

# SEWAGE LIFT STATIONS

## THOUSAND HILLS STATE PARK

### KIRKSVILLE, MISSOURI

---

OWNER: STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR  
  
DEPARTMENT OF NATURAL RESOURCES DIVISION  
OF STATE PARKS

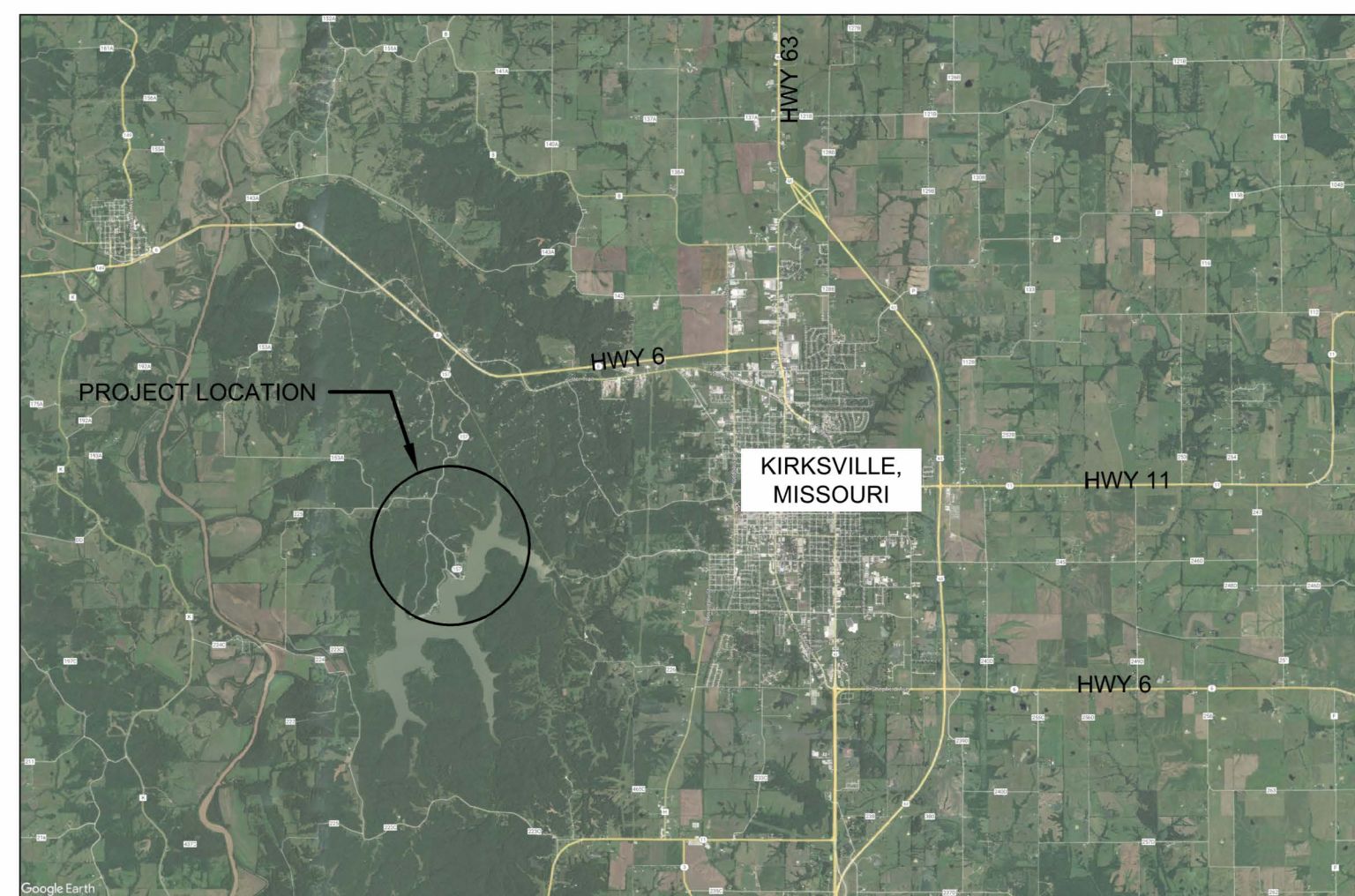
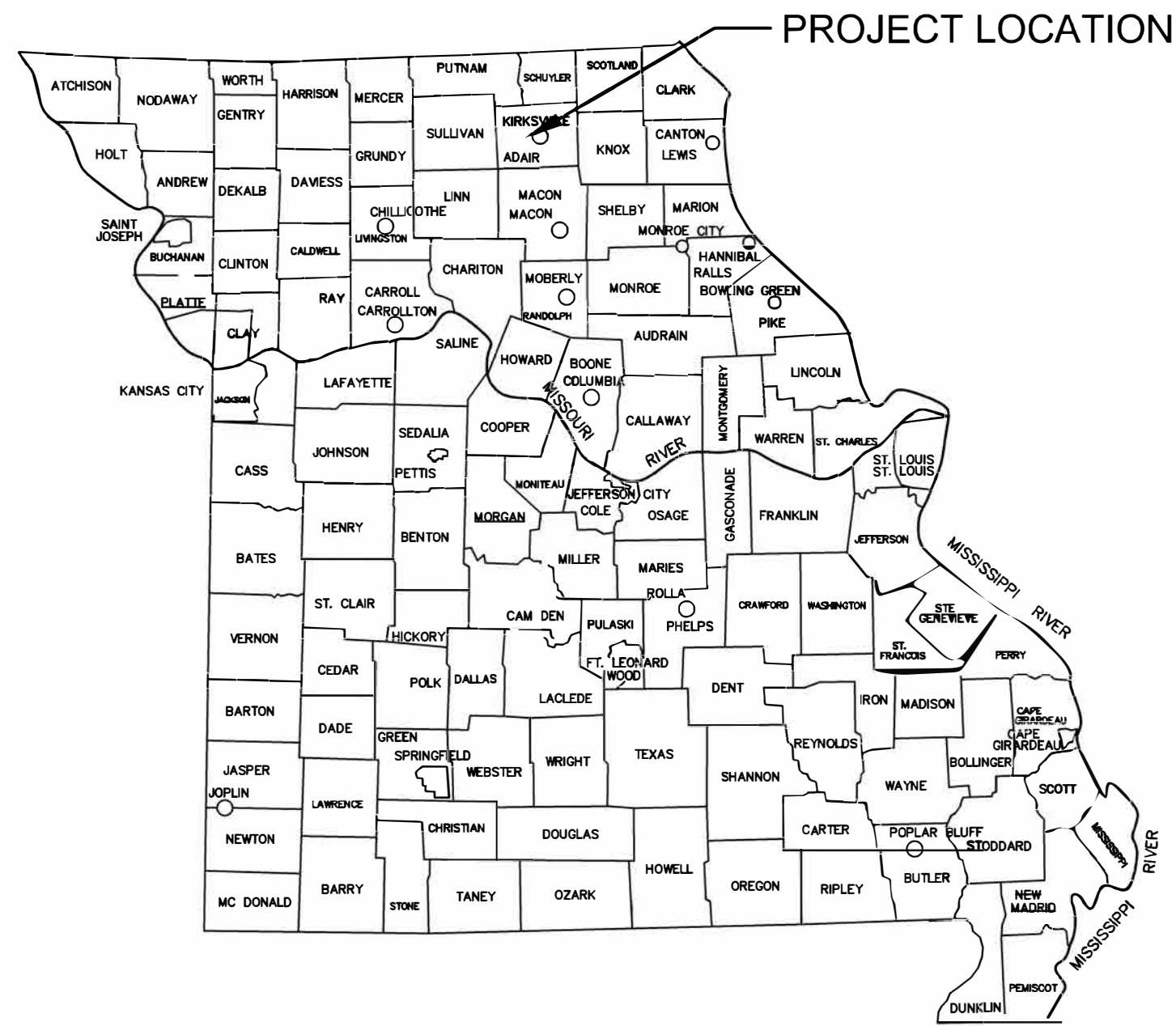
PROJECT  
MANAGEMENT: OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES MANAGEMENT,  
DESIGN AND CONSTRUCTION

DESIGNER: Klingner & Associates, PC

PROJECT NUMBER: X2302-03

SITE NUMBER: 5114  
ASSET NUMBER: 7815114035





PROJECT LOCATION MAP  
NTS

SHEET NUMBER	SHEET NAME	CURRENT REVISION DATE
G001	COVER SHEET	2/12/2024
G002	GENERAL NOTES AND LEGENDS	2/12/2024
C001	OVERALL SITE PLAN	2/12/2024
C100	LIFT STATION 1 DETAILS	2/12/2024
C101	LIFT STATION 2 DETAILS	2/12/2024
C102	LIFT STATION 3 REHAB AND LIFT STATION 4 BYPASS	2/12/2024
C103	LIFT STATION 5 DETAILS	2/12/2024
C104	LIFT STATION 6 DETAILS	2/12/2024
C500	MISCELLANEOUS CIVIL DETAILS	2/12/2024
E501	ELECTRICAL DETAILS - LIFT STATIONS 1&2	2/12/2024
E502	ELECTRICAL DETAILS - LIFT STATION 3	2/12/2024
E503	ELECTRICAL DETAILS LIFT STATIONS 5 & 6	2/12/2024
E701	ELECTRICAL SCHEDULES	2/12/2024
E801	CTRL DIAGRAM - LIFT STATION 1	2/12/2024
E802	CTRL DIAGRAM - LIFT STATION 2	2/12/2024
E803	CTRL DIAGRAM - LIFT STATION 3	2/12/2024
E804	CTRL DIAGRAM - LIFT STATION 5	2/12/2024
E805	CTRL DIAGRAM - LIFT STATION 6	2/12/2024

THE CONTRACTOR(S) SHALL COMPLY WITH THE LATEST EDITION OF APPLICABLE CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO:

- THE AMERICANS WITH DISABILITIES ACT (ADA)
- INTERNATIONAL BUILDING CODE (IBC)
- NATIONAL ELECTRIC CODE (NEC)
- INTERNATIONAL PLUMBING CODE (IPC)
- LIFE SAFETY CODE (NFPA 101)
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- AMERICAN CONCRETE INSTITUTE (ACI)
- MISSOURI DEPARTMENT OF TRANSPORTATION (MODOT)
- MISSOURI DEPARTMENT OF NATURAL RESOURCES (MDNR)

**GENERAL NOTES**

- ALL DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
- ANY DISCREPANCIES BETWEEN SPECIFICATIONS, DRAWINGS, AND/OR SITE CONDITIONS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- ALL AREAS DESIGNATED TO REMAIN UNDISTURBED SHALL BE PROTECTED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR STAKING THE LOCATION OF ALL PROPOSED IMPROVEMENTS, INCLUDING ROUGH AND FINISHED ELEVATIONS AND ALL OTHER PROPOSED IMPROVEMENTS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL VERIFY THAT ALL APPLICABLE LOCAL, STATE, & FEDERAL CODES ARE FOLLOWED. ALL APPLICABLE LOCAL AND STATE NOTIFICATIONS AND PERMITS SHALL BE ACQUIRED PRIOR TO CONSTRUCTION, INCLUDING ALL NECESSARY UTILITY CONNECTION PERMITS FROM THE RESPECTIVE UTILITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND SERVICES REQUIRED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL REFERENCE POINTS, BENCHMARKS, MONUMENTS, STAKES, AND PROPERTY CORNERS DURING CONSTRUCTION. REPLACEMENT OF LOST REFERENCE POINTS SHALL BE AT THE CONTRACTORS EXPENSE.
- REMOVE ALL STRUCTURES, FOUNDATIONS, WALLS, PAVEMENTS, AND ALL OTHER ITEMS IN CONFLICT WITH PROPOSED IMPROVEMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.
- REFERENCES TO "STANDARD SPECIFICATIONS" SHALL MEAN THE MISSOURI DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION", LATEST ADDITION.
- THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- NO WORK SHALL BE PERFORMED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT OWNER APPROVAL.
- SITE CLEAN-UP SHALL BE PERFORMED ON A DAILY BASIS. SIDEWALKS, PARKING LOTS, ROADWAYS, AND THE PROJECT SITE SHALL BE KEPT CLEAN AT ALL TIMES. CONTROL DUST IN AND AROUND ALL WORK AND STAGING AREAS.
- ALL OPEN EXCAVATIONS SHALL BE PROTECTED.
- MAINTAIN POSITIVE DRAINAGE ON THE SITE THROUGHOUT THE PROJECT DURATION.
- OWNER TO REMOVE BRUSH PILES.
- IF A DISCREPANCY IN THE SPOT ELEVATIONS IS NOTED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTING. IF THERE IS A DISCREPANCY BETWEEN THE SPOT ELEVATIONS AND CONTOURS, THE CONTOURS SHALL GOVERN.
- IF SOIL OR GROUNDWATER IS ENCOUNTERED WHICH EMITS A PETROLEUM ODOR OR IS DISCOLORED THE CONTRACTOR SHALL STOP EXCAVATION AND NOTIFY THE OWNER IMMEDIATELY. THE OWNER WILL COORDINATE ENVIRONMENTAL EFFORTS TO HANDLE THE IMPACTED SOIL OR GROUNDWATER IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL TAKE APPROPRIATE ACTION TO ENSURE PUBLIC AND EMPLOYEE SAFETY.

**UTILITY NOTES**

- THE LOCATION OF EXISTING UTILITIES IN CONSTRUCTION AREAS SHALL BE FIELD VERIFIED BY THE CONTRACTOR BY CONTACTING THE MISSOURI ONE CALL SYSTEM, INC. OR THE INDIVIDUAL UTILITIES NOT PARTICIPATING IN THIS SYSTEM. EXISTING UTILITIES TO REMAIN SHALL BE PROTECTED. ANY REPAIR OR RELOCATION REQUIRED, AS A RESULT OF DAMAGE BY CONSTRUCTION ACTIVITIES SHALL BE AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL PAY UTILITY PERMIT AND/OR INSPECTION FEES.
- UTILITY TRENCHES WITHIN PAVEMENT AREAS SHALL BE BACKFILLED WITH APPROVED COMPACTED GRANULAR BACKFILL.
- ALL ELECTRIC SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE, CURRENT VERSION.
- ADJUST ALL VALVES, MANHOLES, CASTINGS, GAS VENTS, ETC., TO MATCH THE NEW SURFACE. ADJUSTMENT SHALL BE COORDINATED WITH THE UTILITY COMPANIES AND THE COST FOR ALL ADJUSTMENTS SHALL BE INCIDENTAL TO THE CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. REPAIR ANY DAMAGE TO SAID STRUCTURES AND APPURTENANCES THAT OCCUR DURING CONSTRUCTION.
- THE DRAWINGS INDICATE THE BEST KNOWLEDGE OF THE OWNER AND ENGINEER/ARCHITECT ON THE GENERAL LOCATION AND NATURE OF THE EXISTING AND OR PROPOSED UNDERGROUND UTILITIES IN THE AREA OF CONSTRUCTION. EXPLORATORY EXCAVATIONS AT THE SITE TO DETERMINE INSITU LOCATIONS WERE NOT CONDUCTED. QUALITY LEVEL D IN ACCORDANCE WITH C/ASCE 38-02, STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA, WAS UTILIZED. REGARDLESS OF THE LEVEL OF INVESTIGATION, THE UTILITIES SHOWN SHOULD NOT BE CONSIDERED A WARRANTY OR GUARANTEE OF ACTUAL PRESENCE OR LOCATION AND THE CONTRACTOR REMAINS RESPONSIBLE FOR THE LOCATION, VERIFICATION, AND PROPER NOTIFICATION OF POTENTIAL UTILITIES.

**QUALITY LEVELS: B**

QUALITY LEVEL A - PROVIDES THE HIGHEST LEVEL OF ACCURACY. BY LOCATING OR POTHOLING UTILITIES IN ADDITION TO QUALITY LEVELS B, C, AND D TASKS. THE LOCATED UTILITY INFRASTRUCTURE IS SURVEYED AND MAPPED TO DEVELOP PLAN AND PROFILE INFORMATION.

QUALITY LEVEL B - INVOLVES DESIGNATING THE HORIZONTAL POSITION OF SUBSURFACE UTILITIES THROUGH SURFACE DETECTION METHODS AND RECORDING THE INFORMATION THROUGH A SURVEY METHOD. IN ADDITION TO QUALITY LEVEL C AND D TASKS.

QUALITY LEVEL C - INVOLVES SURVEYING VISIBLE SUBSURFACE UTILITY STRUCTURES SUCH AS MANHOLES, HAND-HOLES, UTILITY VALVES AND METERS, FIRE HYDRANTS, PEDESTALS AND UTILITY MARKERS, AND THEN CORRELATING THE INFORMATION WITH EXISTING UTILITY RECORDS TO CREATE COMPOSITE DRAWINGS. IN ADDITION TO QUALITY LEVEL D TASKS

QUALITY LEVEL D - INVOLVES COLLECTING DATA FROM EXISTING UTILITY RECORDS, THAT MAY INCLUDE AS-BUILT DRAWINGS, DISTRIBUTION AND SERVICE MAPS, EXISTING GEOGRAPHIC INFORMATION SYSTEM DATABASE, CONSTRUCTION PLANS, ETC. DATABASES, CONSTRUCTION PLANS, ETC.

**EROSION CONTROL NOTES**

- EROSION CONTROL SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE DETAILS IN THESE PLANS, AND THE MISSOURI DEPARTMENT OF NATURAL RESOURCES STANDARDS AND REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL.
- THE EROSION CONTROL SHOWN ON THIS SET OF PLANS SHALL BE CONSIDERED THE MINIMUM ACCEPTABLE FOR THIS PROJECT. THERE MAY BE ADDITIONAL EROSION CONTROL REQUIRED DUE TO THE VARIOUS CONSTRUCTION TECHNIQUES, WHICH MAY BE USED. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING AND MAINTAINING ALL THE RUNOFF FROM THE SITE, IN A MANNER WHICH KEEPS ALL SILT ON SITE.
- A LAND DISTURBANCE PERMIT WILL NOT BE REQUIRED SINCE LESS THAN 1 ACRE OF LAND WILL BE DISTURBED BY GRADING OPERATIONS.
- ALL INLET PROTECTION AND TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED UPON COMPLETION OF PAVING OPERATIONS AND FINAL STABILIZATION OF LANDSCAPED AND SEED AREAS.

**ABBREVIATIONS**

- FL FLOWLINE ELEVATION
- TC TOP OF CURB ELEVATION
- GL GUTTER LINE ELEVATION
- TG TOP OF GRATE ELEVATION
- STA STATION
- FES FLARED END SECTION
- SWI STORM WATER INLET
- FFE FINISH FLOOR ELEVATION
- HP HIGH POINT
- LP LOW POINT
- TW TOP OF WALL ELEVATION
- BW BOTTOM OF WALL ELEVATION
- DS DOWNSPOUT
- EP EDGE OF PAVEMENT
- (NIC) NOT IN CONTRACT
- (M) MATCH EXISTING

**LEGEND**

EXISTING	PROPOSED	
---	---	PROPERTY LINE
---	---	LOT LINE
---	---	RIGHT OF WAY LINE
---	---	CENTERLINE
---	---	EASEMENT
---	---	BUILDING SETBACK
---	---	CONSTRUCTION LIMITS
---	---	FENCE LINE
---	---	CHAIN LINK FENCE
---	---	FENCE W/ SQUARE POSTS
---	---	STREAM
---	---	STRUCTURE
---	---	PAVEMENT MARKINGS
---	---	EDGE OF PAVEMENT
---	---	CURB AND GUTTER
---	---	RAILROAD TRACKS
---	---	WATER LINE
---	---	FIRE PROTECTION
---	---	GAS LINE
---	---	OVERHEAD ELECTRIC
---	---	UNDERGROUND ELECTRIC
---	---	OVERHEAD TELEPHONE
---	---	UNDERGROUND TELEPHONE
---	---	CABLE TELEVISION
---	---	FIBER OPTIC
---	---	COMMUNICATION LINE
---	---	STORM SEWER
---	---	SANITARY SEWER
---	---	FORCE MAIN
---	---	COMBINED SEWER
---	---	IRRIGATION SYSTEM
---	---	MAST ARM SIGNAL (3 SIGNALS)
---	---	MAST ARM SIGNALS (2 SIGNALS)
---	---	UTILITY TRAFFIC SIGN
---	---	SIGN
---	---	MANHOLE
---	---	STORM WATER INLET
---	---	CATCH BASIN
---	---	CLEANOUT
---	---	CULVERT
---	---	BOX CULVERT
---	---	WATER VALVE
---	---	FIRE HYDRANT
---	---	POST INDICATOR VALVE
---	---	WATER METER
---	---	GAS VALVE
---	---	GAS METER
---	---	TELEPHONE PEDESTAL
---	---	CABLE TV PEDESTAL
---	---	ELECTRIC METER
---	---	UTILITY POLE
---	---	LIGHT STANDARD
---	---	LIGHT POLE
---	---	GUY WIRE
---	---	SUMMIT / HIGH POINT
---	---	CONTOURS
---	---	INDEX CONTOURS
---	---	DIRECTION OF DRAINAGE
---	---	SPOT ELEVATION
---	---	DECIDUOUS SHRUB
---	---	DECIDUOUS TREE
---	---	CONIFEROUS SHRUB
---	---	CONIFEROUS TREE

NOTE: SEE SHEET E501 FOR PUMP CONTROL DIAGRAM AND CONTROL PANEL INSTALLATION



Know what's below.  
Call before you dig.

NOTE  
UTILITY INFORMATION IS FOR THE CONVENIENCE OF THE CONTRACTOR. BEFORE CONSTRUCTION BEGINS THE CONTRACTOR SHALL CONTACT MISSOURI ONE CALL SYSTEM, INC. AT 811 OR 1-800-344-7483 AND THE INDIVIDUAL UTILITIES NOT INCLUDED IN THIS SYSTEM FOR THE LOCATION OF ALL EXISTING UTILITIES.

STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR

BIDDING DOCUMENTS



**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors

www.klingner.com  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peella, IA, Davenport, IA  
973.355.9598

KLINGNER & ASSOCIATES, P.C. - ENGINEERING  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02-12-2024

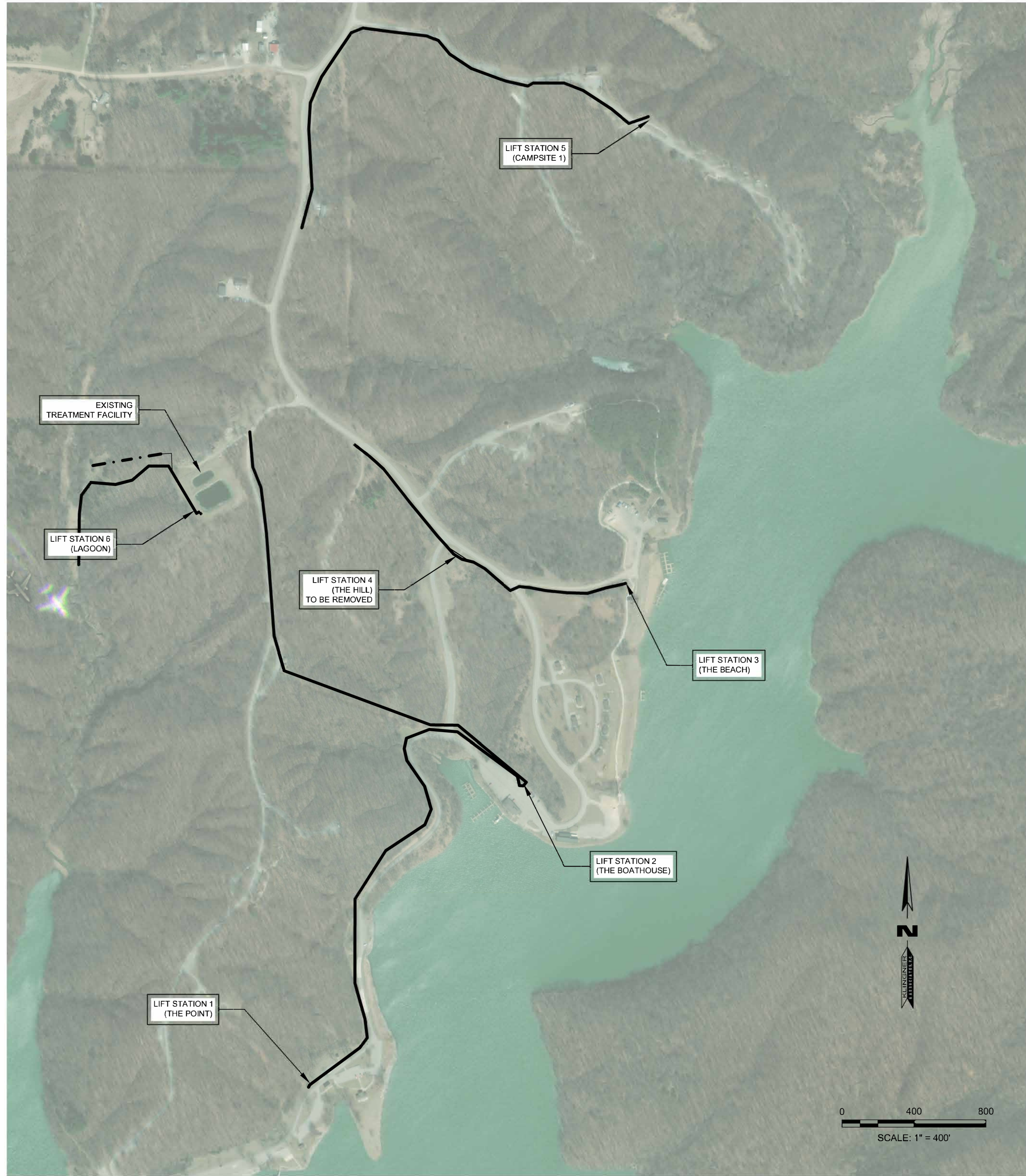
CAD DWG FILE: G002  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:  
**GENERAL NOTES  
AND LEGENDS**

SHEET NUMBER:

**G002**





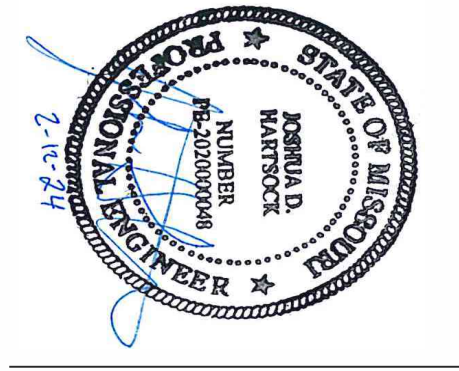
**1** THOUSAND HILLS STATE PARK LIFT STATIONS  
SCALE: 1" = 400'

LIFT STATION IDENTIFICATION	LIFT STATION 1	LIFT STATION 2	LIFT STATION 3	LIFT STATION 4	LIFT STATION 5	LIFT STATION 6
DESCRIPTOR	THE POINT	THE BOATHOUSE	THE BEACH	THE HILL	CAMPSITE 1	THE LAGOON
GROUT SEAMS	YES	YES	YES	TO BE REMOVED	YES	YES
PRECAST WET WELL CAP REPLACEMENT WITH 4" VENT	YES	YES	YES	TO BE REMOVED	YES	YES
WET WELL PUMP AND FLOAT EQUIPMENT REPLACEMENT	YES	YES	YES	TO BE REMOVED	YES	YES
WET WELL MOUNTING EQUIPMENT REPLACEMENT	YES	YES	YES	TO BE REMOVED	YES	YES
VALVE VAULT INTERNAL PIPING AND FITTING REPLACEMENT	YES	YES	YES	TO BE REMOVED	YES	YES
CONTROL PANEL REPLACEMENT	YES	YES	YES	TO BE REMOVED	YES	YES
CONTROL PANEL ELECTRICAL REPLACEMENT	YES	YES	YES	TO BE REMOVED	YES	YES
PUMP MANUFACTURER	SULZER	SULZER	SULZER	TO BE REMOVED	SULZER	SULZER
PUMP MODEL	PE45/2W-C-60 HZ	PE80/2-E-60HZ	PE300/2-G-60HZ	TO BE REMOVED	PE100/2-E-60HZ	PE185/2-G-60HZ
SHEET	C100	C101	C102	TO BE REMOVED	C103	C104

**2** LIFT STATION REHABILITATION SUMMARY  
N.T.S.

- NOTE:
1. ALL PUMPS TO BE REPLACED ARE TO BE SULZER PUMPS AND EXISTING PUMPS TO BE REMOVED AND PROVIDED TO THE PARK FOR USE IN EMERGENCY SITUATIONS
  2. WET WELL CAP TO BE REPLACED WITH PRECAST CONCRETE. CONTRACTOR TO SUBMIT SHOP DRAWINGS WITH REINFORCING DETAILS FOR APPROVAL PRIOR TO FABRICATION.
  3. LIFT STATION WET WELL AND VALVE VAULT REPLACEMENT MATERIAL AND PRODUCTS TO MATCH EXISTING UNLESS OTHERWISE NOTED.

STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR  
BIDDING DOCUMENTS



**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA 50806  
www.klingner.com  
Quincy, IL 61857  
Burlington, IA 50806

KLINGNER & ASSOCIATES, P.C. - ENGINEERING  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

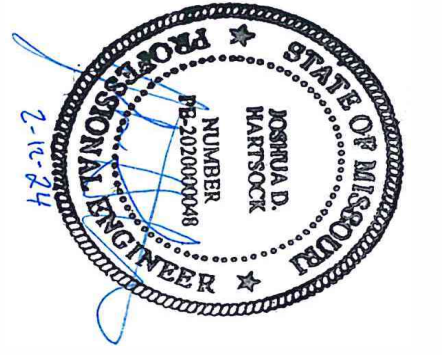
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02-12-2024

CAD DWG FILE: C001  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:  
**OVERALL SITE  
PLAN**

SHEET NUMBER:  
**C001**





**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors

www.klingner.com  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peella, IA, Davenport, IA

MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

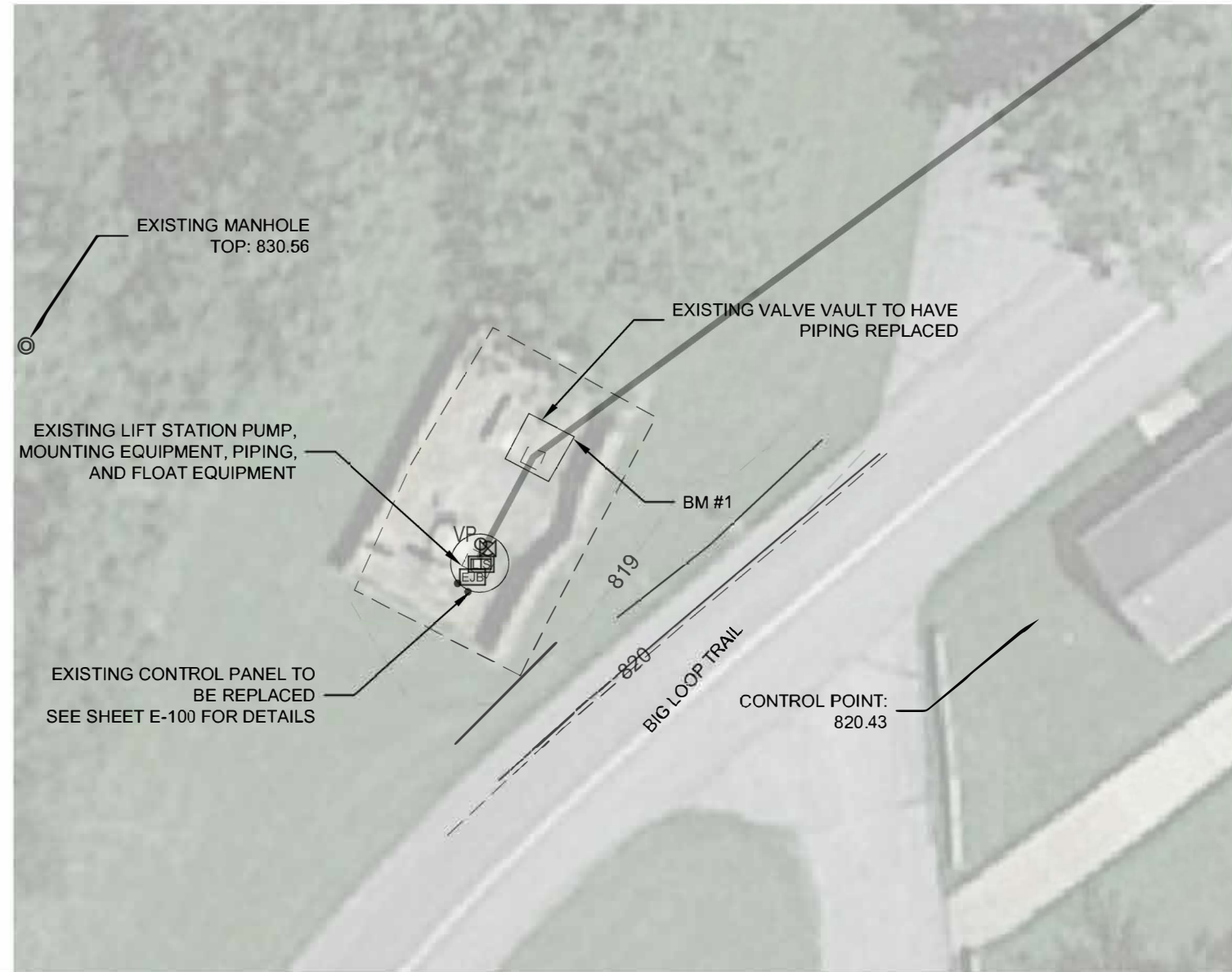
PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02-12-2024

CAD DWG FILE: C100  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

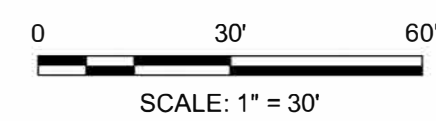
SHEET TITLE:  
**LIFT STATION 1  
DETAILS**

SHEET NUMBER:  
**C100**



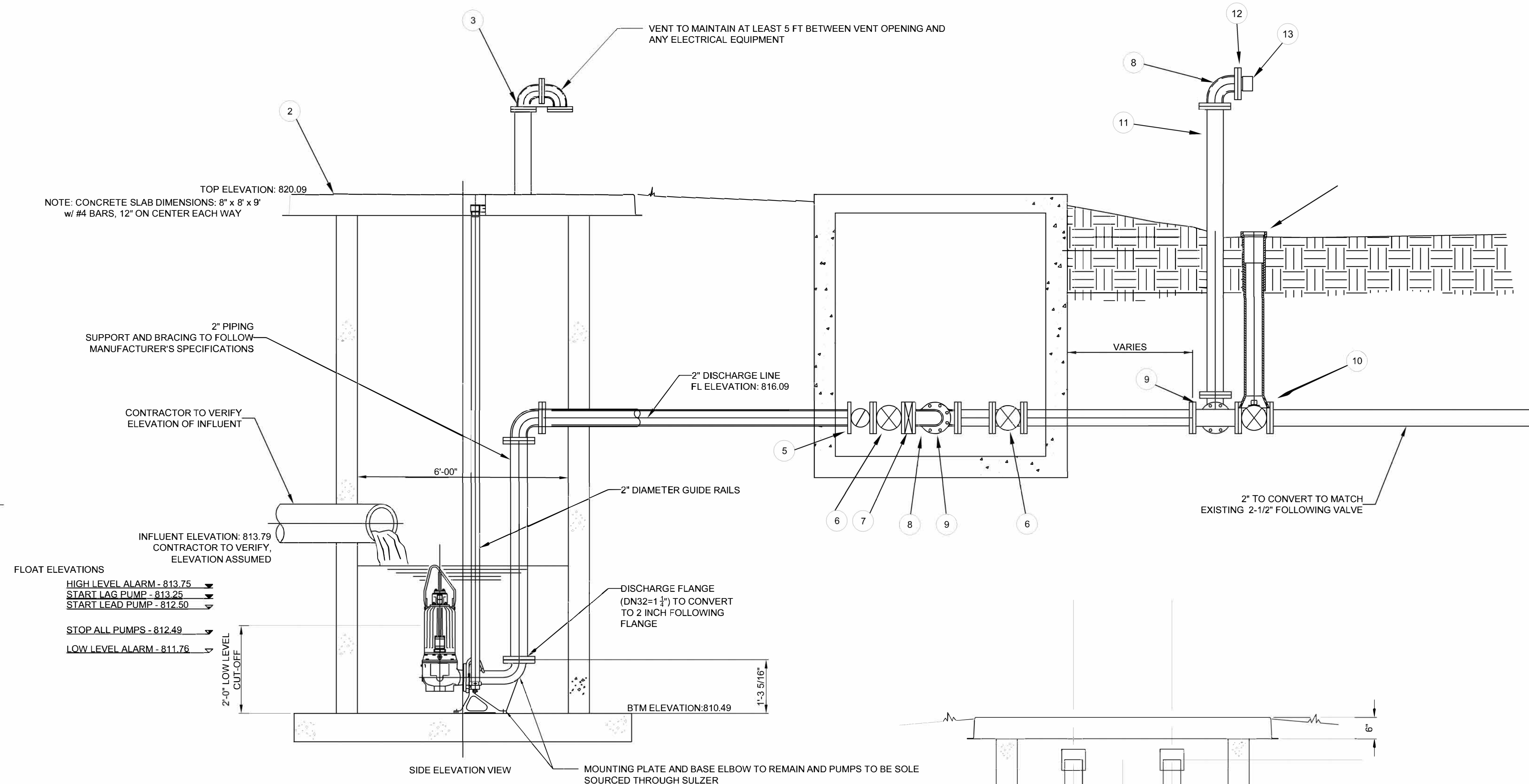
**1** LIFT STATION 1 PLAN VIEW  
SCALE: 1" = 30'

- BENCHMARKS:  
1. CHISELED "1" SOUTHEAST CORNER CONCRETE ACCESS STRUCTURE - 820.50  
2. CHISELED "1" 2" +/- FROM BUILDING WEST SIDE WALK NORTH OF RESTROOMS - 820.37



REHABILITATION SUMMARY	
LIFT STATION IDENTIFICATION	LIFT STATION 1
DESCRIPTOR	THE POINT
GROUT SEAMS	YES
WET WELL PUMP AND FLOAT EQUIPMENT REPLACEMENT	YES
PRECAST WET WELL CAP REPLACEMENT WITH 4" VENT	YES
WET WELL MOUNTING EQUIPMENT REPLACEMENT	YES
WET WELL INTERIOR PIPING REPLACEMENT	YES
VALVE VAULT INTERNAL PIPING AND FITTING REPLACEMENT	YES
CONTROL PANEL REPLACEMENT	YES
CONTROL PANEL ELECTRICAL REPLACEMENT	YES
PUMPS	PE45/2E-V-60HZ

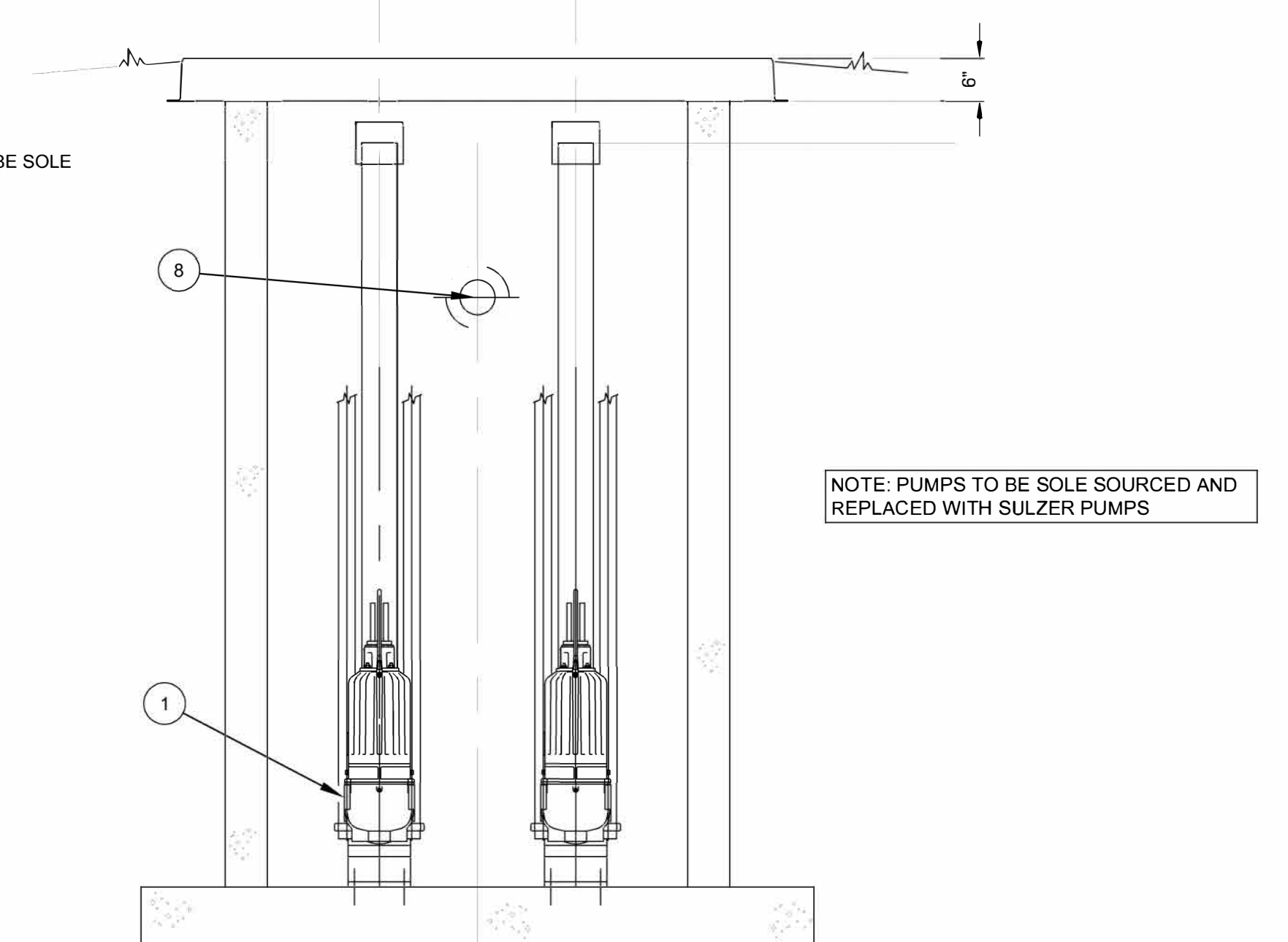
**3** LIFT STATION REHABILITATION SUMMARY  
N.T.S.



ITEM	DESCRIPTION	MATERIAL AND SIZE
1	PUMP	CAST IRON
2	BASE	PRECAST CONCRETE (MATCH EXISTING)
3	WETWELL VENT	304 SS 2"
4	CONTROL PANEL	304 SS (SEE MEP SHEETS)
5	2" SWING CHECK VALVE	316 SS - 2"
6	2" GATE VALVE	CAST IRON
7	2" PRESSURE TRANSMITTER	316 SS 2"
8	2" 90° BEND (FLG.)	316 SS 2"
9	2" TEE (FLG.)	316 SS 2"
10	2" GATE VALVE	CAST IRON 2"
11	2" D.I.P. SPOOL 7' LONG (FLG.)	316 SS 2"
12	2" THREADED FLANGE	316 SS 2"
13	2" CAMLOCK FITTING	316 SS 2"

NOTE: ALL METAL FASTENERS, APPURTENANCES, AND MINOR EQUIPMENT WITHIN THE WET-WELL SHALL BE STAINLESS STEEL.

**2** LIFT STATION 1 (THE POINT) REHABILITATION NOTES







**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors

www.klingner.com  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peella, IA, Davenport, IA

MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

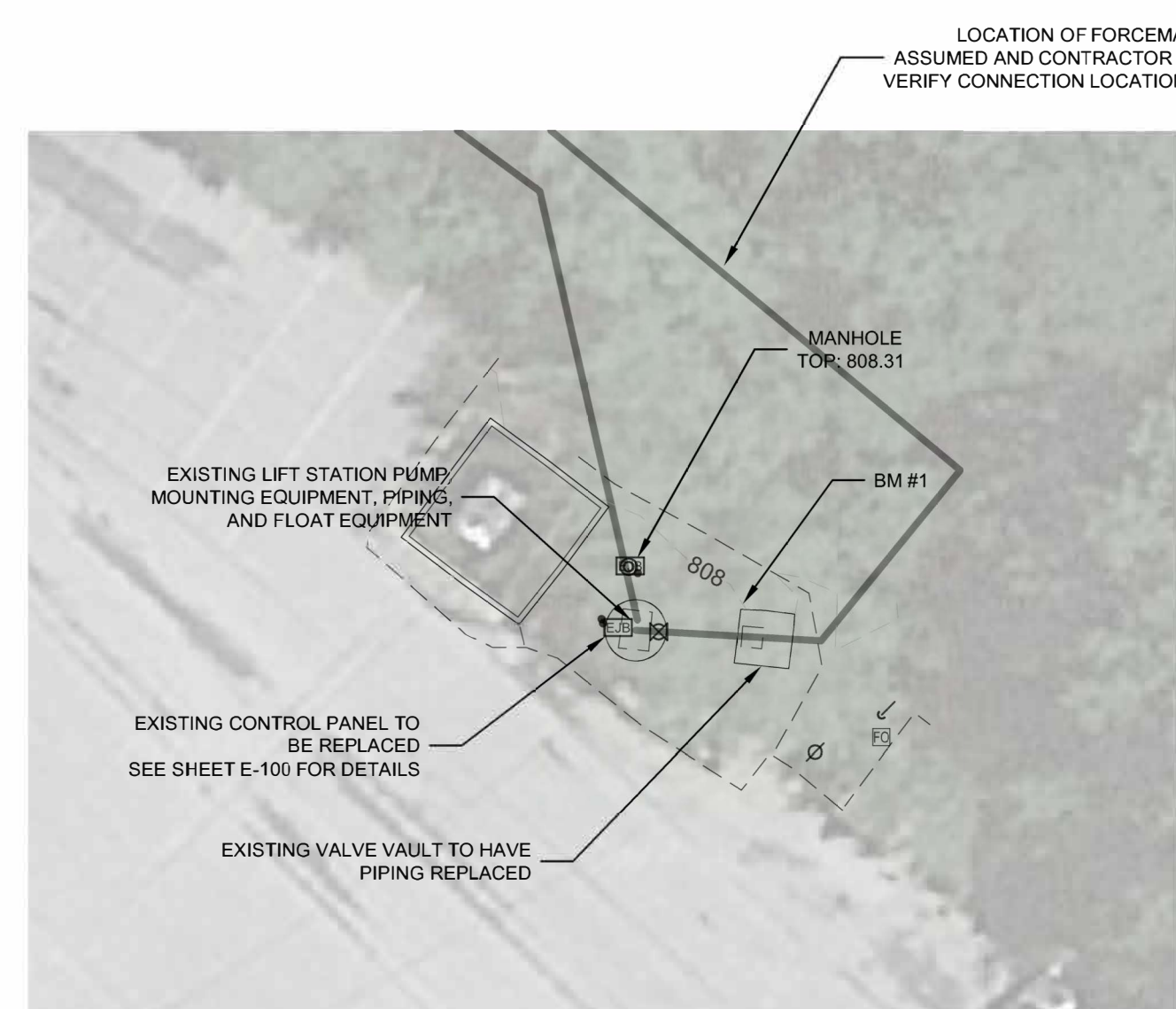
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02-12-2024

CAD DWG FILE: C101  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:  
**LIFT STATION 2  
DETAILS**

SHEET NUMBER:

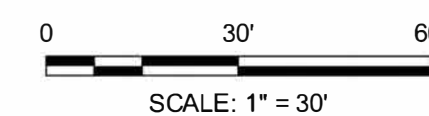
**C101**



**1** LIFT STATION 2 PLAN VIEW  
SCALE: 1" = 30'

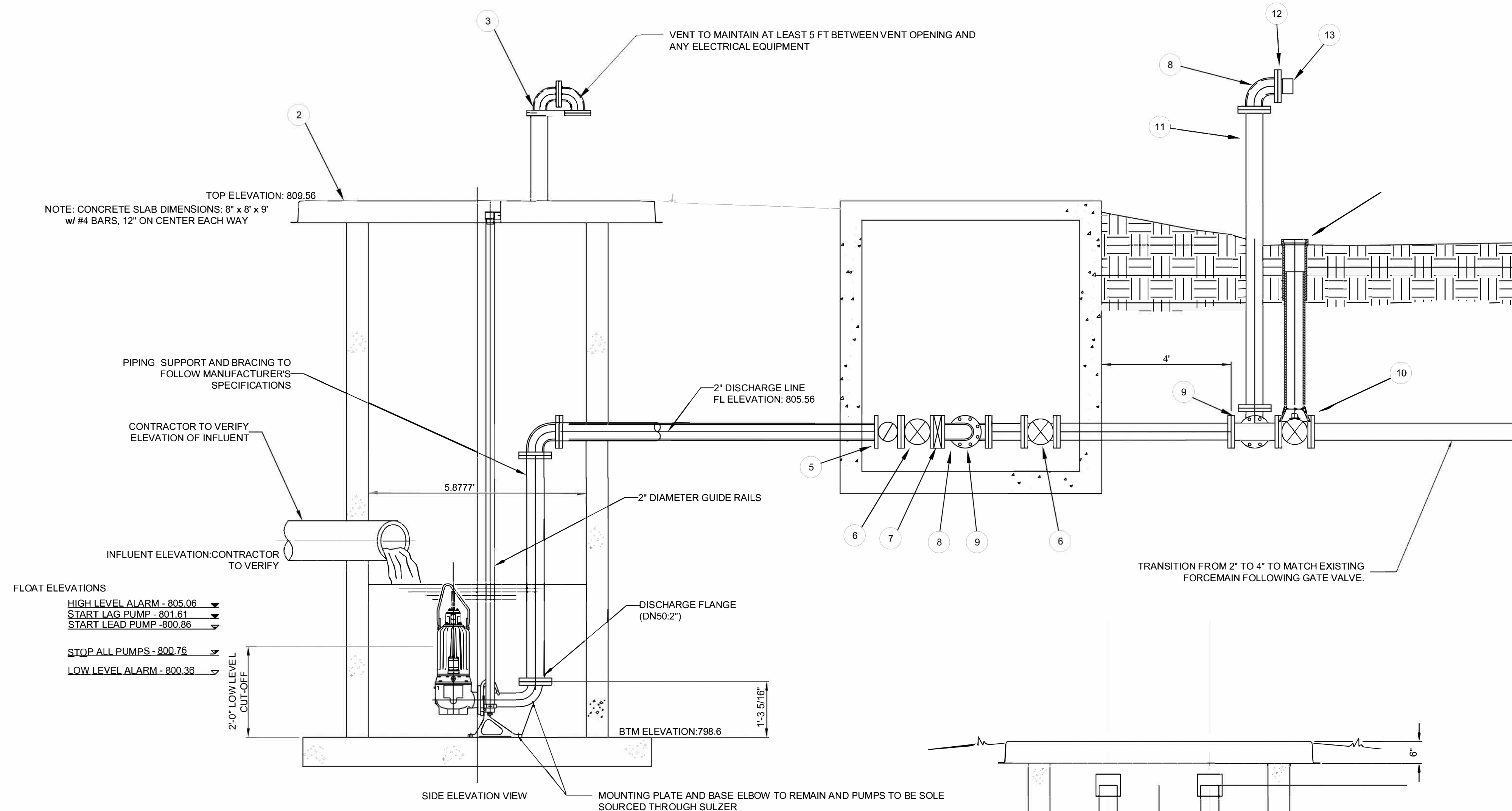
BENCHMARKS:

