
| = GAS METER | = WATER SPIGOT | | |
| = GUY | = WATER VALVE | | |
| = GAS VALVE | = WELL | | |
| = HYDRANT | = WOOD POWER POLE | | |
| = INDICATOR VALVE | + 5.9 = SPOT ELEVATION | | |

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| K. MILLER | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## DRAWING LEGENDS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 4

V4

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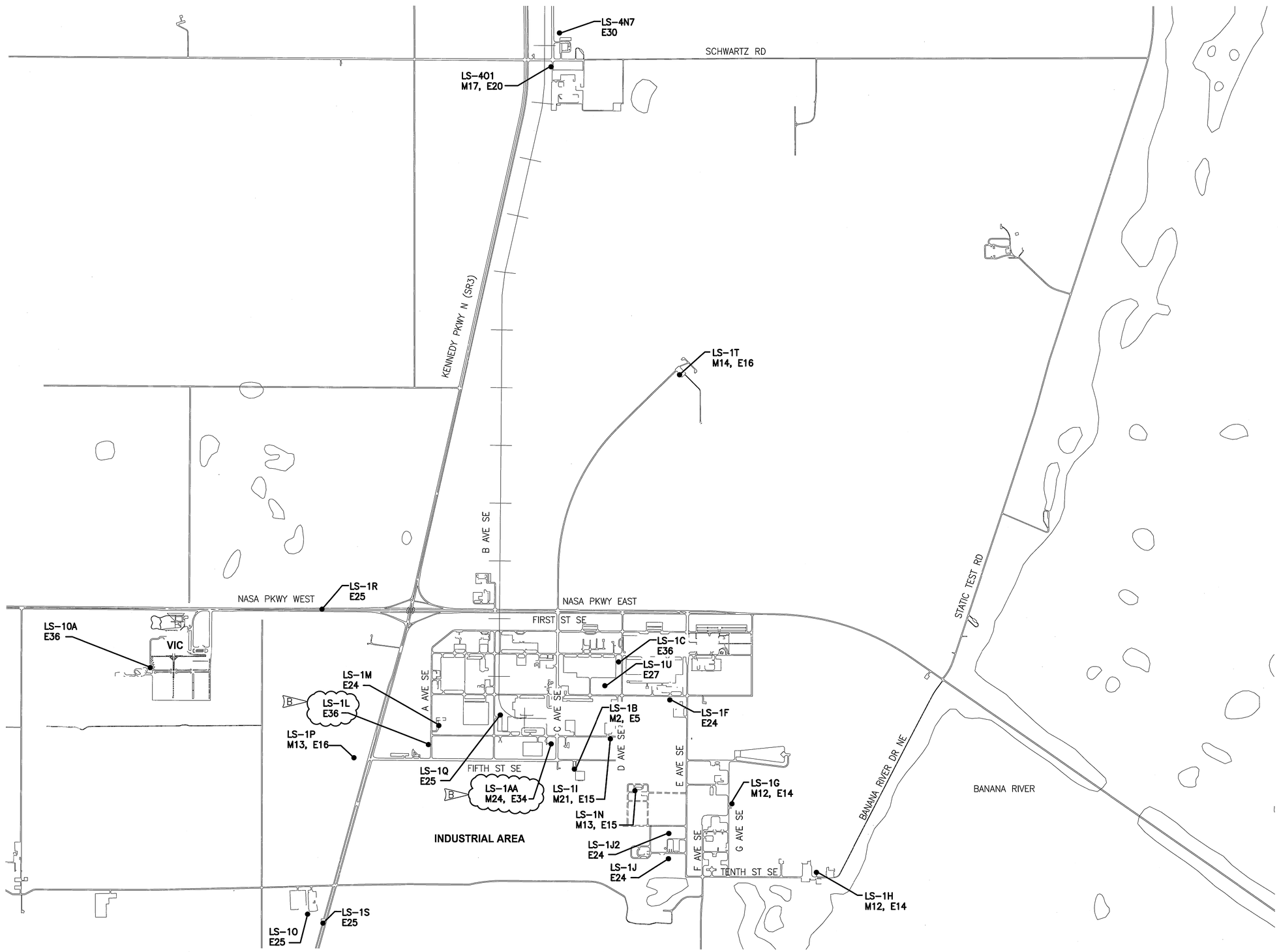


## KEYMAP
1" = 1000'

N

**GRAPHIC SCALE**
0 500 1000 2000
SCALE IN FEET
1"=1000'

**LEGEND**
LS-1T — LIFT STATION IDENTIFIER
M14, E16 — SHEET IDENTIFIER

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | UPDATED KEYMAP | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

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| SUBMITTED M. CLARK | 12/05/11 |
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| APPROVED M. CLARK | |
| K. MILLER | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**KEY MAP (SOUTH)**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 5 | |

V5

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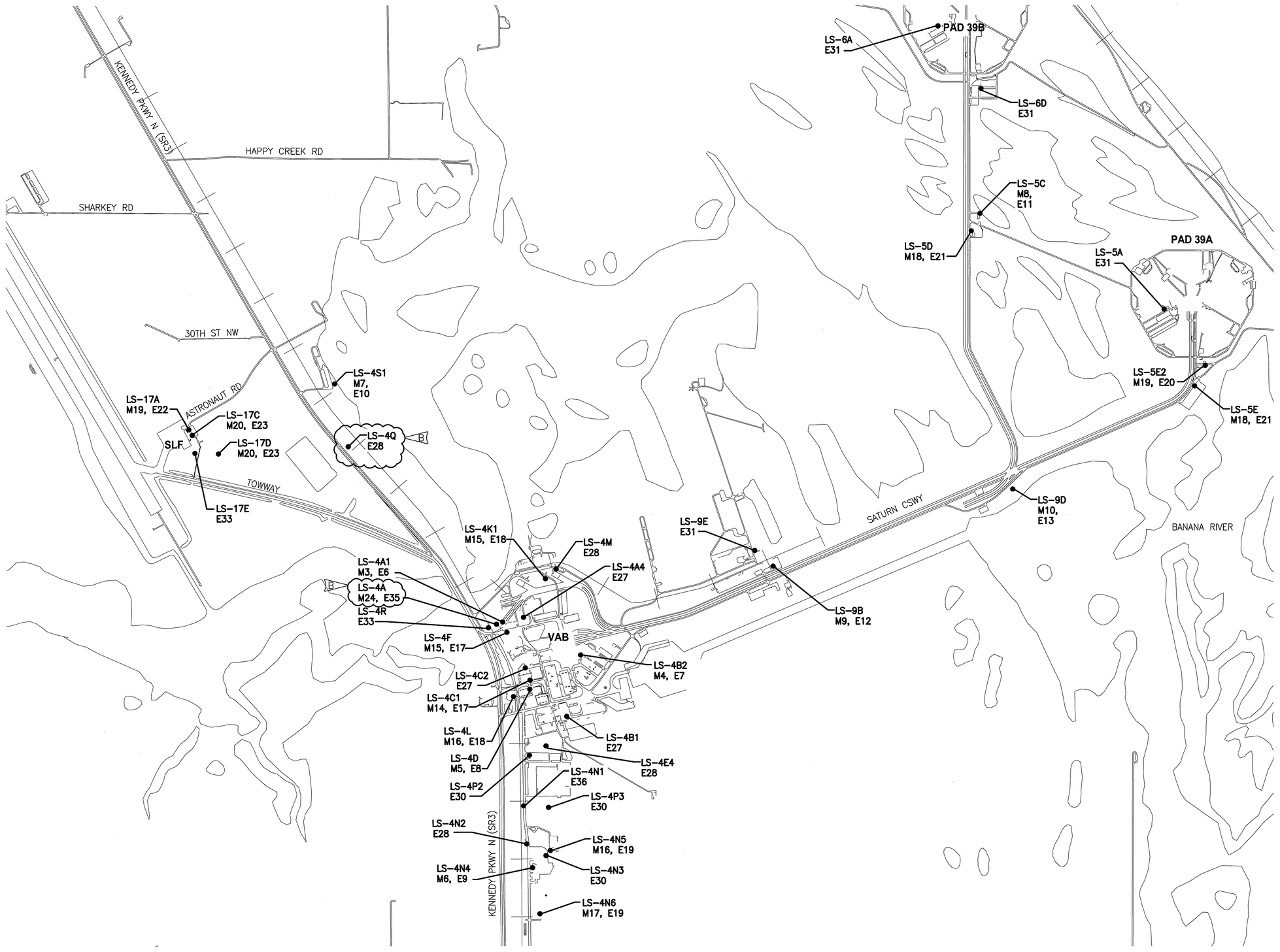


**KEYMAP**
1" = 1000'

N

**GRAPHIC SCALE**
0 500 1000 2000
SCALE IN FEET
1" =1000'

**LEGEND**
LS-1T — LIFT STATION IDENTIFIER
M14, E16 — SHEET IDENTIFIER

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | UPDATED KEYMAP | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**KEY MAP (NORTH)**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 6 | |

V6

KSC FORM 1-11 (3/76)(C/G 3/94)

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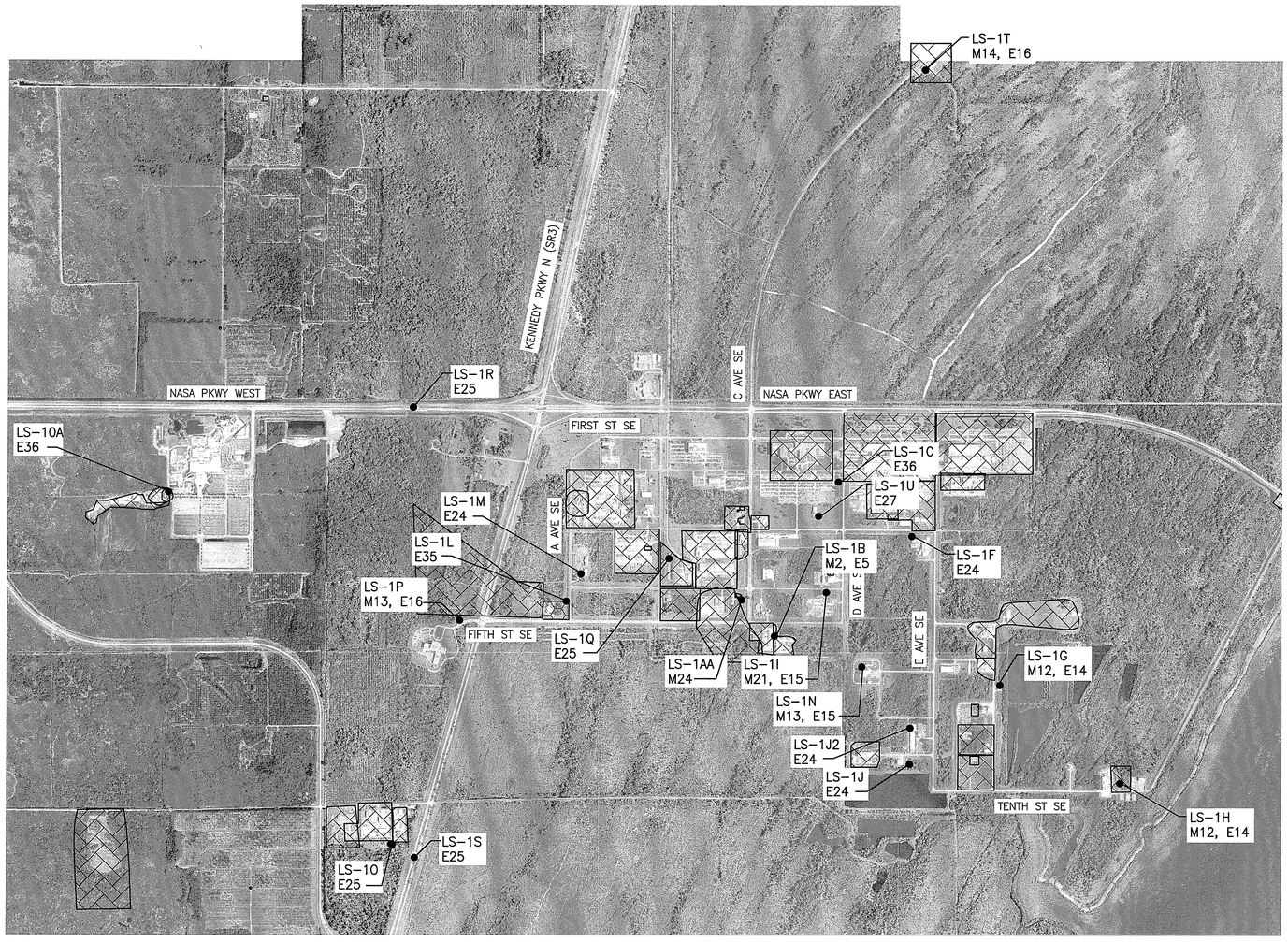
## LEGEND

- SWMU SITE
- PRL SITE
- LS-1T — LIFT STATION IDENTIFIER
- M14, E16 — SHEET IDENTIFIER




## SOUTH PLAN

1" = 1000'

## GENERAL NOTES:

1. THE SYSTEMS BEING MODIFIED MAY BE LOCATED WITHIN VARIOUS SWMU OR PRL. THESE SITES CONTAIN GROUNDWATER CONTAMINATION, SOIL CONTAMINATION, OR BOTH. SOIL EXCAVATED FROM THE LAND SURFACE TO ANY DEPTH SHALL BE RETURNED TO THE AREA OF EXCAVATION FROM WHICH IT WAS REMOVED. SOIL EXCAVATED FROM THE SITE THAT CANNOT BE RETURNED TO THE AREA FROM WHICH IT WAS REMOVED SHALL BE COLLECTED BY THE CONTRACTOR AND PLACED IN AN APPROPRIATE CONTAINER IN ACCORDANCE WITH THE REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE CO AND NASA ENVIRONMENTAL TO HAVE THE EXCAVATED SOIL SAMPLED TO DETERMINE IF IT IS A HAZARDOUS WASTE. THE SOIL SHALL BE DISPOSED OF IN ACCORDANCE WITH THE PWQ/TRP PROCESS. THE CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICES TO PREVENT EROSION AND REMOVAL OF SOIL FROM SITE.
2. DEWATERING EFFLUENT SHALL BE DISCHARGED TO GRADE UPLAND OF THE EXCAVATED AREA AND ALLOWED TO PERCOLATE BACK INTO THE PERVIOUS GROUND SURFACE. DEWATERING SHALL NOT EXCEED 50 GPM WITHIN A SWMU OR PRL, UNLESS AUTHORIZED BY THE CO AND NASA ENVIRONMENTAL. BEST MANAGEMENT PRACTICES SHALL BE USED TO PREVENT DEWATERING EFFLUENT FROM ENTERING SURFACE WATERS. THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN TO THE CO AND NASA ENVIRONMENTAL 14 DAYS PRIOR TO COMMENCEMENT OF DEWATERING WORK WITHIN A SWMU OR PRL BOUNDARY FOR DEWATERING PLAN APPROVAL.
3. THE SIZE AND LOCATIONS OF SWMU/PRL AREAS ARE BASED ON THE BEST AVAILABLE INFORMATION AND LOCATIONS AND SIZE OF AREAS ARE APPROXIMATE.
4. THE CONTRACTOR IS TO CONTACT THE CO SHOULD CONTAMINANTS OR SUSPECTED CONTAMINANTS BE IDENTIFIED OUTSIDE THE LIMITS OF THE IDENTIFIED SWMU/PRL AREAS AND WITHIN THE LIMITS OF CONSTRUCTION.
5. SWMU/PRL CONTAMINANT DATA WAS PROVIDED BY NASA ENVIRONMENTAL.

GRAPHIC SCALE
0 500 1000 2000
SCALE IN FEET
1"=1000'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | |

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| APPROVED M. CLARK | 12/6/11 |
| K. MILLER | 12/5/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## SWMU PRL SITE KEY MAP (SOUTH)

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 7 | |

EN1

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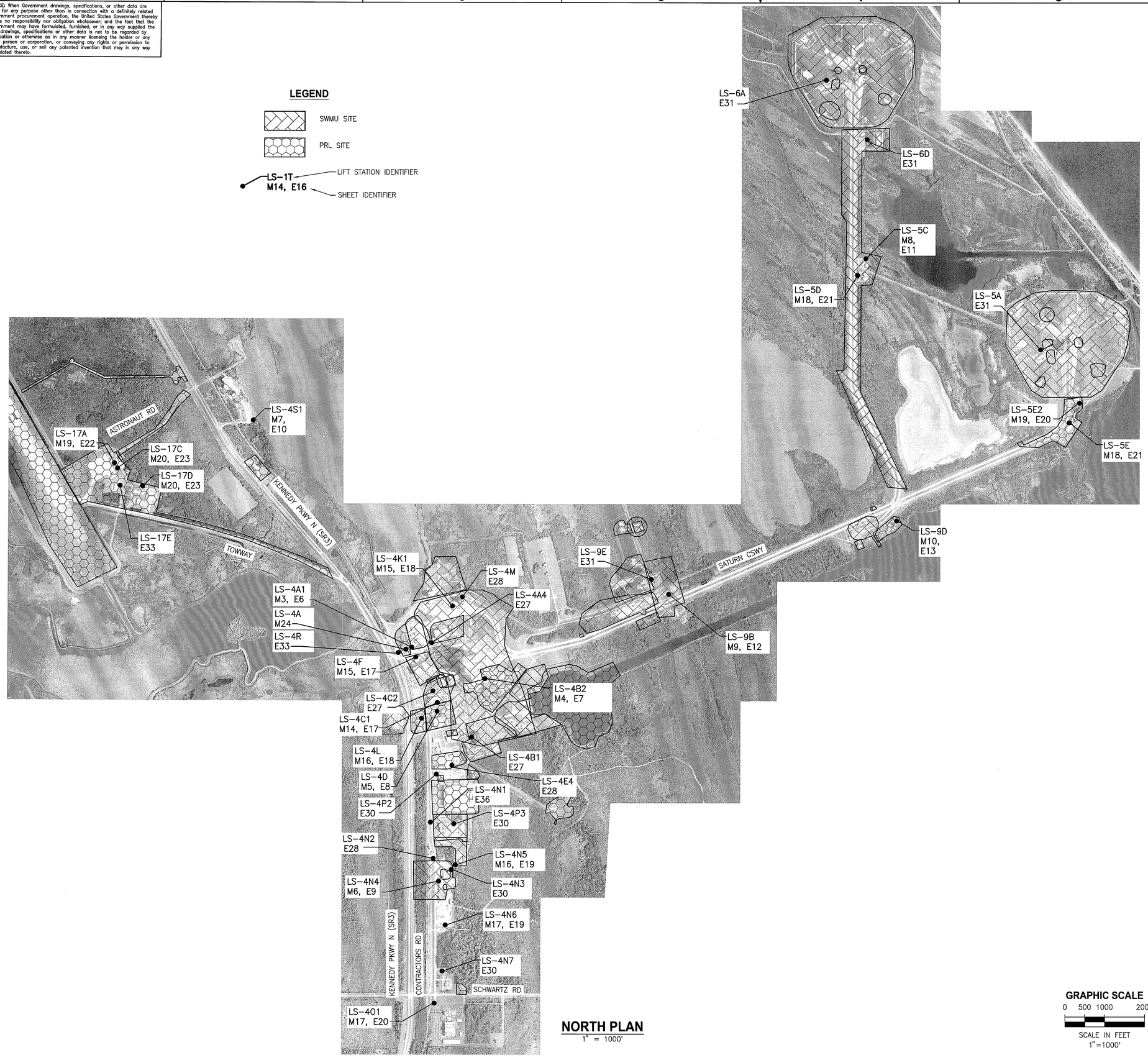
- SWMU SITE
- PRL SITE
- LS-1T — LIFT STATION IDENTIFIER
- M14, E16 — SHEET IDENTIFIER




**NORTH PLAN**
1" = 1000'

**GRAPHIC SCALE**
0 500 1000 2000
SCALE IN FEET
1"=1000'

N

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | KM |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**SWMU PRL SITE KEY MAP (NORTH)**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 8

EN2

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## SWMU CONTAMINANTS

| SWMU | CONTAMINANTS | LOCATION (MEDIA) | STATUS | NOTES | LIFT STATION |
|---|---|---|---|---|---|
| 4 | POLYCHLORINATED BIPHENYLS (PCBS), POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS) | SOIL | LTM | | LS-1B |
| | VOLATILE ORGANIC COMPOUNDS (VOCS) | GROUNDWATER | | | |
| 8 | CHLORINATED VOLATILE ORGANIC COMPOUNDS [CVOCS (TCE, CDCE, VINYL CHLORIDE (VC))], PENTACHLOROPHENOL (PCP) | GROUNDWATER | CMS | | LS-5A |
| | ZINC, ARSENIC, BERYLLIUM, LEAD, BENZO(A)PYRENE (BAP), COPPER, CADMIUM, CHROMIUM, PAHS, PCBS, PCP | SOIL, SEDIMENT | | | |
| 9 | CVOCS (TCE, CDCE, VC), METALS (ALUMINUM, ARSENIC, BARIUM, LEAD, MERCURY, THALLIUM) | GROUNDWATER | CMI | | LS-6A |
| | BENZO(A)PYRENE (BAP), ARSENIC, NICKEL, ZINC | SOIL, SEDIMENT | | | |
| 10 | VOCS AND PCBS (GROUNDWATER); NONE (SOIL) | GROUNDWATER: WATER TABLE TO 30 FT BELOW LAND SURFACE | CMI | | |
| 13 | PAHS, METALS | SOIL, SEDIMENT | CMI | | |
| | VOCS | GROUNDWATER | | | |
| 14 | PCBS, PAHS, ARSENIC | SOIL, SEDIMENT | LTM | | |
| | VOCS, IRON | GROUNDWATER | | | |
| 21 | PCBS | SOILS: PCBS IN SURFACE SOILS SURROUNDING SANDBLAST FACILITIES | LUCIP | | |
| 24C | VOCS AND PETROLEUM | GROUNDWATER: SEE SWMU 035 FOR PETROLEUM, LOW LEVEL VOCS CAN ALSO BE FOUND IN GENERAL AREA BELOW 20 FT BLS | LTM | PART OF SWMU 056 | |
| 30 | VOCS, SEMIVOLATILE ORGANIC COMPOUNDS (SVOCS) | GROUNDWATER | CMI | | |
| 35 | PETROLEUM | GROUNDWATER: SMALL AREA OF PETROLEUM CONTAMINANTS IN SHALLOW GROUNDWATER NORTH OF ABOVE GROUND STORAGE TANKS | SA | | |
| 36 | VOCS | PART OF GROUNDWATER PLUME FROM SWMU 010 ENCROACHES ON THE SOUTHEAST CORNER OF THIS SITE | SA | | |
| 39 | VOCS | GROUNDWATER | CMI | | |
| 40 | VOCS | GROUNDWATER: WATER TABLE TO 50 FT BELOW LAND SURFACE | LTM | | |
| 41 | VOCS[(TDCE, CDCE, VC, DFP (DECAFLUOROPENTANE)] | GROUNDWATER | RFI/IM | | LS-4P3 |
| 43 | PCBS | SOIL | CMI | | |
| 44 | PAHS, PCBS, THALLIUM | SOIL | LUCIP | | LS-4A |
| 45 | NICKEL | SWALE SOIL | CMI | | |
| | VOCS | GROUNDWATER | | | |
| 55 | PCBS, METALS | SOIL | CMI, LTM | | LS-4N3, LS-4N4 |
| | VOCS | GROUNDWATER | | | |
| 56 | VOCS, AMMONIA | GROUNDWATER | CMI | | LS-4A4, 4K1, 4M1 |
| | BAP, PCBS | SOIL | | | |
| 67 | PCBS, PAHS | SOIL | CMI | | LS-1AA |
| | VOCS, ALUMINUM | GROUNDWATER | | | |
| 70 | VOCS [TRICHLOROFLUOROMETHANE (TCFM) AND VC] AND ALUMINUM | GROUNDWATER | LUCIP | | |
| 72 | METALS, PAHS, AND TRPH | SOIL, SWALE SOIL | CMI | | LS-4F |
| | ALUMINUM, VOCS | GROUNDWATER | | | |
| 76 | PCBS, PAHS | SOIL | LTM | | |
| | VOCS, IRON | GROUNDWATER | | | |
| 77 | CVOCS | GROUNDWATER | RFI/IM | | LS-1H |
| | COPPER, CHROMIUM | SOIL | | | |
| 79 | VINYL CHLORIDE | GROUNDWATER | CS | | LS-1T |
| 80 | VOCS | GROUNDWATER: WATER TABLE TO 50 FT BELOW LAND SURFACE | LTM | | |
| 81 | COPPER, ARSENIC, BAP, DIBENZO(A,H)ANTHRACENE, TOTAL PETROLEUM HYDROCARBONS (TPH) | SOIL/SWALE SOIL | LTM | | LS-4N5 |
| | ANTIMONY | GROUNDWATER | | | |
| 82 | VOCS (CDCE, VC) | GROUNDWATER | CMS | | LS-1Q |
| 84 | 1,1-BIPHENYL, ARSENIC, LEAD | GROUNDWATER | CMI | | |
| 85 | VC | GROUNDWATER | LTM | | |
| 88 | CVOCS (TCE, VC) | GROUNDWATER | CMI | | |
| 89 | TCE, CDCE, VC | GROUNDWATER | RFI/IM | | LS-9B, 9E |

## SWMU CONTAMINANTS

| | | | | | |
|---|---|---|---|---|---|
| 90 | PCBS, TRPH, BARIUM, CHROMIUM, TCE, FREON 113 | SOIL | CMS/IM | | |
| | TETRACHLOROETHENE (PCE), TCE, CDCE, 1,1-DCE, 1,1 DCA, VC, FREON 113 | GROUNDWATER | | | |
| 91 | VC | GROUNDWATER | RFI | | |
| 92 | PCBS, PAHS | SOIL | CMI | | |
| 94 | AMMONIA | GROUNDWATER | LTM | | |
| 95 | VOCS (TCE, 1,1-DCE, CDCE, TDCE, VC) | GROUNDWATER | CMS/IM | | |
| 96 | BARIUM, COPPER, PCBS, TOTAL PETROLEUM HYDROCARBONS (TPH) | SOIL | CMI | | LS-1B |
| 98 | AMMONIA | GROUNDWATER | LTM | | |
| 99 | BAP, PAHS | SOIL | LTM | | LS-10A |
| | PETROLEUM HYDROCARBONS | GROUNDWATER | | | |
| 100 | VOCS (TCE, CDCE, TDCE, VC) | GROUNDWATER | RFI | | |
| 101 | VOCS WITH VINYL CHLORIDE ONLY CONTAMINANT OF CONCERN EXCEEDING GW CLEANUP CRITERIA | GROUNDWATER | LTM | | LS-4C1, 4C2 |
| 102 | VOCS (TCE, CDCE, VC) | GROUNDWATER | RFI | | |
| 104 | PCBS | SOIL, CONCRETE | RFI/IM | | |
| 106 | (AROCLOR-1254, BENZO(A)PYRENE TOTAL EQUIVALENTS [BAP TEQ], ARSENIC, BARIUM, CHROMIUM, COPPER, LEAD, MERCURY | SOIL | RFI/IM | | LS-5C, 5D, 6D |
| | VINYL CHLORIDE | GROUNDWATER | | | |

BAP= BENZO(A)PYRENE

BLS= BELOW LAND SURFACE

CDCE= CIS-DICHLOROETHENE

CS= CONFIRMATION SAMPLING

CMI= CORRECTIVE MEASURES IMPLEMENTATION

CMS= CORRECTIVE MEASURES STUDY

CVOCS= CHLORINATED VOLATILE ORGANIC COMPOUNDS

DCA= DICHLOROETHANE

DCE= DICHLOROETHANE

DFP= DECAFLUOROPENTANE

IM= INTERIM MEASURE

LTM= LONG TERM MONITORING

LUCIP= LAND USE CONTROL IMPLEMENTATION PLAN

PAHS= POLYNUCLEAR AROMATIC HYDROCARBONS

PCBS= POLYCHLORNATED BIPHENYLS

PCP= PENTACHLOROPHENOL

RFI= RESOURCE CONSERVATION RECOVERY ACT (RCRA) FACILITY INVESTIGATION

TCE= TRICHLOROETHENE

TCFM= TRICHLOROFLUOROMETHANE

TDCE= TRANS-DICHLOROETHENE

TRPH= TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

TPH= TOTAL PETROLEUM HYDROCARBONS

VC= VINYL CHLORIDE

VOCS= VOLATILE ORGANIC COMPOUNDS

## PRL CONTAMINANTS

| PRL | CONTAMINANTS | LOCATION (MEDIA) | STATUS | NOTES | LIFT STATION |
|---|---|---|---|---|---|
| 51 | PETROLEUM | GROUNDWATER AND SOIL: AREA SOUTH OF FACILITY CONTAINS PETROLEUM PRODUCTS FROM 5-15 FT BLS. | CMI | | |
| 84 | VOCS | GROUNDWATER: WATER TABLE TO 50 FT BELOW LAND SURFACE | LTM | CRAWLER PARK SITE SOUTH, PART OF SWMU 044 | |
| | METALS AND PAHS(SOIL) | SOIL | | | |
| 86B | PCBS | GROUNDWATER: PCBS IN SHALLOW GROUNDWATER (5 TO 15 FT BLS) SOUTH OF AN POWER BUILDING | LTM | STP14, PART OF SWMU 021 | |
| 144 | NOT AVAILABLE | NOT AVAILABLE | CS/IM | | |
| 149 | ARSENIC | SOILS: ARSENIC IN SURFACE SOILS BENEATH PLAYGROUND POUR AND PLAY SURFACE | | | |
| 150 | PCBS | SOIL: PCBS IN SOIL BENEATH TRANSFORMER PAD ONLY | LUCIP | | |
| 164 | NO CONCERNS IN THIS AREA | NONE | LTM | | |
| 165 | NOT AVAILABLE | | SAR | SAR ON HOLD | |
| 166 | PCBS, BAP | SOIL | CS | CURRENTLY UNDERGOING IM, WILL BE NFA | |
| 167 | PCBS, COPPER | SOIL, GROUNDWATER | CS/IM | NFA PENDING SRCO | |
| 170 | PCBS | SOIL, CONCRETE, ASPHALT | CS | SOIL IM NO EARLIER THAN FY12 | LS-4D |
| 172 | NOT AVAILABLE | SOIL, GROUNDWATER | CS | NO LOCS NEAR LIFT STATION, CS ON HOLD | LS-9D |
| 174 | PCBS, BAP, COPPER, CHROMIUM, TPH 2,6-DINITROTOLUENE, CARBAZOLE, ACENAPTHENE, NAPTHALENE, DIBENZO(A,H)ANTHRACENE | SOIL | CS | | LS-4L |
| | DIBENZO(A,H)ANTHRACENE | GROUNDWATER | | | |
| 175 | NOT AVAILABLE | SOIL AND GROUNDWATER | CS | CS ON HOLD | LS-5E, LS-5E2 |
| 176 | NO CONTAMINANTS IDENTIFIED YET | CS ON HOLD | CS | | |
| 182 | BAP, ZINC | SOIL | CS | | LS-4A |
| | DCE | GROUNDWATER | | | |
| 187 | NOT AVAILABLE | SOIL AND GROUNDWATER | CS | CS ON HOLD (FY12 AT EARLIEST) | LS-17A, LS-17C, LS-17D, LS-17E |

SAR= SWMU ASSESSMENT REPORT SITE REHABILITATION

SRCO= COMPLETION ORDER

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SUBMITTED K. RIVERA | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 65681 | |
| APPROVED M. CLARK | 12/04/11 |
| K. MILLER | 12/5/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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KENNEDY SPACE CENTER, FLORIDA

# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
# LIFT STATIONS

## SWMU AND PRL CONTAMINANTS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 9

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## ASBESTOS SCHEDULE

| LIFT STATION | MATERIAL TYPE | ASBESTOS | FRIABLE | CONDITION | QUANTITY | UNIT | LOCATION | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| LS-4S1 | MISCELLANEOUS MATERIALS (WIRING INSULATION) | NO | NO | GOOD | 20 | LF | WETWELL | WIRING INSULATION IN CONTROL PANEL AND WETWELL |
| LS-17D | MISCELLANEOUS MATERIALS (WIRING INSULATION) | NO | NO | GOOD | 20 | LF | WETWELL | WIRING INSULATION IN CONTROL PANEL AND WETWELL |
| LS-17D | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 19 | EA | EXTERIOR | PIPE GASKETS AT MECHANICAL JOINTS |
| LS-4F | MISCELLANEOUS MATERIALS (MASTIC) | NO | NO | DAMAGED | 52 | LF | WETWELL / VALVE VAULT | BLACK CONCRETE JOINT SEAL |
| LS-4F | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 21 | EA | EXTERIOR | PIPE GASKETS AT MECHANICAL JOINTS |
| LS-4F | MISCELLANEOUS MATERIAL (PIPE COATING) | NO | NO | DAMAGED | 50 | SF | WETWELL / VALVE VAULT / PIPING | BLACK COAL TAR EPOXY |
| LS-4C1 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 22 | EA | EXTERIOR | PIPE GASKETS AT MECHANICAL JOINTS |
| LS-4C1 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 200 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-4C1 | MISCELLANEOUS MATERIALS (MASTIC) | NO | NO | DAMAGED | 50 | LF | WETWELL / VALVE VAULT | BLACK CONCRETE JOINT SEAL |
| LS-4D | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4D | MISCELLANEOUS MATERIALS (PUTTY) | YES * | NO | GOOD | 0.5 | SF | WETWELL / VALVE VAULT | ELECTRICAL PUTTY |
| LS-4L | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4L | MISCELLANEOUS MATERIALS (WIRING INSULATION) | NO | NO | GOOD | 20 | LF | WETWELL | FIBERGLASS WIRING INSULATION |
| LS-9B | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 10 | EA | EXTERIOR | RUBBER GASKETS |
| LS-9B | MISCELLANEOUS MATERIALS (WIRING INSULATION) | NO | NO | GOOD | 20 | LF | WETWELL | FIBERGLASS WIRING INSULATION |
| LS-9D | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-9D | MISCELLANEOUS MATERIAL (FOAM) | NO | NO | GOOD | 1 | SF | EXTERIOR | YELLOW FOAM |
| LS-5D | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 10 | EA | EXTERIOR | RUBBER GASKETS |
| LS-5D | MISCELLANEOUS MATERIAL (FOAM) | NO | NO | GOOD | 1 | SF | EXTERIOR | NEOPRENE FOAM RUBBER |
| LS-5C | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-5C | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-5C | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 70 | LF | WETWELL / VALVE VAULT / PIPING | BLACK MASTIC |
| LS-4N5 | MISCELLANEOUS MATERIALS (MASTIC) | NO | NO | DAMAGED | 52 | LF | WETWELL / VALVE VAULT | CONCRETE JOINT SEAL |
| LS-4N5 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 21 | EA | EXTERIOR | PIPE GASKETS AT MECHANICAL JOINTS |
| LS-4N5 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-4N4 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4N4 | MISCELLANEOUS MATERIALS (WIRING) | NO | NO | GOOD | 100 | LF | WETWELL | FIBROUS WIRING |
| LS-4N4 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-4N6 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 10 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4N6 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-4N6 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | LF | EXTERIOR | LIGHT GRAY CONCRETE JOINT SEAL |
| LS-401 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4N6 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | LF | WETWELL / VALVE VAULT / PIPING | CONCRETE JOINT SEAL |

## ASBESTOS SCHEDULE

| LIFT STATION | MATERIAL TYPE | ASBESTOS | FRIABLE | CONDITION | QUANTITY | UNIT | LOCATION | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| LS-4N6 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | LF | WETWELL / VALVE VAULT / PIPING | CONCRETE JOINT SEAL |
| LS-401 | MISCELLANEOUS MATERIAL (FOAM) | NO | NO | GOOD | 1 | SF | EXTERIOR | NEOPRENE FOAM RUBBER |
| LS-401 | MISCELLANEOUS MATERIALS (PUTTY) | NO | NO | GOOD | 5 | SF | EXTERIOR | DARK GRAY ELECTRICAL PUTTY |
| LS-1T | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-1T | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-1I | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-1G | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-1G | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 100 | LF | EXTERIOR | DARK GRAY CONCRETE JOINT SEAL |
| LS-1G | MISCELLANEOUS MATERIALS (PUTTY) | NO | NO | GOOD | 5 | SF | EXTERIOR | DARK GRAY ELECTRICAL PUTTY |
| LS-1H | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-1H | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 100 | LF | EXTERIOR | CONCRETE JOINT SEAL |
| LS-1H | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-1N | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-1N | MISCELLANEOUS MATERIALS (PUTTY) | NO | NO | GOOD | 1 | SF | EXTERIOR | DARK GRAY ELECTRICAL PUTTY |
| LS-1N | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-17A | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-17A | MISCELLANEOUS MATERIALS (PUTTY) | NO | NO | GOOD | 1 | SF | EXTERIOR | ELECTRICAL PUTTY |
| LS-17A | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-17C | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 25 | LF | PIPING | GREEN MASTIC AT PIPE PENETRATION |
| LS-4A1 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4A1 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | LF | PIPING | BLACK MASTIC |
| LS-4K1 | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-4K1 | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-5E | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-5E | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-5E2 | NO SUSPECT MATERIALS | | | | | | | |
| LS-1P | MISCELLANEOUS MATERIALS (GASKETS) | NO | NO | GOOD | 20 | EA | EXTERIOR | RUBBER GASKETS |
| LS-1P | MISCELLANEOUS MATERIALS (PUTTY) | NO | NO | GOOD | 5 | SF | EXTERIOR | ELECTRICAL PUTTY |
| LS-1P | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | SF | WETWELL / VALVE VAULT / PIPING | COAL TAR EPOXY |
| LS-1P | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 50 | LF | PIPING | BLACK MASTIC |
| LS-1B | MISCELLANEOUS MATERIAL (MASTIC) | NO | NO | GOOD | 2 | SF | WALL | DARK GREY ELECTRICAL PUTTY |

NOTE: REPORT BY JONES EDMUNDS

A= ASSUMED ASBESTOS

## ENVIRONMENTAL NOTES

A. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC HEALTH AND SAFETY PLAN TO THE CO PRIOR TO START OF WORK PER SPECIFICATION SECTION 01 35 26. THE SPECIAL CONDITIONS OF THE CONTRACT DOCUMENTS, AND ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS.

B. HEAVY METALS AND/OR PCB'S IN PAINT AND MATERIALS ARE ASSUMED ON THE MATERIALS TO BE DEMOLISHED. CONCENTRATIONS ARE LOW ENOUGH IN RELATION TO OVERALL WEIGHT OF THE STRUCTURE THAT THE GOVERNMENT WILL ALLOW DISPOSAL AT THE GOVERNMENT OWNED KSC CLASS III LANDFILL SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. UNPAINTED METALS AND CONCRETE SHALL BE RECYCLED IN ACCORDANCE WITH THE SPECIAL CONDITIONS OF THE CONTRACT DOCUMENTS.

## ASBESTOS ABATEMENT NOTES

C. THIS PROJECT INCLUDES CUTTING AND CAPPING OF ASBESTOS CEMENT PIPE TO BE ABANDONED IN PLACE. REFER TO CIVIL SHEETS FOR LOCATIONS. THE CONTRACTOR SHALL HANDLE ASBESTOS CONTAINING MATERIALS IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS, SPECIFICATION 02 82 13.00 98 AND THE CONTRACT REQUIREMENTS.

D. THIS PROJECT INCLUDES REMOVAL OF ASBESTOS CEMENT PIPE. REFER TO ASBESTOS SCHEDULE FOR QUANTITIES TO BE REMOVED. THE CONTRACTOR SHALL ABATE AND DISPOSE OF CEMENT PIPE IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS, SPECIFICATION 02 82 13.00 98, AND THE CONTRACT DOCUMENTS.

E. SITE SPECIFIC ASBESTOS WORK PLANS MUST BE PROVIDED FOR ALL WORK ASSOCIATED WITH THE IDENTIFIED ASBESTOS CONCRETE PIPES.

F. ITEMS SHOWN IN THE ASBESTOS COLUMN OF THE SCHEDULES AS "YES*" HAVE BEEN ASSUMED TO CONTAIN ASBESTOS DUE TO THE HAZARDS AND CRITICAL NATURE ASSOCIATED WITH THE SYSTEM. THE CONTRACTOR SHALL ASSUME THESE ITEMS ARE POSITIVE FOR ASBESTOS. THE CONTRACTOR HAS THE OPTION TO SAMPLE MATERIAL BEFORE DEMOLITION BEGINS IN ORDER TO MINIMIZE THE DEMOLITION SCHEDULE.

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

THIS DRAWING CREATED IN AUTOCAD 2010 FILE FORMAT AND WILL BE REVISED ONLY ON AN AUTOCAD SYSTEM. FILE: 14000189-DP2-EN-4.DWG

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| SIGNATURES | DATE |
|---|---|
| DRAWN J. ALLEN | 12/05/11 |
| CHECKED T. MURRAY | 12/05/11 |
| SUBMITTED K. RIVERA | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 65681 | |
| APPROVED M. CLARK | 12/05/11 |
| K. MILLER | 12/5/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## ENVIRONMENTAL NOTES AND ASBESTOS SCHEDULE

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 | SHEET 10

EN4

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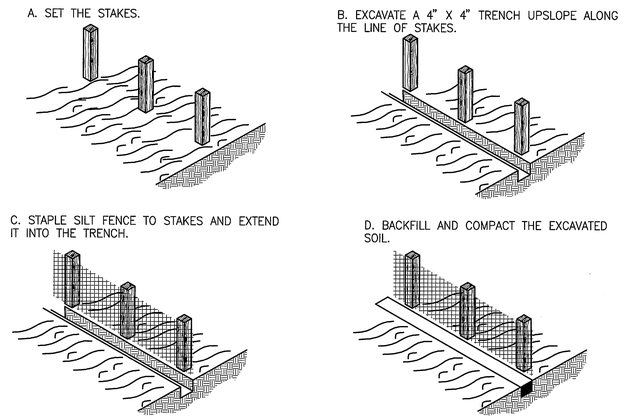
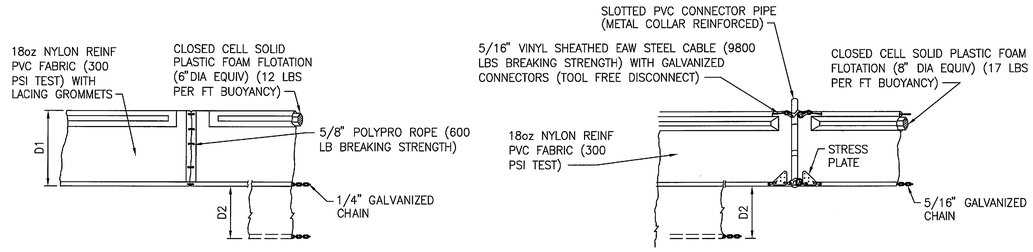



## CONSTRUCTION OF A SILT FENCE DETAIL 1 EN5

NTS




D1 =5' STD (SINGLE PANEL FOR DEPTHS 5' OR LESS)

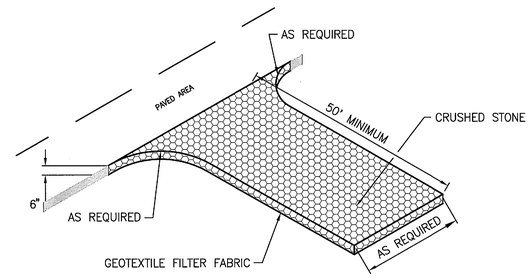
D2 =5' STD (ADDITIONAL PANEL FOR DEPTHS 5')

CURTAIN TO REACH BOTTOM UP TO DEPTHS OF 10 FEET. TWO (2) PANELS TO BE USED FOR DEPTHS GREATER THAN 10 FEET UNLESS SPECIAL DEPTH CURTAINS SPECIFICALLY CALL FOR IN THE PLANS OR AS DETERMINED BY THE ENGINEER.

NOTICE: COMPONENTS OF TYPES 1 AND 2 MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES 1 AND 2 SHALL BE AS APPROVED BY THE ENGINEER.

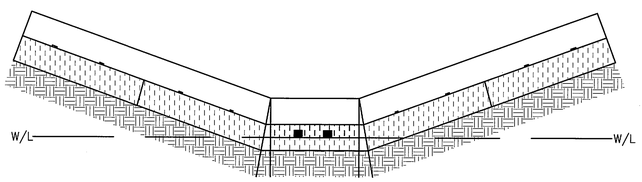
## TYPICAL FLOATING TURBIDITY BARRIER DETAIL 2 EN5

NTS



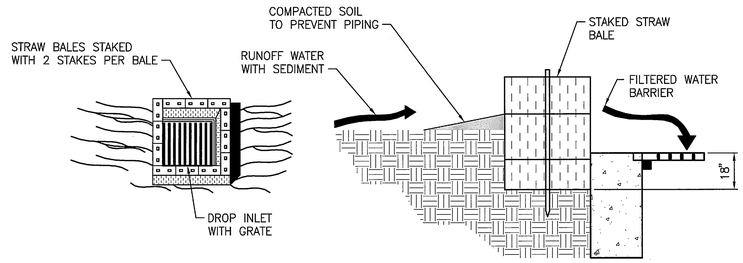

## STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL 3 EN5

NTS




## PROPER PLACEMENT OF A STRAW BALE IN A DRAINAGE WAY DETAIL 4 EN5

NTS

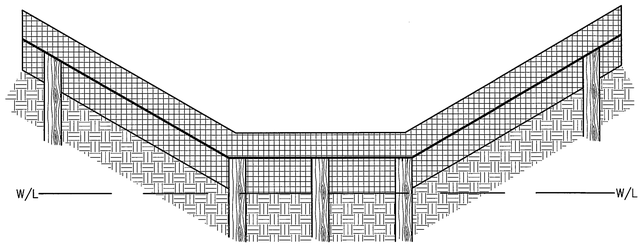



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5%) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 5.3 CFS) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

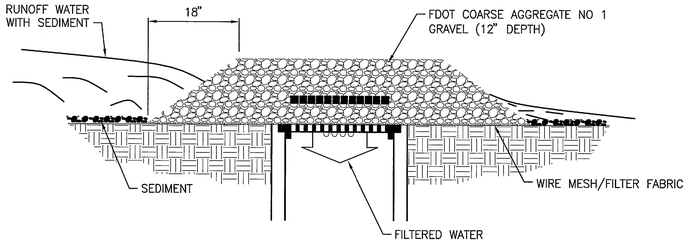
## STRAW BALE DROP INLET SEDIMENT FILTER DETAIL 5 EN5

NTS



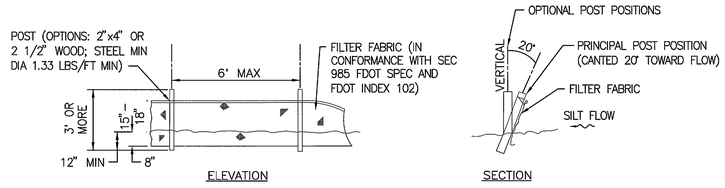

## PROPER PLACEMENT OF A SILT FENCE IN A DRAINAGE WAY DETAIL 6 EN5

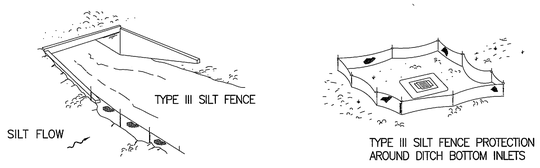
NTS




## GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER DETAIL 7 EN5

NTS




### TYPE III SILT FENCE

NOTES:

A. DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

B. WHEN JOINING BUTT ENDS OF SILT FENCE FABRIC; JOIN FABRIC ENDS, WRAP AROUND A POST 360-DEGREES, AND SET POST.

## FDOT INDEX NUMBER 102 SILT FENCE DETAIL 8 EN5

NTS

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| CHECKED K. RIVERA | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 12/05/11 |
| K. MILLER | 12/5/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

STORMWATER POLLUTION PREVENTION DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
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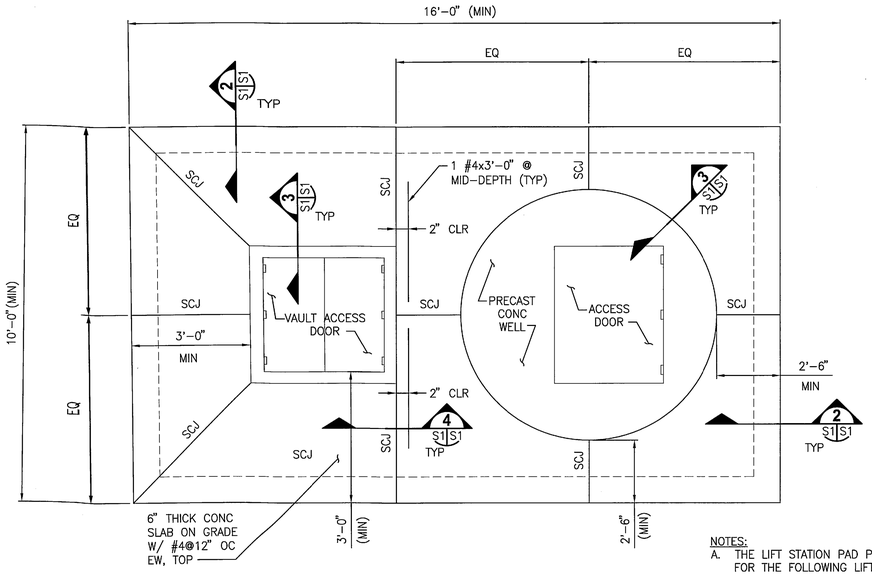
GRAPHIC SCALE

0 1 2 4

SCALE IN FEET
1/2"=1'-0"




## LIFT STATION PAD PLAN (1 / S1)

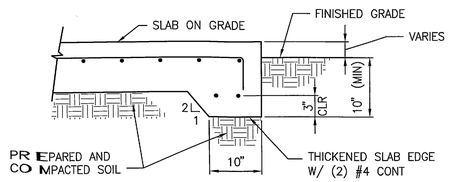
1/2"=1'-0"

NOTES:

A. THE LIFT STATION PAD PLAN APPLIES TYPICALLY FOR THE FOLLOWING LIFT STATIONS:

| | | | |
|---|---|---|---|
| LS-1B | LS-4D | LS-5C | LS-17C |
| LS-1G | LS-4K1 | LS-5D | LS-17D |
| LS-1H | LS-4N4 | LS-5E | |
| LS-1P | LS-4N5 | LS-5E2 | |
| LS-1T | LS-4N6 | LS-9B | |
| LS-4A1 | LS-4O1 | LS-9D | |
| LS-4C1 | LS-4S1 | LS-17A | |

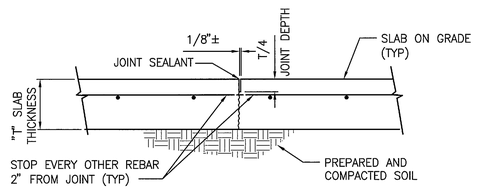
B. COORDINATE WITH MECHANICAL DRAWINGS FOR SLAB ELEVATIONS AND DIMENSIONS.




## THICKENED SLAB EDGE DETAIL (2 / S1)

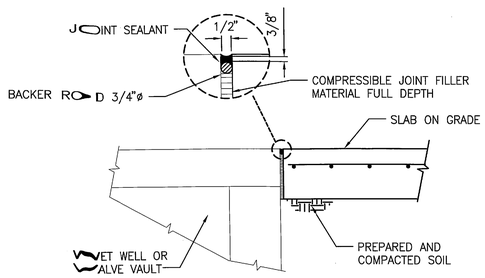
NTS

NOTE:
SAW-CUT JOINTS SHALL BE PERFORMED WITHIN 4 TO 8 HOURS AFTER CONCRETE PLACEMENT.




## SAW-CUT CONTRACTION JOINT (SCJ) DETAIL (4 / S1)

NTS




## SLAB JOINT DETAIL (3 / S1)

NTS

## ABBREVIATIONS

| | | | | | |
|---|---|---|---|---|---|
| ACI | AMERICAN CONCRETE INSTITUTE | FBC | FLORIDA BUILDING CODE | PSI | POUNDS PER SQUARE INCH |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS | LL | LIVE LOAD | REINF | REINFORCEMENT, REINFORCING |
| BTM | BOTTOM | MAX | MAXIMUM | SCJ | SAW CUT CONTRACTION JOINT |
| CJ | CONSTRUCTION JOINT | MIN | MINIMUM | SIM | SIMILAR |
| CLR | CLEAR | NTS | NOT TO SCALE | STD | STANDARD |
| CONC | CONCRETE | OC | ON CENTER(S) | T&B | TOP AND BOTTOM |
| CONT | CONTINUOUS | EF | EACH FACE | TOC | TOP OF CONCRETE |
| DCJ | DOWELED CONTRACTION JOINT | EW | EACH WAY | TYP | TYPICAL |
| DET | DETAIL | EXIST | EXISTING | UNO | UNLESS NOTED OTHERWISE |
| ø | DIAMETER | EJ | EXPANSION JOINT | W/ | WITH |
| EA | EACH | FV | FIELD VERIFY | | |
| EF | EACH FACE | JT | JOINT | | |
| EQ | EQUIVALENT | OD | OUTSIDE DIAMETER | | |
| | | PSF | POUNDS PER SQUARE FOOT | | |

## GENERAL STRUCTURAL NOTES:

1. DESIGN CODE AND CRITERIA
   - 5.1. FLORIDA BUILDING CODE (FBC), 2009 SUPPLEMENTS
   - 5.2. REINFORCED CONCRETE:
   - 5.2.1. ACI 350, CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
   - 5.2.2. OTHER STRUCTURES: ACI 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - 5.3. LIVE LOAD: SLABS ON GRADE 250 PSF
2. EQUIPMENT PADS SHALL BE BASED ON REQUIREMENTS INDICATED IN GEOTECHNICAL REPORT. EXCAVATE TO BOTTOM OF PAD, COMPACT WITH HAND HELD COMPACTOR TO 95% PER ASTM D-1557 FOR 1'-0" BELOW EXCAVATION. PLACE CLEAN GRANULAR FILL IN 12 INCH LAYERS AND COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM MODIFIED PROCTOR DRY DENSITY AS DETERMINED BY ASTM D-1557.
3. DEWATER, AS REQUIRED, SUCH THAT EXCAVATIONS ARE DRY AT THE TIME OF CONCRETE PLACEMENT. PIPING, LOSS OF FINES, AND SOIL HEAVE IS NOT PERMITTED. DAMAGE TO EXISTING ADJACENT STRUCTURES OR ROADWAYS IS NOT PERMITTED.
4. ALLOWABLE SOIL BEARING STRENGTH: 2500 PSF
5. THE REQUIRED CONCRETE STRENGTH BASED ON AN AGE OF 28 DAYS FOR ELEMENTS IN THE STRUCTURE SHALL NOT BE LESS:
   - 5.1. 3,000 PSI FOR CONCRETE FOUNDATION, SLAB ON GRADE
6. CONSOLIDATE ALL CONCRETE USING MECHANICAL VIBRATING EQUIPMENT.
7. DO NOT PLACE CONCRETE DURING RAIN OR IF RAIN IS LIKELY TO OCCUR PRIOR TO CONCRETE HARDENING.
8. EPOXY GROUT FOR ANCHOR BOLTS SHALL CONFORM TO ASTM C579 AND ASTM C307 AND SHALL BE MADE BY "HILTI" OR APPROVED EQUAL WITH CO'S APPROVAL. "HILTI" HIT HY 150/HIT-ICE INJECTION ADHESIVE SHALL BE SELECTED.
9. CLEAR COVER FOR REINFORCING BARS, UNLESS OTHERWISE NOTED, SHALL BE:
   - 9.1. CAST AGAINST EARTH 3" UNO
   - 9.2. CONCRETE EXPOSED TO WEATHER 2" UNO
10. PROVIDE 3/4" CHAMFER ON ALL EXPOSED EDGES OF CONCRETE.
11. SUBGRADE PREPARATIONS FOR SLAB ON GRADE AND FOUNDATION SHALL BE BASED ON THE EVALUATIONS AND RECOMMENDATIONS OF THE REPORT OF GEOTECHNICAL EXPLORATION AND EVALUATION BY THE GEOTECHNICAL ENGINEER. THE GEOTECHNICAL INVESTIGATION IS PREFORMED BY:
    NODARSE & ASSOCIATES, INC. (N&A)
    N&A REPORT NO. :06-10-0040-101
    REPORT DATE: JULY 25, 2011
    THIS REFERENCE IS FOR INFORMATION ONLY.

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| CHECKED N. PONTILLO | 12/05/11 |
| SUBMITTED W. LI | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 56104 | |
| APPROVER M. CLARK | 12/05/11 |
| K. MILLER | 12/5/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## STRUCTURAL DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
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## LIFT STATION DATA TABLE

GEOMETRY AND DIMENSIONS

| | LIFT STATION | GRADE EL | DISCHARGE PIPE SIZE | DISCHARGE IE | LOWEST INFLUENT IE | HIGH WATER LEVEL/REDUNDANT ALL PUMPS ON EL | LAG PUMP ON EL | LEAD PUMP ON EL | ALL PUMPS OFF EL | LOW WATER LEVEL/REDUNDANT ALL PUMPS OFF EL | BASE EL | WET WELL ID | VALVE VAULT LENGTH | VALVE VAULT WIDTH | VALVE VAULT BASE EL | T/MAINTENANCE PAD EL | MAINTENANCE PAD LENGTH | MAINTENANCE PAD WIDTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REPLACEMENT LIFT STATIONS | LS-1B | **9.00** | **3"** | **5.75** | **5.70** | **5.70** | **5.20** | **4.70** | **3.53** | **N/A** | **1.00** | **4'** | **4'-0"** | **4'-0"** | **N/A** | **9.25** | **19'-0"** | **11'-6"** |
| | LS-4A1 | **8.00** | **4"** | **4.70** | **1.38** | **1.30** | **0.80** | **0.30** | **-1.40** | **-1.90** | **-4.25** | **5'** | **7'-0"** | **6'-6"** | **N/A** | **8.25** | **22'-4"** | **12'-6"** |
| | LS-4B2 | 7.00 | **4"** | **3.70** | **3.77** | **3.30** | **2.80** | **2.30** | **0.30** | **-0.20** | **-2.25** | **6'** | **7'-0"** | **6'-6"** | **N/A** | **8.00** | **N/A** | **N/A** |
| | LS-4D | 8.00 | **6"** | **4.50** | **0.38** | **0.25** | **-0.25** | **-0.75** | **-5.85** | **-6.35** | **-8.75** | **6'** | **7'-0"** | **6'-6"** | **N/A** | **8.25** | **23'-4"** | **13'-4"** |
| | LS-4N4 | 5.50 | **4"** | **2.18** | **0.12** | **0.00** | **-0.50** | **-1.00** | **-3.17** | **-3.67** | **-5.75** | **5'** | **7'-0"** | **6'-6"** | **N/A** | **5.75** | **21'-4"** | **12'-6"** |
| | LS-4S1 | **7.00** | **4"** | **3.70** | **3.00** | **3.00** | **2.50** | **2.00** | **0.67** | **0.17** | **-1.00** | **5'** | **7'-0"** | **6'-6"** | **N/A** | **7.25** | **21'-4"** | **12'-6"** |
| | LS-5C | 6.00 | **4"** | **2.70** | **2.08** | **2.08** | **1.58** | **1.08** | **0.08** | **-0.42** | **-2.25** | **8'** | **7'-6"** | **7'-0"** | **N/A** | **6.25** | **25'-10"** | **15'-4"** |
| | LS-9B | 6.00 | **2"** | **2.83** | **4.07** | **4.00** | **3.50** | **3.00** | **2.25** | **N/A** | **0.92** | **4'** | **4'-0"** | **4'-0"** | **N/A** | **6.25** | **19'-0"** | **11'-6"** |
| | LS-9D | 6.25 | **4"** | **2.93** | **-1.12** | **-1.00** | **-1.50** | **-2.00** | **-3.70** | **-4.20** | **-6.75** | **5'** | **7'-0"** | **6'-6"** | **N/A** | **6.50** | **22'-4"** | **12'-6"** |
| REHABILITATED LIFT STATIONS | LS-1G | 5.00 | **4"** | **2.75** | -2.53 | **-2.27** | **-2.60** | **-2.93** | **-3.93** | **-4.26** | -6.45 | 9.5'x9.5' | 8'-0" | 6'-10" | 2.75 | ******** | **30'-3"** | **18'-8"** |
| | LS-1H | 5.00 | **4"** | **1.33** | 1.52 | **1.85** | **1.52** | **1.19** | **0.29** | **-0.04** | -1.55 | 5' | 7'-10" | 6'-8" | 0.34 | ******** | **24'-3"** | **12'-3"** |
| | LS-1I | 5.00 | **3"** | **6.35** | 3.03 | **3.87** | **3.53** | **3.20** | **1.60** | **1.27** | -0.40 | 4' | N/A | N/A | N/A | ******** | **11'-6"** | **11'-6"** |
| | LS-1N | 7.00 | **4"** | **4.86** | 3.55 | **3.88** | **3.55** | **3.22** | **0.22** | **-0.28** | -2.00 | 5' | 7'-0" | 7'-0" | 3.70 | ******** | **N/A** | **N/A** |
| | LS-1P | 6.00 | **6"** | **0.58** | -2.58 | **-2.60** | **-3.10** | **-3.60** | **-5.85** | **-6.35** | -12.80 | 8' | 7'-4" | 6'-4" | -1.37 | ******** | **26'-0"** | **15'-6"** |
| | LS-1T | 7.00 | **4"** | **4.71** | 2.85 | **2.80** | **2.47** | **2.13** | **0.63** | **0.13** | -1.63 | 4' | 5'-5" | 5'-5" | 4.00 | ******** | **21'-0** | **11'-6"** |
| | LS-4C1 | 6.00 | **3"** | **3.67** | 3.05 | **3.88** | **3.54** | **3.21** | **1.66** | **1.33** | 0.00 | 4' | 6'-0" | 6'-0" | 2.41 | ******** | **20'-6"** | **12'-0"** |
| | LS-4F | 7.00 | **4"** | **4.96** | 4.21 | **4.54** | **4.21** | **3.88** | **0.13** | **-0.37** | -1.74 | 5' | 6'-0" | 6'-0" | 4.08 | ******** | **N/A** | **N/A** |
| | LS-4K1 | 6.00 | **4"** | **3.57** | 2.32 | **2.68** | **2.35** | **2.02** | **-0.23** | **-0.57** | -1.90 | 4' | 6'-4" | 6'-4" | 3.03 | ******** | **19'-0"** | **12'-4"** |
| | LS-4L * | 6.00 | **3"** | **2.75** | 2.47 | **–** | **–** | **–** | **–** | **–** | 0.33 | 4' | 6'-0" | 6'-0" | 2.47 | ******** | **N/A** | **N/A** |
| | LS-4N5 * | 6.00 | **4"** | **3.35** | 3.42 | **–** | **–** | **–** | **–** | **–** | 0.85 | 4' | 6'-0" | 6'-0" | 2.81 | ******** | **19'-0'** | **12'-0"** |
| | LS-4N6 | 7.00 | **4"** | **2.07** | 3.14 | **3.47** | **3.14** | **2.81** | **1.06** | **0.73** | -1.30 | 6' | 6'-0" | 6'-0" | 3.14 | ******** | **20'-6"** | **13'-4"** |
| | LS-401 | 5.50 | **4"** | **1.00** | -1.43 | **-1.50** | **-2.00** | **-2.50** | **-4.00** | **-4.50** | -6.45 | 8.5' | 6'-0" | 6'-0" | -0.09 | ******** | **24'-0"** | **15'-6"** |
| | LS-5D | 7.00 | **3"** | **4.58** | 5.04 | **5.00** | **4.50** | **4.00** | **1.80** | **1.30** | -1.36 | 4' | 5'-0" | 5'-0" | 3.56 | ******** | **21'-8"** | **11'-6"** |
| | LS-5E | 6.00 | **4"** | **2.68** | 2.63 | **2.60** | **2.10** | **1.60** | **0.10** | **-0.40** | -5.30 | 6' | 10'-4" | 8'-4" | 1.56 | ******** | **26'-0"** | **14'-4"** |
| | LS-5E2 | 5.00 | **1-1/4"** | **4.09** | 1.40 | **1.40** | **0.90** | **0.40** | **-0.10** | **-0.60** | -2.80 | 6' | 6'-0" | 6'-0" | – | ******** | **24'-0"** | **14'-0"** |
| | LS-17A | 8.00 | **4"** | **5.97** | 4.97 | **5.30** | **4.97** | **4.64** | **2.89** | **2.39** | 0.80 | 4' | 6'-6" | 5'-6" | 5.28 | ******** | **19'-0"** | **12'-0"** |
| | LS-17C * | 7.50 | **2"** | **6.60** | 5.50 | **–** | **–** | **–** | **–** | **–** | 1.70 | 3' | N/A | N/A | N/A | ******** | **11'-6"** | **11'-6** |
| | LS-17D | 3.00 | **4"** | **-0.66** | -1.07 | **-1.10** | **-1.60** | **-2.10** | **-3.50** | **-4.00** | -6.40 | 5' | 8'-2" | 7'-2" | -1.89 | ******** | **23'-0"** | **13'-3"** |

PUMP DATA

| LIFT STATION | FLOW(GPM) | HEAD(FT) | HP | RPM | IMPELLER SIZE | MANUFACTURER ** | MODEL No. ** | SEE SHEET | LIFT STATION |
|---|---|---|---|---|---|---|---|---|---|
| LS-1B | 63 | 22 | 3 | 3450 | 4.25" | HYDROMATIC | HPGHX300 | M2 | LS-1B |
| LS-4A1 | 94 | 29.3 | 3 | 3450 | 6.0625" | HYDROMATIC | S4NX300 | M3 | LS-4A1 |
| LS-4B2 | 112*** | 9*** | 1 | 1150 | 5.5" | HYDROMATIC | S4NX100 | M4 | LS-4-B2 |
| LS-4D | 424 | 62.1 | 15 | 1750 | 9.375" | HYDROMATIC | H4HX1500 | M5 | LS-4D |
| LS-4N4 | 124 | 30.3 | 3 | 1750 | 6.25" | HYDROMATIC | S4NX300 | M6 | LS-4N4 |
| LS-4S1 | 75*** | 27.7 *** | 3 | 3450 | 5" | HYDROMATIC | HPGHX300 | M7 | LS-4S1 |
| LS-5C | 140.7 | 34.1 | 3 | 1750 | 6.5625" | HYDROMATIC | S4NX300 | M8 | LS-5C |
| LS-9B | 27 | 29.7 | 2 | 1750 | 3.5" | HYDROMATIC | HPGX200 | M9 | LS-9B |
| LS-9D | 97.7 | 37.3 | 5 | 1750 | 8.1875" | HYDROMATIC | HPGFX500 | M10 | LS-9D |
| LS-1G | 249 | 50.2 | 7.5 | 1750 | 8.25" | HYDROMATIC | H4HX750 | M12 | LS-1G |
| LS-1H | 85.5 | 33.2 | 3 | 1750 | 6.3125" | HYDROMATIC | S4NX300 | M12 | LS-1H |
| LS-1I | 98 | 9.9 | 1 | 1150 | 5.625" | HYDROMATIC | S4NX100 | M21 | LS-1I |
| LS-1N | 171 | 31.4 | 5 | 1750 | 6.5" | HYDROMATIC | S4NX500 | M13 | LS-1N |
| LS-1P | 316.7 | 88 | 20 | 1750 | 9.625" | HYDROMATIC | S4KX2000 | M13 | LS-1P |
| LS-1T | 51.6 | 63.1 | 5 | 3450 | 4.625" | HYDROMATIC | S3HVX500 | M14 | LS-1T |
| LS-4C1 | 96 | 27.9 | 3 | 3450 | 4" | HYDROMATIC | S3HVX300 | M14 | LS-4C1 |
| LS-4F | 219.9 | 37.5 | 5 | 1750 | 7" | HYDROMATIC | S4NX500 | M15 | LS-4F |
| LS-4K1 | 140 | 57.7 | 5 | 1750 | 9.875" | HYDROMATIC | HPGFX500 | M15 | LS-4K1 |
| LS-4L * | 146.4 | 20.7 | 0.75 | 1750 | – | HYDROMATIC | SK75M6 | M16 | LS-4L * |
| LS-4N5 * | 95.4 | 12.2 | 0.6 | 1750 | – | HYDROMATIC | SK60 | M16 | LS-4N5 * |
| LS-4N6 | 172.3 | 51.7 | 7.5 | 1750 | 8" | HYDROMATIC | H4HX750 | M17 | LS-4N6 |
| LS-401 | 158.3 | 76.7 | 15 | 1750 | 9" | HYDROMATIC | H4HX1500 | M17 | LS-401 |
| LS-5D | 82.1 | 12.3 | 1 | 1150 | 6.125" | HYDROMATIC | S4NX100 | M18 | LS-5D |
| LS-5E | 121.4 | 64.3 | 5 | 1750 | 9.8125" | HYDROMATIC | HPGFX500 | M18 | LS-5E |
| LS-5E2 | 17.2 | 20.3 | 2 | 3450 | 3.75" | HYDROMATIC | HPGX200 | M19 | LS-5E2 |
| LS-17A | 73.2 | 82.7 | 5 | 1750 | 10.0625" | HYDROMATIC | HPGFX500 | M19 | LS-17A |
| LS-17C * | 92.4 | 14.1 | 0.6 | 1750 | – | HYDROMATIC | SK60 | M20 | LS-17C * |
| LS-17D | 79.4 | 121 | 7.5 | 3450 | 6.75" | HYDROMATIC | HPGHX750 | M20 | LS-17D |

* FOR THE LIFT STATIONS INDICATED CONTRACTOR IS TO FIELD VERIFY EXISTING FLOAT ELEVATIONS AND REPLACE IN KIND.
** OR APPROVED EQUAL.
*** REFER TO SPECIFICATION SECTION 33 32 13.13 FOR ADDITIONAL DESIGN OPERATING POINTS
**** 3

## GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY WETWELL AND MANHOLE INFLUENT INVERTS AND PROVIDE THAT INFORMATION IN THE LIFT STATION SUBMITTALS.

2. AFTER THE CONDITION OF THE APPROVED WASTEWATER CONSTRUCTION PHASING PLANS HAS BEEN MET, THE REPLACEMENT LIFT STATION AND FORCE MAIN ARE OPERATIONAL, AND THE CERTIFICATION OF COMPLETION HAS BEEN OBTAINED FROM THE FDEP, THE CONTRACTOR SHALL:

   A. DIVERT FLOW TO THE REPLACEMENT LIFT STATION.

   B. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES, AND RELATED EQUIPMENT IN THE WET WELL; ALL ABOVE AND BELOW GRADE POWER/CONTROL CABLES AND CONDUITS; CONTROL PANEL, CIRCUIT BREAKER BOX AND POWER POLE; ABOVE GRADE PIPING AND VALVES; THE UPPER SECTION (4 FOOT MINIMUM) OF THE WET WELL; AND CONCRETE SURFACES PADS.

   C. PLUG ALL SEWER LINES CONNECTING TO THE EXISTING WET WELL WITH NON-SHRINK GROUT (MINIMUM THICKNESS FOR EACH PLUG SHALL BE EQUAL TO THE RESPECTIVE PIPE DIAMETER).

   D. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WET WELL. DISINFECT THE EXISTING WET WELL AND REMOVE AND DISPOSE OF DISINFECTANT. CUT FIVE 1 FT DIA HOLES IN WET WELL BASE TO ALLOW FOR PERCOLATION. FILL THE EXISTING WET WELL WITH SAND AND COMPACT TO 85% MODIFIED PROCTOR.

   E. SOD ALL DISTURBED AREAS.

3. T/MAINTENANCE PAD SHALL BE SET LEVEL WITH THE LOWEST OF T/VALVE VAULT OR T/WET WELL.

4. WHERE THE TOP ELEVATION OF THE LIFT STATION MAINTENANCE PAD IS MORE THAN 3" HIGHER THAN GRADE SEE DETAIL 2/M1 S1

5. RESTORATION AREAS SHOWN ON PLANS ARE FOR REFERENCE ONLY. FOR BIDDING PURPOSES CONTRACTOR SHALL DETERMINE LIMITS OF CONCRETE, LIMEROCK, ASPHALT, CURB, AND SIDEWALK RESTORATION BASED ON PLANNED INSTALLATION METHOD.

6. THE CONTRACTOR SHALL DEVELOP AND SUBMIT A CONSTRUCTION PHASING PLAN FOR APPROVAL ALONG WITH THE LIFT STATION SUBMITTALS. AT A MINIMUM, THE PHASING PLAN SHALL INCLUDE THE REQUIREMENTS PRESENTED IN THE CONTRACT DOCUMENTS, A BY-PASS PUMPING PLAN, DESCRIPTIONS OF DEMOLITION WORK, DESCRIPTION OF PROPOSED WORK, AND PROVIDE A DETAILED SCHEDULE PRESENTING THE PLANNED START AND FINISH DATE FOR EACH ACTIVITY.

7. THE CONTRACTOR SHALL COORDINATE PHASING OF ALL WORK IN ACCORDANCE WITH WORK SEQUENCE AS OUTLINED IN THE PROJECT SPECIFICATIONS AND AS NECESSARY FOR CONTINUITY OF LIFT STATION OPERATIONS. THE CONTRACTOR SHALL PROVIDE TEMPORARY POWER AS REQUIRED TO MAINTAIN OPERATIONS OR POWER TEMPORARY EQUIPMENT.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL REMOVED ITEMS. HOWEVER, THE GOVERNMENT RETAINS SALVAGE RIGHTS TO ALL ITEMS. THE CONTRACTOR SHALL COORDINATE WITH THE CO TO DETERMINE IF ANY ITEMS ARE TO BE SALVAGED.

9. REFER TO DWG E3 FOR PUMP MOTOR PHASE AND VOLTAGE.

10. BOLDED DATA IS PROVIDED FOR BASIS OF CONSTRUCTION, ALL OTHER DATA IS FOR INFORMATION ONLY.

11. THE PROPOSED LOCATIONS OF ELECTRICAL AND COMMUNICATION UTILITIES ARE NOT SHOWN IN THE MECHANICAL DRAWINGS. SEE ELECTRICAL DISCIPLINE DRAWINGS FOR LOCATIONS OF PROPOSED ELECTRICAL AND COMMUNICATION UTILITIES.

12. UTILITIES LOCATIONS SHOWN IN AREA PLANS ARE APPROXIMATE.

13. PROVIDE THRUST BLOCK PER DETAIL 1/M31

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | UPDATED DATA TABLE SHEET LABELS | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**MECHANICAL NOTES AND LIFT STATION DATA TABLE**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 13

M1

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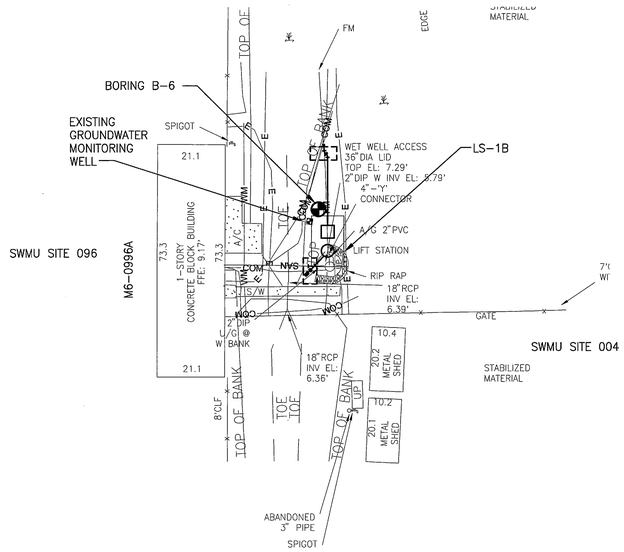
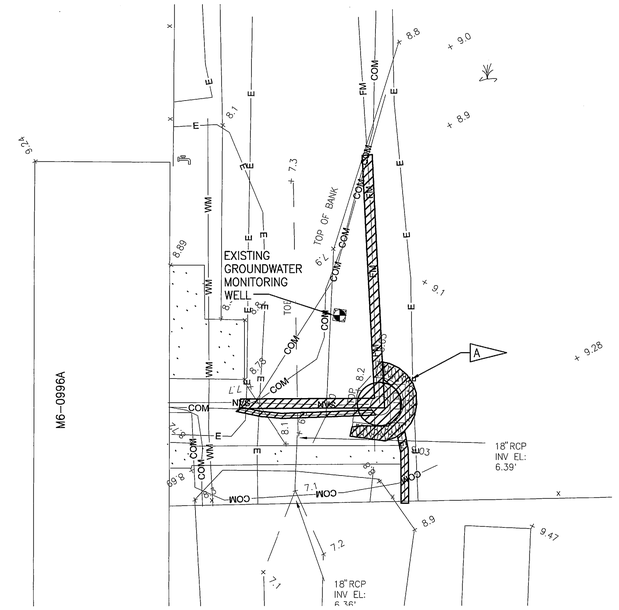



## LIFT STATION 1B AREA PLAN

1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN

1"=10'

## NOTES

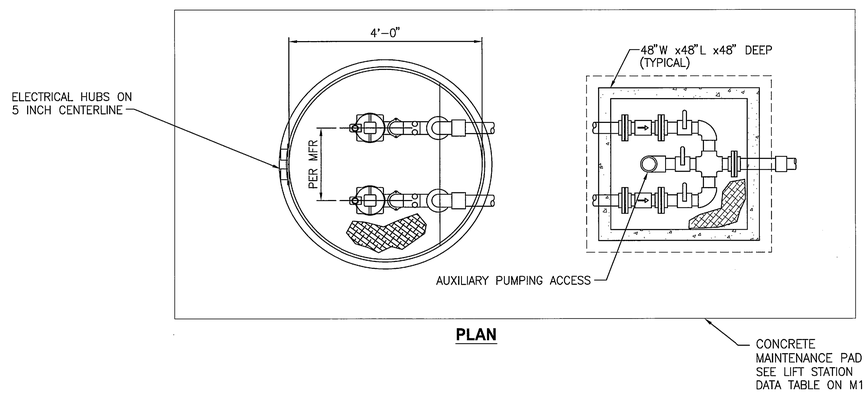
A AFTER THE ALTERNATIVE SANITARY FACILITIES ARE IN PLACE:

1. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES, AND RELATED EQUIPMENT IN THE WETWELLS.
2. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELLS. DISINFECT THE EXISTING WETWELLS AND REMOVE AND DISPOSE OF DISINFECTANT.
3. REMOVE AND DISPOSE OF ALL ABOVE AND BELOW GRADE POWER/CONTROL CABLES AND CONDUITS; CONTROL PANEL, CIRCUIT BREAKER BOX AND POWER POLE; ABOVE GRADE PIPING AND VALVES; THE ENTIRE WETWELL; CONCRETE SURFACE PADS; AND CONCRETE RETAINING WALLS. MATERIALS REMOVED IN DEMOLITION SHALL BE DISPOSED OF IN ACCORDANCE WITH THE APPLICABLE NOTES ON DWG EN4.

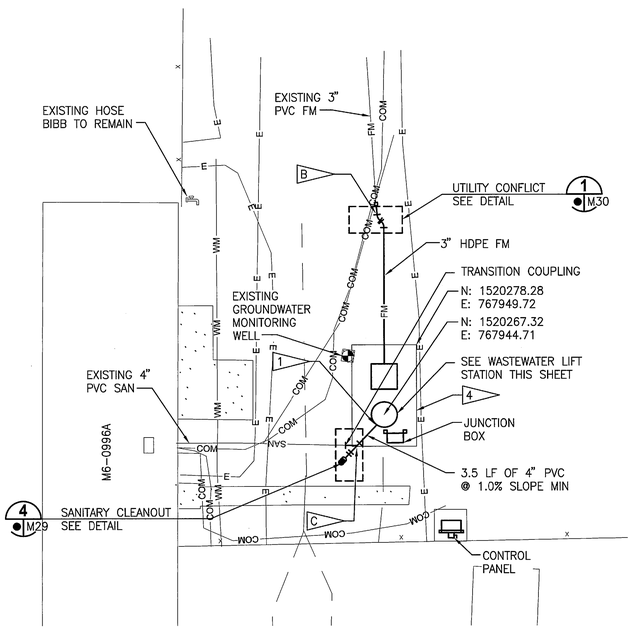
B REMOVE EXISTING PIPE AS REQUIRED. INSTALL (2)-3" 45° HDPE BENDS, 3"x4" HDPE RED, AND TRANSITION COUPLING. PLUG AND ABANDON PIPE FROM EXISTING WET WELL IN PLACE.

C REMOVE EXISTING PIPE AS REQUIRED. INSTALL 4" POJ PVC 45 WYE. PLUG AND ABANDON PIPE FROM EXISTING WET WELL IN PLACE.

D. THE CONTRACTOR SHALL PROVIDE TEMPORARY RESTROOM FACILITIES FOR (2) PEOPLE AT M6-0996 IN ACCORDANCE WITH ANSI CODE Z4. AT LEAST ONE TEMPORARY RESTROOM AT EACH LOCATION SHALL BE ADA COMPLIANT. FACILITY TEMPORARY RESTROOM FACILITIES SHALL BE CLEANED AND STOCKED ON A DAILY BASIS. THE LOCATIONS OF THE TEMPORARY RESTROOM FACILITIES ARE TO BE COORDINATED WITH THE CO. THE CONTRACTOR IS TO POST TEMPORARY SIGNAGE FOR PERMANENT RESTROOMS, SHOWERS, WATER FOUNTAINS, AND SINKS IN FACILITIES WITHOUT WASTEWATER SERVICE, INDICATING THAT THOSE FACILITIES ARE OUT OF SERVICE AND DIRECTING PERSONNEL TO THE TEMPORARY RESTROOM FACILITIES.

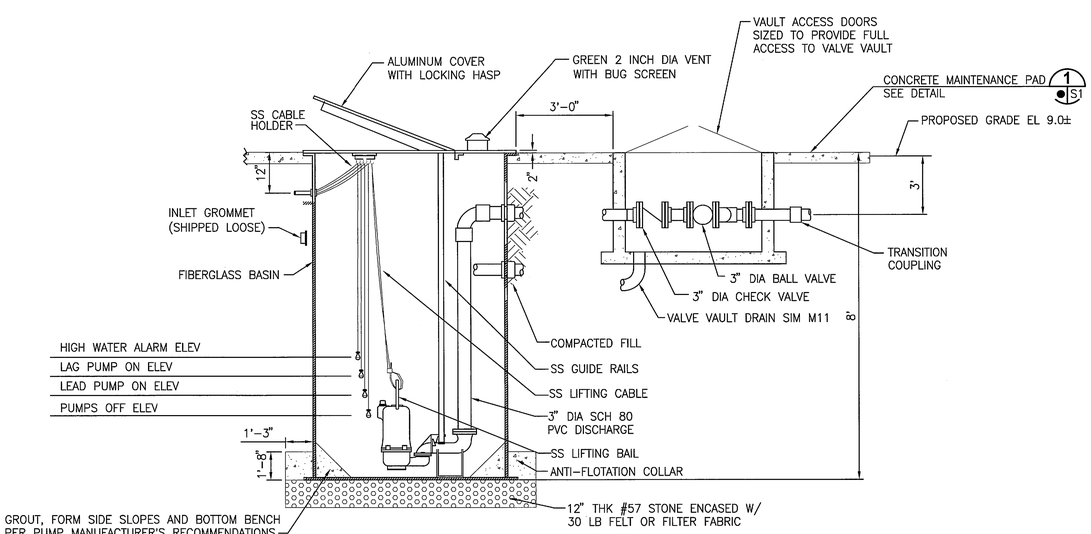



## PLAN




## LIFT STATION 1B SITE PLAN

1"=10'




## SECTION A-A

## WASTEWATER LIFT STATION DETAIL

NTS

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10

-N-

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 12/05/11 |
| K. MILLER | 12/5/11 |

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KENNEDY SPACE CENTER, FLORIDA

REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATION 1B PLANS AND DETAIL

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 14 | |

M2

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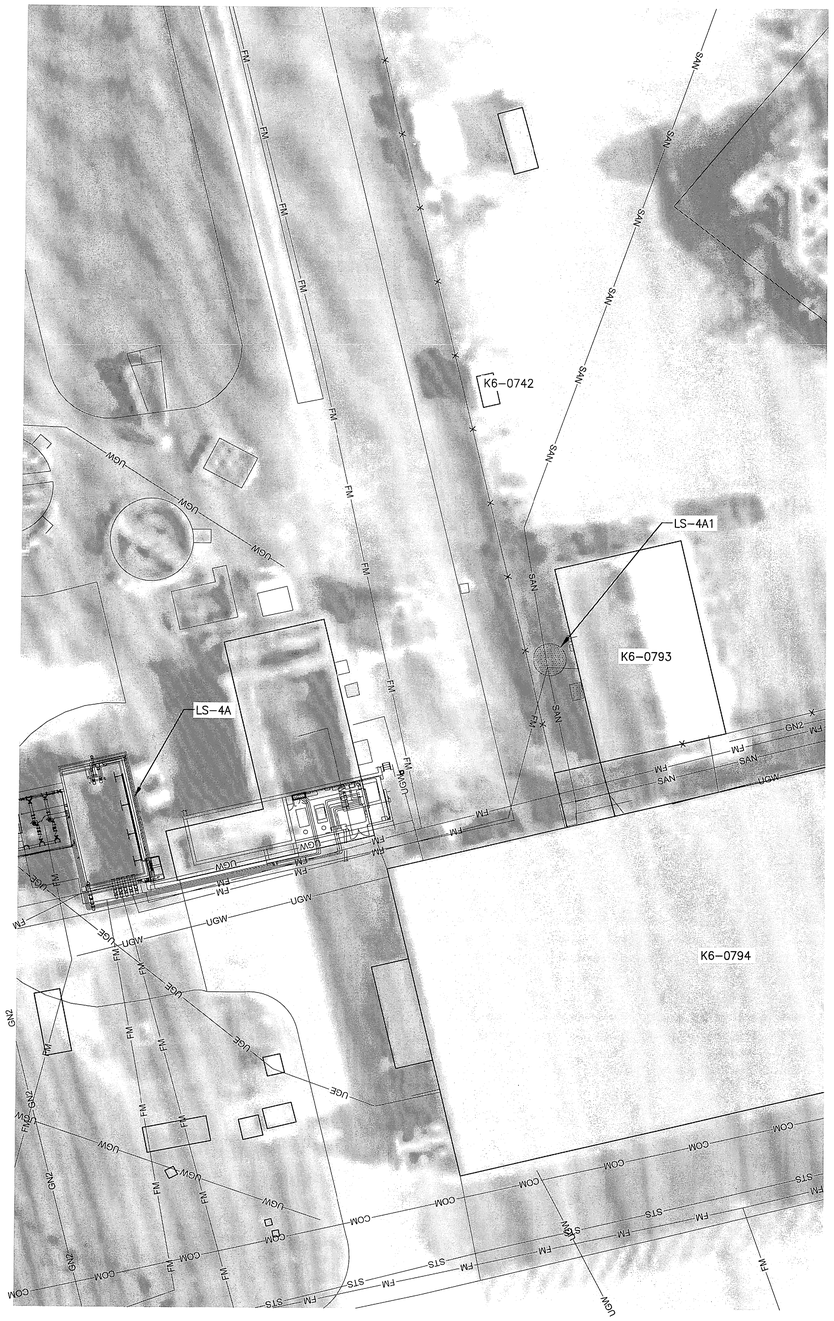
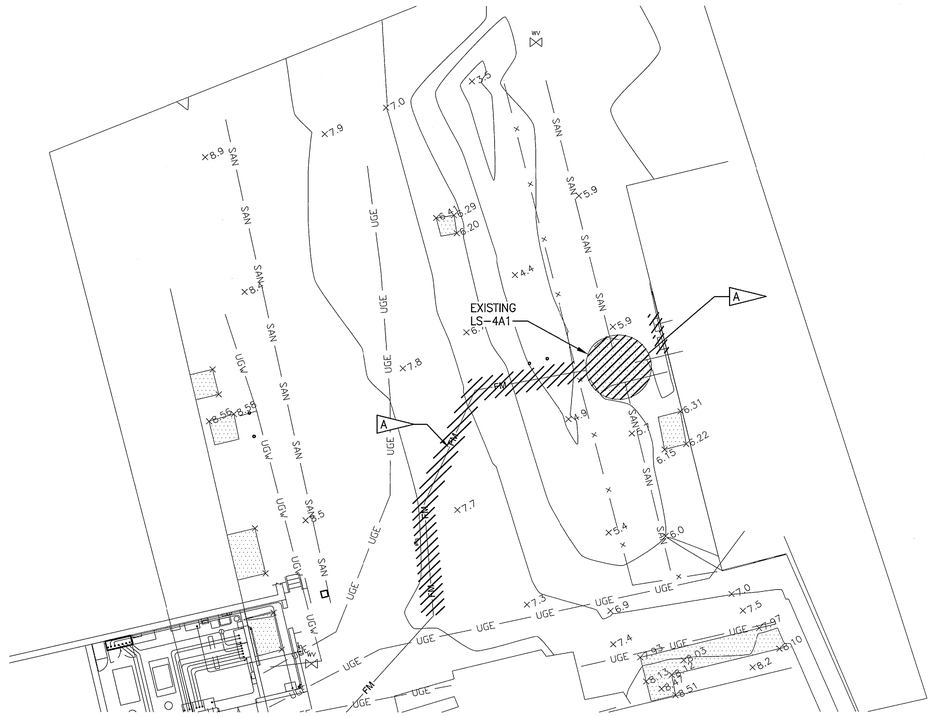
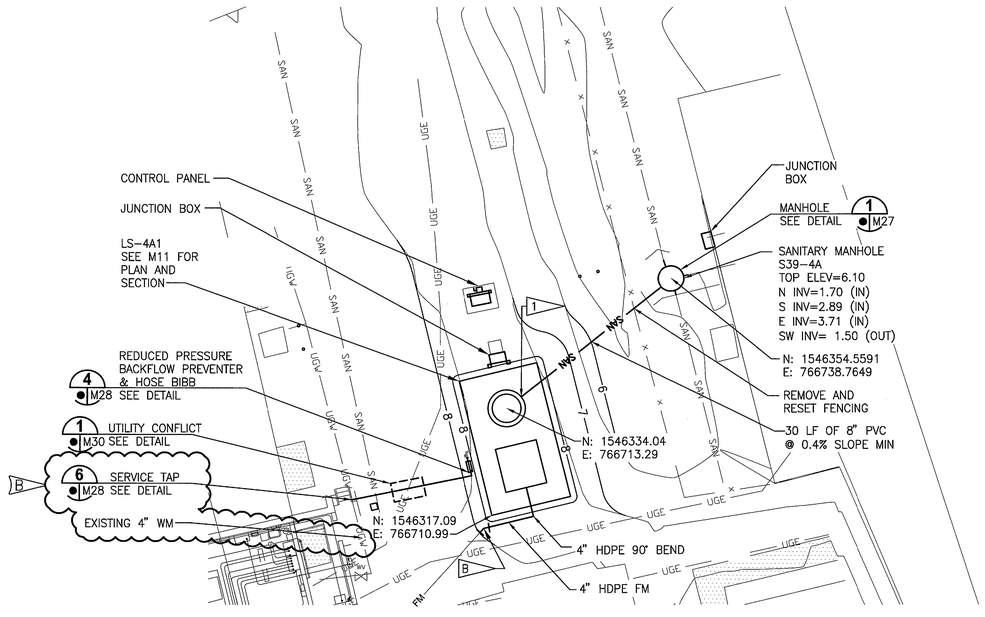



## LIFT STATION 4A1 AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION 4A1 SITE PLAN
1"=10'

## NOTES

A — AFTER THE ALTERNATIVE SANITARY FACILITIES ARE IN PLACE:

1. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES, AND RELATED EQUIPMENT IN THE WETWELLS.
2. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELLS . DISINFECT THE EXISTING WETWELLS AND REMOVE AND DISPOSE OF DISINFECTANT.
3. REMOVE AND DISPOSE OF ALL ABOVE AND BELOW GRADE POWER/CONTROL CABLES AND CONDUITS; CONTROL PANEL, CIRCUIT BREAKER BOX AND POWER POLE; ABOVE GRADE PIPING AND VALVES; THE ENTIRE WETWELL; AND CONCRETE SURFACE PADS. MATERIALS REMOVED IN DEMOLITION SHALL BE DISPOSED OF IN ACCORDANCE WITH THE APPLICABLE NOTES ON DWG EN4.

B — REMOVE EXISTING PIPE AS REQUIRED. INSTALL 4" HDPE 45° ELB. PLUG AND ABANDON PIPE FROM EXISTING WET WELL IN PLACE.

C. THE CONTRACTOR SHALL PROVIDE TEMPORARY RESTROOM FACILITIES FOR (11) PEOPLE AT K6-0743, (2) PEOPLE AT K6-0793, AND (23) PEOPLE AT K6-0794 IN ACCORDANCE WITH ANSI CODE Z4. AT LEAST ONE TEMPORARY RESTROOM AT EACH LOCATION SHALL BE ADA COMPLIANT. TEMPORARY RESTROOM FACILITIES SHALL BE CLEANED AND STOCKED ON A DAILY BASIS. THE LOCATIONS OF THE TEMPORARY RESTROOM FACILITIES ARE TO BE COORDINATED WITH THE CO. THE CONTRACTOR IS TO POST TEMPORARY SIGNAGE FOR PERMANENT RESTROOMS, SHOWERS, WATER FOUNTAINS, AND SINKS IN FACILITIES WITHOUT WASTEWATER SERVICE, INDICATING THAT THOSE FACILITIES ARE OUT OF SERVICE AND DIRECTING PERSONNEL TO THE TEMPORARY RESTROOM FACILITIES.

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

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| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATION 4A1 SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 15

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10

N

M3

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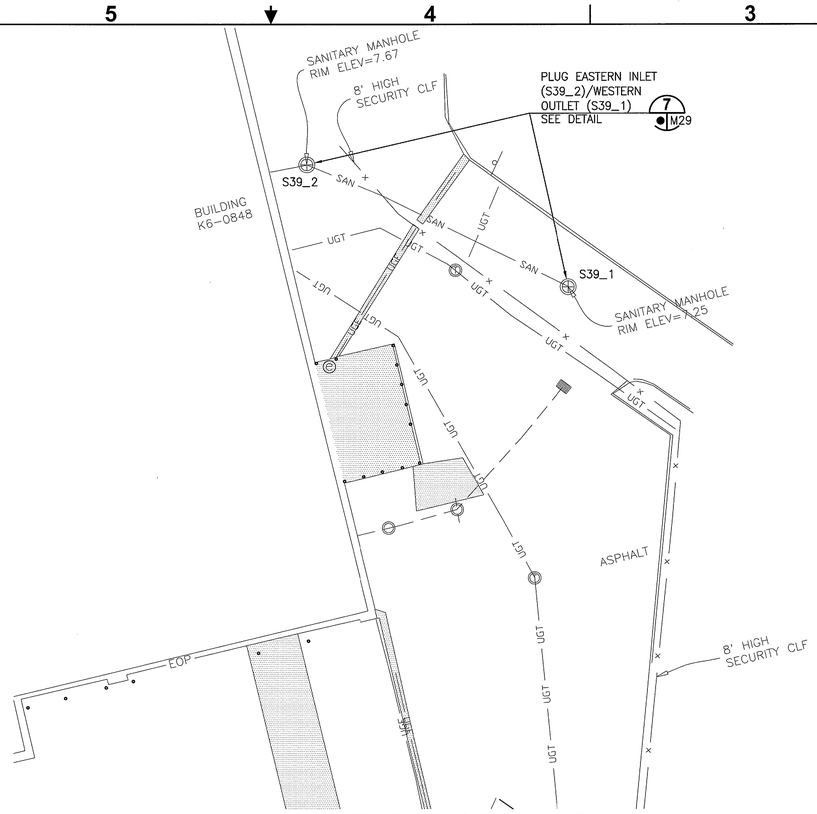
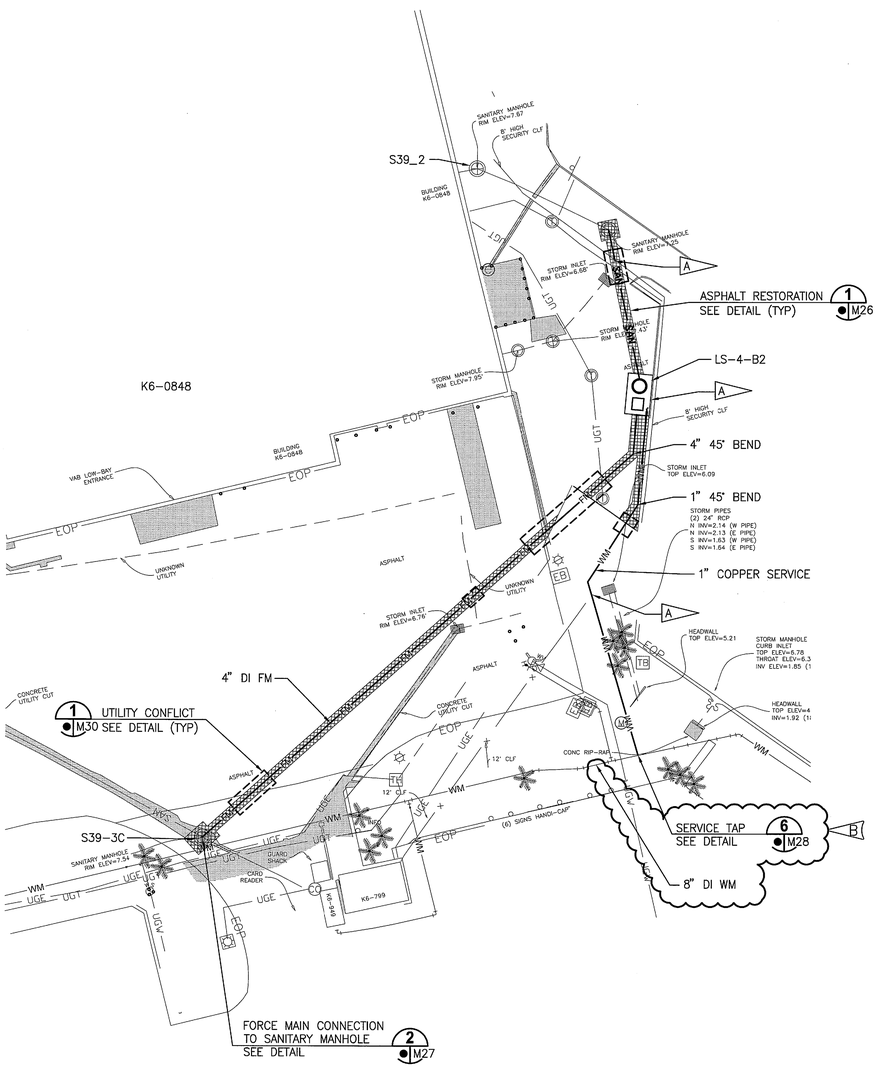
## NOTES

A — REMOVE AND REINSTALL FENCE AS REQUIRED FOR INSTALLATION OF LIFT STATION AND APPURTENANCES. CONTRACTOR TO COORDINATE WITH CO AND NASA SECURITY BEFORE FENCING IS REMOVED. CONTRACTOR SHALL PROVIDE 8' CHAIN LINK FENCIING TO ENSURE FACILITY SECURITY.



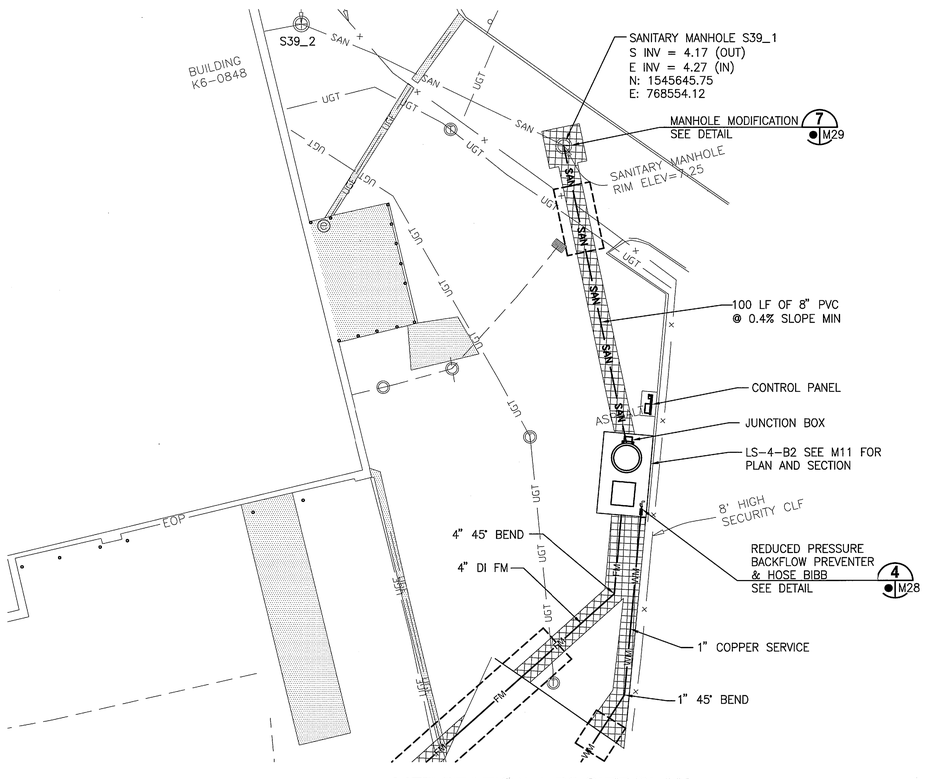

## EXISTING CONDITIONS AND DEMOLITION PLAN

1"=20'




## LIFT STATION 4-B2 AREA PLAN

1"=40'




## LIFT STATION 4-B2 SITE PLAN

1"=20'

GRAPHIC SCALE 0 20 40 80 — SCALE IN FEET 1"=40'

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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JONES EDMUNDS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## LIFT STATION 4B2 SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 16 | |

M4

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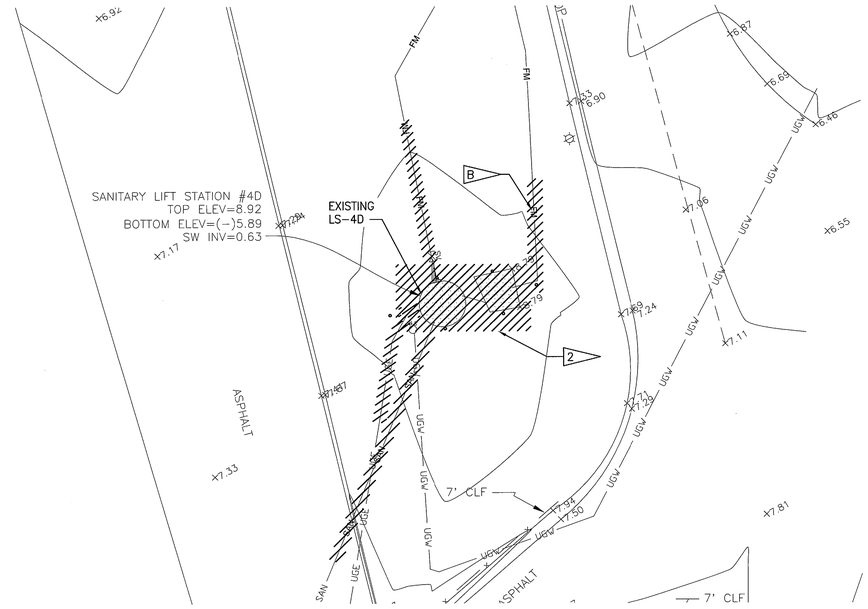
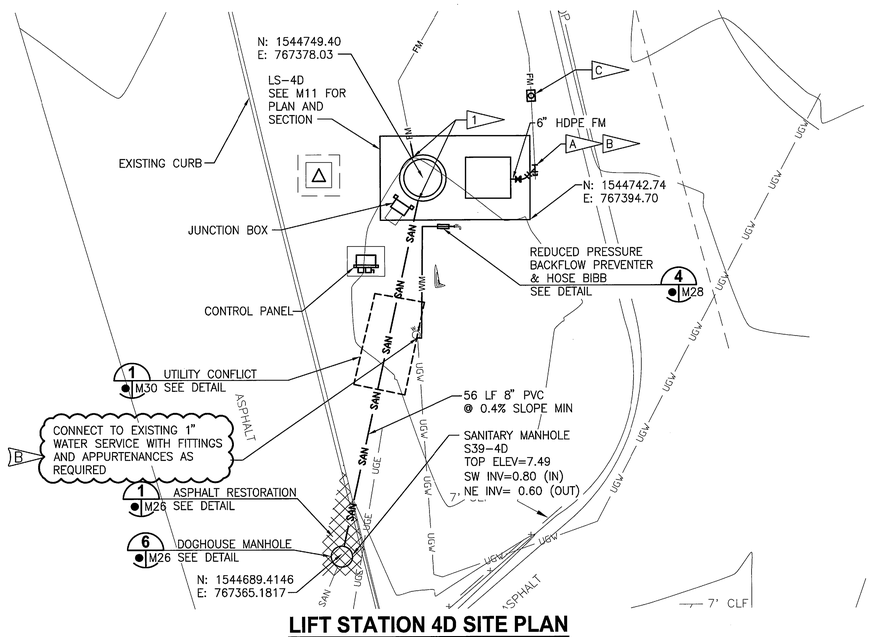
## LIFT STATION 4D AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION 4D SITE PLAN
1"=10'

## NOTES

A. INSTALL 6" HDPE WYE, 45° HDPE BEND, PV, AND TRANSITION COUPLINGS.

B. REMOVE EXISTING PIPE AS REQUIRED AND INSTALL A CAP ON THE 6" HDPE WYE (UPSTREAM RUN).

C. INSTALL 6" TEMPORARY LINE STOP.

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED WATER SERVICE SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATION 4D SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 17

M5

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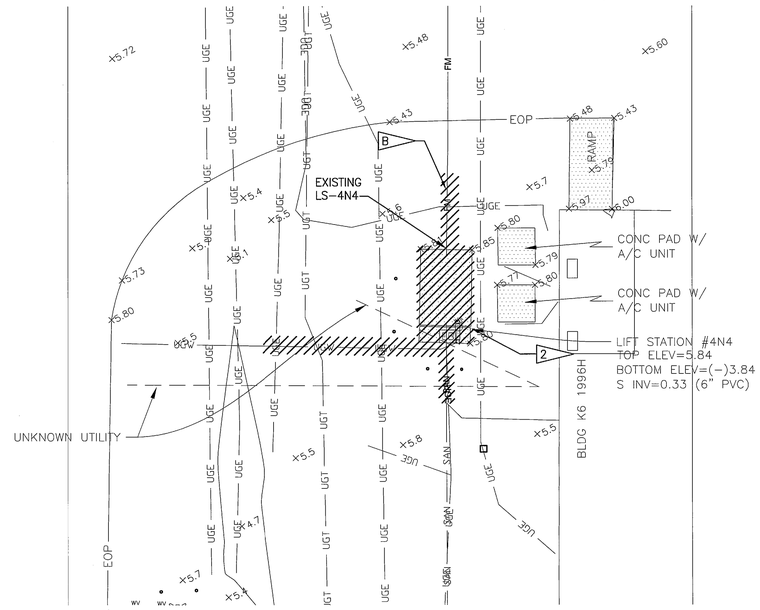
## NOTES

A. INSTALL 4" HDPE WYE, 45° HDPE BEND, PV, (2) 4"x3" HDPE RED, AND TRANSITION COUPLINGS.

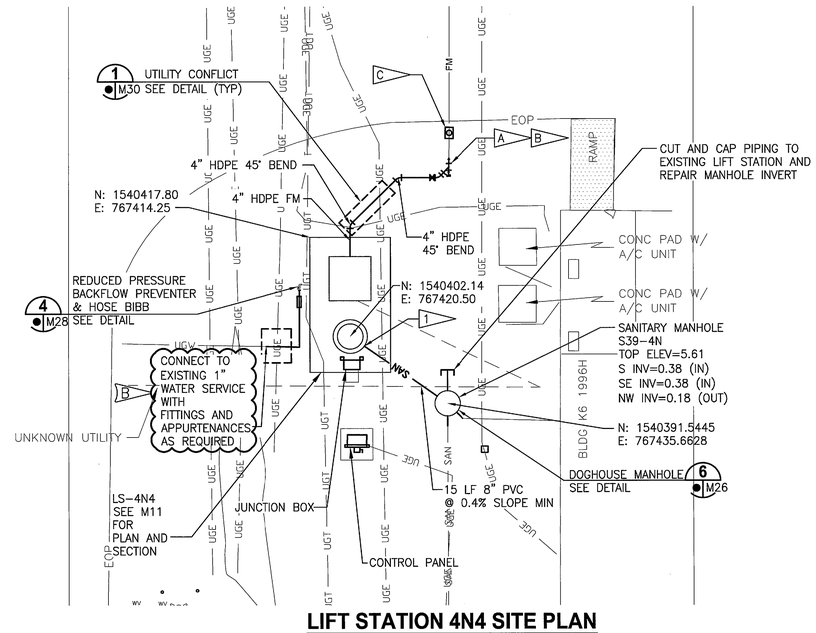
B. REMOVE EXISTING PIPE AS REQUIRED AND INSTALL A CAP ON THE 4"x3" HDPE RED.

C. INSTALL 3" TEMPORARY LINE STOP.

## LIFT STATION 4N4 AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION 4N4 SITE PLAN
1"=10'

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

M6

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED WATER SERVICE SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS

## LIFT STATION 4N4 SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 18

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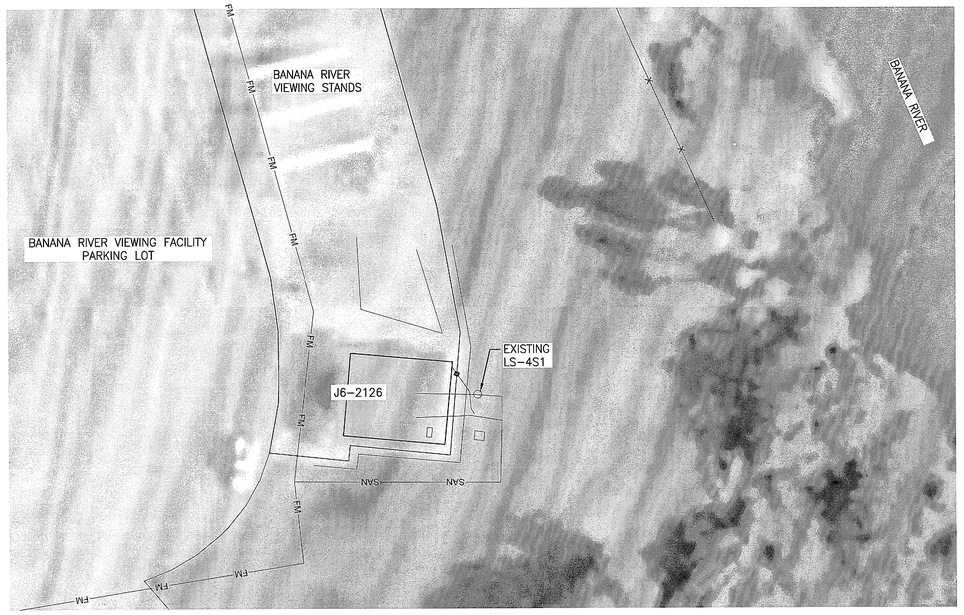
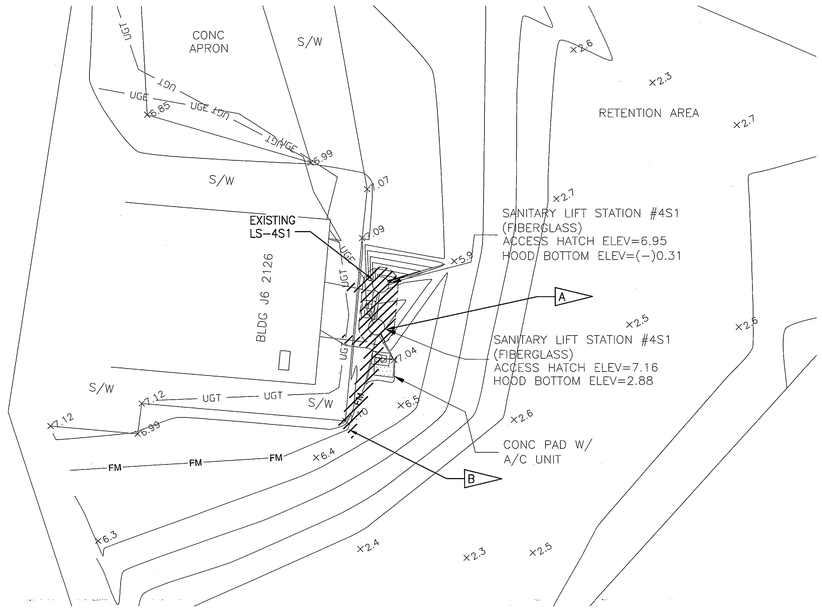
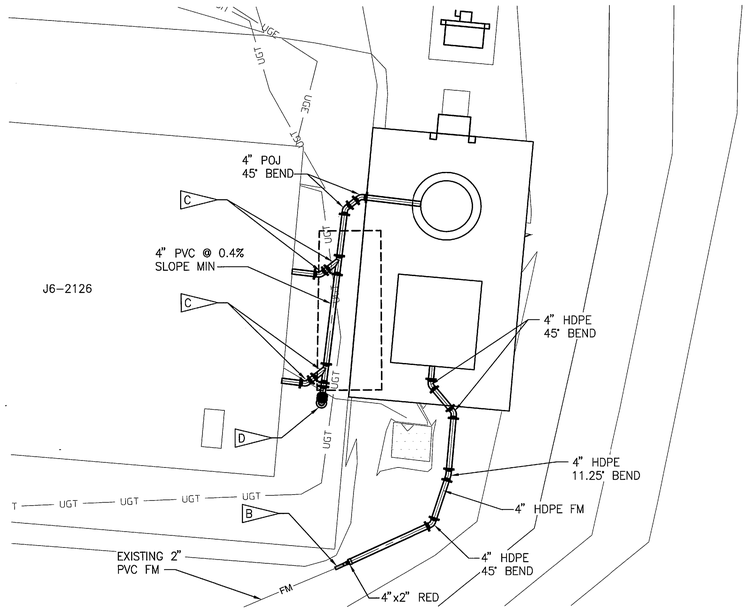


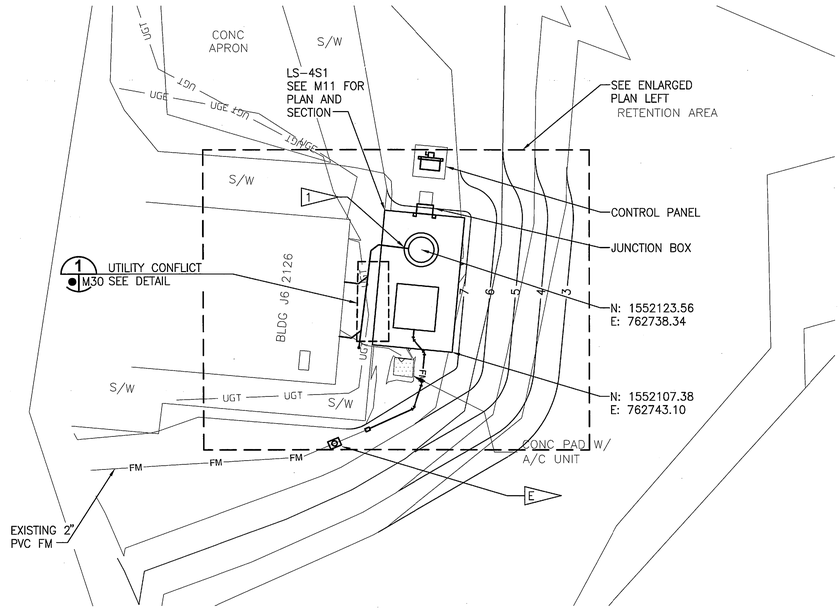

## LIFT STATION 4S1 AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION 4S1 ENLARGED PLAN
1"=5'




## LIFT STATION 4S1 SITE PLAN
1"=10'

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

GRAPHIC SCALE 0 5 10 — SCALE IN FEET 1"=5'

N

## NOTES

A. AFTER THE CONDITIONS OF THE APPROVED WASTEWATER BYPASS PUMPING PLAN HAVE BEEN MET:
   1. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES, AND RELATED EQUIPMENT IN THE WETWELLS.
   2. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELLS . DISINFECT THE EXISTING WETWELLS AND REMOVE AND DISPOSE OF DISINFECTANT.
   3. REMOVE AND DISPOSE OF ALL ABOVE AND BELOW GRADE POWER/CONTROL CABLES AND CONDUITS; CONTROL PANEL, CIRCUIT BREAKER BOX AND POWER POLE; ABOVE GRADE PIPING AND VALVES; THE ENTIRE WETWELL; AND CONCRETE SURFACE PADS. MATERIALS REMOVED IN DEMOLITION SHALL BE DISPOSED OF IN ACCORDANCE WITH THE APPLICABLE NOTES ON DWG EN4.

B. REMOVE EXISTING PIPE. INSTALL 2" TRANSITION COUPLING.

C. REMOVE EXISTING PIPE. INSTALL POJ PVC 45° BEND AND WYE.

D. REMOVE EXISTING PIPE. INSTALL CLEANOUT AND SWJ PVC 45° BENDS. (4 / M29)

E. INSTALL 2" TEMPORARY LINE STOP.

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 10/31/11 |
| CHECKED M. CLARK | 10/31/11 |
| SUBMITTED R. BEST | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 10/31/11 |
| K. MILLER | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## LIFT STATION 4S1 SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 | SHEET 19

M7

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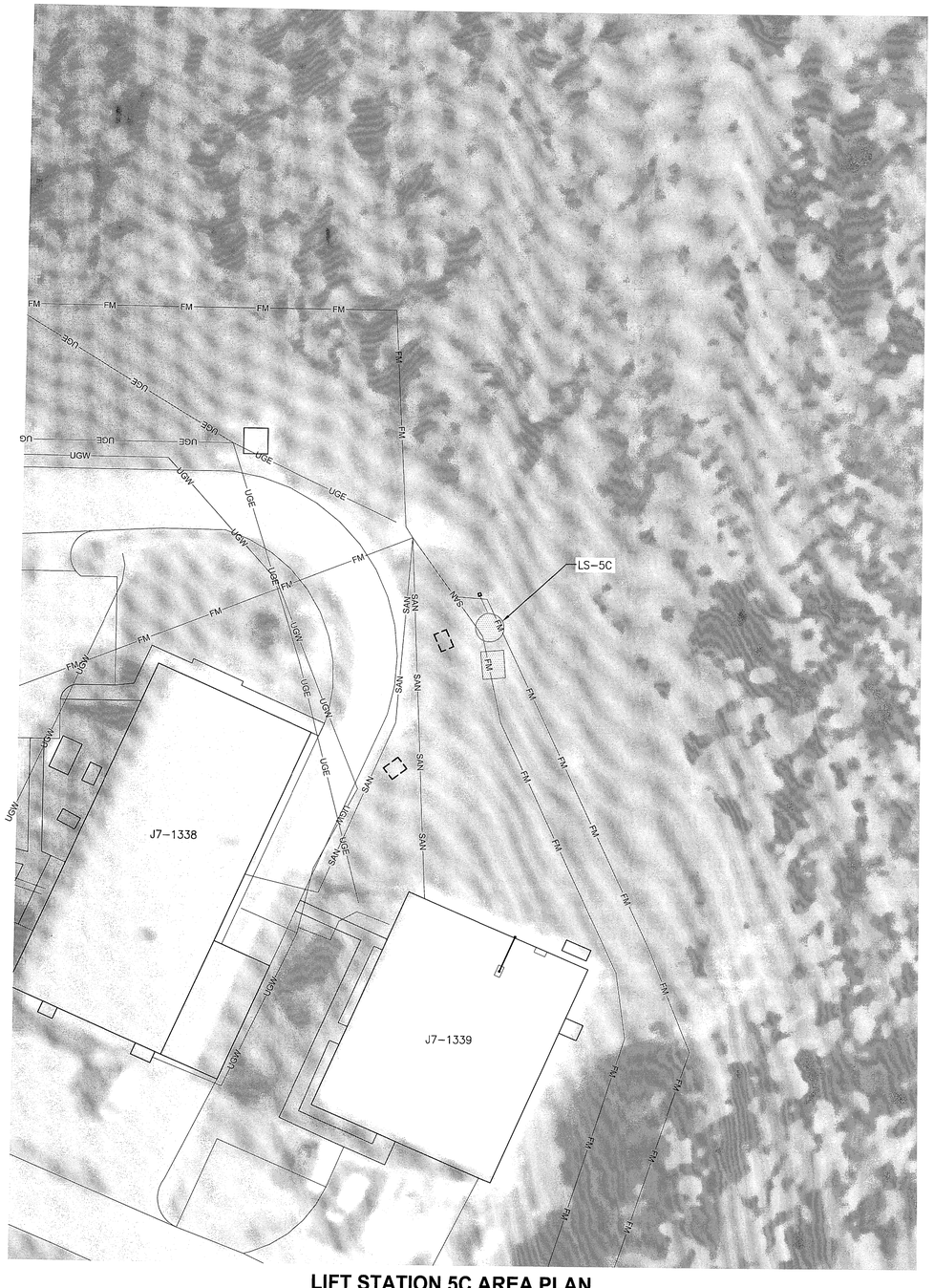
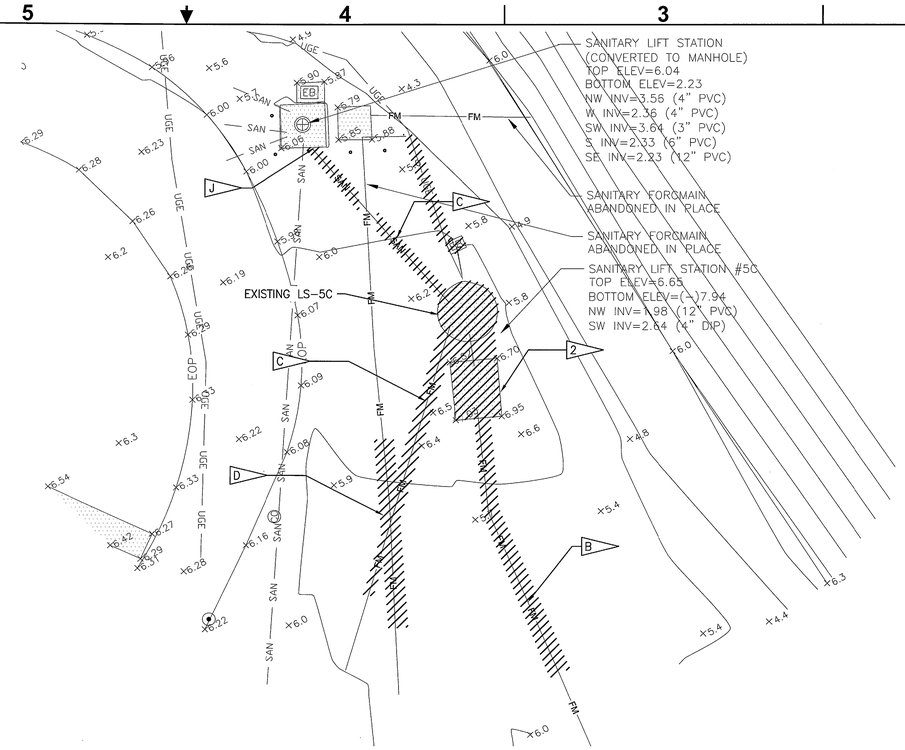
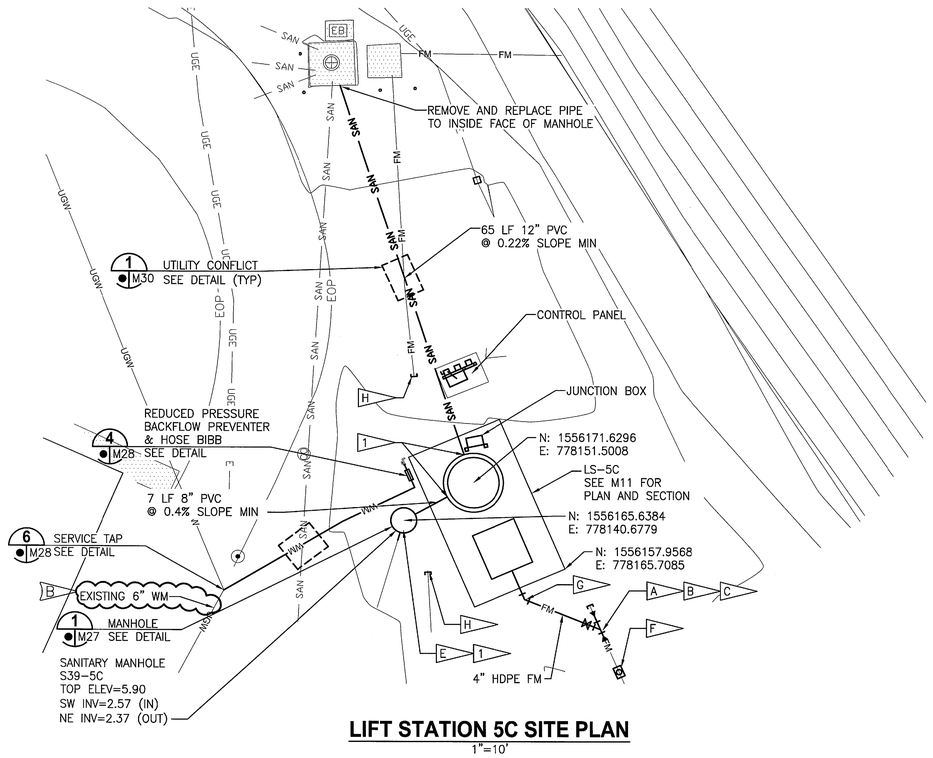



## LIFT STATION 5C AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION 5C SITE PLAN
1"=10'

## NOTES

A. INSTALL 4" HDPE WYE, PV, 4"x6" HDPE REDUCERS, AND TRANSITION COUPLINGS.

B. REMOVE EXISTING PIPE AS REQUIRED AND INSTALL A CAP ON THE 4"x6" HDPE RED.

C. PLUG AND ABANDON PIPE TO EXISTING LIFT STATION IN PLACE.

D. REMOVE EXISTING PIPE AS REQUIRED TO INSTALL MANHOLE.

E. CONNECT MANHOLE TO EXISTING FORCE MAIN AS REQUIRED.

F. INSTALL 6" TEMPORARY LINE STOP.

G. INSTALL 4" HDPE 45° BEND.

H. CAP EXISTING ABANDONED 4" PVC FM

J. GROUT MH OPENING MIN 12" THICK W/ NON-SHRINK GROUT. REPAIR MANHOLE BENCH SIMILAR TO TYPICAL U-SHAPED CHANNEL. SEE DETAIL 6 M27

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

-N-

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
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| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS

## LIFT STATION 5C SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 20

M8

C FORM 1-11 (3/76)(C/G 3/94)

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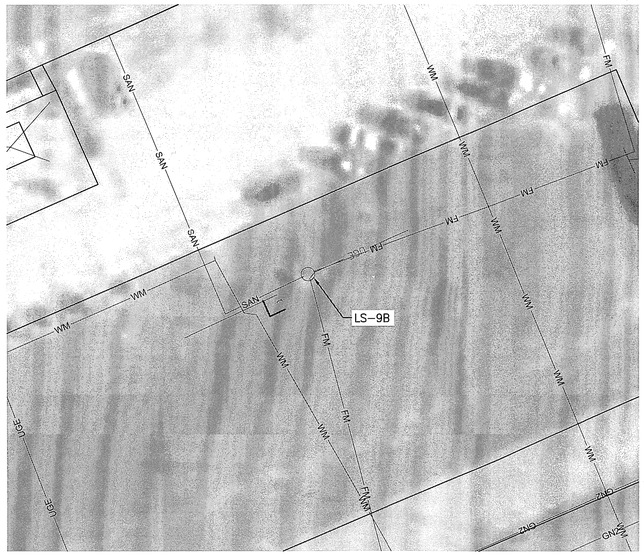
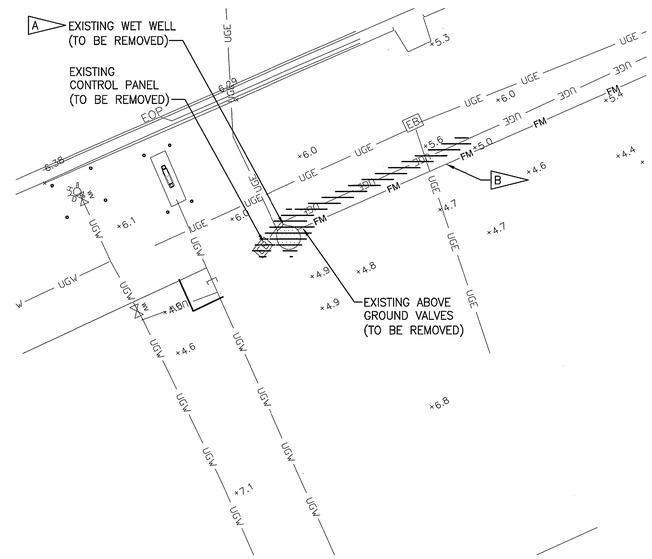



## LIFT STATION 9B AREA PLAN
1" = 20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'

## NOTES

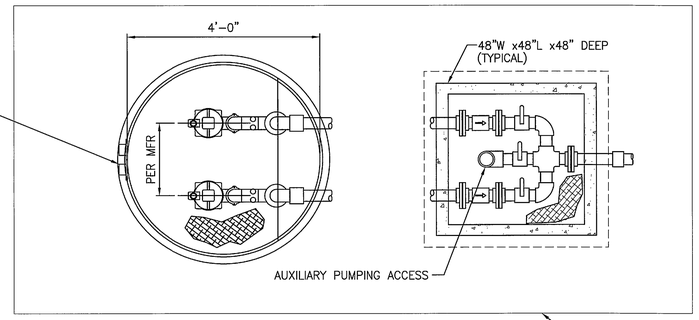
A. AFTER THE ALTERNATIVE SANITARY FACILITIES ARE IN PLACE:

1. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES, AND RELATED EQUIPMENT IN THE WETWELLS.
2. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELLS. DISINFECT THE EXISTING WETWELLS AND REMOVE AND DISPOSE OF DISINFECTANT.
3. REMOVE AND DISPOSE OF ALL ABOVE AND BELOW GRADE POWER/CONTROL CABLES AND CONDUITS; CONTROL PANEL, CIRCUIT BREAKER BOX AND POWER POLE; ABOVE GRADE PIPING AND VALVES; THE ENTIRE WETWELL; AND CONCRETE SURFACE PADS. MATERIALS REMOVED IN DEMOLITION SHALL BE DISPOSED OF IN ACCORDANCE WITH THE APPLICABLE NOTES ON DWG EN4.

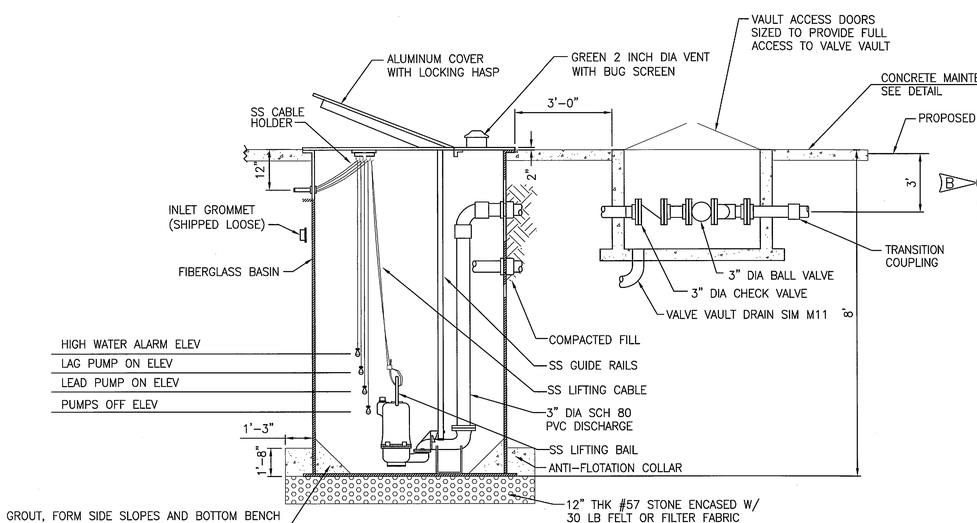
B. FORCE MAIN REPLACED UNDER 79K38877 VOL 3. COORDINATE WORK TO MINIMIZE OUTAGES.

C. CONNECT 2" HDPE LIFT STATION DISCHARGE TO REPLACED 2" SST FM AS REQUIRED.

D. THE CONTRACTOR SHALL PROVIDE TEMPORARY RESTROOM FACILITIES FOR (11) PEOPLE AT K7-0569, (2) PEOPLE AT K7-0618, AND (12) PEOPLE AT K7-0617 IN ACCORDANCE WITH ANSI CODE Z4. AT LEAST ONE TEMPORARY RESTROOM AT EACH LOCATION SHALL BE ADA COMPLIANT. TEMPORARY RESTROOM FACILITIES SHALL BE CLEANED AND STOCKED ON A DAILY BASIS. THE LOCATIONS OF THE TEMPORARY RESTROOM FACILITIES ARE TO BE COORDINATED WITH THE CO. THE CONTRACTOR IS TO POST TEMPORARY SIGNAGE FOR PERMANENT RESTROOMS, SHOWERS, WATER FOUNTAINS, AND SINKS IN FACILITIES WITHOUT WASTEWATER SERVICE, INDICATING THAT THOSE FACILITIES ARE OUT OF SERVICE AND DIRECTING PERSONNEL TO THE TEMPORARY RESTROOM FACILITIES.

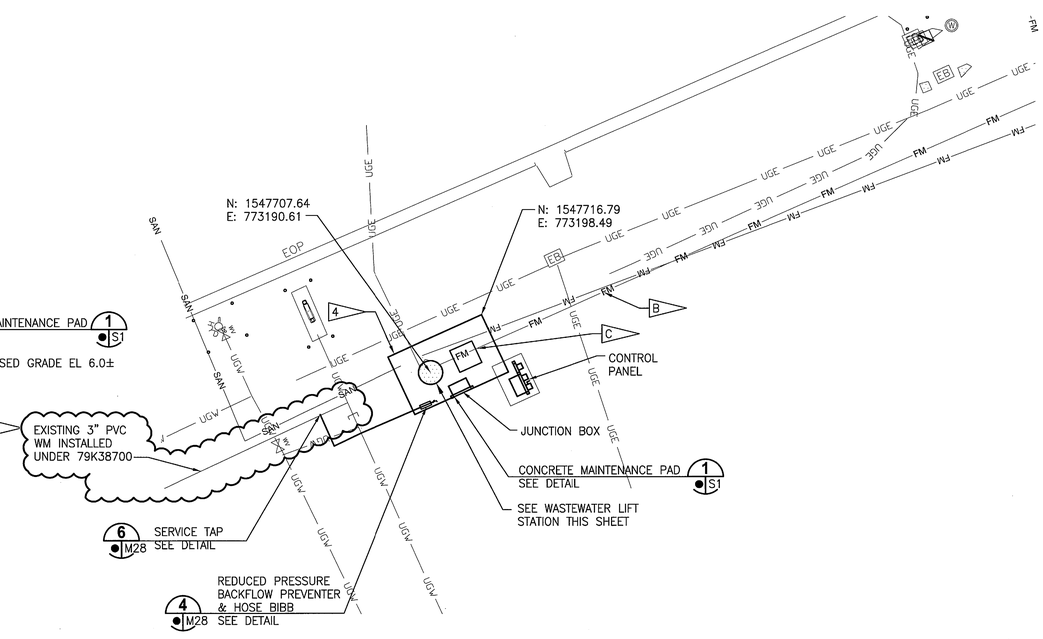



## PLAN




## SECTION A-A

## WASTEWATER LIFT STATION DETAIL
NTS




## PROPOSED LIFT STATION 9B SITE PLAN
1"=10'

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED PLAN | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
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| CHECKED M. CLARK | 12/05/11 |
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| APPROVED M. CLARK | |
| K. MILLER | |

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JOHN F. KENNEDY SPACE CENTER, NASA
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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATION 9B PLANS AND DETAIL

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 — SHEET 21

M9

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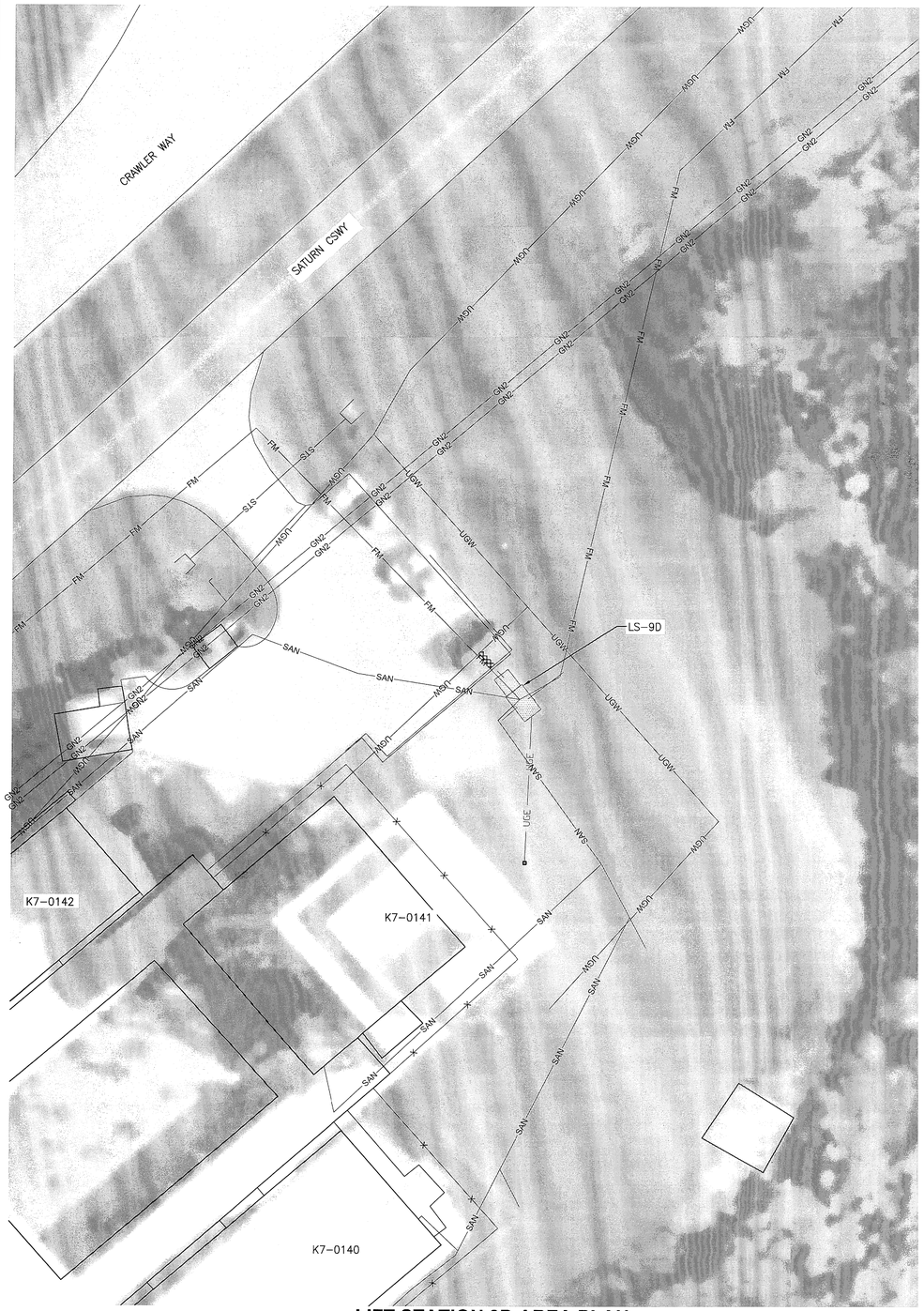
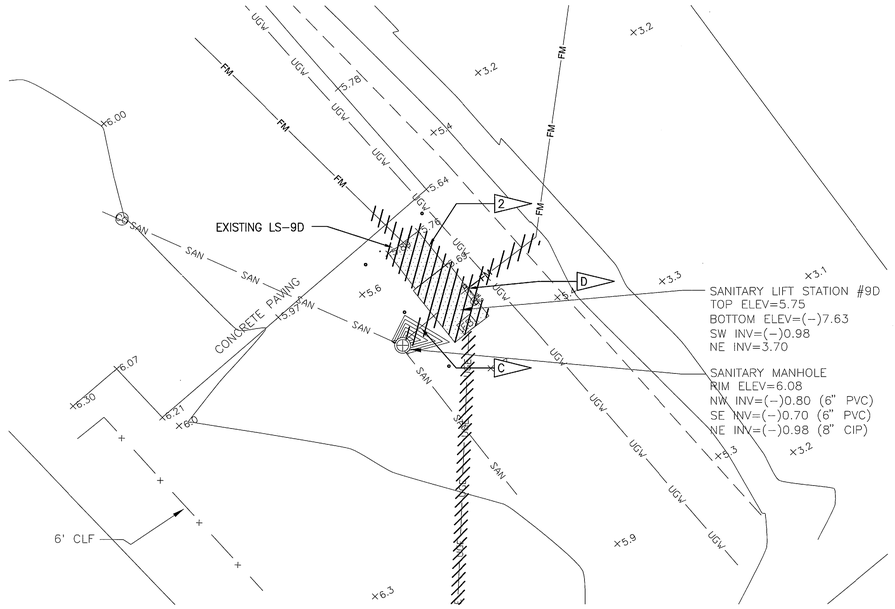
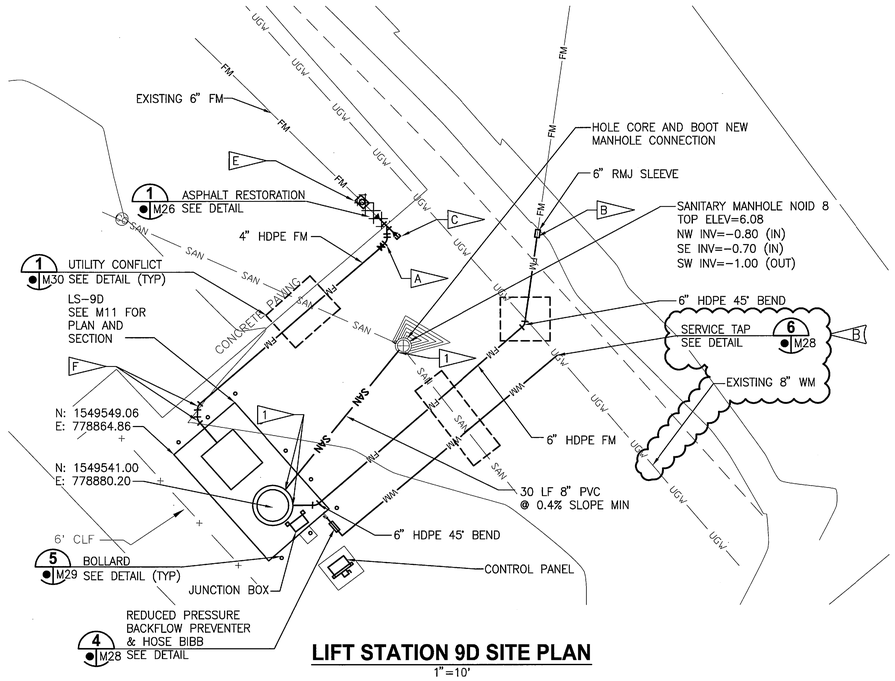



## LIFT STATION 9D AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION 9D SITE PLAN
1"=10'

## NOTES

A. INSTALL 4" HDPE WYE, 45° HDPE BEND, 4"x6" HDPE REDUCER, AND TRANSITION COUPLINGS.

B. REMOVE EXISTING PIPE AS REQUIRED. EXTEND FM TO LIFT STATION. PLUG AND ABANDON PIPE TO EXISTING WETWELL IN PLACE.

C. REMOVE EXISTING PIPE AS REQUIRED AND INSTALL A CAP ON THE 4"x6" HDPE REDUCER. PLUG AND ABANDON PIPE FROM EXISTING WET WELL IN PLACE.

D. DEMOLISH EXISTING HOSE BIBB. REMOVE EXISTING SERVICE TO WATERMAIN AND PLUG

E. INSTALL TEMPORARY 6" LINE STOP.

F. INSTALL (2) 4" HDPE 45° BENDS.

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 3/7/12 | TMC |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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JOHN F. KENNEDY SPACE CENTER, NASA
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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATION 9D SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 22 | |

M10

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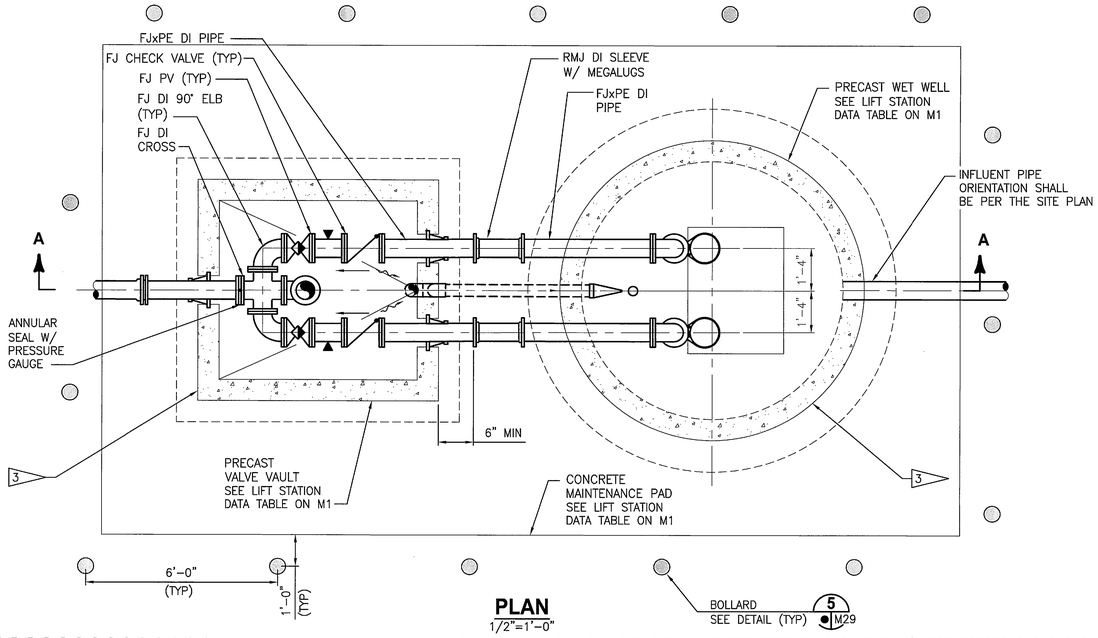
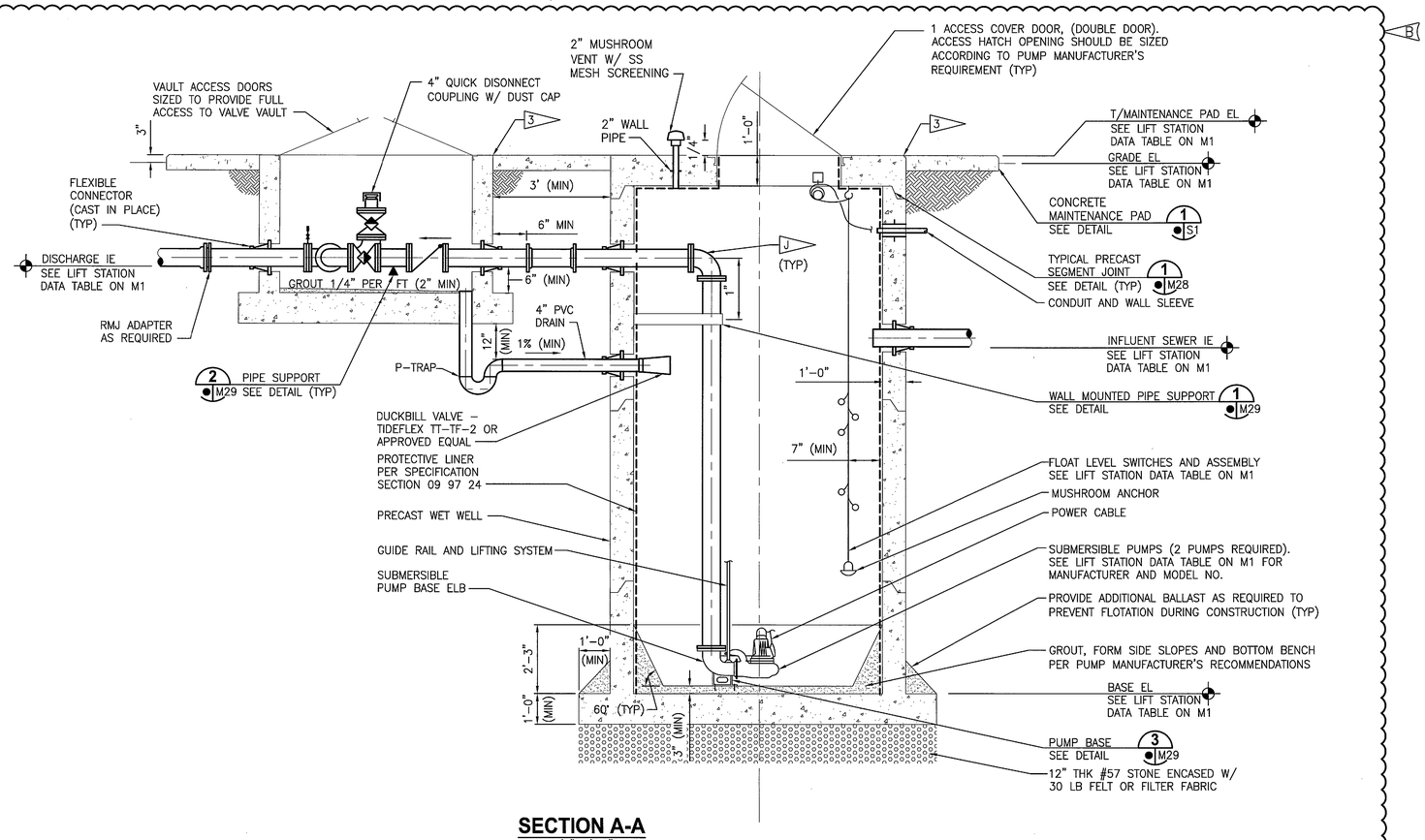



## PLAN
1/2"=1'-0"




## SECTION A-A
1/2"=1'-0"

## NOTES

A. PUMP PLACEMENT SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

B. CONTRACTOR SHALL VERIFY PUMP MANUFACTURER'S REQUIREMENTS FOR OPENING FOR CAST-IN PLACE ACCESS COVER FRAME. CONTRACTOR SHALL VERIFY PUMP DIMENSIONS FOR OPENING CLEARANCE.

C. EXTERIOR OF WET WELL SHALL BE PAINTED WITH COAL TAR EPOXY AS SPECIFIED.

D. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL BE PAINTED PER SPECIFICATIONS.

E. PROVIDE SPARK-PROOF CONTACT BETWEEN PUMPS AND GUIDE RAIL SYSTEM.

F. SUSPEND FLOAT CABLES FROM 316 SS CABLE W/ EPOXY OR RUBBER COATED CAST IRON MUSHROOM ANCHOR OUT OF INFLUENT FLOW PATH. USE SS CLAMPS TO AFFIX FLOATS SECURELY TO ANCHOR. LOOP 316 SS CABLE THROUGH HOLES IN MUSHROOM ANCHOR TO ENSURE ANCHOR STAYS ATTACHED TO CABLE. USE ALL 316 SS FITTINGS AND HARDWARE (EXCEPT ANCHOR) FOR ASSEMBLY. ASSEMBLY NEEDS TO BE REACHABLE AND REMOVABLE FROM ACCESS COVER DOOR.

G. EACH ELECTRIC PUMP CABLE SHALL BE SUPPORTED FROM A SS CABLE RACK VIA A SS KELLUMS CABLE GRIP (OR APPROVED EQUAL).

H. LOW ALARM ON / REDUNDANT ALL PUMPS OFF LEVEL TO BE SET SO THAT SUBMERSIBLE PUMP MOTOR IS TOTALLY SUBMERGED.

I. SEE LIFT STATION DATA TABLE ON M1 FOR WET WELL AND MAINTENANCE PAD DIMENSIONS.

B J PIPING AND FIXTURE SIZES SAME AS DISCHARGE SIZE IN LIFT STATION DATA TABLE ON M1.