- CHISELED 1" NORTHWEST CORNER CONCRETE ACCESS STRUCTURE - 809.60
- 8" SPIKE IN EAST SIDE POWER POLE EAST OF BOAT RENTAL BUILDING - 807.80



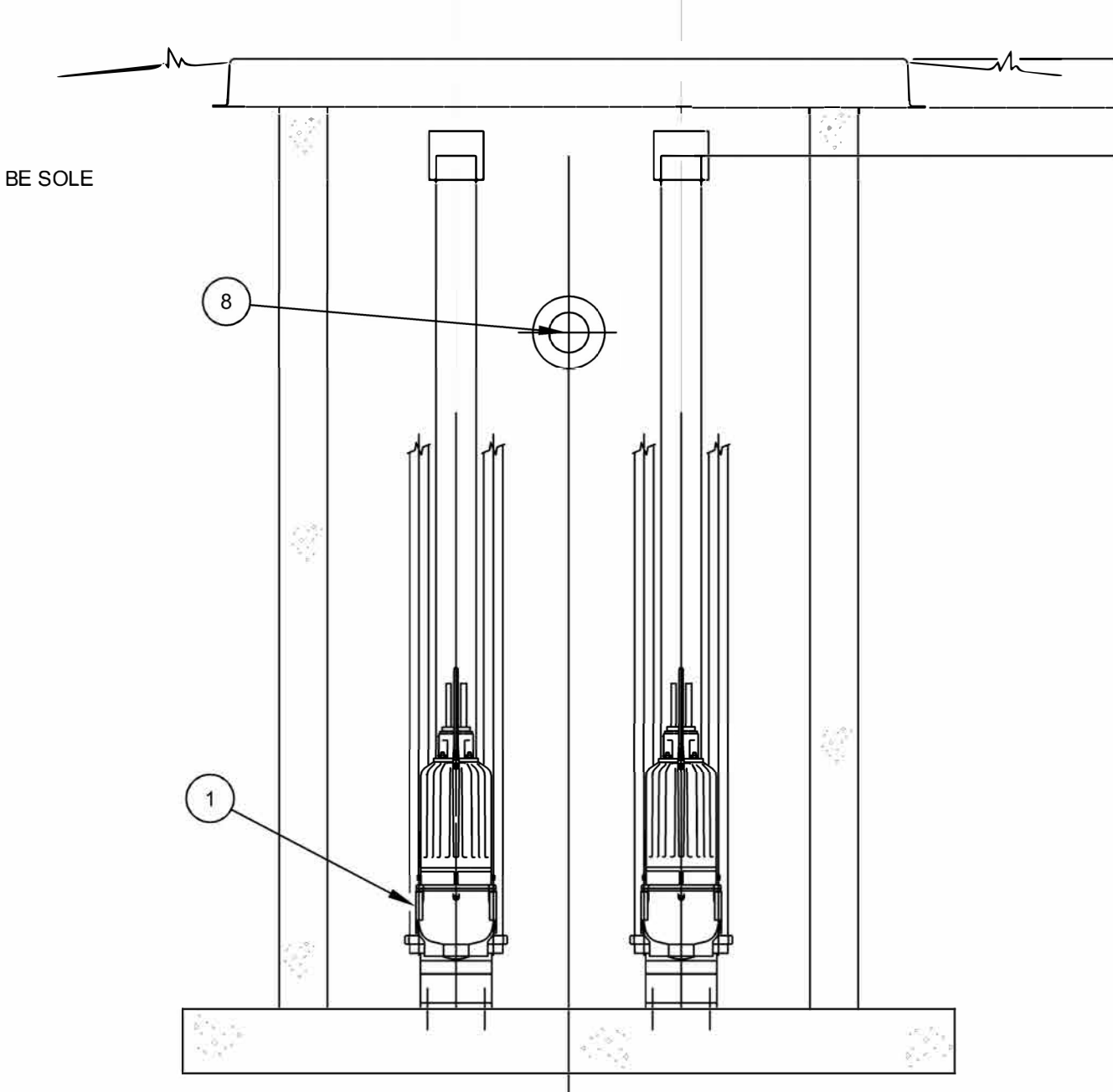
REHABILITATION SUMMARY	
LIFT STATION IDENTIFICATION	LIFT STATION 2
DESCRIPTOR	THE BOATHOUSE
GROUT SEAMS	YES
WET WELL PUMP AND FLOAT EQUIPMENT REPLACEMENT	YES
PRECAST WET WELL CAP REPLACEMENT WITH 4" VENT	YES
WET WELL MOUNTING EQUIPMENT REPLACEMENT	YES
WET WELL INTERIOR PIPING REPLACEMENT	YES
VALVE VAULT INTERNAL PIPING AND FITTING REPLACEMENT	YES
CONTROL PANEL REPLACEMENT	YES
CONTROL PANEL ELECTRICAL REPLACEMENT	YES
PUMPS	PE80/2-E-60HZ

**3** LIFT STATION REHABILITATION SUMMARY  
N.T.S.



ITEM	DESCRIPTION	MATERIAL AND SIZE
1	PUMP	CAST IRON
2	BASE	PRECAST CONCRETE (MATCH EXISTING)
3	WETWELL VENT	304 SS 2"
4	CONTROL PANEL	304 SS (SEE MEP SHEETS)
5	2" SWING CHECK VALVE	316 SS - 2"
6	2" GATE VALVE	CAST IRON
7	2" PRESSURE TRANSMITTER	316 SS 2"
8	2" 90° BEND (FLG.)	316 SS 2"
9	2" TEE (FLG.)	316 SS 2"
10	2" GATE VALVE	CAST IRON 2"
11	2" D.I.P. SPOOL 7' LONG (FLG.)	316 SS 2"
12	2" THREADED FLANGE	316 SS 2"
13	2" CAMLOCK FITTING	316 SS 2"

NOTE: ALL METAL FASTENERS, APPURTENANCES, AND MINOR EQUIPMENT WITHIN THE WET-WELL SHALL BE STAINLESS STEEL.

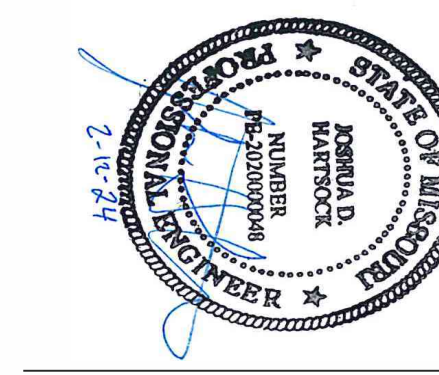


NOTE: PUMPS TO BE SOLE SOURCED AND REPLACED WITH SULZER PUMPS

**2** LIFT STATION 2 (THE BOATHOUSE) REHABILITATION NOTES

**2** LIFT STATION 2 (THE BOATHOUSE) REHABILITATION NOTES





**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors

www.klingner.com  
Columbia, Missouri  
Quincy, IL, Gainesburg, IL, Hannibal, MO  
907 East Ash Street  
Burlington, IA, Peella, IA, Davenport, IA  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

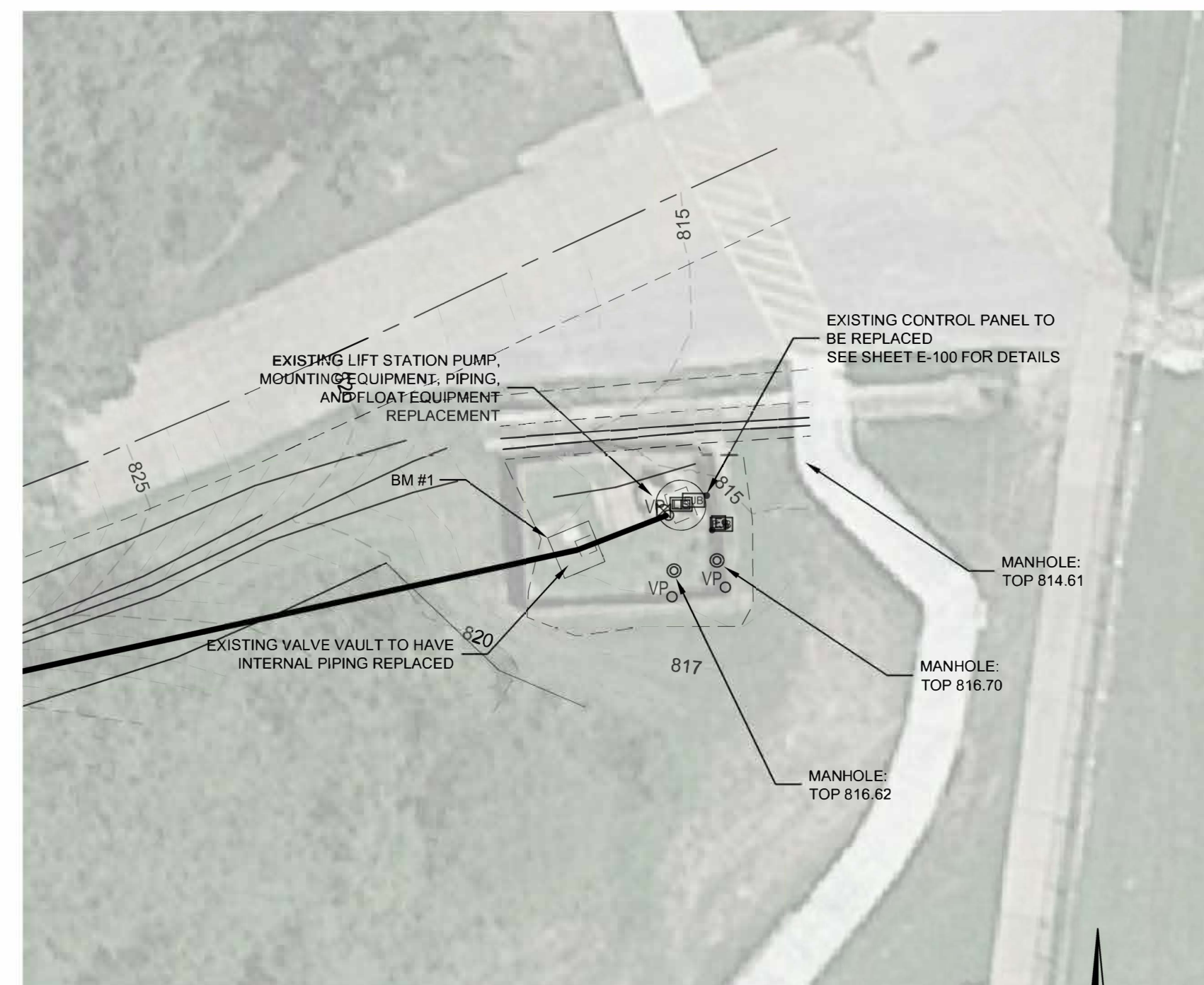
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02-12-2024

CAD DWG FILE: C102  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

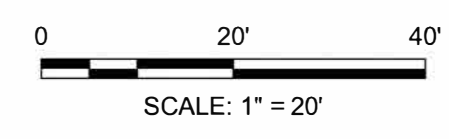
SHEET TITLE:  
**LIFT STATION 3  
REHAB AND LIFT  
STATION 4 BYPASS**

SHEET NUMBER:

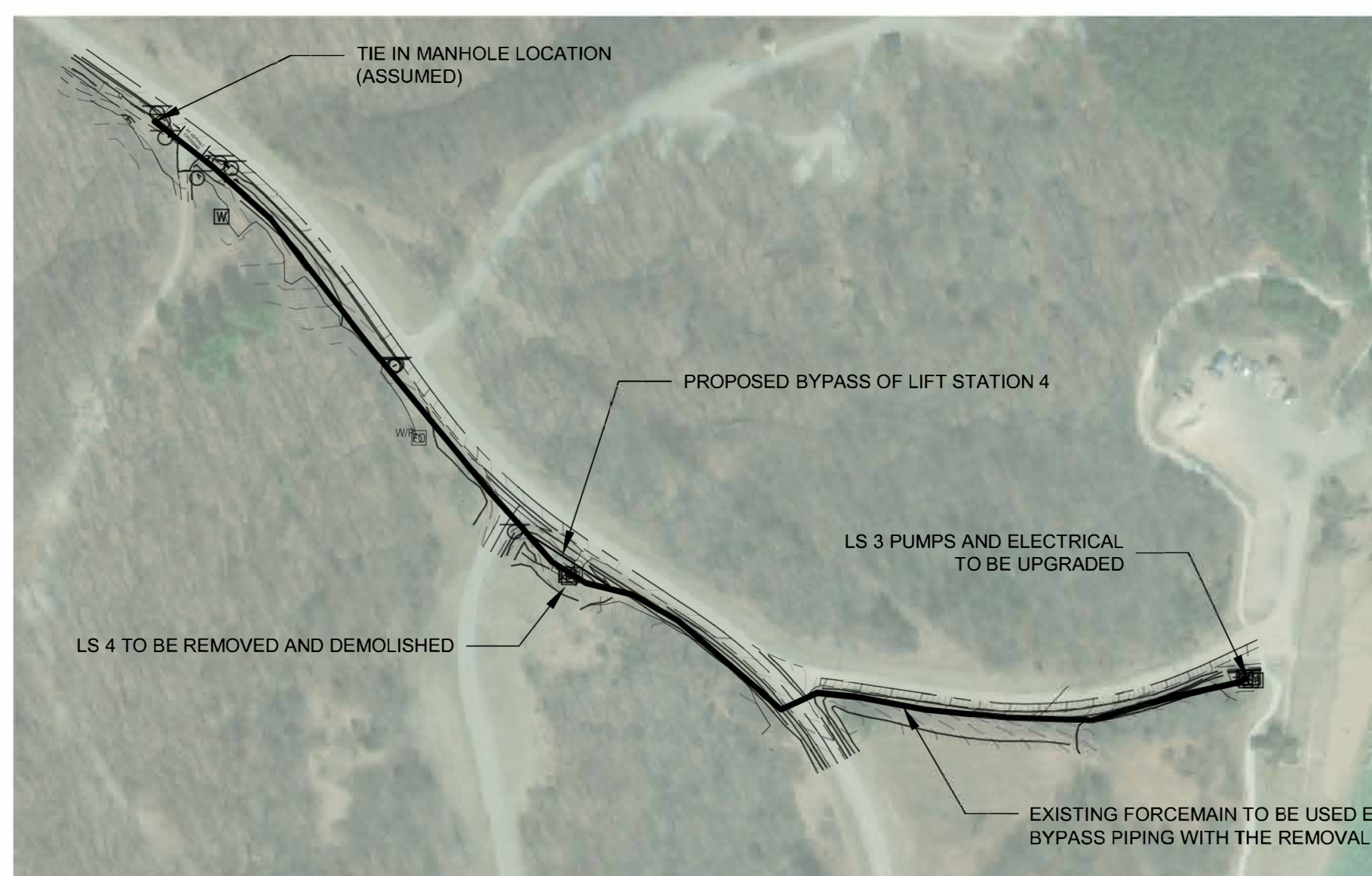
**C102**



- BENCHMARKS:**
- CHISELED "L" NORTHWEST CORNER CONCRETE ACCESS STRUCTURE 816.78
  - CHISELED "T" SOUTH END CURB SOUTH ISLAND PARKING LOT NORTH OF SITE - 814.55



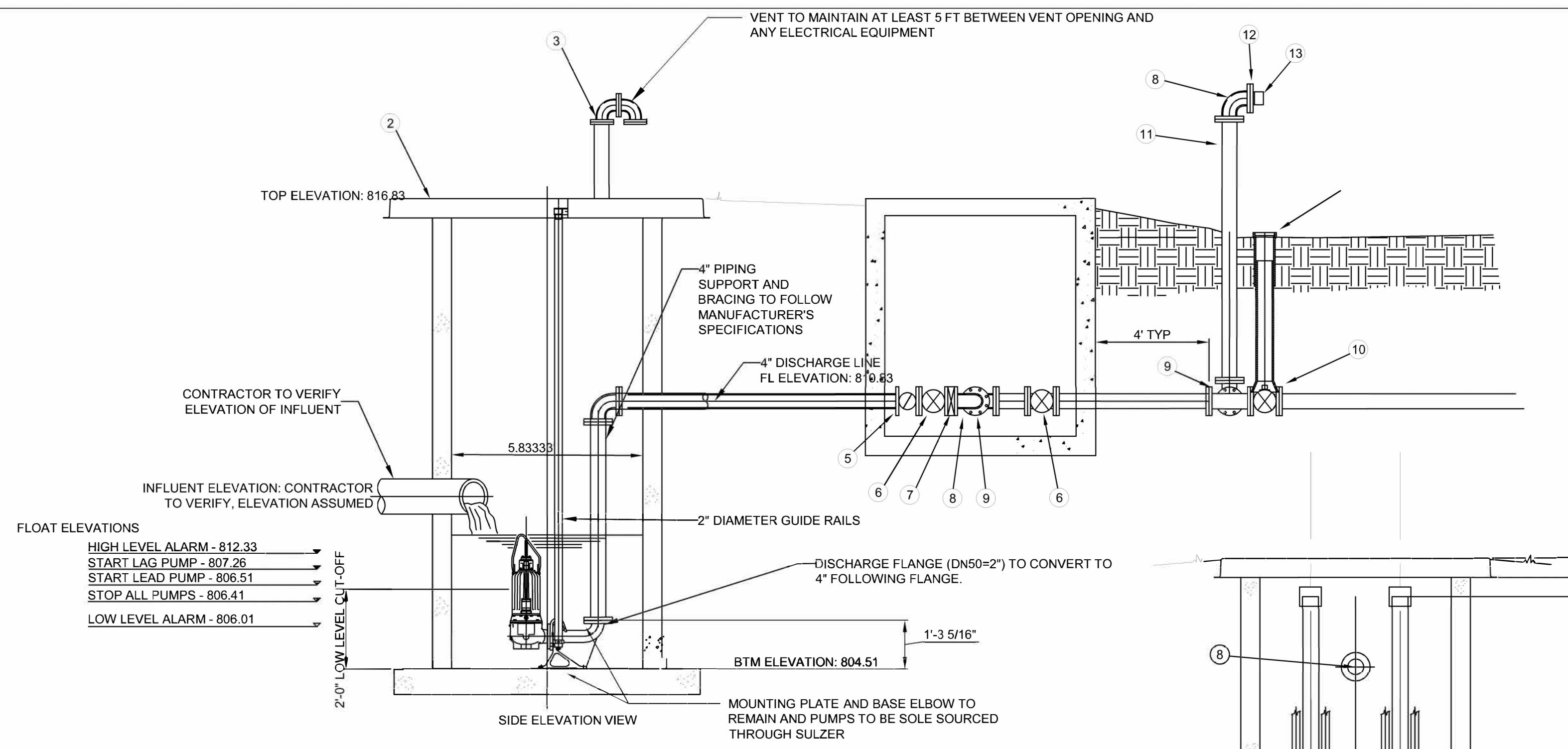
**1 LIFT STATION 3 LAYOUT**  
SCALE: 1" = 20'



**2 LIFT STATION 3 (THE BEACH) FORCEMAIN ROUTE**  
SCALE: 1" = 200'

LIFT STATION IDENTIFICATION	LIFT STATION 3
DESCRIPTOR	THE BEACH
GROUT SEAMS	YES
WET WELL PUMP AND FLOAT EQUIPMENT REPLACEMENT	YES
PRECAST WET WELL CAP REPLACEMENT WITH 4" VENT	YES
WET WELL MOUNTING EQUIPMENT REPLACEMENT	YES
WET WELL INTERIOR PIPING REPLACEMENT	YES
VALVE VAULT INTERNAL PIPING AND FITTING REPLACEMENT	YES
CONTROL PANEL REPLACEMENT	YES
CONTROL PANEL ELECTRICAL REPLACEMENT	YES
PUMPS	PE300/2-G-60HZ

**3 LIFT STATION REHABILITATION SUMMARY**  
N.T.S.

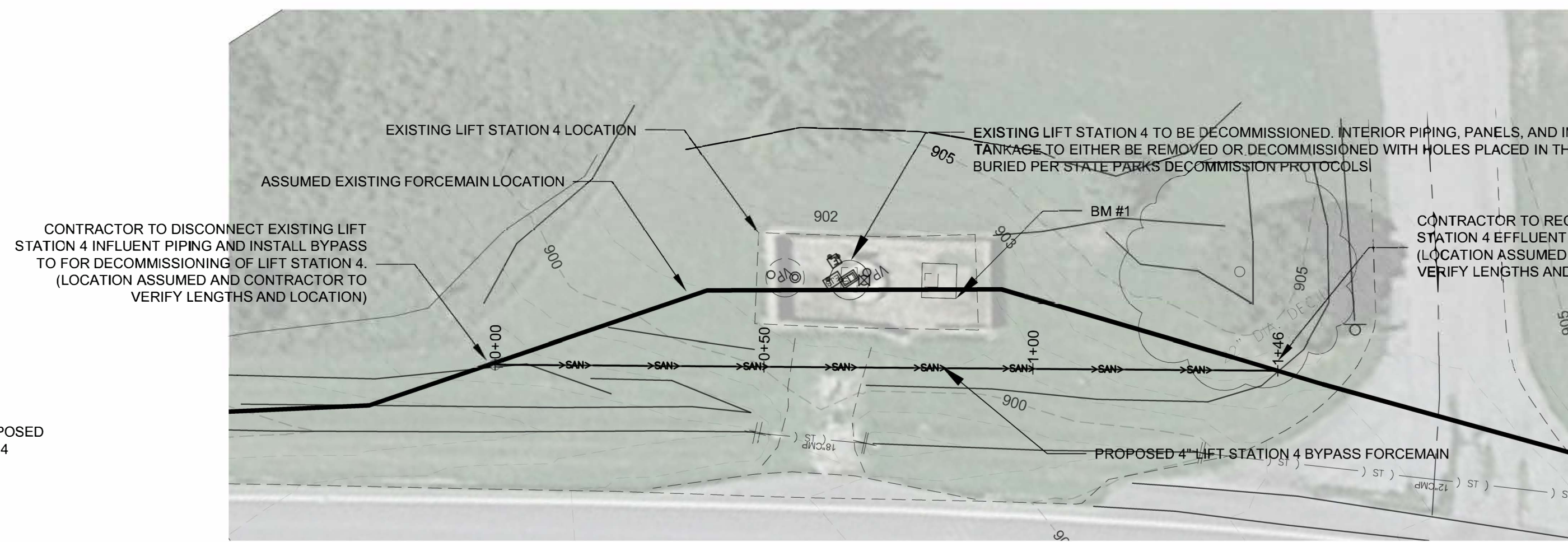


ITEM	DESCRIPTION	MATERIAL AND SIZE
1	PUMP	CAST IRON
2	BASE	PRECAST CONCRETE (MATCH EXISTING)
3	WET WELL VENT	3/8" SS 4"
4	CONTROL PANEL	304 SS (SEE MEP SHEETS)
5	4" SWING CHECK VALVE	316 SS 4"
6	4" GATE VALVE	CAST IRON 4"
7	4" PRESSURE TRANSMITTER	316 SS 4"
8	4" 90° BEND (FLG.)	316 SS 4"
9	4" TEE (FLG.)	316 SS 4"
10	4" GATE VALVE	CAST IRON 4"
11	4" D.I.P. SPOOL 7' LONG (FLG.)	316 SS 4"
12	4" THREADED FLANGE	316 SS 4"
13	4" CAMLOCK FITTING	316 SS 4"

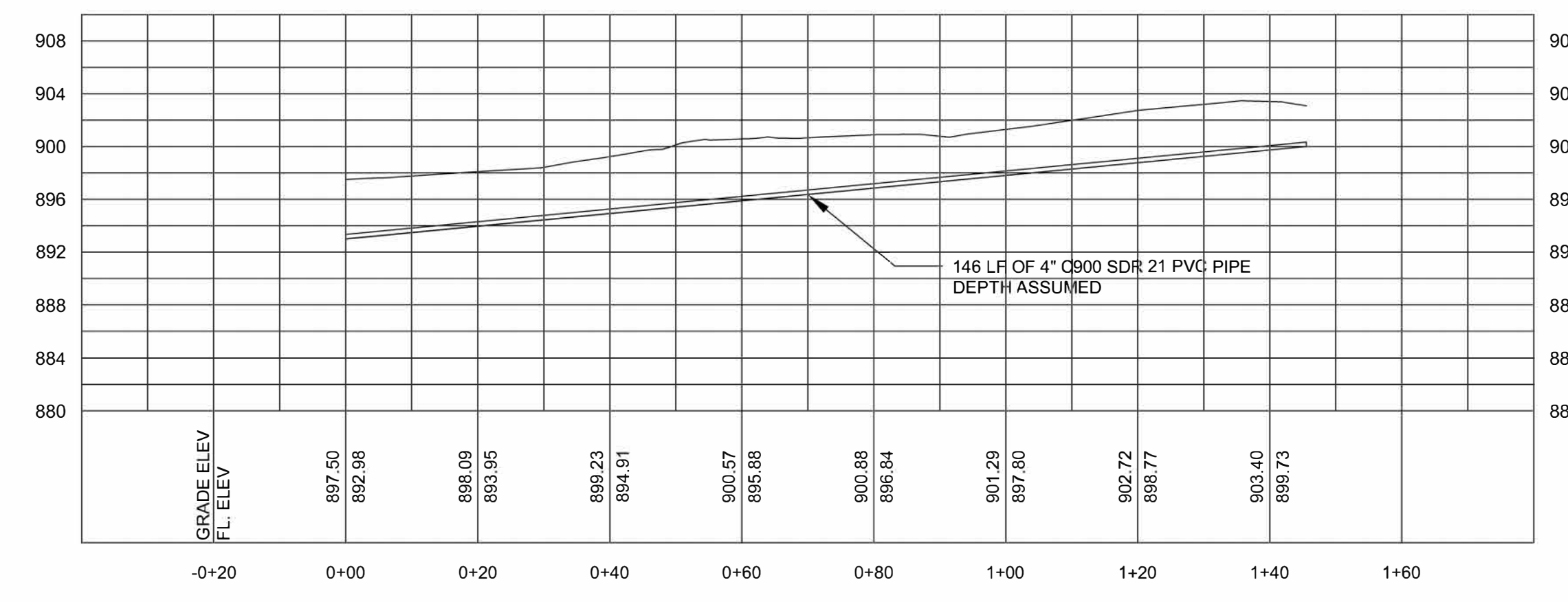
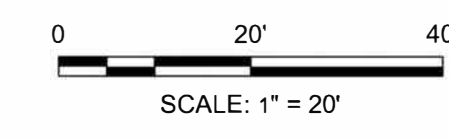
NOTE: ALL METAL FASTENERS, APPURTENANCES, AND MINOR EQUIPMENT WITHIN THE WET-WELL SHALL BE STAINLESS STEEL.