GRAPHIC SCALE
0 1 2 4
SCALE IN FEET
1/2"=1'-0"

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## REPLACEMENT LIFT STATIONS PLAN AND SECTION

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 23 | |

M11

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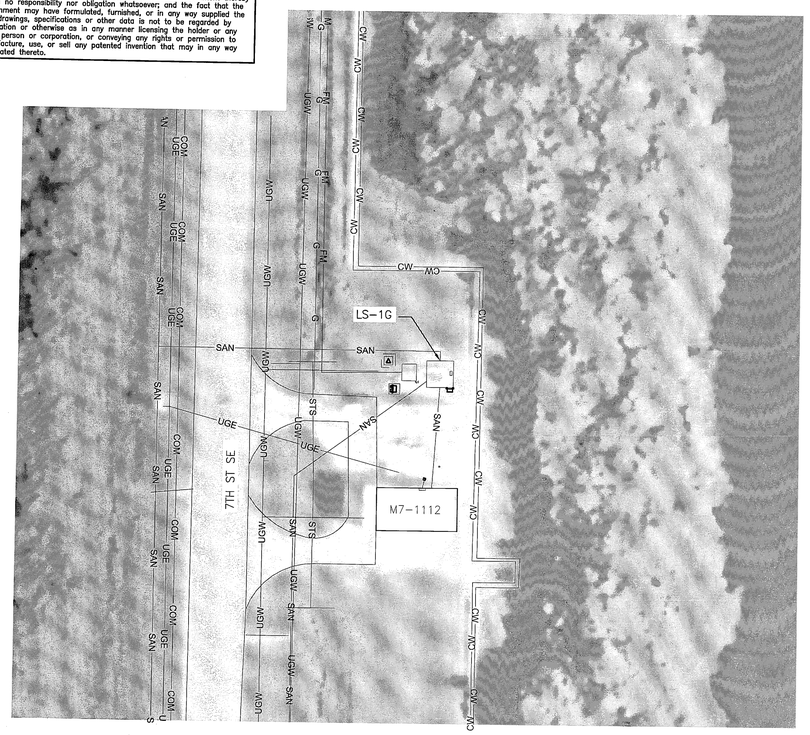
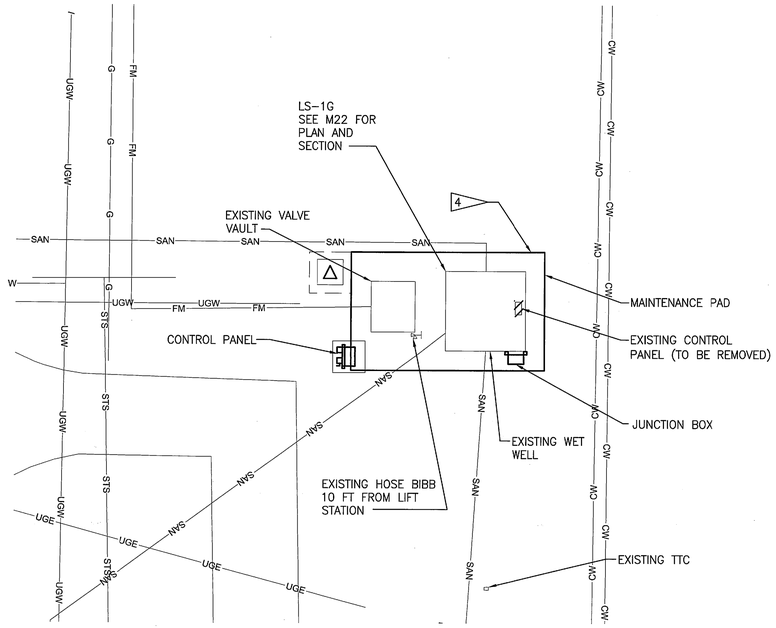
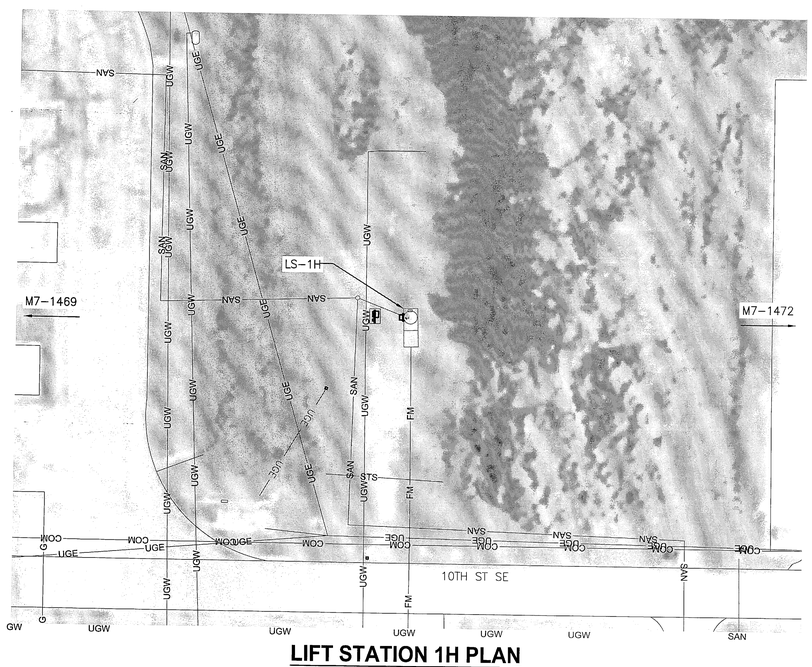


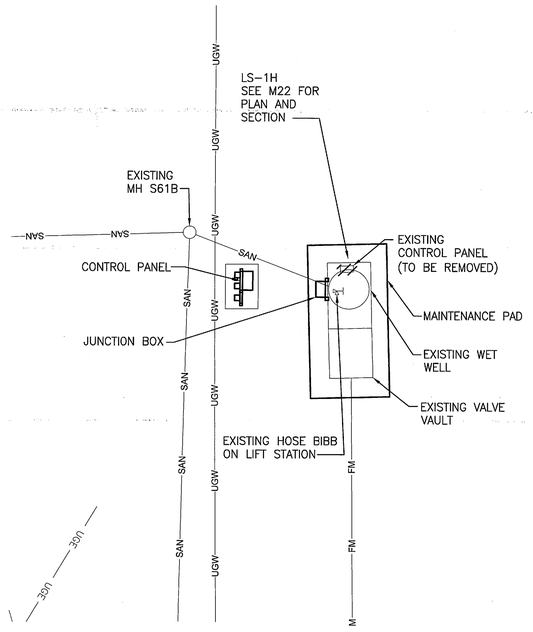

## LIFT STATION 1G PLAN
1" = 30'




## LIFT STATION 1G PLAN
1" = 10'




## LIFT STATION 1H PLAN
1" = 30'




## LIFT STATION 1H PLAN
1" = 10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

N

M12

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 10/31/11 |
| CHECKED M. CLARK | 10/31/11 |
| SUBMITTED R. BEST | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 10/31/11 |
| K. MILLER | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
# LIFT STATIONS

## REHABILITATION LIFT STATIONS SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 24 | |

FORM 1-11 (3/76)(C/G 3/94)

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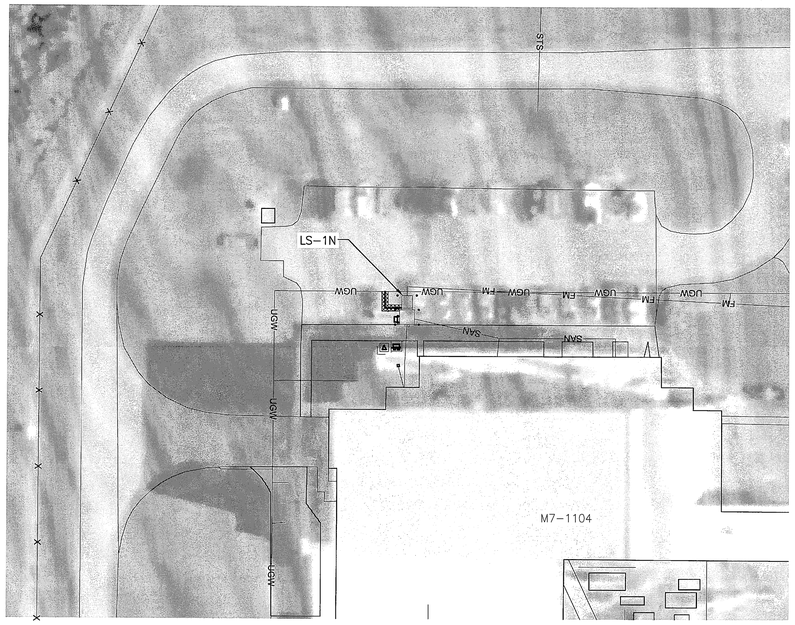
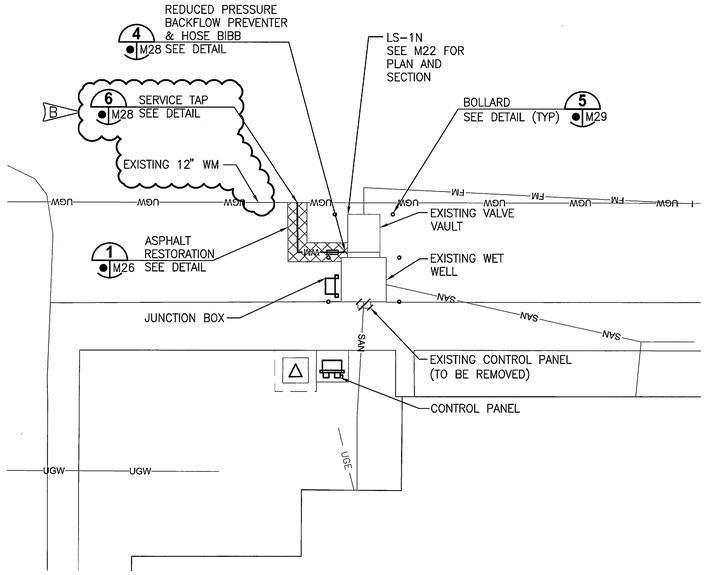
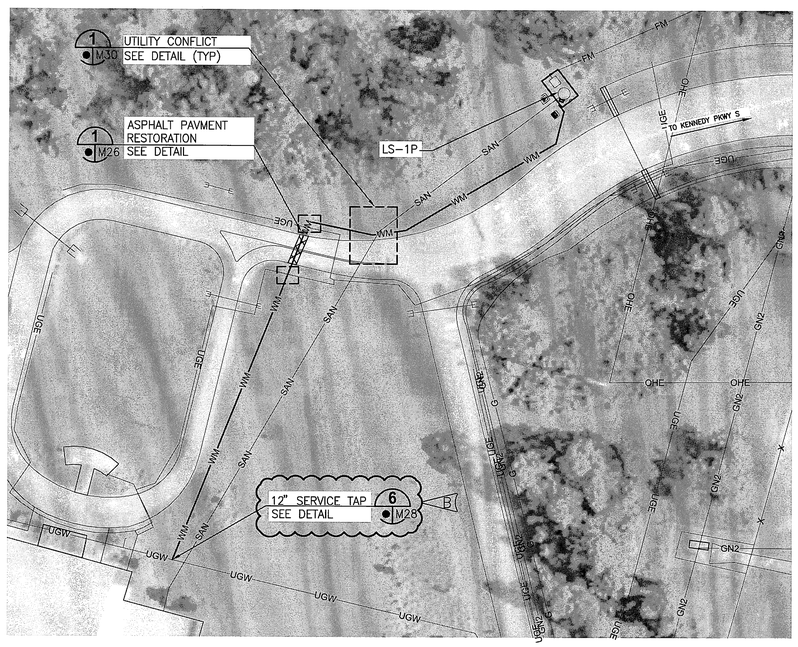


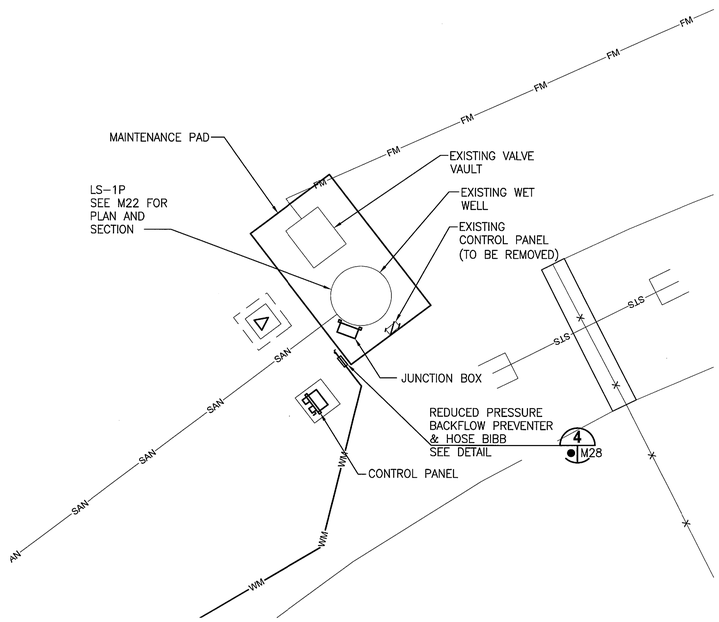

## LIFT STATION 1N AREA PLAN
1" = 30'




## LIFT STATION 1N PLAN
1" = 10'




## LIFT STATION 1P AREA PLAN
1" = 50'




## LIFT STATION 1P PLAN
1" = 10'

GRAPHIC SCALE 0 25 50 100 — SCALE IN FEET 1"=50'

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

-N-

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
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| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

REHABILITATION LIFT STATIONS
SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 25 | |

M13

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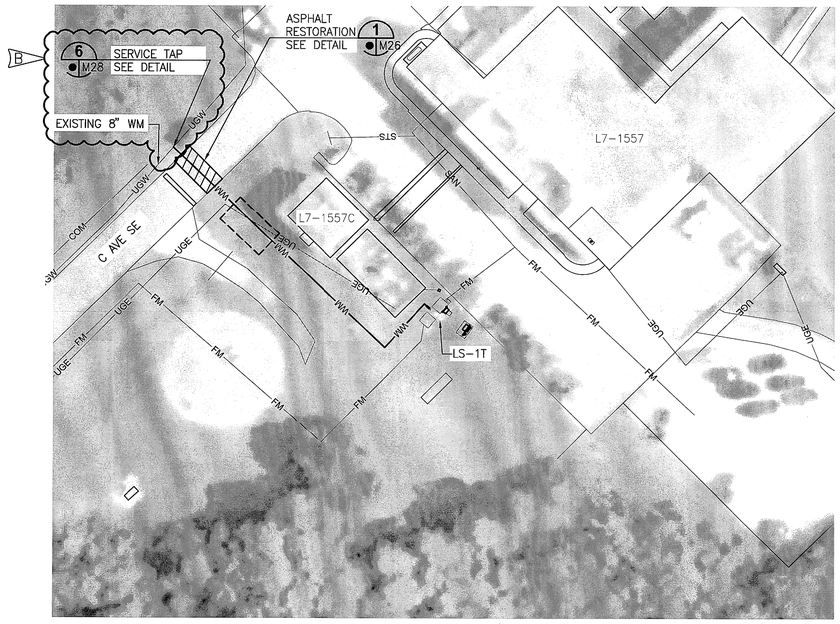
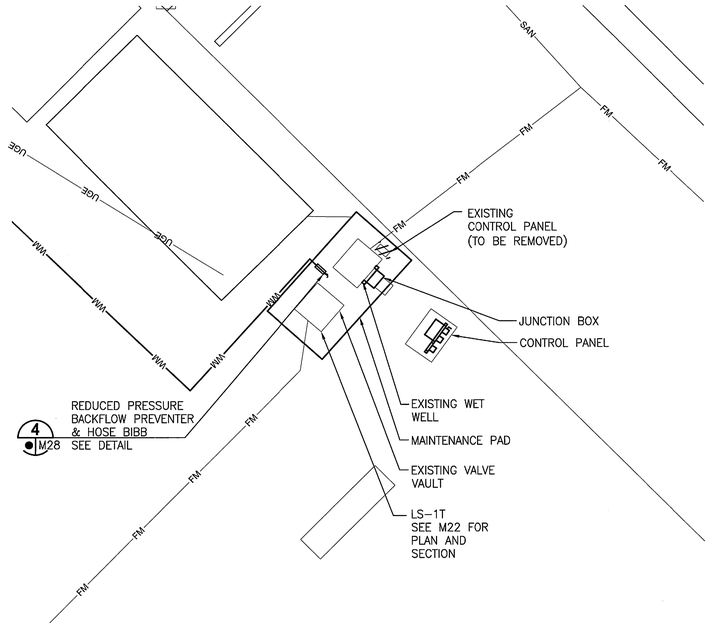
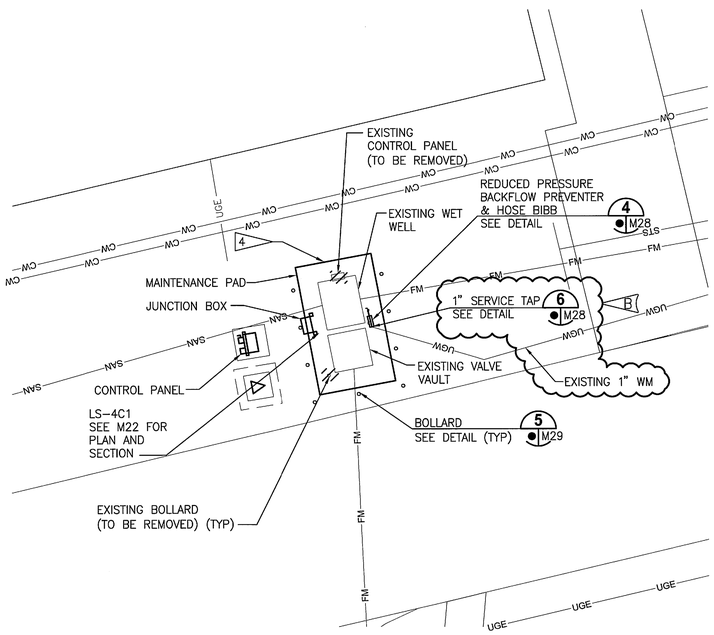



## LIFT STATION 1T PLAN
1" = 30'




## LIFT STATION 1T PLAN
1" = 10'

## LIFT STATION 4C1 PLAN
1" = 30'




## LIFT STATION 4C1 PLAN
1" = 10'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZES | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

REHABILITATION LIFT STATIONS
SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
| PROJ. NO. 96968.3 | | SHEET 26 | |

M14

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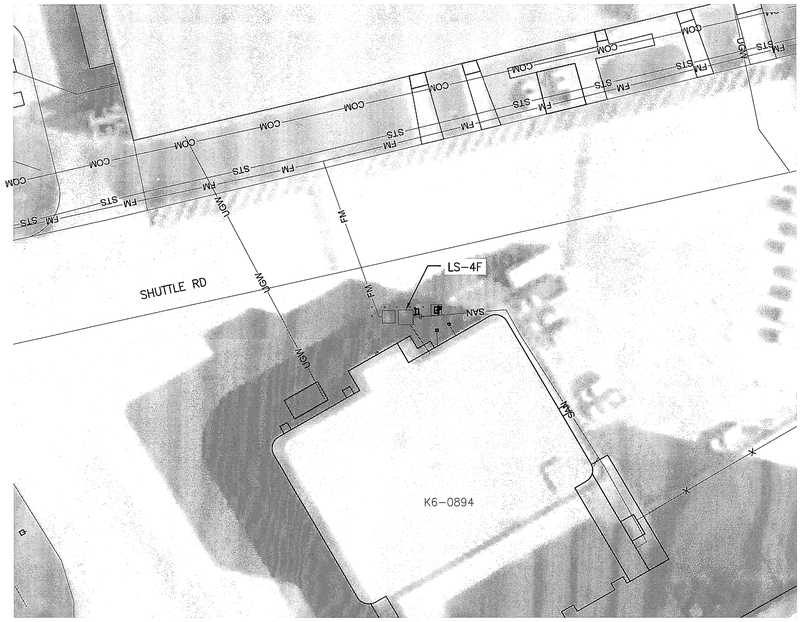
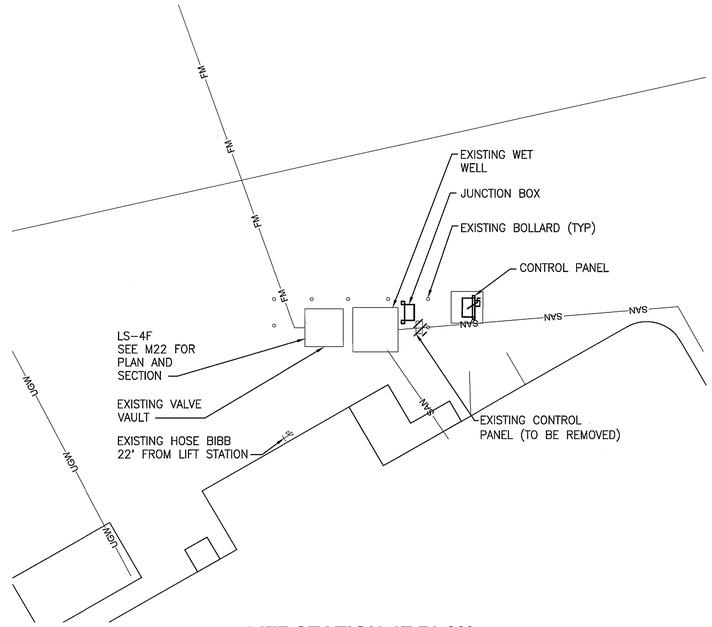
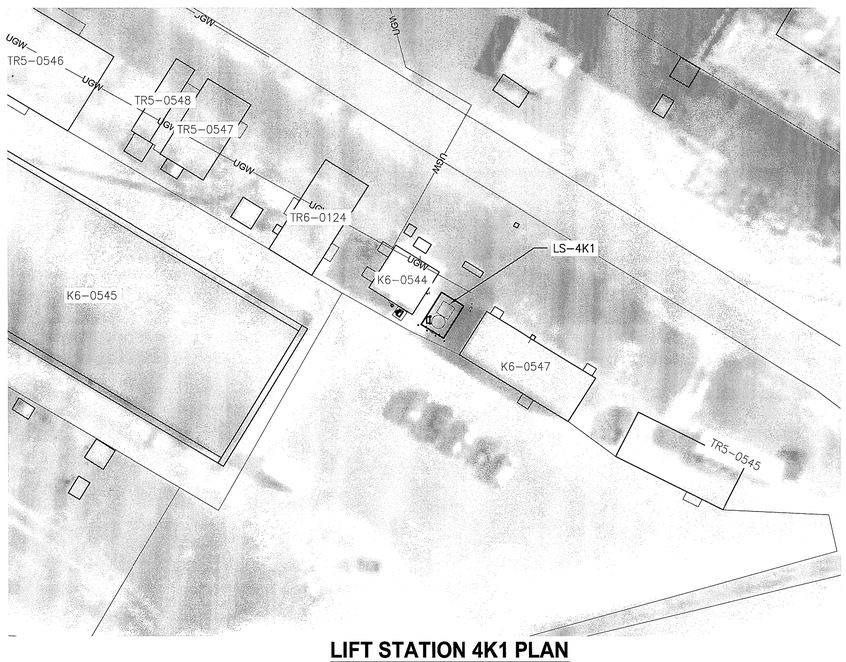


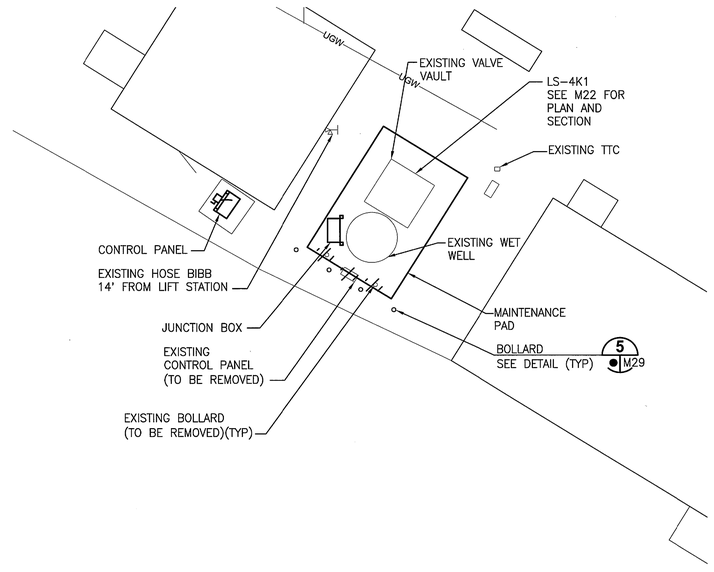

## LIFT STATION 4F PLAN
1" = 30'




## LIFT STATION 4F PLAN
1" = 10'




## LIFT STATION 4K1 PLAN
1" = 30'




## LIFT STATION 4K1 PLAN
1" = 10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
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| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 12/05/11 |
| K. MILLER | 12/5/11 |

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JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**REHABILITATION LIFT STATIONS**
**SITE PLANS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 | SHEET 27

M15

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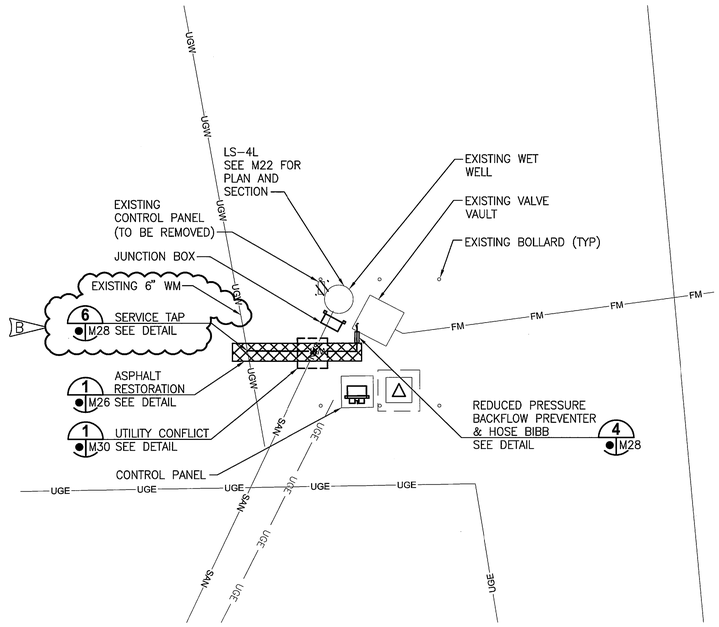
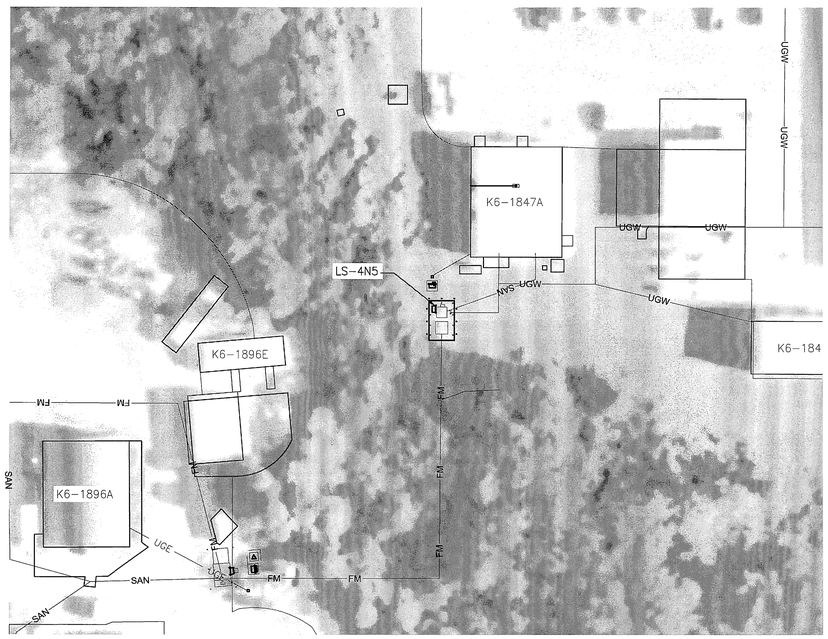
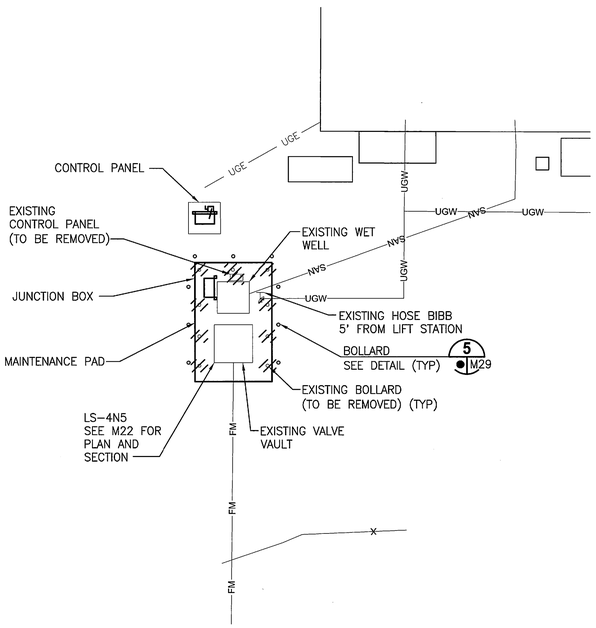
## LIFT STATION 4L PLAN
1" = 30'




## LIFT STATION 4L PLAN
1" = 10'




## LIFT STATION 4N5 PLAN
1" = 30'




## LIFT STATION 4N5 PLAN
1" = 10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**REHABILITATION LIFT STATIONS SITE PLANS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 28

M16

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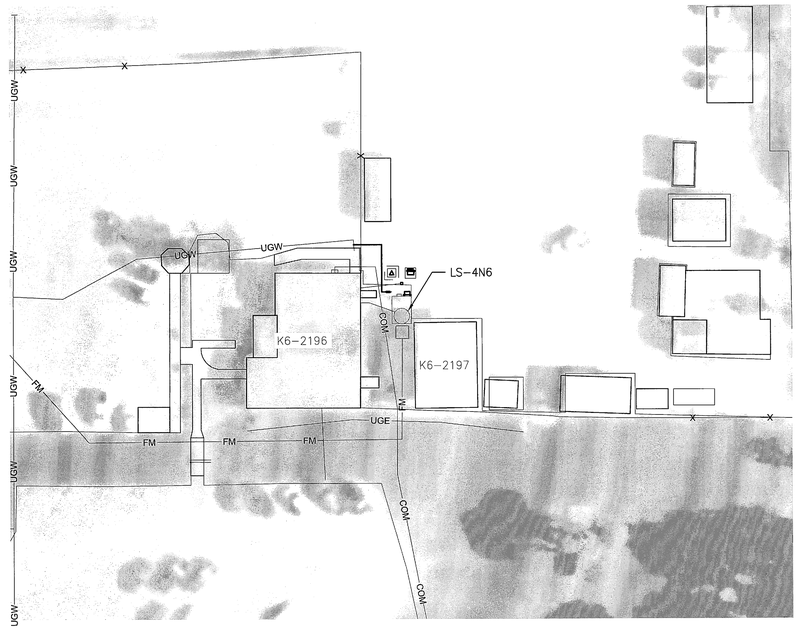
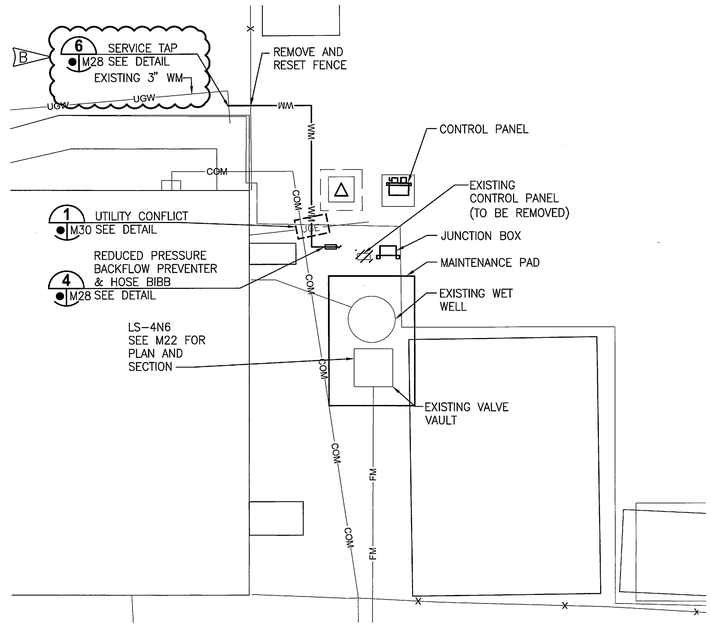
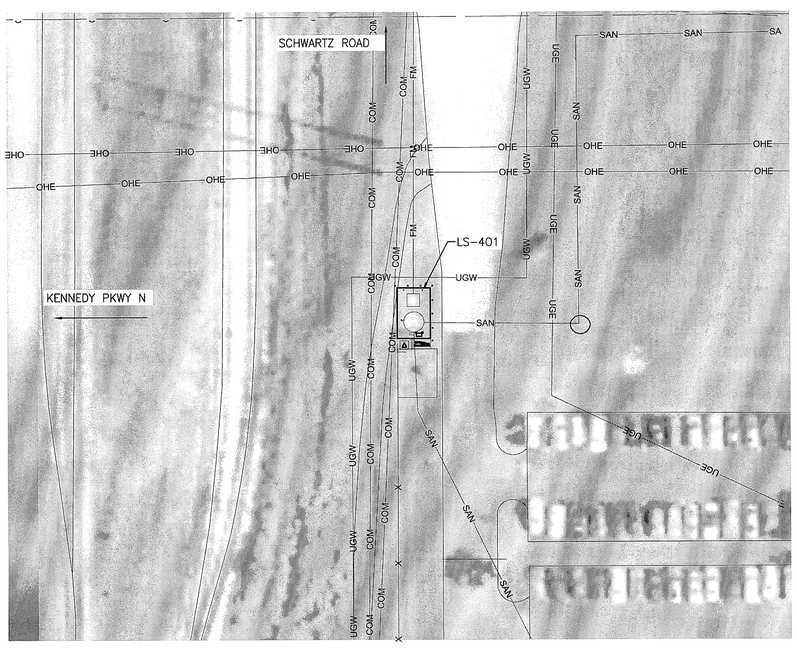


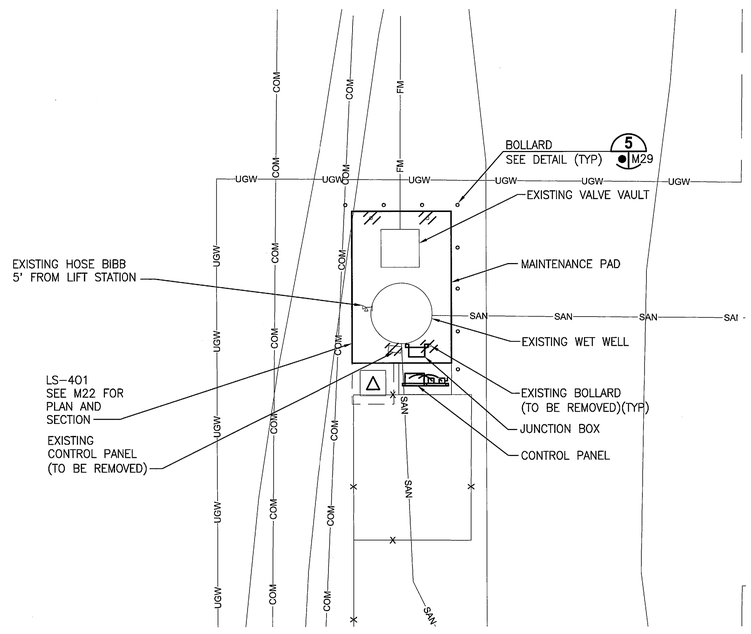

## LIFT STATION 4N6 PLAN
1" = 30'




## LIFT STATION 4N6 PLAN
1" = 10'




## LIFT STATION 401 PLAN
1" = 30'




## LIFT STATION 401 PLAN
1" = 10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

-N-

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
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| SUBMITTED R. BEST | 12/05/11 |
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| APPROVED M. CLARK | |
| K. MILLER | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**REHABILITATION LIFT STATIONS SITE PLANS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 29

M17

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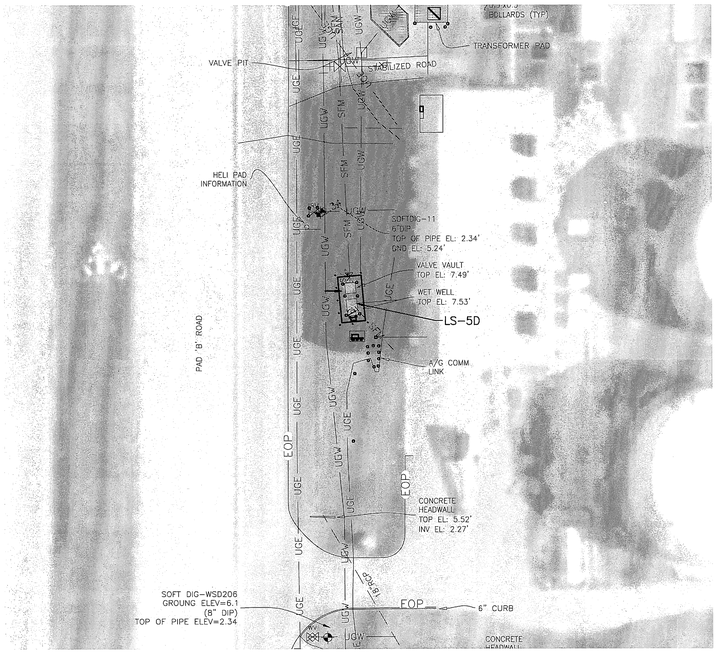
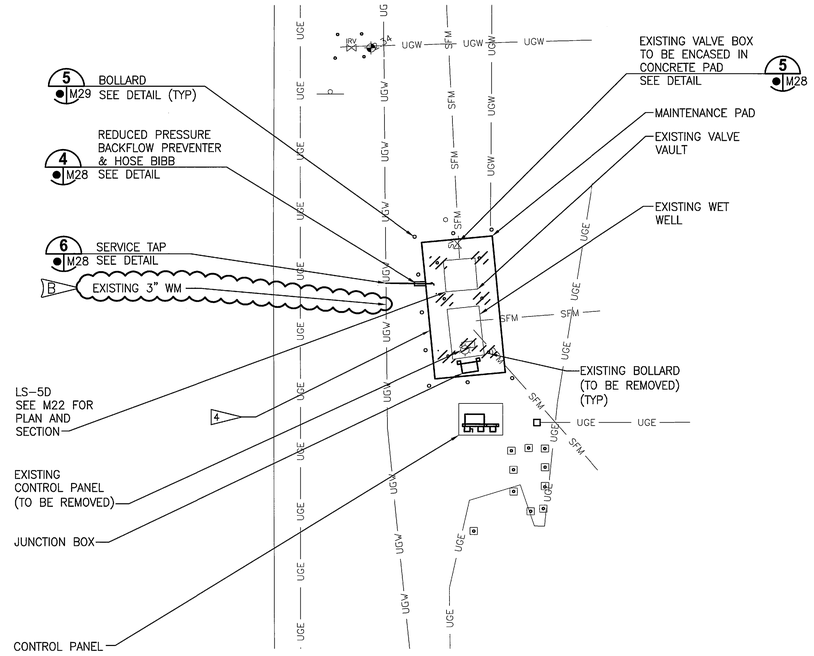
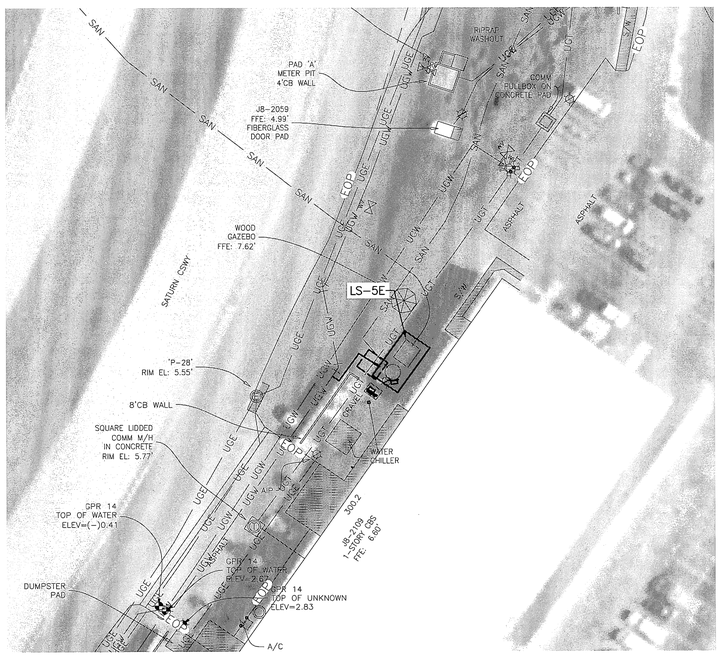


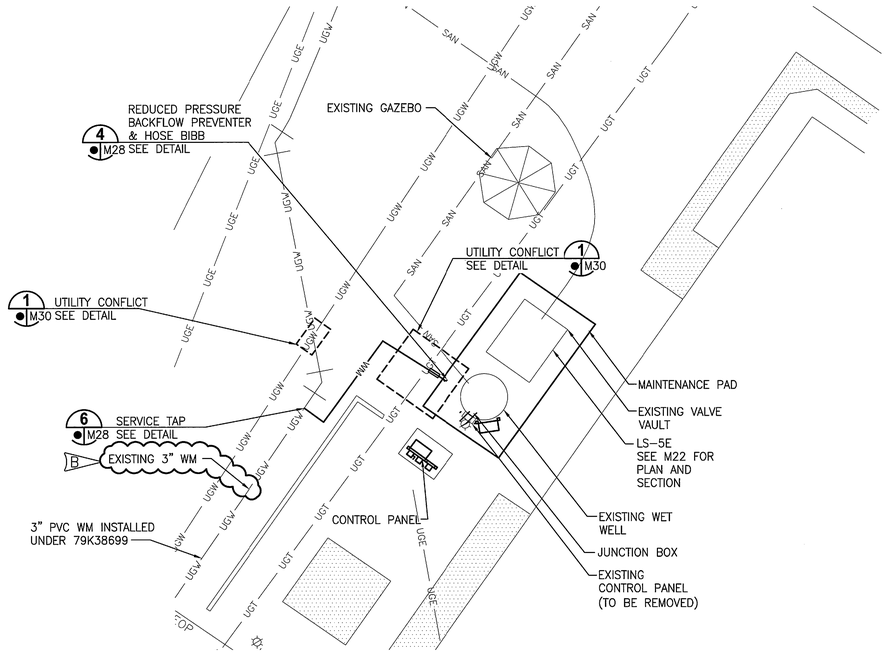

## LIFT STATION 5D PLAN
1" = 30'




## LIFT STATION 5D PLAN
1" = 10'




## LIFT STATION 5E PLAN
1" = 30'




## LIFT STATION 5E PLAN
1" = 10'

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

N

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZES | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SUBMITTED R. BEST | 12/05/11 |
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| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

REHABILITATION LIFT STATIONS
SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

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M18

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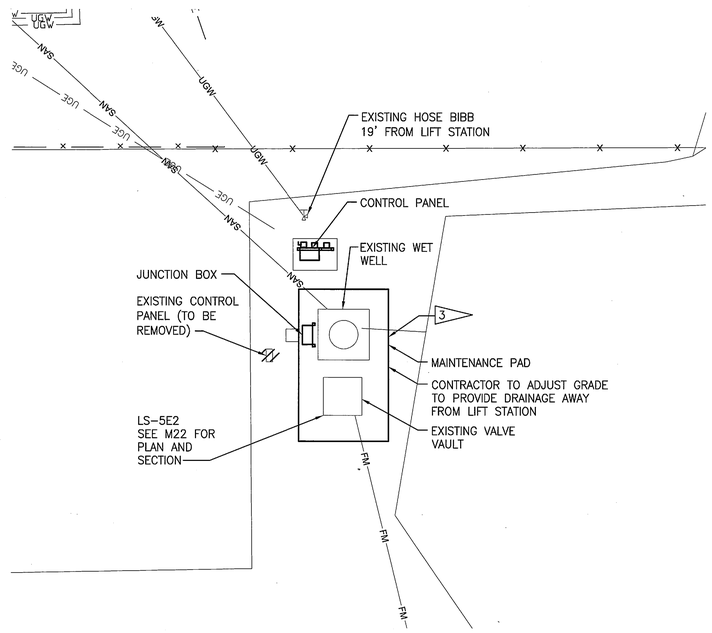
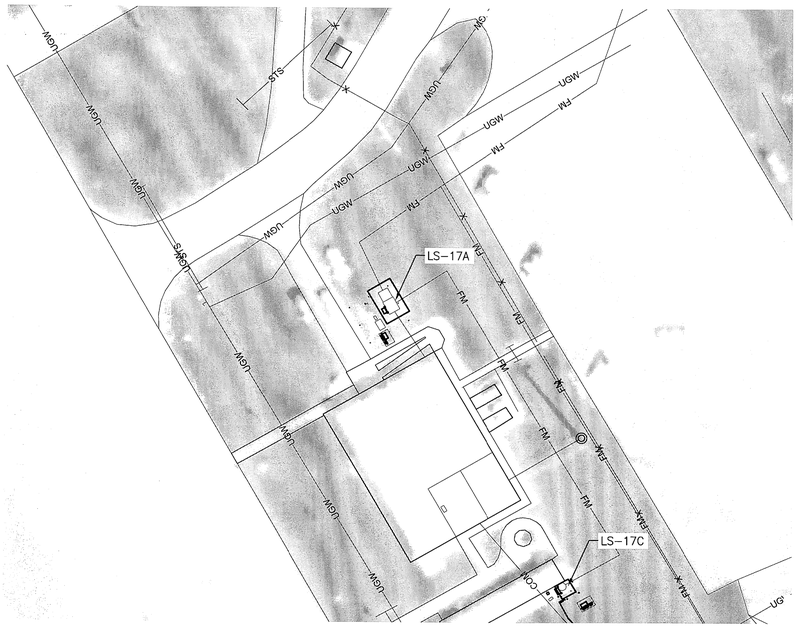
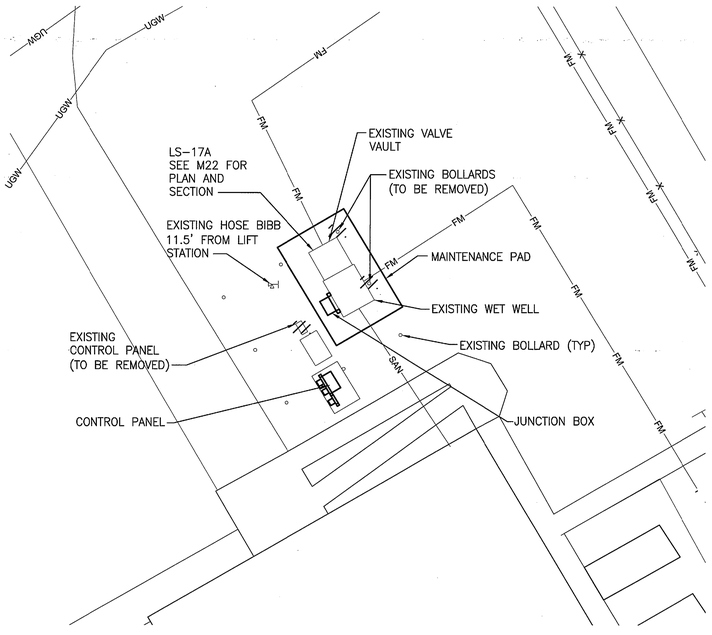
## LIFT STATION 5E2 PLAN
1" = 30'




## LIFT STATION 5E2 PLAN
1" = 10'




## LIFT STATION 17A PLAN
1" = 30'




## LIFT STATION 17A PLAN
1" = 10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

-N-

M19

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 10/31/11 |
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| SUBMITTED R. BEST | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 10/31/11 |
| K. MILLER | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
# LIFT STATIONS

## REHABILITATION LIFT STATIONS SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 31

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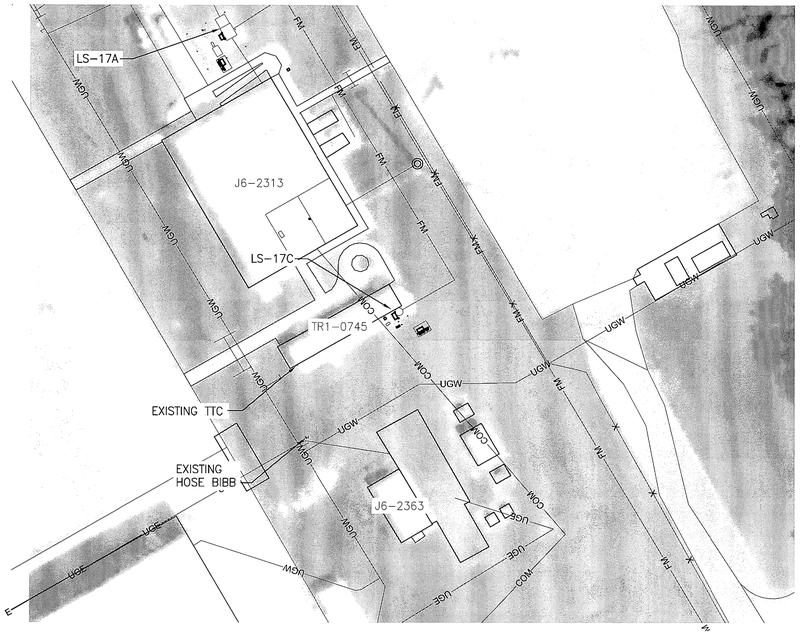
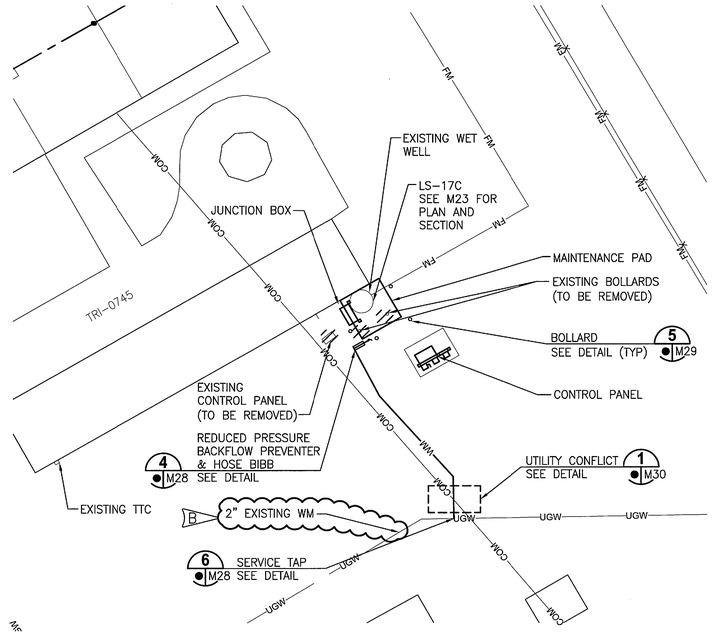
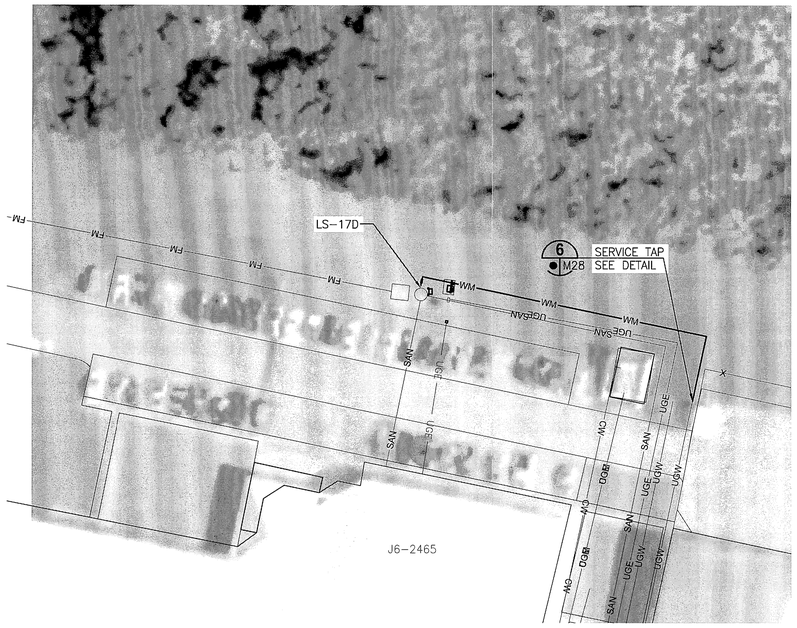


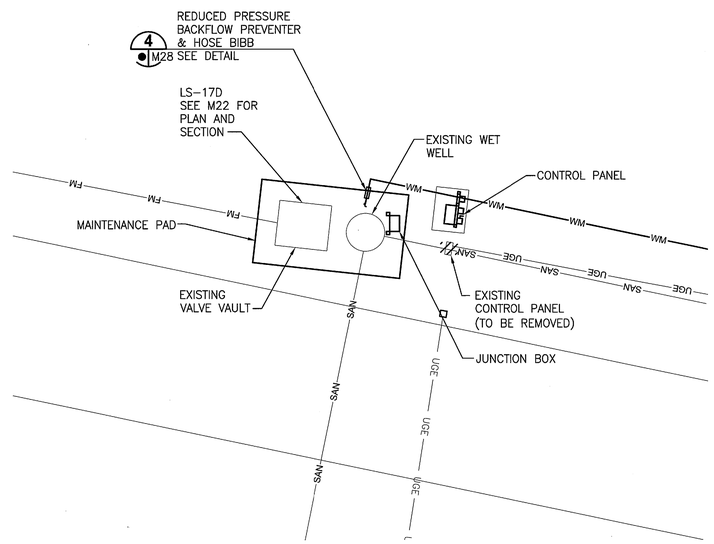

## LIFT STATION 17C PLAN
1" = 30'




## LIFT STATION 17C PLAN
1" = 10'




## LIFT STATION 17D PLAN
1" = 30'




## LIFT STATION 17D PLAN
1" = 10'

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | ADDED SERVICE TAP SIZE | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

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| APPROVED M. CLARK | |
| K. MILLER | |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## REHABILITATION LIFT STATIONS SITE PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 — SHEET 32

M20

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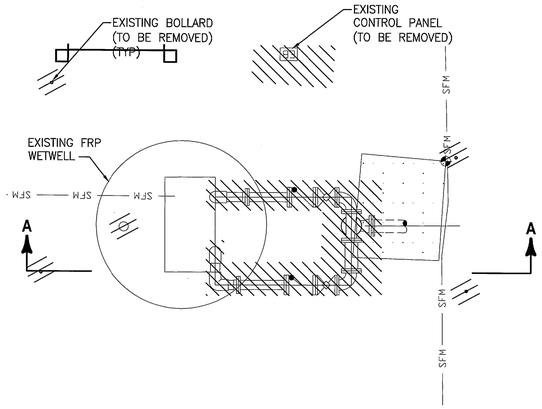
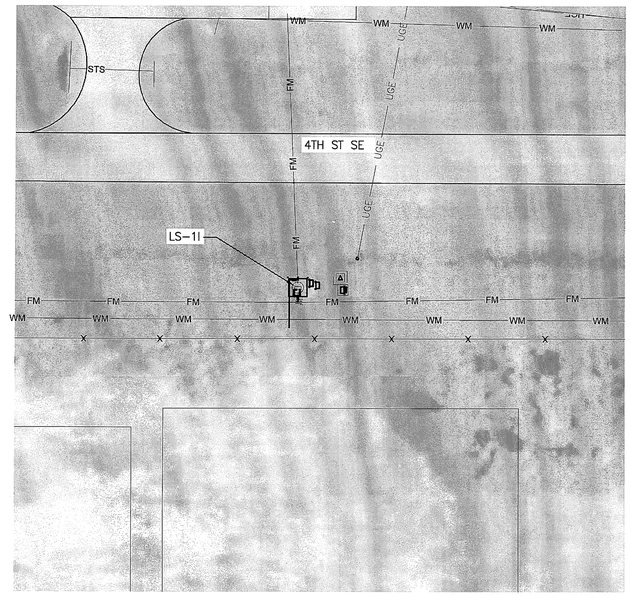
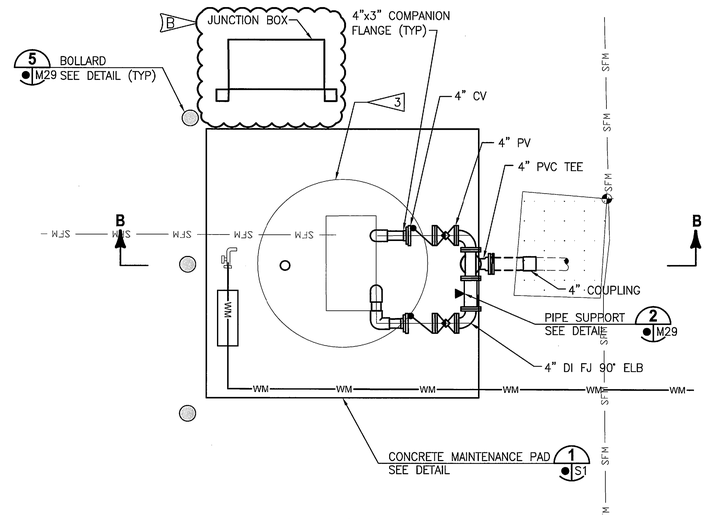



**PLAN**




## LIFT STATION 1I AREA PLAN

1" = 30'




**PLAN**

## PUMP STATION NOTES:

A. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES IN THE WETWELL AND PUMP DISCHARGE PIPING OUTSIDE OF THE WETWELL.

B. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELL.

C. PUMP PLACEMENT SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

D. CONTRACTOR SHALL VERIFY PUMP MANUFACTURER'S REQUIREMENTS FOR OPENING FOR ACCESS COVER FRAME. CONTRACTOR SHALL VERIFY PUMP DIMENSIONS FOR OPENING CLEARANCE.

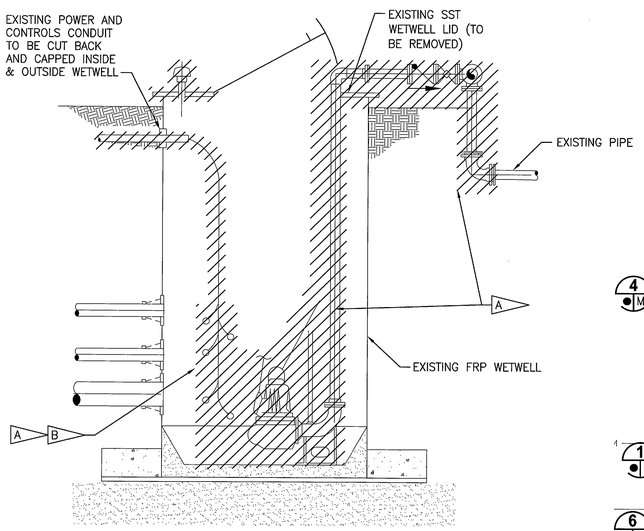
E. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL BE PAINTED PER SPECIFICATIONS.

F. PROVIDE SPARK-PROOF CONTACT BETWEEN PUMPS AND GUIDE RAIL SYSTEM.

G. SUSPEND FLOAT CABLES FROM 316 SS CABLE W/ EPOXY OR RUBBER COATED CAST IRON MUSHROOM ANCHOR OUT OF INFLUENT FLOW PATH. USE SS CLAMPS TO AFFIX FLOATS SECURELY TO ANCHOR. LOOP 316 SS CABLE THROUGH HOLES IN MUSHROOM ANCHOR TO ENSURE ANCHOR STAYS ATTACHED TO CABLE. USE ALL 316 SS FITTINGS AND HARDWARE (EXCEPT ANCHOR) FOR ASSEMBLY. ASSEMBLY NEEDS TO BE REACHABLE AND REMOVABLE FROM ACCESS COVER DOOR.

H. EACH ELECTRIC PUMP CABLE SHALL BE SUPPORTED FROM A SS CABLE RACK VIA A SS KELLUMS CABLE GRIP (OR APPROVED EQUAL).

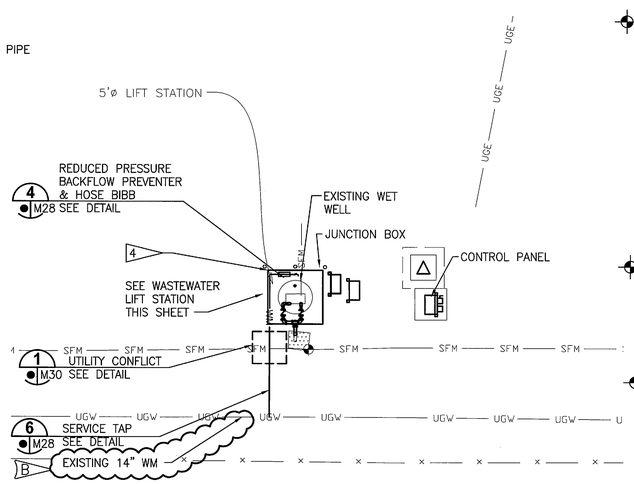
I. SEE LIFT STATION DATA TABLE ON M1 FOR WET WELL AND MAINTENANCE PAD DIMENSIONS.




**SECTION A-A**

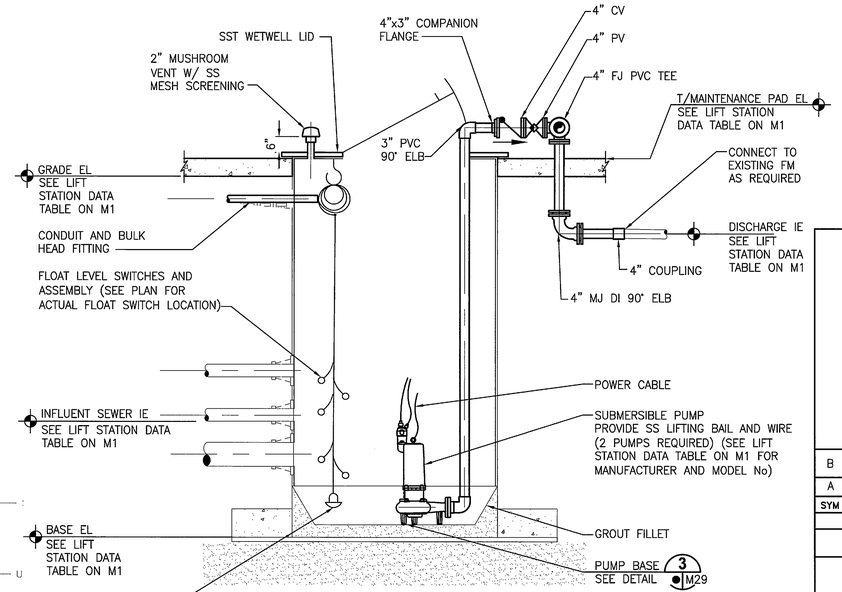
## EXISTING WASTEWATER LIFT STATION 1I DETAIL

NTS




## LIFT STATION 1I SITE PLAN

1" = 10'




**SECTION B-B**

## REHABILITATED WASTEWATER LIFT STATION 1I DETAIL

NTS

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

M21

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 12/05/11 | |

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| APPROVED M. CLARK | |
| K. MILLER | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**LIFT STATION 1I PLAN AND DETAILS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

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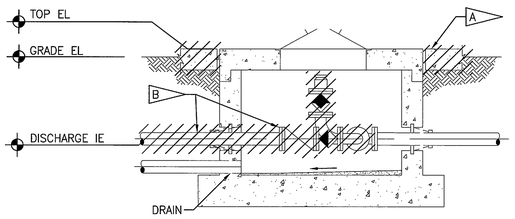
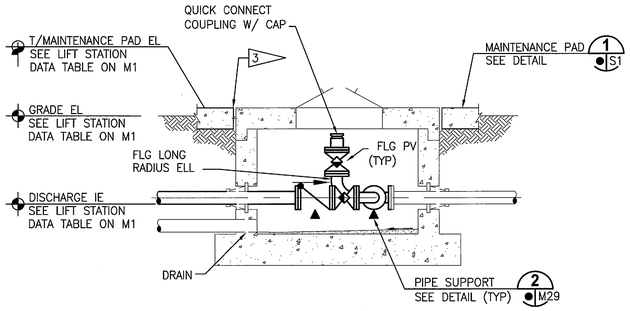
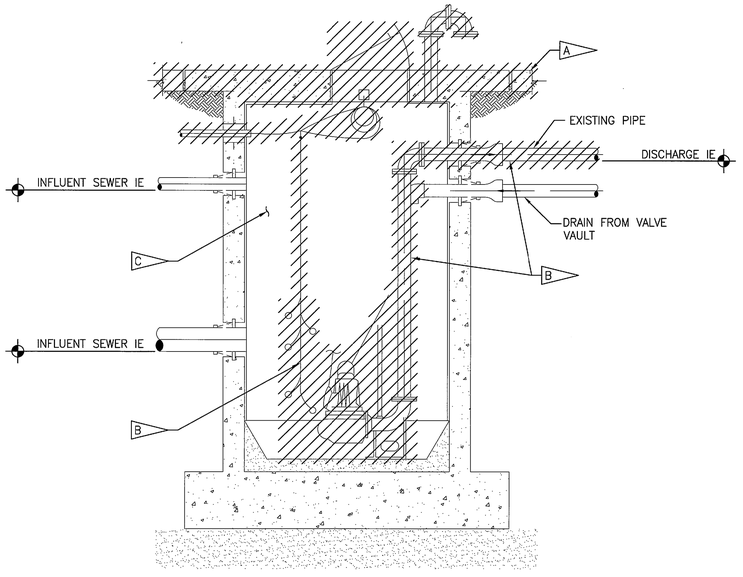


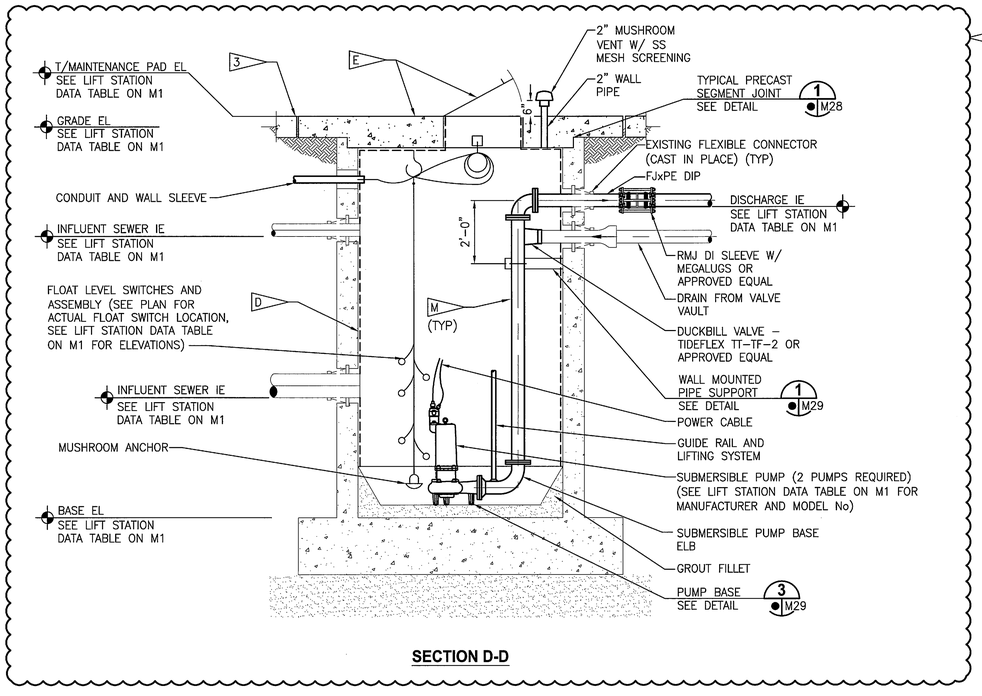

**SECTION A-A**




**SECTION C-C**




**SECTION B-B**




**SECTION D-D**

## PUMP STATION NOTES:

A. REMOVE AND DISPOSE OF EXISTING PRECAST WETWELL LID AND EXISTING MAINTENANCE PAD.

B. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES IN THE WETWELL; INDICATED PIPING VALVES, AND PIPE SUPPORTS IN THE VALVE VAULT; AND PUMP DISCHARGE PIPING BETWEEN WETWELL AND VALVE VAULT.

C. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELL.

D. CLEAN INSIDE WETWELL AND LID AND INSTALL PROTECTIVE LINER PER SPECIFICATION SECTION 09 97 24

E. PROVIDE AND INSTALL PRECAST REPLACEMENT WETWELL LID. ACCESS HATCH OPENING SHALL BE SIZED AND LOCATED AS RECOMMENDED BY THE PUMP MANUFACTURER. CONTRACTOR SHALL VERIFY PUMP MANUFACTURER'S REQUIREMENTS FOR OPENING FOR ACCESS COVER FRAME. CONTRACTOR SHALL VERIFY PUMP DIMENSIONS FOR OPENING CLEARANCE.

F. NO MAINTENANCE PAD IS REQUIRED FOR LS–4F, LS–4L, AND LS–1N.

G. PUMP PLACEMENT SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

H. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL BE PAINTED PER SPECIFICATIONS.

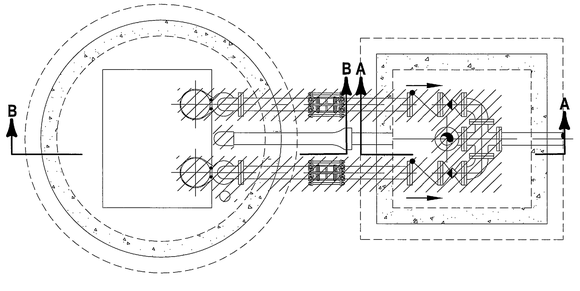
I. PROVIDE SPARK–PROOF CONTACT BETWEEN PUMPS AND GUIDE RAIL SYSTEM.

J. SUSPEND FLOAT CABLES FROM 316 SS CABLE W/ EPOXY OR RUBBER COATED CAST IRON MUSHROOM ANCHOR OUT OF INFLUENT FLOW PATH. USE SS CLAMPS TO AFFIX FLOATS SECURELY TO ANCHOR. LOOP 316 SS CABLE THROUGH HOLES IN MUSHROOM ANCHOR TO ENSURE ANCHOR STAYS ATTACHED TO CABLE. USE ALL 316 SS FITTINGS AND HARDWARE (EXCEPT ANCHOR) FOR ASSEMBLY. ASSEMBLY NEEDS TO BE REACHABLE AND REMOVABLE FROM ACCESS COVER DOOR.

K. EACH ELECTRIC PUMP CABLE SHALL BE SUPPORTED FROM A SS CABLE RACK VIA A SS KELLUMS CABLE GRIP (OR APPROVED EQUAL).

L. SEE LIFT STATION DATA TABLE ON M1 FOR WET WELL, VALVE VAULT AND MAINTENANCE PAD DIMENSIONS.

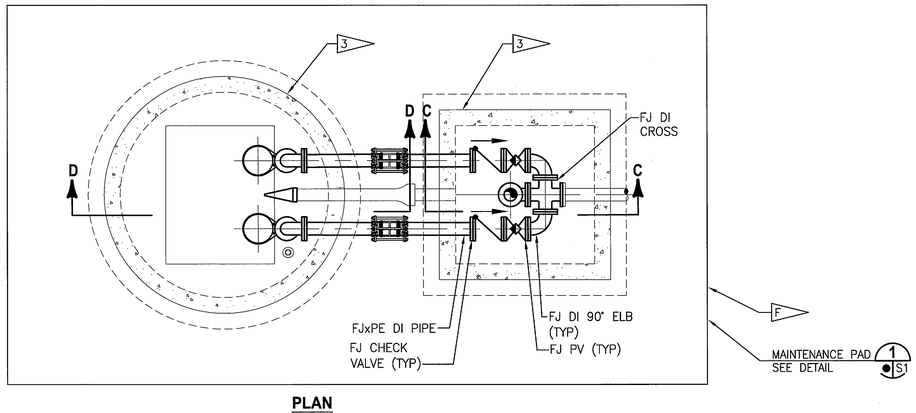
B M. PIPING AND FIXTURE SIZES SAME AS DISCHARGE SIZE IN LIFT STATION DATA TABLE ON M1.




**PLAN**

## EXISTING WASTEWATER LIFT STATION DETAIL

NTS




**PLAN**

## REHABILITATED WASTEWATER LIFT STATION DETAIL

NTS

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**REHABILITATE LIFT STATION DETAILS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

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M22

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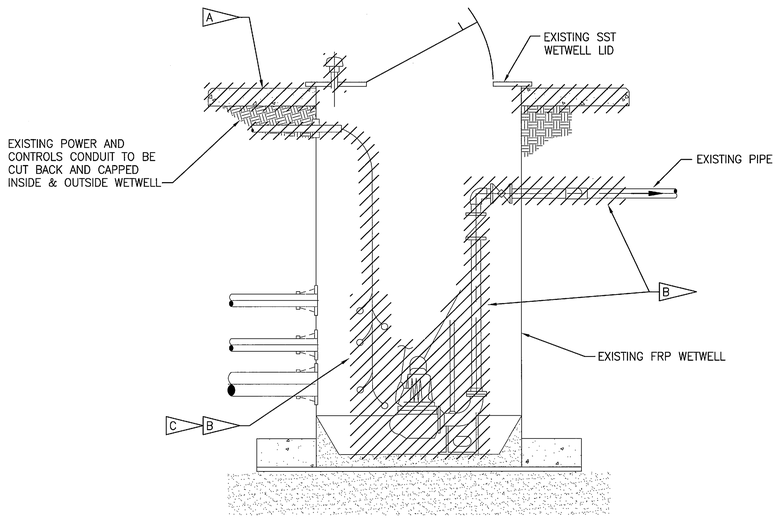
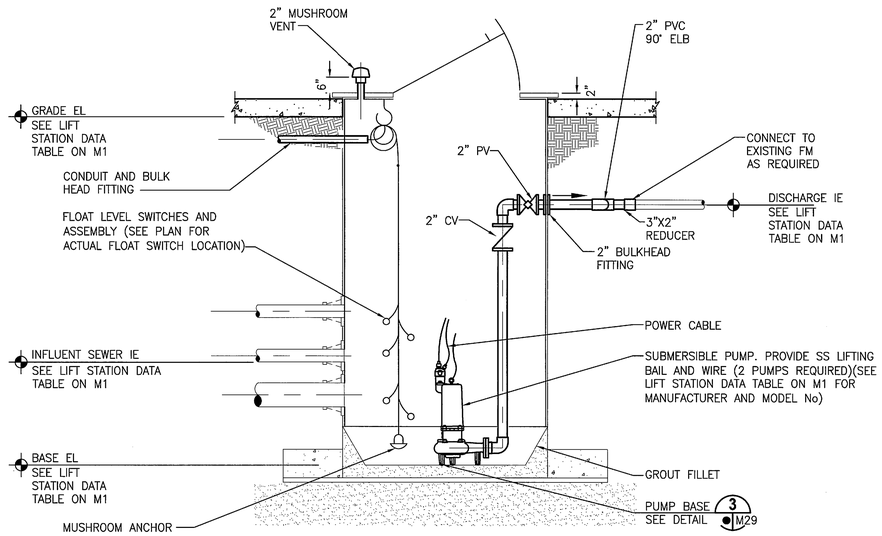



**SECTION A-A**




**SECTION B-B**

## PUMP STATION NOTES:

A. REMOVE AND DISPOSE OF EXISTING MAINTENANCE PAD, WHERE APPLICABLE.

B. REMOVE AND DISPOSE OF ALL PIPING, EQUIPMENT, FLOATS, CABLES IN THE WETWELL AND PUMP DISCHARGE PIPING OUTSIDE OF THE WETWELL.

C. REMOVE AND DISPOSE OF ALL LIQUIDS AND SOLIDS IN EXISTING WETWELL.

D. PUMP PLACEMENT SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

E. CONTRACTOR SHALL VERIFY PUMP MANUFACTURER'S REQUIREMENTS FOR OPENING FOR ACCESS COVER FRAME. CONTRACTOR SHALL VERIFY PUMP DIMENSIONS FOR OPENING CLEARANCE.

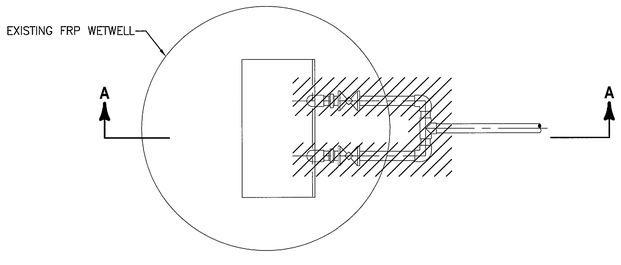
F. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL BE PAINTED PER SPECIFICATIONS.

G. PROVIDE SPARK-PROOF CONTACT BETWEEN PUMPS AND GUIDE RAIL SYSTEM.

H. SUSPEND FLOAT CABLES FROM 316 SS CABLE W/ EPOXY OR RUBBER COATED CAST IRON MUSHROOM ANCHOR OUT OF INFLUENT FLOW PATH. USE SS CLAMPS TO AFFIX FLOATS SECURELY TO ANCHOR. LOOP 316 SS CABLE THROUGH HOLES IN MUSHROOM ANCHOR TO ENSURE ANCHOR STAYS ATTACHED TO CABLE. USE ALL 316 SS FITTINGS AND HARDWARE (EXCEPT ANCHOR) FOR ASSEMBLY. ASSEMBLY NEEDS TO BE REACHABLE AND REMOVABLE FROM ACCESS COVER DOOR.

I. EACH ELECTRIC PUMP CABLE SHALL BE SUPPORTED FROM A SS CABLE RACK VIA A SS KELLUMS CABLE GRIP (OR APPROVED EQUAL).

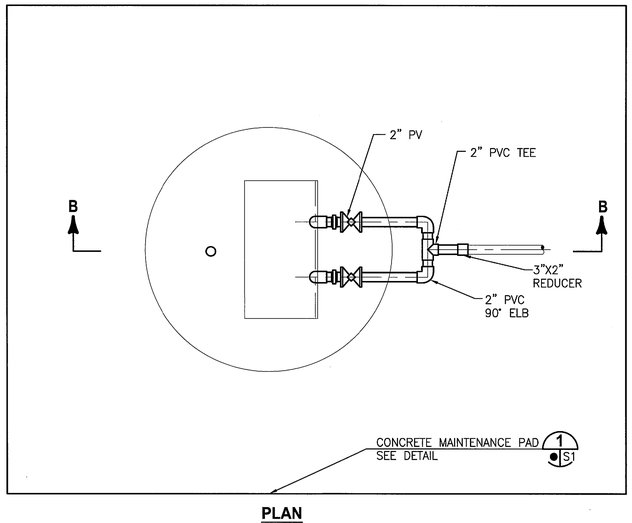
J. SEE LIFT STATION DATA TABLE ON M1 FOR WET WELL AND MAINTENANCE PAD DIMENSIONS.




**PLAN**

## EXISTING FIBERGLASS WASTEWATER LIFT STATION DETAIL

NTS




**PLAN**

## REHABILITATED FIBERGLASS WASTEWATER LIFT STATION DETAIL

NTS

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED SECTION | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

REHABILITATE LIFT STATION DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
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M23

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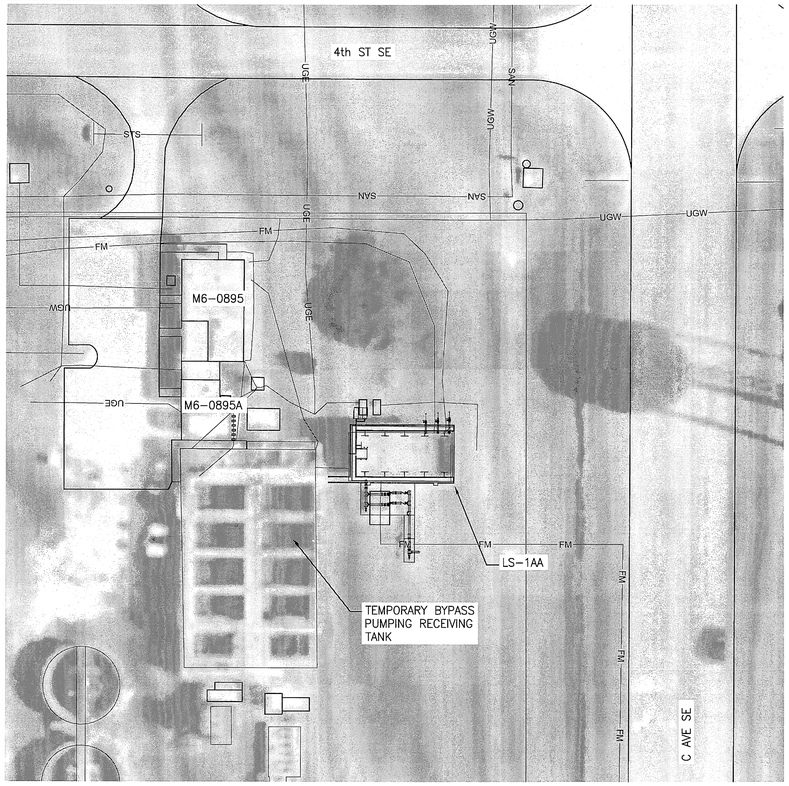
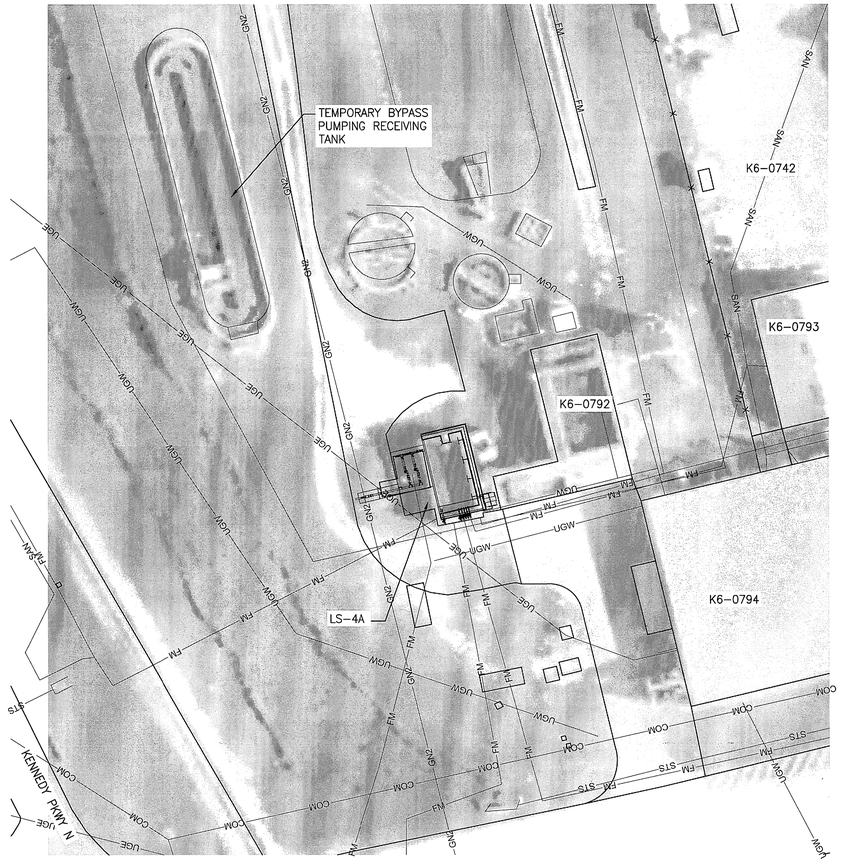



## LIFT STATION 1AA SITE LOCATION PLAN
1"=30'




## LIFT STATION 4A SITE LOCATION PLAN
1"=30'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

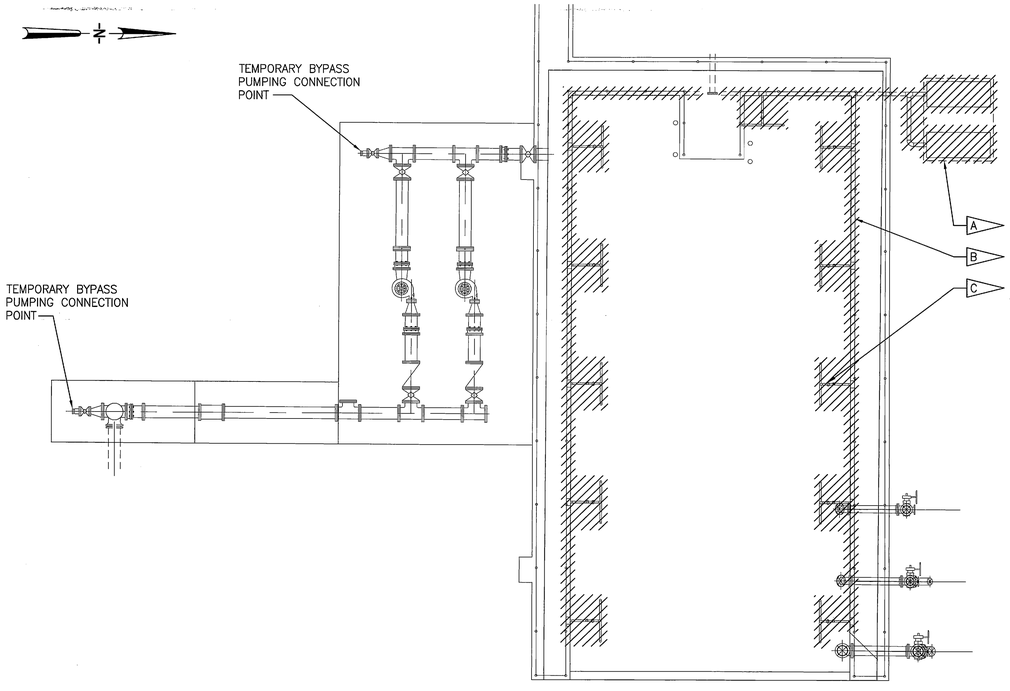
-N-

### PUMP STATION NOTES

A. DEMOLISH EXISTING BLOWERS.

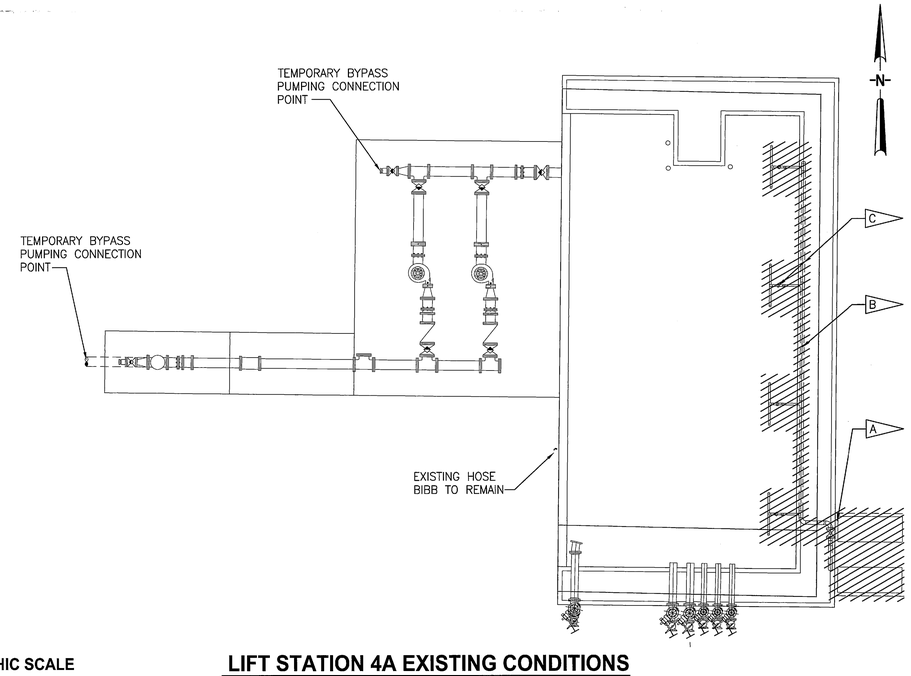
B. DEMOLISH EXISTING AIR HEADERS. THE CONTRACTOR SHALL FIELD VERIFY MAKE AND MODEL INFORMATION FOR IN KIND REPLACEMENT PRIOR TO DEMOLITION AND SUBMIT THAT INFORMATION IN THE LIFT STATION SUBMITTALS.

C. DEMOLISH EXISTING DIFFUSERS. THE CONTRACTOR SHALL FIELD VERIFY MAKE AND MODEL INFORMATION FOR IN KIND REPLACEMENT PRIOR TO DEMOLITION AND SUBMIT THAT INFORMATION IN THE LIFT STATION SUBMITTALS.




## LIFT STATION 1AA EXISTING CONDITIONS AND DEMOLITION PLAN
1"=5'

GRAPHIC SCALE
0 2.5 5 10
SCALE IN FEET
1"=5'




## LIFT STATION 4A EXISTING CONDITIONS AND DEMOLITION PLAN
1"=5'

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| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| CHECKED M. CLARK | 10/31/11 |
| SUBMITTED R. BEST | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | 10/31/11 |
| K. MILLER | 11/1/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATIONS 1AA AND 4A EXISTING CONDITIONS AND DEMOLITION PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 36 | |

M24

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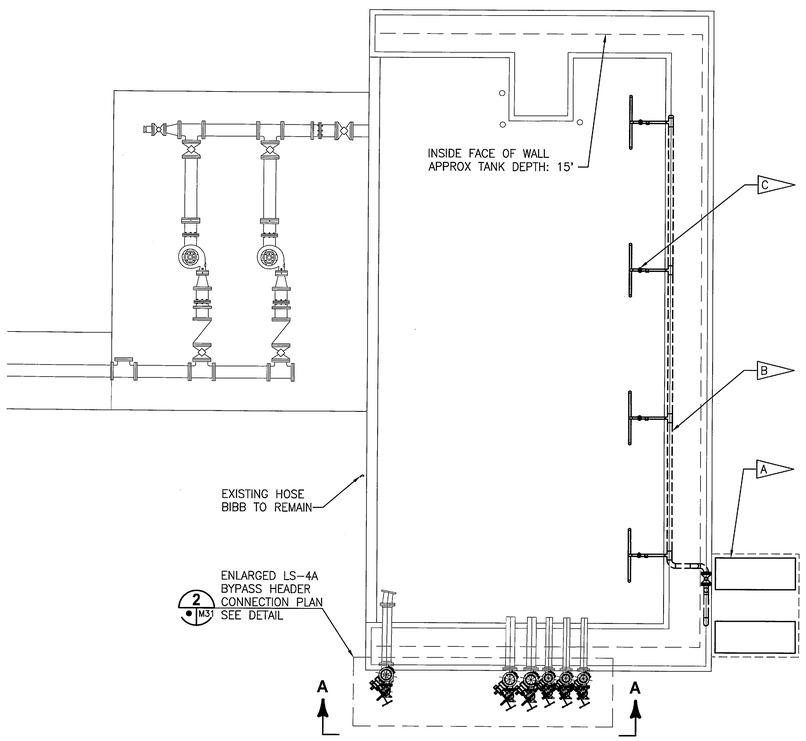
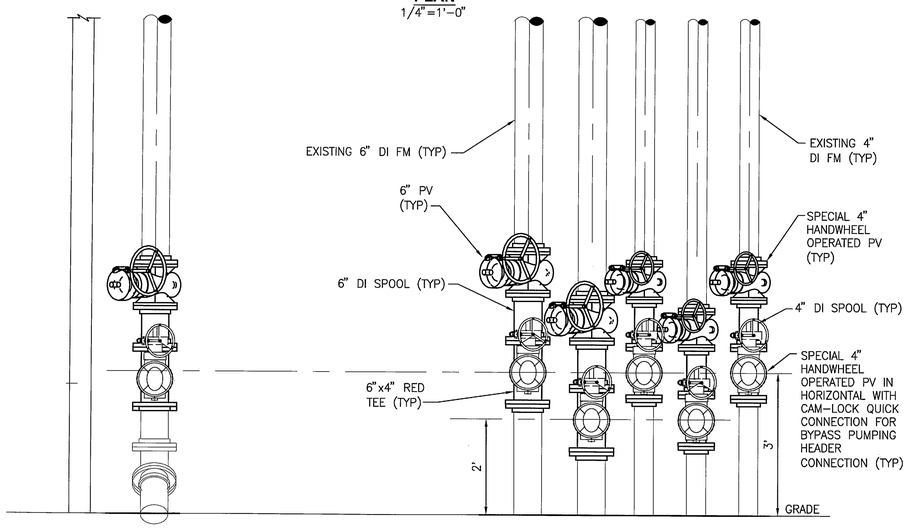


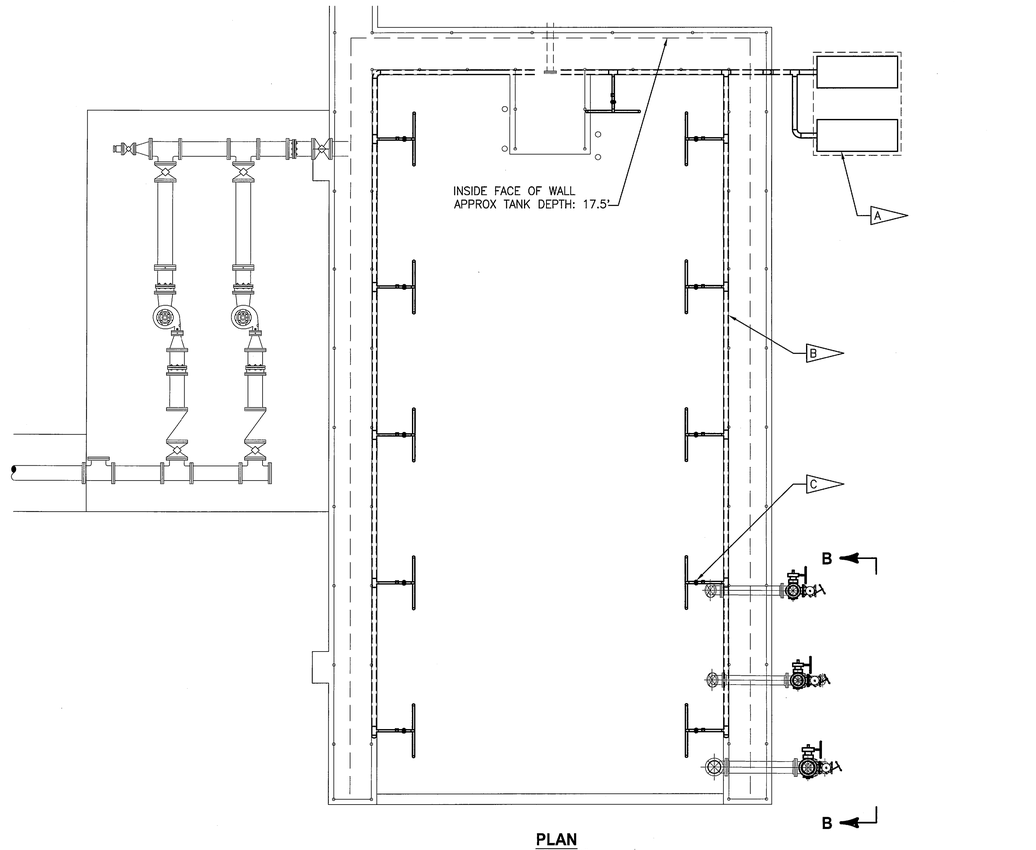

**PLAN**
1/4"=1'-0"



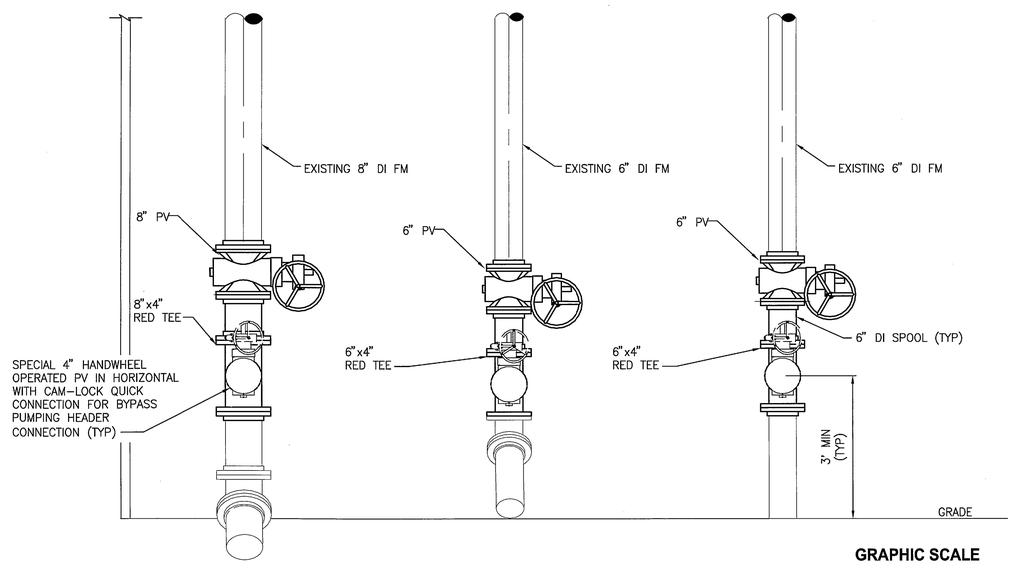

NOTE:
1. CONTRACTOR TO STAGGER VALVE SPACING AND ROTATE VALVES AS REQUIRED TO ALLOW ACCESS TO OPERATORS.

**SECTION A-A**
3/4"=1'-0"

## LIFT STATION 4A MODIFICATIONS DETAIL




**PLAN**
1/4"=1'-0"




**SECTION B-B**
3/4"=1'-0"

## LIFT STATION 1AA MODIFICATIONS DETAIL

**GRAPHIC SCALE**
0 1 2 4 8
SCALE IN FEET
1/4"=1'0

**GRAPHIC SCALE**
0 0.5 1 2
SCALE IN FEET
3/4"=1'0

## PUMP STATION NOTES

A. REPLACE BLOWERS WITH 2 SUTORBILT LEGENDQ MODEL 4MQ BLOWER PACKAGE OR APPROVED EQUAL WITH 15HP MOTORS. SEE SPECIFICATIONS SECTION 11 37 80 AND DETAIL 7/M2

B. REPLACE AIR HEADERS AND ASSOCIATED APPURTENANCES IN-KIND.

C. REPLACE DIFFUSERS AND ASSOCIATED APPURTENANCES IN-KIND.

D. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH, AND FOR FULLY OPERATING TEMPORARY BYPASS PUMPING SETUP WHICH BYPASS PUMPS WASTEWATER AROUND THE LIFT STATION. CONTRACTOR IS RESPONSIBLE FOR ALL DISPOSAL FEES ASSOCIATED FOR WASTE TO BE HAULED OFF SITE. WASTE IS NOT ALLOWED TO BE DISPOSED OF OR TREATED ON SITE. CONTRACTOR IS RESPONSIBLE FOR, BUT NOT LIMITED TO, THE HOOK UP OF THE BYPASS PUMPING OPERATION; ANY AND ALL REPAIR REQUIRED OF THE BYPASS PUMPING OPERATION; FURBISHING, OPERATING, AND MAINTENANCE OF ALL REQUIRED TEMPORARY EQUIPMENT (I.E., HOLDING TANKS, PRIMARY AND REDUNDANT SERVICE/BACKUP PUMPS, ETC.); PROVIDING A SYSTEM OPERATOR; TEMPORARY INFLUENT HEADER; PUMP AND WASTEWATER LEVEL ALARMS; THE CONNECTION OF THE BYPASS PUMPING SYSTEM TO THE LOCAL UTILITIES' TELEMETRY SYSTEM; ETC.

E. THE CONTRACTOR SHALL DEVELOP AND SUBMIT A CONSTRUCTION PHASING PLAN FOR APPROVAL ALONG WITH THE LIFT STATION SUBMITTALS. AT A MINIMUM, THE PHASING PLAN SHALL INCLUDE THE REQUIREMENTS PRESENTED IN THE CONTRACT DOCUMENTS, A BY-PASS PUMPING PLAN, DESCRIPTIONS OF DEMOLITION WORK, DESCRIPTION OF PROPOSED WORK, AND PROVIDE A DETAILED SCHEDULE. PRESENT PLANNED START AND FINISH DATE FOR EACH ACTIVITY.

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL REMOVED ITEMS. HOWEVER, THE GOVERNMENT RETAINS SALVAGE RIGHTS TO ALL ITEMS. THE CONTRACTOR SHALL COORDINATE WITH THE CO TO DETERMINE IF ANY ITEMS ARE TO BE SALVAGED.

G. CLEAN INSIDE WETWELL AND INSTALL PROTECTIVE LINER PER SPECIFICATION SECTION 09 97 24.

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | KMR |

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| K. MILLER | 12/5/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**LIFT STATIONS 1AA AND 4A DETAILS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

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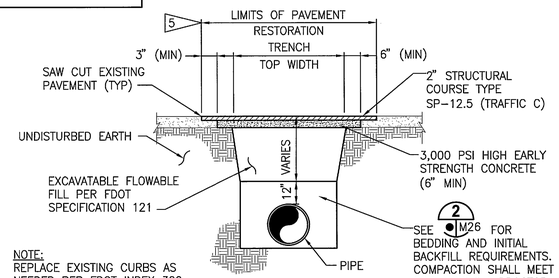
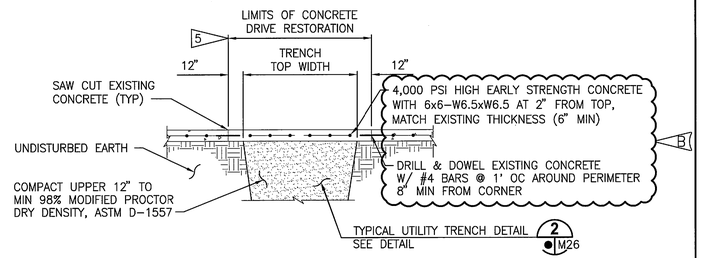



NOTE:
REPLACE EXISTING CURBS AS NEEDED PER FDOT INDEX 300.

## ASPHALT PAVEMENT RESTORATION DETAIL 1 M26

NTS




NOTES:

A. DRILL AND DOWEL 1 LOCATION EACH SIDE FOR CURB REPAIR.

B. MATCH EXISTING GRADE AND FINISH.

C. REPLACE EXISTING CURBS AS NEEDED PER FDOT INDEX 300.

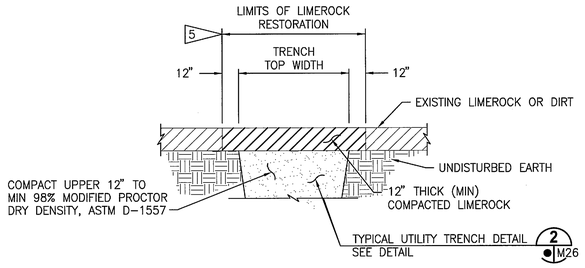
D. WATER TO CEMENT RATIO SHALL NOT EXCEED 0.45

E. PLACE CONTRACTION JOINTS @12' OC (MAX)

F. CONCRETE SHALL BE CURED MOIST, BY SPRAYING OR FOGGING, FOR FIRST 48 HOURS (MIN)

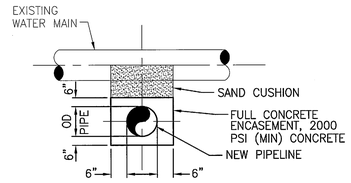
## CONCRETE RESTORATION DETAIL 3 M26

NTS

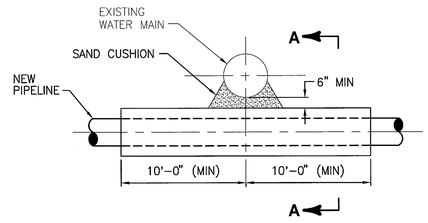



## LIMEROCK RESTORATION DETAIL 4 M26

NTS

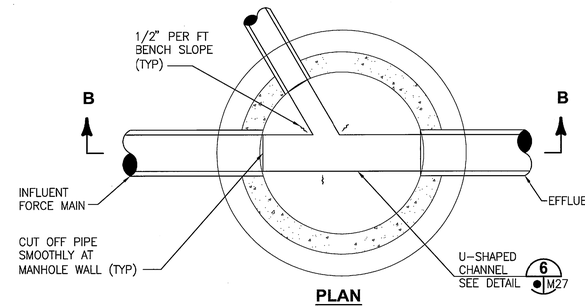



## SECTION A-A

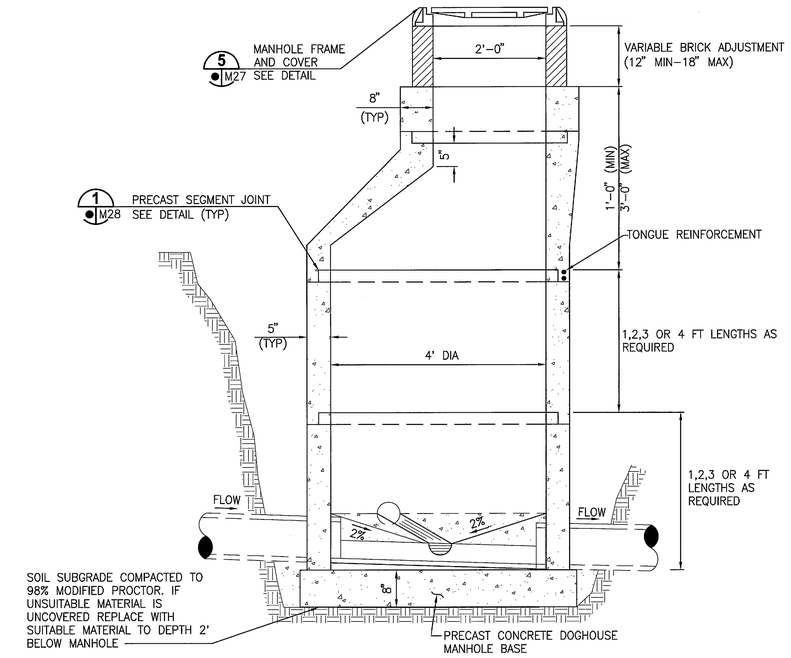



## CONCRETE ENCASEMENT DETAIL 5 M26

NTS




## PLAN




## SECTION B-B

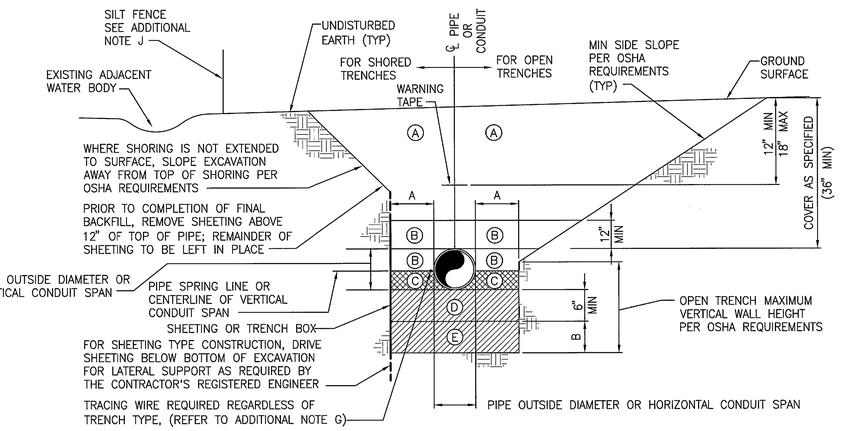
## PRECAST CONCRETE DOGHOUSE MANHOLE DETAIL 6 M26

NTS

NOTES:

A. FOR ALL MANHOLE TYPES, IF BASE RESTS IN CLAY SOILS, EXCAVATE AN ADDITIONAL 24", AND BACKFILL IN AND AROUND STRUCTURE "FULL DEPTH" WITH A-3 RATED MATERIAL. CONNECTIONS AND GROUTING IN MANHOLE NOT SHOWN.

B. FOR SEWER PIPE CONNECTIONS LOCATIONS AND INVERTS, SEE PIPE DRAWINGS FOR DETAILS REGARDING SEWER PIPE CONNECTIONS TO MANHOLE, SEE TYPICAL INFLUENT, EFFLUENT AND FORCE MAIN CONNECTIONS DETAILS ON THIS SHEET.




| NOMINAL PIPE DIAMETER OR HORIZONTAL CONDUIT SPAN (INCHES) | MINIMUM SIDEWALL CLEARANCE | ADDITIONAL EXCAVATION DEPTH (1) |
|---|---|---|
| | A (INCHES) | B (INCHES) |
| LESS THAN 24 | 12 | 12 |
| 24 AND GREATER | 18 | 18 |

(1) REQUIRED WHERE UNSUITABLE MATERIAL IS ENCOUNTERED.

| ZONE NO. | ZONE NAME | MATERIAL | COMPACTION |
|---|---|---|---|
| A | FINAL BACKFILL | AS SPECIFIED | AT LEAST 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY ASTM D-1557 |
| B | INITIAL BACKFILL | | |
| C | HAUNCHING | | |
| D | BEDDING | | |
| E | FOUNDATION | | |

TRENCH ZONE NOTES:

A FINAL BACKFILL SHALL BE INSTALLED IN LIFTS NOT EXCEEDING 6 INCHES, LOOSE MEASUREMENT. REFER TO ADDITIONAL NOTE H.

B INITIAL BACKFILL SHALL BE INSTALLED IN LIFTS NOT EXCEEDING 6 INCHES, LOOSE MEASUREMENT. ALL LIFTS SHALL BE COMPACTED BY HAND TAMPING OR AN APPROVED METHOD OF MECHANICAL TAMPING. REFER TO ADDITIONAL NOTE H

C HAUNCHING SHALL BE IN COMPLETELY DEWATERED TRENCHES IN LIFTS NOT EXCEEDING 6 INCHES, LOOSE MEASUREMENT. ALL LIFTS SHALL BE COMPACTED BY HAND TAMPING. HAUNCHING SHALL BE BROUGHT UP EQUALLY ON BOTH SIDES OF THE PIPE.

D BEDDING SHALL BE INSTALLED IN COMPLETELY DEWATERED TRENCHES IN LIFTS NOT EXCEEDING 6 INCHES, LOOSE MEASUREMENT, AND SHALL BE COMPACTED BY HAND OR MECHANICAL TAMPING. PROPERLY SHAPED BELL HOLES SHALL BE EXCAVATED IN THE BEDDING TO PERMIT ASSEMBLY OF THE PIPE. REFER TO ADDITIONAL NOTE H

NATIVE, UNDISTURBED MATERIAL IN COMPLETELY DEWATERED TRENCHES MEETING THE COMPACTION AND MATERIAL REQUIREMENTS FOR COMPACTED BEDDING MATERIAL NEED NOT BE REPLACED OR REWORKED, EXCEPT FOR SHAPING OF THE BELL HOLES, AND WHERE REFILL IS REQUIRED.

E FOUNDATION SHALL BE REQUIRED WHERE UNSUITABLE MATERIAL IS ENCOUNTERED. FOUNDATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS FOR BEDDING. REFER TO ADDITIONAL NOTE H.

ADDITIONAL NOTES:

F. FOR TRENCHES IN VEHICULAR TRAFFIC AREAS OR BENEATH SURFACE IMPROVEMENTS (EG, SLAB, ETC.) SEE CONTRACT SPECIFICATIONS FOR ADDITIONAL COMPACTION REQUIREMENTS.

G. TRACING WIRE SHALL BE INSTALLED ON THE SIDE OF THE PIPE AND ATTACHED TO THE PIPE EVERY 10' W/ A NYLON WIRE TIE. IF THE WIRE IS DAMAGED OR NEEDS TO BE EXTENDED A 3M WATERPROOF TYPE UF SPLICE, OR APPROVED EQUAL, SHALL BE INSTALLED TO REPAIR THE WIRE. THE ENDS OF THE TRACING WIRE SHALL BE BROUGHT UP IN EVERY VALVE BOX ON THE LINE AND AT THE HYDRANT VALVES. THERE SHALL BE A MINIMUM COIL OF 3' LEFT UNDER THE VALVE BOX COVER. THE WIRE SHALL BE TESTED TO VERIFY CONDUCTIVITY.

H. ALTERNATIVE LIFT THICKNESSES, NOT EXCEEDING 12 INCHES LOOSE MEASUREMENT, ARE ACCEPTABLE IN TRENCH ZONES 1, 2, 4, AND 5 PROVIDED 1) THE LIFT THICKNESS DOES NOT EXCEED THE MAXIMUM VALUE RECOMMENDED IN WRITING BY THE APPLICABLE PIPE MANUFACTURER AND 2) FIELD TEST RESULTS CONFIRM THAT THE SPECIFIED COMPACTION REQUIREMENTS ARE BEING MET.

J. CONSTRUCT STORMWATER POLLUTION PREVENTION ITEMS ADJACENT TO ALL SOIL DISTURBANCES ACCORDING TO DETAILS ON EN3. PLACE ON DOWN SLOPE TO INTERCEPT SEDIMENT AND PROTECT NEARBY WATER BODIES AND UNDISTURBED AREAS. MAINTAIN STORMWATER POLLUTION PREVENTION ITEMS IN GOOD WORKING ORDER UNTIL ADEQUATE COVER MATERIALS ARE ESTABLISHED. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT. BUILT UP SEDIMENT WILL BE REMOVED FROM STAKED SILT FENCE AND STAKED TURBIDITY BARRIERS WHEN IT HAS REACHED ONE-HALF THE HEIGHT OF THE SILT FENCE OR BARRIER.

## TYPICAL UTILITY TRENCH DETAIL 2 M26

NTS

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL 3 | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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JONES EDMUNDS
CERTIFICATE OF AUTHORIZATION #1841
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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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KENNEDY SPACE CENTER, FLORIDA

REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

MECHANICAL DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 38

M26

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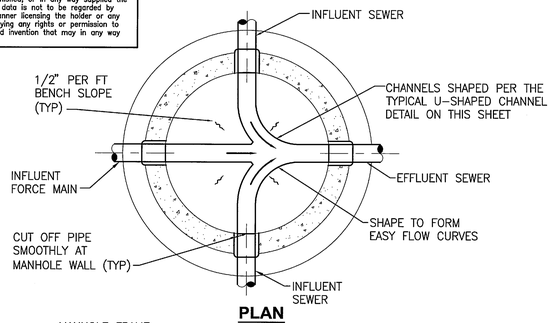
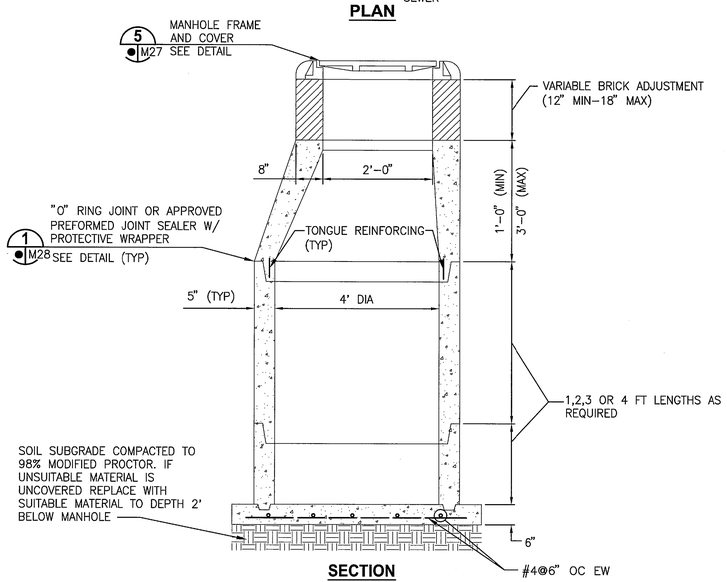



**PLAN**




**SECTION**

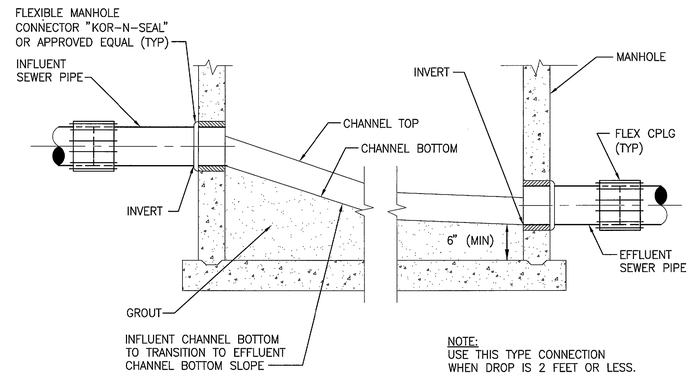
NOTES:

A. FOR ALL MANHOLE TYPES, IF BASE RESTS IN CLAY SOILS, EXCAVATE AN ADDITIONAL 24", AND BACKFILL IN AND AROUND STRUCTURE "FULL DEPTH" WITH A-3 RATED MATERIAL. CONNECTIONS AND GROUTING IN MANHOLE NOT SHOWN.

B. FOR SEWER PIPE CONNECTIONS LOCATIONS AND INVERTS, SEE PIPE DRAWINGS FOR DETAILS REGARDING SEWER PIPE CONNECTIONS TO MANHOLE, SEE TYPICAL INFLUENT, EFFLUENT AND FORCE MAIN CONNECTIONS DETAILS ON THIS SHEET.

## PRECAST CONCRETE MANHOLE DETAIL 1 M27

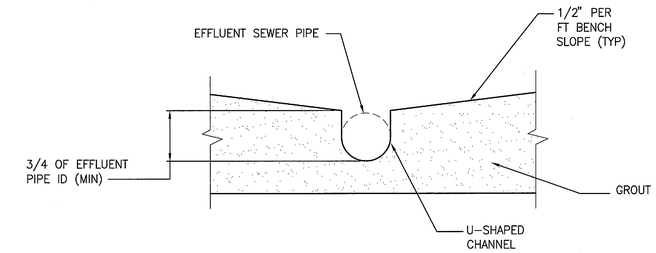
NTS




NOTE:
USE THIS TYPE CONNECTION WHEN DROP IS 2 FEET OR LESS.

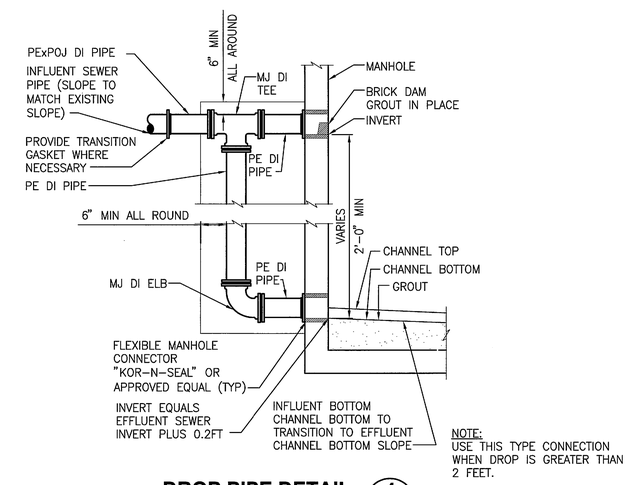
## TYPICAL GRAVITY CONNECTION TO MANHOLE DETAIL 3 M27

NTS




## TYPICAL U-SHAPED CHANNEL DETAIL 6 M27

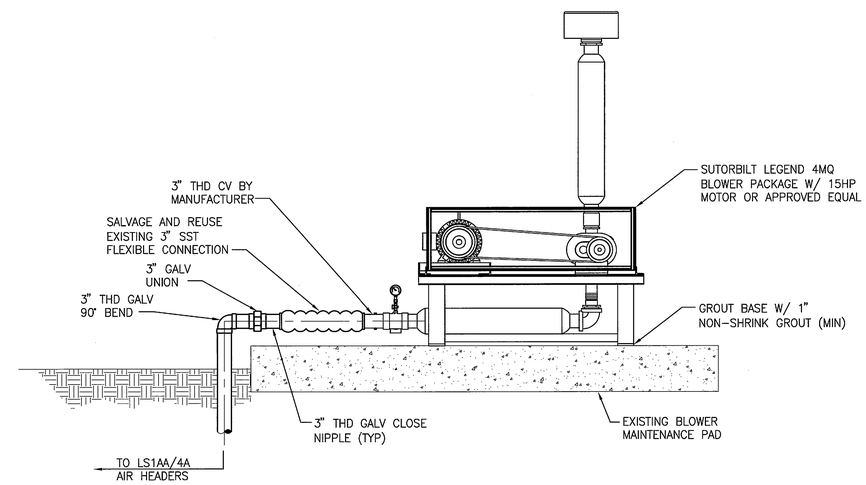
NTS




NOTE:
USE THIS TYPE CONNECTION WHEN DROP IS GREATER THAN 2 FEET.

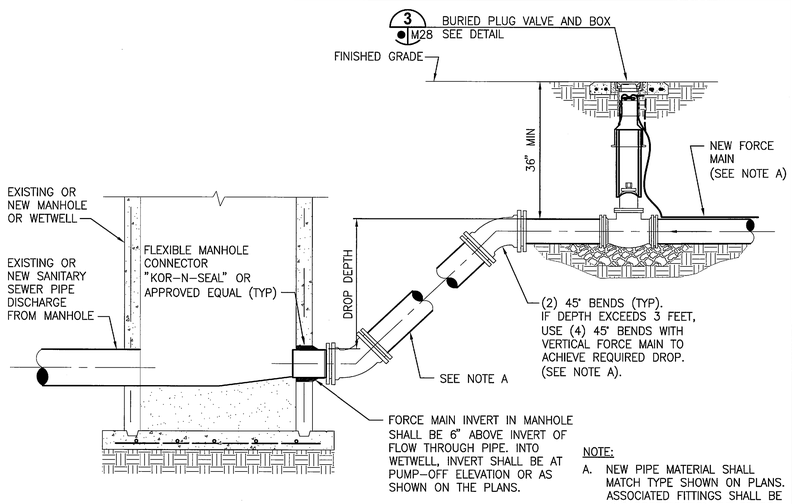
## DROP PIPE DETAIL 4 M27

NTS




## TYPICAL BLOWER ASSEMBLY DETAIL 7 M27

NTS

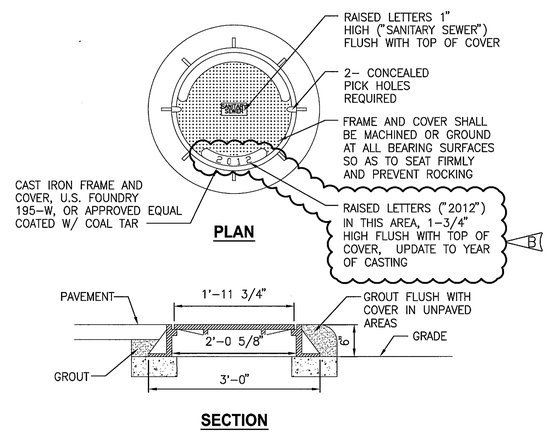



NOTE:

A. NEW PIPE MATERIAL SHALL MATCH TYPE SHOWN ON PLANS. ASSOCIATED FITTINGS SHALL BE PER SPECIFICATION 33 30 00 FOR RESPECTIVE PIPE MATERIAL.

## TYPICAL FORCE MAIN CONNECTION TO SANITARY MANHOLE OR WETWELL 2 M27

NTS




**PLAN**

**SECTION**

## MANHOLE FRAME AND COVER DETAIL 5 M27

NTS

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL 5 | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

MECHANICAL DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 SHEET 39

M27

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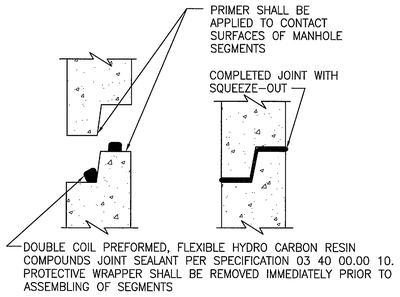
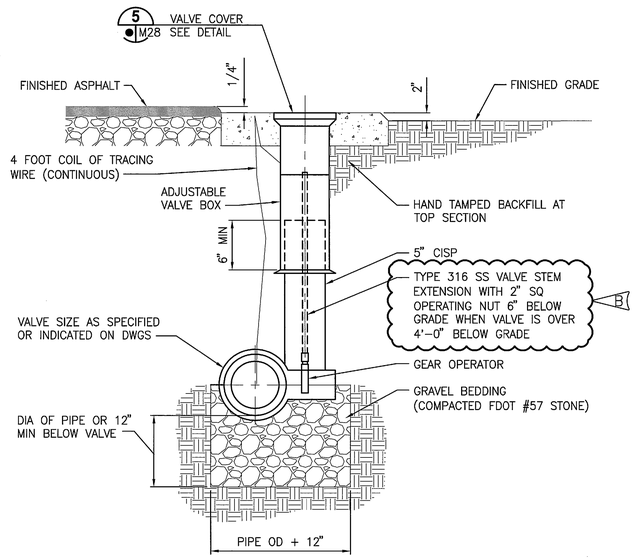


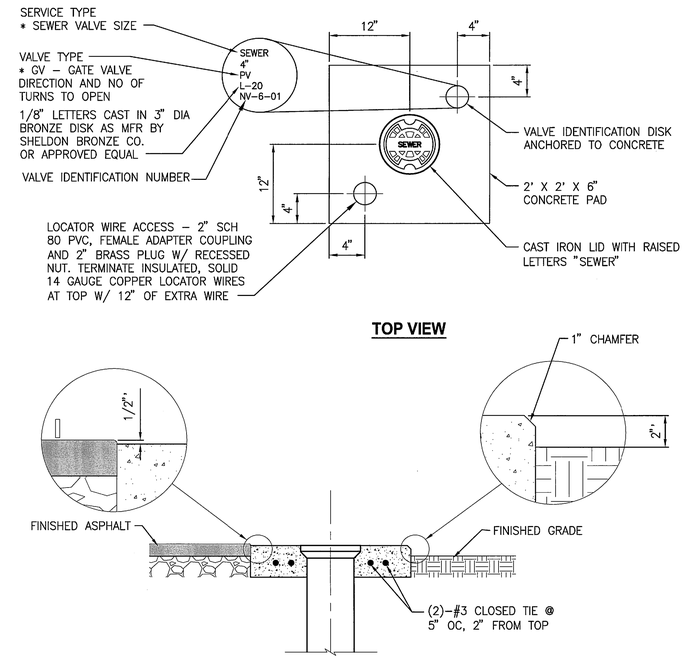

## TYPICAL PRECAST SEGMENT JOINT DETAIL W/ SEALANT (1 / M28)

NTS




## BURIED PLUG VALVE AND BOX DETAIL (3 / M28)

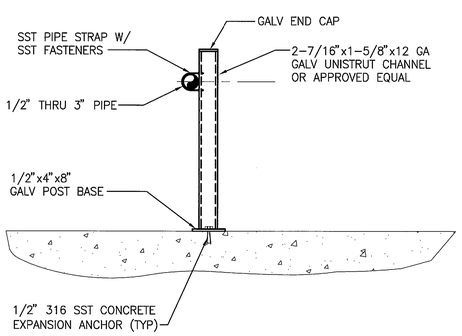
NTS




NOTE:
PROVIDE EMBOSSED SS TAG SECURED TO VALVE BODY W/ SS AIRCRAFT CABLE CONTAINING DUPLICATE INFORMATION SHOWN ON IDENTIFICATION DISC.

## VALVE COLLAR AND IDENTIFICATION DISK DETAIL (5 / M28)

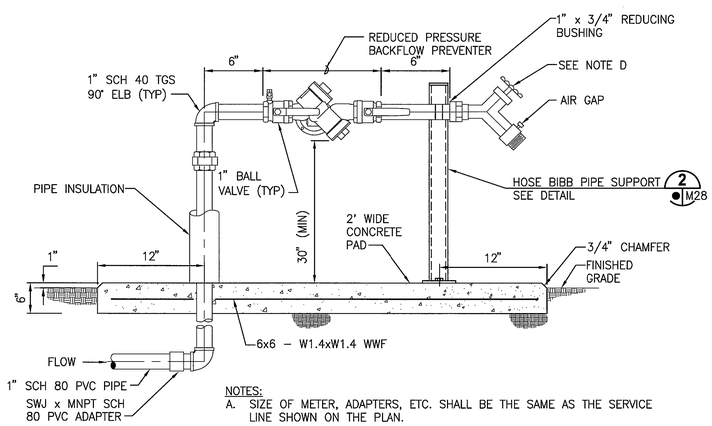
NTS




NOTES:
A. UNLESS NOTED OTHERWISE, SST COMPONENTS SHALL BE 300-SERIES SST.
B. PROVIDE NON-SHRINK GROUT BELOW BASE WHERE NECESSARY TO ACHIEVE LEVEL AND FULL BEARING SUPPORT.

## HOSE BIBB PIPE SUPPORT (2 / M28)

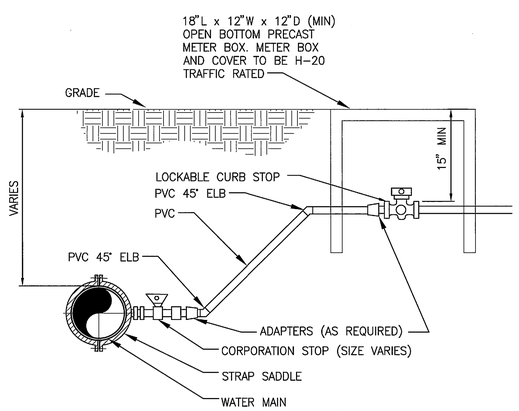
NTS




NOTES:
A. SIZE OF METER, ADAPTERS, ETC. SHALL BE THE SAME AS THE SERVICE LINE SHOWN ON THE PLAN.
B. INSULATE ABOVE GRADE PIPING AND BACKFLOW PREVENTER ASSEMBLY.
C. REFER TO SECTION 33 11 00 FOR REDUCED PRESSURE BACKFLOW PREVENTER SPECIFICATIONS.
D. 3/4" BRASS, ANGLE BODY HOSE BIBB. BODY FLANGE SHALL BE PROVIDED WITH INTERNAL PIPE THREAD TO SUIT 3/4" PIPE. BODY SHALL BE SUITABLE FOR WRENCH GRIP. HOSE BIBB SHALL HAVE 3/4" EXPOSED HOSE THREADS. HOSE BIBB HANDLE SHALL BE SECURELY ATTACHED TO STEM.

## REDUCED PRESSURE BACKFLOW PREVENTER & HOSE BIBB DETAIL (4 / M28)

NTS




## TYPICAL SERVICE TAP DETAIL (6 / M28)

NTS

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL 3 | 03/07/12 | |
| A | | GENERAL REVISIONS | 12/05/11 | |

REVISIONS

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| K. MILLER | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
MECHANICAL DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |
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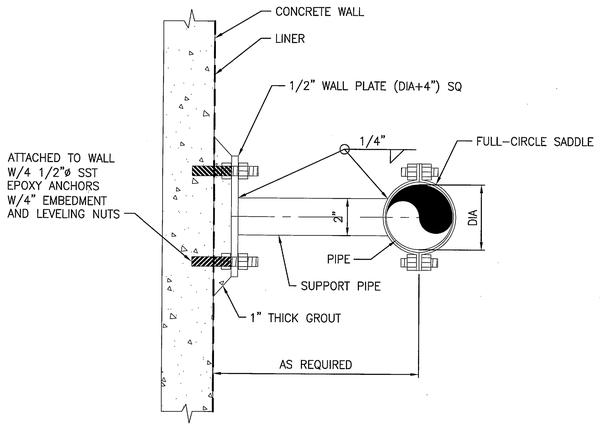
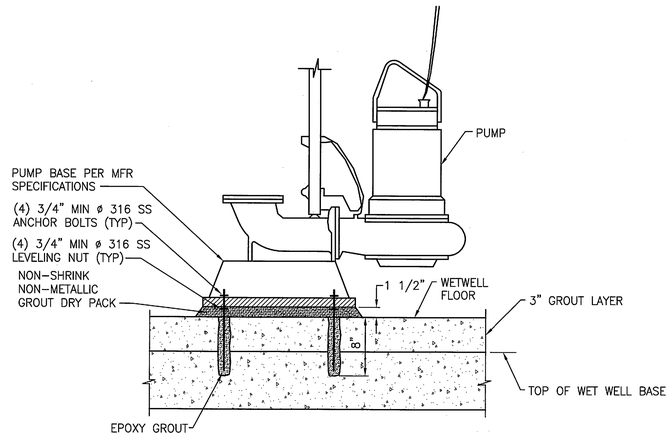
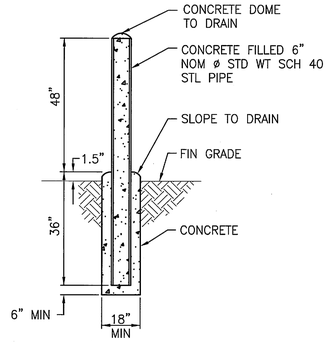



NOTES:
A. ALL HARDWARE, PLATE, SADDLE, ETC, SHALL BE 300 SERIES SST.
B. SUPPORT PIPE SHALL BE SCH 40 SST.

## WALL-MOUNTED PIPE SUPPORT (TOP VIEW) DETAIL 1 / M29
NTS

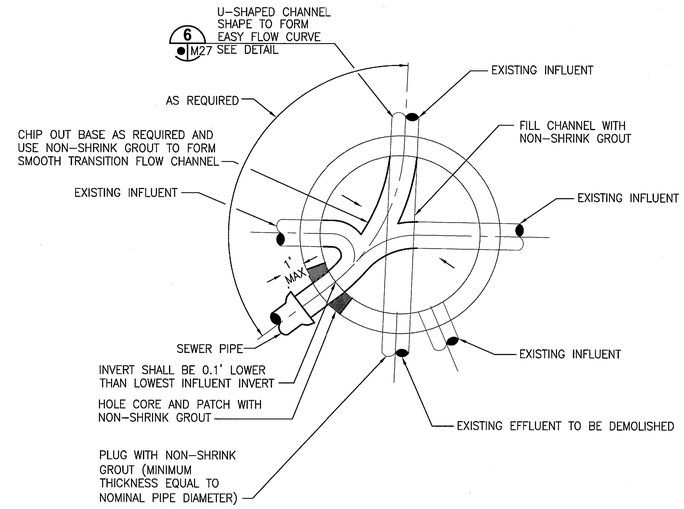



## PUMP BASE DETAIL 3 / M29
NTS

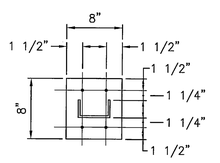



NOTES:
A. ACTUAL INSTALLATION LOCATION OF EACH BOLLARD SHALL BE AS SHOWN ON THE DRAWINGS OR AS DIRECTED IN THE FIELD. CENTER TO CENTER SPACING SHALL BE APPROXIMATELY 6', BUT NOT GREATER THAN 8'.
B. PAINT ALL PIPING MATERIALS OSHA SAFETY YELLOW.

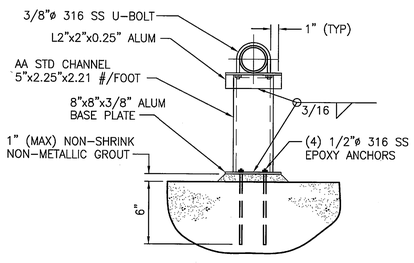
## BOLLARD DETAIL 5 / M29
NTS



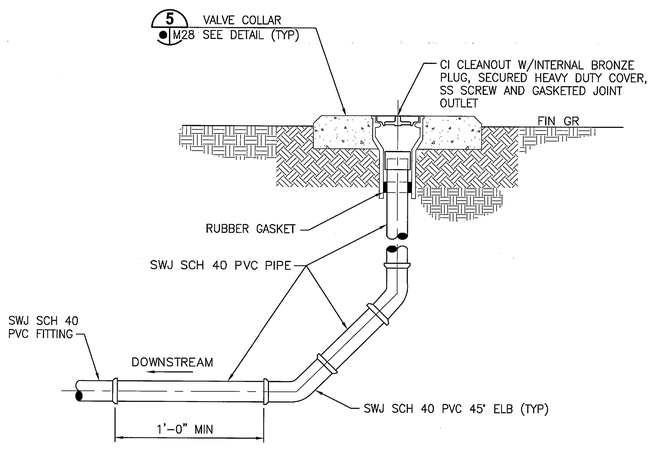

## MANHOLE MODIFICATION PLAN 7 / M29
NTS




## ALUMINUM BASE PLATE DETAIL




## PIPE SUPPORT DETAIL 2 / M29
NTS




## SECTION

NOTE:
SIZE OF PIPE, FITTINGS, CLEANOUT, ETC. SHALL BE AS REQUIRED FOR CONNECTION TO 4" WET WELL INFLUENT PIPING.

## GRAVITY SEWER CLEANOUT DETAIL 4 / M29
NTS

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KCM |

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| APPROVED M. CLARK | 10/31/11 |
| K. MILLER | 11/1/11 |

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JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
MECHANICAL DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 41 | |

M29

SC FORM 1-11 (3/76)(C/G 3/94)

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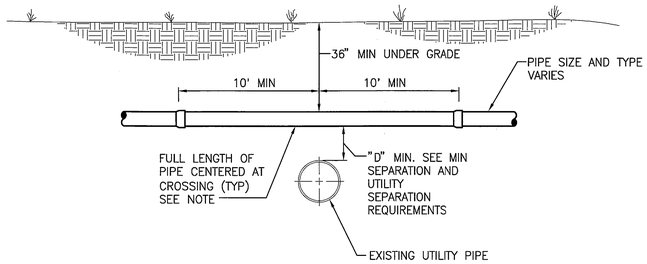
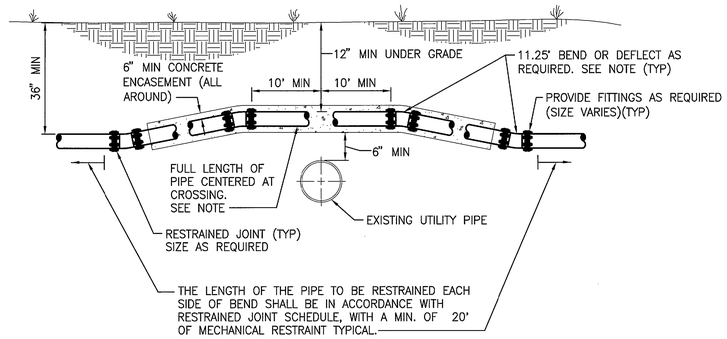
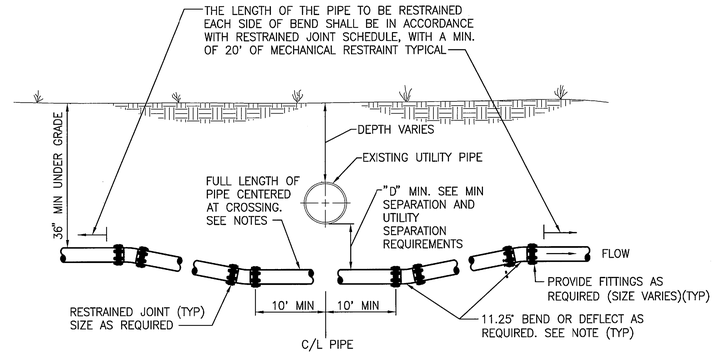



**CROSSING OVER UTILITIES**




NOTE: ENCASEMENT IS REQUIRED IF DEPTH FROM GRADE TO TOP OF PIPE IS LESS THAN 24 INCHES.

**CROSSING OVER UTILITIES (ENCASED)**




**CROSSING UNDER UTILITIES**

## UTILITY SEPARATION REQUIREMENTS

A. IT IS REQUIRED THAT "WATER MAINS" BE INSTALLED, CLEANED, DISINFECTED AND HAVE A SATISFACTORY BACTERIOLOGICAL SURVEY PERFORMED IN ACCORDANCE WITH THE LATEST APPLICABLE AWWA STANDARDS AND CHAPTER 62–555, F.A.C. STANDARDS. FOR THE PURPOSE OF THIS SECTION, THE PHRASE "WATER MAINS" SHALL MEAN MAINS, INCLUDING TREATMENT PLANT PROCESS PIPING, CONVEYING EITHER RAW, PARTIALLY TREATED, OR FINISHED DRINKING WATER; FIRE HYDRANT LEADS; AND SERVICE LINES THAT HAVE AN INSIDE DIAMETER OF THREE (3) INCHES OR GREATER. IN ADDITION, THE PHRASE "REGULATED PUBLIC ACCESS RECLAIMED WATER" REFERS TO THE WATER REGULATED UNDER PART III OF CHAPTER 62.210, F.A.C.

B. NEW, RELOCATED OR EXISTING UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE (3) FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING REGULATED PUBLIC ACCESS RECLAIMED WATER.

C. NEW OR RELOCATED, UNDERGROUND SEWER/WATER MAINS SHALL BE LOCATED TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX (6) FEET, AND PREFERABLY TEN (10) FEET, BETWEEN THE OUTSIDE OF THE SEWER/WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED WATER/GRAVITY OR PRESSURE–TYPE SANITARY SEWER, NON–REGULATED RECLAIMED WATER, OR WASTEWATER FORCE MAIN. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY–TYPE SANITARY SEWERS MAY BE REDUCED TO THREE (3) FEET WHERE THE BOTTOM OF THE WATER MAIN IS LOCATED AT LEAST SIX (6) INCHES ABOVE THE TOP OF THE SEWER (SPECIAL CASE).

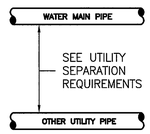
D. NEW, RELOCATED OR EXISTING UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY OR VACUUM–TYPE SANITARY SEWER, OR STORM SEWER SHALL BE LOCATED SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX (6) INCHES, AND PREFERABLE TWELVE (12) INCHES, ABOVE OR AT LEAST TWELVE (12) INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

E. NEW, RELOCATED OR EXISTING UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE–TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LOCATED SO THE OUTSIDE OF THE WATER MAIN IS A LEAST TWELVE (12) INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

F. AT THE UTILITY CROSSINGS DESCRIBED IN NOTES D AND E ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE (3) FEET FROM ALL JOINTS IN VACUUM–TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING REGULATED PUBLIC ACCESS RECLAIMED WATER, AND AT LEAST SIX (6) FEET FROM ALL JOINTS IN GRAVITY OR PRESSURE–TYPE SANITARY SEWERS, NON–REGULATED RECLAIMED WATER, OR WASTEWATER FORCE MAINS.

G. NEW, RELOCATED OR EXISTING FIRE HYDRANTS SHALL BE LOCATED SO THAT THE HYDRANTS ARE AT LEAST THREE (3) FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING REGULATED PUBLIC ACCESS RECLAIMED WATER; AT LEAST THREE (3) FEET, AND PREFERABLY TEN (10) FEET, FROM ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER; AT LEAST SIX (6) FEET, AND PREFERABLY TEN (10) FEET, FROM ANY EXISTING OR PROPOSED GRAVITY OR PRESSURE–TYPE SANITARY SEWER OR WASTEWATER FORCE MAIN.

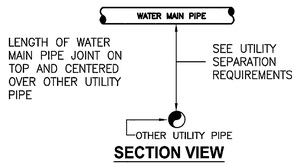
H. IF THE CONTRACTOR CAN NOT MEET THE MINIMUM SEPARATION REQUIREMENTS HE/SHE MUST NOTIFY THE CONTRACTING OFFICER. THE CONTRACTING OFFICER IS REQUIRED TO DISCUSS MITIGATION WITH FDEP AND OBTAIN FDEP APPROVAL PRIOR TO INSTALLING ANY UTILITIES NOT IN COMPLIANCE WITH FDEP MINIMUM SEPARATION REQUIREMENTS.




**PLAN VIEW**

| OTHER PIPING TYPE | MINIMUM HORIZONTAL SEPARATION (FEET) SEE NOTE C |
|---|---|
| 1. GRAVITY SANITARY SEWER | 6 |
| 2. GRAVITY SANITARY SEWER (SPECIAL CASE, NOTE #3) | 3 |
| 3. SEWAGE FORCE MAIN | 6 |
| 4. GRAVITY STORM SEWER | 3 |
| 5. RECLAIMED WATER (PUBLIC ACCESS) | 3 |
| 6. ELECTRIC | 3 |
| 7. OTHER | 6 B |

**MINIMUM HORIZONTAL SEPARATION REQUIREMENTS**




**SECTION VIEW**

| OTHER PIPING TYPE | "D" – MINIMUM VERTICAL SEPARATION (INCHES) SEE NOTE D |
|---|---|
| 1. GRAVITY SANITARY SEWER | 6 |
| 2. SEWAGE FORCE MAIN | 12 |
| 3. GRAVITY STORM SEWER | 6 |
| 4. RECLAIMED WATER | 12 |
| 5. ELECTRIC | 6 |
| 6. OTHER | 12 B |

NOTE:

J. IF THE WATER MAIN IS BELOW THE SEWER PIPE, THEN A MINIMUM OF 12" VERTICAL SEPARATION IS REQUIRED.

K. THE CONTRACTOR MAY CHOOSE TO DEFLECT THE PROPOSED PIPE UNDER OR OVER THE EXISTING UTILITY PIPE IN LIEU OF USING FITTINGS AS LONG AS THE MINIMUM DISTANCE "D" IS MAINTAINED AND THE AMOUNT OF PIPE DEFLECTION MEETS THE REQUIREMENTS OF THE SPECIFICATIONS.

**MINIMUM VERTICAL SEPARATION REQUIREMENTS**

# TYPICAL UTILITY CONFLICT DETAIL

NTS

1 / M30

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL 1 | 03/07/12 | MC |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN G. O'LEARY | 12/05/11 |
| CHECKED M. CLARK | 12/05/11 |
| SUBMITTED R. BEST | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 69875 | |
| APPROVED M. CLARK | |
| K. MILLER | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**MECHANICAL DETAILS**

| FILE NO. | SIZE | DWG. NO. | REV |
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| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 42

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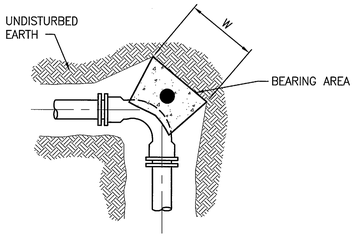
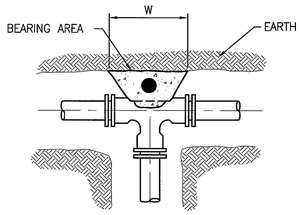
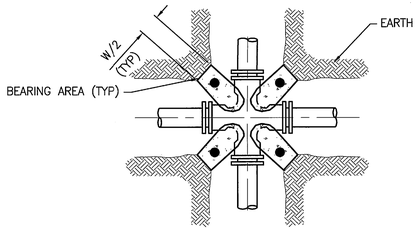


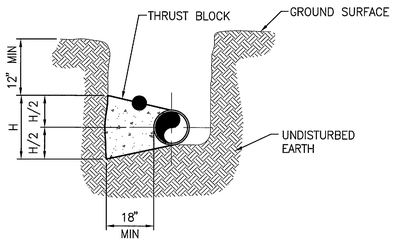

**BENDS PLAN**



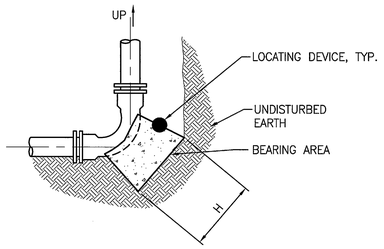

**TEE PLAN**




**CROSS PLAN**




**ILLUSTRATIVE SECTION**




**BENDS IN SECTION**

| REACTION BLOCK BEARING AREA DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| FITTING | 11 1/4" BEND | 22 1/2" BEND | 45" BEND | 90" BEND | TEE/CROSS/ PLUGS/CAPS |
| SIZE (in) | H x W (in) | H x W (in) | H x W (in) | H x W (in) | H x W (in) |
| 4 | 11x11 | 15x15 | 20x20 | 28x28 | 23x23 |
| 6 | 15x15 | 21x21 | 29x29 | 40x40 | 33x33 |

B

## REACTION BLOCK NOTES

A. BASED ON 150 PSI PRESSURE & 1500 PSF SOIL BEARING VALUE, 2.0 SAFETY FACTOR, WATER TABLE BELOW THE THRUST BLOCK, VERTICAL BLOCK FACE, AND A MINIMUM THICKNESS OF 18 INCHES. B

B. BEARING AREAS FOR PLUGS SHALL BE THE SAME AS FOR TEES.

C. FORM REACTION BLOCKS TO KEEP CONCRETE CLEAR OF JOINTS AND BOLTS.

D. REQUIRED REACTION BLOCK BEARING AREA SHALL BE PLACED AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE ALL LOOSE MATERIAL AND EXTEND REACTION BLOCK TO UNDISTURBED MATERIAL.

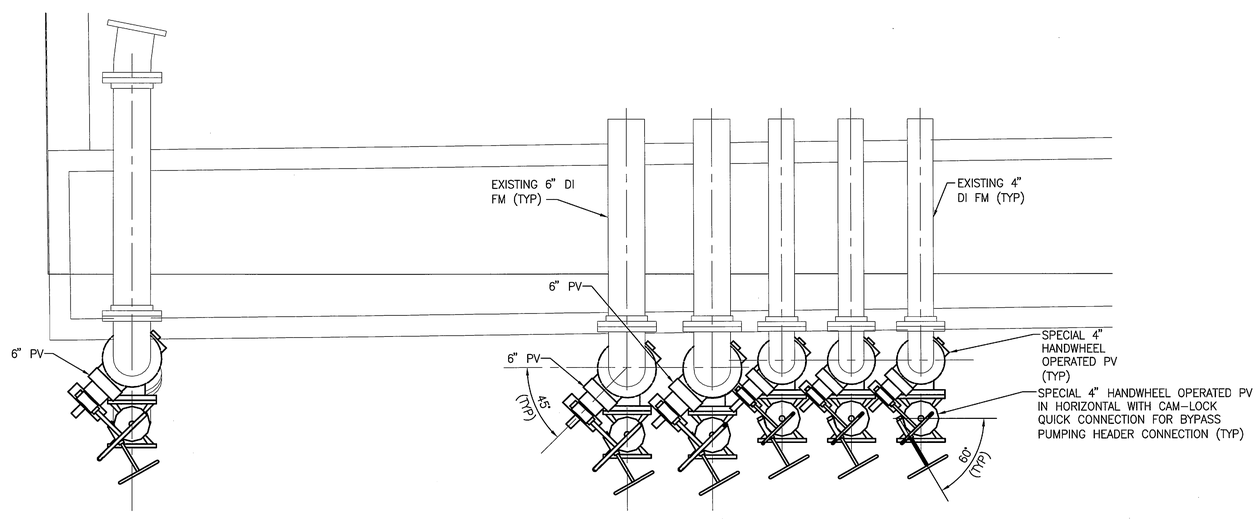
E. PLACE PRESSURE TREATED WOOD BOARDS IN FRONT OF PLUG, AT TEE, CROSS OR END OF PIPE BEFORE POURING CONCRETE REACTION BLOCK.

F. BACKFILL SHALL CONSIST ENTIRELY OF CLEAN SAND AND ROCK FRAGMENTS. ANY MUCK ENCOUNTERED SHALL BE REPLACED WITH BACKFILL COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY, ASTM D1557.

G. CONTRACTOR TO OBTAIN LOCATING DEVICES AND TO EMBED THE DEVICE INTO THE TOP SURFACE ON THE THRUST BLOCK SUCH THAT HALF THE DEVICE IS EXPOSED AND THE LOCATION IS AT THE CENTROID OF THE THRUST BLOCK TOP SURFACE AREA. THE LOCATING DEVICES SHALL BE OMNI MARKER MODEL 161 WATER MARKER OR APPROVED EQUAL.

## TYPICAL REACTION BLOCK (THRUST BLOCK) DETAILS (1 / M31)

NTS




## ENLARGED LS-4A BYPASS HEADER CONNECTION PLAN (2 / M25 M31)

NTS

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL 1 | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**MECHANICAL DETAILS**

| FILE NO. | SIZE | DWG. NO. | REV |
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PROJ. NO. 96968.3 SHEET 43

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SPECIFICATION REFERENCE NO 79K38878

## PLANS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | CONDUIT, CAP OR STUB-OUT |
| | CONDUIT, UP (MULTIPLE OR SINGLE) |
| | CONDUIT, DOWN (MULTIPLE OR SINGLE) |
| | CONDUIT, CONCEALED ABOVE CEILING |
| | CONDUIT, EXPOSED |
| | CONDUIT, IN FLOOR OR UNDERGROUND |
| | MULTIPLE CONDUIT RUN (UNDERGROUND UNLESS OTHERWISE INDICATED) |
| | INSTRUMENT, DESIGNATION AS INDICATED |
| M | MOTOR, HORSEPOWER INDICATED |
| | GROUND ROD, 3/4"x20'-0" COPPER CLAD |
| PB | ELECTRIC PULLBOX, NUMBER INDICATED |
| | DISCONNECT/SAFETY SWITCH, NEMA 4X SS, 3P UNLESS OTHERWISE NOTED, WITH 2 FORM "C" AUXILIARY CONTACTS, F=FUSED |
| | RADIO TELEMETRY ANTENNA TOWER |

## ONE-LINE DIAGRAM LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | AUTOMATIC TRANSFER SWITCH, AMPS AND POLES INDICATED |
| | HEAVY DUTY SAFETY SWITCH (FUSED IF INDICATED) |
| | DOUBLE THROW SAFETY SWITCH (FUSED IF INDICATED) |
| E | ELAPSED TIME METER |
| | EQUIPMENT OUTLINE |
| | FUSE |
| FIT-100 | INSTRUMENT, DESIGNATION AS INDICATED |
| | SELECTOR SWITCH<br>HAND OFF AUTOMATIC (HOA)<br>ON-OFF (O-O)<br>ON OFF REMOTE (OOR)<br>VFD/BYPASS (V-B) |
| D | TIME DELAY RELAY (0-180 SEC) |
| P | PHASE MONITOR RELAY |
| | GROUND |
| PM | POWER MONITOR |
| M | MOTOR, HORSEPOWER INDICATED |
| | MOTOR CIRCUIT PROTECTOR (MCP) OR CIRCUIT BREAKER (TRIP AMPS INDICATED.) 3 POLE UNLESS OTHERWISE INDICATED |
| H | MOTOR SPACE HEATER |
| | MOTOR STARTER, COMBINATION WITH MCP<br>FVNR= FULL VOLTAGE NON-REVERSING<br>RVAT= REDUCED VOLTAGE AUTO-XFMR<br>SSRV= SOLID STATE REDUCED VOLTAGE |
| CPT | TRANSFORMER, CONTROL POWER |
| | TRANSFORMER, POTENTIAL |
| | TRANSFORMER, POWER |
| SPD | SURGE PROTECTIVE DEVICE |
| T | TRANSFORMER, PAD MTD |
| | ULTRASONIC LEVEL TRANSMITTER |
| | GFCI DUPLEX RECEPTACLE |
| | ALARM HORN |
| | ALARM STROBE |
| IC | ISOLATION CONTACTOR |
| IC | BYPASS CONTACTOR |

## GENERAL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| # | CONDUIT RUN REFERENCE, SEE LIFT STATION DATA TABLE ON E3 |
| MCC-1 | CIRCUIT REFERENCE, SEE SEE LIFT STATION DATA TABLE ON E3 |
| # | FLAG NOTE CALLOUT |
| X | ON EQUIPMENT, INDICATES REMOVAL |
| | EQUIPMENT TO BE REMOVED |
| | EQUIPMENT TO BE RELOCATED |

THESE ARE STANDARD LEGEND SHEETS. SOME SYMBOLS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.

IN GENERAL, LIGHT LINES INDICATE EXISTING OR WORK OF OTHER TRADES, BOLD LINES INDICATE NEW ELECTRICAL WORK.

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

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| SIGNATURES | DATE |
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| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. FRANG | 11/1/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## ELECTRICAL LEGENDS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 44 | |

E1

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## GENERAL ELECTRICAL NOTES

1. EXISTING CONTROL PANEL AND EQUIPMENT RACK TO BE REMOVED.
2. EXPLOSION–PROOF JUNCTION BOX, SEE DETAIL 2/E37
3. 6" THICK CONCRETE SLAB WITH 2.1 X 2.1 WELDED WIRE FABRIC.
4. PROVIDE CONTROL PANEL AND LEVEL FLOATS AS SPECIFIED IN SECTION 33 32 13.13 AND THE INSTRUMENTATION DRAWINGS. INSTALL CONTROL PANEL IN LOCATION INDICATED. THE EXISTING CONTROL PANEL SHALL REMAIN IN SERVICE UNTIL REPLACEMENT CONTROL PANEL AND PUMPS ARE INSTALLED. SEE DETAIL 1/E37 FOR CONTROL PANEL INSTALLATION.
5. TO SOURCE PANEL. SEE LIFT STATION DATA TABLE FOR PANEL LOCATION AND CIRCUIT INFORMATION.
6. TIER 15 RATED QUAZITE PULLBOX. UNLESS OTHERWISE INDICATED. USE EXISTING CIRCUIT BREAKER IN SOURCE PANEL, EXISTING CONDUCTORS, AND EXISTING CONDUITS FROM SOURCE PANEL TO PULL BOX.
7. GENERATOR RECEPTACLE.
8. CONDUIT SEAL (TYP).
9. EXISTING WET WELL.
10. PROPOSED WET WELL.
11. REMOVE EXISTING CONDUITS TO WETWELL SEAL WALL PENETRATION INTO WETWELL WITH NON–SHRINK GROUT.
12. CORE DRILL WET WELL WALL FOR REPLACEMENT POWER AND CONTROL CONDUITS.
13. REMOVE EXISTING CONDUCTORS TO SOURCE TERMINATION AND ABOVE GROUND PORTION OF CONDUIT AT CONTROL PANEL. CAP CONDUIT AND ABANDON IN–PLACE. FOR CONDUITS WITH CONCRETE PENETRATION, CUT CONDUITS BELOW FINISHED CONCRETE LEVEL AND PATCH.
14. REFER TO LIFT STATION DATA TABLE ON E3 FOR CONDUIT, WIRING, CIRCUIT BREAKER, AND PUMP SIZES.
15. RADIO TELEMETRY ANTENNA TOWER SEE DETAIL 1/I7 FOR ANTENNA INSTALLATION.
16. RTU. SEE DETAIL 1/E38 FOR RTU INSTALLATION.
17. NEMA 4X SAFETY SWITCH. SEE DETAIL 1/E37 FOR SAFETY SWITCH INSTALLATION.
18. PROVIDE COAXIAL CABLE FROM RTU TO ANTENNA IN 2" CONDUIT. SEE INSTRUMENTATION DRAWINGS FOR FURTHER DETAIL.
19. MULTIMODE FIBER OPTIC CONDUITS AND CABLES TO BE TERMINATED FOR TESTING, BUT NOT LANDED AT KCCS CONNECTION. PROVIDE 50' SPARE FIBER OPTIC CABLE COILED UP INSIDE OF COMMUNICATIONS ROOM. IF KCCS CONNECTION POINT IS NOT LOCATED INSIDE OF A BUILDING, PROVIDE 50' SPARE FIBER OPTIC CABLE COILED UP INSIDE OF TTC PANEL. PROVIDE CLEAR LABELING OF ALL FIBERS IDENTIFYING SOURCE TO ALLOW PROPER TERMINATING BY OTHERS.
20. TWISTED SHIELDED PAIRED CONDUITS AND CABLES TO BE TERMINATED BY OTHERS AT KCCS CONNECTION. PROVIDE 50' SPARE TWISTED SHIELDED PAIRED CABLE COILED UP INSIDE OF COMMUNICATIONS ROOM. IF KCCS CONNECTION POINT IS NOT LOCATED INSIDE OF A BUILDING, PROVIDE 50' SPARE TWISTED SHIELDED PAIRED CABLE COILED UP INSIDE OF TTC PANEL. PROVIDE CLEAR LABELING OF ALL CONDUCTORS IDENTIFYING SOURCE TO ALLOW PROPER TERMINATING BY OTHERS.
21. CONTROL PANEL EQUIPMENT RACK. SEE DETAIL 1/E37
22. NETWORK INTERFACE PANEL. SEE DETAIL 2/I6
23. ALL WORK SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC). GROUND ALL ELECTRICAL EQUIPMENT AND ENCLOSURES IN ACCORDANCE WITH THE NEC.
24. THE CONTRACT DOCUMENTS MAY NOT REFLECT ALL EXISTING UTILITIES OR SHOW THEM IN THEIR EXACT LOCATIONS. THE CONTRACTOR SHALL HAVE UTILITY LOCATES PERFORMED BEFORE BEGINNING EXCAVATION. THE CONTRACTOR SHALL HAND DIG AND VERIFY ALL EXISTING UTILITIES. THE CONTRACTOR SHALL REPAIR, AT CONTRACTOR EXPENSE, ANY SERVICE THAT IS INTERRUPTED BY THE CONTRACTOR WHETHER SHOWN OR NOT SHOWN ON THE CONTRACT DOCUMENTS. ALL REPAIRS SHALL BE APPROVED BY THE CO.
25. BEFORE BEGINNING WORK, ALL ELECTRICAL EQUIPMENT AND SYSTEMS SHALL BE OPERATED IN THE PRESENCE OF REPRESENTATIVES OF THE CONTRACTOR AND THE CO IN ORDER TO ESTABLISH THAT ALL SYSTEMS ARE IN PROPER WORKING ORDER AT THE START OF THE PROJECT. UPON COMPLETION OF THE ABOVE TEST, THE CONTRACTOR SHALL SUBMIT A DETAILED LISTING INDICATING ANY ITEMS NOTED WHICH ARE NOT IN FULLY OPERATIONAL CONDITION. THIS LISTING SHALL BE SIGNED BY ALL PARTIES PRESENT AT THE TEST. COMMENCEMENT OF WORK BEFORE THE ABOVE SHALL CONSTITUTE ACCEPTANCE OF ALL SYSTEMS BY THE CONTRACTOR IN FULLY OPERATIONAL CONDITION.
26. THE CONTRACTOR SHALL COORDINATE PHASING OF ALL WORK IN ACCORDANCE WITH WORK SEQUENCE AS OUTLINED IN THE PROJECT SPECIFICATIONS AND AS NECESSARY FOR CONTINUITY OF LIFT STATION OPERATIONS. THE CONTRACTOR SHALL PROVIDE TEMPORARY POWER AS REQUIRED TO MAINTAIN OPERATIONS OR POWER TEMPORARY EQUIPMENT.
27. THE CONTRACTOR SHALL DEVELOP AND SUBMIT A CONSTRUCTION PHASING PLAN FOR APPROVAL ALONG WITH THE LIFT STATION SUBMITTALS. AT A MINIMUM, THE PHASING PLAN SHALL INCLUDE THE REQUIREMENTS PRESENTED IN THE CONTRACT DOCUMENTS, A BY–PASS PUMPING PLAN, DESCRIPTIONS OF DEMOLITION WORK, DESCRIPTION OF PROPOSED WORK, AND PROVIDE A DETAILED SCHEDULE PRESENTING THE PLANNED START AND FINISH DATE FOR EACH ACTIVITY.
28. THE CONTRACTOR SHALL COORDINATE NEW CONDUIT AND/OR DUCT RUNS WITH OTHER UTILITIES, FOR FACILITIES AND PIPING RUNS. PROVIDE 6" CLEARANCE AT PIPE CROSSINGS.
29. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS OF ALL SYSTEMS INCLUDING ROUTING OF INSTRUMENTATION CIRCUITS AND HOME RUNS.
30. THESE DRAWINGS ARE INTENDED TO SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT ONLY AND MAY NOT INDICATE EVERY OFFSET, BEND, FITTING OR MODIFICATION OF MATERIALS REQUIRED FOR INSTALLATION. THE EXACT EQUIPMENT SIZE, CONFIGURATION, AND ELECTRICAL POINTS OF CONNECTION TO EQUIPMENT VARY BY MANUFACTURER. THE CONTRACTOR SHALL COORDINATE THE FINAL CONFIGURATION OF EQUIPMENT. THE CONTRACTOR SHALL SUBMIT EQUIPMENT COORDINATION DRAWINGS INDICATING THE ACTUAL SIZE AND CONFIGURATION OF PROPOSED EQUIPMENT DRAWN TO SCALE INCLUDING THE MANUFACTURER'S RECOMMENDED MAINTENANCE SERVICE AREAS AND MECHANICAL AND ELECTRICAL INTERFACE REQUIREMENTS INCLUDING ELECTRICAL CONNECTIONS AT THE TIME OF EQUIPMENT SHOP DRAWING SUBMITTAL.
31. ALL OUTDOOR ANALOG SIGNAL CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL ABOVE AND BELOW GRADE. AT ALL LIFT STATIONS, ALL CONDUITS BETWEEN LIFT STATION CONTROL PANELS AND EXPLOSION PROOF JUNCTION BOXES AND BETWEEN EXPLOSION PROOF JUNCTION BOXES AND WETWELLS SHALL BE PVC COATED RIGID GALVANIZED STEEL ABOVE AND BELOW GRADE. ALL OTHER OUTDOOR CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL ABOVE GRADE AND SCHEDULE 40 PVC BELOW GRADE UNLESS INDICATED OTHERWISE. ALL FITTINGS AND MOUNTING HARDWARE FOR PVC COATED RGS CONDUIT SHALL BE PVC COATED. REFER TO SECTION 26 05 00.00 40 AND SECTION 33 71 02.00 20 FOR ADDITIONAL REQUIREMENTS. INDOOR CONDUITS SHALL BE RIGID GALVANIZED STEEL. TRANSITIONS FROM PVC TO RGS CONDUIT SHALL BE BELOW THE FIRST ELBOW. THE PORTION OF RGS CONDUIT TRANSITIONS THAT ARE BELOW FINISHED FLOOR SHALL BE PVC COATED. PVC CONDUIT SHALL BE SUNLIGHT RESISTANT, RATED FOR 90°C CONDUCTORS. FLEXIBLE CONDUIT, IF REQUIRED, SHALL BE CARLON "CARFLEX" OR EQUAL.
32. SPLICES IN PULLBOXES SHALL BE PERMISSIBLE ONLY WHERE INDICATED IN THE CONTRACT DRAWINGS, OR AS APPROVED BY THE CO. SPLICES SHALL BE WATERPROOF, LISTED FOR THE APPLICATION, AND INSTALLED IN ACCORDANCE WITH SPLICE AND CABLE OR WIRING MANUFACTURER.
33. ALL MOUNTING HARDWARE, ANCHORS, CHANNEL, PLATES, BRACKETS, FLOAT SUSPENSION CABLES, CABLE HANGERS AND ENCLOSURES SHALL BE STAINLESS STEEL UNLESS OTHERWISE INDICATED.
34. CONDUCTORS WITHIN CONTROL PANEL SHALL BE TYPE MTW. VFD WIRING SHALL BE TYPE XHHW–2 OR LISTED VFD CABLE. ALL OTHER CONDUCTORS SHALL BE ANNEALED SOFT DRAWN COPPER WITH TYPE THWN/THHN INSULATION RATED FOR 600 VOLTS.
35. INSTRUMENTATION CIRCUITS IN CONDUITS SHALL BE SEPARATED BY 6" MINIMUM WHERE RUNNING IN PARALLEL WITH POWER CIRCUIT CONDUITS.
36. ALL CONDUITS SHALL HAVE A SEPARATE GREEN GROUND CONDUCTOR INSTALLED FOR GROUNDING.
37. ALL DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE.
38. ALL ELECTRICAL EQUIPMENT ENCLOSURES LOCATED OUTSIDE SHALL BE NEMA 4X–SS UNLESS OTHERWISE INDICATED.
39. ALL EMPTY CONDUITS SHALL CONTAIN 200 LB PULL–LINE. ALL SPARE CONDUITS SHALL BE CAPPED ON EACH END AND LABELED TO IDENTIFY SOURCE OF EACH END.
40. ALL CONDUCTORS AND CABLES USED IN OUTDOOR OR UNDERGROUND LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS.
41. COORDINATE THE ROUTING OF INDOOR CONDUITS WITH THE CO.
42. COORDINATE THE TEMPORARY SHUTDOWN OF POWER AS WELL AS THE DECOMMISSIONING OF POWER AND COMMUNICATION CONDUCTORS WITH THE CO.
43. CONTRACTOR SHALL CORE DRILL BUILDING WALLS FOR CONDUIT PENETRATION. SEAL AROUND CONDUITS WITH 30 YEAR ACRYLIC CAULK AND PAINT AROUND CONDUIT TO MATCH BUILDING EXTERIOR.