NOTE: PUMPS TO BE SOLE SOURCED AND REPLACED WITH SULZER PUMPS

**4 LIFT STATION 3 (THE BEACH) REHABILITATION NOTES**  
N.T.S.



- BENCHMARKS (LIFT STATION 4)**
- CHISELED "N" NORTHWEST CORNER CONCRETE ACCESS STRUCTURE.
  - CHISELED "T" NORTH-NORTHEAST CIRCULAR CONCRETE LIFT STATION STRUCTURE.



**5 LIFT STATION 4 BYPASS PLAN AND PROFILE**  
SCALE: 1" = 20'





**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors

www.klinger.com  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peella, IA, Davenport, IA

MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_

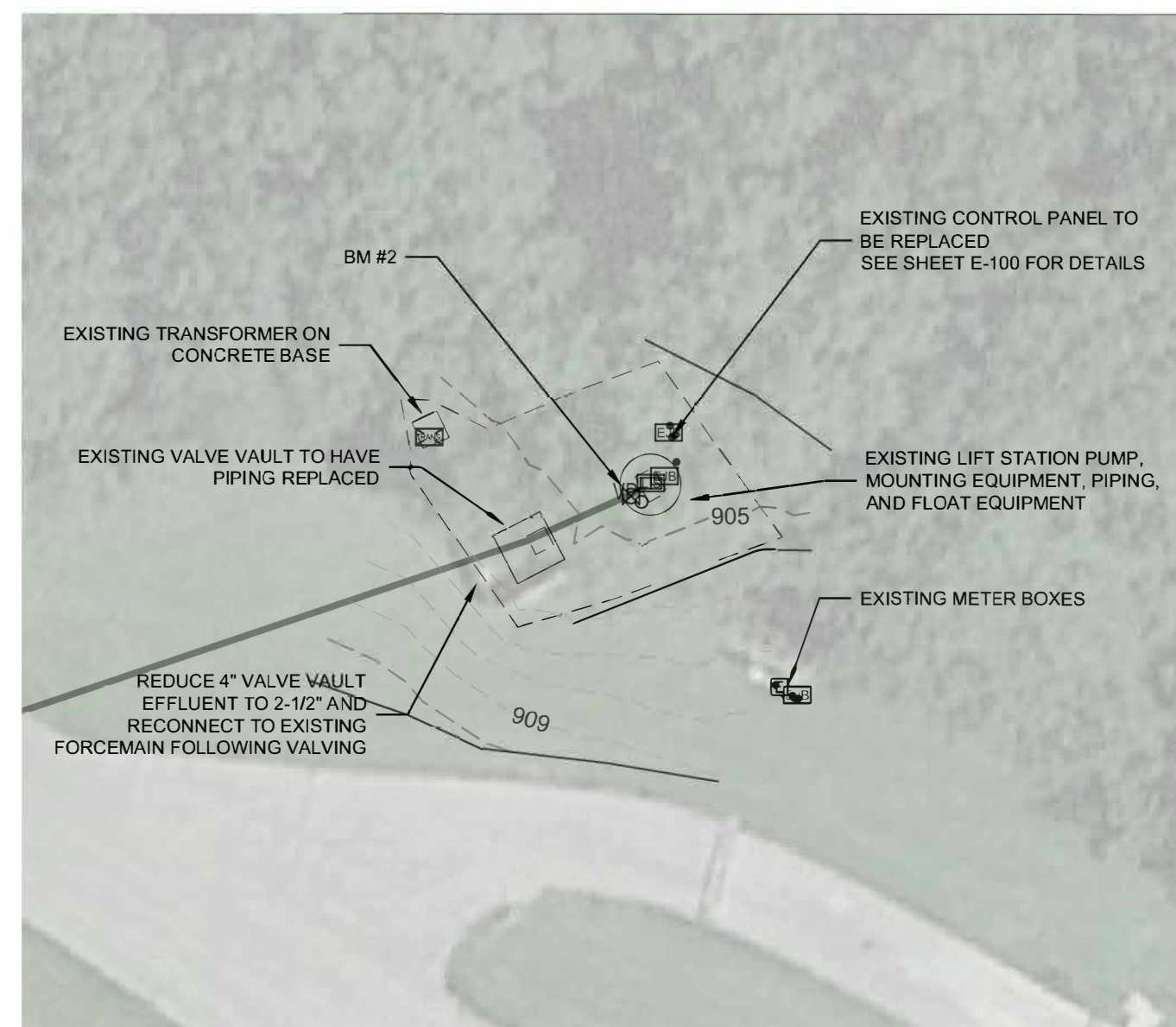
ISSUE DATE: 02-12-2024

CAD DWG FILE: C103  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

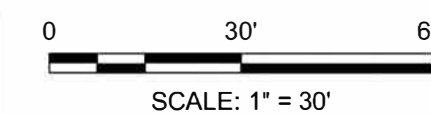
SHEET TITLE:  
**LIFT STATION 5  
DETAILS**

SHEET NUMBER:

**C103**



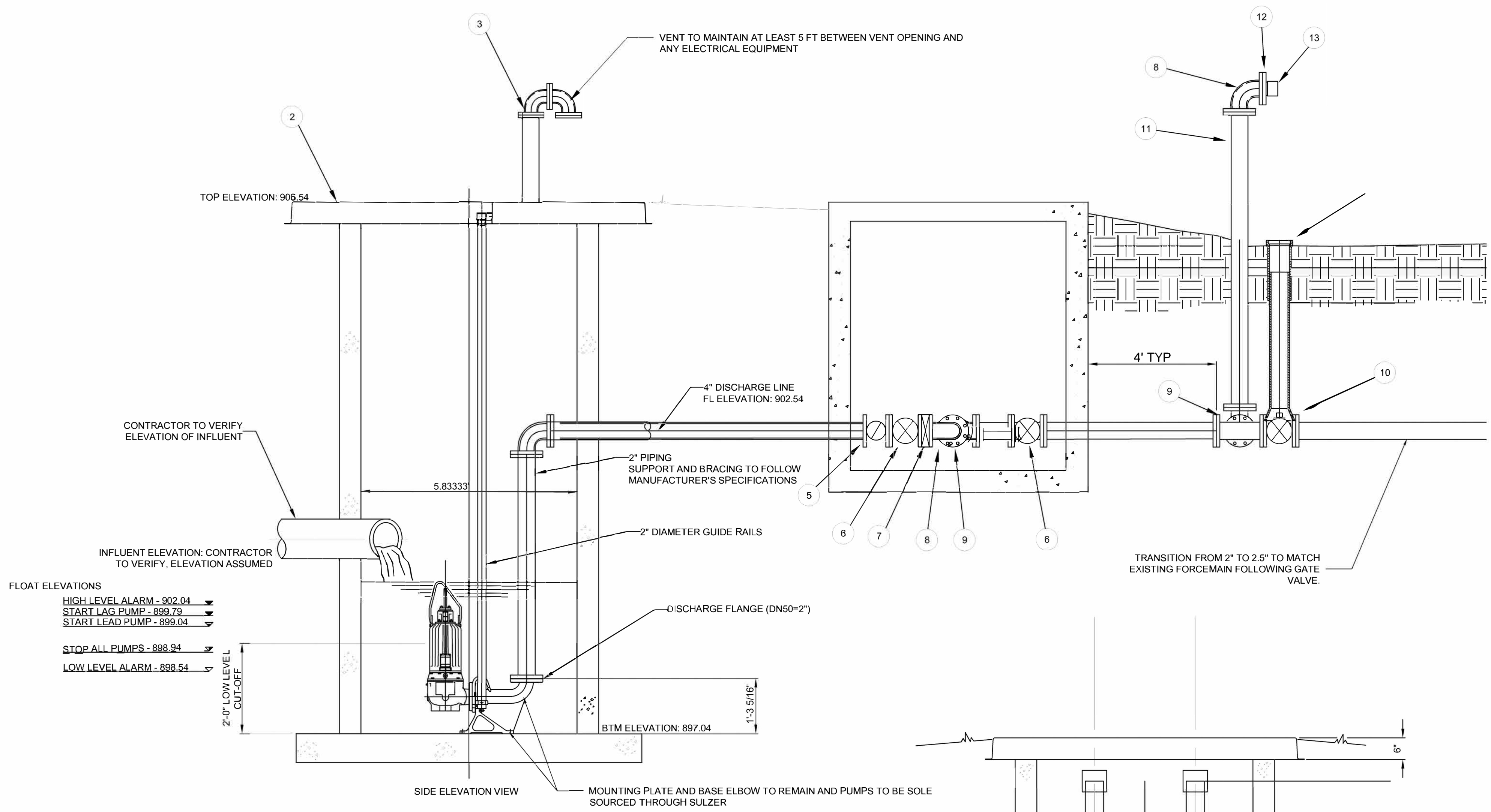
- BENCHMARKS:  
1. CHISELED "0" ON CONCRETE PAD AT WATER STATION  
SOUTHEAST OF SITE - 906.71  
2. CHISELED "0" WEST SIDE CIRCULAR CONCRETE LIFT  
STATION STRUCTURE - 906.58



**1** LIFT STATION 5 LAYOUT  
SCALE: 1" = 30'

LIFT STATION REHABILITATION SUMMARY	
LIFT STATION IDENTIFICATION	LIFT STATION 5
DESCRIPTOR	CAMP SITE 1
GROUT SEAMS	YES
WET WELL PUMP AND FLOAT EQUIPMENT REPLACEMENT	YES
PRECAST WET WELL CAP REPLACEMENT WITH 4" VENT	YES
WET WELL MOUNTING EQUIPMENT REPLACEMENT	YES
WET WELL INTERIOR PIPING REPLACEMENT	YES
VALVE VAULT INTERNAL PIPING AND FITTING REPLACEMENT	YES
CONTROL PANEL REPLACEMENT	YES
CONTROL PANEL ELECTRICAL REPLACEMENT	YES
PUMPS	PE100/2-E-60HZ

**2** LIFT STATION REHABILITATION SUMMARY  
N.T.S.

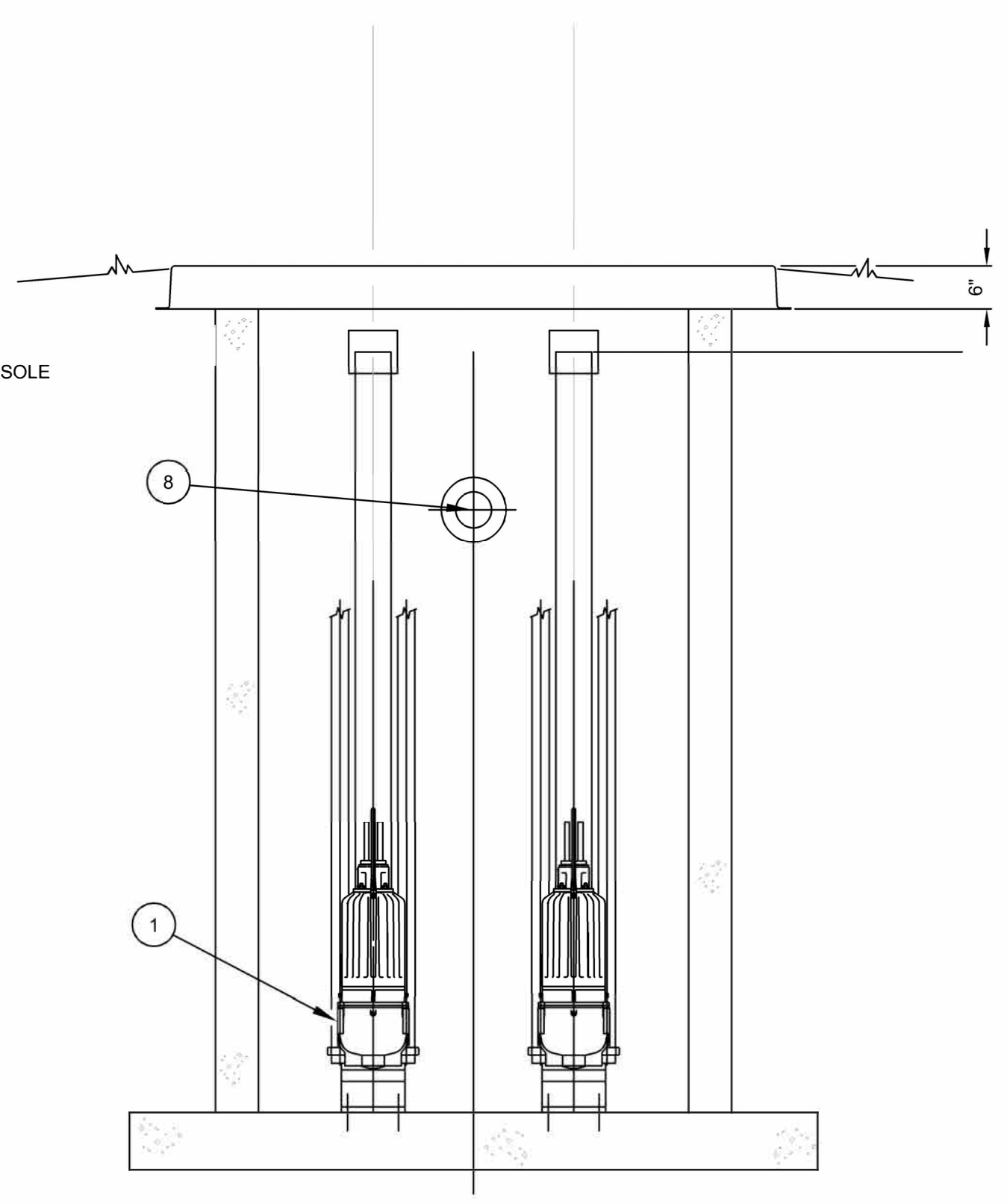


- FLOAT ELEVATIONS  
HIGH LEVEL ALARM - 902.04  
START LAG PUMP - 899.79  
START LEAD PUMP - 899.04  
STOP ALL PUMPS - 898.94  
LOW LEVEL ALARM - 898.54

ITEM	DESCRIPTION	MATERIAL AND SIZE
1	PUMP	CAST IRON
2	BASE	PRECAST CONCRETE (MATCH EXISTING)
3	WETWELL VENT	304 SS 2"
4	CONTROL PANEL	304 SS (SEE MEP SHEETS)
5	2" SWING CHECK VALVE	316 SS - 2"
6	2" GATE VALVE	CAST IRON 2"
7	2" PRESSURE TRANSMITTER	316 SS 2"
8	2" 90° BEND (FLG.)	316 SS 2"
9	2" TEE (FLG.)	316 SS 2"
10	2" GATE VALVE	CAST IRON 2"
11	2" D.I.P. SPOOL 7' LONG (FLG.)	316 SS 2"
12	2" THREADED FLANGE	316 SS 2"
13	2" CAMLOCK FITTING	316 SS 2"

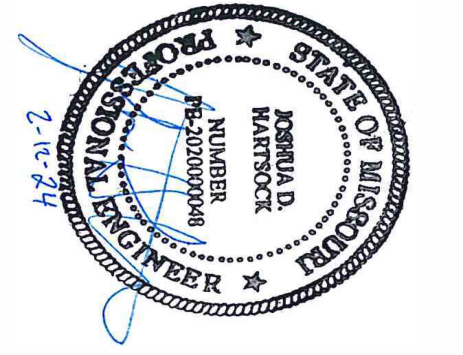
NOTE: ALL METAL FASTENERS, APPURTENANCES, AND MINOR EQUIPMENT WITHIN THE WET-WELL SHALL BE STAINLESS STEEL.

**3** LIFT STATION 5 (THE CAMPSITE) REHABILITATION NOTES  
SCALE: NTS



NOTE: PUMPS TO BE SOLE SOURCED AND REPLACED WITH SULZER PUMPS





**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
973.325.9598

www.klingner.com  
Quincy, IL, Gainesburg, IL, Hannibal, MO  
Burlington, IA, Peella, IA, Davenport, IA  
**KLINGNER & ASSOCIATES, P.C. - ENGINEERING**  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL  
RESOURCES DIVISION OF  
STATE PARKS

SEWAGE LIFT STATIONS

20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

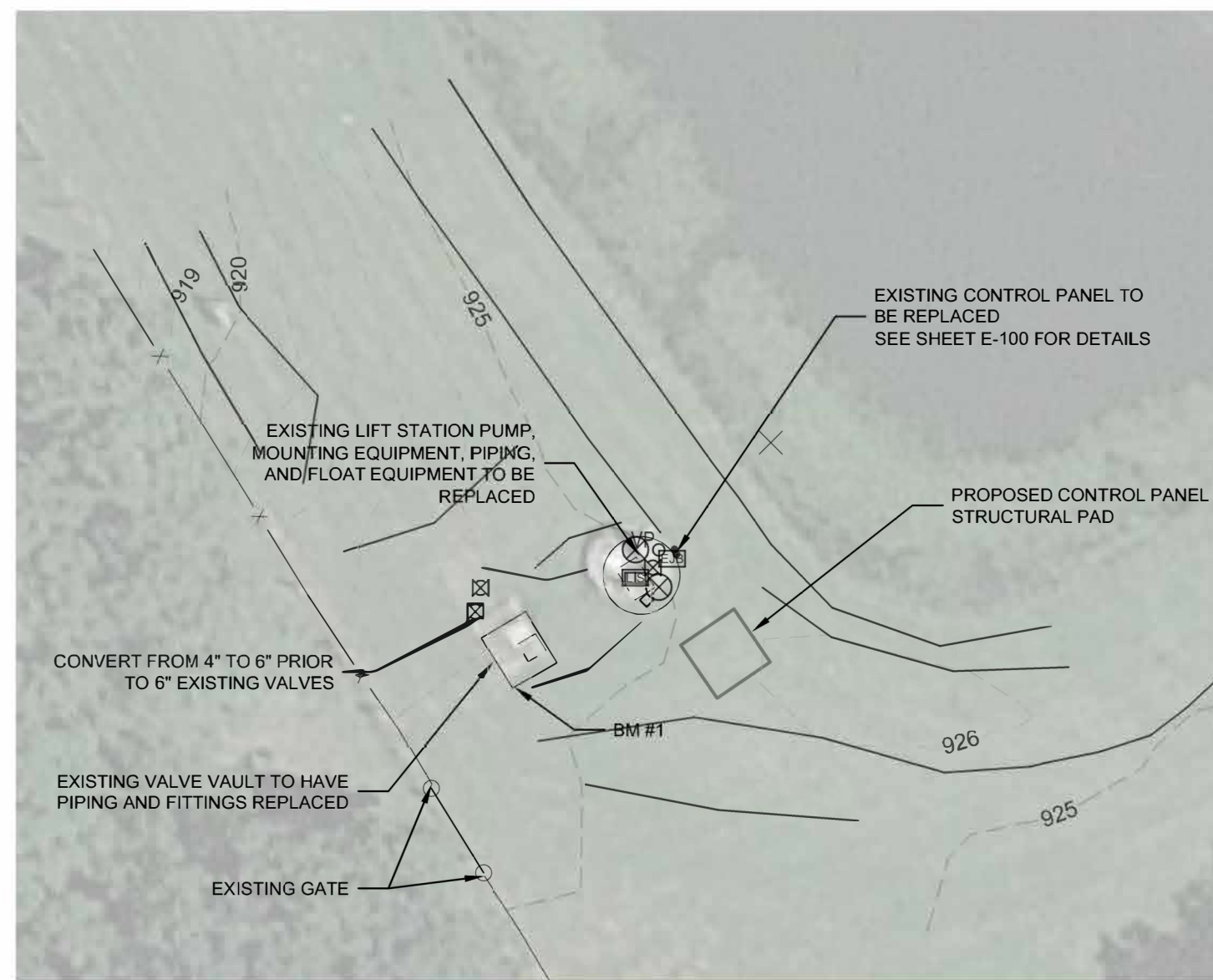
PROJECT # X2302-03  
SITE # 5114  
ASSET # 78151140

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02-12-2024

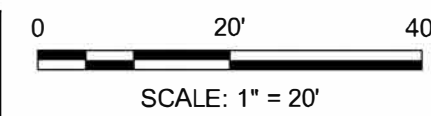
CAD DWG FILE: C104  
DRAWING BY: JDH  
CHECKED BY: MCB/JJN  
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:  
**LIFT STATION 6  
DETAILS**

SHEET NUMBER:  
**C104**



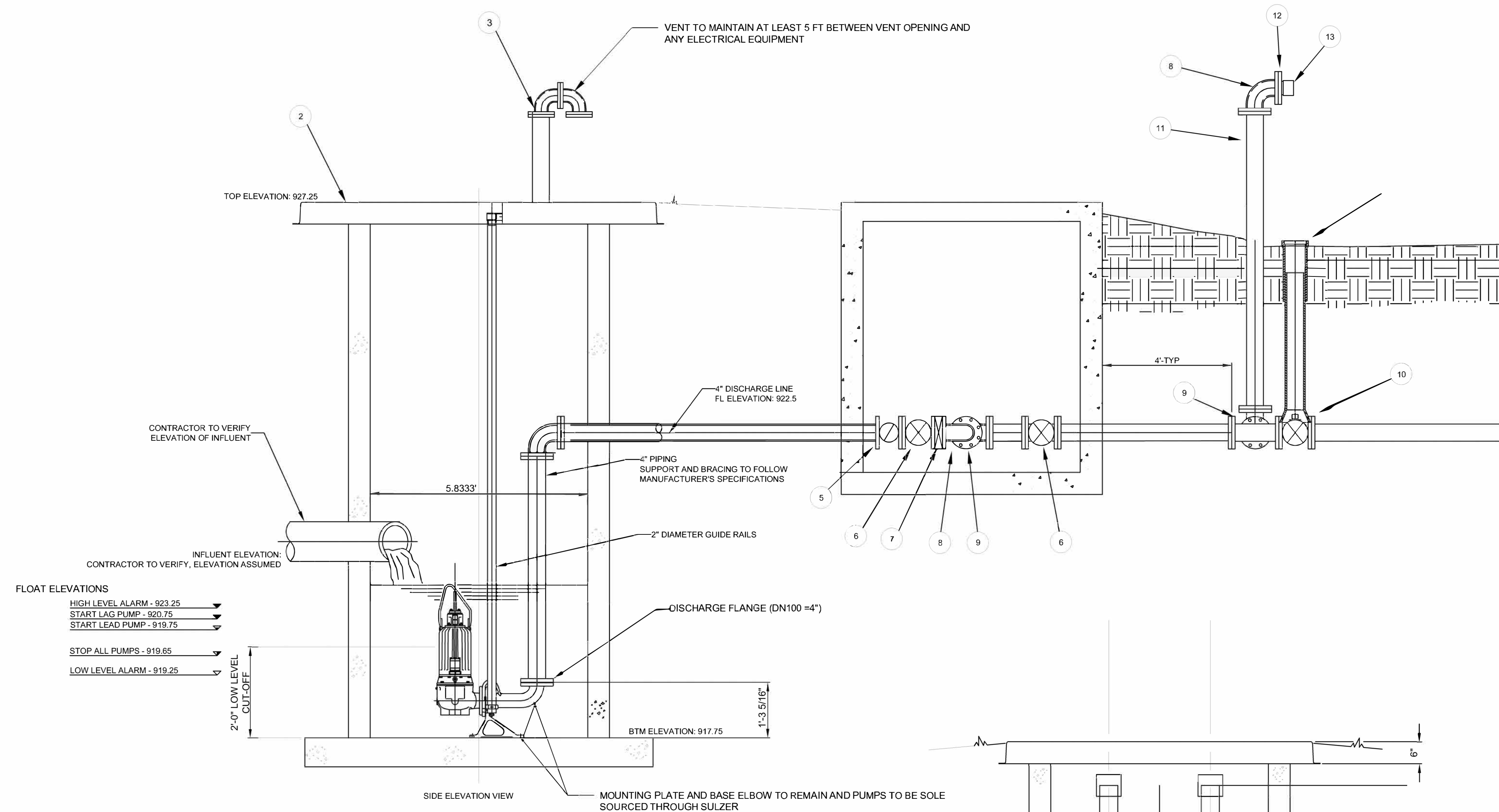
- BENCHMARKS:
- CHISELED "1" SOUTHWEST CORNER CONCRETE ACCESS STRUCTURE - 925.42
  - CHISELED "2" NORTHWEST CORNER CONCRETE BASE FOR DOUBLE BREAKER - 925.72