## ABBREVIATIONS

| | |
|---|---|
| A | AMPERE, AUTOMATIC |
| AC | ALTERNATING CURRENT |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AMP | AMPERE |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AUTO | AUTOMATIC AUX AUXILIARY |
| AWG | AMERICAN WIRE GAGE |
| BC | BARE COPPER |
| BKR | BREAKER |
| BLDG | BUILDING |
| C | CONDUIT, CONTACTOR, CONDUCTOR, CLOSE |
| CB | CIRCUIT BREAKER |
| CFWE | CABLE FURNISHED WITH EQUIPMENT |
| CKT | CIRCUIT |
| CO | CONTRACTING OFFICER |
| CPT | CONTROL POWER TRANSFORMER |
| CRE | CORROSION RESISTANT |
| CT | CURRENT TRANSFORMER, CABLE TRAY |
| DC | DIRECT CURRENT |
| DIV | DIVISION |
| DS | DISCONNECT SWITCH |
| EP | EXPLOSION–PROOF |
| FDR | FEEDER |
| F,FU | FUSE |
| FLEX | FLEXIBLE CONDUIT |
| FO | FIBER OPTIC |
| FREQ | FREQUENCY |
| FVNR | FULL VOLTAGE NON–REVERSING |
| FVR | FULL VOLTAGE REVERSING |
| G | GROUND |
| GALV | GALVANIZED |
| GEN | GENERATOR |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GND | GROUND |
| HP | HORSEPOWER |
| HPS | HIGH PRESSURE SODIUM |
| HOA | HAND OFF AUTOMATIC |
| HW | HARDWIRED |
| IC | INTERRUPTING CAPACITY |
| IEEE | INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS |
| I&C | INSTRUMENTATION AND CONTROL |
| J,JB | JUNCTION BOX |
| K | KEY INTERLOCK |
| KA | KILOAMPERES |
| KCCS | KENNEDY COMPLEX CONTROL SYSTEM |
| KCMIL | THOUSAND CIRCULAR MILS |
| KV | KILOVOLT |
| KVA | KILOVOLT AMPERES |
| KW | KILOWATTS |
| KWH | KILOWATT HOUR |
| L | LIGHTING CONTACTOR, LOW SPEED, LOWER |
| LB | POUND |
| LT | LIQUID–TIGHT |
| FLEX | FLEX CONDUIT |
| M | MAGNETIC CONTACTOR COIL, MOTOR, MANUAL |
| MCC | MOTOR CONTROL CENTER |
| MH | MANHOLE, METAL HALIDE, MOUNTING HEIGHT |
| MO | MOTOR OPERATOR |
| MS | MOTOR STARTER |
| MSC | MISCELLANEOUS |
| MT,MTD | MOUNT, MOUNTED |
| MV | MEDIUM VOLTAGE |
| N | NEUTRAL, NORMAL |
| NA | NON–AUTOMATIC |
| NC | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION |
| NEUT | NEUTRAL |
| NO | NORMALLY OPEN |
| NTS | NOT TO SCALE |
| O–O | ON–OFF |
| OOR | ON OFF REMOTE |
| PB | PULL BOX |
| PF | POWER FACTOR |
| PH | PHASE |
| PNL | PANEL |
| PT | POTENTIAL TRANSFORMER |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| RCPT | RECEPTACLE |
| RF | RADIO FREQUENCY |
| RGS | RIGID GALVANIZED STEEL |
| RMS | ROOT MEAN SQUARE |
| RTU | REMOTE TERMINAL UNIT |
| RVAT | REDUCED VOLTAGE AUTOTRANSFORMER |
| RVNR | REDUCED VOLTAGE NON REVERSING |
| RVR | REDUCED VOLTAGE REVERSING |
| SA | SURGE ARRESTER |
| SPD | SURGE PROTECTIVE DEVICE |
| SS | STAINLESS STEEL |
| SSRV | SOLID STATE REDUCED VOLTAGE |
| ST | SHUNT TRIP |
| SV | SOLENOID VALVE |
| SW | SWITCH |
| TEL | TELEPHONE |
| TEMP | TEMPERATURE |
| TJB | TERMINAL JUNCTION BOX |
| TSP | TWISTED SHIELDED PAIR |
| UNO | UNLESS NOTED OTHERWISE |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| V | VOLTAGE, VOLTS |
| VFD | VARIABLE FREQUENCY DRIVE |
| V–B | VFD BYPASS |
| W | WATT |
| WP | WEATHERPROOF |
| WWF | WELDED WIRE FABRIC |
| W/ | WITH |
| XFMR | TRANSFORMER |
| ϕ | PHASE |

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| CHECKED M KOROS | 12/05/11 |
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| APPROVED M. CLARK | 12/7/11 |
| FOR D. TRANG | 12/9/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**ABBREVIATIONS AND GENERAL NOTES**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 45

E2

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SPECIFICATION REFERENCE NO 79K38878

## LIFT STATION DATA TABLE

| | LIFT STATION | PUMP HP | VOLTAGE | PHASE | FEEDER WIRE & CONDUIT SIZES | MAIN CB SIZE | PUMP CB SIZE | SOURCE PNL | TTC | KCCS CONNECTION | DWG No | FLOAT WIRE & CONDUIT SIZES FROM PUMP CONTROLLER TO JB | MOTOR WIRE & CONDUIT SIZES FROM JB TO MOTOR | FLOAT WIRE & CONDUIT SIZES FROM JB TO FLOATS | CONTROL PANEL WIRE AND CONDUIT SIZES FROM MAIN TO SOURCE | WIRE AND CONDUIT SIZES TO RTU OR KCCS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (2) | | | | | | (3) | (4) | | | (5) | | (6) * | (7) * |
| REPLACEMENT LIFT STATIONS | LS-1B | 3 | 208 | 1Φ | 2#6, 1#6(G), 1-1/4"C | 100A | 70A | EXIST PAD-MOUNTED TRANSFORMER VIA CIRCUIT BREAKER | TTC 1 CA 0901 M6-0996 | HW | E5 | 18#14, 1 1/2"C. (FLOATS, ALARMS, SPARES) | CFWE, 1-1/2"C. (PUMP CABLE) | 5-CFWE, 1 1/2"C. (FLOAT SWITCH CABLES) | 2#2, 1#8(G), 2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4A1 | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | NO MAIN | 20A, 15A | BLDG K6-0793 | LS-4A PLC | HW | E6 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4B2 | 1 | 208 | 1Φ | 2#12, 1#12(G), 1"C | 40A | 15A | VAB, RM 1N6, PNL 1NPB, CKT 45,47 | KCCS NETWORK SWITCH | FO | E7 | | | | 2#8, 1#8(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-4D | 15 | 480 | 3Φ | 3#10, 1#10(G), 2"C | 100A | 60A | BLDG K6-1096, PNL MDP-A, CKT 3 | N/A | RF | E8 | | CFWE, 2"C. (PUMP CABLE) | | 3#1, 1-1/2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4N4 | 3 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | BLDG K6-1996H, PNL RP-17-19-21 | TTC-1 K6-1996H MECH RM | HW | E9 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#12, 1#12(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4S1 | 3 | 208 | 1Φ | 2#12, 1#12(G), 1"C | NO MAIN | 20A | LIGHTING PNL RP2 | TTC-1 CA 50010 | HW | E10 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 2#10, 1#10(G) | 6 PAIR TSP IN 2"CONDUIT |
| | LS-5C | 3 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | USS-1120 SECONDARY SIDE PNL | TTC-1 CA 650101 J7-1339 RM 105B | FO | E11 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#4/0, 1#2, 2-1/2"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-9B | 2 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG K7-0468 | KCCS NETWORK SWITCH | FO | E12 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-9D | 5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | PNL MDP AT VIEWING TOWER | TTC 15-L-5 | HW | E13 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| REHABILITATED LIFT STATIONS | LS-1G | 7.5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | BLDG M7-1112, PNL 1A, CKT 22 | N/A | RF | E14 | 18#14, 1 1/2"C. (FLOATS, ALARMS, SPARES) | CFWE, 1-1/2"C. (PUMP CABLE) | 5-CFWE, 1 1/2"C. (FLOAT SWITCH CABLES) | 3#8, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1H | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 50A | 30A | PNL MDP OR PNL L AT USS-2 | KCCS NETWORK SWITCH | FO | E14 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-1I | 1 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG M7-777, PNL P-1, CKT 17 | N/A | RF | E15 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#12, 1#12(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1N | 5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG M6-1724, PNL PP1-16 | N/A | RF | E15 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1P | 20 | 480 | 3Φ | 3#10, 1#10(G), 2"C | 150A | 70A | PNL SLSL | N/A | RF | E16 | | CFWE, 2"C. (PUMP CABLE) | | 3#1/0, 1#1/0(N), 1#1/0(G), 2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1T | 5 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | PNL 1 AP1 | KCCS NETWORK SWITCH | FO | E16 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-4C1 | 3 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 40A | 20A | BLDG K6-1094 | N/A | RF | E17 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4F | 5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 20A | ORBITOR PROCESSING FACILITY | TTC-LB3 K6-0894 RM 125 | HW | E17 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4K1 | 5 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | PNL LP-2, CKT 7, VIA 60A DISCONNECT | TTC 15-J-35 | HW | E18 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4L | .75 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG K6-1193 OR USS-833 | N/A | RF | E18 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4N5 | 0.6 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 3A | BLDG K6-1847A, PNL OP, CKT 22 | TTC-1 CA 5402 RM 100 | HW | E19 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4N6 | 7.5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | BLDG K6-2196 | N/A | RF | E19 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-401 | 15 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG K6-2496 | N/A | RF | E20 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#1, 1#4(G), 3"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-5D | 1 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 15A | 10A | BLDG J7-1388 | KCCS NETWORK SWITCH | FO | E21 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G) | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-5E | 5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG J8-2109 ROOM 1125, PNL HDPC, CKT 37 | KCCS NETWORK SWITCH | FO | E21 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-5E2 | 2 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 40A | 20A | PNL LCB, CKT 31,35 | KCCS NETWORK SWITCH | FO | E20 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-17A | 5 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 70A | 40A | PNL LS NEXT TO PNL CP 90A, CKT 2,4,6 | KCCS NETWORK SWITCH | FO | E22 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#2, 1#_(G), 1-1/2"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-17C | 0.6 | 120 | 1Φ | 2#12, 1#12(G), 1"C | 40A | 25A | PNL TR1-745 | KCCS NETWORK SWITCH | FO | E23 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 1#10, 1#10(N), 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-17D | 7.5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 50A | 30A | BLDG J2465, PNL MSB | KCCS NETWORK SWITCH | FO | E23 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| CONTROL PANEL LIFT STATIONS | LS-1F | 2 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | PARACHUTE STORAGE FACILITY | N/A | RF | E24 | 18#14, 1 1/2"C. (FLOATS, ALARMS, SPARES) | CFWE, 1-1/2"C. (PUMP CABLE) | 5-CFWE, 1 1/2"C. (FLOAT SWITCH CABLES) | 3#10, 1-1/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1J | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | PHSF BLDG ROOM 115, PNL MDPB/13 | N/A | RF | E24 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1-1/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1J2 | 2 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 20A | 15A | PNL MCC-101A CKT J1A | N/A | RF | E24 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1-1/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1M | 0.6 | 120 | 1Φ | 2#12, 1#12(G), 1"C | 40A | 40A | BLDG M6-765 | N/A | RF | E24 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1O | 5 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | USS-129 DISCONNECT NEAR BY | N/A | RF | E25 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1-1/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1Q | 5 | 208 | 1Φ | 2#10, 1#10(G), 2"C | 50A | 25A | BLDG M6-740, 225A PNLON SOUTH WALL INSIDE BLDG, CKTS 21 & 23 | N/A | RF | E25 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 2#8, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-1R | 2 | 208 | 1Φ | 2#12, 1#12(G), 1"C | 50A | 25A | GUARD SHACK, PNL A, CKT 113 | TTC-1 M6-0223 RM 104 | HW | E25 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 2#8, 1#8(G), 1"C | N/A |
| | LS-1S | 2 | 220 | 1Φ | 2#12, 1#12(G), 1"C | 50A | 25A | PNL A, CKT 1,3 | TTC-1 M6-1724 RM 104 | HW | E25 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 2#8, 1#10(N), 1#10(G) | N/A |
| | LS-1U | 1.5 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 40A | 15A | BLDG M6-0570 | N/A | RF | E27 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4A4 | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 20A | 15A | MCC-815-A2, BREAKER 2E-OPF-3 | N/A | RF | E27 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1-1/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4B1 | 7.5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 100A | 20A | BLDG 1249, PNL HP11, CKTS 7,9,11 | N/A | RF | E27 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#1, 2"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4C2 | 0.5 | 208 | 1Φ | 2#12, 1#12(G), 1"C | 20A | - | BLDG K6-996A PLUMBING SHOP, PNL P1, CKTS 8 & 10, 20A BREAKER | K6-0996 | HW | E27 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#12, 1#12(G) | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4E4 | 3 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 40A | 20A | PNL B, CKT 16 VIA DISCONNECT SWITCH | TTC 14-J-31 K6-1096 | HW | E28 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4M | 0.75 | 220 | 1Φ | 2#12, 1#12(G), 1"C | 30A | 15A | MCC SECTION I COMPATMENT J VIA 5KVA XFMR, XFMR TO BE REPLACED | TTC 15-J-75 CA 49 | HW | E28 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4N2 | 0.6 | 120 | 1Φ | 2#12, 1#12(G), 1"C | 30A | 15A | BLDG K6-1844D, PNL L1, CKT 5 | TTC-1 K6-1884 MAINT OFFICE | HW | E28 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 2#10, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4N3 | 10 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | DISCONNECT SWITCH AT LIFTSTATION | N/A | RF | E30 | | CFWE, 2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1-1/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4N7 | 5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 20A | NO PUMP CB | BLDG K6-2496B | N/A | RF | E30 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(N), 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4P2 | 3 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 40A | 20A | BLDG K6-1446 GENERATOR SHOP | N/A | RF | E30 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(N), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4P3 | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | PNL DLP-1 | N/A | RF | E30 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G) | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4Q | 3 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | BLDG J-2377 | TTC 16-1-3 | HW | E28 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-4R | 5 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 60A | 30A | BLDG K6-791, PNL LDP, CKTS 33,35,37 | N/A | RF | E33 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#6, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-5A | 5 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG J8-1705A | TTC-1 CA 3806 J8-1705 | HW | E31 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#12(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-6A | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG J7-384A | TTC-1 CA 3902 J7-0432 | HW | E31 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#10, 1#10(G), 3/4"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-6D | 7.5 | 208 | 3Φ | 3#10, 1#10(G), 2"C | 70A | 50A | BLDG J7-689, ROOM 1125, PNL LDP, CKT 32 | KCCS NETWORK SWITCH | FO | E31 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#4, 1-1/4"C | FIBER OPTIC CABLE IN 2"CONDUIT |
| | LS-9E | 2 | 208 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG k7-415, PNL RP1, CKTS 2,7,29,31 | TTC 15-K-2 CA 39 | HW | E31 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | 6 PAIR TSP IN 2"CONDUIT |
| | LS-17E | 3 | 480 | 3Φ | 3#12, 1#12(G), 1"C | 30A | 15A | BLDG J6-2370, PNL H2, CKTS 7,9,11 | KCCS NETWORK SWITCH | FO | E33 | | CFWE, 1-1/2"C. (PUMP CABLE) | | 3#8, 1#10(G), 1"C | FIBER OPTIC CABLE IN 2"CONDUIT |

* PROVIDE 1 SPARE CONDUIT OF EQUAL SIZE TO THAT WHICH IS REQUIRED FOR THE CIRCUIT.

## NOTES:

A. THE DATA IN THIS TABLE HAS BEEN COMPILED FROM MULTIPLE SOURCES AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE DATA MAY NOT ACCURATELY REFLECT ALL OF THE EXISTING CONDITIONS FOR THE LIFT STATIONS AND THEIR SOURCE PANELS. THE CONTRACTOR SHALL FIELD VERIFY ALL DATA IN TABLE AND PROVIDE AN UPDATED SPREADSHEET TO THE CO AT THE COMPLETION OF THE PROJECT.

B. IF CONDUCTOR OR CIRCUIT BREAKER SIZES ARE FOUND TO BE SMALLER THAN THE MINIMUM SIZE REQUIRED TO MEET NEC OR VOLTAGE DROP REQUIREMENTS, THE CONTRACTOR SHALL UPGRADE THE CIRCUIT AS NECESSARY TO MEET THOSE REQUIREMENTS.

C. THE CONTRACTOR SHALL PROVIDE A PERMANENT LABEL THAT IDENTIFIES THE SOURCE PANEL NAME, LOCATION, CIRCUIT NUMBERS, AND AVAILABLE FAULT CURRENT FOR ALL CONTROL PANELS PROVIDED.

## KCCS CONNECTION UPGRADE ONLY LIFT STATION DATA TABLE

| LIFT STATION | TTC | KCCS CONNECTION | DRAWING No |
|---|---|---|---|
| | | | |
| LS-1AA | N/A | RF (RECEIVING) | E34 |
| LS-1C | N/A | RF | E36 |
| LS-1L | N/A | RF | E36 |
| LS-10A | N/A | RF | E36 |
| LS-4N1 | N/A | RF | E36 |

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DATA TABLES | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 12/05/11 |
| CHECKED M KOROS | 12/05/11 |
| SUBMITTED M. CLARK | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | |
| D. TRANG | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATION DATA TABLE

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 SHEET 46

E3

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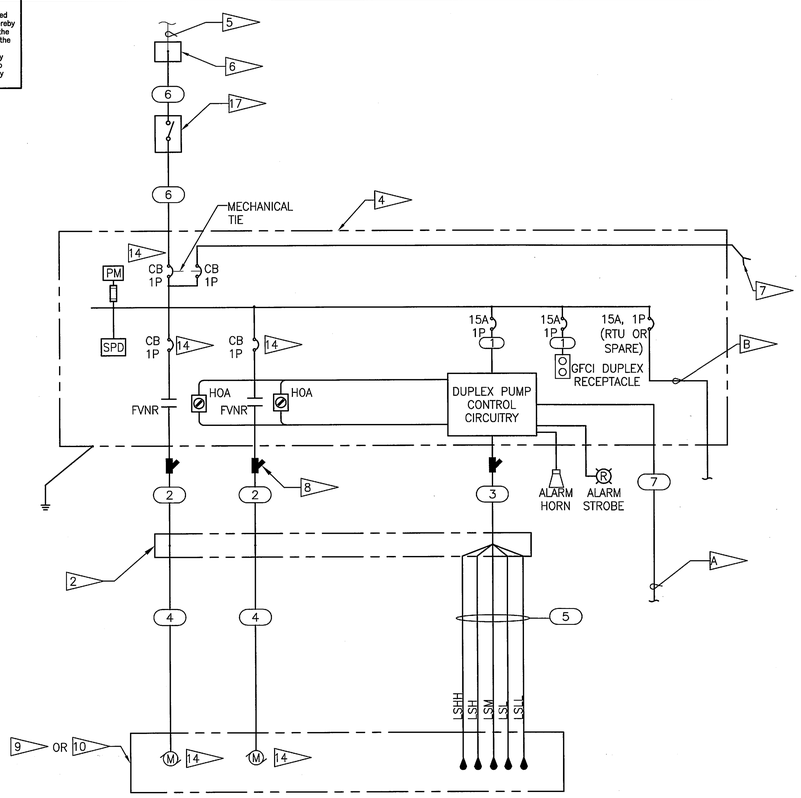
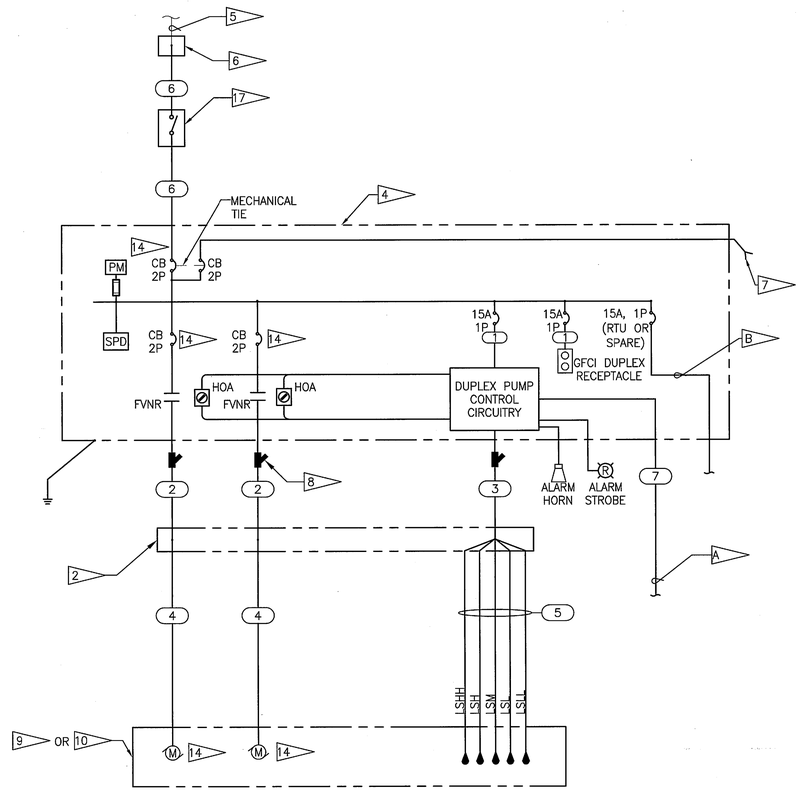
SPECIFICATION REFERENCE NO 79K38878



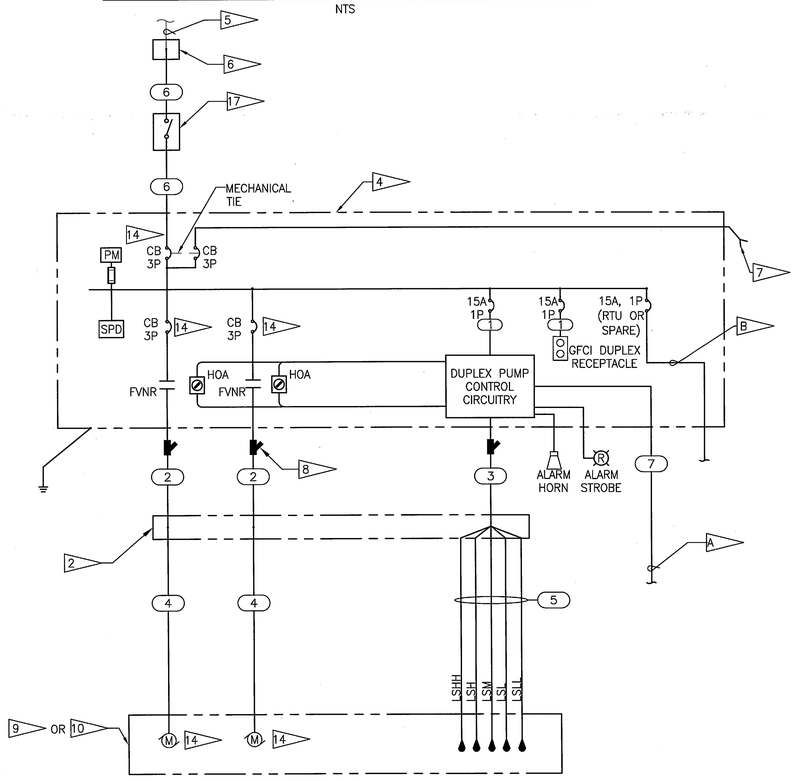

## TYPICAL 120V LIFT STATION ONE-LINE DIAGRAM

NTS



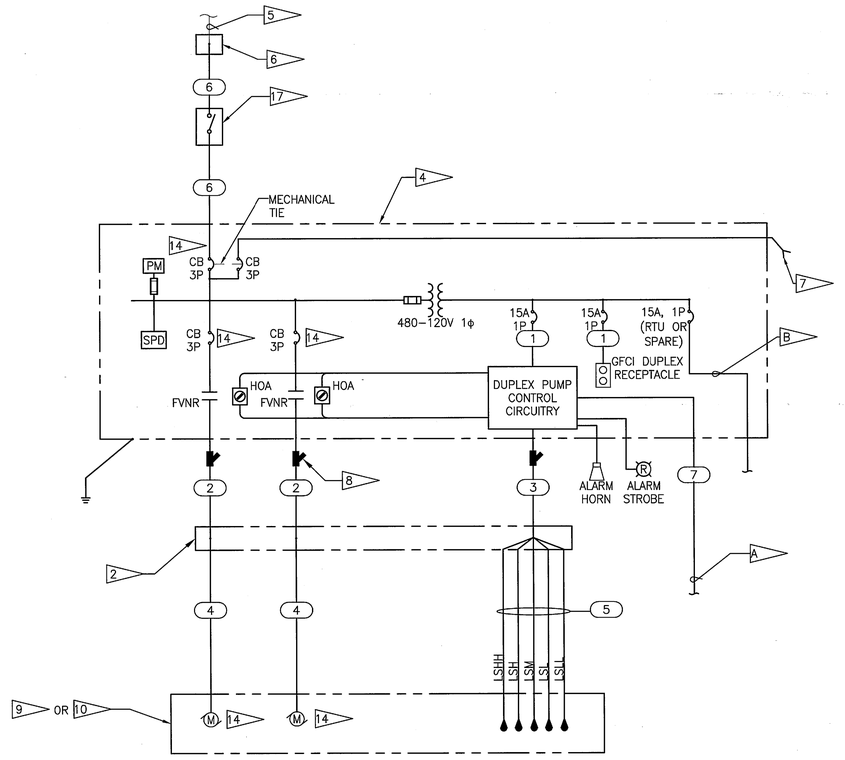

## TYPICAL 208 or 240V, 1 PHASE LIFT STATION ONE-LINE DIAGRAM

NTS




## TYPICAL 208 or 240V, 3 PHASE LIFT STATION ONE-LINE DIAGRAM

NTS




## TYPICAL 480V LIFT STATION ONE-LINE DIAGRAM

NTS

**NOTES:**

A. PROVIDE RADIO, 6 PAIR TSP, OR FIBER OPTIC CONNECTION TO KCCS SYSTEM AS INDICATED IN THE INSTRUMENTATION DRAWINGS.

B. PROVIDE 2#12, 1#12(G), 3/4"C TO RTU FOR APPLICABLE LIFT STATIONS.

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|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

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| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
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| APPROVED M. CLARK | 10/31/11 |
| APPROVED D. TRANG | 11/1/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**ONE-LINE DIAGRAMS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 47 | |

E4

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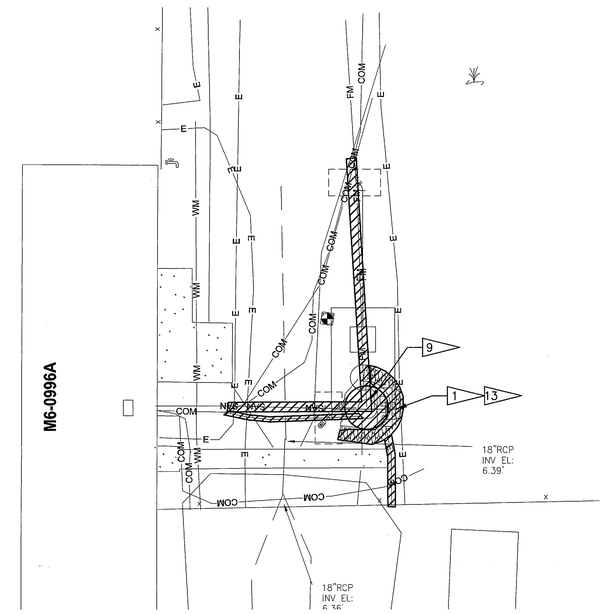
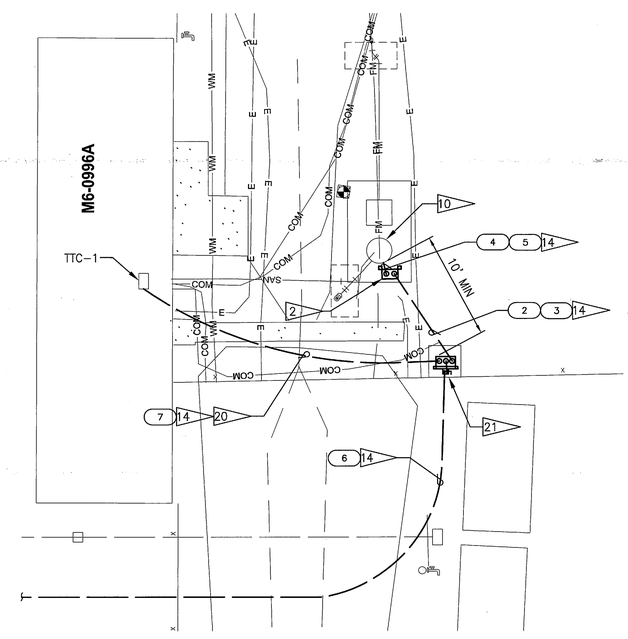
## LIFT STATION 1B AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## PROPOSED LIFT STATION 1B SITE PLAN
1"=10'

**NOTES:**

A. HAND DIG ALL CONDUITS WITHIN SUBSTATION FENCE.

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10

-N-

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| A | | GENERAL REVISIONS | 10/31/11 | |

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| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## LIFT STATION 1B ELECTRICAL PLAN

E5

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 — SHEET 48

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## NOTES:

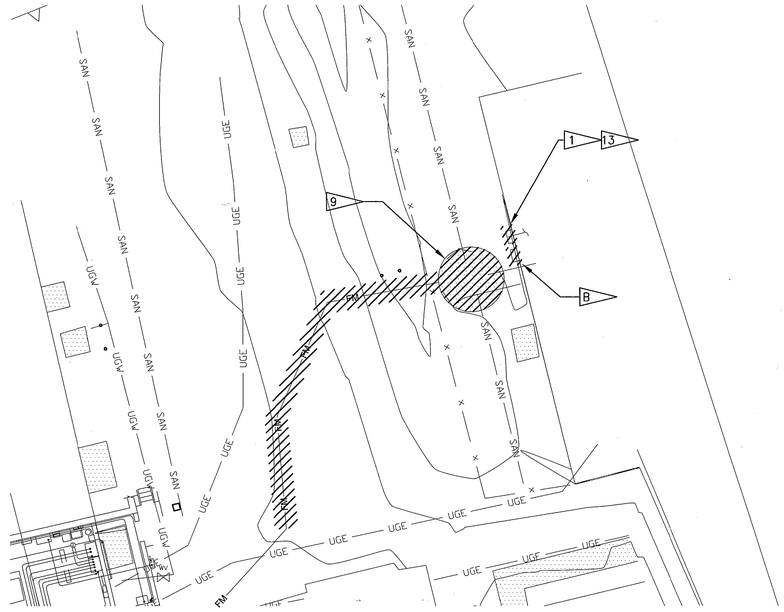
A. MOUNT JUNCTION BOX TO WALL OF EXISTING K6-0793 BUILDING USING STAINLESS STEEL HARDWARE.

B. REMOVE EXISTING PH MONITORING SYSTEM, INSTRUMENTATION SYSTEM ENCLOSURE, AND ALL ASSOCIATED WIRING AND PIPING TO WET WELL.

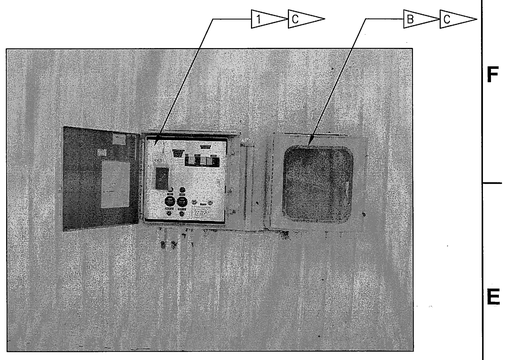
C. SEAL HOLES LEFT BY REMOVED EQUIPMENT WITH 30 YEAR ACRYLIC CAULK AND PAINT TO MATCH BUILDING EXTERIOR.

D. TWISTED SHIELDED PAIRED CONDUITS AND CABLES TO BE TERMINATED AT PLC. CONTRACTOR SHALL PROVIDE 10' SPARE TWISTED SHIELDED PAIRED CABLE COILED UP INSIDE OF PLC PANEL.

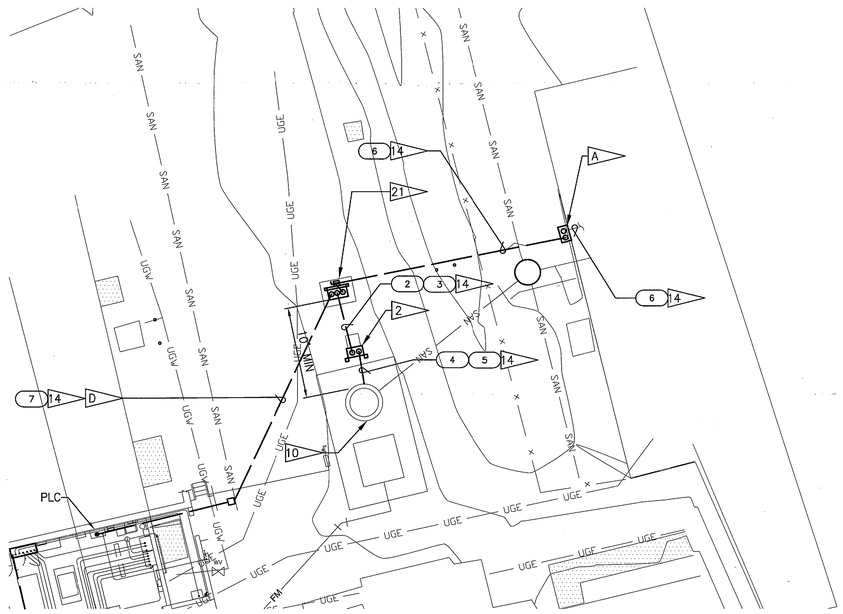
## LIFT STATION LS-4A1 AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION LS-4A1 CONTROL PANEL PHOTO
NTS




## LIFT STATION LS-4A1 SITE PLAN
1"=10'

GRAPHIC SCALE 0 10 20 40
SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20
SCALE IN FEET 1"=10'

N

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| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
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| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATION 4A1 ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
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E6

SC FORM 1-11 (3/76)(C/G 3/94)

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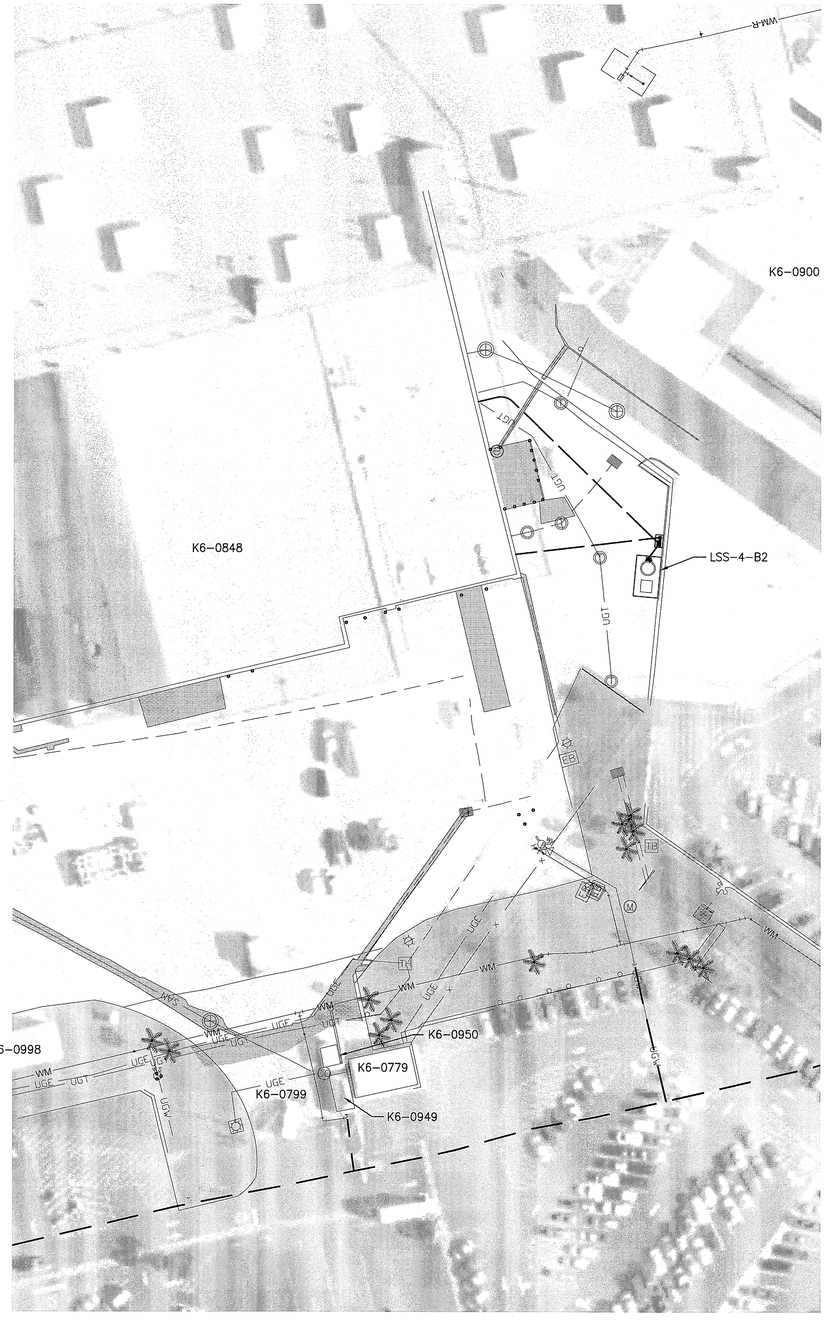
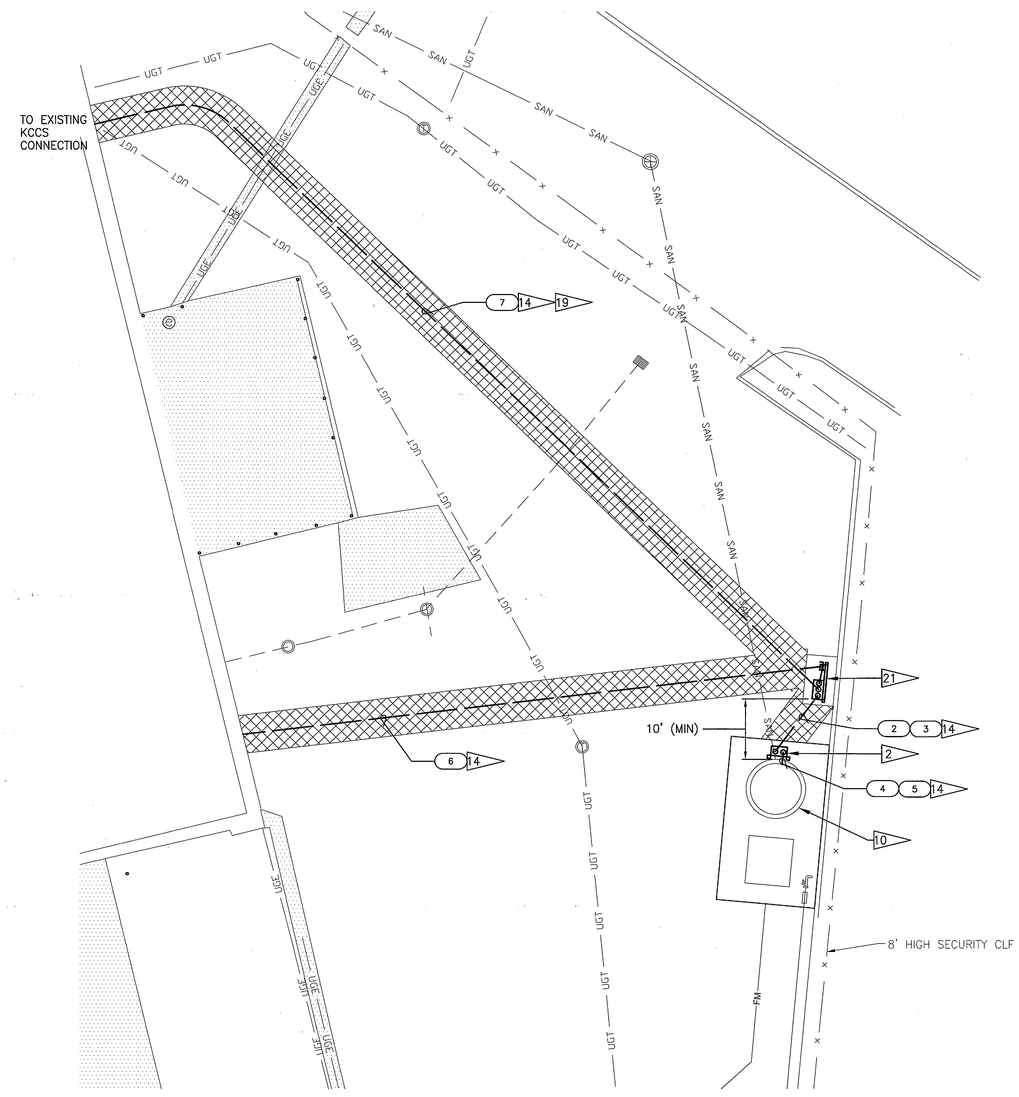



## LIFT STATION 4-B2 AREA PLAN
1"=40'




## LIFT STATION 4-B2 SITE PLAN
1"=10'

GRAPHIC SCALE
0 20 40 80
SCALE IN FEET
1"=40'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

-N-

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
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| SIGNATURES | DATE |
|---|---|
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| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS

## LIFT STATION 4B2 ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 50 | |

E7

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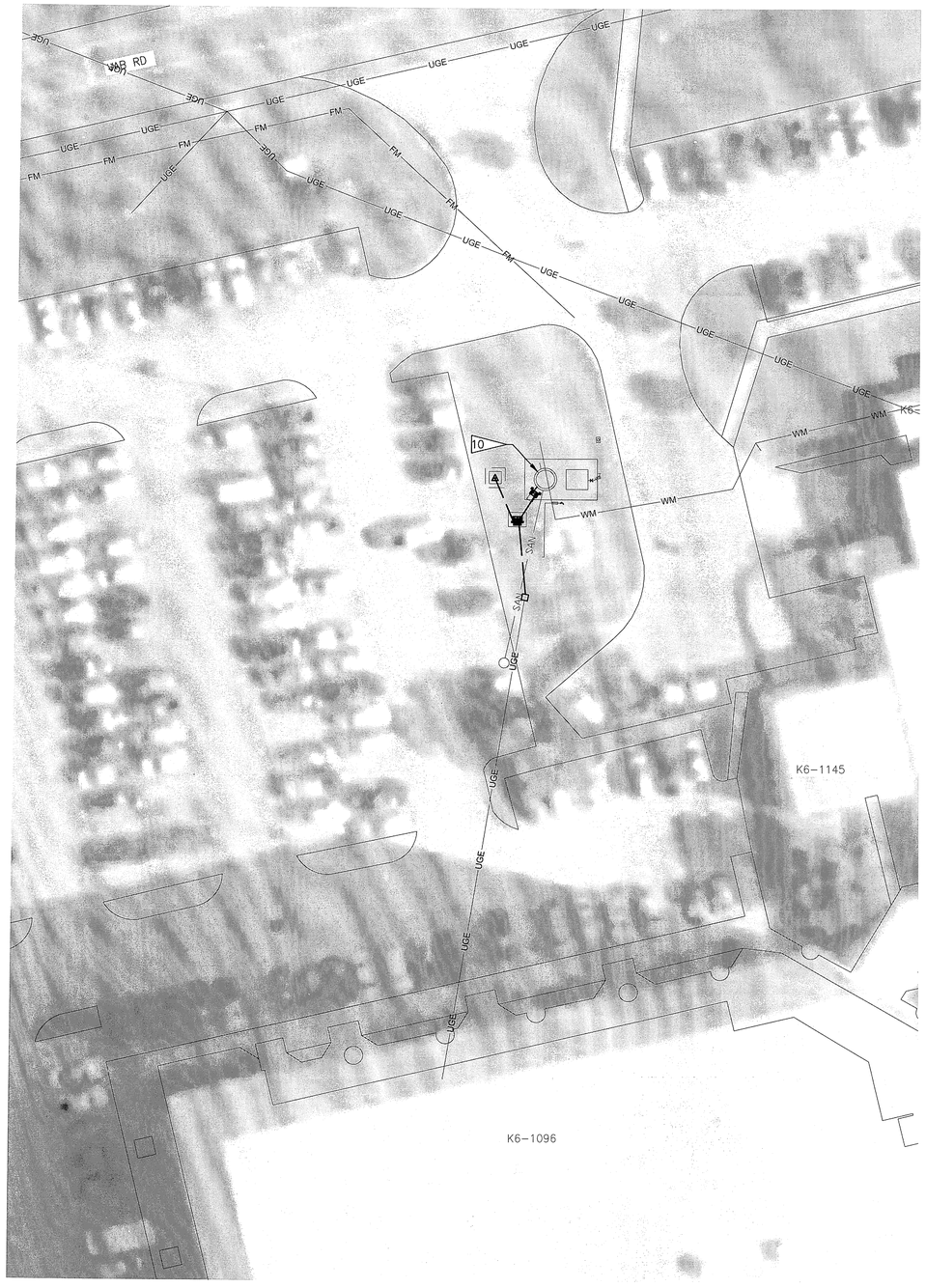
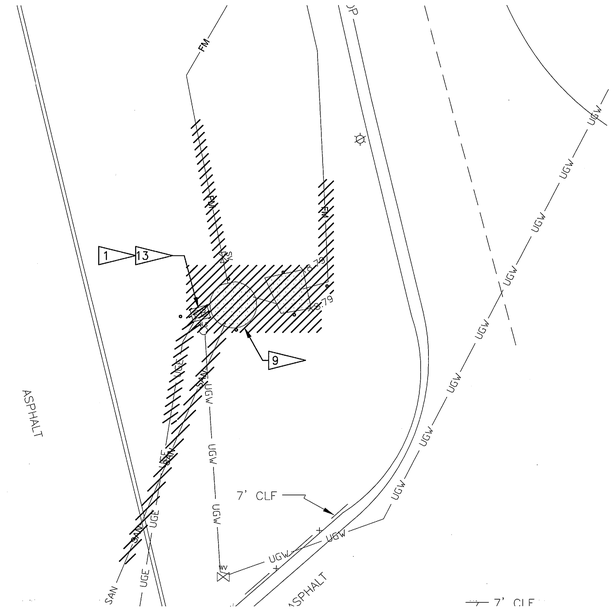
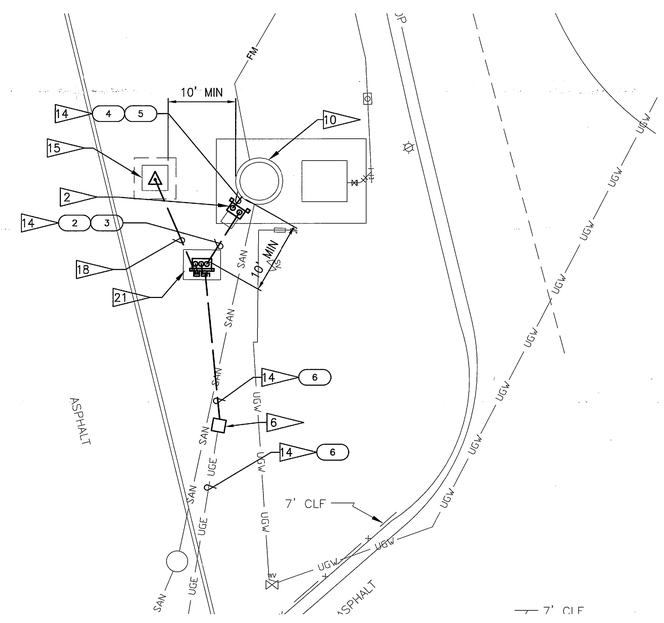


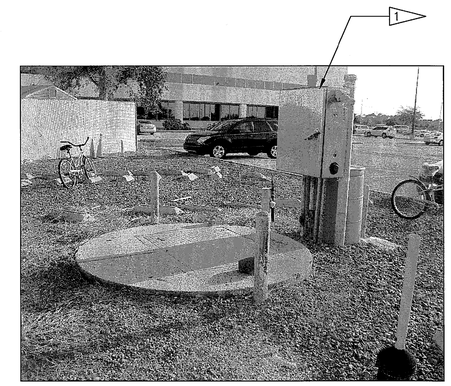

## LIFT STATION LS-4D AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION LS-4D SITE PLAN
1"=10'




## LIFT STATION LS-4D PHOTO
NTS

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATION 4D ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 51 | |

E8

FORM 1-11 (3/76)(C/G 3/94)

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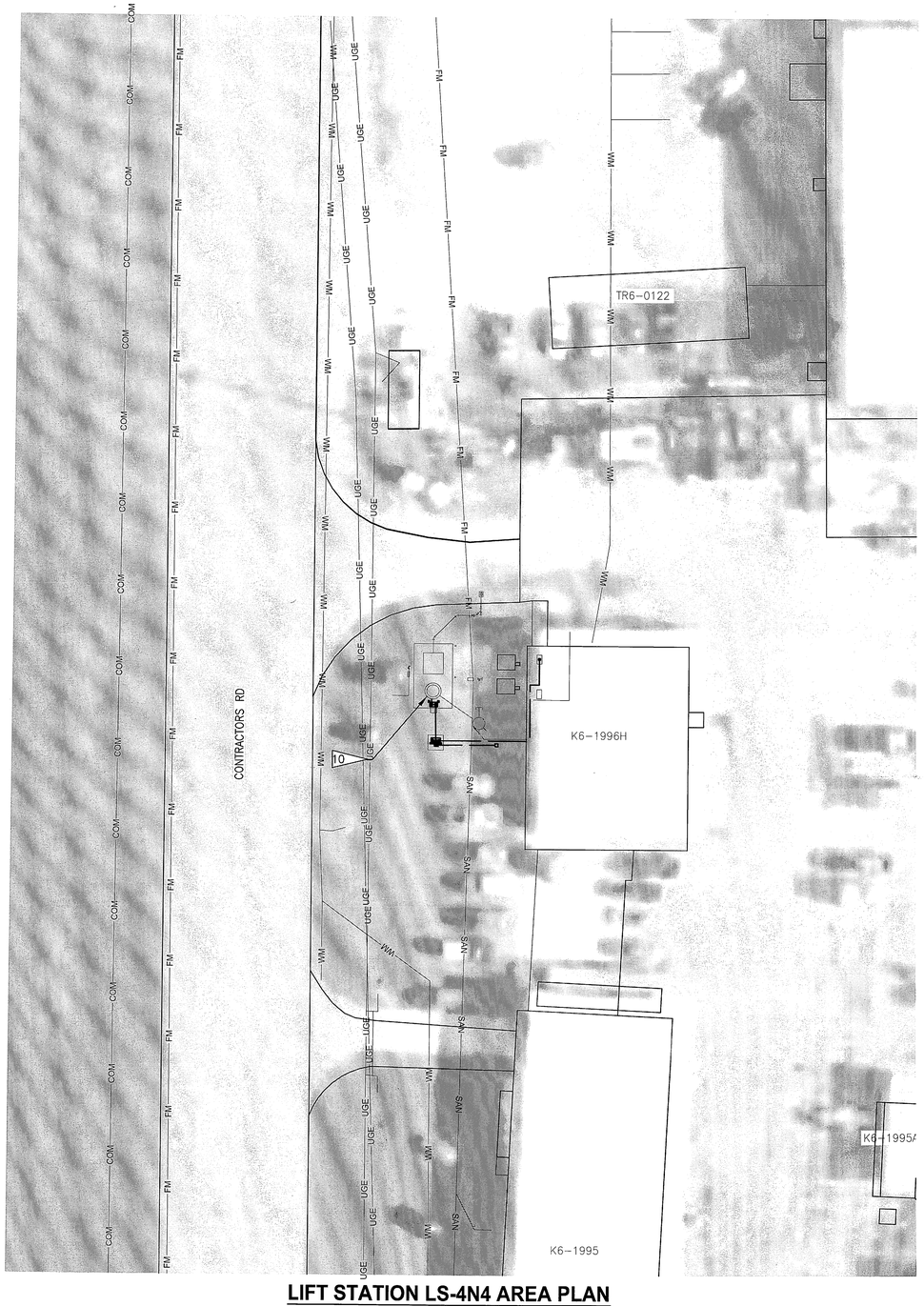
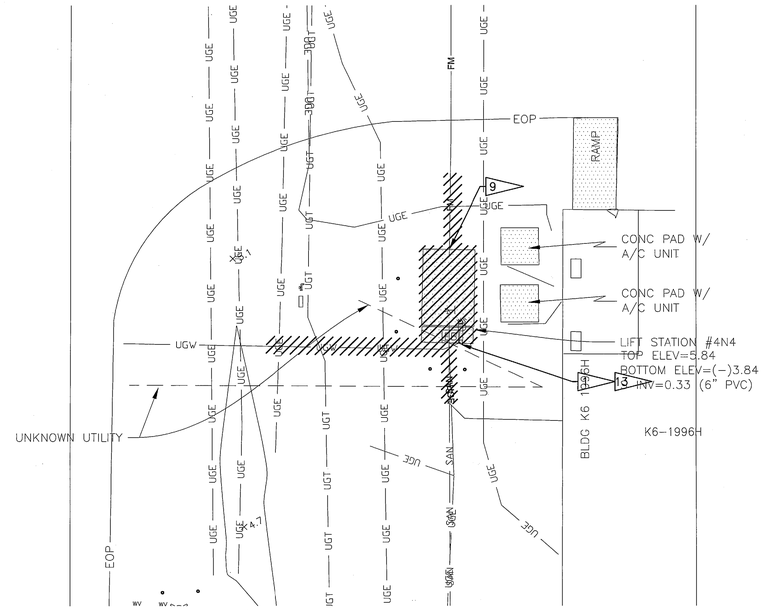
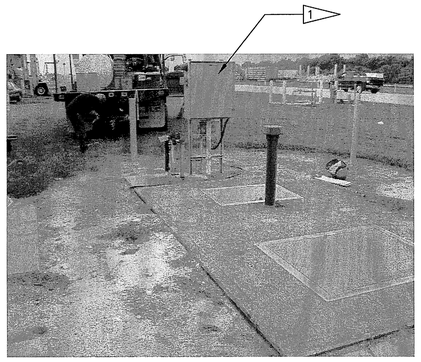


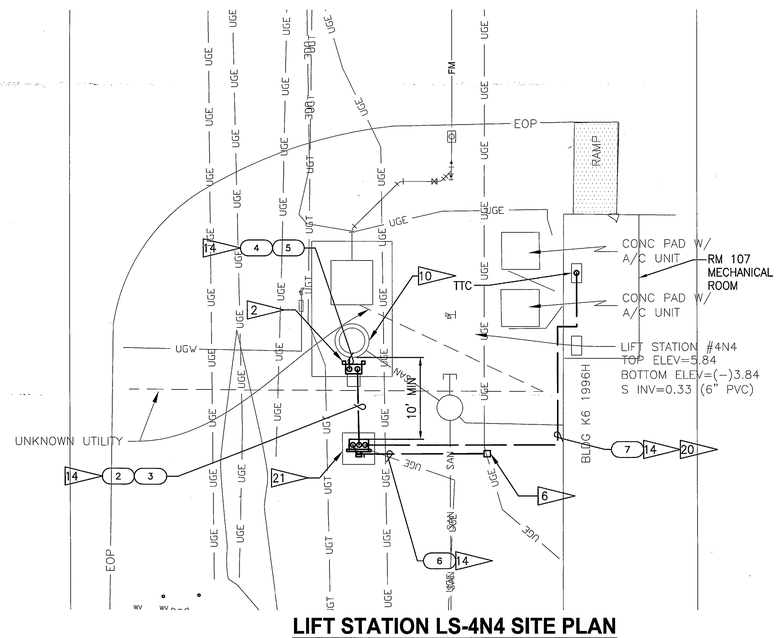

## LIFT STATION LS-4N4 AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION LS-4N4 PHOTO
NTS




## LIFT STATION LS-4N4 SITE PLAN
1"=10'

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | RM |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATION 4N4 ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 52 | |

E9

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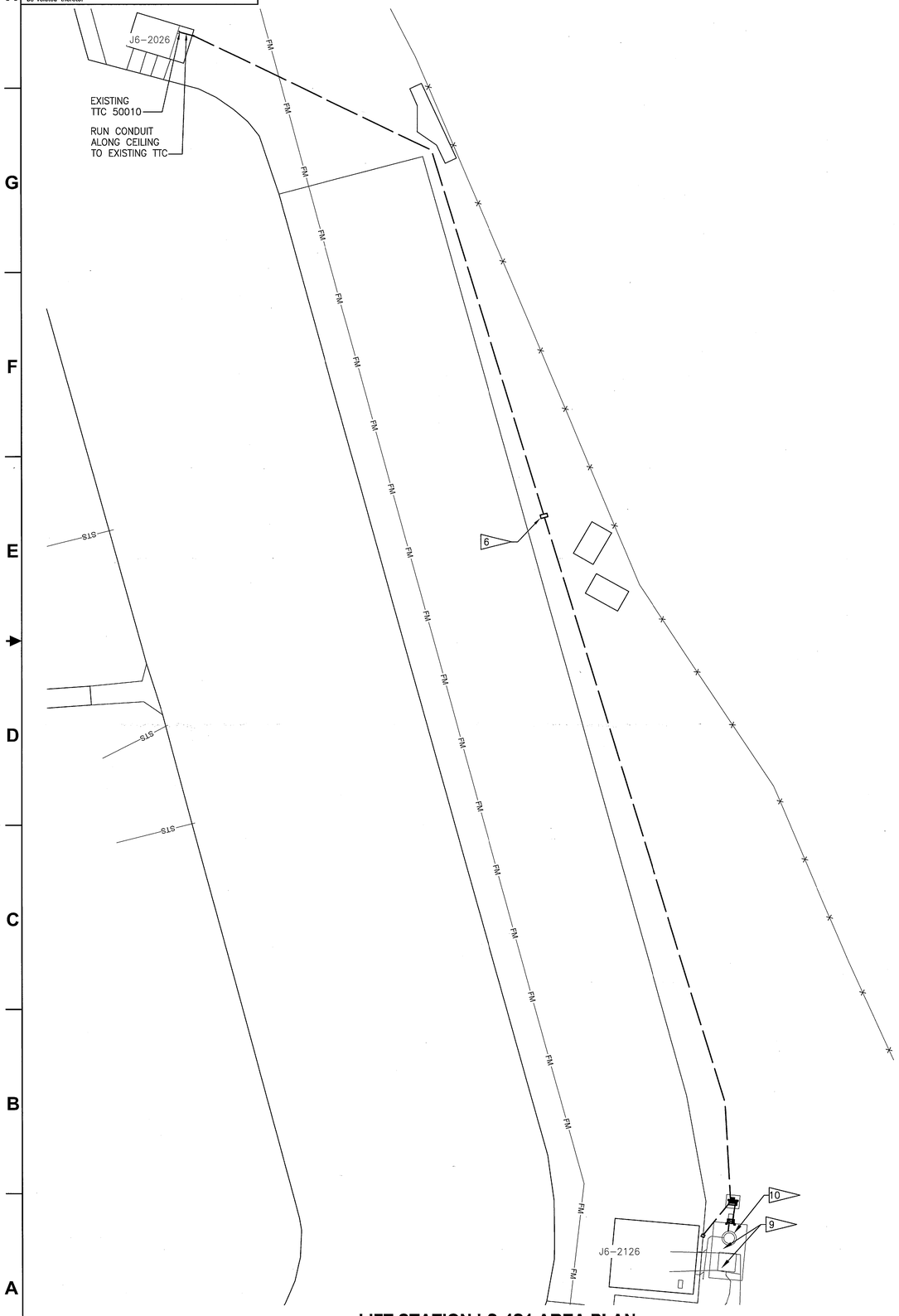
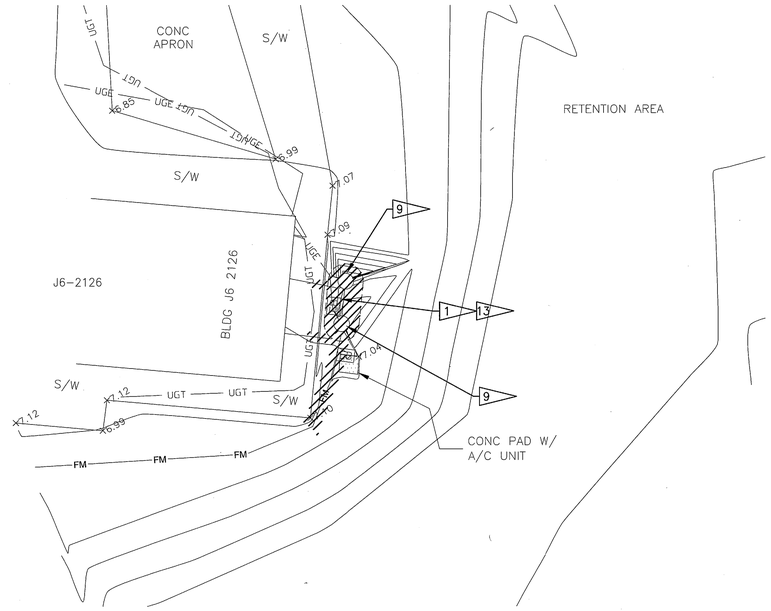
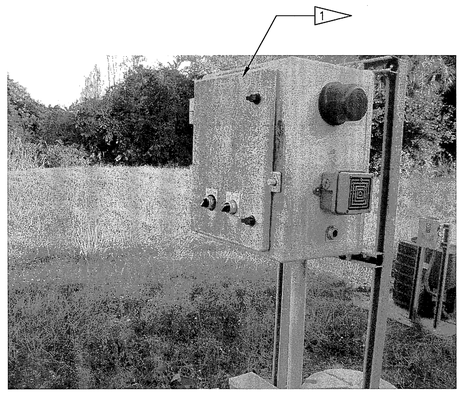


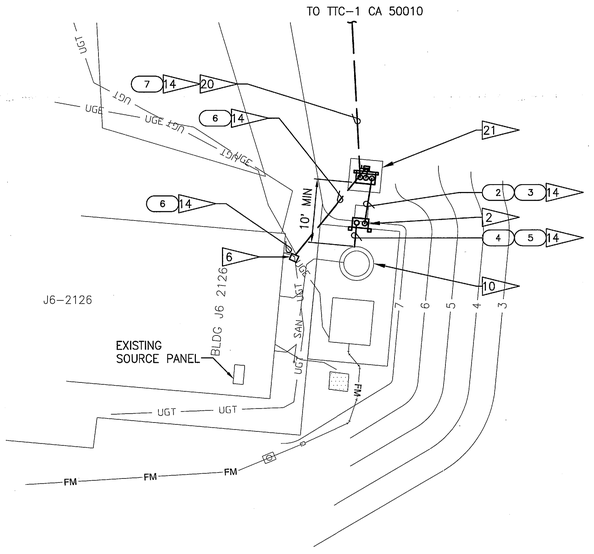

## LIFT STATION LS-4S1 AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION LS-4S1 CONTROL PANEL PHOTO
NTS




## LIFT STATION LS-4S1 SITE PLAN
1"=10'

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATION 4S1 ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 53 | |

E10

SC FORM 1-11 (3/76)(C/G 3/94)

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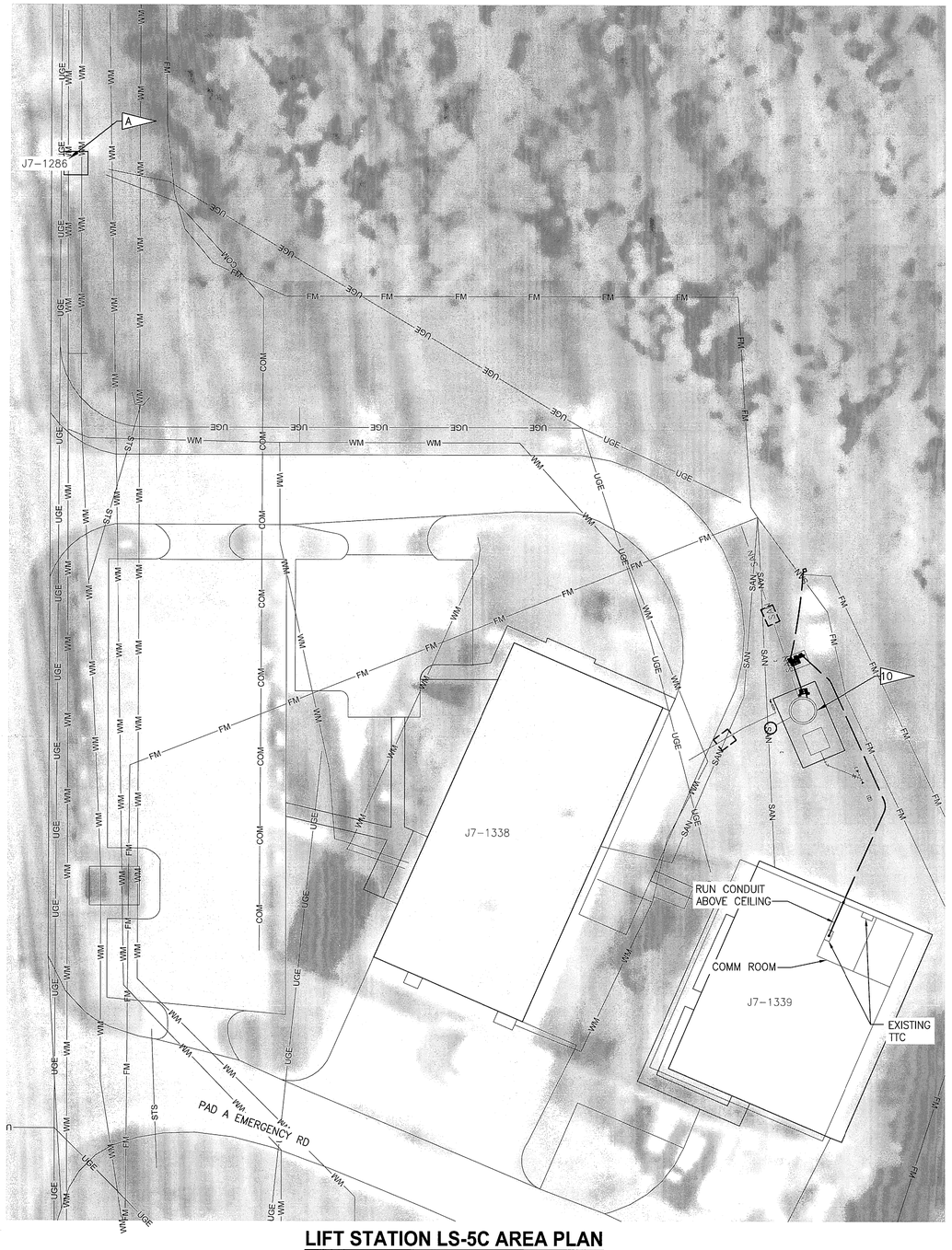
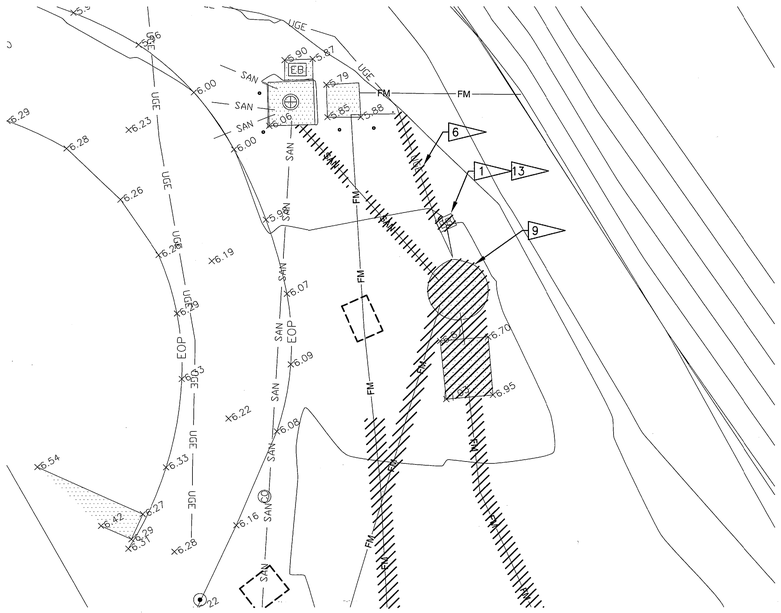
**NOTES:**

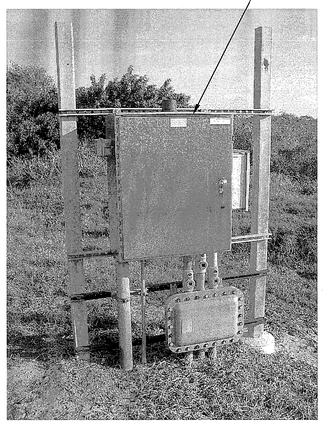
A — SUBSTATION USS 1120. LIFT STATION FED FROM SECONDARY SIDE PANEL.



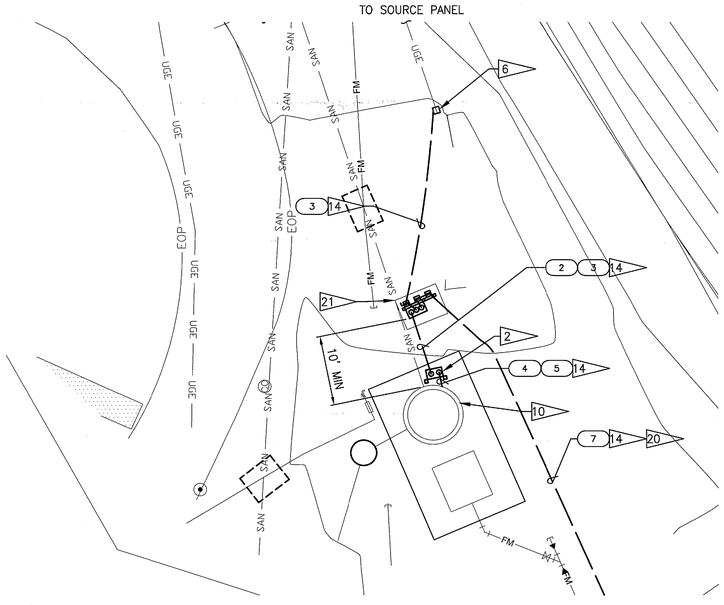

## LIFT STATION LS-5C AREA PLAN
1"=20'



## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'



## LIFT STATION LS-5C
NTS




## LIFT STATION LS-5C SITE PLAN
1"=10'

GRAPHIC SCALE 0 10 20 40 — SCALE IN FEET 1"=20'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

-N-

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATION 5C ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 54 | |

E11

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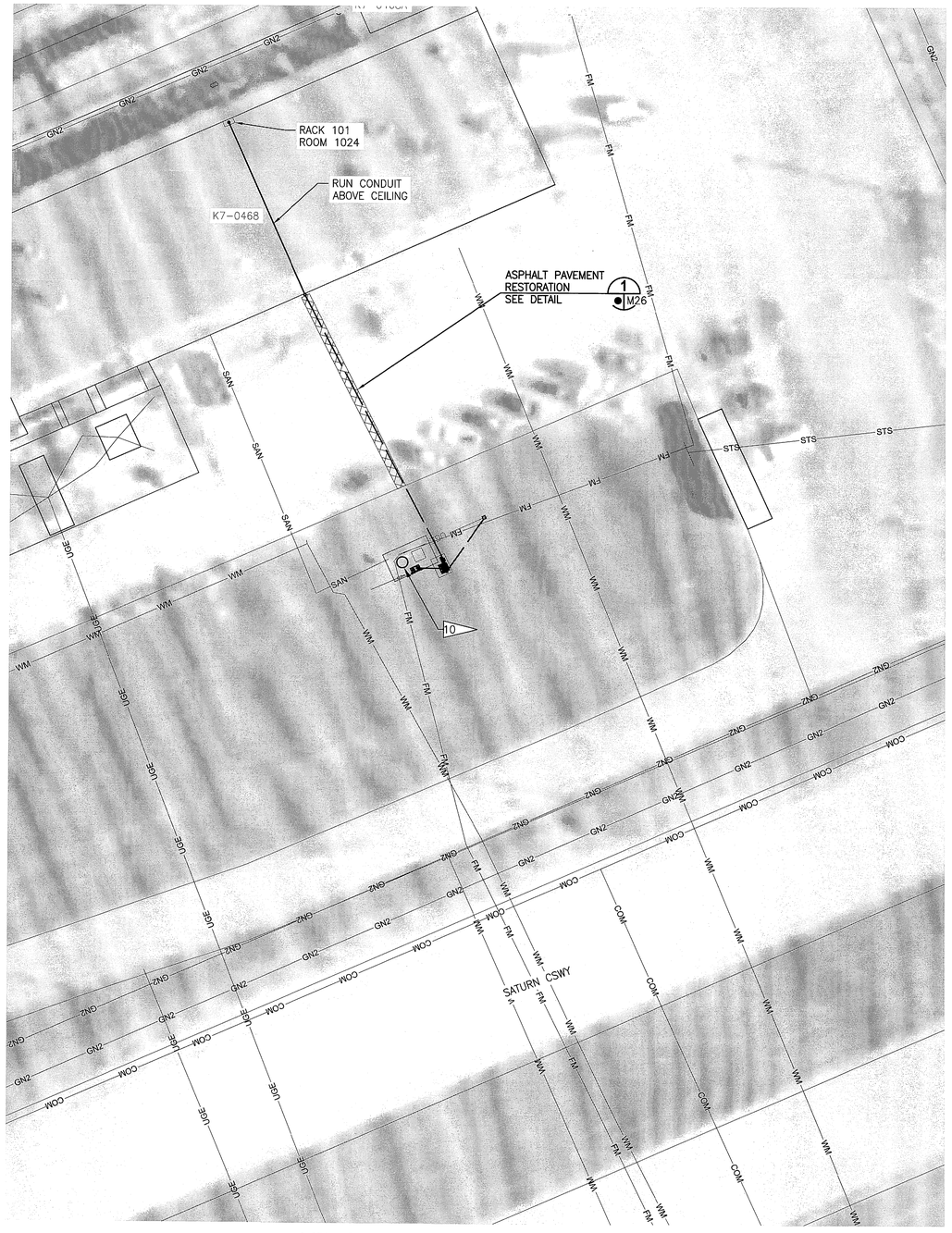
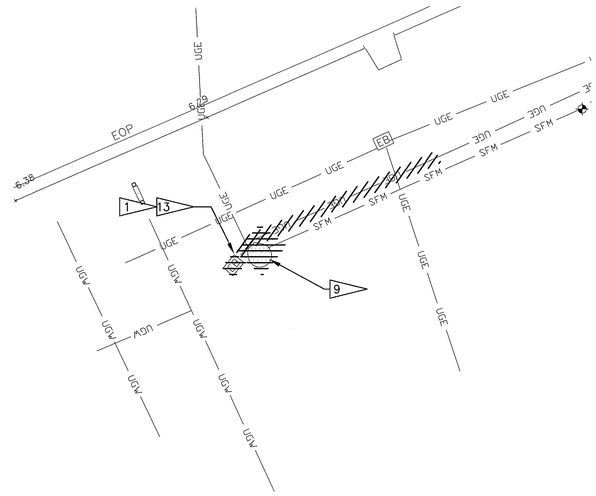
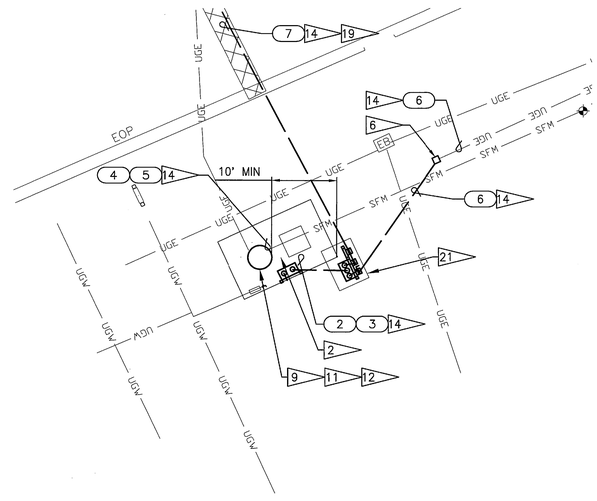



## LIFT STATION LS-9B AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'

## LIFT STATION LS-9B
NTS




## LIFT STATION LS-9B SITE PLAN
1"=10'

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 12/05/11 |
| CHECKED M KOROS | 12/05/11 |
| SUBMITTED M CLARK | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M CLARK | 12/05/11 |
| D. TRANG | 12/5/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

LIFT STATION 9B ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 55 | |

E12

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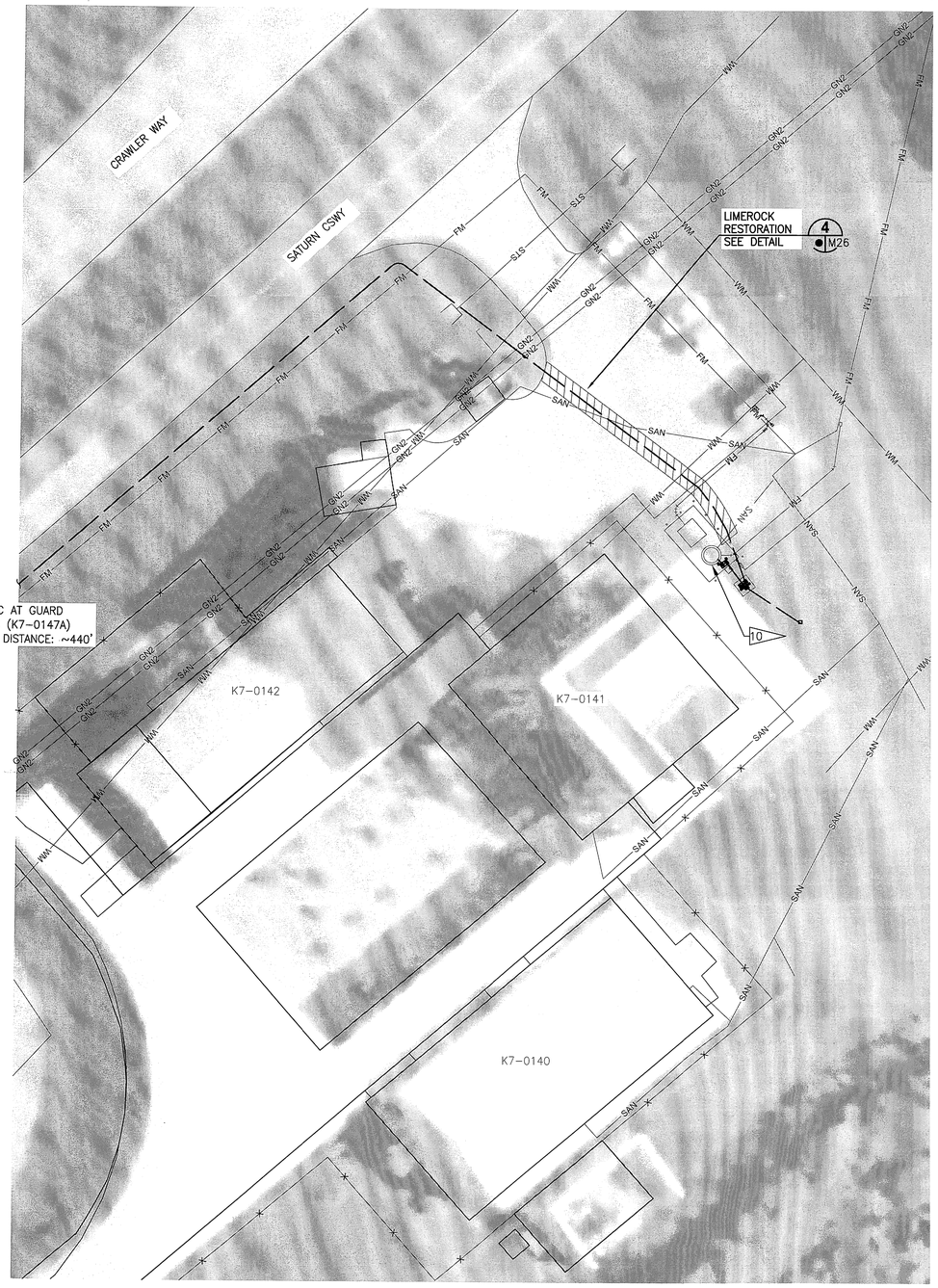
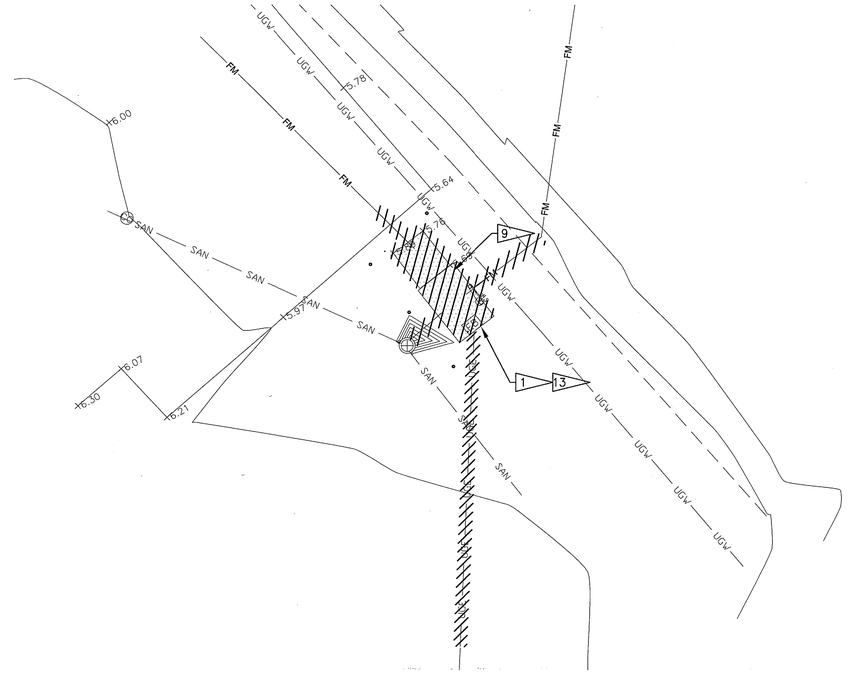
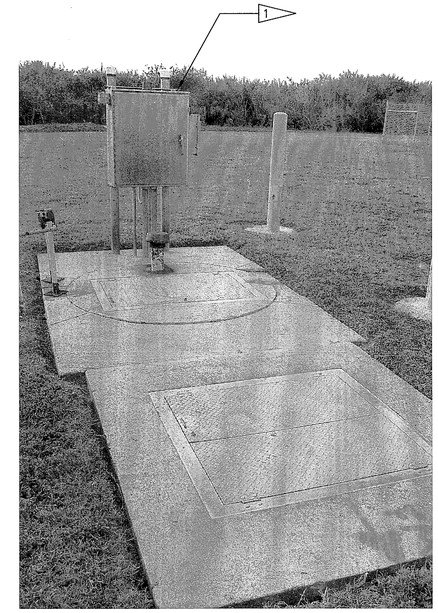


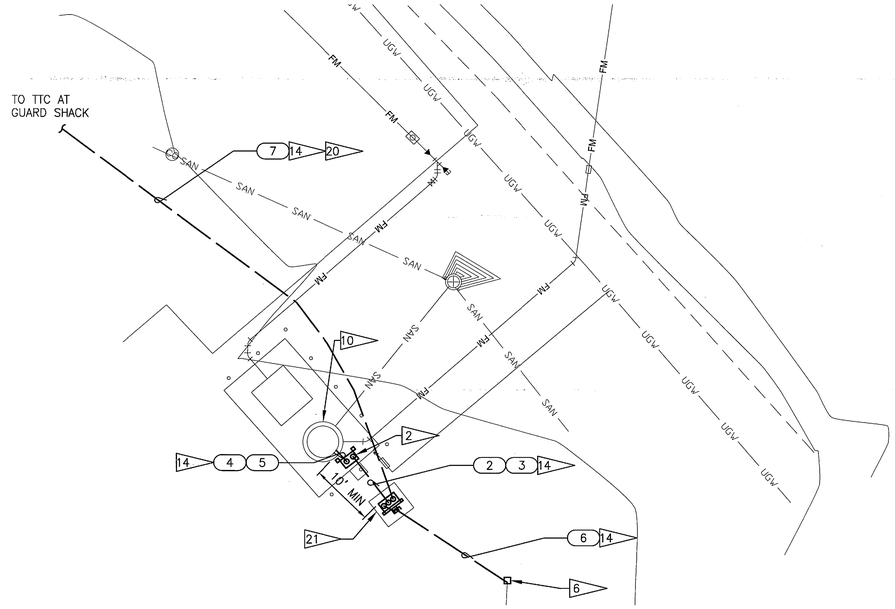

## LIFT STATION LS-9D AREA PLAN
1"=20'




## EXISTING CONDITIONS AND DEMOLITION PLAN
1"=10'




## LIFT STATION LS-9D
NTS




## LIFT STATION LS-9D SITE PLAN
1"=10'

GRAPHIC SCALE
0 10 20 40
SCALE IN FEET
1"=20'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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KENNEDY SPACE CENTER, FLORIDA

REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATION 9D ELECTRICAL PLAN

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 56 | |

E13

C FORM 1-11 (3/76)(C/G 3/94)

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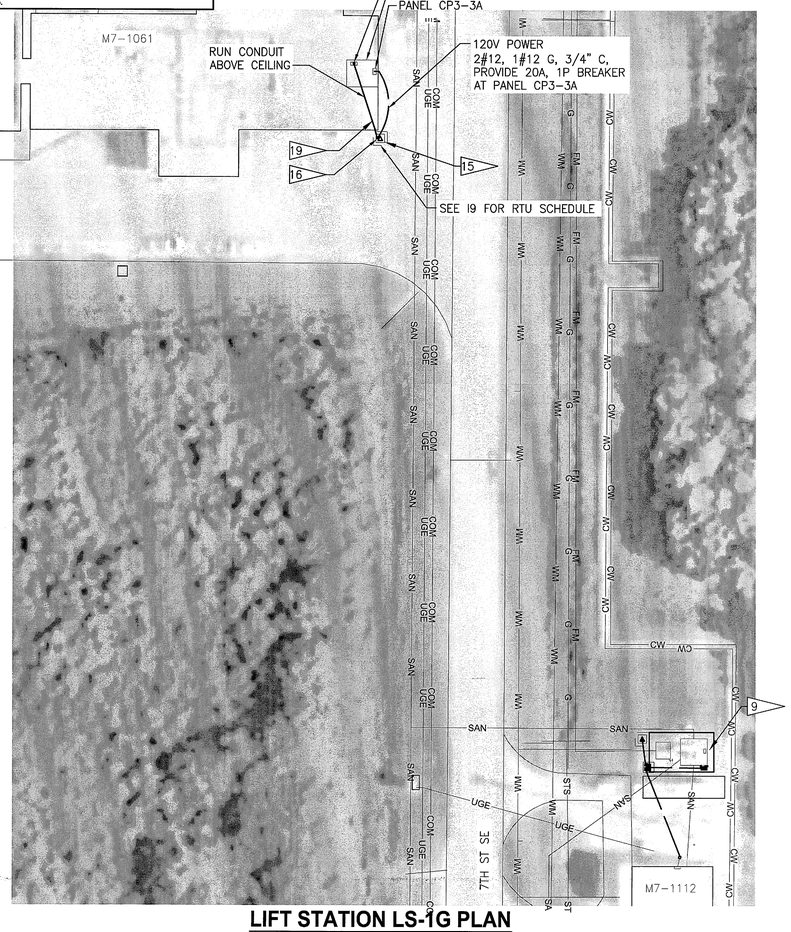
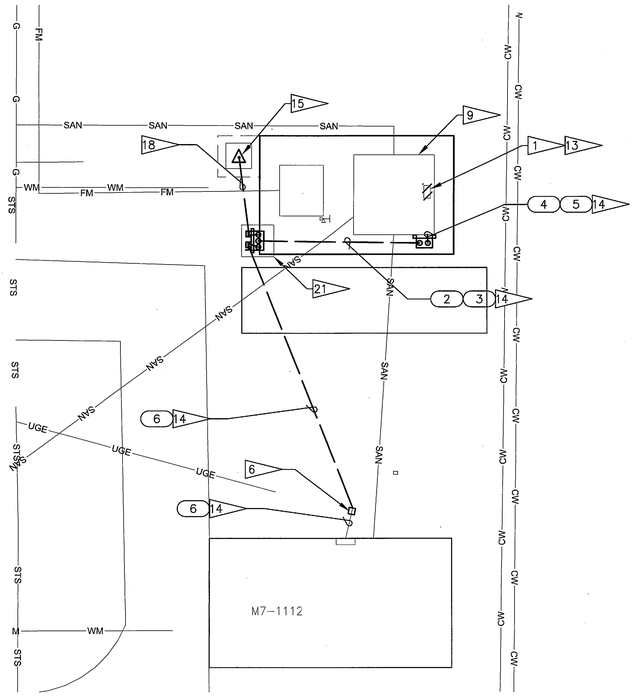
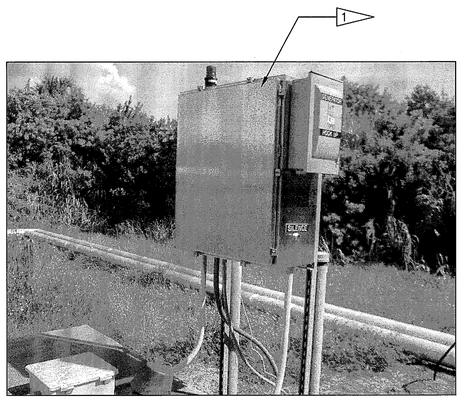


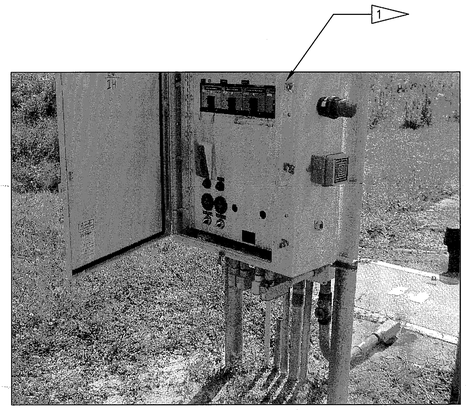

## LIFT STATION LS-1G PLAN
1"=30'



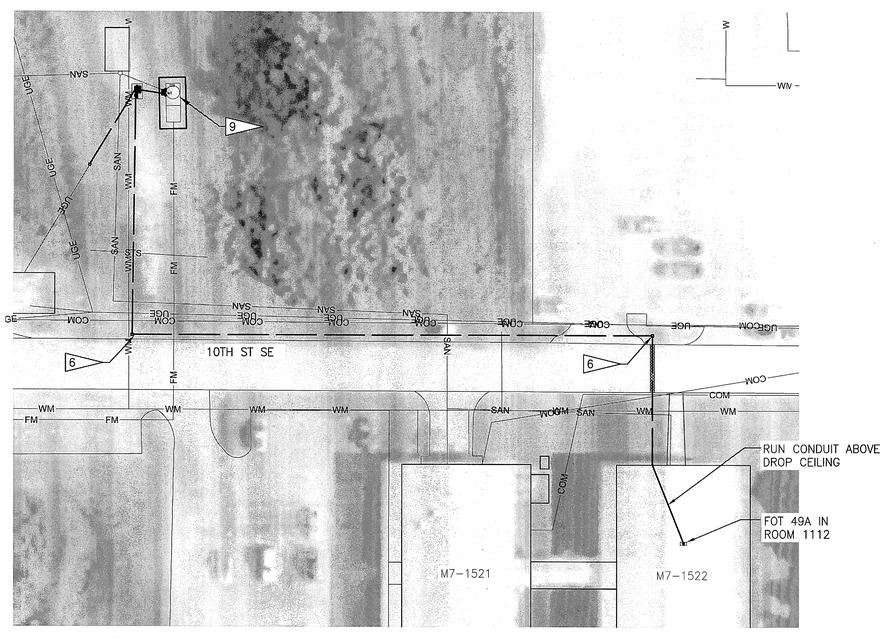

## LIFT STATION LS-1G PLAN
1"=10'



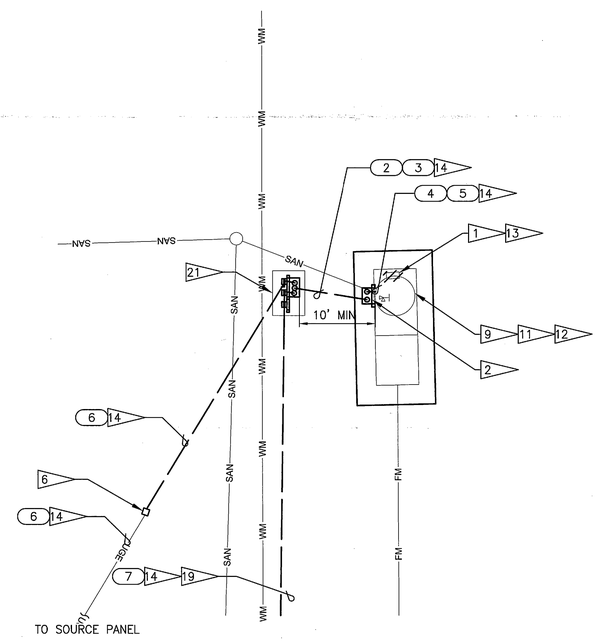
## LIFT STATION LS-1G PHOTO
NTS



## LIFT STATION LS-1H PHOTO
NTS




## LIFT STATION LS-1H PLAN
1"=30'




## LIFT STATION LS-1H PLAN
1"=10'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

REVISIONS

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JONES EDMUNDS
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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 1G AND 1H ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 57 | |

E14

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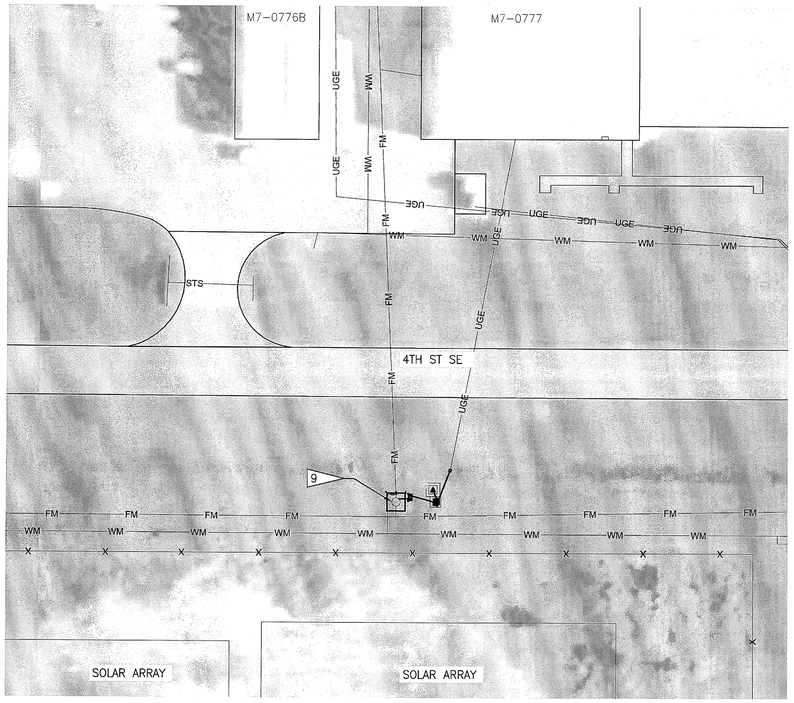
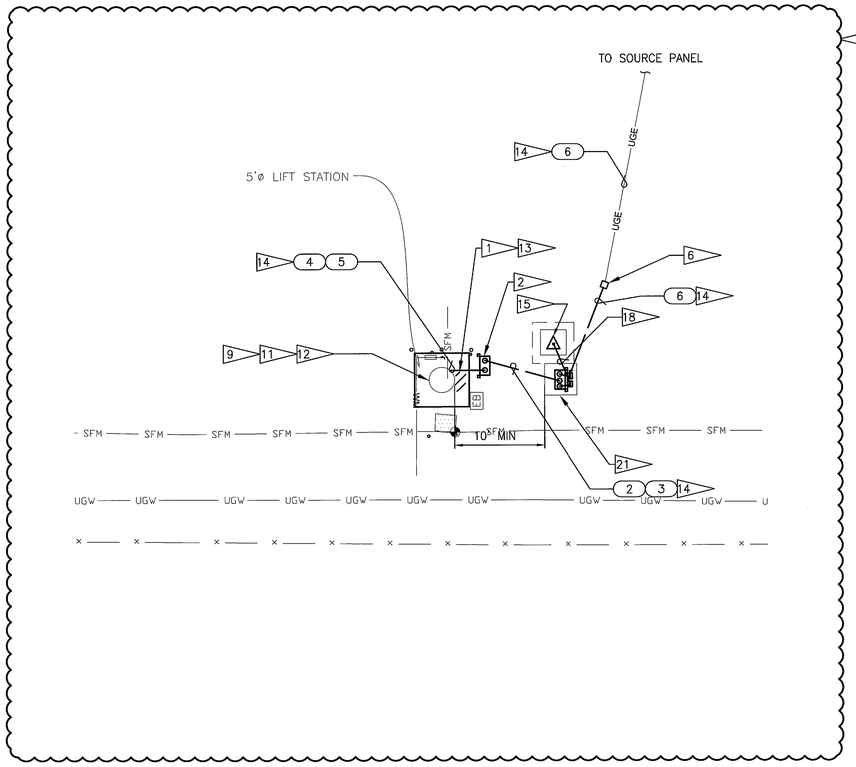
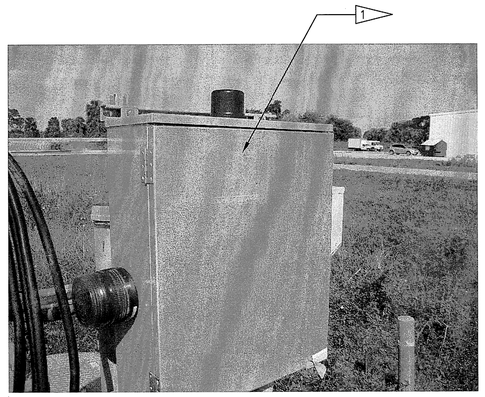


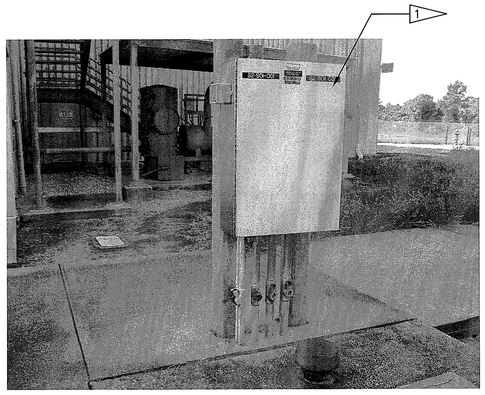

## LIFT STATION LS-1I PLAN
1"=30'



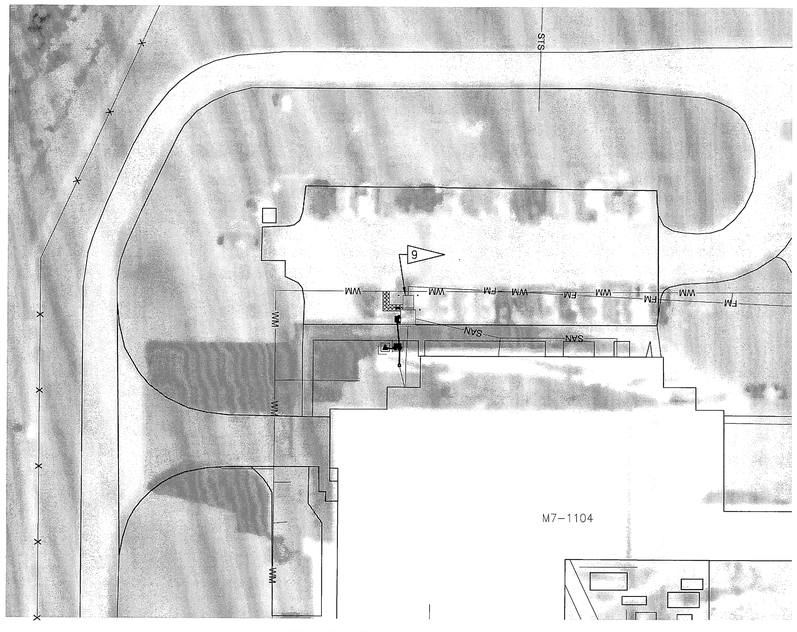

## LIFT STATION LS-1I PLAN
1"=10'



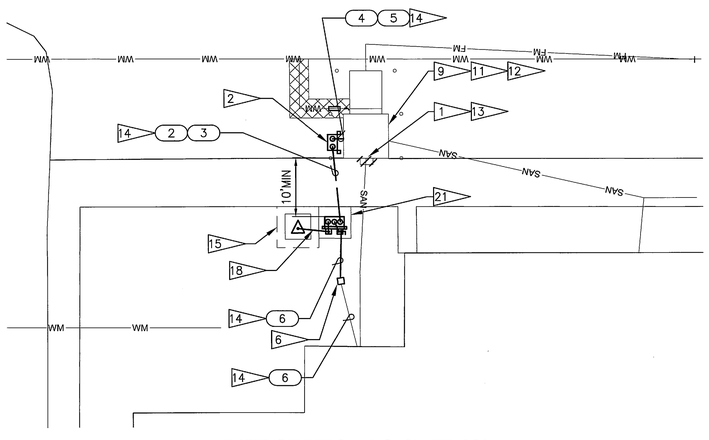
## LIFT STATION LS-1I PHOTO
NTS



## LIFT STATION LS-1N PHOTO
NTS




## LIFT STATION LS-1N PLAN
1"=30'




## LIFT STATION LS-1N PLAN
1"=10'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED PLAN | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 12/05/11 |
| CHECKED M KOROS | 12/05/11 |
| SUBMITTED M. CLARK | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | |
| D. TRANG | |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 1I AND 1N ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 | SHEET 58

E15

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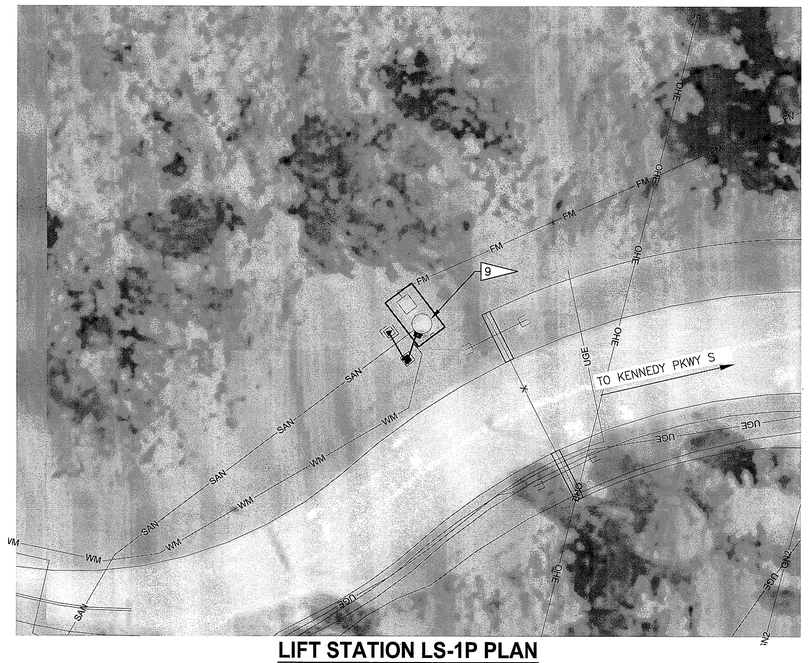
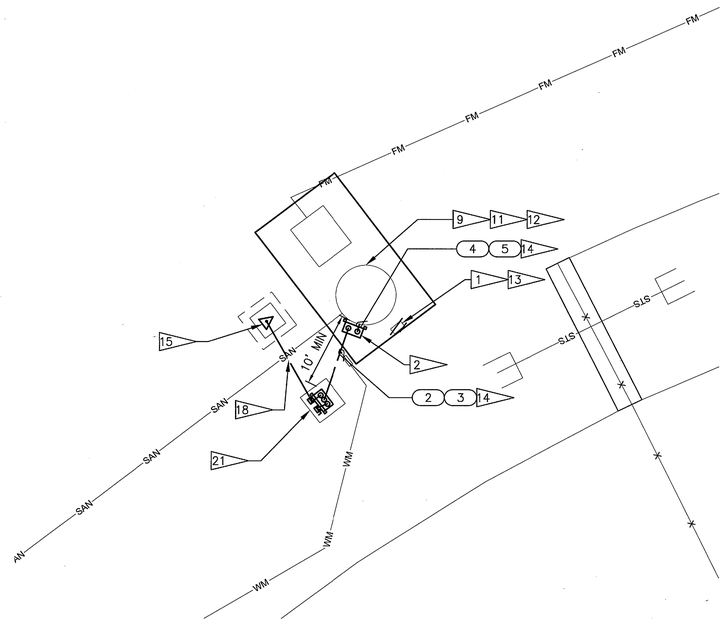
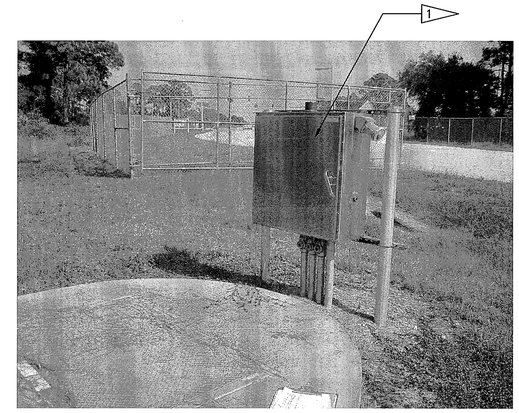


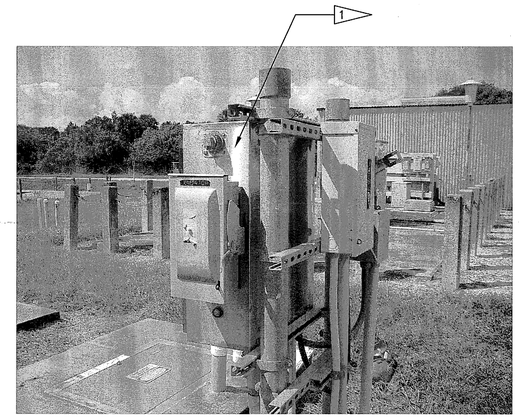

## LIFT STATION LS-1P PLAN
1"=30'



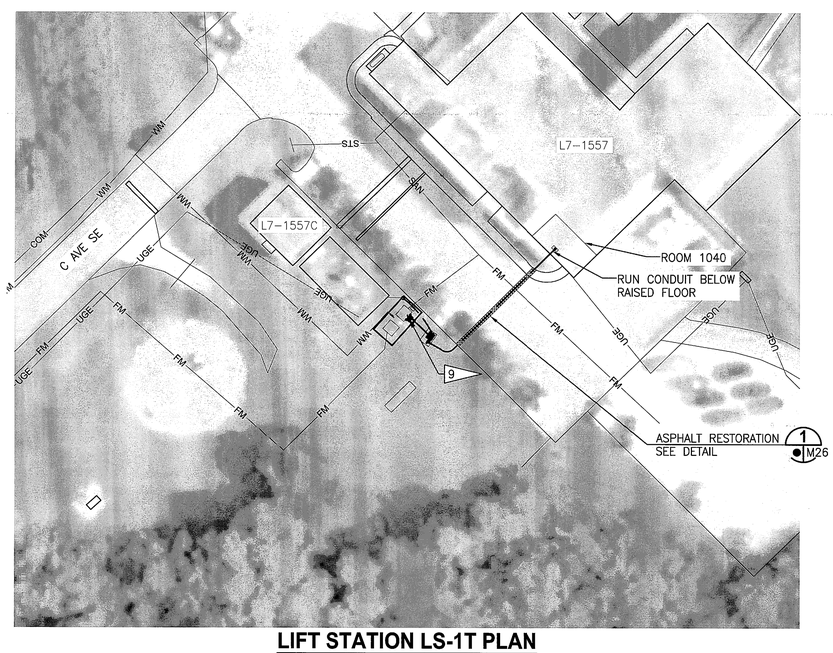

## LIFT STATION LS-1P PLAN
1"=10'



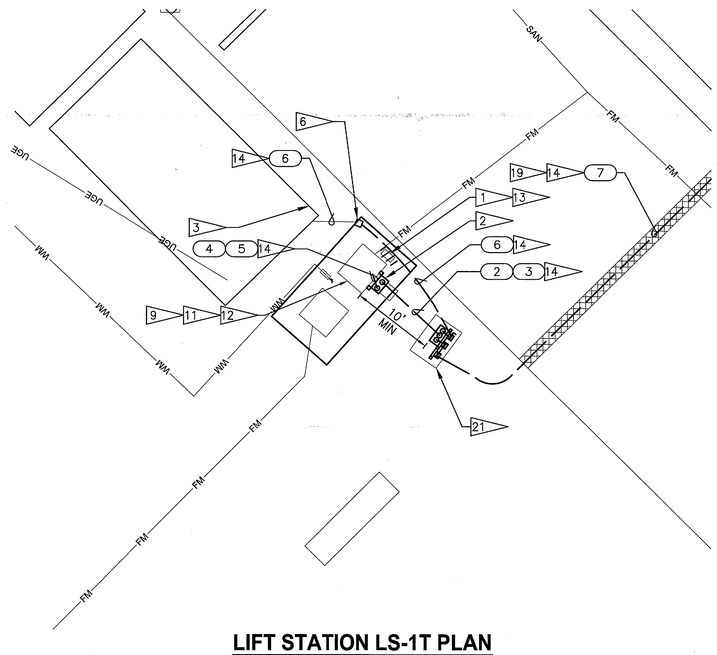

## LIFT STATION LS-1P PHOTO
NTS




## LIFT STATION LS-1T PHOTO
NTS




## LIFT STATION LS-1T PLAN
1"=30'




## LIFT STATION LS-1T PLAN
1"=10'

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| DJ TRANG | 11/1/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATIONS 1P AND 1T
ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 59

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

-N-

E16

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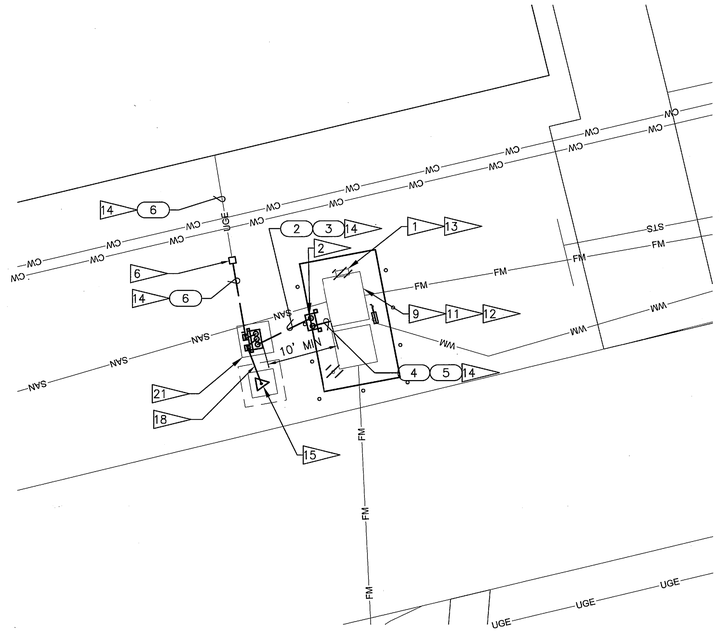
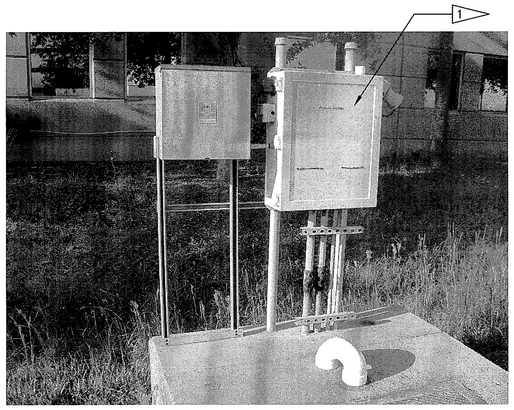
## LIFT STATION LS-4C1 PLAN
1"=30'

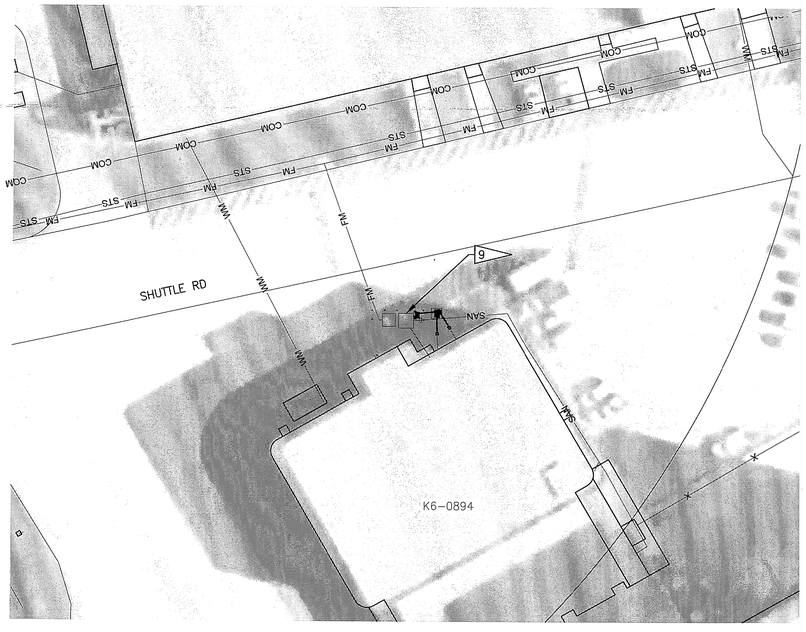



## LIFT STATION LS-4C1 PLAN
1"=10'

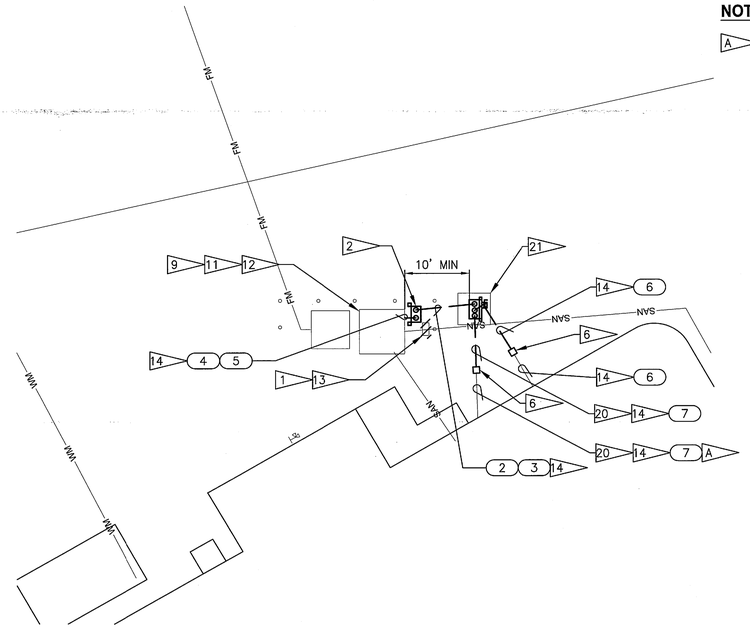


## LIFT STATION LS-4C1 PHOTO
NTS

## LIFT STATION LS-4F PHOTO
NTS




## LIFT STATION LS-4F PLAN
1"=30'




## LIFT STATION LS-4F PLAN
1"=10'

**NOTES:**

A — DEMOLISH CONDUCTORS FROM EXISTING LIFT STATION TO NETWORK SWITCH LOCATED IN ROOM 125 OF BUILDING K6-0894. REUSE EXISTING CONDUIT TO MAKE KCCS CONNECTION FROM PROPOSED LIFT STATION TO NETWORK SWITCH.

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATIONS 4C1 AND 4F
ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 60 | |

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

N

E17

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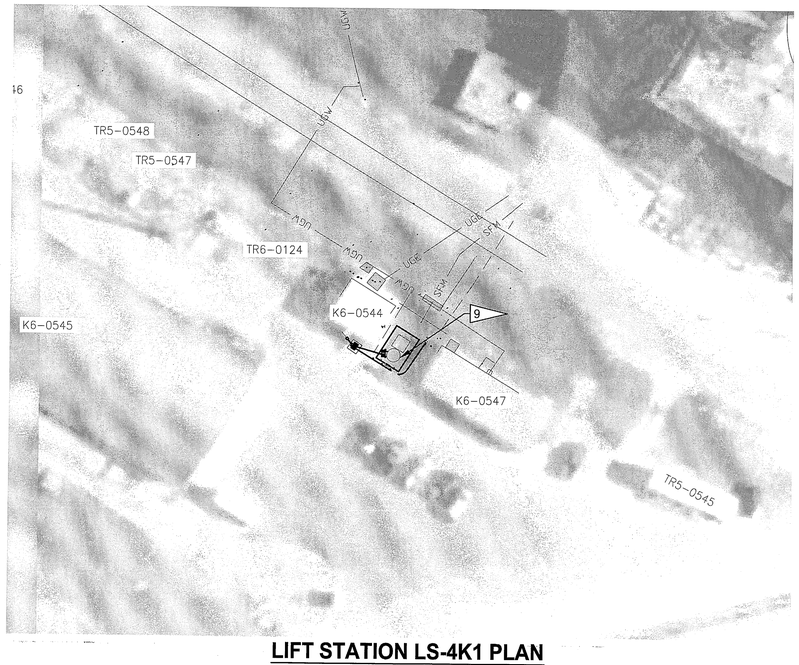
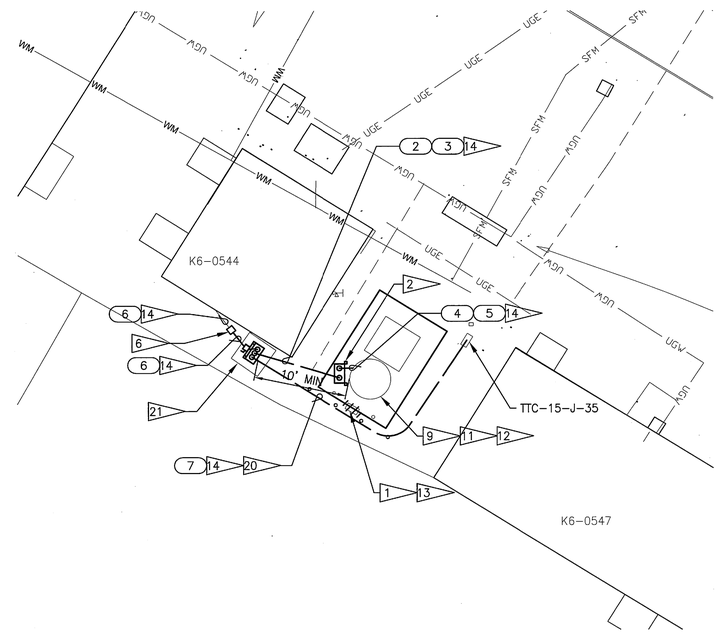
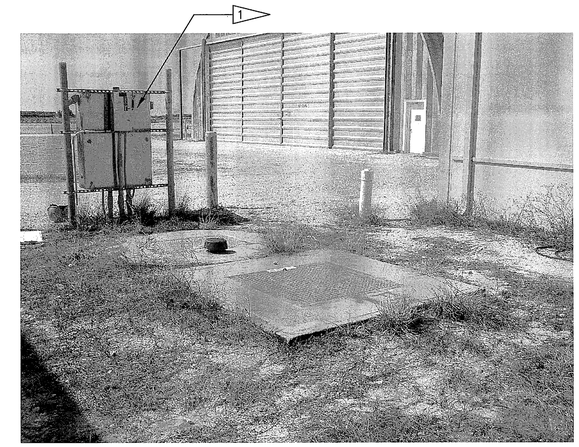


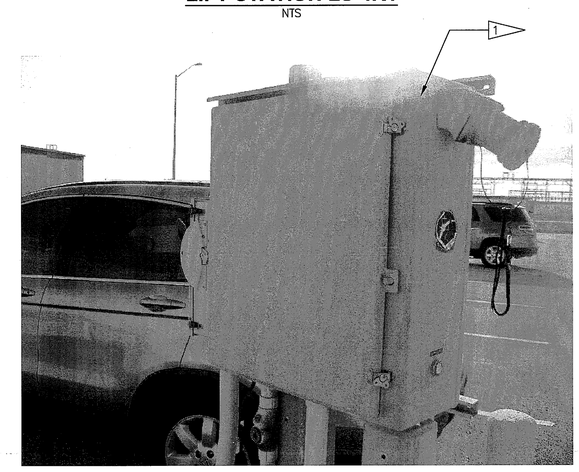

## LIFT STATION LS-4K1 PLAN
1"=30'




## LIFT STATION LS-4K1 PLAN
1"=10'

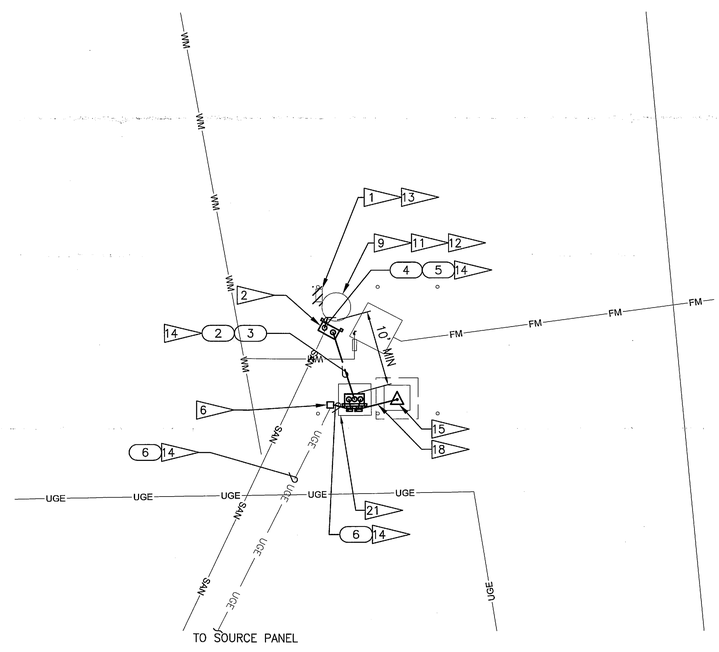



## LIFT STATION LS-4K1
NTS




## LIFT STATION LS-4L
NTS

## LIFT STATION LS-4L PLAN
1"=30'




## LIFT STATION LS-4L PLAN
1"=10'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

THIS DRAWING CREATED IN AUTOCAD 2010 FILE FORMAT AND WILL BE REVISED ONLY ON AN AUTOCAD SYSTEM. FILE: 14000189-DP2-E18.DWG

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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATIONS 4K1 AND 4L
ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 61 | |

E18

C FORM 1-11 (3/76)(C/G 3/94)

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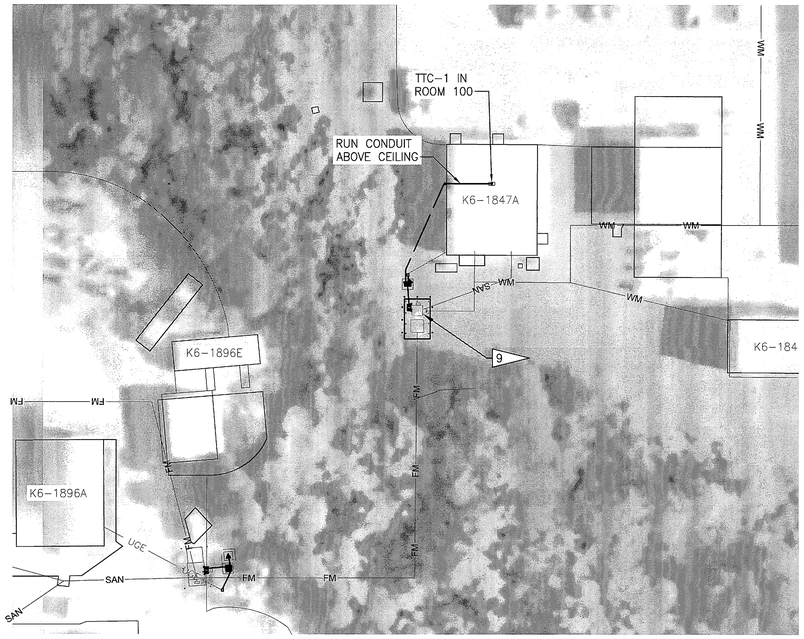
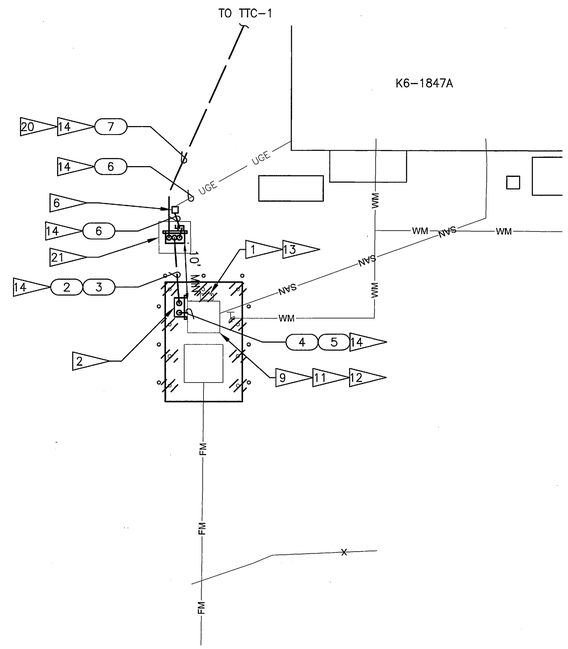
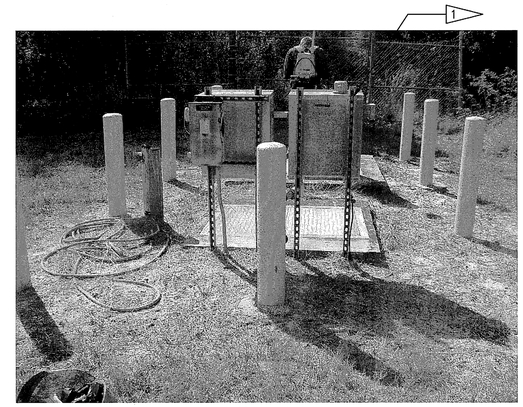


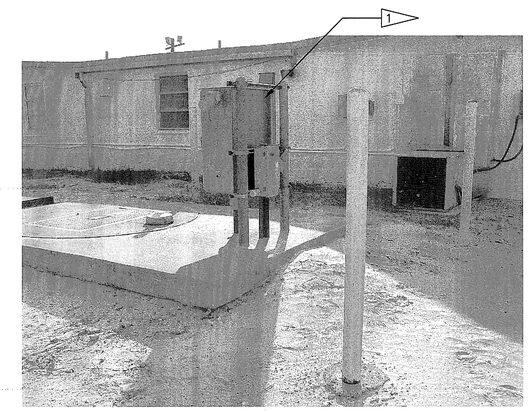

## LIFT STATION LS-4N5 PLAN
1"=30'



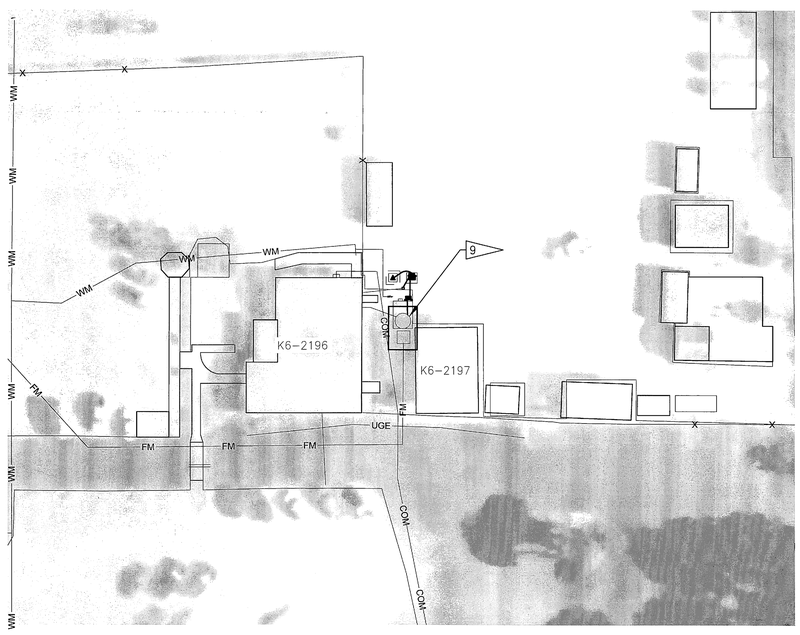

## LIFT STATION LS-4N5 PLAN
1"=10'



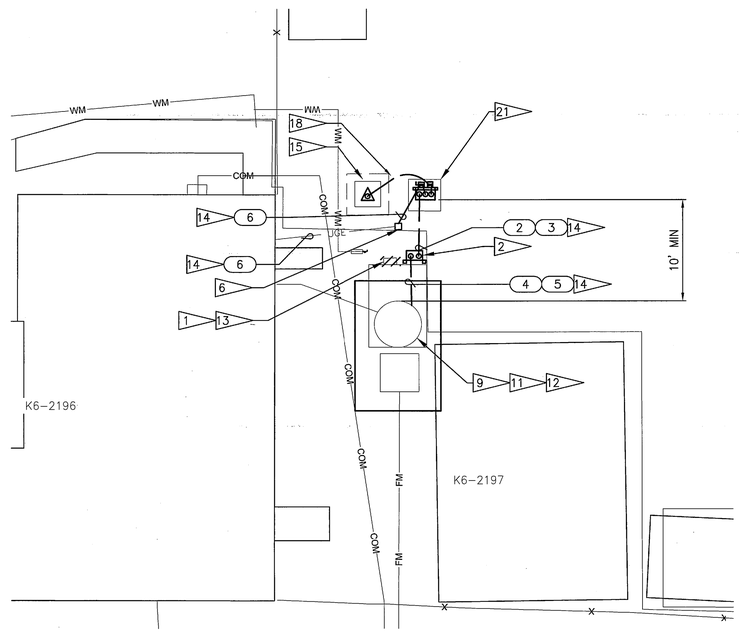

## LIFT STATION LS-4N5 PHOTO
NTS




## LIFT STATION LS-4N6 PHOTO
NTS




## LIFT STATION LS-4N6 PLAN
1"=30'




## LIFT STATION LS-4N6 PLAN
1"=10'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 4N5 AND 4N6 ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 62 | |

E19

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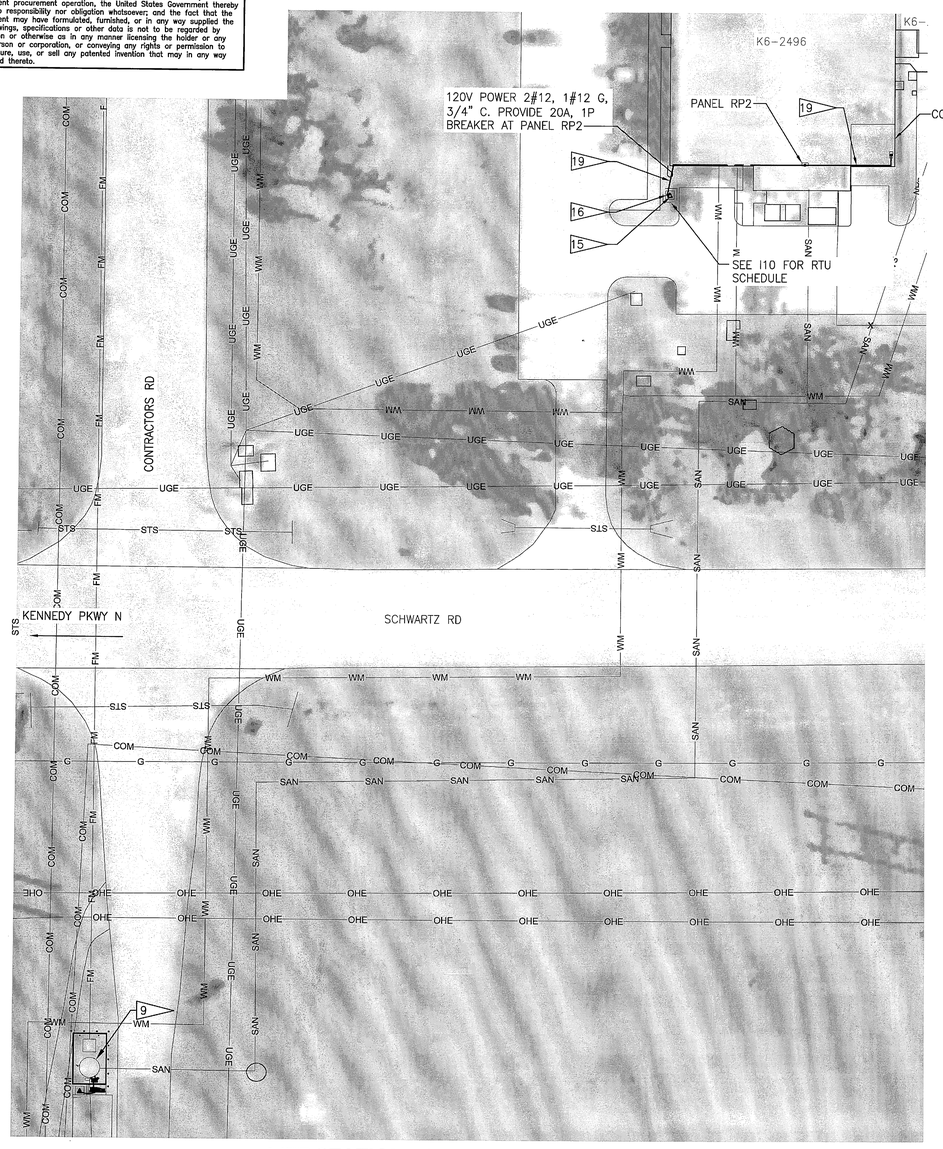
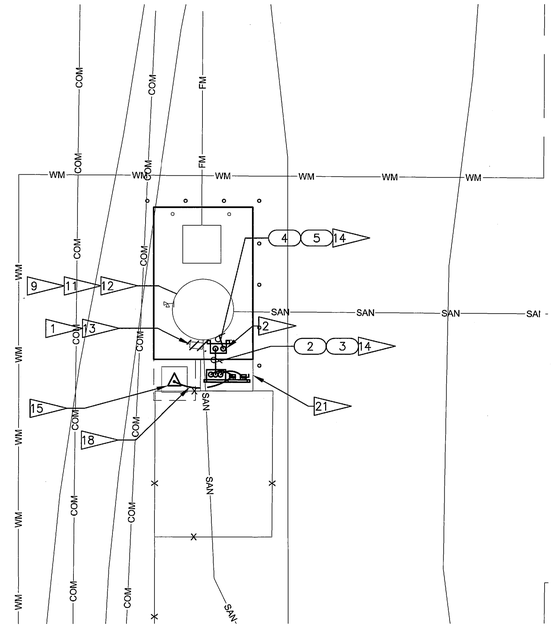
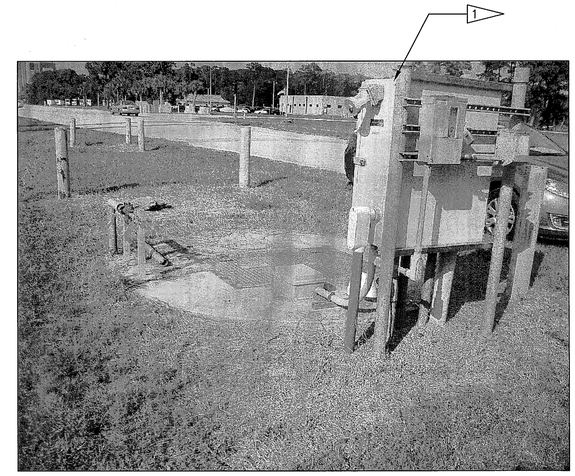


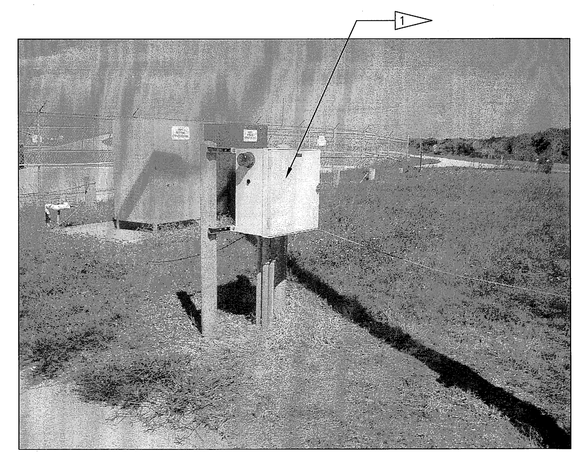

## LIFT STATION LS-4O1 PLAN
1"=30'



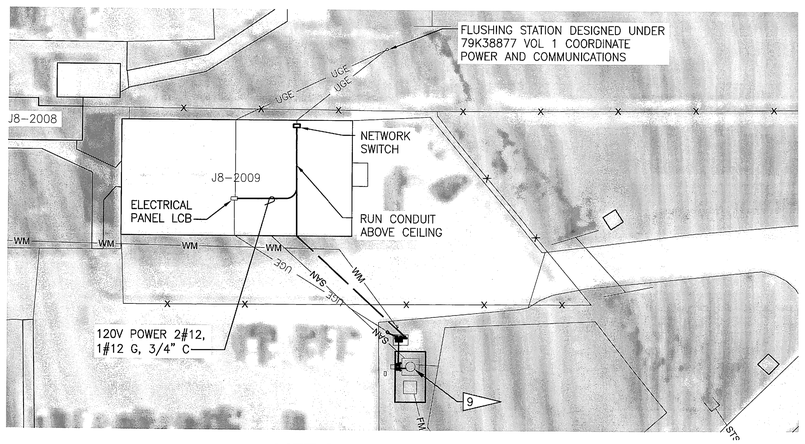
## LIFT STATION LS-4O1 PLAN
1"=10'



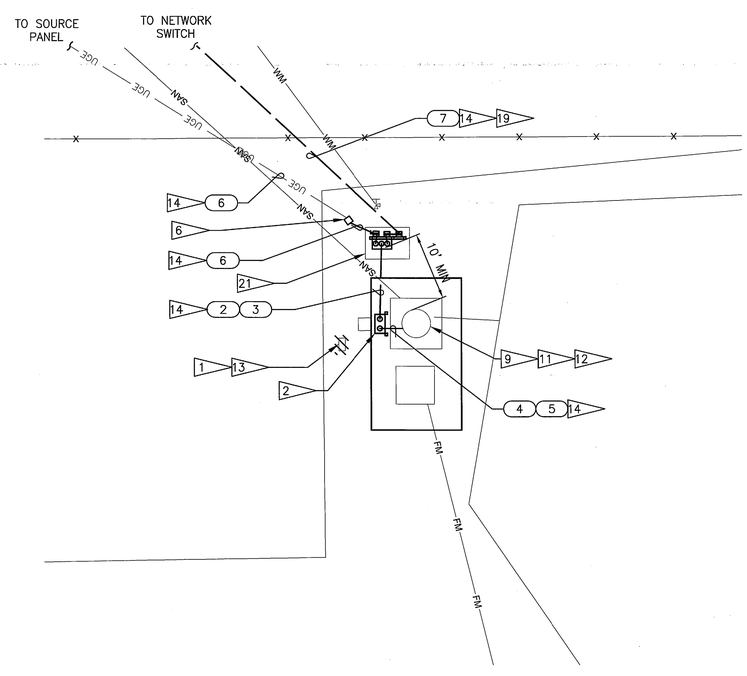
## LIFT STATION LS-4O1 PHOTO
NTS



## LIFT STATION LS-5E2 PHOTO
NTS




## LIFT STATION LS-5E2 PLAN
1"=30'




## LIFT STATION LS-5E2 PLAN
1"=10'

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

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| A | | GENERAL REVISIONS | 10/31/11 | KM |

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATIONS 4O1 AND 5E2
ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 — SHEET 63

E20

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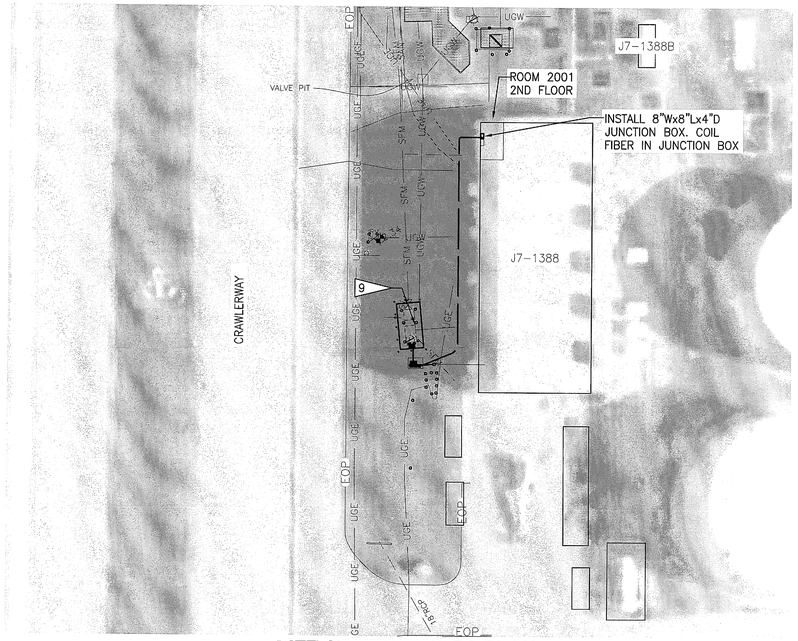
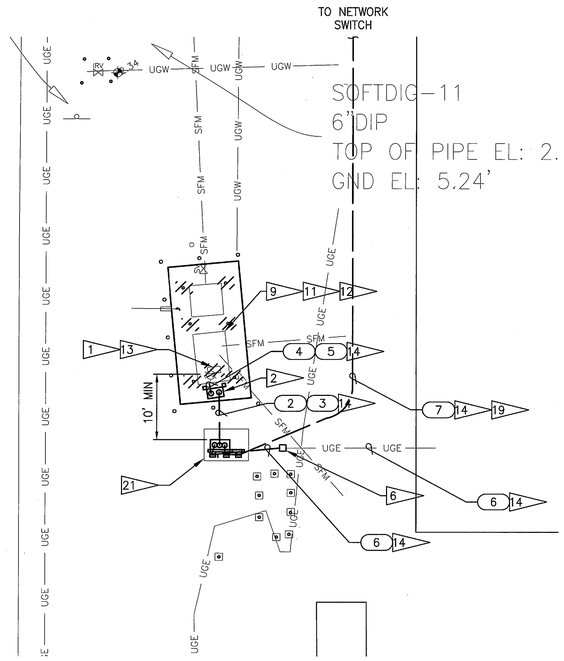
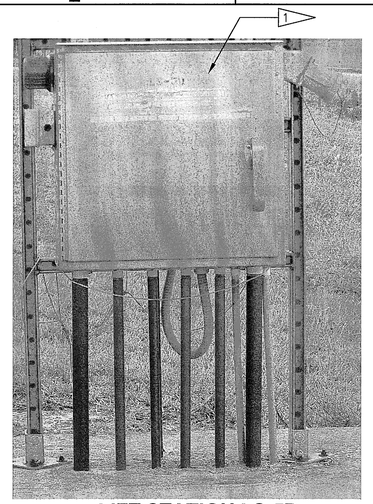


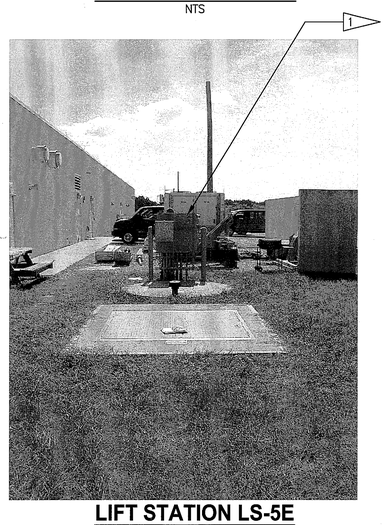

## LIFT STATION LS-5D PLAN
1"=30'



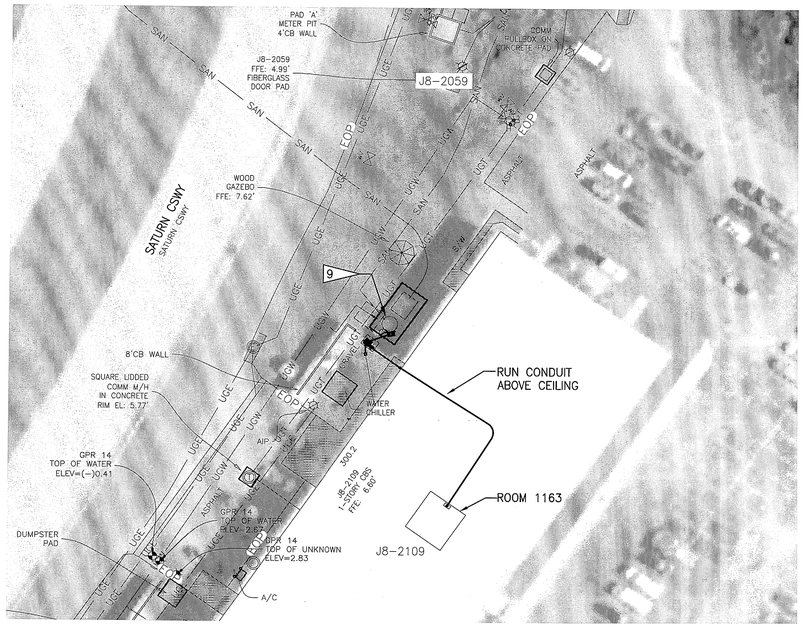

## LIFT STATION LS-5D PLAN
1"=10'



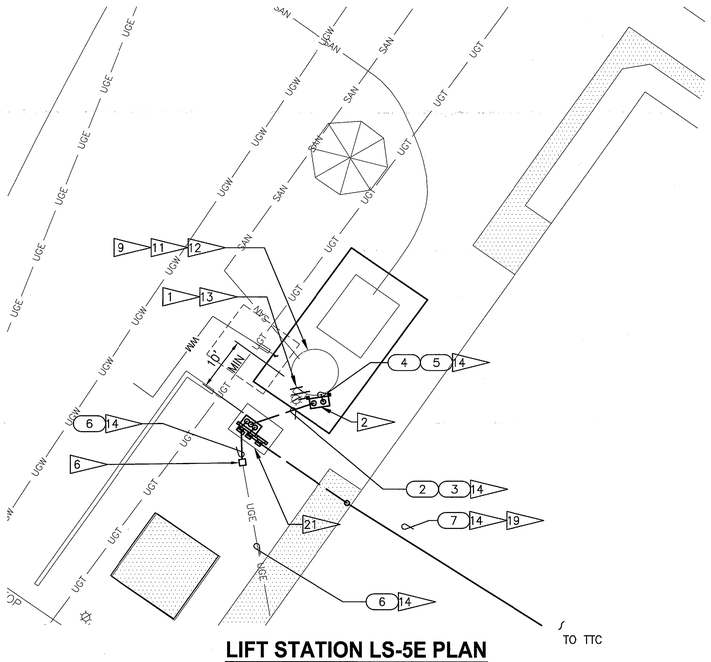
## LIFT STATION LS-5D
NTS



## LIFT STATION LS-5E
NTS




## LIFT STATION LS-5E PLAN
1"=30'




## LIFT STATION LS-5E PLAN
1"=10'

GRAPHIC SCALE 0 15 30 60 — SCALE IN FEET 1"=30'

GRAPHIC SCALE 0 5 10 20 — SCALE IN FEET 1"=10'

N

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. YEANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 5D AND 5E ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 64 | |

E21

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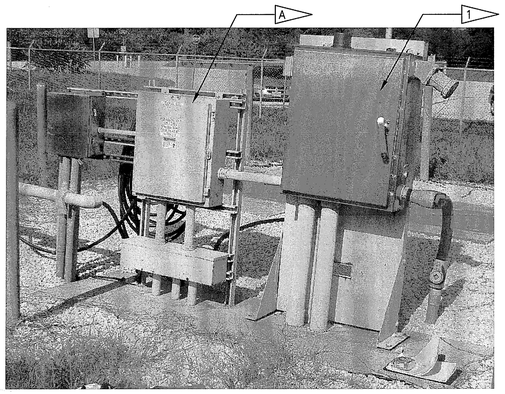
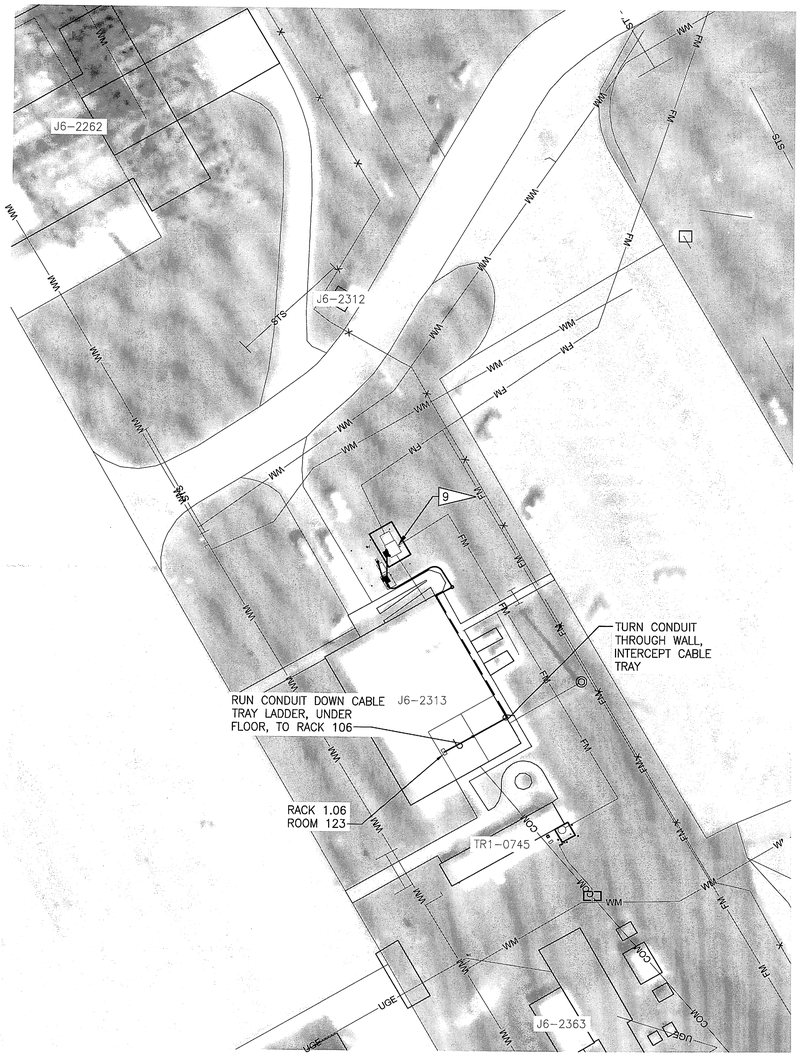
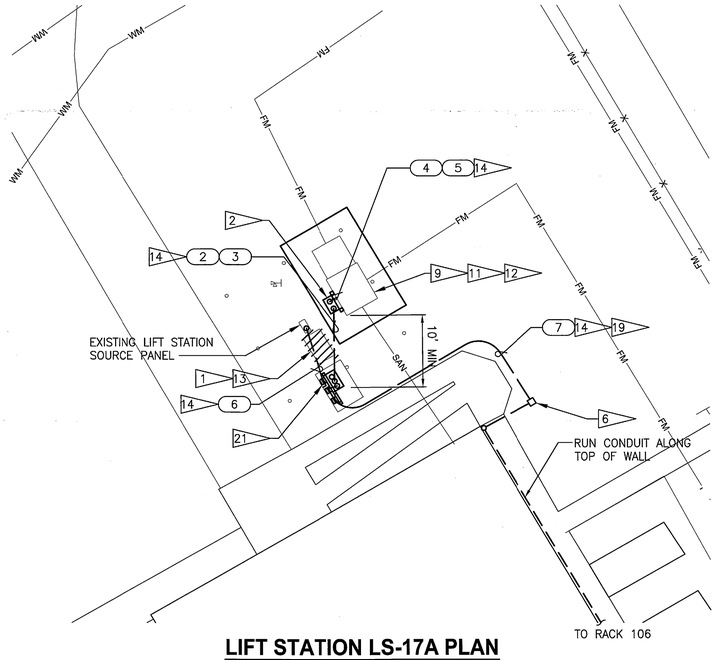



**LIFT STATION LS-17A PHOTO**
NTS




**LIFT STATION LS-17A PLAN**
1"=30'




**LIFT STATION LS-17A PLAN**
1"=10'

**GRAPHIC SCALE**
0 15 30 60
SCALE IN FEET
1"=30'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

N

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| A | | GENERAL REVISIONS | 10/31/11 | KM |

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| APPROVED M. CLARK | 10/31/11 |
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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**LIFT STATIONS 17A ELECTRICAL PLAN**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 65 | |

E22

C FORM 1-11 (3/76)(C/G 3/94)

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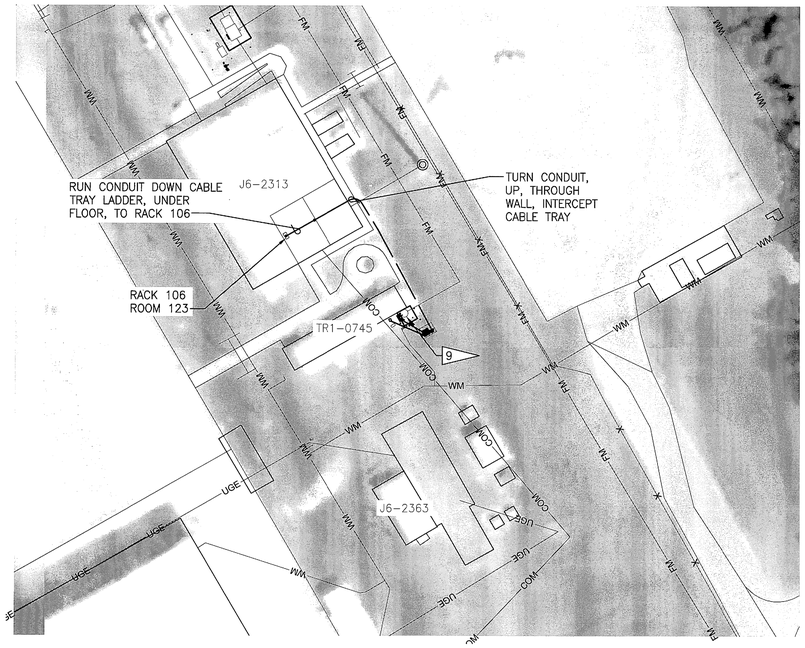
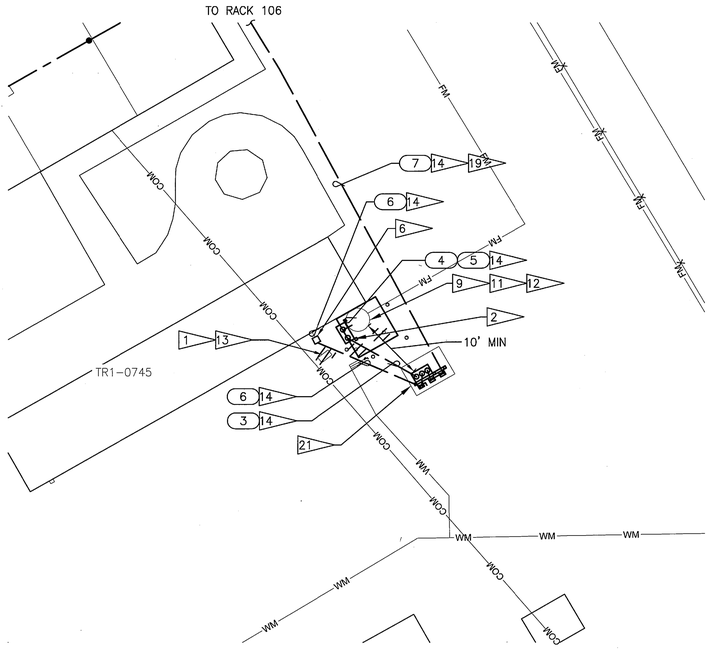
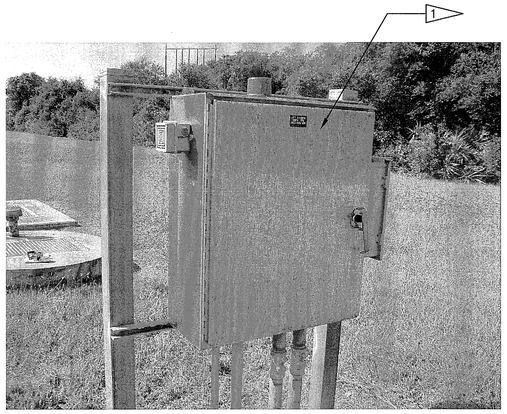



## LIFT STATION LS-17C PLAN
1"=30'

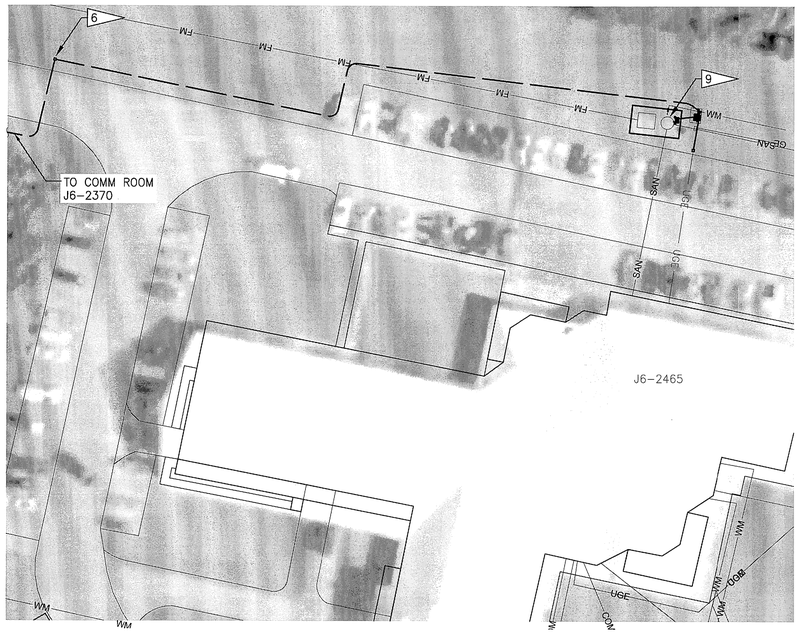



## LIFT STATION LS-17C PLAN
1"=10'

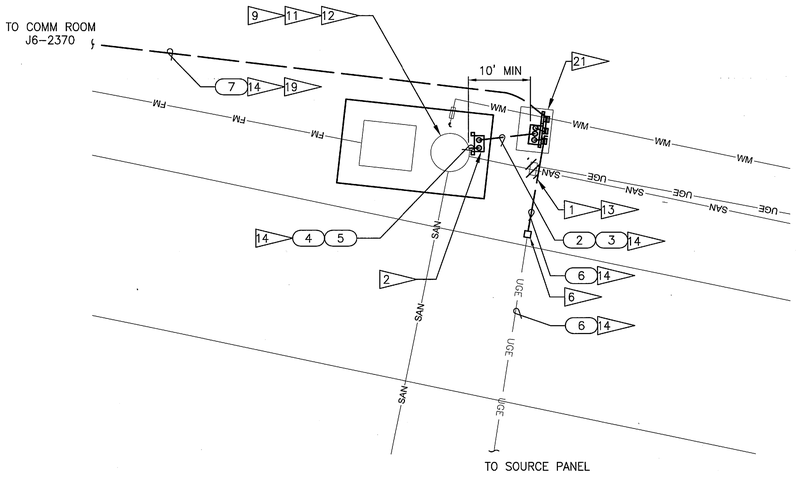
## LIFT STATION LS-17C PHOTO
NTS



## LIFT STATION LS-17D PHOTO
NTS




## LIFT STATION LS-17D PLAN
1"=30'




## LIFT STATION LS-17D PLAN
1"=10'

GRAPHIC SCALE
0 15 30 60
SCALE IN FEET
1"=30'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
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| D. TRANG | 11/1/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
LIFT STATIONS 17C AND 17D
ELECTRICAL PLANS

E23

| FILE NO. | SIZE | DWG. NO. | REV |
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| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 66 | |

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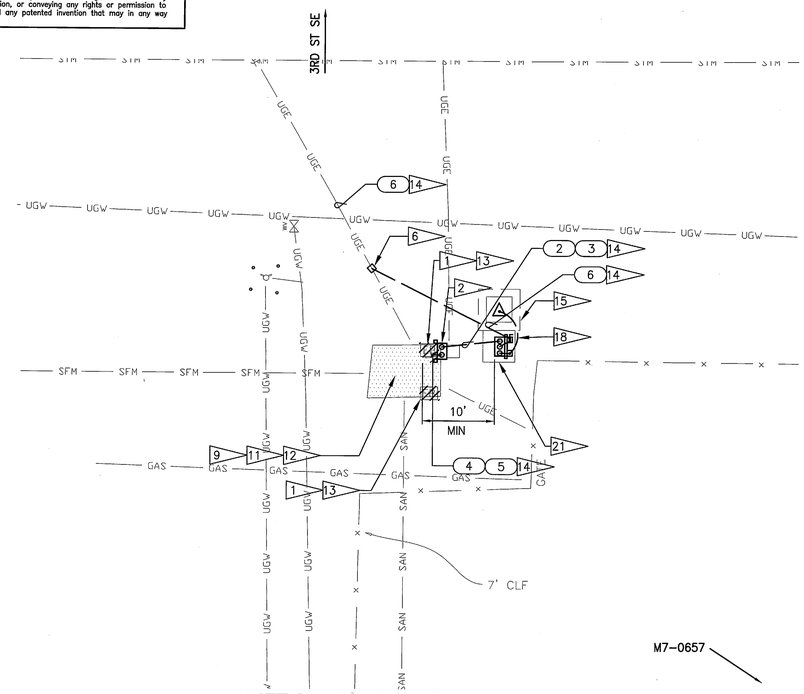
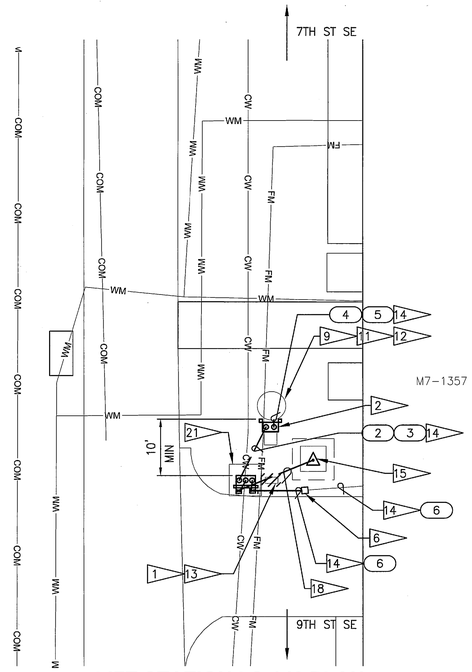
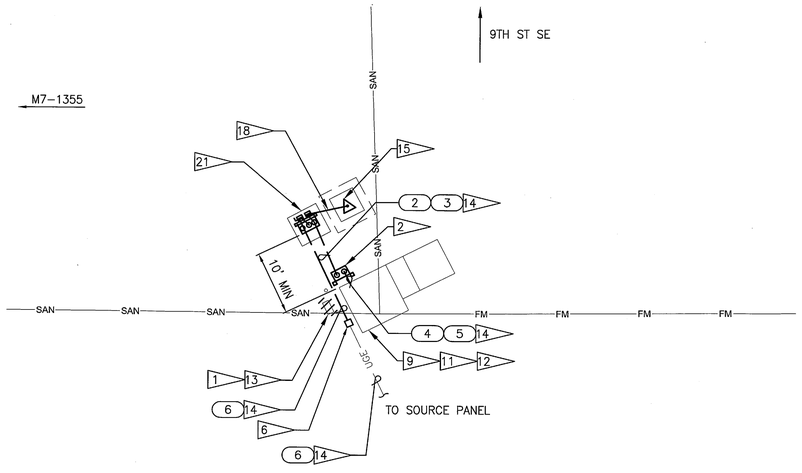


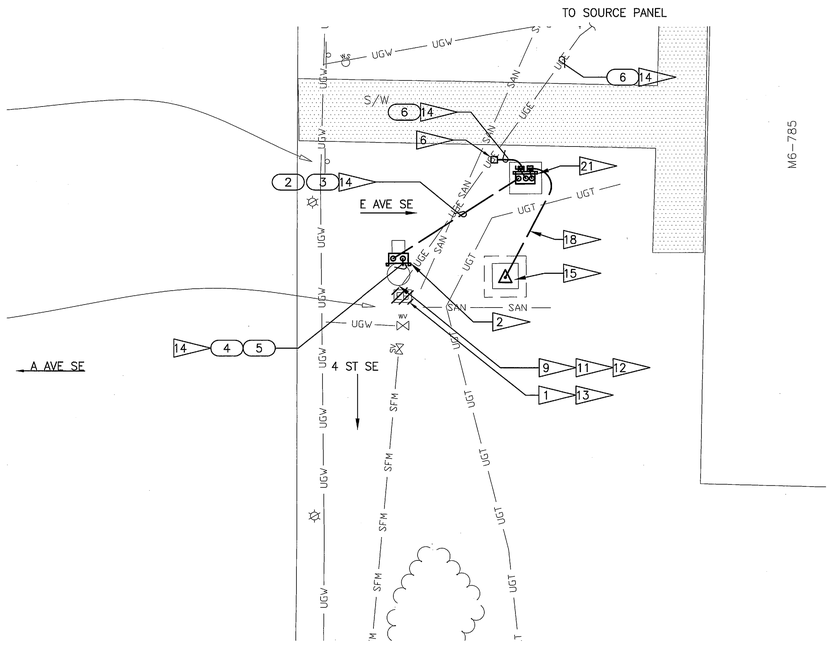

## LIFT STATION LS-1F PLAN
1"=10'




## LIFT STATION LS-1J2 PLAN
1"=10'




## LIFT STATION LS-1J PLAN
1"=10'




## LIFT STATION LS-1M PLAN
1"=10'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

-N-

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

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| SIGNATURES | DATE |
|---|---|
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| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. FRANG | 11/1/11 |

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KENNEDY SPACE CENTER, FLORIDA

# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 1F,1J,1J2, AND 1M ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 67 | |

E24

SC FORM 1-11 (3/76)(C/G 3/94)

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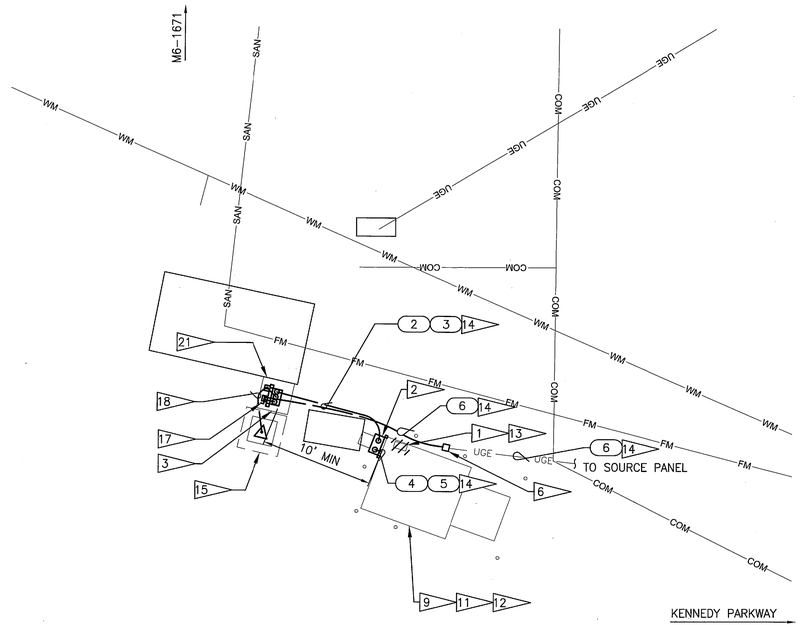
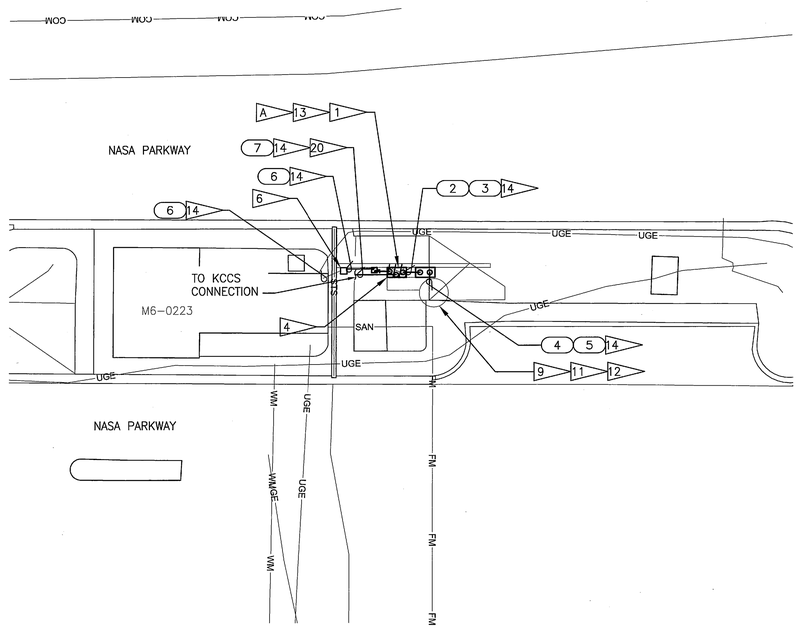
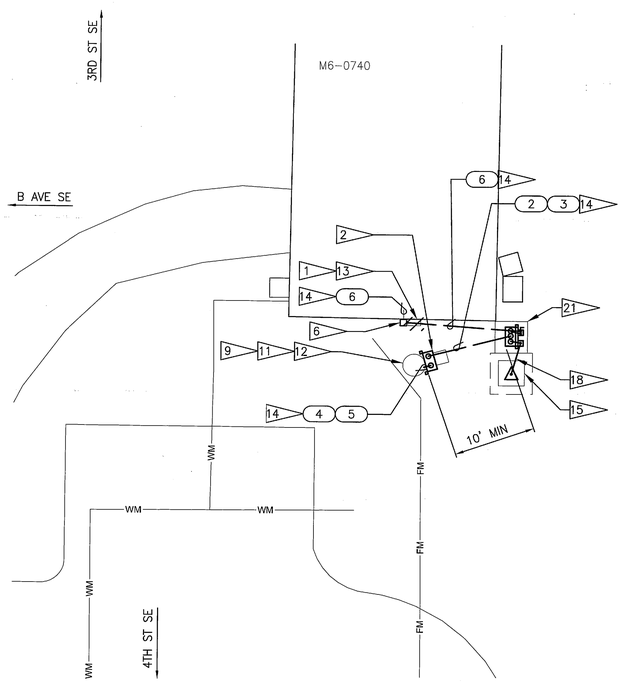


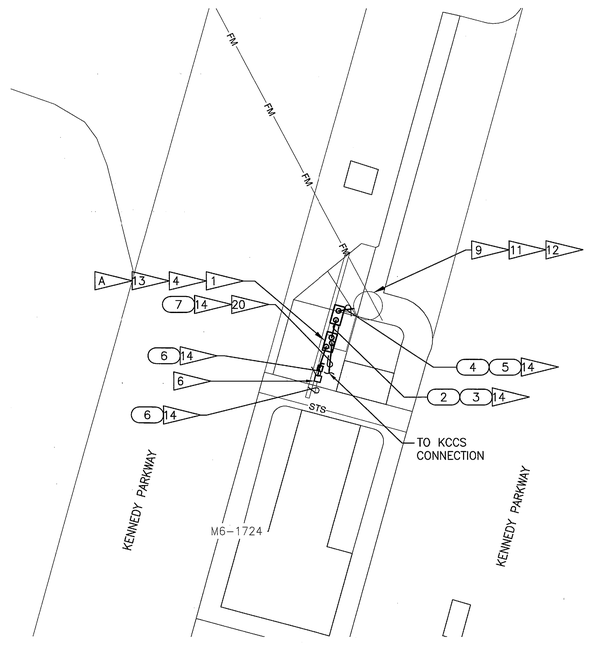

## LIFT STATION LS-1O PLAN
1"=10'




## LIFT STATION LS-1R PLAN
1"=10'




## LIFT STATION LS-1Q PLAN
1"=10'




## LIFT STATION LS-1S PLAN
1"=10'

**NOTES:**

A — SEE DETAIL 1/E37 SIMILAR. REPLACE CONTROL PANEL IN SAME LOCATION AS EXISTING. MOUNT PROPOSED EQUIPMENT USING STAINLESS STEEL HARDWARE AND UNISTRUT AS REQUIRED. TEMPORARILY SHUT DOWN GUARD SHACK WATER SERVICE AS REQUIRED.