**1 LIFT STATION 6 LAYOUT**  
SCALE: 1" = 20'

LIFT STATION REHABILITATION SUMMARY	
LIFT STATION IDENTIFICATION	LIFT STATION 6
DESCRIPTOR	THE LAGOON
GROUT SEAMS	YES
WET WELL PUMP AND FLOAT EQUIPMENT REPLACEMENT	YES
PRECAST WET WELL CAP REPLACEMENT WITH 4" VENT	YES
WET WELL MOUNTING EQUIPMENT REPLACEMENT	YES
WET WELL INTERIOR PIPING REPLACEMENT	YES
VALVE VAULT INTERNAL PIPING AND FITTING REPLACEMENT	YES
CONTROL PANEL REPLACEMENT	YES
CONTROL PANEL ELECTRICAL REPLACEMENT	YES
PUMP	PE85/2-G-60HZ

**2 LIFT STATION REHABILITATION SUMMARY**  
N.T.S.



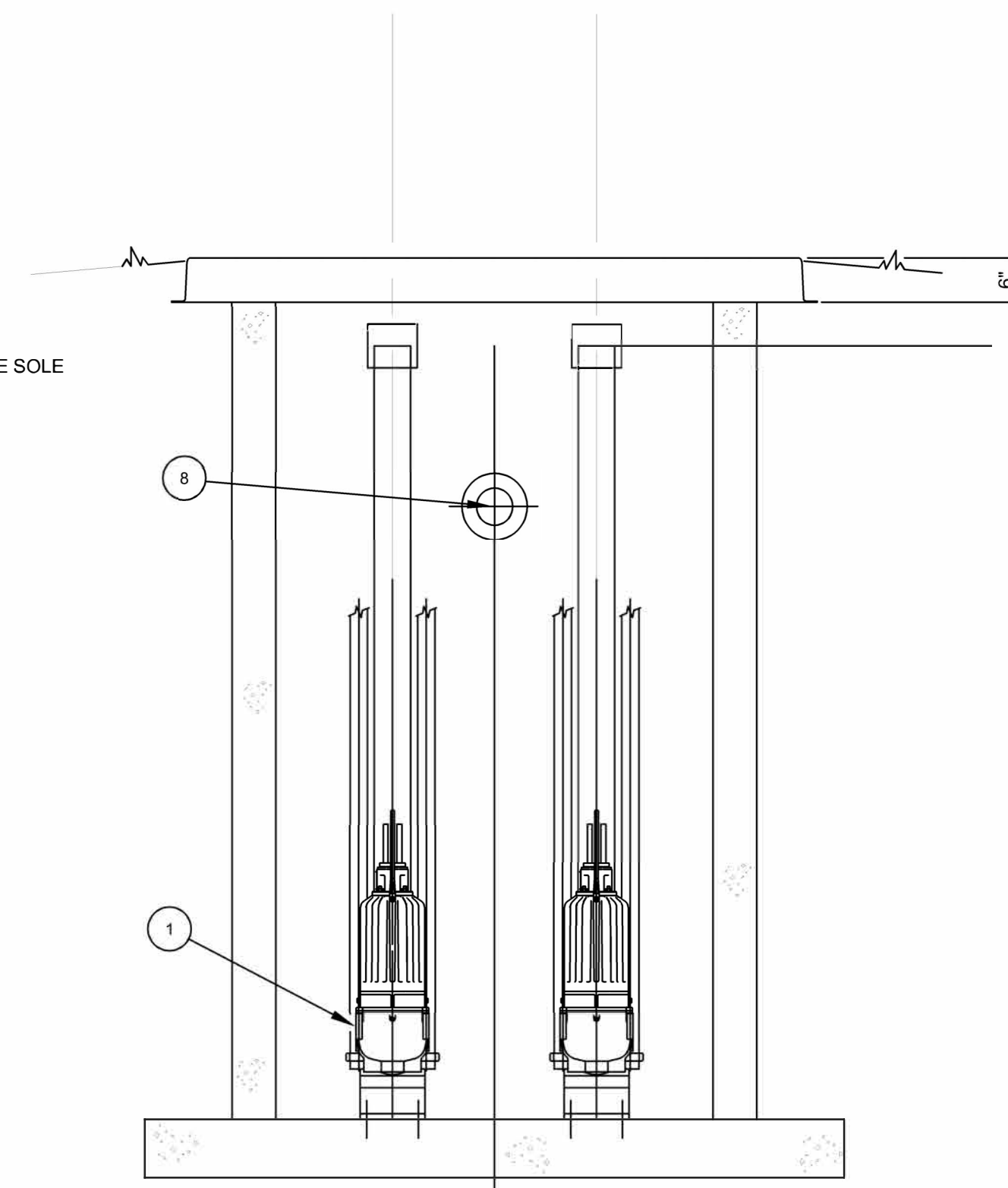
- FLOAT ELEVATIONS
- HIGH LEVEL ALARM - 923.25
  - START LAG PUMP - 920.75
  - START LEAD PUMP - 919.75
  - STOP ALL PUMPS - 919.65
  - LOW LEVEL ALARM - 919.25

ITEM	DESCRIPTION	MATERIAL AND SIZE
1	PUMP	CAST IRON
2	BASE	PRECAST CONCRETE (MATCH EXISTING)
3	WETWELL VENT	304 SS 4"
4	CONTROL PANEL	304 SS (SEE MEP SHEETS)
5	4" SWING CHECK VALVE	316 SS - 4"
6	4" GATE VALVE	CAST IRON
7	4" PRESSURE TRANSMITTER	316 SS 4"
8	4" 90° BEND (FLG.)	316 SS 4"
9	4" TEE (FLG.)	316 SS 4"
10	4" GATE VALVE	CAST IRON 4"
11	4" D.I.P. SPOOL 2" LONG (FLG.)	316 SS 4"
12	4" THREADED FLANGE	316 SS 4"
13	4" CAMLOCK FITTING	316 SS 4"

NOTE: ALL METAL FASTENERS, APPURTENANCES, AND MINOR EQUIPMENT WITHIN THE WET-WELL SHALL BE STAINLESS STEEL.

**3 LIFT STATION 6 (THE LAGOON) REHABILITATION NOTES**  
N.T.S.

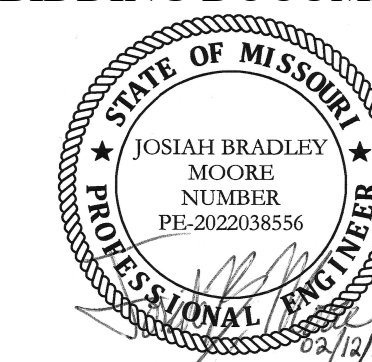
NOTE: PUMPS TO BE SOLE SOURCED AND REPLACED WITH SULZER PUMPS









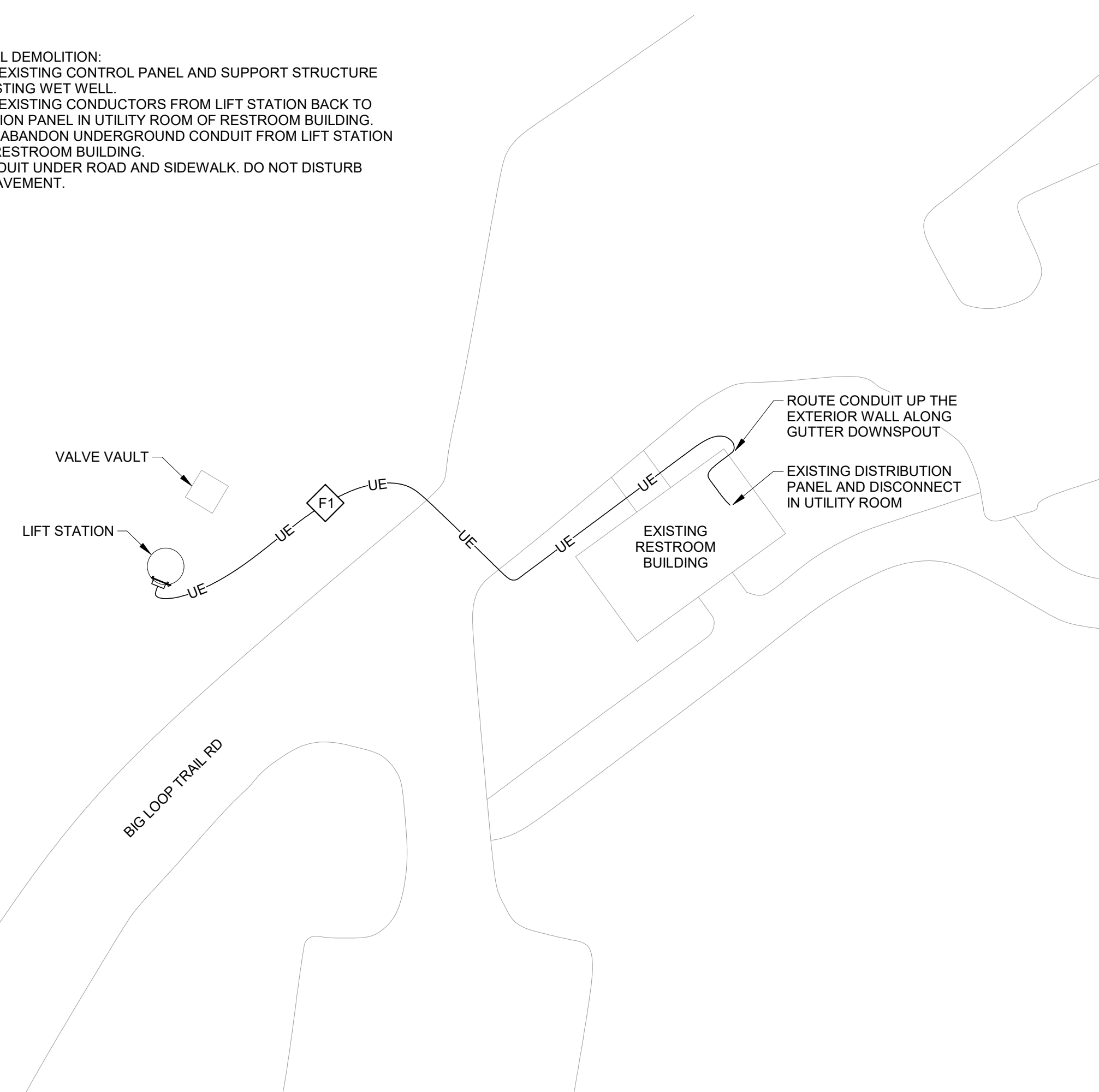


**GENERAL ELECTRICAL NOTES:**

1. APPLICABLE STANDARDS: NFPA-70 AND THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) OF 1971 AND ALL AMENDMENTS THERETO; EQUIPMENT, DEVICES, APPARATUS, SYSTEMS, AND INSTALLATIONS SHALL BE ENTIRELY SUITABLE AND SAFE FOR EACH INTENDED APPLICATION AND BE IN FULL COMPLIANCE WITH APPLICABLE STANDARDS, REQUIREMENTS, RULES, REGULATIONS, CODES, STATUTES, ORDINANCES, ETC., OF MUNICIPAL, COUNTY, AND STATE GOVERNMENTS, OWNER'S INSURANCE COMPANY, LOCAL UTILITIES, AND LABOR REGULATIONS. NOTHING CONTAINED IN THESE PLANS AND SPECIFICATIONS SHALL BE CONSTRUED TO CONFLICT WITH THESE LAWS, CODES, AND ORDINANCES.
2. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF SYSTEMS. INSTALL SYSTEMS AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
3. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ARRANGE FOR ALL INSPECTIONS REQUIRED BY LOCAL AUTHORITIES.
4. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS, ACCESSORIES, TOOLS, EQUIPMENT, TRANSPORTATION, LABOR, SERVICES, AND OPERATIONS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM.
5. CONTRACTOR SHALL PERFORM EXCAVATION REQUIRED TO INSTALL HIS WORK.
6. COORDINATE INSTALLATION OF ELECTRICAL EQUIPMENT ON TOP OF WET WELL CONCRETE CAPS WITH LOCATION OF ACCESS HATCHES. DO NOT INSTALL ELECTRICAL EQUIPMENT DIRECTLY ABOVE ACCESS HATCHES.
7. ELECTRICAL UTILITY PROVIDER: AMEREN MISSOURI.

**NOTES:**

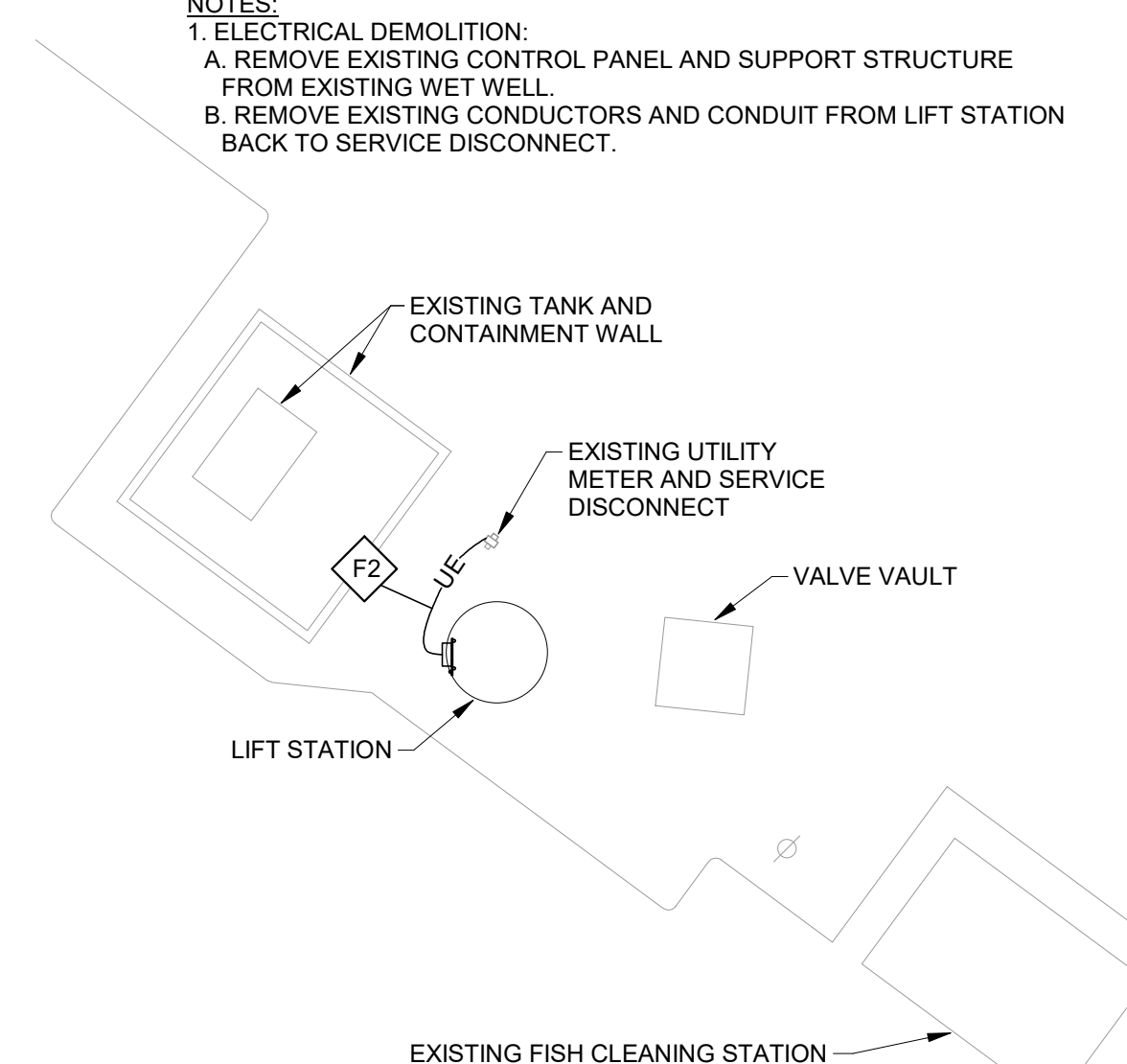
1. ELECTRICAL DEMOLITION:  
A. REMOVE EXISTING CONTROL PANEL AND SUPPORT STRUCTURE FROM EXISTING WET WELL.  
B. REMOVE EXISTING CONDUCTORS FROM LIFT STATION BACK TO DISTRIBUTION PANEL IN UTILITY ROOM OF RESTROOM BUILDING.  
C. CAP AND ABANDON UNDERGROUND CONDUIT FROM LIFT STATION BACK TO RESTROOM BUILDING.
2. BORE CONDUIT UNDER ROAD AND SIDEWALK. DO NOT DISTURB EXISTING PAVEMENT.



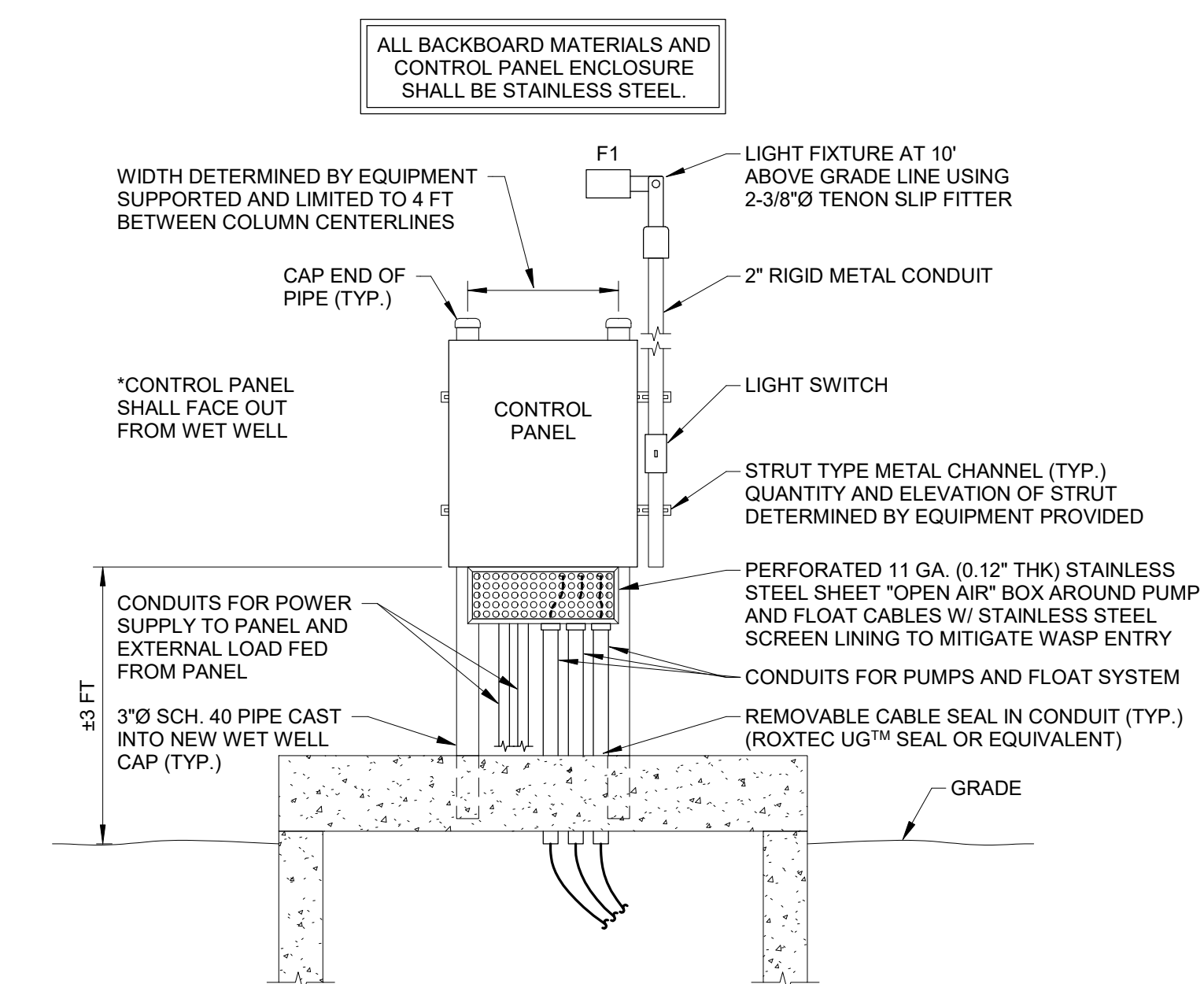
1 ELECTRICAL SITE PLAN - LIFT STATION 1 (POINT)  
1" = 20'-0"

**NOTES:**

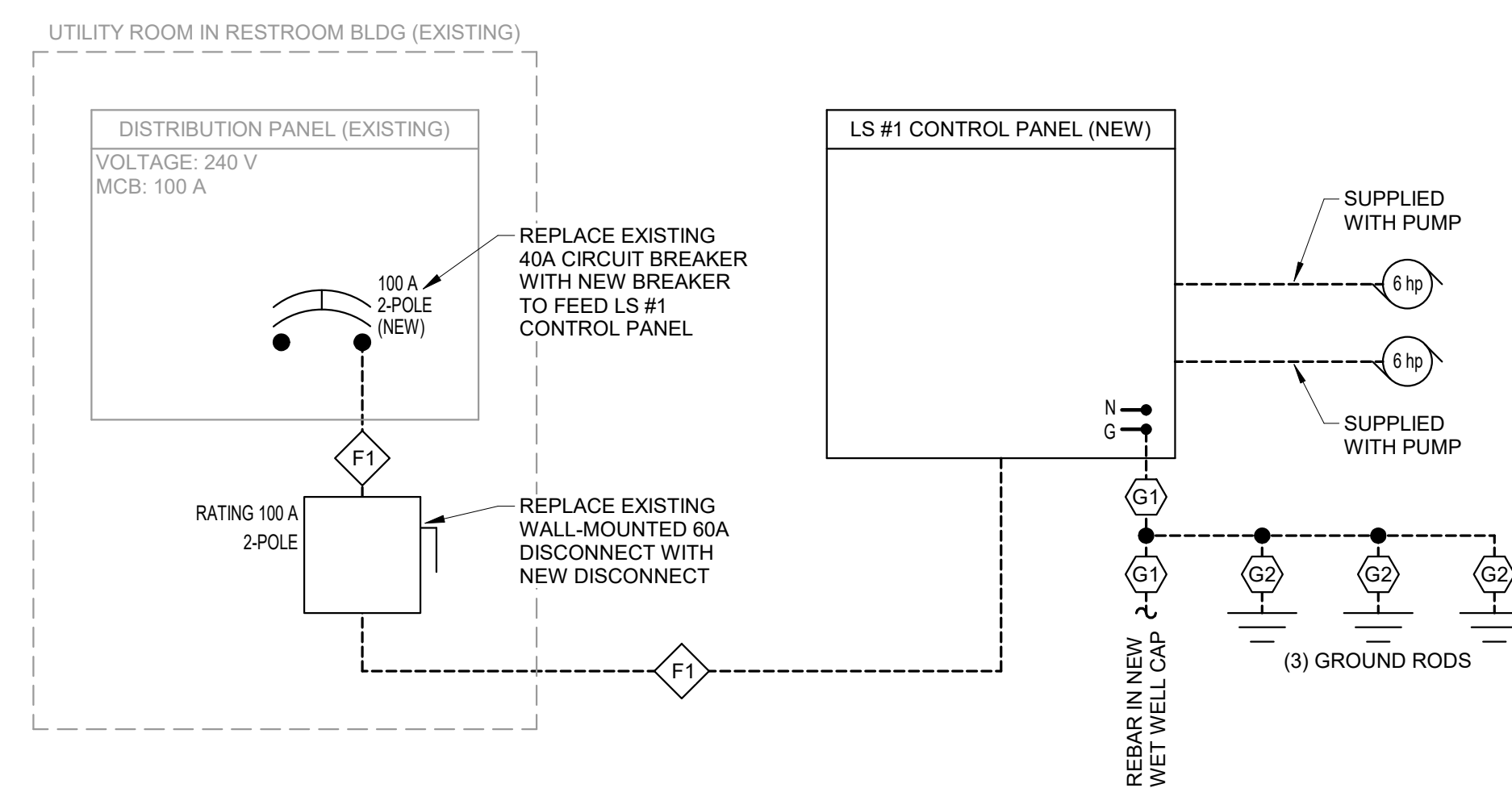
1. ELECTRICAL DEMOLITION:  
A. REMOVE EXISTING CONTROL PANEL AND SUPPORT STRUCTURE FROM EXISTING WET WELL.  
B. REMOVE EXISTING CONDUCTORS AND CONDUIT FROM LIFT STATION BACK TO SERVICE DISCONNECT.