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

N

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**LIFT STATIONS 1O,1Q,1R, AND 1S ELECTRICAL PLANS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 68 | |

E25

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SPECIFICATION REFERENCE NO 79K38878

**NOTES:**

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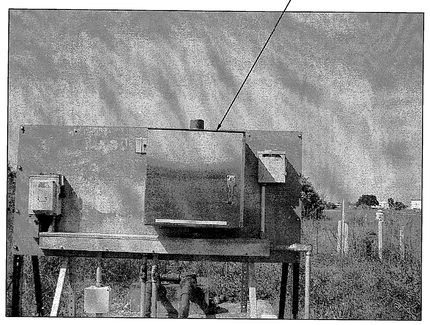
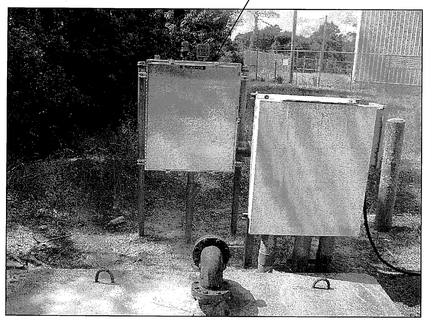
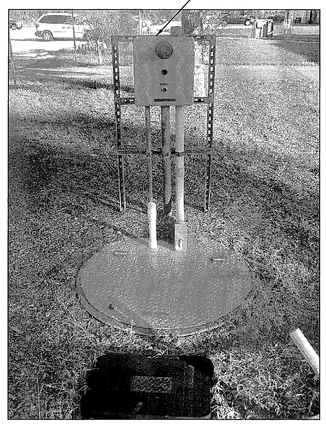


**LIFT STATION LS-1F**
NTS

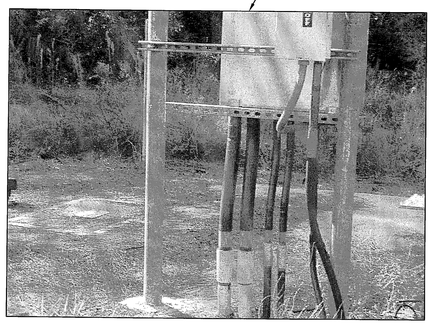


**LIFT STATION LS-1J**
NTS

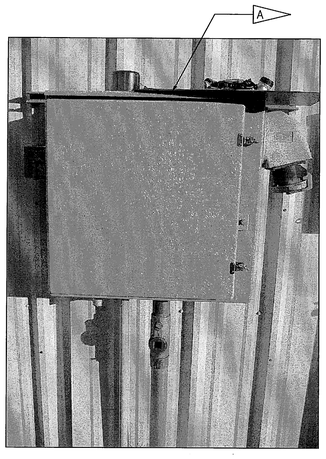
**LIFT STATION LS-1J2**
NTS



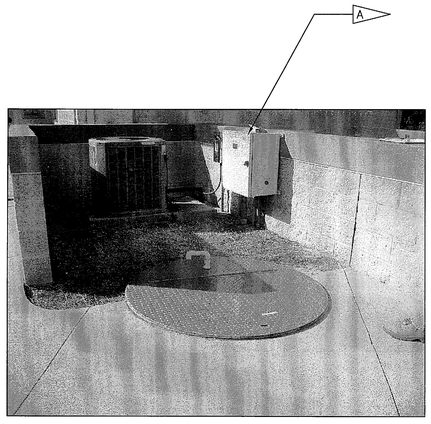
**LIFT STATION LS-1M**
NTS



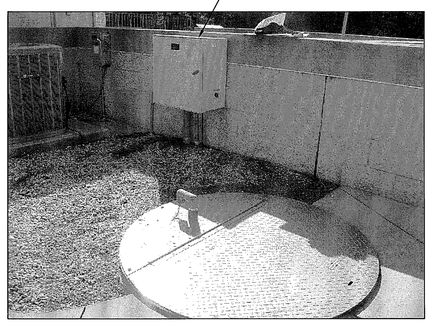
**LIFT STATION LS-1O**
NTS



**LIFT STATION LS-1Q CONTROL PANEL**
NTS



**LIFT STATION LS-1R**
NTS



**LIFT STATION LS-1S**
NTS

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| A | | GENERAL REVISIONS | 12/05/11 | KM |

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 12/05/11 |
| CHECKED M KOROS | 12/05/11 |
| SUBMITTED M. CLARK | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 12/09/11 |
| D. TRANG | 12/5/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**LIFT STATIONS 1F,1J,1J2,1M,1O,1Q,1R, AND 1S DEMOLITION PHOTOS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 69

E26

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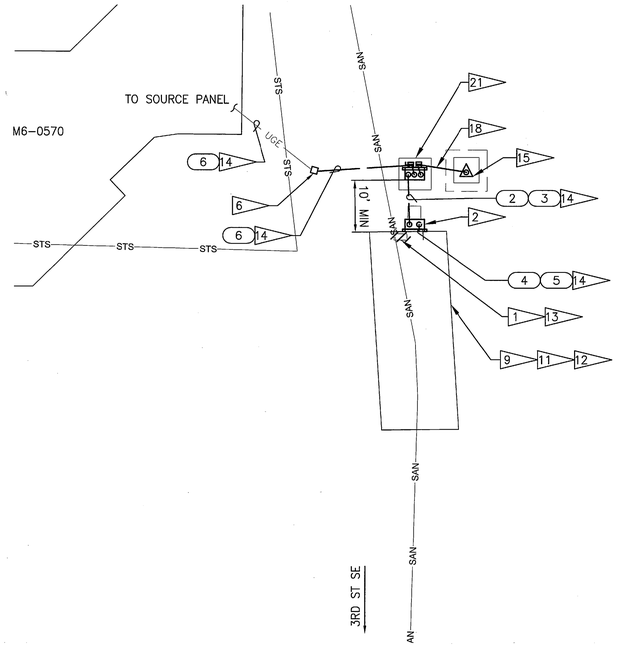
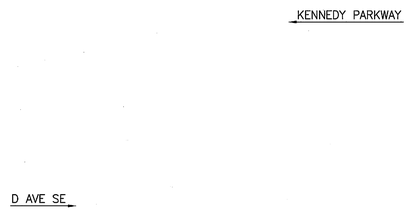
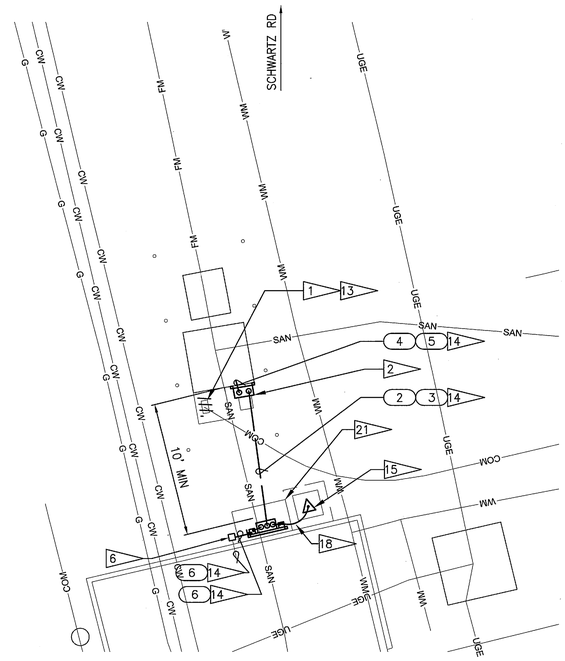
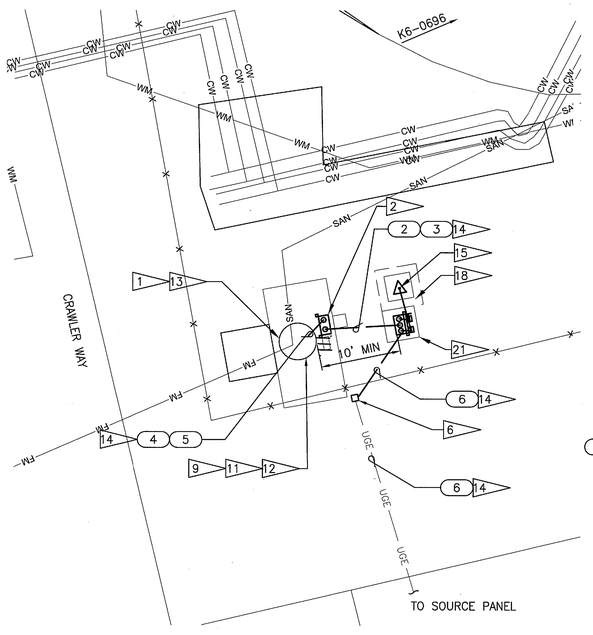



## LIFT STATION LS-1U PLAN
1"=10'

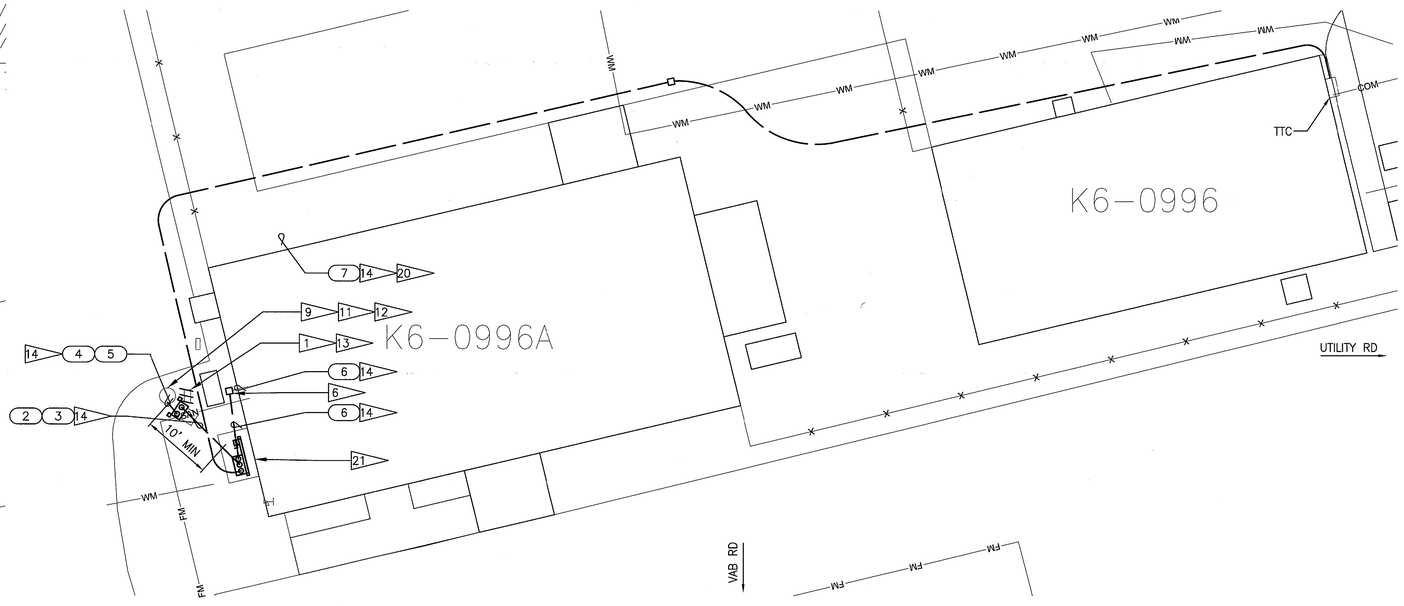



## LIFT STATION LS-4B1 PLAN
1"=10'




## LIFT STATION LS-4A4 PLAN
1"=10'




## LIFT STATION LS-4C2 PLAN
1"=10'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

-N-

E27

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| A | | GENERAL REVISIONS | 10/31/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
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| APPROVED M. CLARK | 10/31/11 |
| D.J. FRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 1U,4A4,4B1, AND 4C2 ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 70 | |

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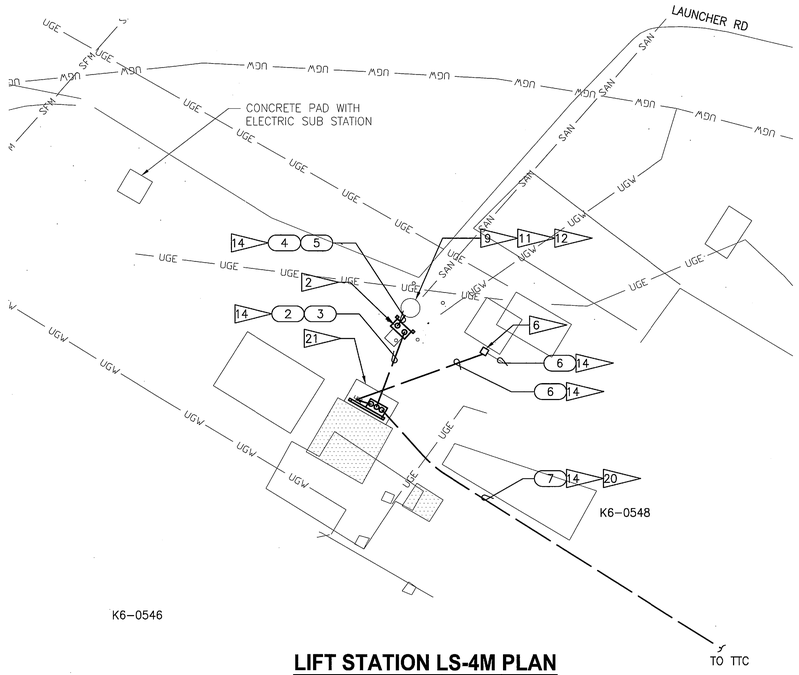
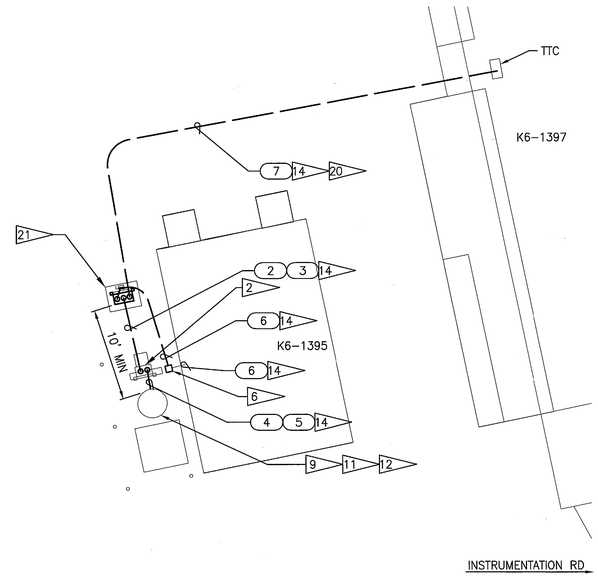
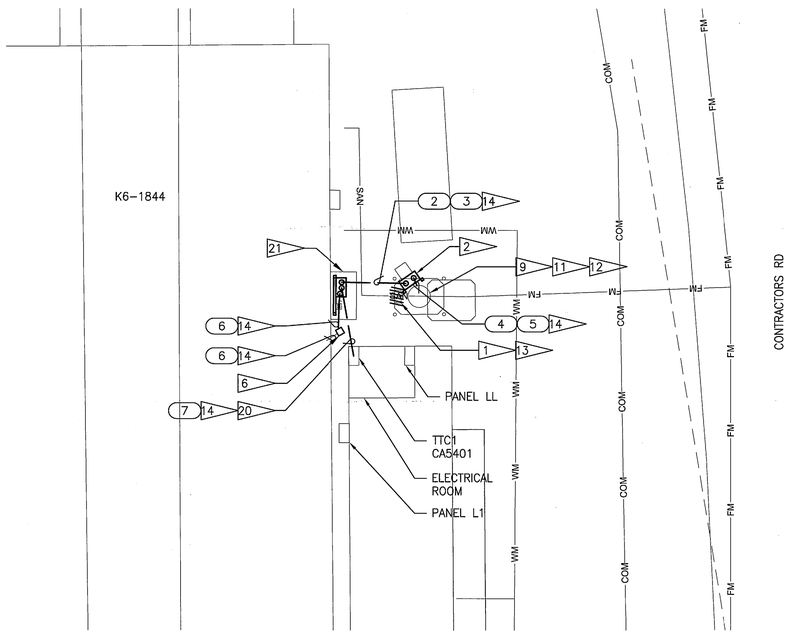


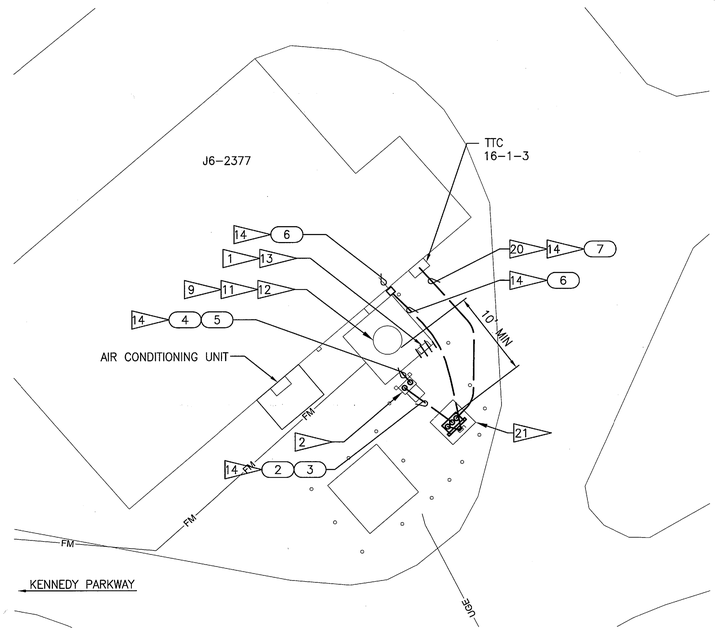

## LIFT STATION LS-4M PLAN
1"=10'




## LIFT STATION LS-4E4 PLAN
1"=10'




## LIFT STATION LS-4N2 PLAN
1"=10'




## LIFT STATION LS-4Q PLAN
1"=10'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

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|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN L MILLER | 10/31/11 |
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| SUBMITTED M. CLARK | 10/31/11 |
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| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 4M,4N2,4E4, AND 4Q ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
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| | F | 79K38877 VOL 2 | A |
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E28

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SPECIFICATION REFERENCE NO 79K38878

**NOTES:**

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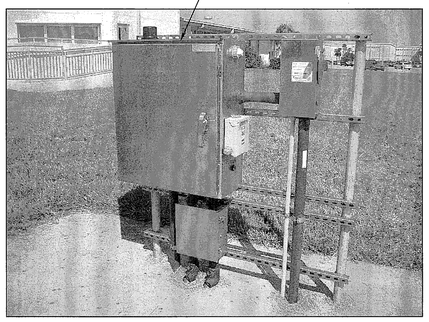
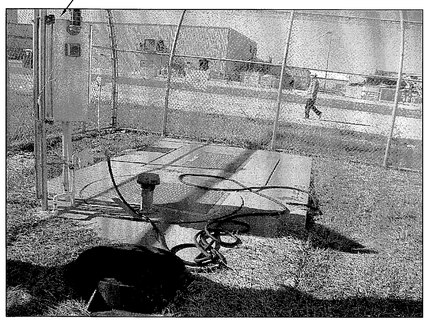
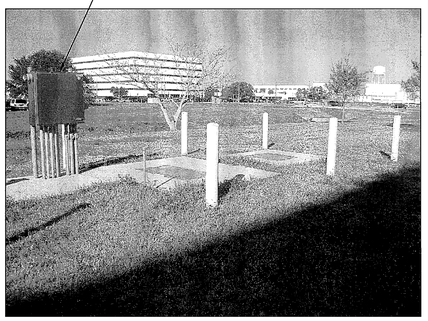


**LIFT STATION LS-1U**
NTS



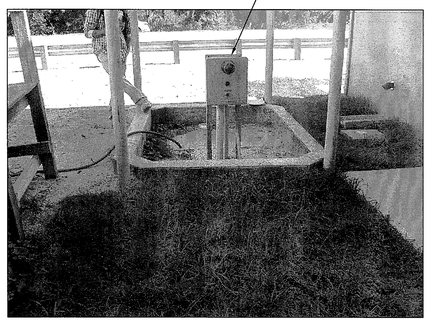
**LIFT STATION LS-4A4**
NTS



**LIFT STATION LS-4B1**
NTS

**LIFT STATION LS-4C2**
NTS

**LIFT STATION LS-4M**
NTS



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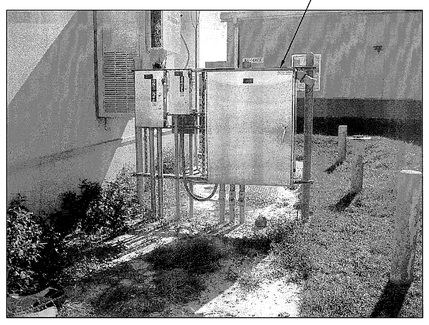
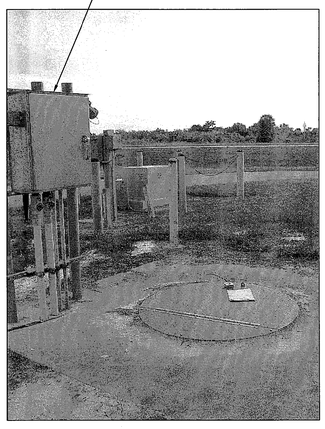
NTS



**LIFT STATION LS-4E4**
NTS



**LIFT STATION LS-4Q**
NTS

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|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | KMM |

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| SIGNATURES | DATE |
|---|---|
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| CHECKED M KOROS | 12/05/11 |
| SUBMITTED M. CLARK | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 48898 | |
| APPROVED M. CLARK | 12/05/11 |
| D. TRANG | 12/5/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**LIFT STATIONS 1U,4A4,4B1,4C2,4M,4N2,4E4, AND 4Q DEMOLITION PHOTOS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

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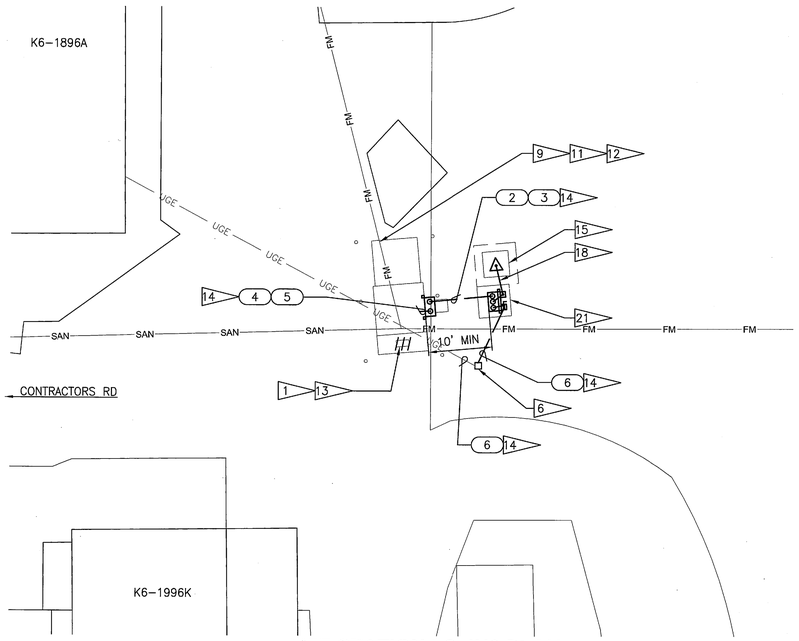
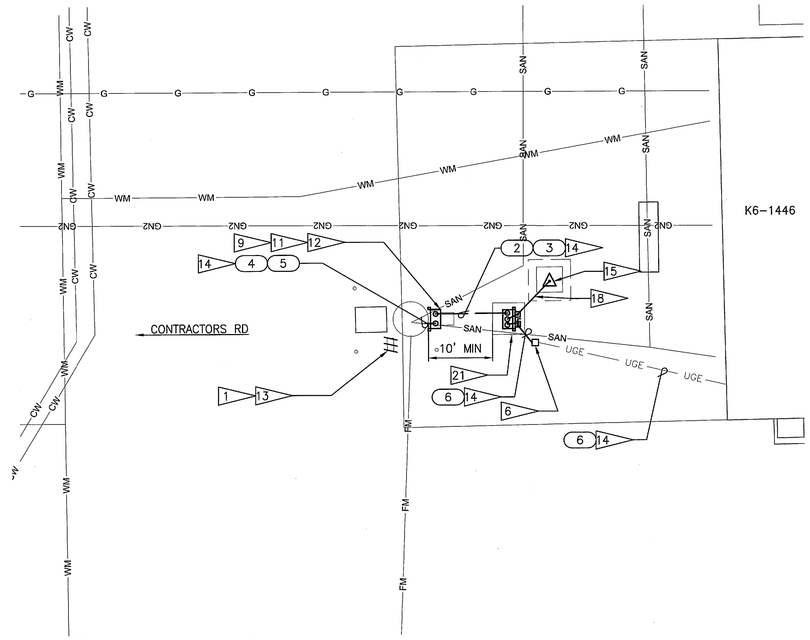
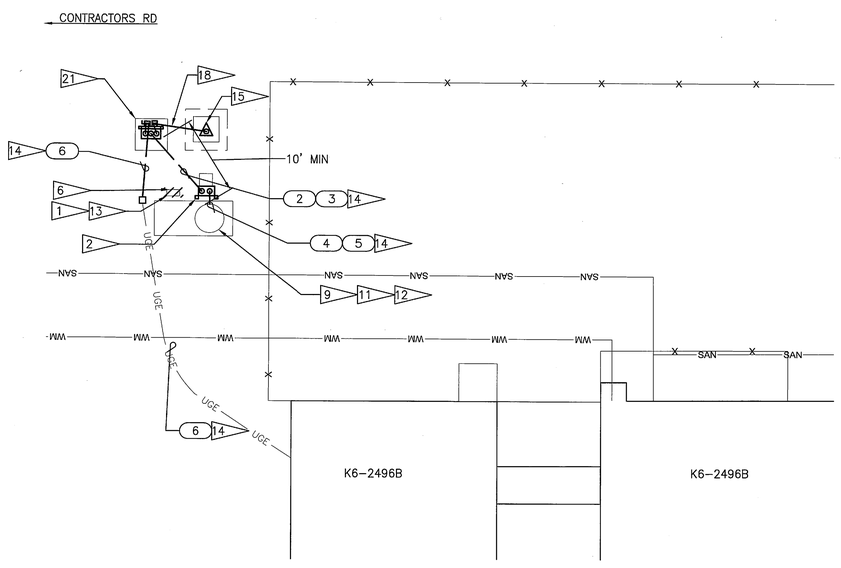


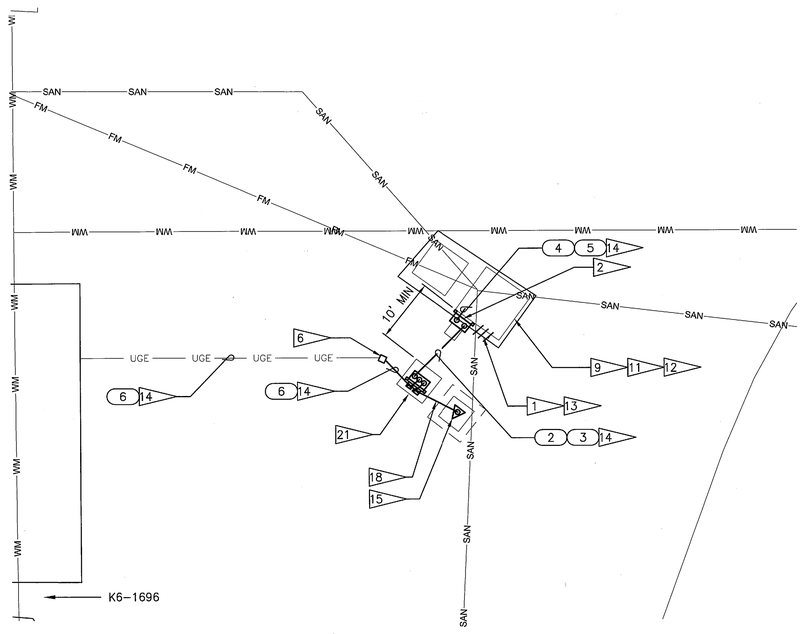

## LIFT STATION LS-4N3 PLAN
1"=10'




## LIFT STATION LS-4P2 PLAN
1"=10'




## LIFT STATION LS-4N7 PLAN
1"=10'




## LIFT STATION LS-4P3 PLAN
1"=10'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | |

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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
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| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
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| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 4N3,4N7,4P2, AND 4P3 ELECTRICAL PLANS

E30

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 | SHEET 73

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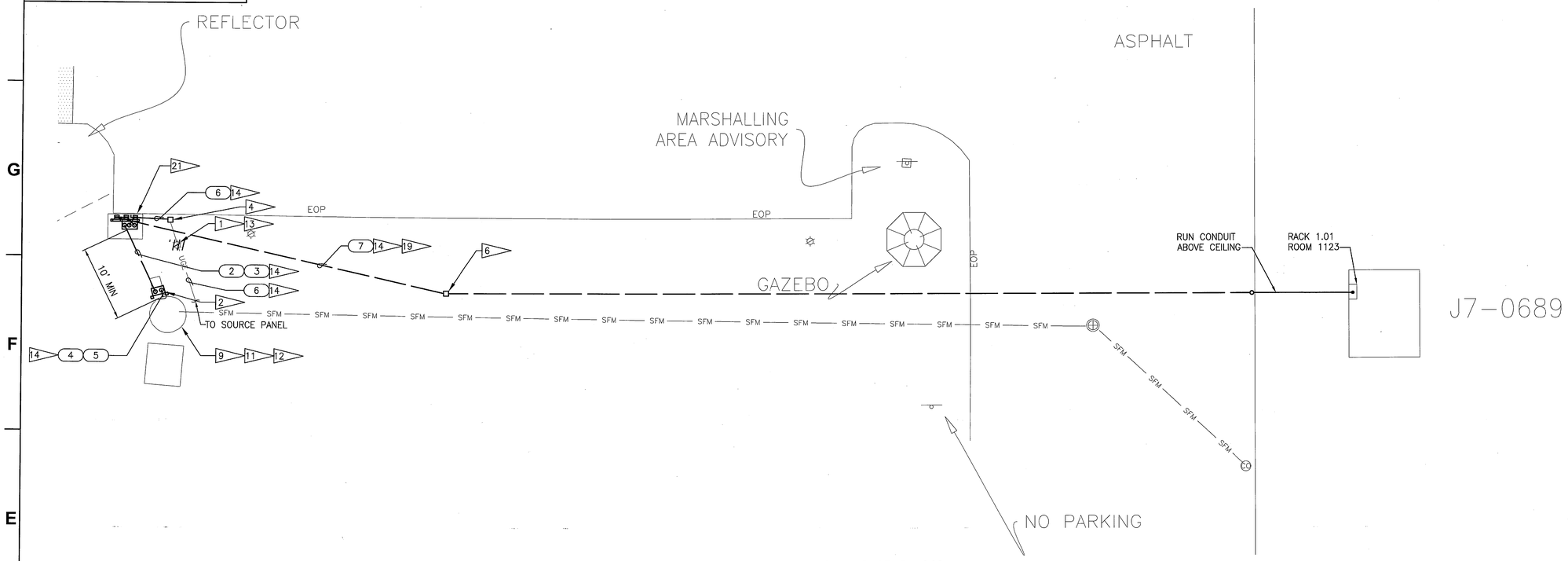
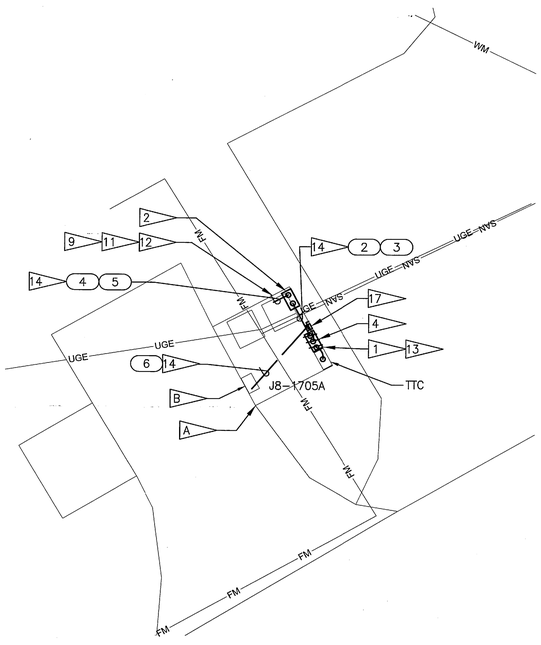
**NOTES:**

A — EXISTING MAIN BREAKER FED FROM PANEL PDA, CKT 15.

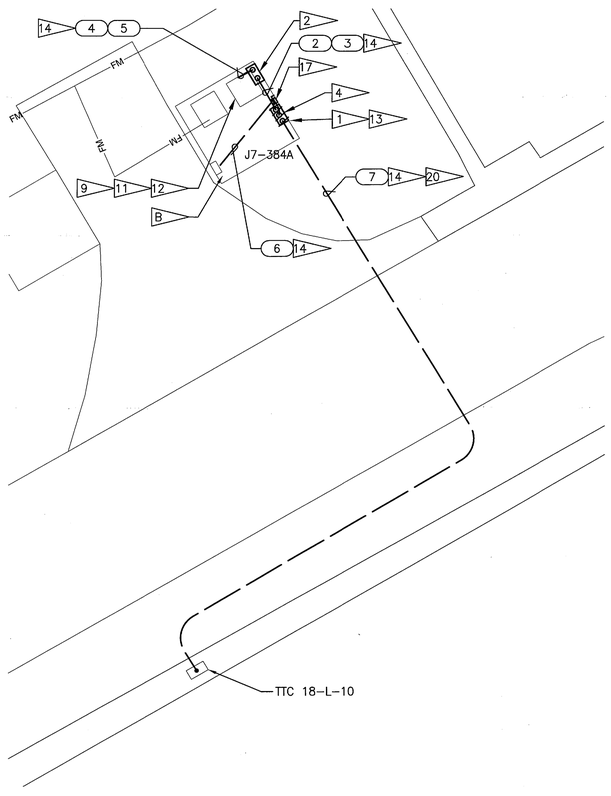
B — EXISTING SOURCE PANEL.



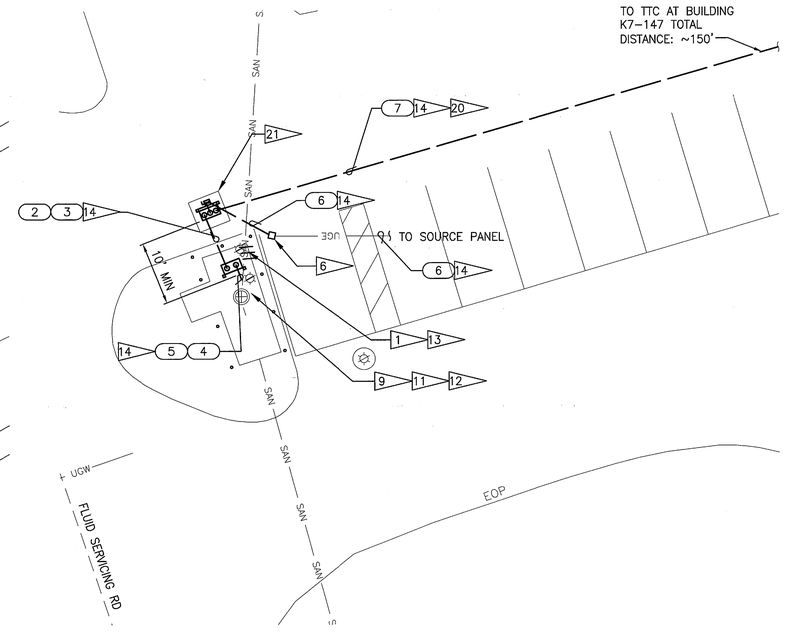

## LIFT STATION LS-6D PLAN
1"=10'




## LIFT STATION LS-5A PLAN
1"=10'




## LIFT STATION LS-6A PLAN
1"=10'




## LIFT STATION LS-9E PLAN
1"=10'

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

N

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| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**LIFT STATIONS 5A,6A,6D, AND 9E**
**ELECTRICAL PLANS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 | SHEET 74

E31

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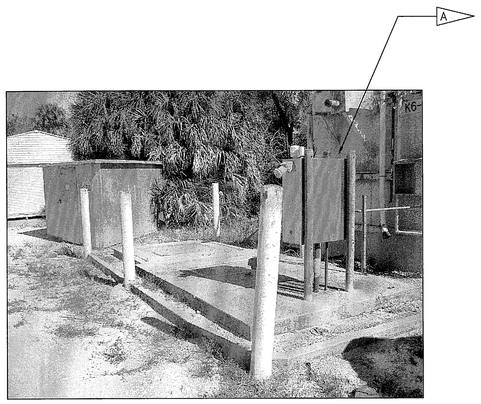
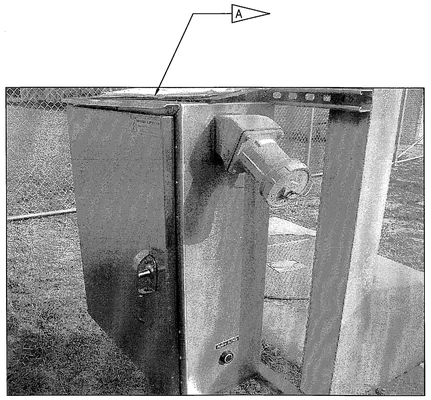
SPECIFICATION REFERENCE NO 79K38878

**NOTES:**

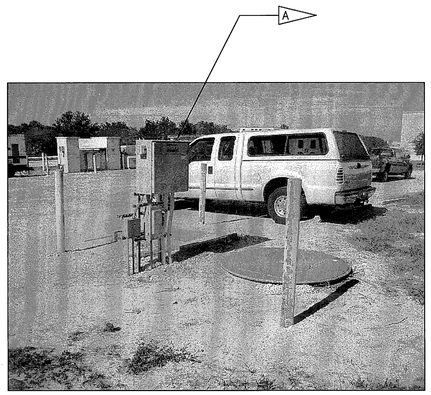
A LIFT STATION PHOTOGRAPHS ARE INTENDED FOR REFERENCE PURPOSES ONLY.



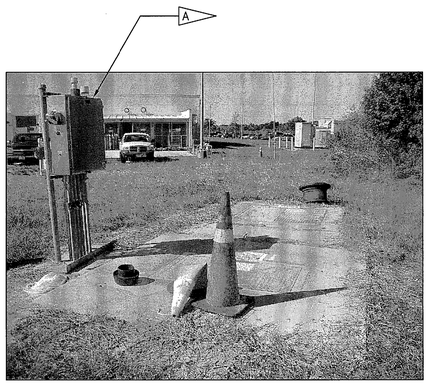
**LIFT STATION LS-4N3**
NTS



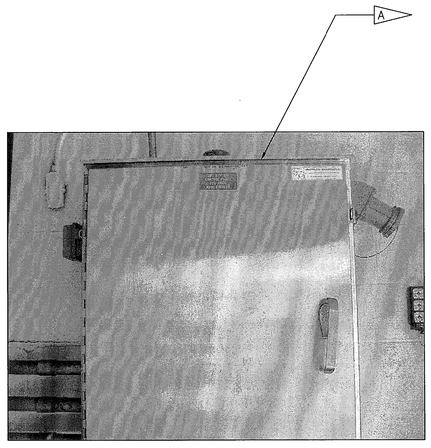
**LIFT STATION LS-4N7**
NTS



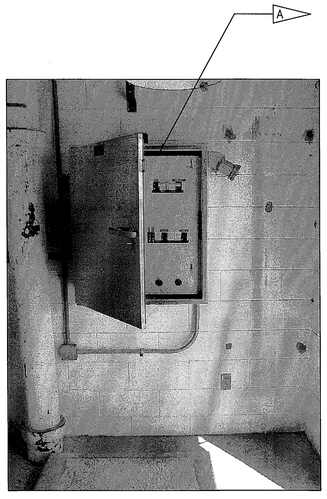
**LIFT STATION LS-4P2**
NTS



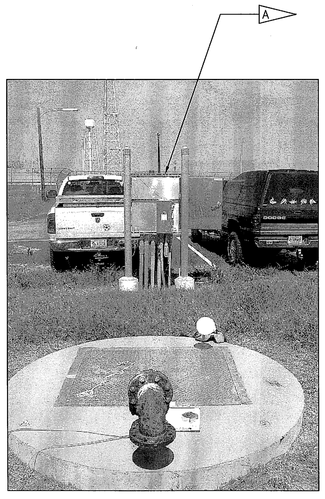
**LIFT STATION LS-4P3**
NTS



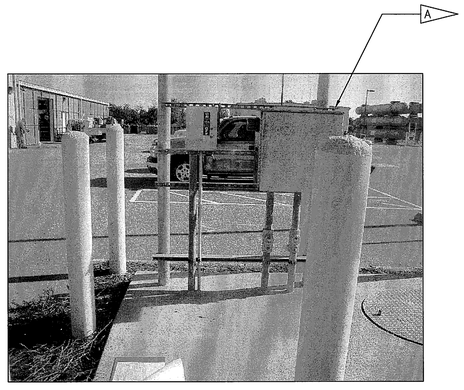
**LIFT STATION LS-5A**
NTS



**LIFT STATION LS-6A**
NTS



**LIFT STATION LS-6D**
NTS



**LIFT STATION LS-9E**
NTS

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|---|---|---|---|---|
| A | | GENERAL REVISIONS | 12/05/11 | KM |

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| CHECKED M KOROS | 12/05/11 |
| SUBMITTED M. CLARK | 12/05/11 |
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| APPROVED M. CLARK | 12/05/11 |
| D. TRANG | 12/5/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**LIFT STATIONS 4N3,4N7,4P2,4P3,5A,6A,6D, AND 9E DEMOLITION PHOTOS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

E32

PROJ. NO. 96968.3 SHEET 75

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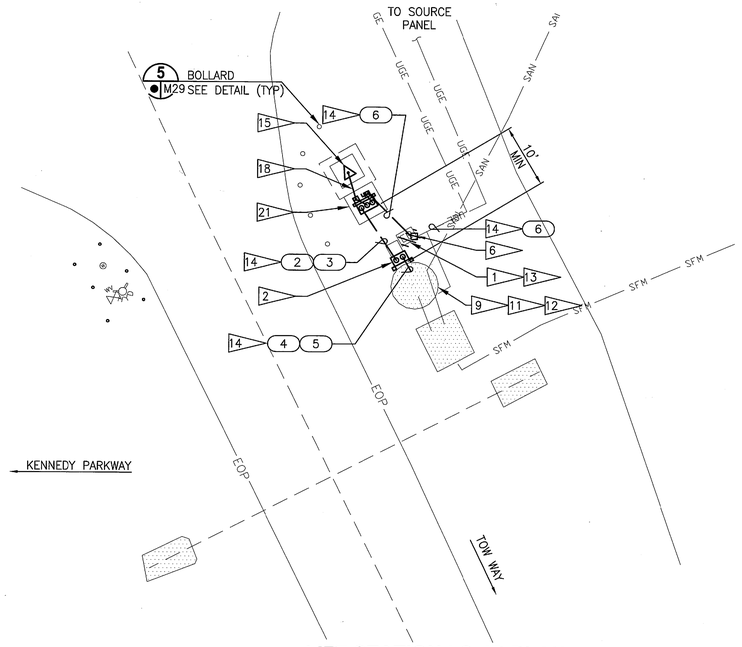
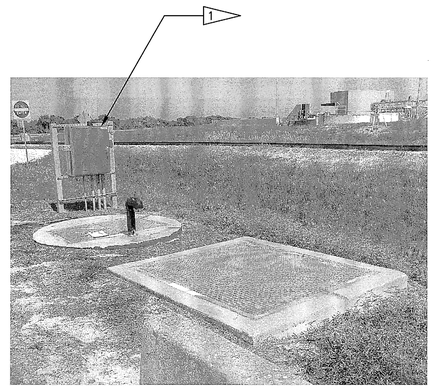
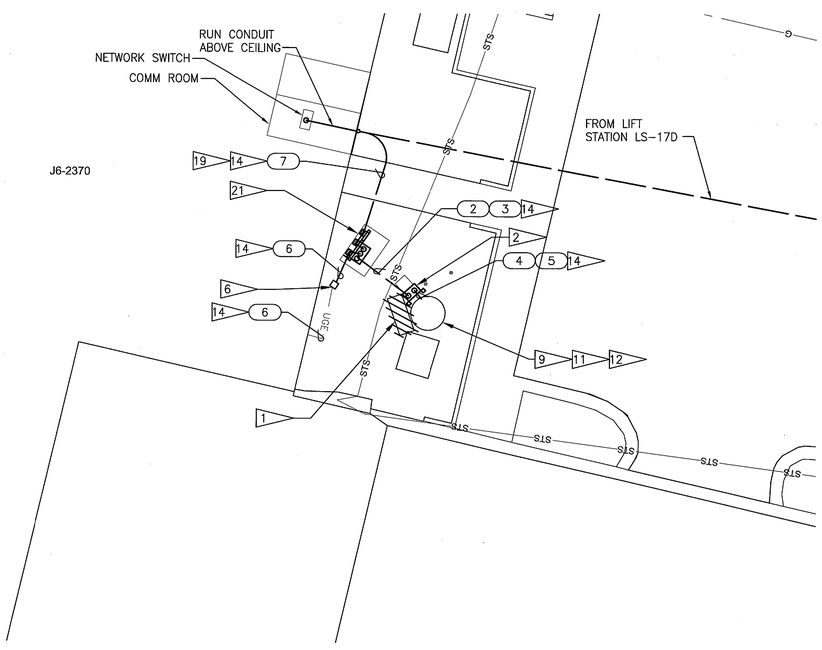


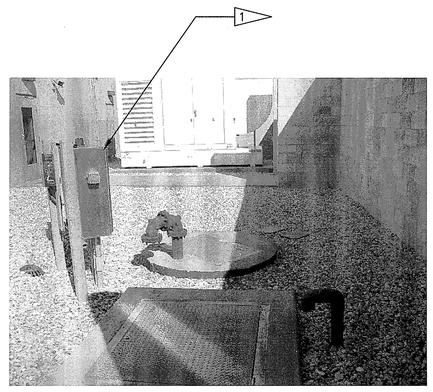

## LIFT STATION LS-4R PLAN
1"=10'



## LIFT STATION LS-4R
NTS




## LIFT STATION LS-17E PLAN
1"=10'



## LIFT STATION LS-17E
NTS

GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
1"=10'

-N-

E33

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|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

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| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
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| APPROVED M. CLARK | 10/31/11 |
| D. TRANE | 11/1/11 |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS
## LIFT STATIONS 4R AND 17E ELECTRICAL PLANS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

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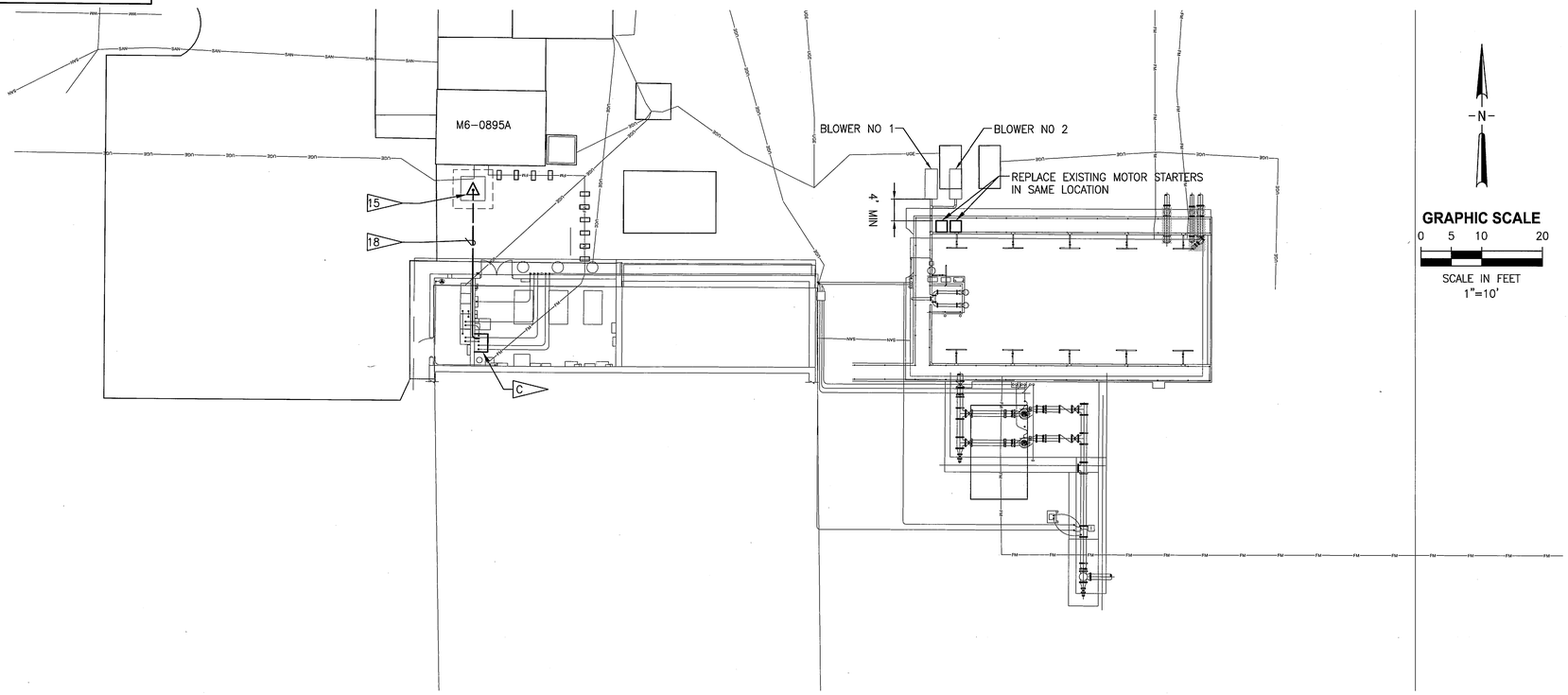
SPECIFICATION REFERENCE NO 79K38878




## LIFT STATION LS-1AA ELECTRICAL PLAN

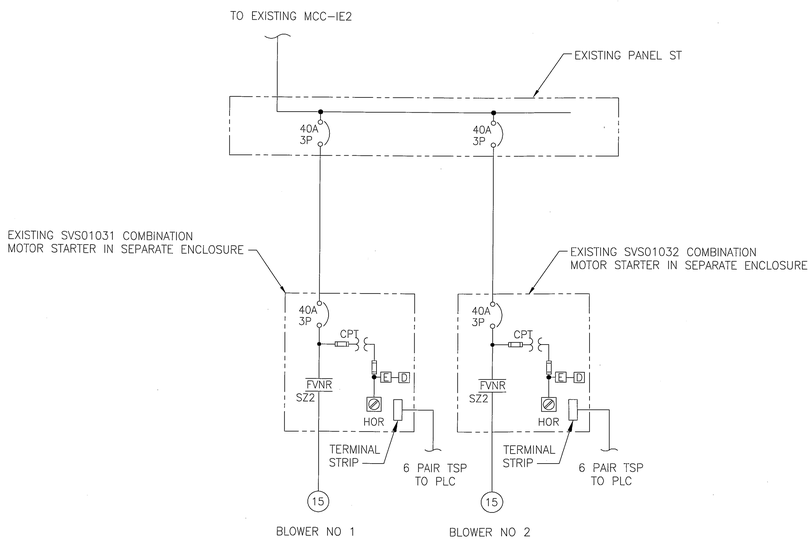
1"=10'

**NOTES:**

A. CONTRACTOR SHALL REUSE EXISTING POWER CONDUCTORS AND CONDUIT.

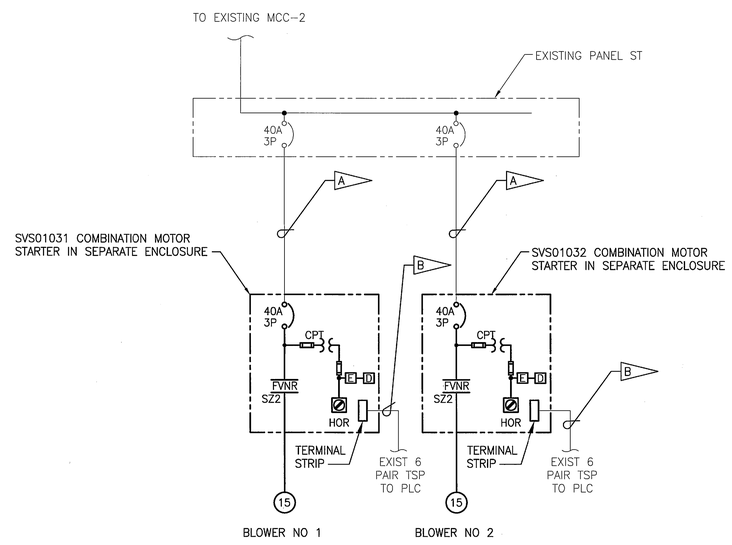
B. CONTRACTOR SHALL RECONNECT EXISTING STATUS AND CONTROL WIRING TO PROPOSED MOTOR STARTERS.

C. CONTRACTOR SHALL REPLACE PANEL CP-1AA AND DEMOLISH CONDUCTORS AND CONDUIT TO ALL ABANDONED AND UNUSED EQUIPMENT. SEE I6 FOR INSTALLATION DETAILS.




## EXISTING LIFT STATION LS-1AA ONE-LINE DIAGRAM

NTS




## LIFT STATION LS-1AA ONE-LINE DIAGRAM

NTS

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**LIFT STATION 1AA CONTROL SYSTEM MODIFICATIONS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 77 | |

E34

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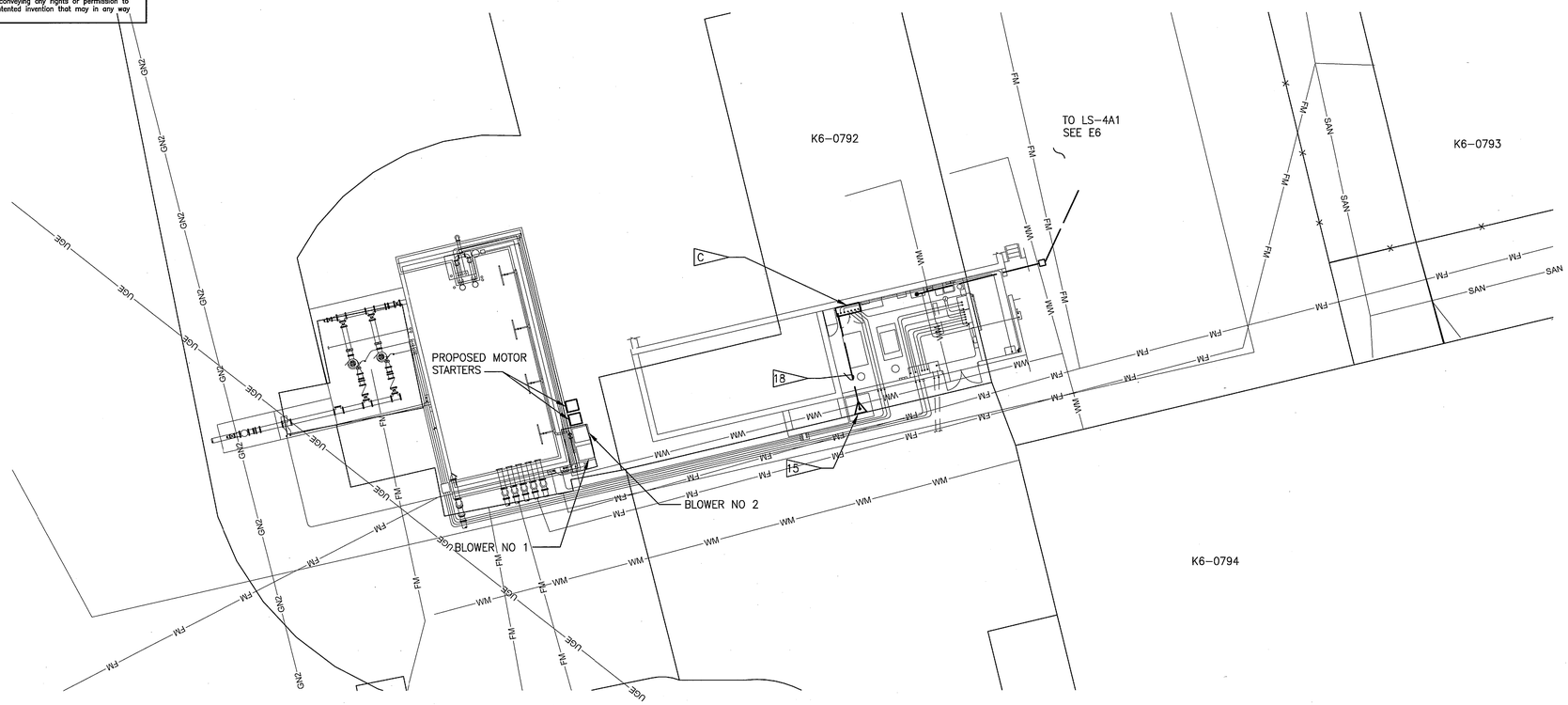
SPECIFICATION REFERENCE NO 79K38878




## LIFT STATION LS-4A ELECTRICAL PLAN

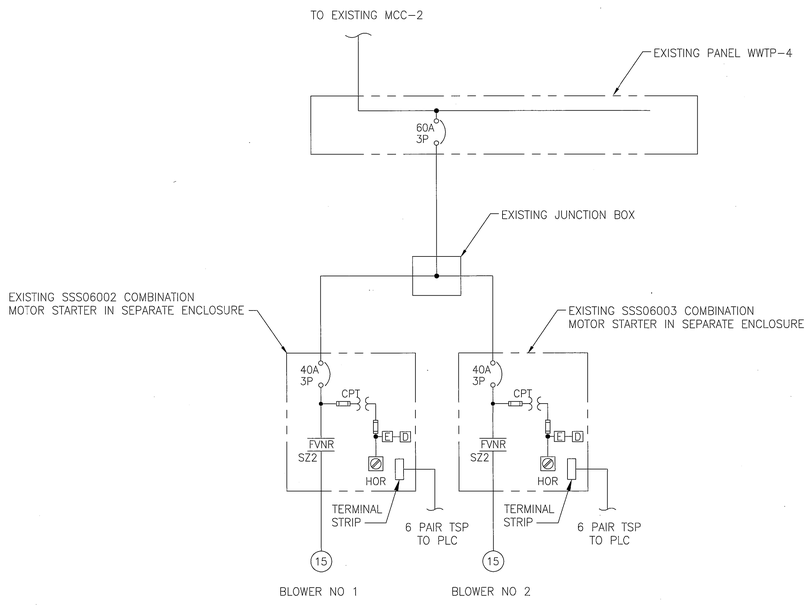
1"=10'

**NOTES:**

A. CONTRACTOR SHALL REUSE EXISTING POWER CONDUCTORS AND CONDUIT.

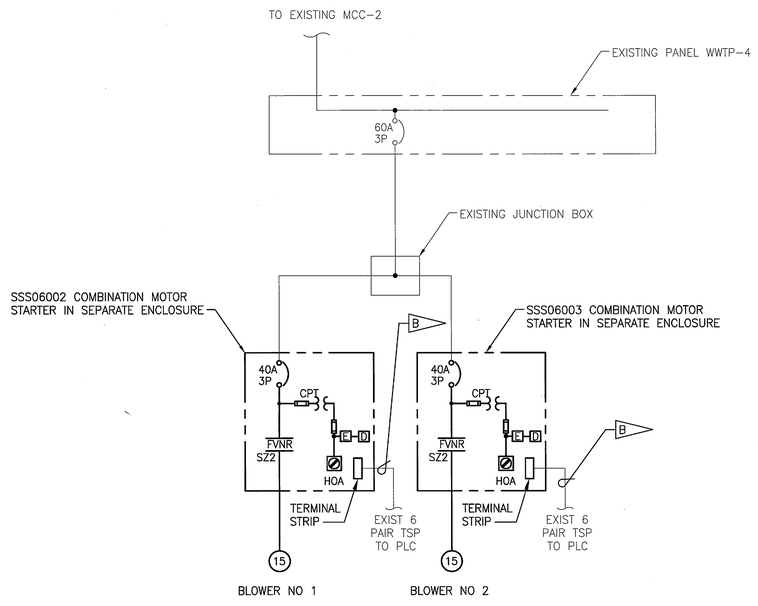
B. CONTRACTOR SHALL RECONNECT EXISTING ALARMS TO PROPOSED MOTOR STARTERS.

C. CONTRACTOR SHALL REPLACE PANEL CP-4A AND DEMOLISH CONDUCTORS AND CONDUIT TO ALL ABANDONED AND UNUSED EQUIPMENT. SEE I6 FOR INSTALLATION DETAILS.




## EXISTING LIFT STATION LS-4A ONE-LINE DIAGRAM

NTS




## LIFT STATION LS-4A ONE-LINE DIAGRAM

NTS

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| D. TRANG | 11/1/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**LIFT STATION 4A CONTROL SYSTEM MODIFICATIONS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 | SHEET 78

E35

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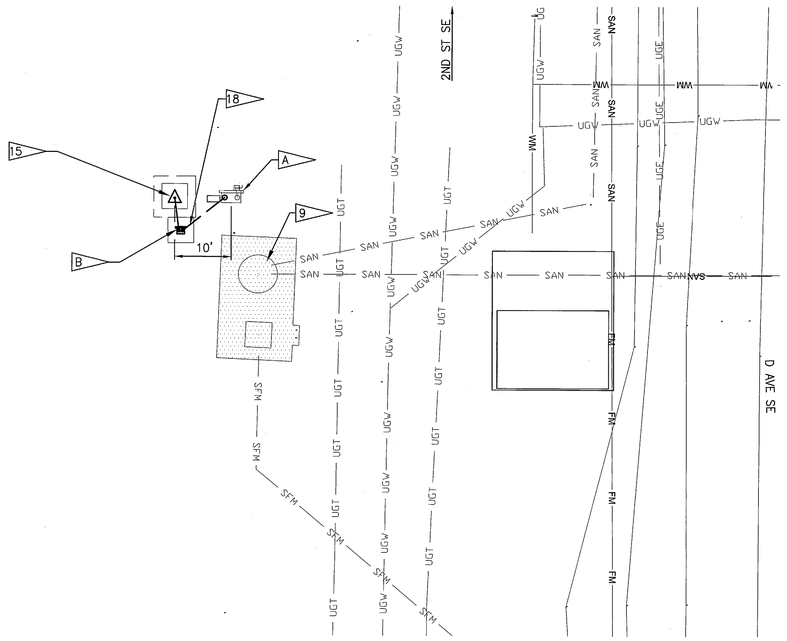
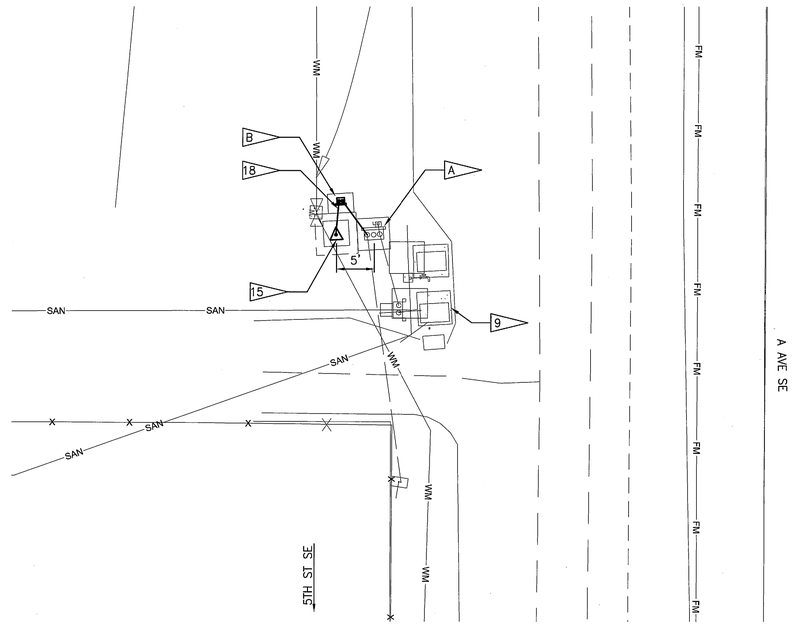
**NOTES:**

A — EXISTING CONTROL PANEL AND EQUIPMENT RACK.

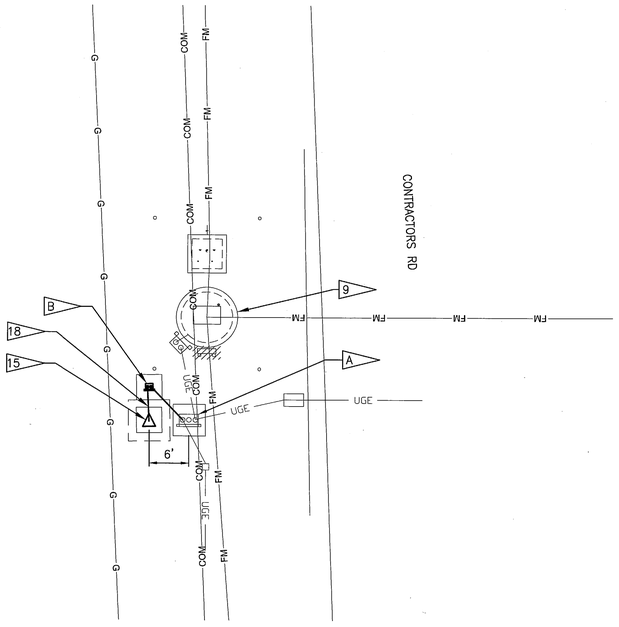
B — RTU. SEE DETAIL 1/E38 FOR RTU INSTALLATION.



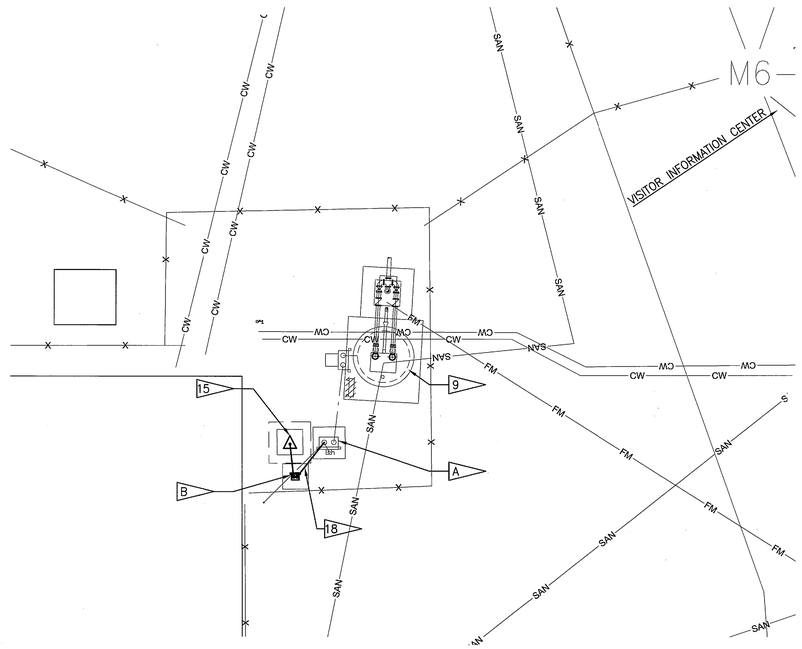

## LIFT STATION LS-1C PLAN
1"=10'




## LIFT STATION LS-1L PLAN
1"=10'




## LIFT STATION LS-4N1 PLAN
1"=10'




## LIFT STATION LS-10A PLAN
1"=10'

**GRAPHIC SCALE**
0 5 10 20
SCALE IN FEET
1"=10'

-N-

E36

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REVISIONS

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| SIGNATURES | DATE |
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| DRAWN L MILLER | 10/31/11 |
| CHECKED M KOROS | 10/31/11 |
| SUBMITTED M. CLARK | 10/31/11 |
| ST of LICENSURE: FL | |
| LICENSE NO: 48898 | |
| APPROVED M. CLARK | 10/31/11 |
| D. TRANG | 11/1/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**LIFT STATIONS 1C,1L,4N1, AND 10A ELECTRICAL PLANS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 79 | |

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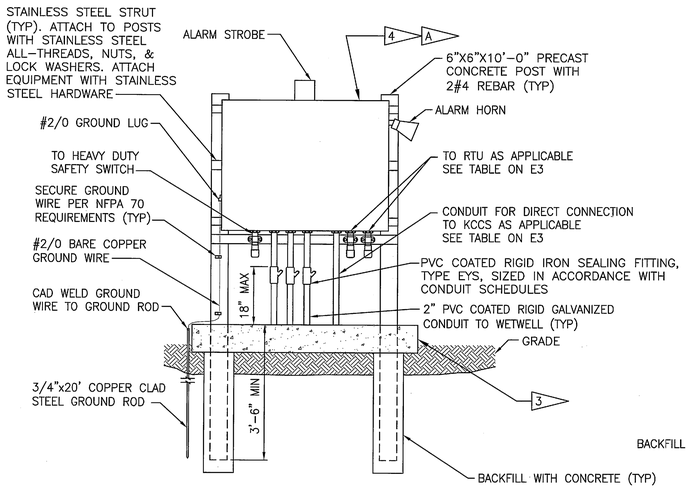
SPECIFICATION REFERENCE NO 79K38878

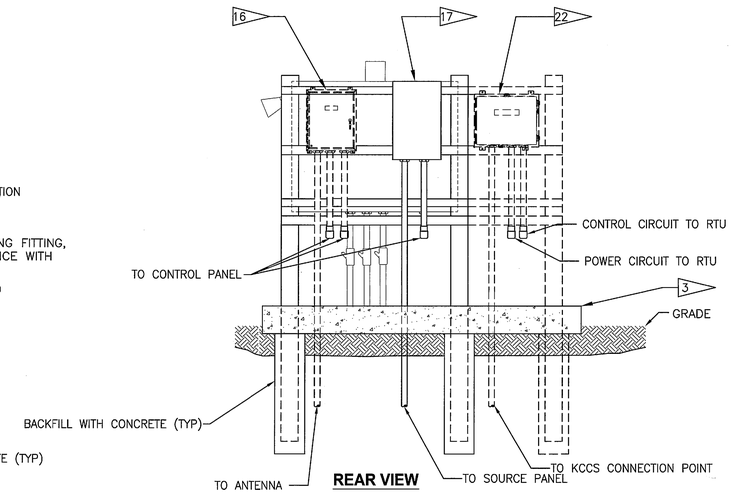
**NOTES:**

A. SEE LIFT STATION DATA TABLE ON SHEET E3 FOR CONDUIT AND CONDUCTOR SIZES.

B. DELETE CONDUIT SEAL TO WETWELL FOR CONDUITS 1-1/2" AND SMALLER.




**FRONT VIEW**

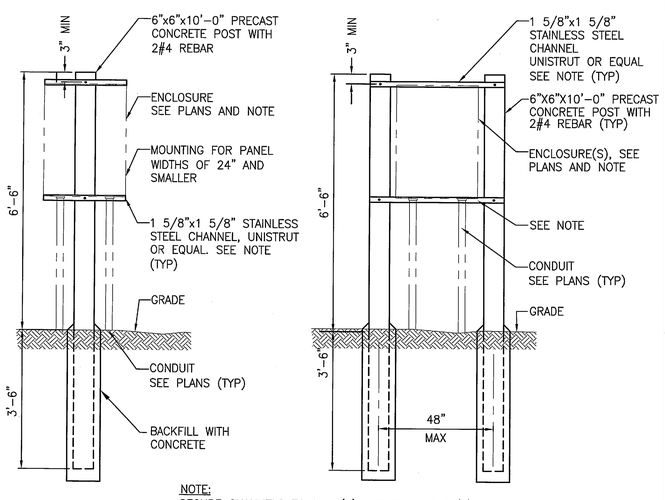



**REAR VIEW**

## CONTROL PANEL DETAIL 1

NTS

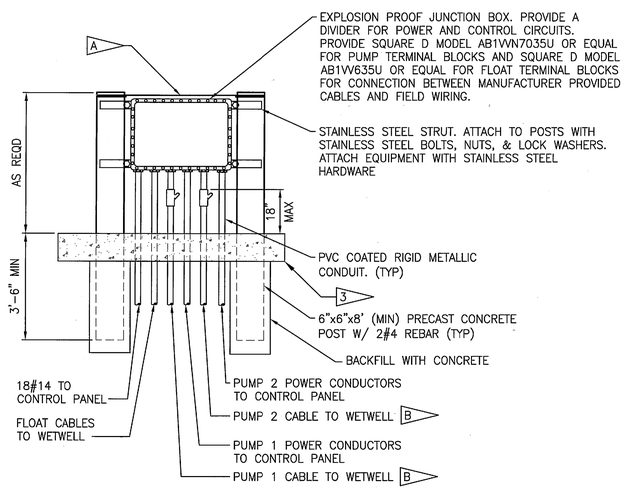
E37




NOTE:
SECURE CHANNELS TO POST(S) AND ENCLOSURE(S) TO CHANNELS WITH STAINLESS STEEL HARDWARE.

## TYPICAL EQUIPMENT MOUNTING ON CONCRETE POST(S) DETAIL

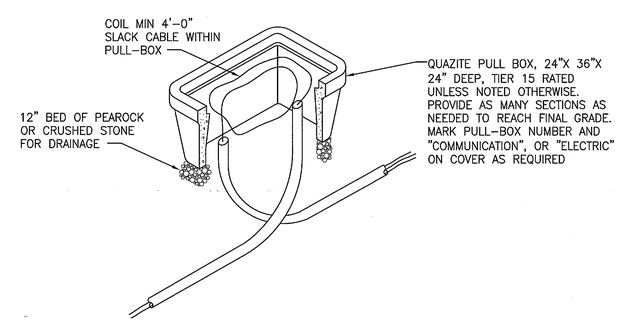
NTS




## EXPLOSION PROOF JUNCTION BOX MOUNTING DETAIL 2

NTS

E2 E37




## TYPICAL UNDERGROUND PULL BOX INSTALLATION DETAIL

NTS

E37

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**
**ELECTRICAL DETAILS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 80 | |

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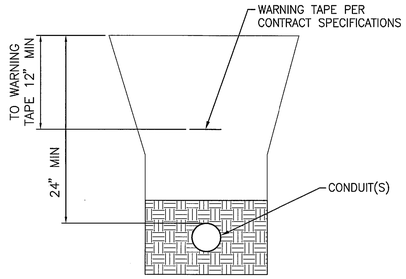
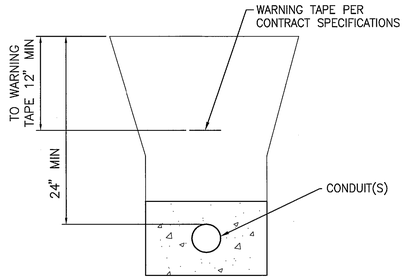
SPECIFICATION REFERENCE NO 79K38878

NOTE:
FOR COMPACTION REQUIREMENTS
SEE TYPICAL UTILITY TRENCH DETAIL 2/M26




(TYPICAL ALL UNPAVED AREAS)
## TYPICAL UNDERGROUND TRENCH DETAIL
NTS

NOTE:
FOR COMPACTION REQUIREMENTS
SEE TYPICAL UTILITY TRENCH DETAIL 2/M26

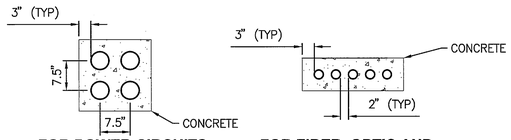



(TYPICAL ALL PAVED AREAS)
## TYPICAL UNDERGROUND TRENCH DETAIL
NTS

FOR POWER CIRCUITS  FOR FIBER OPTIC AND CONTROL WIRING

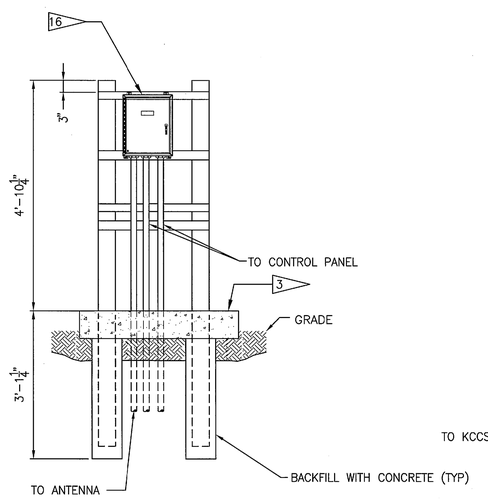
NON-ROADWAY AREAS
## TYPICAL DUCT BANK WITHOUT CONCRETE ENCASEMENT DETAIL
NTS

NOTE:
PROVIDE CONCRETE ENCASEMENT UNDER PAVED AREAS AND WHEN WITHIN 10' OF A ROADWAY.