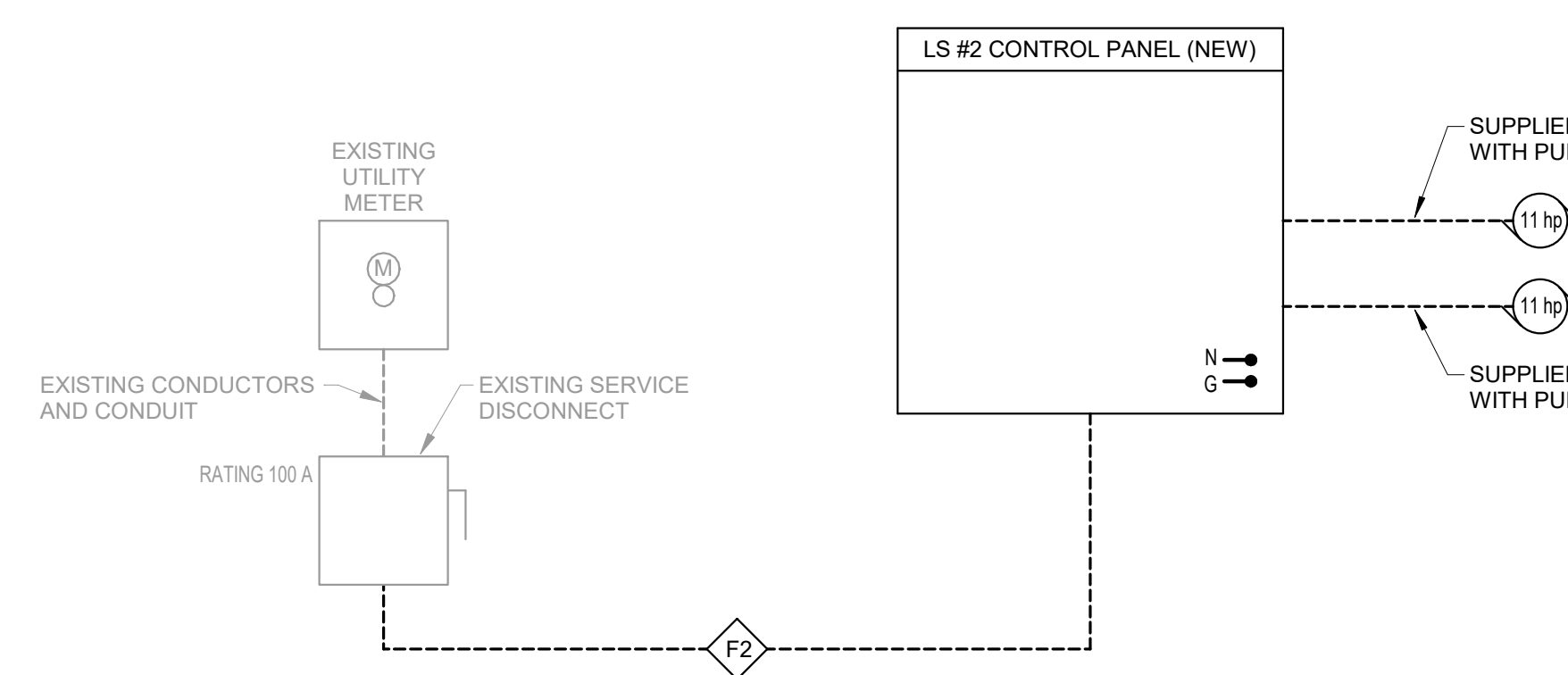
2 ELECTRICAL SITE PLAN - LIFT STATION 2 (MARINA)  
1" = 20'-0"



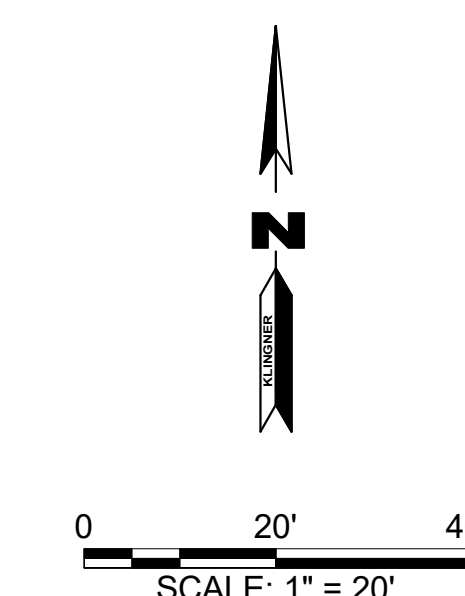
3 PUMP CONTROL PANEL ELEVATION - LIFT STATIONS 1 & 2 (POINT & MARINA)  
NTS



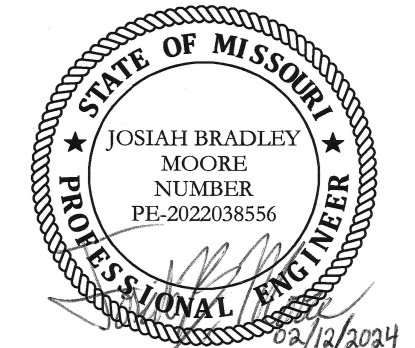
4 POWER ONE-LINE DIAGRAM - LIFT STATION 1 (POINT)  
NTS



5 POWER ONE-LINE DIAGRAM - LIFT STATION 2 (MARINA)  
NTS







JOSIAH B. MOORE - ENGINEER  
MO # PE-2022038556

**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
www.klinger.com  
Columbia, Missouri  
907 East Ash Street  
573.365.5988  
Burlington, IA, Peoria, IA, Hannibal, MO  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

SEWAGE LIFT STATIONS

THOUSAND HILLS STATE  
PARK, 20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 7815114035

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02/12/2024

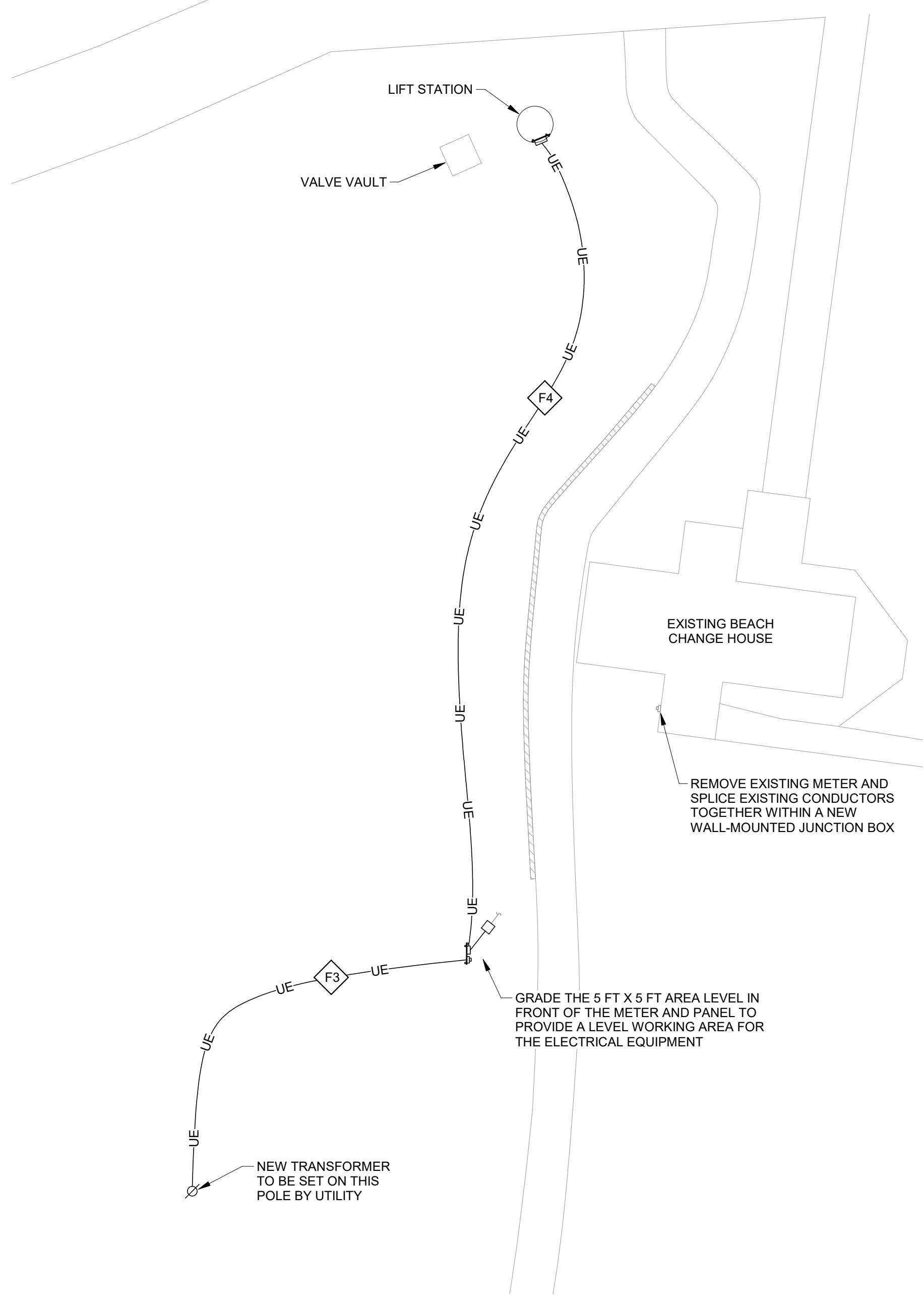
CAD DWG FILE: E502  
DRAWING BY: JBM  
CHECKED BY: JJN  
DESIGNED BY: JBM

SHEET TITLE:  
**ELECTRICAL  
DETAILS – LIFT  
STATION 3**

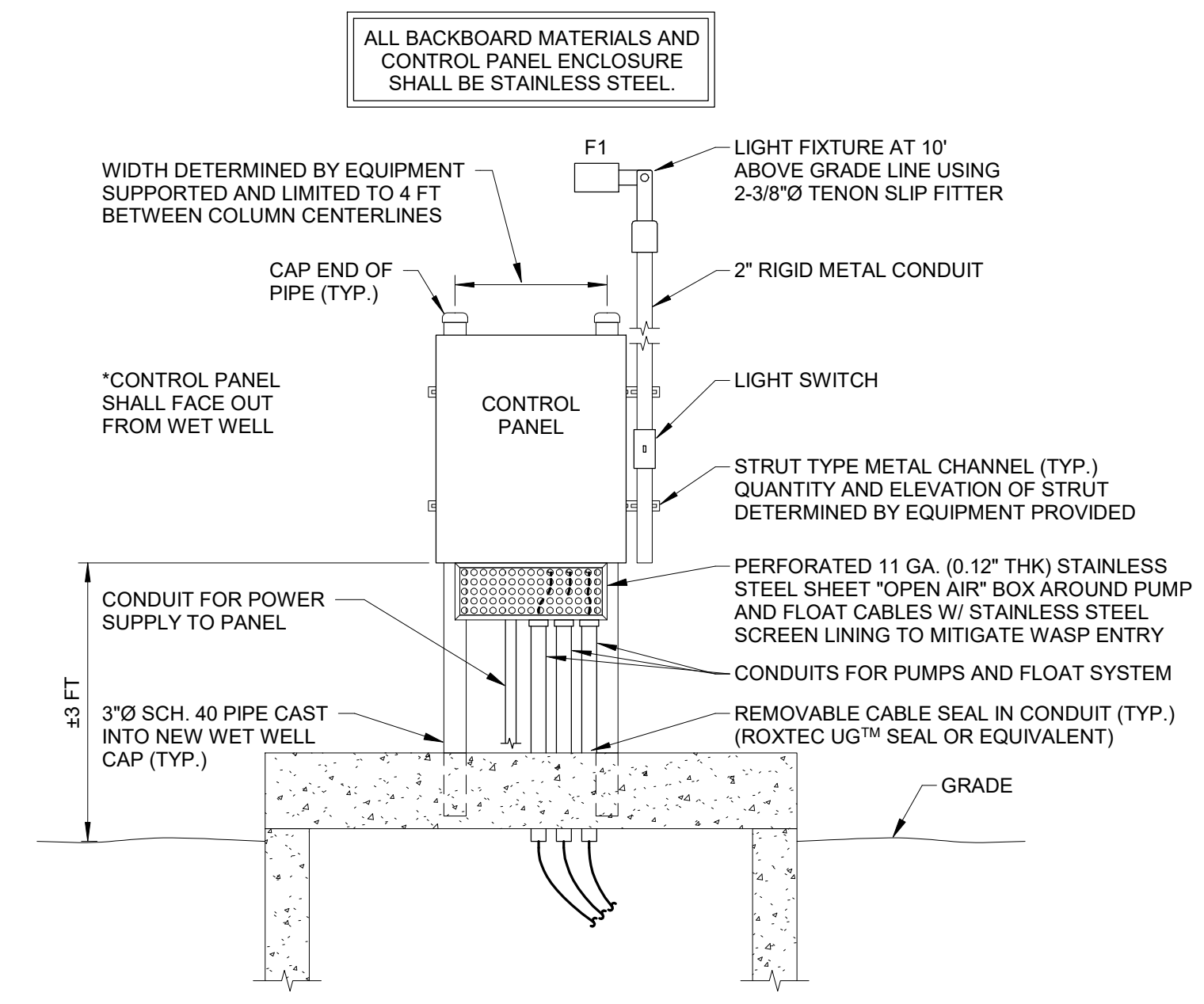
SHEET NUMBER:  
**E502**

11 OF 18 SHEETS  
February 12, 2024

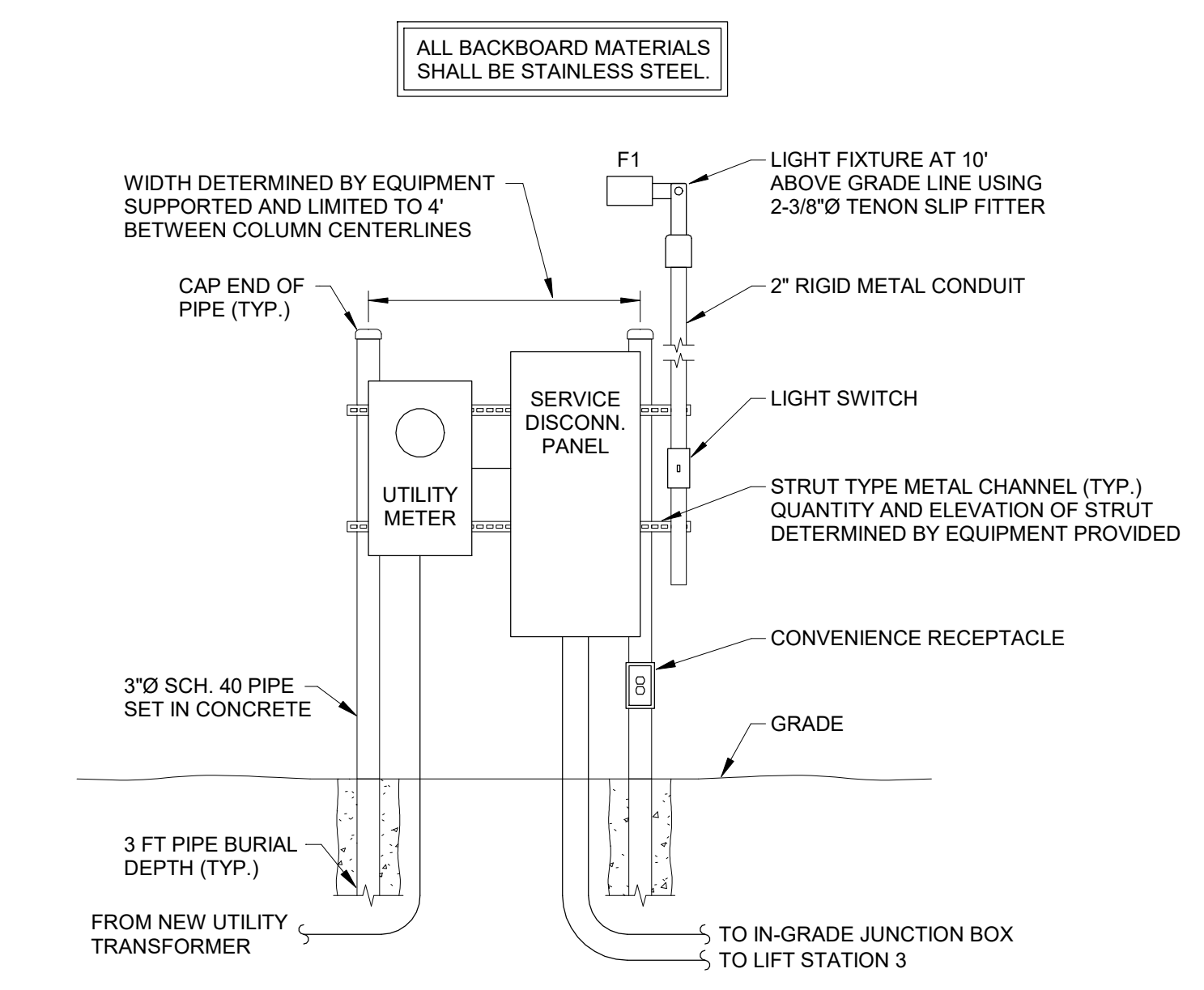
- NOTES:  
1. ELECTRICAL DEMOLITION:  
A. REMOVE EXISTING CONTROL PANEL AND SUPPORT STRUCTURE FROM EXISTING WET WELL.  
B. REMOVE EXISTING UTILITY METER, SERVICE DISCONNECT, AND WOODEN POST AT LIFT STATION.  
C. REMOVE EXISTING CONDUCTORS FROM LIFT STATION BACK TO EXISTING UTILITY TRANSFORMER POLE.  
D. CAP AND ABANDON EXISTING CONDUIT FROM LIFT STATION BACK TO EXISTING UTILITY TRANSFORMER POLE.  
E. REMOVE EXISTING UTILITY METER ON EXTERIOR WALL OF BEACH CHANGE HOUSE.  
2. UNDERGROUND FEEDER ROUTING SHOWN IN THE PLANS IS APPROXIMATE. FIELD VERIFY LOCATION OF EXISTING UNDERGROUND FEEDER TO EXISTING BEACH CHANGE HOUSE. NEW ELECTRICAL SERVICE BACKBOARD SHALL BE IN LINE WITH THE EXISTING FEEDER AND SHALL BE SET IN A LOCATION THAT MINIMIZES OBSTRUCTION TO MOWERS, MAINTENANCE VEHICLES, ETC.



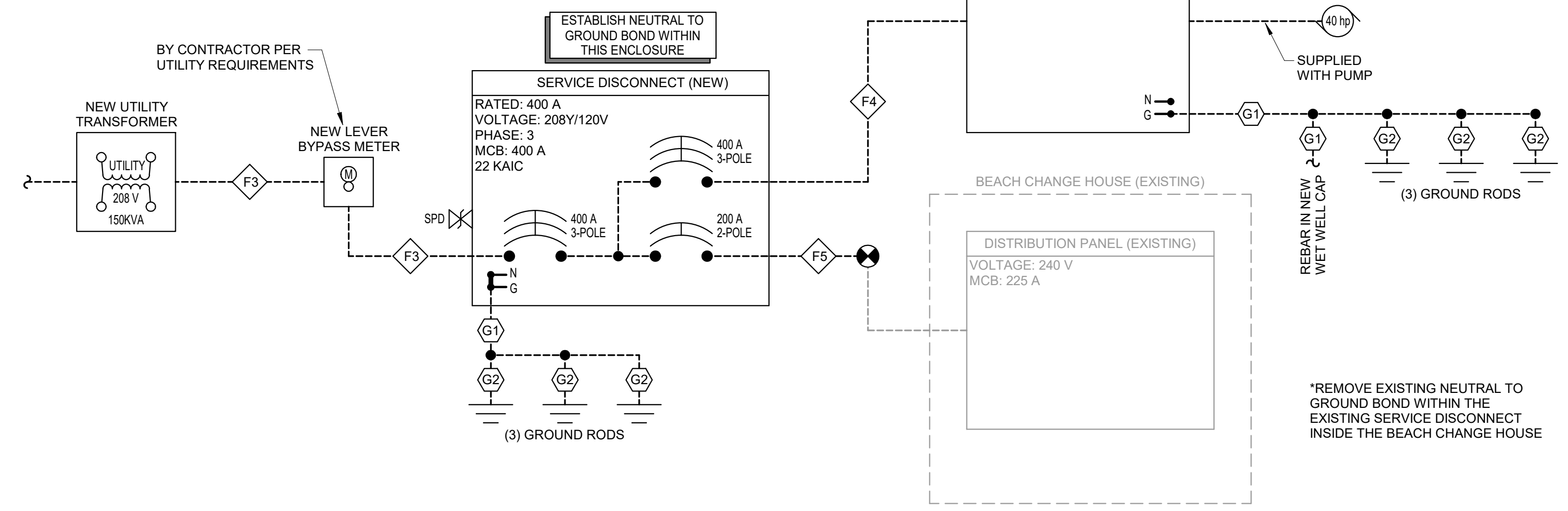
1 ELECTRICAL SITE PLAN - LIFT STATION 3 (BEACH)  
1" = 20'-0"



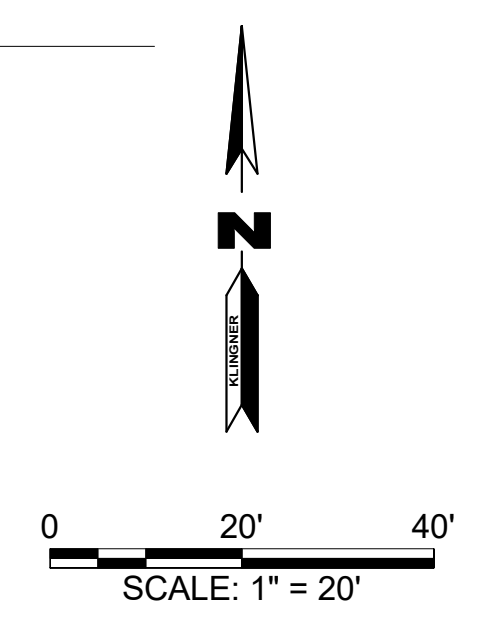
2 PUMP CONTROL PANEL ELEVATION - LIFT STATION 3 (BEACH)  
NTS



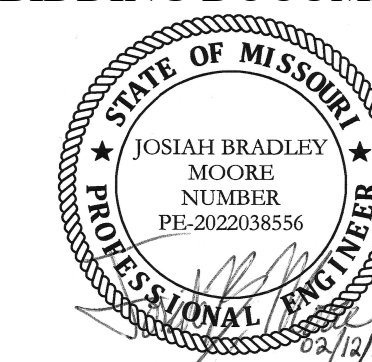
3 ELECTRICAL SERVICE BACKBOARD ELEVATION - LS 3 (BEACH)  
NTS



4 POWER ONE-LINE DIAGRAM - LIFT STATION 3 (BEACH)  
NTS







JOSIAH B. MOORE - ENGINEER  
MO # PE-2022038556

**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors

www.klinger.com  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peoria, IA, Hannibal, MO  
573.365.5988

KLINGNER & ASSOCIATES, P.C. - ENGINEERING  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

SEWAGE LIFT STATIONS

THOUSAND HILLS STATE  
PARK, 20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 7815114035