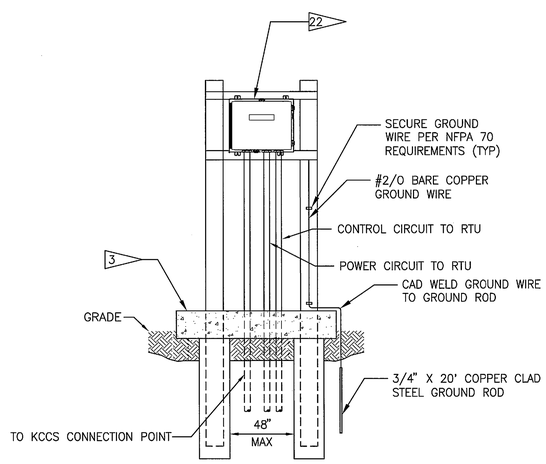



FOR POWER CIRCUITS  FOR FIBER OPTIC AND CONTROL WIRING

UNDER ROADS OR DRIVEWAYS
## TYPICAL DUCT BANK WITH CONCRETE ENCASEMENT DETAIL
NTS




FRONT VIEW




REAR VIEW

## RTU DETAIL 1/E38
NTS

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| FOR D. TRANG | 12/9/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS
ELECTRICAL DETAILS

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |
| PROJ. NO. 96968.3 | | SHEET 81 | |

E38

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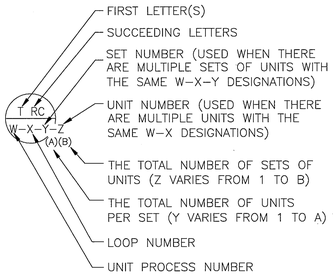
# INSTRUMENT IDENTIFICATION

## EXAMPLE SYMBOLS




TT — FIELD MOUNTED INSTRUMENT

I/P FY — REAR–OF–PANEL MOUNTED INSTRUMENT

FIC — PANEL MOUNTED INSTRUMENT

QL — MOTOR CONTROL CENTER MOUNTED INSTRUMENT

## INSTRUMENT IDENTIFICATION LETTERS TABLE

| | FIRST LETER(S) | | SUCCEEDING LETTERS | | |
|---|---|---|---|---|---|
| | PROCESS OR INITIATING VARIABLE | MODIFIER | READOUT OR PASSIVE FUNCTION | OUTPUT FUNCTION | MODIFIER |
| A | ANALYSIS (+) | | ALARM | | |
| B | BURNER FLAME | | USERS CHOICE (+) | USERS CHOICE (+) | USERS CHOICE |
| C | CONDUCTIVITY | | | CONTROL | |
| D | DENSITY (S.G.) | DIFFERENTIAL | | | |
| E | VOLTAGE | | PRIMARY ELEMENT | | |
| F | FLOW RATE | | | | |
| G | GAUGE | | GLASS | GATE | |
| H | HAND (MANUAL) | | | | HIGH |
| I | CURRENT | | INDICATE | | |
| J | POWER | SCAN | | | |
| K | TIME OR SCHEDULE | | | CONTROL STATION | |
| L | LEVEL | | LIGHT (PILOT) | | LOW |
| M | MOTION | | | | MIDDLE |
| N | USERS CHOICE (+) | | USERS CHOICE (+) | USERS CHOICE (+) | USERS CHOICE (+) |
| O | USERS CHOICE (+) | | ORIFICE | | |
| P | PRESSURE (OR VACUUM) | | POINT (TEST CONNECTION) | | |
| Q | QUANTITY OR EVENT (+) | INTEGRATE | INTEGRATE | | |
| R | | | RECORD OR PRINT | | |
| S | SPEED OR FREQUENCY | SAFETY | | SWITCH | |
| T | TEMPERATURE | | | TRANSMIT | |
| U | MULTIVARIABLE (+) | | MULTIFUNCTION (+) | MULTIFUNCTION (+) | MULTIFUNCTION (+) |
| V | VISCOSITY | | | VALVE OR DAMPER | |
| W | WEIGHT OR FORCE | | WELL | | |
| X | UNCLASSIFIED (+) | | UNCLASSIFIED | UNCLASSIFIED (+) | UNCLASSIFIED (+) |
| Y | USERS CHOICE (+) | | | RELAY OR COMPUTE (+) | |
| Z | POSITION | | | DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT | |

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS

## SPECIAL CASES

OC QL — OPENED AND CLOSED EVENT LIGHTS

OC ZL — OPENED AND CLOSED POSITION LIGHTS

OC ZS — OPENED AND CLOSED POSITION SWITCHES

OO HS — ON–OFF HAND SWITCH. MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

SS HS — STOP–START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

OSC HS — ELECTRIC ACTUATOR WITH INTEGRAL OPEN–STOP–CLOSE MOMENTARY CONTACT CONTROL SWITCH

CM FIHA — FLOW INDICATING, COMPUTER/MANUAL CONTROL STATION

CAM FIC — FLOW INDICATING, COMPUTER/AUTO/MANUAL CONTROL STATION

SSC FIC — FLOW INDICATING SUPERVISORY SET POINT (BY COMPUTER), AUTO/MANUAL CONTROL STATION

## TRANSDUCERS

| | | | |
|---|---|---|---|
| A | ANALOG | I | CURRENT |
| D | DIGITAL | P | PNEUMATIC |
| E | VOLTAGE | PF | PULSE FREQUENCY |
| F | FREQUENCY | PD | PULSE DURATION |
| H | HYDRAULIC | R | RESISTANCE |

EXAMPLE:

I/P FY — CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

XX XXX XXX — SOFTWARE IMPLEMENTED OPERATOR INTERFACE

XX — SOFTWARE IMPLEMENTED CALCULATION

D. P. FITZGERALD, INC.
*Water & Wastewater Treatment*
*Process Controls*
*Alachua, Florida* COA 8991

# LINE LEGEND

- PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)
- PROCESS (FUTURE)
- ANALOG SIGNAL (4 TO 20 mAdc, ETC.)
- DISCRETE SIGNAL (ON/OFF, ETC.)
- PNEUMATIC SIGNAL
- FILLED SYSTEM SIGNAL
- HYDRAULIC SYSTEM SIGNAL
- DATA LINK
- MANUFACTURER SUPPLIED SIGNAL CABLE
- SERIAL SIGNAL
- FIBER OPTIC
- BUILDING OR FACILITY BOUNDARY
- PACKAGE SYSTEM EQUIPMENT

PARALLELING LINES

(2) (A) 3(2) (B)

(A) TOTAL OF 2 SIGNALS
(B) 3 TYPICAL SETS OF 2 SIGNALS EACH. TOTAL OF 6 SIGNALS.

CONNECTING LINES

NON–CONNECTING LINES

# INTERFACE SYMBOLS

WA S — D WA

= PROCESS INTERFACE

= SIGNAL INTERFACE

W = SOURCE UNIT PROCESS NO.

A = INTERFACE NO.

D = DESTINATION DRAWING NO.

S = SOURCE DRAWING NO.

N — PROCESS OR SIGNAL LINE CONTINUATION N=1,2,3,ETC — N

INTERFACE TO OR FROM PROCESS EXTERNAL TO PROJECT

# SELF CONTAINED VALVE, ACTUATED VALVE & EQUIPMENT TAG NUMBERS

WD–XY
W = UNIT PROCESS NUMBER
X = LOOP NUMBER
Y = UNIT NUMBER

D:

| | | | |
|---|---|---|---|
| GW | = GATEWAY | PD | = PULSATION DAMPER |
| HT | = HYDRO TURBINE | SM | = STATIC MIXER |
| LIU | = LIGHT INTERFACE UNIT | TC | = TRANSCEIVER |
| M | = MECHANICAL EQUIPMENT | TK | = TANK |
| MC | = MEDIA CONVERTER | V | = VALVE (SEE VALVE SCHEDULE) |
| MP | = METERING PUMP | VH | = VAPOR HEATER |
| NS | = NETWORK SWITCH | VP | = VAPORIZER |
| OWS | = OPERATOR WORKSTATION | | |
| P | = PUMP | | |

# ABBREVIATIONS & LETTER SYMBOLS

| | |
|---|---|
| AC | ALTERNATING CURRENT |
| ALKY | ALKALINITY |
| AM | AUTO–MANUAL |
| CAM | COMPUTER–AUTO–MANUAL |
| CCS | CENTRAL CONTROL SYSTEM |
| $CL_2$ | CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATION) |
| CM | COMPUTER–MANUAL |
| COD | CHEMICAL OXYGEN DEMAND |
| XCP–Y | CONTROL PANEL: X=UNIT PROCESS NO. , Y=LOOP NO. |
| DC | DIRECT CURRENT |
| DO | DISSOLVED OXYGEN |
| $FCL_2$ | FREE CHLORINE RESIDUAL |
| FOS | FAST–OFF–SLOW |
| FOSA | FAST–OFF–SLOW–AUTO |
| FOSR | FAST–OFF–SLOW–REMOTE |
| XFP–Y | FIELD PANEL: X=UNIT PROCESS NO. , Y=LOOP NO. |
| FR | FORWARD–REVERSE |
| HDNS | HARDNESS |
| HOA | HAND–OFF–AUTO |
| HOR | HAND–OFF–REMOTE |
| LEL | LOWER EXPLOSIVE LIMIT |
| LIU | LIGHT INTERFACE UNIT |
| LOS | LOCKOUT STOP |
| LR | LOCAL–REMOTE |
| MA | MANUAL–AUTO |
| MBAS | METHYLENE BLUE ACTIVE SUBSTANCES |
| MC | MODULATE–CLOSE |
| MCC–X | MOTOR CONTROL CENTER NO. X |
| MP | METERING PUMP |
| MSC | MANUFACTURER SUPPLIED CABLE |
| NIP | NETWORK INTERFACE PANEL |
| OC | OPEN–CLOSE (D) |
| OCR | OPEN–CLOSE–REMOTE |
| OCA | OPEN–CLOSE–AUTO |
| OO | ON–OFF |
| OOA | ON–OFF–AUTO |
| OOR | ON–OFF–REMOTE |
| OP | ORTHO PHOSPHATE |
| ORP | OXIDATION REDUCTION POTENTIAL |
| OSC | OPEN–STOP–CLOSE |
| pH | HYDROGEN ION CONCENTRATION |
| PLC | PROGRAMMABLE LOGIC CONTROLLER |
| RM–X | REMOTE MULTIPLEXING MODULE NO. X |
| RTU–X | REMOTE TELEMETRY UNIT NO. X |
| SF | SLOWER–FASTER |
| SS | START–STOP |
| SSC | SUPERVISORY SET POINT CONTROL |
| $TCL_2$ | TOTAL CHLORINE RESIDUAL |
| TK | TANK |
| TOC | TOTAL ORGANIC CARBON |
| TOD | TOTAL OXYGEN DEMAND |
| TURB | TURBIDITY |
| VFD | VARIABLE FREQUENCY DRIVE |
| VH | VAPOR HEATER |
| VHC | VOLATILE HYDROCARBONS |
| VIB | VIBRATION |
| VP | VAPORIZER |

# GENERAL NOTES

1. COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM
2. COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (*) ARE TO BE UNDER DIVISION 26, ELECTRICAL.
3. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.
4. ALL COMPONENTS SHOWN INSIDE PACKAGE SYSTEM BOUNDARY ARE TO BE PROVIDED AS PART OF THE PACKAGE SYSTEM.

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| L. KIEL | 11/2/11 |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

INSTRUMENTATION AND CONTROLS LEGEND SHEET 1 OF 2

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 82

I1

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## VALVE SYMBOLS

- GATE
- K — KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- V — VEE- BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- DOUBLE CHECK BACKFLOW PREVENTER
- RP — REDUCED PRESSURE BACKFLOW PREVENTER
- BALL CHECK
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- OR — REGULATED SIDE PRESSURE/CONTROL
- MULTI-PORT VALVES (BALL VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN). ARROWS INDICATE FLOW PATTERN. SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- S — SAMPLE
- MUD
- FLOW CONTROL VALVE

## GATE SYMBOLS

- SLUICE
- BUTTERFLY
- FLAP
- FABRICATED SLIDE
- SHEAR

## ACTUATOR SYMBOLS

- M XX — MOTORIZED
- EH XX — ELECTROHYDRAULIC

NOTES:

1. ON LOSS OF PRIMARY POWER (PNEUMATIC, ELECTRICAL OR HYDRAULIC)
   XX: FO = FAIL OPEN
   FC = FAIL CLOSED
   FLP = FAIL TO LAST POSITION

- P XX — PNEUMATIC
- H XX — HYDRAULIC
- S — SOLENOID
- MANUAL

## PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORIFICE PLATE
- FLOW TUBE
- PITOT-STATIC
- VORTEX METER
- ROTAMETER
- ULTRASONIC FLOWMETER (INLINE)
- THERMAL MASS FLOW METER
- MASS FLOW METER
- ELECTROMAGNETIC FLOWMETER
- PROPELLER OR TURBINE METER
- X — DENSITY METER (X: N = NUCLEAR, O = OPTICAL, U = ULTRASONIC)
- ULTRASONIC FLOWMETER (CLAMP-ON)
- LEVEL (ULTRASONIC)
- LEVEL (BUBBLER TUBE)
- ELECTRODE
- LS — LEVEL (FLOAT)
- OR
- LS

## MISCELLANEOUS SYMBOLS

NOTE:
XX: AS ADJUSTABLE SPEED
CS-1 CONSTANT SPEED (SINGLE SPEED)
CS-2 CONSTANT SPEED (TWO SPEED)

- SIGHT GLASS
- DIAPHRAGM SEAL
- BLIND FLANGE
- AIR GAP
- V — VENT TO ATMOSPHERE
- PLUG
- RECEPTACLE
- RADIO ANTENNA
- A, ON-TD X-SEC, B — "ON" TIME DELAY B "ON" X-SEC. AFTER A "ON". INSTANT "OFF".
- A, OFF-TD X-SEC, B — "OFF" TIME DELAY B "OFF" X-SEC. AFTER A "OFF". INSTANT "ON".
- I — OR — INTERLOCK. SEE CONTROL DIAGRAMS
- XX — AIR SET XX= SUPPLY PRESSURE IN PSIG.
- AIR SET FILTER/ REGULATOR/ GAUGE SET
- CALIBRATION CYLINDER
- STATIC MIXER
- FILTER
- 120VAC — 120 VOLT, 60 HZ POWER
- 480VAC — 480 VOLT, 60 HZ POWER
- ANNULAR DIAPHRAGM SEAL
- OR M OR M — MIXER
- M XX — ELECTRIC MOTOR
- PRESSURE GAUGE
- CARD READER
- SECURITY CAMERA
- OPERATOR WORKSTATION
- A, B, AND, C — LOGIC ELEMENT: IF A AND NOT B THEN C
- A, B, OR, C — LOGIC ELEMENT: IF A OR B THEN C
- S, R — ON/OFF RELAY. INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT.
- S, R — SWITCHING SIGNAL SWITCHING RELAY. INPUT WITH DOT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT
  OTHER INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS NOT PRESENT.
- F — FLUSHING CONNECTION
- HOSE ADAPTOR
- S — SEAL WATER SET
- SIGHT GLASS
- PULSATION DAMPENER
- D — HUB DRAIN
- QUICK DISCONNECT

## PUMP AND COMPRESSOR SYMBOLS

- CENTRIFUGAL PUMP (DRY PIT) XX
- CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP XX
- CHEMICAL FEED PUMP XX
- DIAPHRAGM PUMP XX
- GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT) XX
- PISTON PUMP XX
- PROGRESSIVE CAVITY PUMP XX
- SUBMERSIBLE SUMP PUMP XX
- PERISTALTIC HOSE PUMP XX
- COMPRESSOR (CENTRIFUGAL), BLOWER OR TURBINE XX
- COMPRESSOR (PISTON) XX
- EJECTOR

- RADIO LINK
- NETWORK GATEWAY OR BRIDGE
- LIGHT-COPPER TRANSCEIVER
- COMPUTER WORKSTATION OR SERVER
- WYE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- LEVEL GAUGE

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| A | | GENERAL REVISIONS | 10/31/11 | KM |

REVISIONS

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| C. KIEL | 11/2/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
## LIFT STATIONS

## INSTRUMENTATION AND CONTROLS LEGEND SHEET 2 OF 2

| FILE NO. | SIZE | DWG. NO. | REV |
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| | F | 79K38877 VOL 2 | A |
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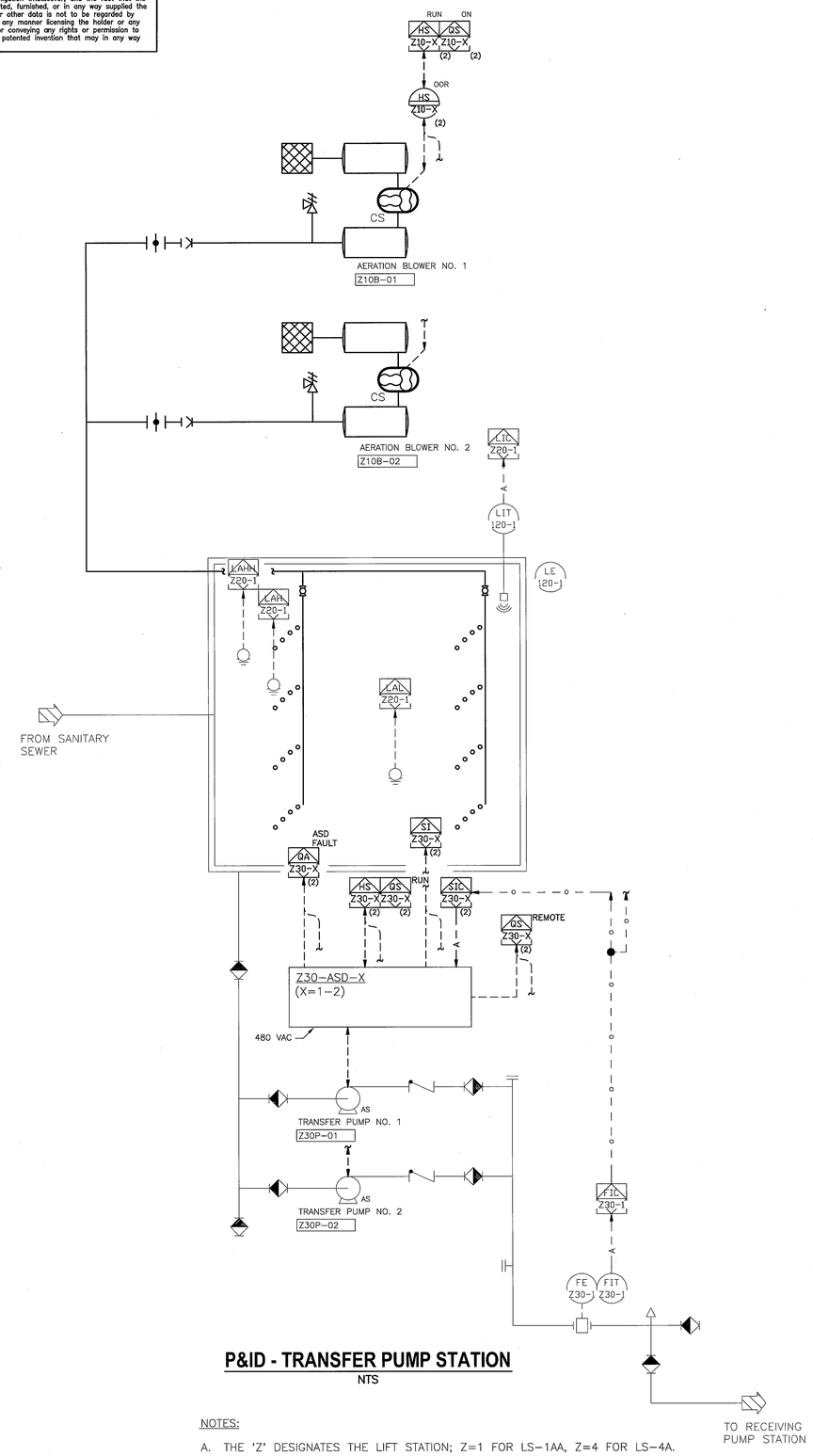


## P&ID - TRANSFER PUMP STATION

NTS

NOTES:

A. THE 'Z' DESIGNATES THE LIFT STATION; Z=1 FOR LS-1AA, Z=4 FOR LS-4A.

B. THE RECEIVING PUMP STATION FOR EACH IS AS FOLLOWS:
   a. LS-1AA IS THE RECEIVING PUMP STATION FOR LS-4A
   b. CAPE CANAVERAL AIR FORCE STATION WASTEWATER TREATMENT FACILITY IS RECEIVING STATION FOR LS-1AA

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## LIFT STATION SEQUENCE OF OPERATION

GENERAL

THE PUMP STATIONS ARE DUPLEX PUMP CONFIGURATION. VARY THE PUMP SPEED TO ESTABLISH THE OPERATOR-ENTERED TRANSFER FLOW RATE WITH RESPECT TO WET WELL LEVEL. INCREMENT/DECREMENT PUMP SPEED AND HOLD THE ENTERED CONSTANT FLOW RATE SPECIFIC FOR THE PRESCRIBED WET WELL LEVELS. AERATE THE WET WELL CONTENTS BY OPERATING ONE OF TWO BLOWERS CONTINUOUSLY. ALTERNATE THE OPERATING BLOWER EVERY 24-HOURS. MONITOR THE WET WELL LEVEL AND MAKE ADJUSTMENTS IN THE PUMP STATION OPERATION TO ACCOUNT FOR VARIATIONS IN VOLUME CONTAINED IN THE WET WELL.

REVISE THE KCCS TO SUPPORT OPERATOR INTERFACE (MONITORING AND SET POINT ENTRY). THE PUMP STATION PLC AND KCCS SHALL COMMUNICATE USING AN EXISTING WIDE AREA NETWORK LINK (FIBER OPTIC MEDIA).

REFER TO THE SPECIFICATIONS FOR MORE DETAILED SEQUENCE OF OPERATION.

CONTROL SEQUENCE

PUMP STATION PUMP START/STOP CONTROL

MANUAL MODE –

PROVIDE FOR HAND/OFF/AUTO SELECTION ON THE KCCS. WHEN IN 'OFF' MODE, THE PUMP SHALL STOP AND NOT RESPOND TO ANY EXTERNAL SIGNALS. WHEN IN 'HAND' MODE, THE SELECTED PUMP SHALL RUN CONTINUOUSLY AT THE OPERATOR-ENTERED SPEED. THE PUMP SHALL STOP WHENEVER ANY OF THE FOLLOWING EVENTS OCCUR FOR THE ASSOCIATED PUMP:

ADJUSTABLE SPEED DRIVE FAIL ALARM
PUMP 'OUT-OF-SERVICE'

AUTOMATIC MODE –

OPERATE THE 'LEAD' PUMP, VARYING THE SPEED AS A FUNCTION OF THE WET WELL LEVEL (SEE BELOW) WHENEVER IN 'AUTO' MODE. ALTERNATE THE 'LEAD' PUMP SELECTION WHENEVER EITHER ALL PUMPS ARE OFF, OR ONE PUMP RUNS 24-HOURS CONTINUOUSLY. INCREMENT/DECREMENT THE LEAD PUMP SPEED AS INDICATED BELOW:

| TANK RANGE (% TOTAL LEVEL) | SET POINT (GPM) |
|---|---|
| 59 TO 100 | 500 |
| 51 TO 59 | 450 |
| 43 TO 50 | 350 |
| 0 TO 42 | 300 |

THE SET POINTS SHALL BE OPERATOR-ENTERED VALUES. THE PROGRAM SHALL PUSH THE SET POINT VALUE INTO THE PID CONTROL LOOP WHENEVER MEASURED TANK LEVEL IS WITHIN THE PRESCRIBED RANGE.

IMMEDIATELY START THE LAG PUMP IN THE EVENT THE LEAD PUMP IS CALLED TO RUN AND ASD IS FAILED OR THE PUMP IS OUT-OF-SERVICE. OUT-OF-SERVICE CONDITIONS ARE AS FOLLOWS:

PUMP FAIL (CALLED TO RUN, NOT RUNNING AFTER A PRESET DELAY)
NOT IN 'AUTO'
NOT IN 'REMOTE'

STOP ALL PUMP WHENEVER LOW LEVEL IS DETECTED USING THE FLOAT SWITCH (Z-LSL-1).

IN THE EVENT THE WET WELL LEVEL REACHES THE HIGH (Z-LSH-1) OR HIGH HIGH (Z-LSHH-1) LEVELS AS MEASURED BY THE FLOAT SWITCHES, DISCONTINUE THE AUTOMATIC MODE AS DESCRIBED ABOVE AND OPERATE AS A CONSTANT SPEED (100% SPEED), DUPLEX PUMP STATION. START THE LEAD PUMP ON HIGH LEVEL. START BOTH PUMPS ON HIGH HIGH LEVEL. CONTINUE PUMP OPERATION UNTIL LOW LEVEL IS ACHIEVED. STOP ALL PUMP OPERATION AND RETURN TO AUTOMATIC CONTROL MODE.

PUMP STATION BLOWER START/STOP CONTROL

MANUAL MODE –

PROVIDE FOR HAND/OFF/AUTO SELECTION ON THE KCCS. WHEN IN 'OFF' MODE, THE BLOWER SHALL STOP AND NOT RESPOND TO ANY EXTERNAL SIGNALS. WHEN IN 'HAND' MODE, THE SELECTED BLOWER SHALL RUN CONTINUOUSLY. THE PUMP SHALL STOP WHENEVER ANY OF THE FOLLOWING EVENTS OCCUR FOR THE ASSOCIATED PUMP:

BLOWER 'OUT-OF-SERVICE'

AUTOMATIC MODE –

OPERATE THE 'LEAD' BLOWER WHENEVER IN 'AUTO' MODE. ALTERNATE THE 'LEAD' BLOWER SELECTION EVERY 24-HOURS.

IMMEDIATELY START THE LAG BLOWER IN THE EVENT THE LEAD BLOWER IS CALLED TO RUN AND IS OTHERWISE OUT-OF-SERVICE. OUT-OF-SERVICE CONDITIONS ARE AS FOLLOWS:

BLOWER FAIL (CALLED TO RUN, NOT RUNNING AFTER A PRESET DELAY)
NOT IN 'AUTO'
NOT IN 'REMOTE'

ALARM EVENTS

MAINTAIN ALL ALARM EVENTS UNTIL THE OFFENDING CONDITION IS REMOVED AND THE ALARM IS MANUALLY ACKNOWLEDGED

GENERAL – LOSS OF CONTROL POWER

WET WELL – LEVEL HIGH HIGH
LEVEL HIGH
LEVEL SIGNAL OUT-OF-RANGE (HIGH OR LOW)

PUMP STATION PUMP – PROVIDE FAIL ALARMS EVENT WHENEVER ANY OF THE FOLLOWING CONDITIONS EXIST

PUMP FAIL (CALL TO RUN, NOT RUNNING AFTER A PRESET DELAY)
ADJUSTABLE SPEED DRIVE FAIL

PROVIDE TROUBLE EVENTS WHENEVER ANY OF THE FOLLOWING CONDITIONS EXIST

PUMP OUT-OF-SERVICE (LESS FAIL PUMP FAIL EVENT)
MOTOR WINDING TEMPERATURE HIGH
MOTOR SEAL FAILURE

BLOWER – PROVIDE FAIL ALARM EVENT(S) WHENEVER ANY OF THE FOLLOWING CONDITIONS EXIST

BLOWER FAIL (CALL TO RUN, NOT RUNNING AFTER PRESET DELAY)

PROVIDE TROUBLE EVENT(S) WHENEVER ANY OF THE FOLLOWING CONDITIONS EXIST

BLOWER OUT-OF-SERVICE (LESS FAIL CONDITION)

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| APPROVED M. CLARK | 10/31/11 |
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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**P&ID AND SEQUENCE OF OPERATION**
**WWTP STATIONS LS-1AA AND LS-4A**

| FILE NO. | SIZE | DWG. NO. | REV |
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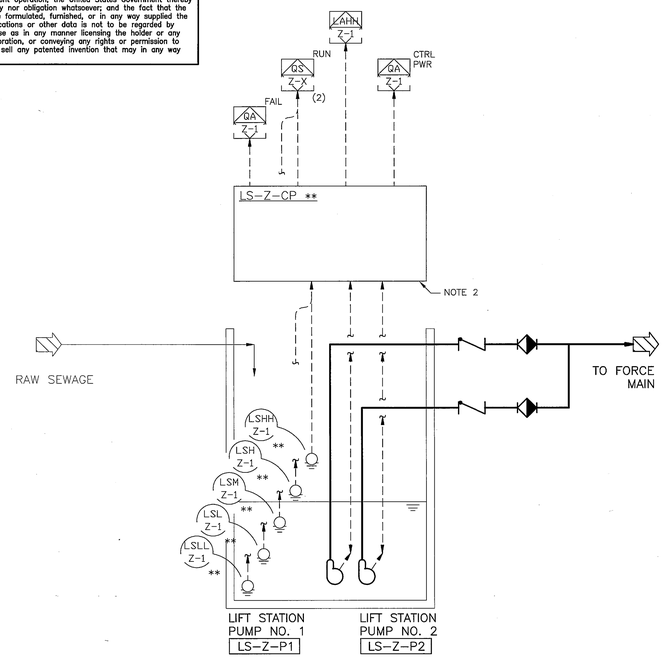


## P&ID - GENERAL LIFT STATION

NTS

## GENERAL LIFT STATION SEQUENCE OF OPERATION

GENERAL

THE LIFT STATIONS ARE DUPLEX PUMP CONFIGURATION USING LEVEL FLOATS TO MONITOR THE WET WELL LEVEL AND START/STOP THE PUMPS. THE PUMP CONTROL SHALL BE ELECTROMECHANICAL BASED (RELAY LOGIC). CONTROL PANEL SHALL PROVIDE SEPARATE, DEDICATED TERMINAL BLOCKS FOR THE PURPOSE OF TRANSMITTING STATION STATUS TO THE SCADA APPLICATION VIA KCCS.

CONTROL SEQUENCE

LIFT STATION PUMP START/STOP CONTROL

MANUAL MODE – PROVIDE FOR OPERATOR START/STOP CONTROL, EACH LOCAL TO THE PUMPS. STOP THE SELECTED PUMPS WHENEVER EITHER OF THE THE FOLLOWING EVENTS OCCUR
ASSOCIATED PUMP FAIL ALARM
WET WELL LEVEL LOW LOW.

AUTOMATIC MODE – START/STOP THE LEAD PUMP TO MAINTAIN THE WET WELL LEVEL WITHIN AN ADJUSTABLE RANGE AS FOLLOWS:
START LEAD (LEVEL MEDIUM)
START LAG (LEVEL HIGH)
STOP (LEVEL LOW)
INITIAL LEVEL VALUES FOR EACH LIFT STATION ARE AS PRESENTED IN THE MECHANICAL DRAWINGS

START BOTH PUMPS WHENEVER THE WET WELL LEVEL HIGH HIGH CONDITION EXIST

STOP THE PUMP(S) WHENEVER EITHER OF THE THE FOLLOWING EVENTS OCCUR
ASSOCIATED PUMP FAIL ALARM
WET WELL LEVEL LOW LOW.

ALTERNATE LEAD PUMP SELECTION WHENEVER ALL PUMPS ARE OFF.

ALARM EVENTS

MAINTAIN ALL ALARM EVENTS UNTIL THE OFFENDING CONDITION IS REMOVED AND THE ALARM IS MANUALLY ACKNOWLEDGED (LOCAL RESET)

GENERAL – LOSS OF CONTROL POWER

WET WELL – LEVEL HIGH HIGH
LEVEL LOW LOW

LIFT STATION PUMP – PROVIDE A PUMP FAIL ALARM EVENT WHENEVER ANY OF THE FOLLOWING CONDITIONS EXIST

CALL TO RUN, NOT RUNNING
LOSS OF PHASE

PROVIDE A PUMP TROUBLE EVENT WHENEVER ANY OF THE FOLLOWING CONDITIONS EXIST

MOTOR WINDING TEMPERATURE HIGH
MOTOR SEAL FAILURE

KCCS MONITORING/CONTROL

MONITORING: DISPLAY THE FOLLOWING DISCRETE SIGNALS
LIFT STATION PUMP RUN STATUS

CONTROL: NONE

ALARM EVENTS: DISPLAY THE FOLLOWING ALARM EVENTS
WET WELL LEVEL HIGH
LOSS OF CONTROL POWER
COMMON PUMP FAIL

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

P&ID AND SEQUENCE OF OPERATION
GENERAL LIFT STATIONS

| FILE NO. | SIZE | DWG. NO. | REV |
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| | F | 79K38877 VOL 2 | A |
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## INDUSTRIAL AREA LIFT STATION KCCS COMMUNICATION CONFIGURATION/ASSIGNMENT

| LIFT STATION | ADJ FACILITY | MEDIA | RTU CONFIGURATION | KCCS TERMINATION CABINET/LOCATION | SIGNAL CONFIGURATION | NOTES |
|---|---|---|---|---|---|---|
| LS-1B | M6-0996 | HARDWIRED | N/A | TTC-1 CA 0901 M6-0996 | 5 STATUS/ALARM | NOTE 'A' |
| LS-1C | M7-0451 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1F | M7-0657 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1G | M7-1162 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1H | M7-1469A | FIBER OPTIC | RTU PANEL 'C' | FOT 49A M7-1521 RM 1112 | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1I | M7-0777 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1J | M7-1354 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1J2 | M7-1357 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1L | M6-0883 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. LIFT STATION CONTROL PANEL EXISTING. REFER TO RTU SCHEDULE |
| LS-1M | M6-0785 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1N | M7-1104 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1O | M6-1671A | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1P | M6-1025 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1Q | M6-0740 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1R | M6-0223 | HARDWIRED | N/A | N/A | 5 STATUS/ALARM | NOTE 'A' |
| LS-1S | M6-1724 | HARDWIRED | N/A | N/A | 5 STATUS/ALARM | NOTE 'A' |
| LS-1T | L7-1557 | FIBER OPTIC | RTU PANEL 'C' | FOT L7-1557 RM 1040 | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-1U | M6-0570 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-10A | K7-569A | RADIO | RTU PANEL 'B' | N/A | ETHERNET CONNECTION | NOTE 'D'. LIFT STATION CONTROL PANEL EXISTING |

## VAB AREA LIFT STATION KCCS COMMUNICATION CONFIGURATION/ASSIGNMENT

| LIFT STATION | ADJ FACILITY | MEDIA | RTU CONFIGURATION | KCCS TERMINATION CABINET/LOCATION | SIGNAL CONFIGURATION | NOTES |
|---|---|---|---|---|---|---|
| LS-4A1 | K6-0793 | HARDWIRED | N/A | LS-4A PLC K6-0792 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4A4 | K6-0696 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4B1 | K6-1249 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4B2 | K6-848 | FIBER | RTU PANEL 'C' | KCCS SWITCH RACK 1.01 K6-848 RM 1N11 | 5 STATUS/ALARM | NOTE 'C' |
| LS-4C1 | K6-1094 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4C2 | K6-0996A | HARDWIRED | N/A | TTC-1 CA 4904 K6-0996A RM 108 | 5 STATUS/ALARM | NOTE 'A'. |
| LS-4D | K6-1096 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4E4 | K6-1395 | HARDWIRED | N/A | TTC 14-J-31 J6-1397 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4F | K6-0894 | HARDWIRED | N/A | TTC-LB3 K6-0894 RM 125 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4K1 | K6-0544 | HARDWIRED | N/A | TTC 15-J-35 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4L | K6-1193 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4M | K6-0546 | HARDWIRED | N/A | TTC 15-J-75 CA 49 K6-0546 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4N1 | K6-1547 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE. LIFT STATION CONTROL PANEL EXISTING |
| LS-4N2 | K6-1844 | HARDWIRED | N/A | TTC-1 K6-1884 RM 1025 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4N3 | K6-1996E | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4N4 | K6-1996H | HARDWIRED | N/A | TTC-1 CA5401 K6-1996H RM 107 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4N5 | K6-1847 | HARDWIRED | N/A | TTC-1 CA 5402 K6-1847 RM 100 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4N6 | K6-2196 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4N7 | K6-2496B | RADIO | RTU PANEL 'A' | N/A | COMMON ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4O1 | K6-2496 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |

## VAB AREA LIFT STATION KCCS COMMUNICATION CONFIGURATION/ASSIGNMENT (CONT)

| LIFT STATION | ADJ FACILITY | MEDIA | RTU CONFIGURATION | KCCS TERMINATION CABINET/LOCATION | SIGNAL CONFIGURATION | NOTES |
|---|---|---|---|---|---|---|
| LS-4P2 | K6-1446 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4P3 | K6-1696 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4Q | J6-2377 | HARDWIRED | N/A | TTC 16-1-3 CA 5002 | 5 STATUS/ALARM | NOTE 'A' |
| LS-4R | K6-0791 | RADIO | RTU PANEL 'A' | N/A | 5 STATUS/ALARM | NOTE 'B'. REFER TO RTU SCHEDULE |
| LS-4S1 | J6-2126 | HARDWIRED | N/A | TTC-1 CA 50010 J6-2025 MECH RM | 5 STATUS/ALARM | NOTE 'A' |
| LS-5A | J8-1705A | HARDWIRED | N/A | TTC 16-M-71 J8-1708 | 5 STATUS/ALARM | NOTE 'A' |
| LS-5C | J7-1339 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J7-1339 COMMUNICATION RM | 5 STATUS/ALARM | NOTE C' |
| LS-5D | J7-1338 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J7-1338 COMMUNICATION BOX | 5 STATUS/ALARM | NOTE C' |
| LS-5E | J8-2009 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J8-2109 RM 1123 | 5 STATUS/ALARM | NOTE C' |
| LS-5E2 | J8-2109 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J8-2009 RM 1004 | 5 STATUS/ALARM | NOTE C' |
| LS-6A | J7-0348A | HARDWIRED | N/A | TTC 18-L-10 | 5 STATUS/ALARM | NOTE 'A' |
| LS-6D | J7-0689 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J7-0689 RM 1123 | 5 STATUS/ALARM | NOTE C' |
| LS-9B | K7-0468 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH K7-0468 RM 1024 | 5 STATUS/ALARM | NOTE C' |
| LS-9D | K7-0142 | HARDWIRED | N/A | TTC 15-L-5 | 5 STATUS/ALARM | NOTE 'A' |
| LS-9E | K6-1145 | HARDWIRED | N/A | TTC 15-K-2 CA 39 | 5 STATUS/ALARM | NOTE 'A' |
| LS-17A | J6-2313 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J6-2313 RM 1 | 5 STATUS/ALARM | NOTE C' |
| LS-17C | J6-2313 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J6-2313 RM 1 | 5 STATUS/ALARM | NOTE C' |
| LS-17D | J6-2465 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J6-2370 COMM RM | 5 STATUS/ALARM | NOTE C' |
| LS-17E | J6-2370 | FIBER OPTIC | RTU PANEL 'C' | KCCS SWITCH J6-2370 COMM RM | 5 STATUS/ALARM | NOTE C' |

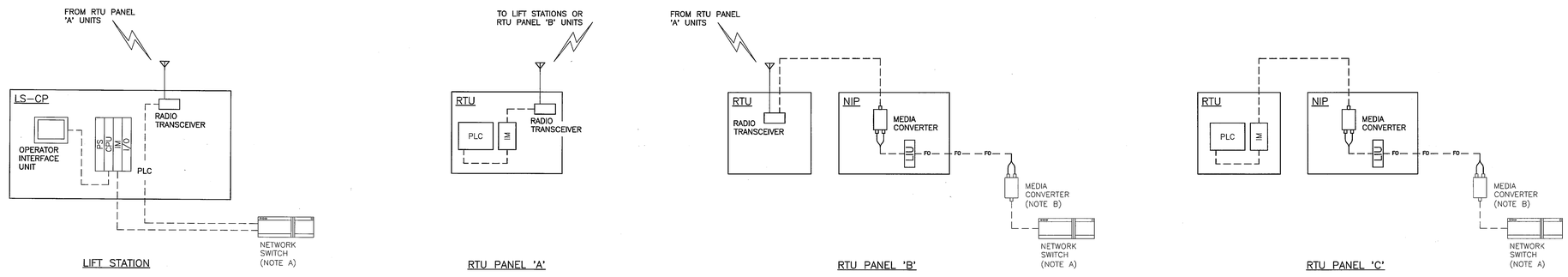
NOTES:

A. HARDWIRE 5 STATUS/ALARMS AS SPECIFIED TO TTC OR PLC SHOWN HERE AND ON ELECTRICAL DRAWINGS.

B. HARDWIRE 5 STATUS/ALARMS AS SPECIFIED TO RTU PANEL AS SHOWN HERE AND ON ELECTRICAL DRAWINGS. MOUNT RTU PANEL TO SAME SUPPORT AS LIFT STATION CONTROL PANEL.

C. PROVIDE AND INSTALL CAT 5e NETWORK CABLE TO INTERFACE WITH EXISTING NETWORK SWITCH AS SHOWN HERE AND ON ELECTRICAL DRAWINGS. CONNECT TO VLAN PORT ON EXISTING KCCS NETWORK SWITCH.

D. PROVIDE AND INSTALL CAT 5e NETWORK CABLE TO INTERFACE EXISTING PLC CONTROLS WITH RTU PANEL MOUNTED RADIO. MOUNT RTU PANEL TO SAME SUPPORT AS LIFT STATION CONTROL PANEL. NO NETWORK INTERFACE PANEL REQUIRED.




## COMMUNICATION BLOCK DIAGRAM

NTS

NOTES:

A. NETWORK SWITCH IS EITHER EXISTING OR PROVIDED, INSTALLED, AND CONFIGURED BY OTHERS.

B. MEDIA CONVERTERS ARE PROVIDED, INSTALLED, AND CONFIGURED BY OTHERS.

D. P. FITZGERALD, INC.
*Water & Wastewater Treatment*
*Process Controls*
*Alachua, Florida* COA 8991

THIS SPACE RESERVED

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|---|---|---|---|---|
| A | | GENERAL REVISIONS | 10/31/11 | KM |

REVISIONS

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3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950

| SIGNATURES | DATE |
|---|---|
| DRAWN D. FITZGERALD | 10/31/11 |
| CHECKED M CLARK | 10/31/11 |
| SUBMITTED D. FITZGERALD | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 40976 | |
| APPROVED M. CLARK | 10/31/11 |
| W. KIEL | 11/3/11 |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**COMMUNICATION BLOCK DIAGRAMS**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 86

15

SC FORM 1-11 (3/76)(C/G 3/94)

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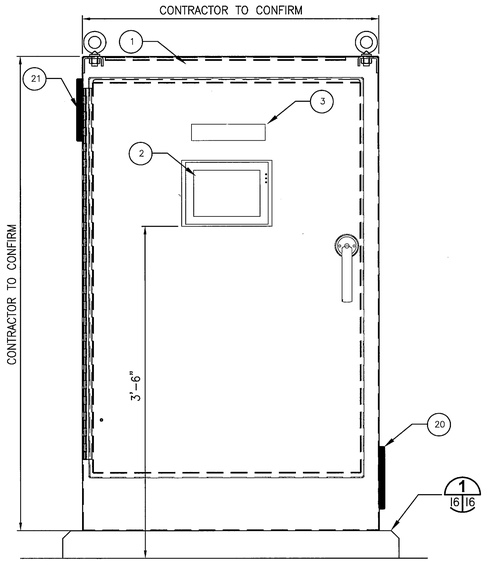
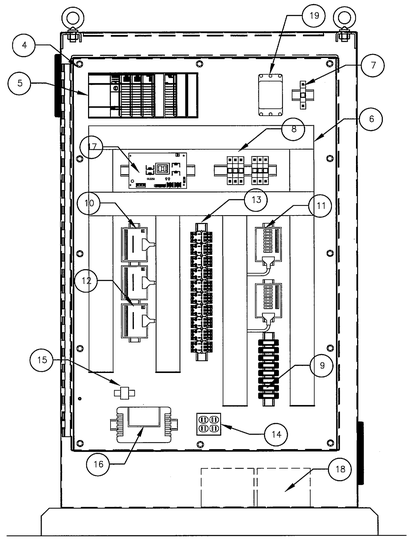


ENCLOSURE FACE ELEVATION — INTERIOR PANEL ELEVATION

| ITEM No. | DESCRIPTION | SPECIFICATION |
|---|---|---|
| 1 | ENCLOSURE | NEMA 3R, SST UN-FINISHED & SOLAR SHIELD W/ 3-POINT LATCH |
| 2 | OPERATOR INTERFACE UNIT (TOUCH SCREEN) | COMPONENT Y63 |
| 3 | CONTROL PANEL NAMEPLATE | ENGRAVE-'CONTROL PANEL', 'LIFT STATION 'Z'' |
| 4 | PANEL AND ACCESSORIES | CARBON STEEL, PAINTED WHITE, BAKED-ENAMEL FINISH |
| 5 | PROGRAMMABLE LOGIC CONTROLLER | COMPONENT Y55 |
| 6 | WIREWAY | |
| 7 | MAIN CIRCUIT BREAKER | |
| 8 | FEEDER CIRCUIT BREAKERS | |
| 9 | ANALOG SIGNAL SURGE SUPPRESSORS | |
| 10 | RELAYS & RELAY SOCKETS | |
| 11 | ANALOG SIGNAL INTERFACE MODULE | ALLEN BRADLEY 1492-RAIFM WITH FUSE CLIPS AND CABLE, OR EQUAL |
| 12 | DISCRETE INPUT INTERFACE MODULE | ALLEN BRADLEY 1492-RIFM, ISOLATED, WITH LED STATUS, OR EQUAL |
| 13 | DISCRETE OUTPUT INTERFACE MODULE | ALLEN BRADLEY 1492-RIFM, ISOLATED, WITH LED STATUS, OR EQUAL |
| 14 | CONVENIENCE RECEPTACLE | |
| 15 | ANTENNA SURGE SUPPRESSOR | POLYPHASER |
| 16 | RADIO UNIT | |
| 17 | 24 VDC POWER SUPPLY UNIT | |
| 18 | 12 VDC BATTERIES, QTY=2 | |
| 19 | MAIN SURGE SUPPRESSOR | |
| 20 | SUPPLY FAN | COMPACT BOX FAN WITHOUT FILTERS, SIZED IN ACCORDANCE W/ SPEC |
| 21 | EXHAUST FAN | COMPACT BOX FAN WITHOUT FILTER, SIZE TO MATCH SUPPLY FAN |

B

## LIFT STATION CONTROL PANEL (3 / I6)

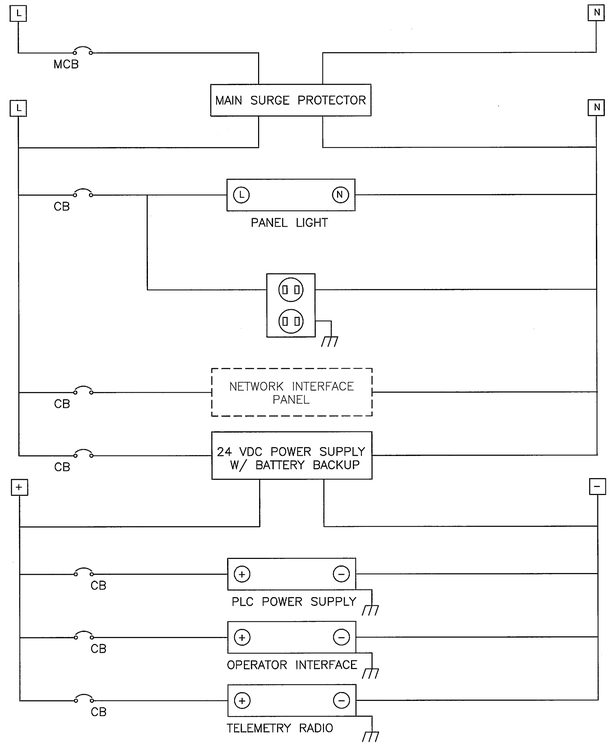
NTS

NOTES:

A. ITEMS IDENTIFIED ABOVE WITH A COMPONENT NUMBER ARE SPECIFIED IN SECTION 40 95 00 PROCESS CONTROL SYSTEMS. THE COMPONENT NUMBER REFERENCES A COMPONENT SPECIFICATION PROVIDED AS AN ATTACHMENT TO SECTION 40 95 00.

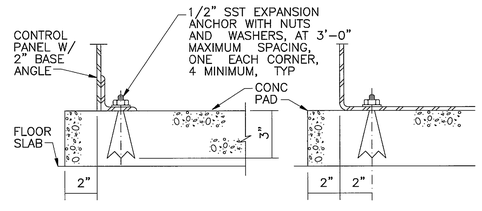
B. DISTRIBUTE PLC I/O OVER SEVERAL MODULES TO AVOID DISABLING PROCESS FUNCTION DUE TO SINGLE MODULE FAILURE.

C. PROVIDE AND INSTALL ONE (1) PANEL AT LS-1AA AND ONE (1) AT LS-4A. ENGRAVE 'Z' TO BE 'LS-1AA' OR 'LS-4A' AS APPROPRIATE FOR THE PANEL NAMEPLATE.

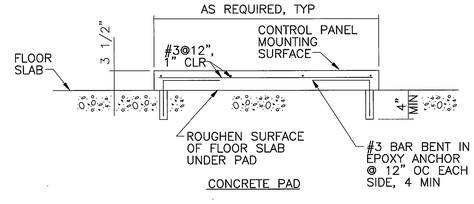



## POWER DISTRIBUTION - LIFT STATION CONTROL PANEL

NTS



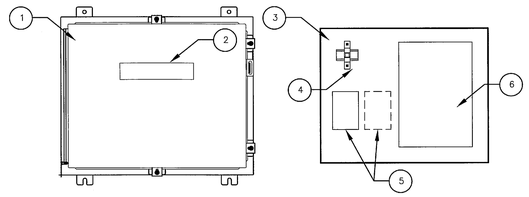

OPEN BOTTOM PANEL — ENCLOSED BOTTOM PANEL




CONCRETE PAD

## STANDARD FREESTANDING PANEL MOUNTING (1 / I6 I6)

NTS



ENCLOSURE FACE ELEVATION — INTERIOR PANEL ELEVATION

| ITEM No. | DESCRIPTION | SPECIFICATION |
|---|---|---|
| 1 | ENCLOSURE | NEMA 3R, SST & SOLAR SHIELD W/ 3-POINT LATCH |
| 2 | PANEL NAMEPLATE | ENGRAVE-'NETWORK INTERFACE PANEL' |
| 3 | PANEL AND ACCESSORIES | CARBON STEEL, PAINTED WHITE, BAKED-ENAMEL FINISH |
| 4 | MAIN CIRCUIT BREAKER | |
| 5 | MEDIA CONVERTER | COMPONENT Y87 |
| 6 | LIGHT INTERFACE UNIT | COMPONENT Y85 |

B

## NETWORK INTERFACE PANEL (2 / I6)

NTS

NOTES:

A. ITEMS IDENTIFIED ABOVE WITH A COMPONENT NUMBER ARE SPECIFIED IN SECTION 40 95 00 PROCESS CONTROL SYSTEMS. THE COMPONENT NUMBER REFERENCES A COMPONENT SPECIFICATION PROVIDED AS AN ATTACHMENT TO SECTION 40 95 00.

B. INSTALL WALL MOUNTED ADJACENT TO THE CONTROL PANEL

C. POWER SUPPLIED BY LIFT STATION CONTROL PANEL

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

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| SIGNATURES | DATE |
|---|---|
| DRAWN D. FITZGERALD | 12/05/11 |
| CHECKED M CLARK | 12/05/11 |
| SUBMITTED D. FITZGERALD | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 40976 | |
| M. CLARK | |
| L. KIEL | |

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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**PANEL DRAWING AND INSTALLATION DETAIL**
**WWTP STATIONS LS-1AA AND LS-4A**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 — SHEET 87

I6

D. P. FITZGERALD, INC.
*Water & Wastewater Treatment*
*Process Controls*
*Alachua, Florida* — COA 8991

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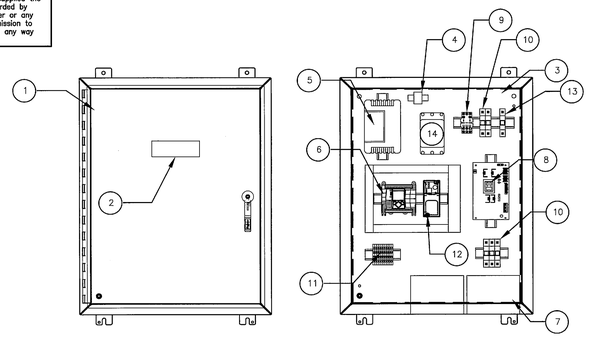



ENCLOSURE FRONT PANEL LAYOUT

| ITEM No. | DESCRIPTION | SPECIFICATION |
|---|---|---|
| 1 | ENCLOSURE | NEMA 3R, SST, & SOLAR SHIELD W/ 3-POINT LATCH |
| 2 | CONTROL PANEL NAMEPLATE | ENGRAVE-SEE SCHEDULE |
| 3 | PANEL AND ACCESSORIES | CARBON STEEL, PAINTED WHITE, BAKED-ENAMEL FINISH |
| 4 | ANTENNA SURGE SUPPRESSOR | POLYPHASER |
| 5 | RADIO UNIT | |
| 6 | PROGRAMMABLE LOGIC CONTROLLER | COMPONENT Y54 |
| 7 | 12 VDC BATTERIES, QTY=2 | |
| 8 | 24 VDC POWER SUPPLY UNIT | |
| 9 | RELAYS & RELAY SOCKETS | |
| 10 | FEEDER BREAKER | |
| 11 | TERMINAL BLOCKS | |
| 12 | NETWORK INTERFACE MODULE | COMPONENT Y30 |
| 13 | MAIN CIRCUIT BREAKER | |
| 14 | MAIN SURGE SUPPRESSOR | |

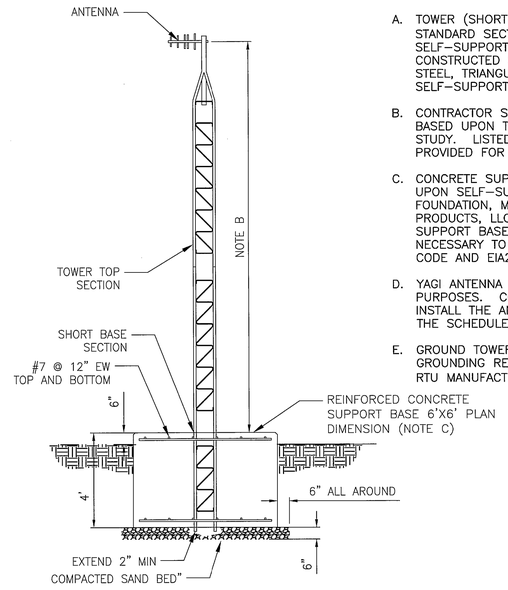
B

## PANEL DRAWING - REMOTE TERMINAL UNIT PANEL 'A'

NTS

NOTES:

A. ITEMS IDENTIFIED ABOVE WITH A COMPONENT NUMBER ARE SPECIFIED IN SECTION 40 95 00 PROCESS CONTROL SYSTEMS. THE COMPONENT NUMBER REFERENCES A COMPONENT SPECIFICATION PROVIDED AS AN ATTACHMENT TO SECTION 40 95 00.




NOTES:

A. TOWER (SHORT BASE, TOP SECTION, AND STANDARD SECTION) SHALL BE SELF-SUPPORTING, PRE-ENGINEERED UNIT, CONSTRUCTED OF HOT-DIPPED GALVANIZED STEEL, TRIANGULAR SECTION, ROHN G-SERIES SELF-SUPPORTING OR EQUAL.

B. CONTRACTOR SHALL ADJUST ANTENNA HEIGHT BASED UPON THE RESULTS OF THE RADIO PATH STUDY. LISTED HEIGHTS ARE TENTATIVE AND PROVIDED FOR BIDDING PURPOSES.

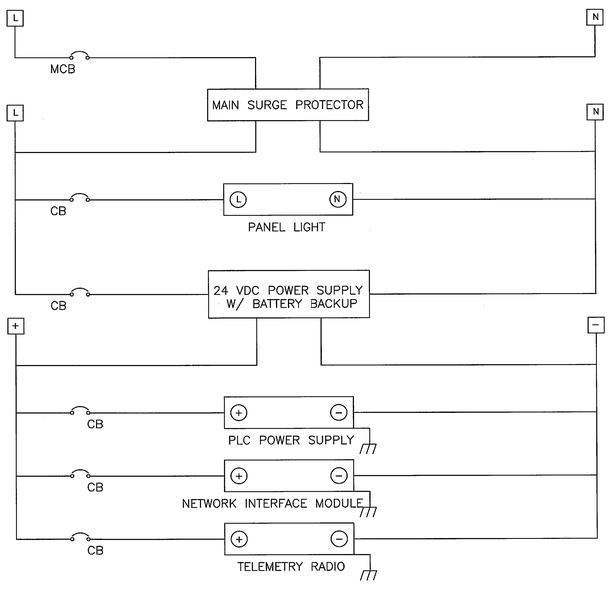
C. CONCRETE SUPPORT BASE PRESENTED IS BASED UPON SELF-SUPPORTING, G-SERIES FOUNDATION, MANUFACTURED BY ROHN PRODUCTS, LLC. CONTRACTOR SHALL DELIVER SUPPORT BASE SIZE AND REINFORCING NECESSARY TO COMPLY WITH FLORIDA BUILDING CODE AND EIA222-G.

D. YAGI ANTENNA IS SHOWN FOR ILLUSTRATION PURPOSES. CONTRACTOR SHALL PROVIDE AND INSTALL THE ANTENNA TYPE AS INDICATED IN THE SCHEDULE.

E. GROUND TOWER IN ACCORDANCE WITH GROUNDING REQUIREMENTS OF DIVISION 26 AND RTU MANUFACTURER'S RECOMMENDATIONS

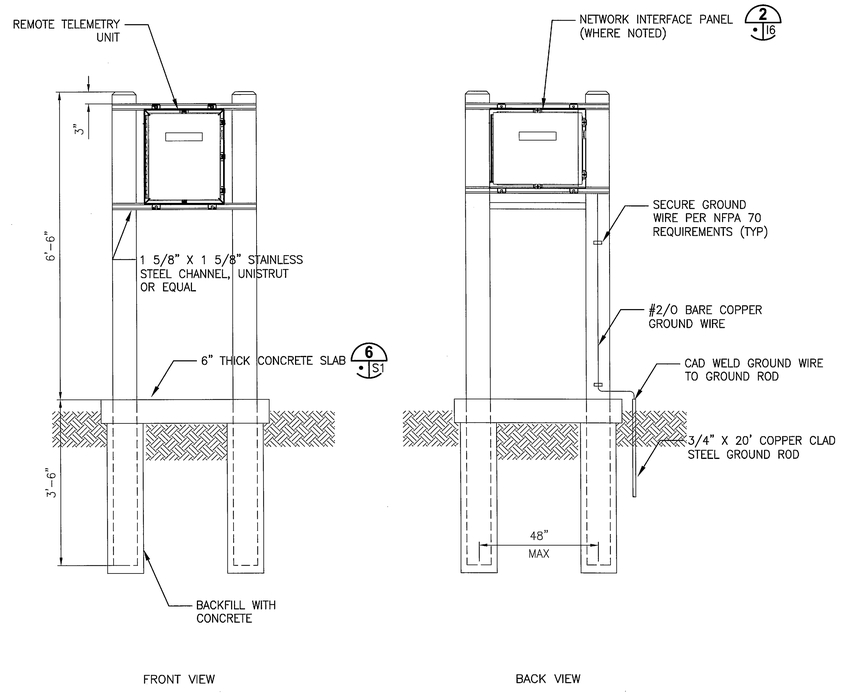
## RADIO TELEMETRY ANTENNA TOWER (1/I7)

NTS




## POWER DISTRIBUTION - REMOTE TERMINAL UNIT PANEL 'A'

NTS




## PANEL MOUNTING RACK (2/I7)

NTS

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| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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| SIGNATURES | DATE |
|---|---|
| DRAWN D. FITZGERALD | 12/05/11 |
| CHECKED M CLARK | 12/05/11 |
| SUBMITTED D. FITZGERALD | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 40976 | |
| M. CLARK | |
| L. KIEL | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

PANEL DRAWINGS AND MOUNTING DETAILS - REMOTE TELEMETRY UNIT PANEL A

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 SHEET 88

I7

D. P. FITZGERALD, INC.
*Water & Wastewater Treatment Process Controls*
*Alachua, Florida* COA 8991

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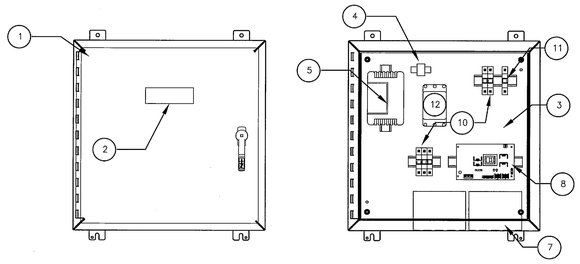



ENCLOSURE FRONT PANEL LAYOUT

| ITEM No. | DESCRIPTION | SPECIFICATION |
|---|---|---|
| 1 | ENCLOSURE | NEMA 3R, SST & SOLAR SHIELD W/ 3-POINT LATCH |
| 2 | CONTROL PANEL NAMEPLATE | ENGRAVE-SEE SCHEDULE |
| 3 | PANEL AND ACCESSORIES | CARBON STEEL, PAINTED WHITE, BAKED-ENAMEL FINISH |
| 4 | ANTENNA SURGE SUPPRESSOR | POLYPHASER |
| 5 | RADIO UNIT | |
| 7 | 12 VDC BATTERIES, QTY=2 | |
| 8 | 24 VDC POWER SUPPLY UNIT | |
| 10 | FEEDER BREAKER | |
| 11 | MAIN CIRCUIT BREAKER | |
| 12 | MAIN SURGE SUPPRESSOR | |

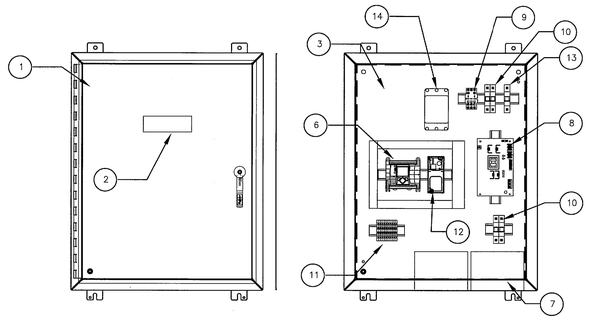
B

## PANEL DRAWING - REMOTE TERMINAL UNIT PANEL 'B'

NTS

NOTES:

A. ITEMS IDENTIFIED ABOVE WITH A COMPONENT NUMBER ARE SPECIFIED IN SECTION 40 95 00 PROCESS CONTROL SYSTEMS. THE COMPONENT NUMBER REFERENCES A COMPONENT SPECIFICATION PROVIDED AS AN ATTACHMENT TO SECTION 40 95 00.




ENCLOSURE FRONT PANEL LAYOUT

| ITEM No. | DESCRIPTION | SPECIFICATION |
|---|---|---|
| 1 | ENCLOSURE | NEMA 3R, SST & SOLAR SHIELD W/ 3-POINT LATCH |
| 2 | CONTROL PANEL NAMEPLATE | ENGRAVE-SEE SCHEDULE |
| 3 | PANEL AND ACCESSORIES | CARBON STEEL, PAINTED WHITE, BAKED-ENAMEL FINISH |
| 6 | PROGRAMMABLE LOGIC CONTROLLER | COMPONENT Y54 |
| 7 | 12 VDC BATTERIES, QTY=2 | |
| 8 | 24 VDC POWER SUPPLY UNIT | |
| 9 | RELAYS & RELAY SOCKETS | |
| 10 | FEEDER BREAKER | |
| 11 | TERMINAL BLOCKS | |
| 12 | NETWORK INTERFACE MODULE | COMPONENT Y30 |
| 13 | MAIN CIRCUIT BREAKER | |
| 14 | MAIN SURGE SUPPRESSOR | |

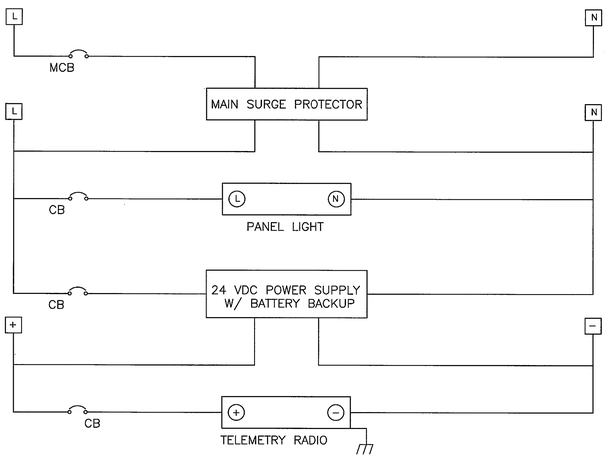
B

## PANEL DRAWING - REMOTE TERMINAL UNIT PANEL 'C'

NTS

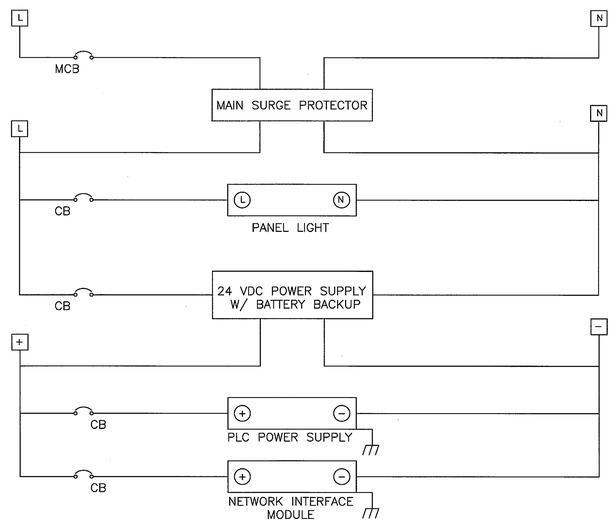
NOTES:

A. ITEMS IDENTIFIED ABOVE WITH A COMPONENT NUMBER ARE SPECIFIED IN SECTION 40 95 00 PROCESS CONTROL SYSTEMS. THE COMPONENT NUMBER REFERENCES A COMPONENT SPECIFICATION PROVIDED AS AN ATTACHMENT TO SECTION 40 95 00.




## POWER DISTRIBUTION - REMOTE TERMINAL UNIT PANEL 'B'

NTS




## POWER DISTRIBUTION - REMOTE TERMINAL UNIT PANEL 'C'

NTS

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| B | | REVISED DETAIL | 03/07/12 | |
| A | | GENERAL REVISIONS | 10/31/11 | |

REVISIONS

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JONES EDMUNDS

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| SIGNATURES | DATE |
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| CHECKED M CLARK | 12/05/11 |
| SUBMITTED D. FITZGERALD | 12/05/11 |
| ST of LICENSURE: FL LICENSE NO: 40976 | |
| M. CLARK | |
| L. KIEL | |

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REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5
LIFT STATIONS

PANEL DRAWINGS AND MOUNTING DETAILS - REMOTE TELEMETRY UNIT PANEL A

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | B |

PROJ. NO. 96968.3 SHEET 89

I8

D. P. FITZGERALD, INC.
*Water & Wastewater Treatment*
*Process Controls*
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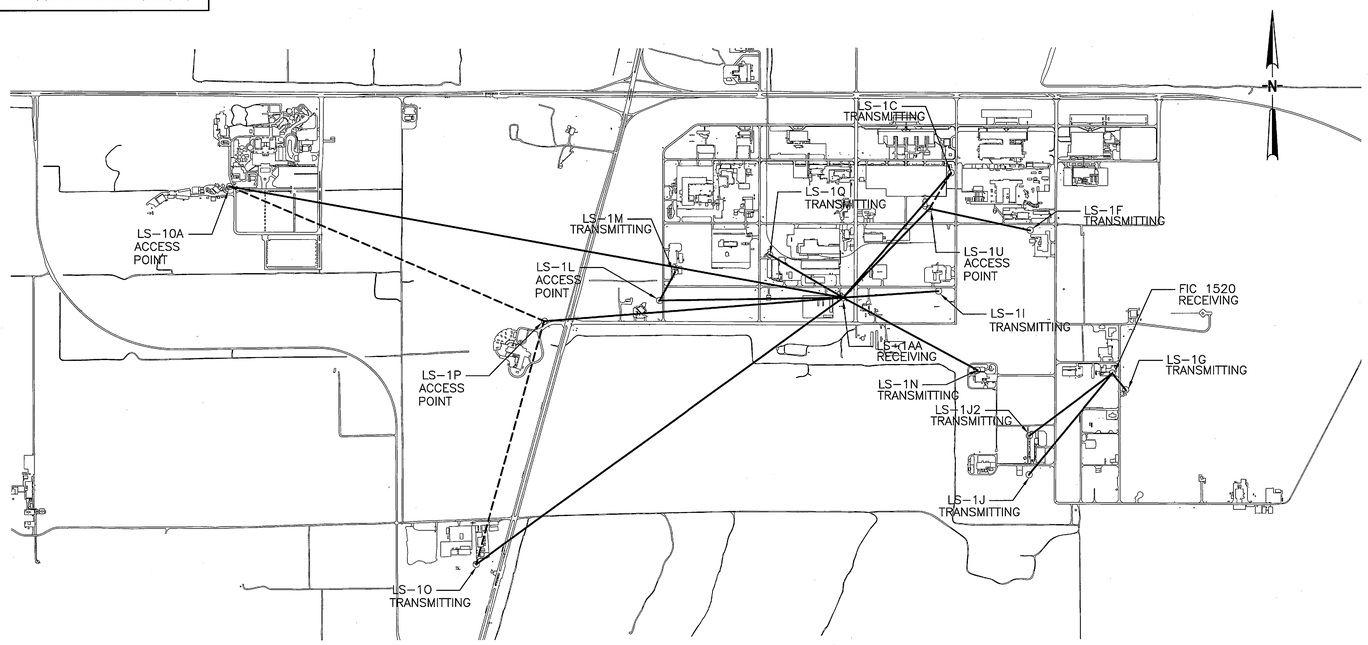


## INDUSTRIAL AREA RADIO LINK DIAGRAM

NTS

LINE LEGEND

PRIMARY RADIO LINK ———

BACKUP RADIO LINK - - - - -

### INDUSTRIAL AREA RTU CONFIGURATION/ASSIGNMENT

| LIFT STATION | ADJ FACILITY | ANTENNA | HEIGHT | RADIO CONFIG | REPEATER | ADJ FACILITY | RECEIVING | ADJ FACILITY | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| LS-1AA | M6-0895B | OMNI | 40 FT | RECEIVING | N/A | N/A | N/A | N/A | RADIO AND ACCESSORIES ARE INTEGRATED IN CONTROL PANEL DESIGN. SEE |
| LS-1C | M7-0451 | YAGI | 15 FT | TRANSMITTING | N/A | N/A | LS-1AA | M6-0895B | |
| LS-1F | N7-0657 | YAGI | 20 FT | TRANSMITTING | LS-1U | M6-0570 | LS-1AA | M6-0895B | |
| LS-1G | M7-1162 | YAGI | 10 FT | TRANSMITTING | N/A | N/A | FIC 1520 | M7-1061 | |
| LS-1I | M7-0777 | YAGI | 15 FT | TRANSMITTING | N/A | N/A | LS-1AA | M6-0895B | |
| LS-1J | M7-1354 | YAGI | 20 FT | TRANSMITTING | N/A | N/A | FIC 1520 | M7-1061 | |
| LS-1J2 | M7-1357 | YAGI | 20 FT | TRANSMITTING | N/A | N/A | FIC 1520 | M7-1061 | |
| LS-1L | M6-0883 | YAGI | 20 FT | ACCESS POINT | N/A | N/A | LS-1AA | M6-0895B | CONFIGURE RADIO TO STORE/FORWARD SIGNALS FROM LS-1M. |
| LS-1M | M6-0785 | YAGI | 10 FT | TRANSMITTING | LS-1L | M6-0883 | LS-1AA | MS-0895B | |
| LS-1N | M7-1104 | YAGI | 15 FT | TRANSMITTING | N/A | N/A | LS-1AA | MS-0895B | |
| LS-1O | M7-1671A | YAGI | 30 FT | TRANSMITTING | N/A | N/A | LS-1AA | M6-0895B | |
| LS-1P | M6-1025 | OMNI | 25 FT | ACCESS POINT | N/A | N/A | LS-1AA | M6-0895B | CONFIGURE RADIO TO STORE/FORWARD SIGNALS FROM LS-10A AND LS-1Q. REPEATING FUNCTION SHALL OCCUR ONLY WHEN DIRECT LINK BETWEEN THESE TWO LIFT STATIONS AND LS-1AA IS LOST |
| LS-1Q | M6-0740 | YAGI | 25 FT | TRANSMITTING | N/A | N/A | LS-1AA | M6-0895B | N/A |
| LS-1U | M6-0570 | OMNI | 20 FT | ACCESS POINT | N/A | N/A | LS-1AA | M6-0895B | CONFIGURE RADIO TO STORE/FORWARD SIGNALS FROM LS-1F AND LS-1C. REPEAT FUNCTION FOR LS-1C SHALL OCCUR ONLY WHEN DIRECT LINK BETWEEN LS-1C AND LS-1AA IS LOST. |
| LS-10A | K7-569A | YAGI | 40 FT | ACCESS POINT | N/A | N/A | LS-1AA | M6-0895B | CONFIGURE RADIO TO STORE/FORWARD SIGNALS FROM VIC WATER QUALITY ANALYZER RTU (SEE VOLUME 2) |
| FIC 1520 | M7-1061 | OMNI | 25 FT | RECEIVING | N/A | N/A | N/A | N/A | PROVIDE AND INSTALL RTU PANEL 'B' AND CONNECT TO KCCS NETWORK SWITCH LOCATED |

THIS SPACE RESERVED

| SYM | ZONE | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|---|
| A | | GENERAL REVISIONS added | 10/31/11 | KM |

REVISIONS

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| DRAWN D. FITZGERALD | 10/31/11 |
| CHECKED M. CLARK | 10/31/11 |
| SUBMITTED D. FITZGERALD | 10/31/11 |
| ST of LICENSURE: FL LICENSE NO: 40976 | |
| APPROVED M. CLARK | 10/31/11 |
| L. KIEL | 11/2/11 |

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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**REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5**
**LIFT STATIONS**

**RTU SCHEDULE - INDUSTRIAL AREA**

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

PROJ. NO. 96968.3 SHEET 90

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*Water & Wastewater Treatment*
*Process Controls*
*Alachua, Florida* COA 8991

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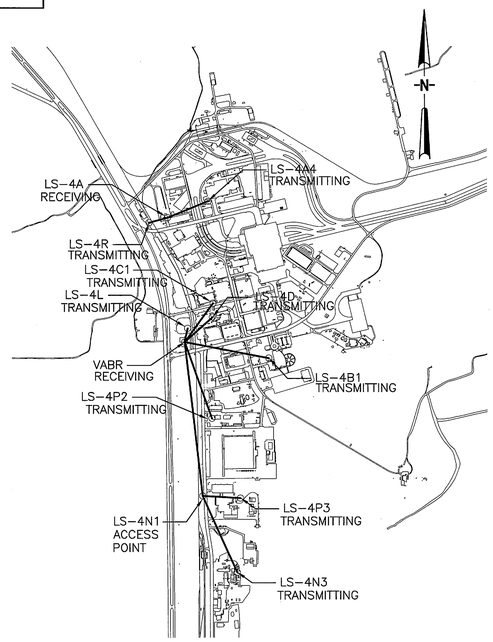
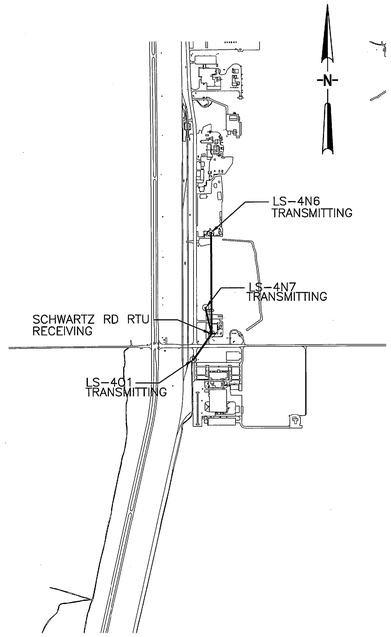



## VEHICLE ASSEMBLY AREA RADIO LINK DIAGRAM

NTS




## SCHWARTZ ROAD AREA RADIO LINK DIAGRAM

NTS

LINE LEGEND

PRIMARY RADIO LINK ———

BACKUP RADIO LINK - - - - - -

### VEHICLE ASSEMBLY BUILDING AREA RTU CONFIGURATION/ASSIGNMENT

| LIFT STATION | ADJ FACILITY | ANTENNA | HEIGHT | RADIO CONFIG | REPEATER | ADJ FACILITY | RECEIVING | ADJ FACILITY | KCCS CONNECTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| LS-4A | K6-0792 | OMNI | 40 FT | RECEIVING | N/A | N/A | N/A | N/A | N/A | RADIO AND ACCESSORIES ARE INTEGRATED IN CONTROL PANEL DESIGN. SEE |
| LS-4A4 | K6-0696 | YAGI | 10 FT | TRANSMITTING | N/A | N/A | LS-4A | K6-0792 | N/A | USE ADJACENT LIGHT POLE AS ANTENNA TOWER |
| LS-4B1 | K6-1249 | YAGI | 12.5 FT | TRANSMITTING | N/A | N/A | VABR | K6-1193 | N/A | |
| LS-4C1 | K6-1094 | YAGI | 10 FT | TRANSMITTING | N/A | N/A | VABR | K6-1193 | N/A | |
| LS-4D | K6-1096 | OMNI | 10 FT | TRANSMITTING | N/A | N/A | VABR | K6-1193 | N/A | |
| VABR | K6-1145 | OMNI | 30 FT | RECEIVING | N/A | N/A | N/A | N/A | N/A | PROVIDE AND INSTALL RTU PANEL 'B' AND CONNECT TO KCCS NETWORK SWITCH LOCATED. RECEIVES SIGNALS FROM LS-4B1, LS-4C1, LS-4D, LS-4L, LS-4N1, AND LS-4P2. TRANSMITS VIA WAN TO KCCS |
| LS-4L | K6-1193 | YAGI | 10 FT | TRANSMITTING | N/A | N/A | VABR | K6-1193 | N/A | |
| LS-4N1 | K6-1547 | OMNI | 20 FT | ACCESS POINT | N/A | N/A | VABR | K6-1193 | N/A | CONFIGURE RADIO TO STORE/FORWARD SIGNALS FROM LS-4N3 AND LS-4P3 |
| LS-4N3 | K6-1996E | YAGI | 17.5 FT | TRANSMITTING | LS-4N1 | K6-1547 | VABR | K6-1193 | N/A | |
| LS-4N6 | K6-2196 | YAGI | 20 FT | TRANSMITTING | N/A | N/A | SCHWARTZ RD | K6-2496 | FOT 09A | |
| LS-4N7 | K6-2496B | YAGI | 12.5 FT | TRANSMITTING | N/A | N/A | SCHWARTZ RD | K6-2496 | FOT 098A | |
| LS-401 | K6-2496 | YAGI | 10 FT | TRANSMITTING | N/A | N/A | SCHWARTZ RD | K6-2496 | FOT 098A | |
| LS-4P2 | K6-1446 | YAGI | 15 FT | TRANSMITTING | N/A | N/A | VABR | K6-1193 | N/A | |
| SCHWARTZ RD RTU | K6-2496 | OMNI | 20 FT | RECEIVING | N/A | N/A | N/A | N/A | FOT 098A | PROVIDE AND INSTALL RTU PANEL 'B' AND CONNECT TO KCCS NETWORK SWITCH LOCATED. RECEIVES SIGNALS FROM LS-4N6, LS-4N7, AND LS-401 AND TRANSMITS VIA FIBER OPTIC CIRCUIT TO KCCS |
| LS-4P3 | K6-1696 | YAGI | 30 FT | TRANSMITTING | LS-4N1 | K6-1547 | VABR | K6-1193 | N/A | |
| LS-4R | K6-0791 | YAGI | 10 FT | TRANSMITTING | N/A | N/A | LS-4A | K6-0792 | N/A | |

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*Process Controls*
*Alachua, Florida* COA 8991

THIS SPACE RESERVED

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| A | | GENERAL REVISIONS Added | 10/31/11 | KM |

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# REVITALIZE WATER & WASTEWATER SYSTEMS - VOLUME 2 OF 5 LIFT STATIONS

## RTU SCHEDULE - VEHICLE ASSEMBLY BUILDING AREA

| FILE NO. | SIZE | DWG. NO. | REV |
|---|---|---|---|
| | F | 79K38877 VOL 2 | A |

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