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02/12/2024

CAD DWG FILE: E503  
DRAWING BY: JBM  
CHECKED BY: JJN  
DESIGNED BY: JBM

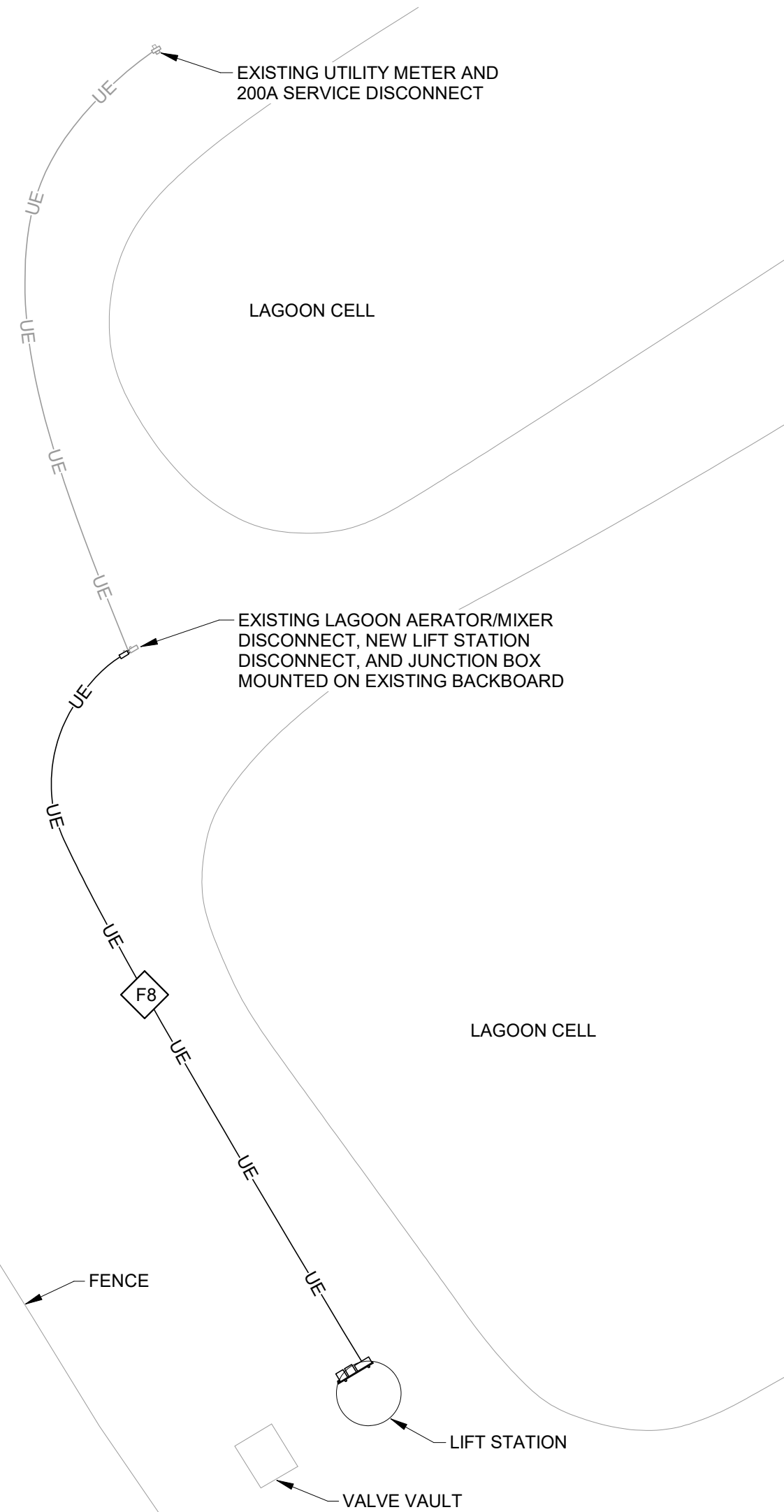
SHEET TITLE:  
**ELECTRICAL  
DETAILS - LIFT  
STATIONS 5 & 6**

SHEET NUMBER:

**E503**

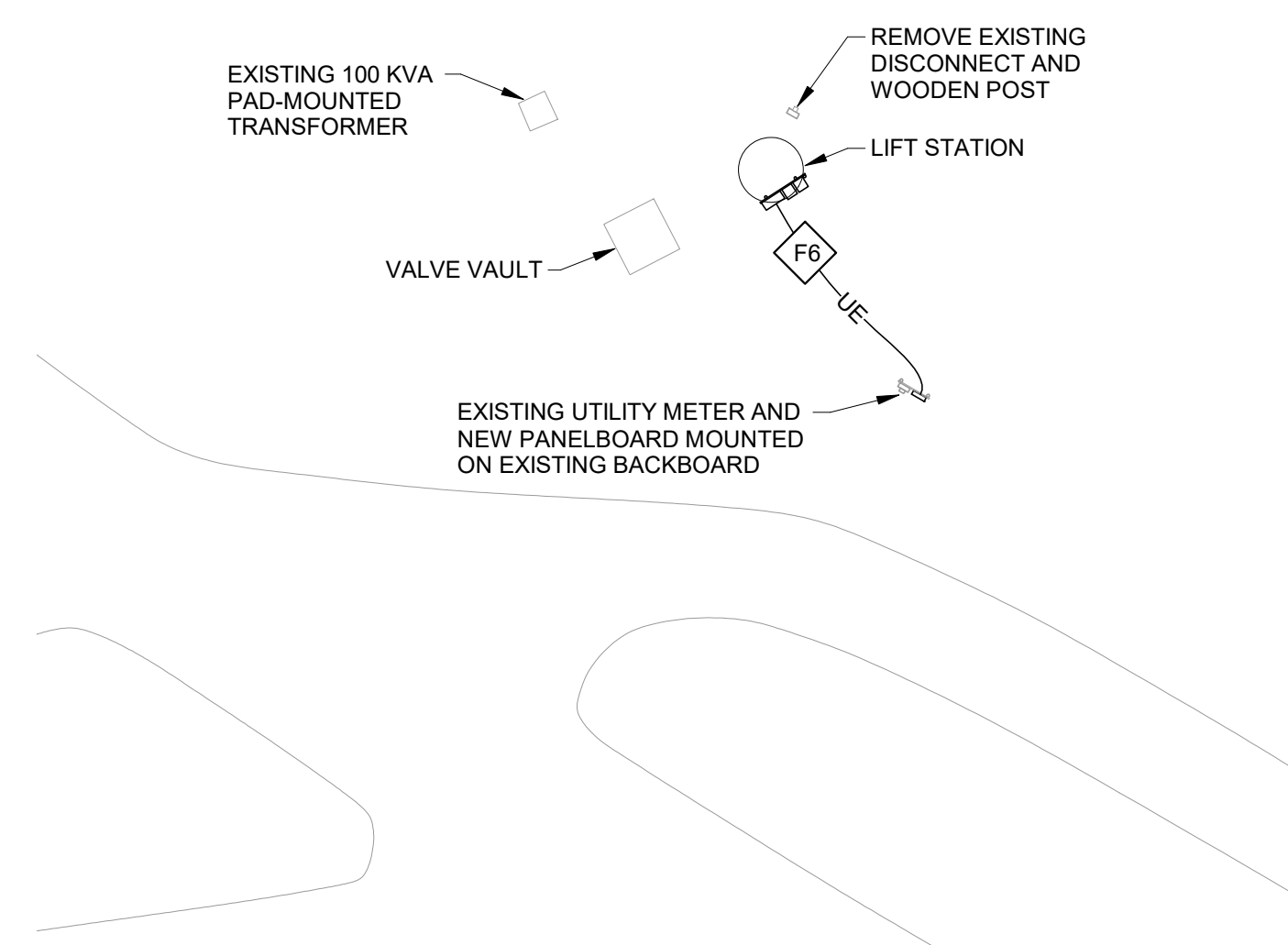
12 OF 18 SHEETS  
February 12, 2024

- NOTES:  
1. ELECTRICAL DEMOLITION:  
A. REMOVE EXISTING CONTROL PANEL AND SUPPORT STRUCTURE FROM EXISTING WET WELL.  
B. REMOVE EXISTING CONDUCTORS FROM LIFT STATION BACK TO EXISTING LIFT STATION DISCONNECT.  
C. REMOVE EXISTING LIFT STATION DISCONNECT (MOUNTED ON BACKBOARD BETWEEN LAGOON CELLS).  
D. CAP AND ABANDON EXISTING CONDUIT BETWEEN LIFT STATION AND LIFT STATION DISCONNECT.

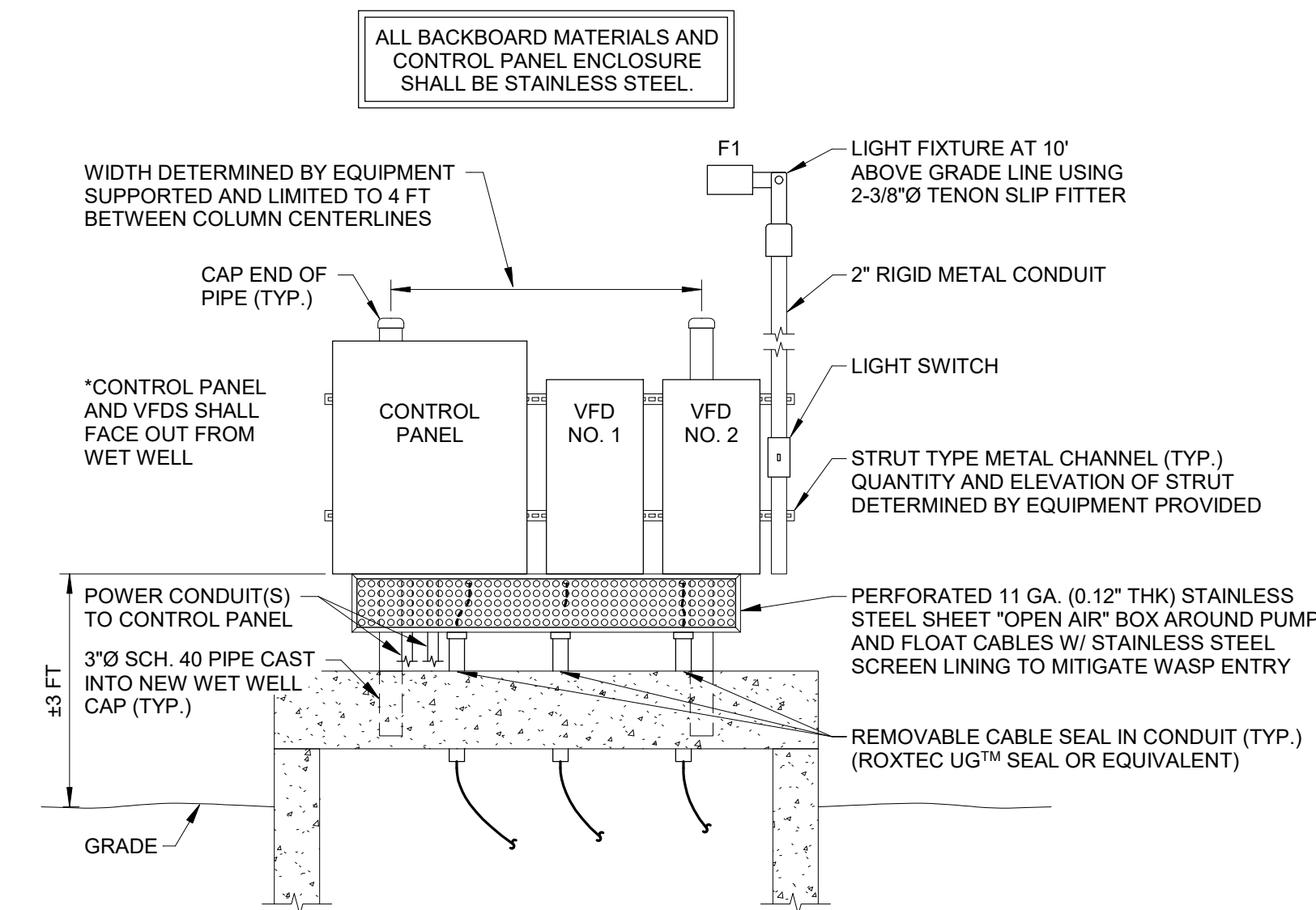


1 ELECTRICAL SITE PLAN - LIFT STATION 6 (LAGOON)  
1" = 20'-0"

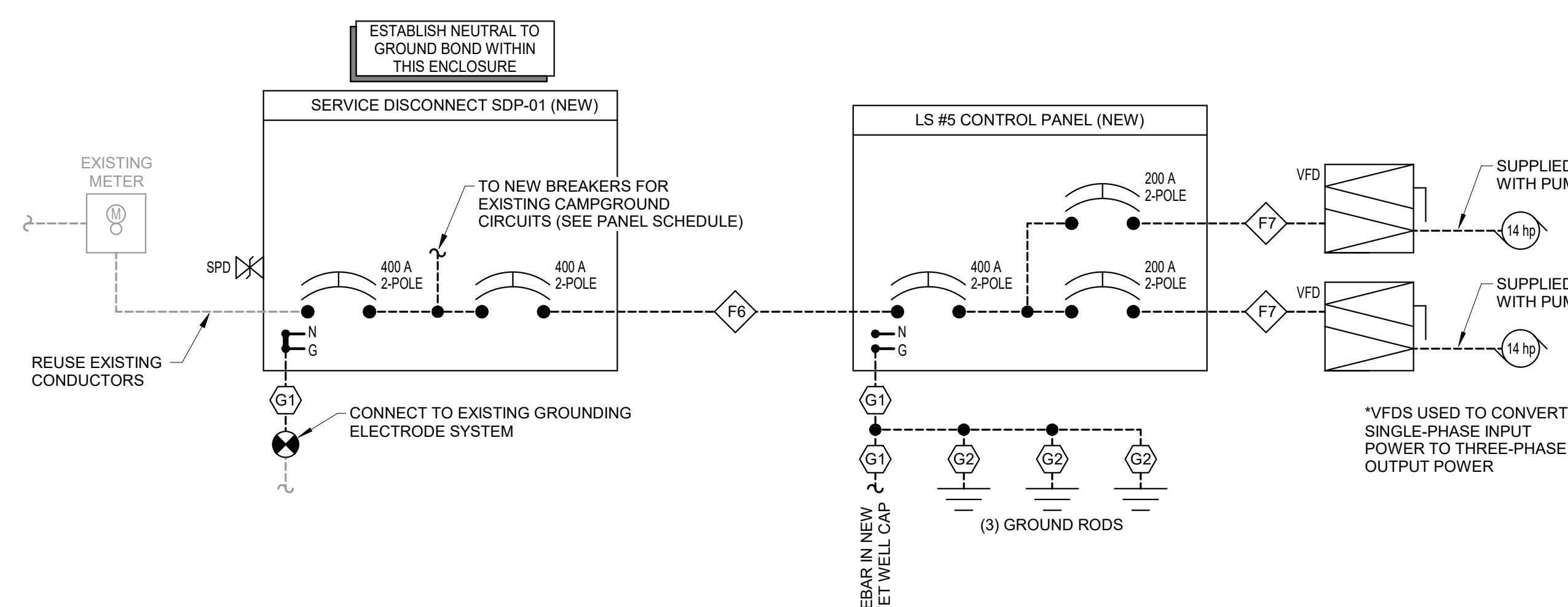
- NOTES:  
1. ELECTRICAL DEMOLITION:  
A. REMOVE EXISTING CONTROL PANEL AND SUPPORT STRUCTURE FROM EXISTING WET WELL.  
B. REMOVE EXISTING LIFT STATION DISCONNECT AND WOODEN POST ADJACENT TO (N/E) LIFT STATION.  
C. REMOVE EXISTING CONDUCTORS AND CONDUIT FROM LIFT STATION BACK TO EXISTING DISTRIBUTION PANELBOARD (SERVICE DISCONNECT) AT EXISTING BACKBOARD.  
D. REMOVE EXISTING DISTRIBUTION PANELBOARD (SERVICE DISCONNECT) FROM EXISTING BACKBOARD.  
2. REUSE EXISTING UTILITY METER ON EXISTING BACKBOARD.



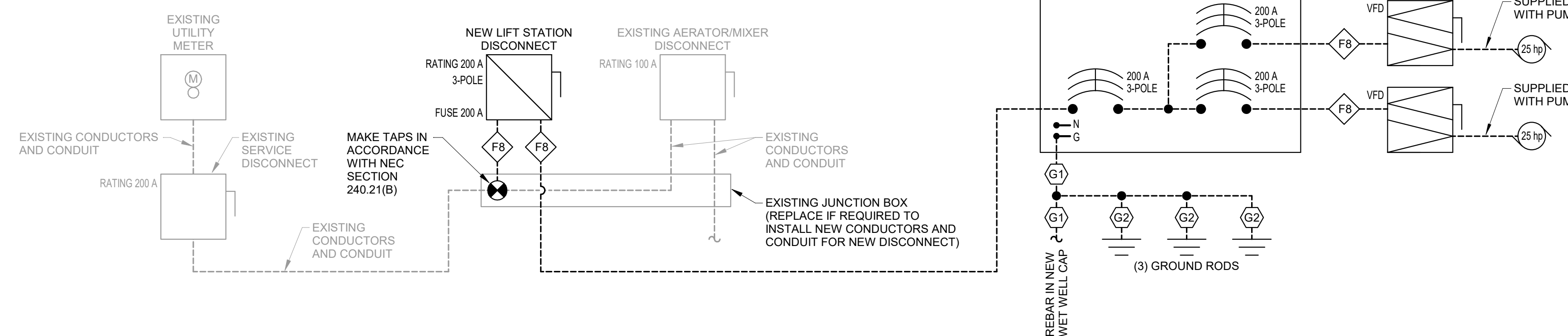
2 ELECTRICAL SITE PLAN - LIFT STATION 5 (CAMPSITE 1)  
1" = 20'-0"



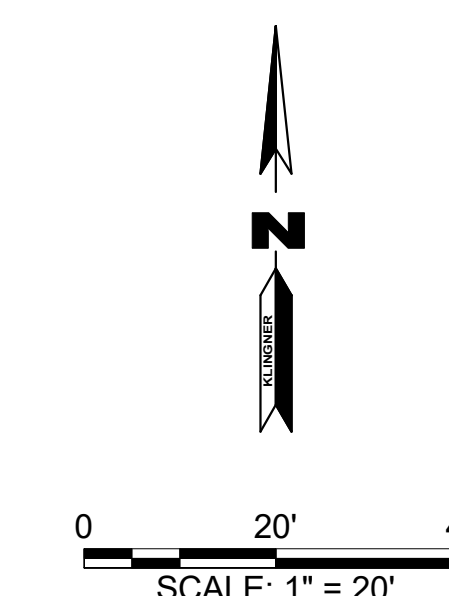
3 PUMP CONTROL PANEL ELEVATION - LIFT STATIONS 5 & 6 (CAMPSITE 1 & LAGOON)  
NTS



4 POWER ONE-LINE DIAGRAM - LIFT STATION 5 (CAMPSITE 1)  
NTS



5 POWER ONE-LINE DIAGRAM - LIFT STATION 6 (LAGOON)  
NTS







JOSIAH B. MOORE - ENGINEER  
MO # PE-2022038556

BRANCH PANEL: SDP-01											
LOCATION: LIFT STATION #5 AREA				VOLTS: 120/240			A.I.C. RATING: 65,000 AMPS SYMMETRICAL				
SUPPLY FROM: UTILITY METER				PHASES: 1			PANEL TYPE: MAIN CB				
MOUNTING: SURFACE				WIRES: 3			MAINS RATING: 400 A				
ENCLOSURE: SEE PROJECT MANUAL				ACCESSORIES:			MAIN BREAKER: 400 A				
CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	LIFT STATION #5	400 A	2	18823 VA	3456 VA	18823 VA	3456 VA	2	100 A	CAMPGROUND FEEDER	2
3											4
5	CAMPGROUND FEEDER	100 A	2	3456 VA	3456 VA	3456 VA	3456 VA	2	100 A	CAMPGROUND FEEDER	6
7											8
9	CAMPGROUND FEEDER	100 A	2	3456 VA	3456 VA	3456 VA	3456 VA	2	100 A	CAMPGROUND FEEDER	10
11											12
13											14
15											16
17											18
19											20
21											22
23											24
PHASE LOAD:				36,103 VA		36,103 VA		**TOTAL LOAD: 72,206 VA			
PHASE AMPS:				301 A		301 A		**TOTAL AMPS: 301 A			

\* LIFT STATION #5 BREAKER MAY BE SUB-FEED BREAKER IF REQUIRED.  
\*\* COORDINATE CIRCUIT DESCRIPTION FOR CAMPGROUND FEEDER CIRCUITS INSIDE THE PANEL DOOR WITH THE OWNER.

FEEDER SCHEDULE (THOUSAND HILLS)						
FEEDER TAG	PARALLEL SETS	PHASE CONDUCTORS QUANTITY	SIZE	NEUTRAL SIZE	EGC SIZE	CONDUIT SIZE
F1	1	2	#3 AWG Cu	#3 AWG Cu	#8 AWG Cu	1.25"
F2	1	3	#3 AWG Cu	#3 AWG Cu	#8 AWG Cu	1.25"
F3	2	3	3/0 AWG Cu	3/0 AWG Cu	N/A	2"
F4	2	3	3/0 AWG Cu	3/0 AWG Cu	#3 AWG Cu	2"
F5	1	2	3/0 AWG Cu	3/0 AWG Cu	#6 AWG Cu	2"
F6	2	2	3/0 AWG Cu	3/0 AWG Cu	#3 AWG Cu	2"
F7	1	2	3/0 AWG Cu	N/A	#6 AWG Cu	2"
F8	1	3	3/0 AWG Cu	N/A	#6 AWG Cu	2"

GEC SCHEDULE	
GEC TAG	GEC SIZE
G1	#4 AWG Cu
G2	#6 AWG Cu

LIGHTING FIXTURE SCHEDULE													
TAG	DESCRIPTION	MOUNT	LENS	LAMP		OUTPUT	DRIVER CONTROL	VOLT	LOAD (W)	BASIS OF DESIGN			REMARKS
				TYPE	COLOR TEMP.					MAKE	MODEL	ACCESSORIES	
F1	EXTERIOR FLOOD LIGHT	TENON SLIP-FITTER	GLASS, IP66	LED	3,000 K	12,054	INTEGRAL PHOTOCELL	120	93	LITHONIA	DSXF2-LED-P3-30K-70CRI-WFL-MVOLT-IS-PE-DDBXD	SLIPFITTER FOR 2-3/8" O.D. TENON	SEE DRAWINGS FOR INSTALLATION DETAILS.
									85	LUMARK	NFFLD-C25-E-UNV-66-S-CB-PER		
											ENGINEER-APPROVED EQUAL		

**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA 50888  
www.klinger.com  
Quincy, IL  
Galveston, TX  
Hammond, MO

KLINGNER & ASSOCIATES, P.C. - ENGINEERING  
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

SEWAGE LIFT STATIONS

THOUSAND HILLS STATE  
PARK, 20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 7815114035

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02/12/2024

CAD DWG FILE: E701  
DRAWING BY: JBM  
CHECKED BY: JJJ  
DESIGNED BY: JBM

SHEET TITLE:

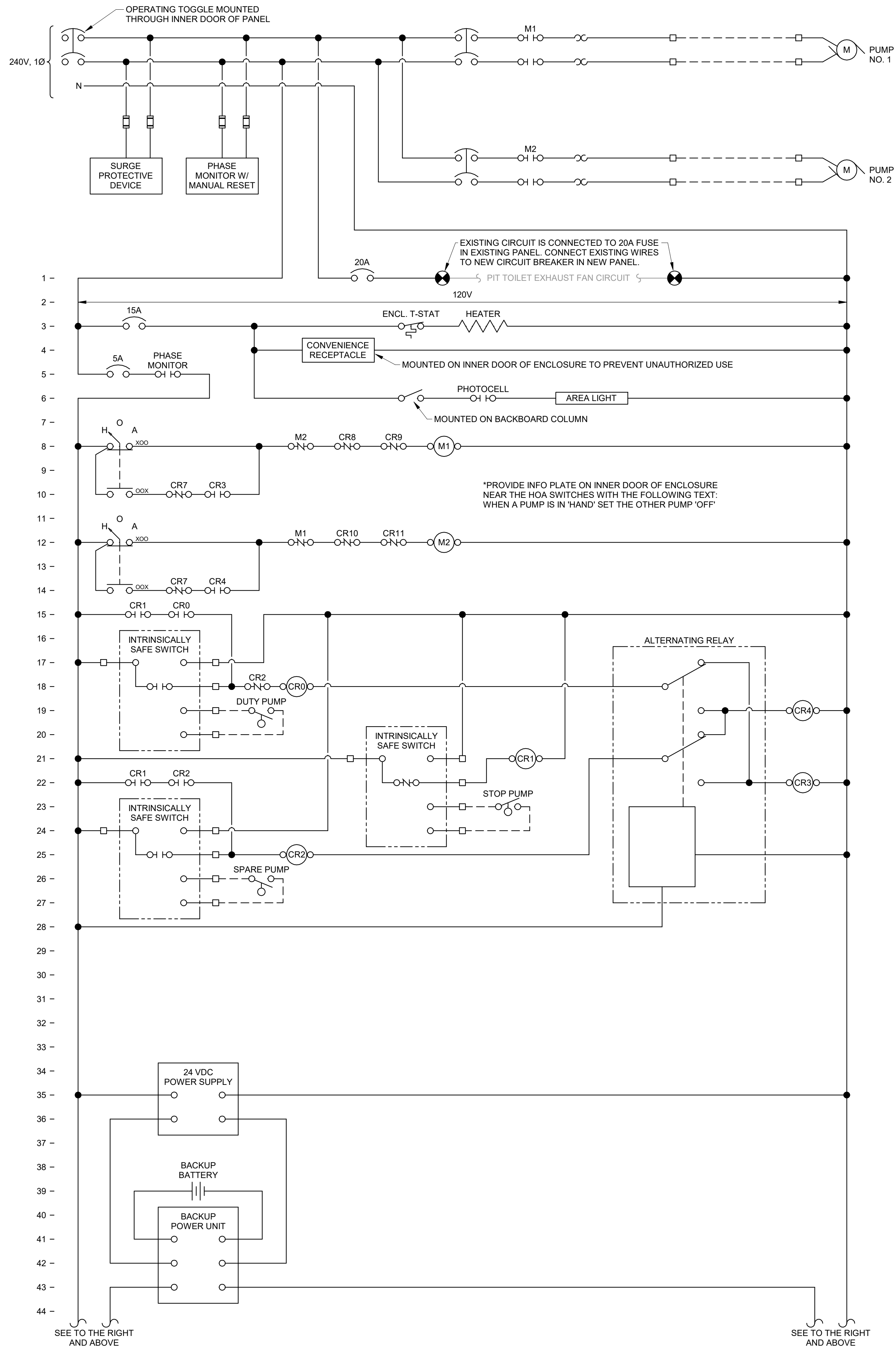
**ELECTRICAL  
SCHEDULES**

SHEET NUMBER:

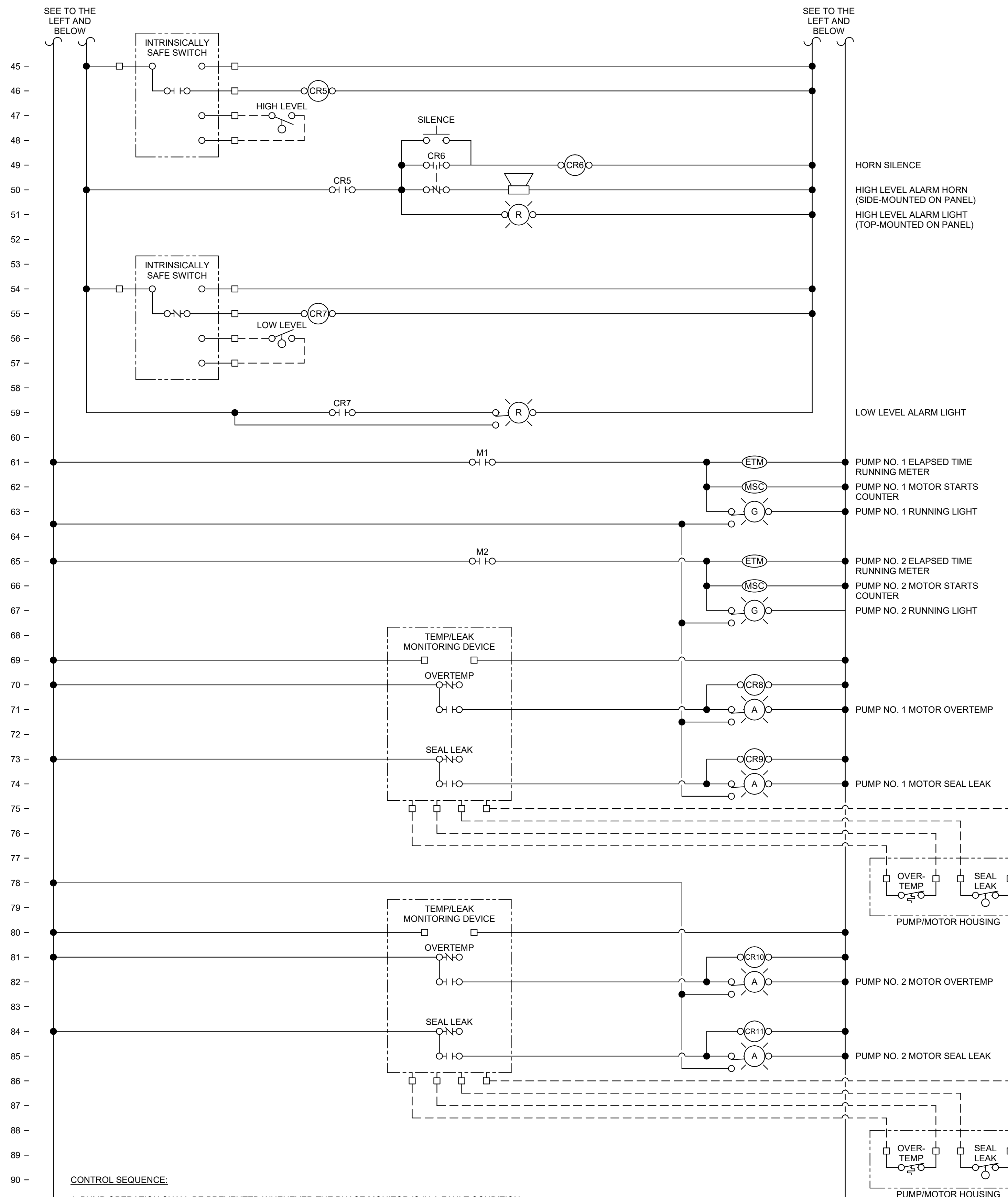
**E701**

13 OF 18 SHEETS  
February 12, 2024





1 PUMP CONTROL DIAGRAM - LIFT STATION 1 (POINT)  
NTS



- CONTROL SEQUENCE:**
- PUMP OPERATION SHALL BE PREVENTED WHENEVER THE PHASE MONITOR IS IN A FAULT CONDITION.
  - PUMP OPERATION SHALL BE PREVENTED WHENEVER THE WATER LEVEL IS BELOW THE LOW LEVEL FLOAT ELEVATION.
  - THE CONTROL SCHEME IS A DUTY + SPARE CONFIGURATION. THE PUMPS SHALL NOT OPERATE SIMULTANEOUSLY.
  - EACH PUMP SHALL HAVE A DEDICATED HAND-OFF-AUTO (HOA) SWITCH.
  - WHEN OFF IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL BE OFF.
  - WHEN MANUAL (HAND) IS SELECTED ON ONE OF THE HOA SWITCHES, THE OPERATOR SHALL SELECT OFF ON THE OTHER HOA SWITCH AND THE PUMP ASSOCIATED WITH THE SWITCH IN MANUAL SHALL RUN. IF THE OTHER SWITCH IS NOT SET TO OFF, A SCENARIO MAY OCCUR IN WHICH NEITHER PUMP RUNS.
  - WHEN AUTO IS SELECTED ON BOTH HOA SWITCHES, THE PUMPS SHALL OPERATE AUTOMATICALLY ACCORDING TO THE WET WELL FLOAT ELEVATIONS:
    - THE WET WELL SHALL HAVE (5) FLOATS: LOW LEVEL, STOP PUMP, DUTY PUMP, SPARE PUMP, AND HIGH LEVEL. FLOAT ELEVATIONS SHALL BE FINALIZED DURING CONSTRUCTION WITH OWNER INPUT.
    - WHEN THE LIQUID LEVEL IN THE WET WELL SURPASSES THE STOP PUMP AND DUTY PUMP LEVELS, THE DUTY PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMP LEVEL.
    - IF THE DUTY PUMP FAILS OR DOES NOT OPERATE AT DESIGN CAPACITY AND THE LIQUID LEVEL IN THE WET WELL SURPASSES THE SPARE PUMP LEVEL, THE DUTY PUMP SHALL TURN OFF AND THE SPARE PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMP LEVEL.
  - THE CONTROL PANEL SHALL ALTERNATE THE DUTY AND SPARE PUMPS UPON COMPLETION OF EACH PUMPING CYCLE.

STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR

BIDDING DOCUMENTS



JOSIAH B. MOORE - ENGINEER  
MO # PE-2022038556

**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA 50805  
www.klinger.com  
Quincy, IL  
Galesburg, IL  
Hannibal, MO  
573.365.5988

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

SEWAGE LIFT STATIONS

THOUSAND HILLS STATE  
PARK, 20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 7815114035

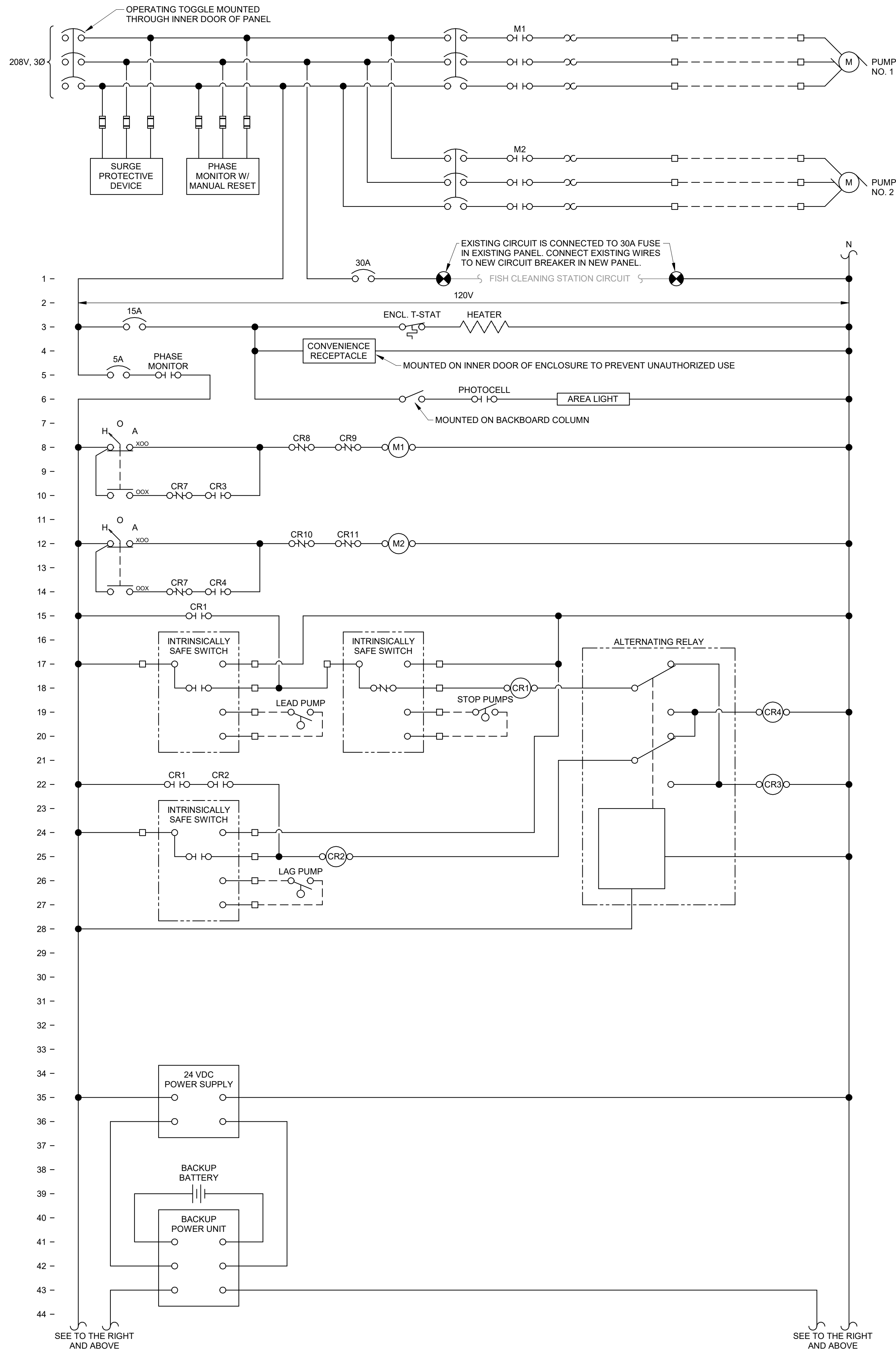
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02/12/2024

CAD DWG FILE: E801  
DRAWING BY: JBM  
CHECKED BY: JJN  
DESIGNED BY: JBM

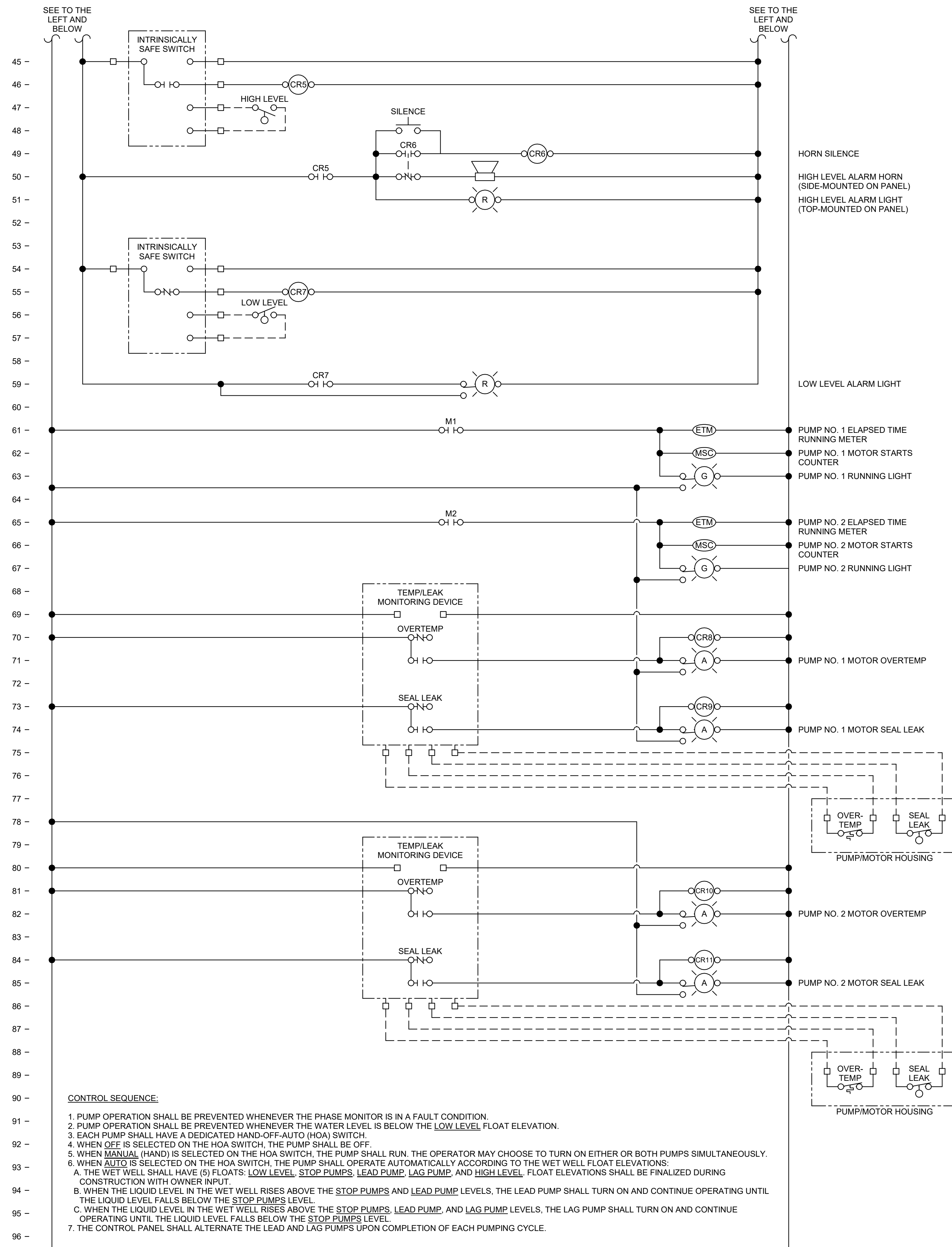
SHEET TITLE:  
**CTRL DIAGRAM -  
LIFT STATION 1**

SHEET NUMBER:  
**E801**  
14 OF 18 SHEETS  
February 12, 2024





1 PUMP CONTROL DIAGRAM - LIFT STATION 2 (MARINA)  
NTS



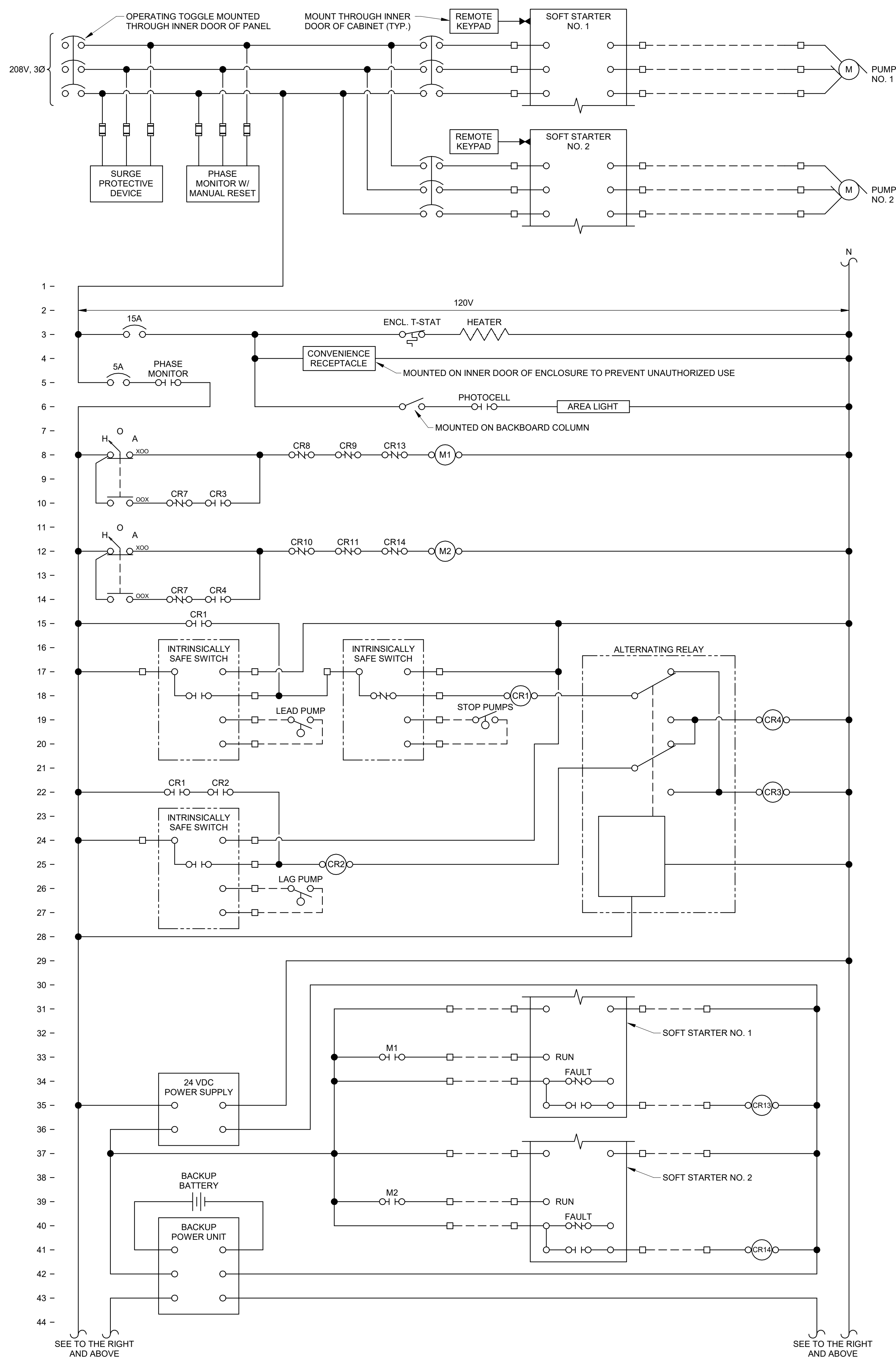
**CONTROL SEQUENCE:**

- PUMP OPERATION SHALL BE PREVENTED WHENEVER THE PHASE MONITOR IS IN A FAULT CONDITION.
- PUMP OPERATION SHALL BE PREVENTED WHENEVER THE WATER LEVEL IS BELOW THE LOW LEVEL FLOAT ELEVATION.
- EACH PUMP SHALL HAVE A DEDICATED HAND-OFF-AUTO (HOA) SWITCH.
- WHEN OFF IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL BE OFF.
- WHEN MANUAL (HAND) IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL RUN. THE OPERATOR MAY CHOOSE TO TURN ON EITHER OR BOTH PUMPS SIMULTANEOUSLY.
- WHEN AUTO IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL OPERATE AUTOMATICALLY ACCORDING TO THE WET WELL FLOAT ELEVATIONS:
  - THE WET WELL SHALL HAVE (5) FLOATS: LOW LEVEL, STOP PUMPS, LEAD PUMP, LAG PUMP, AND HIGH LEVEL. FLOAT ELEVATIONS SHALL BE FINALIZED DURING CONSTRUCTION WITH OWNER INPUT.
  - WHEN THE LIQUID LEVEL IN THE WET WELL RISES ABOVE THE STOP PUMPS AND LEAD PUMP LEVELS, THE LEAD PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMPS LEVEL.
  - WHEN THE LIQUID LEVEL IN THE WET WELL RISES ABOVE THE STOP PUMPS, LEAD PUMP, AND LAG PUMP LEVELS, THE LAG PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMPS LEVEL.
- THE CONTROL PANEL SHALL ALTERNATE THE LEAD AND LAG PUMPS UPON COMPLETION OF EACH PUMPING CYCLE.

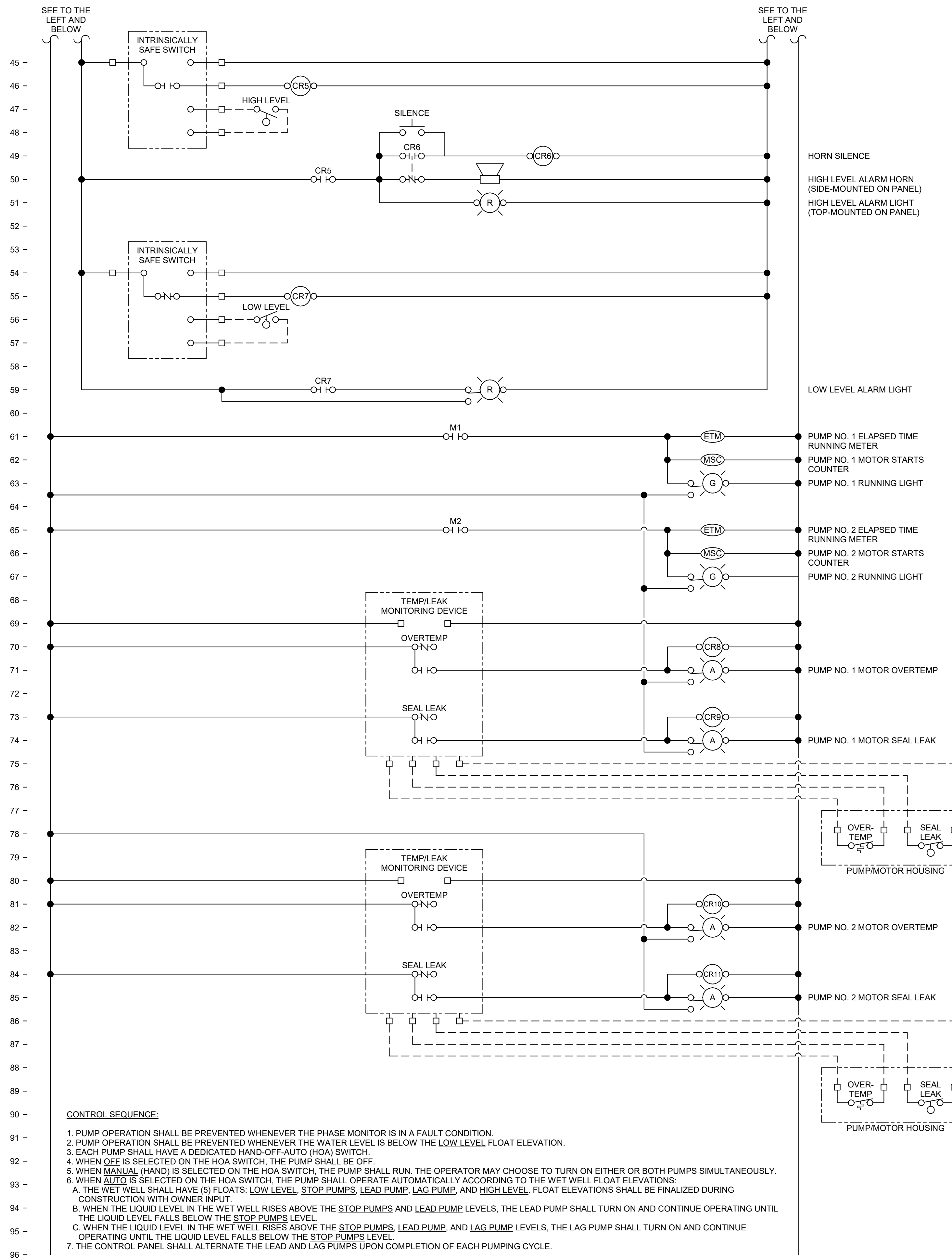


**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peoria, IA, Hannibal, MO  
www.klinger.com  
573.955.5988



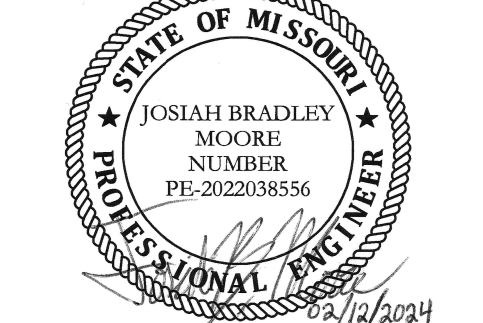


1 PUMP CONTROL DIAGRAM - LIFT STATION 3 (BEACH)  
NTS



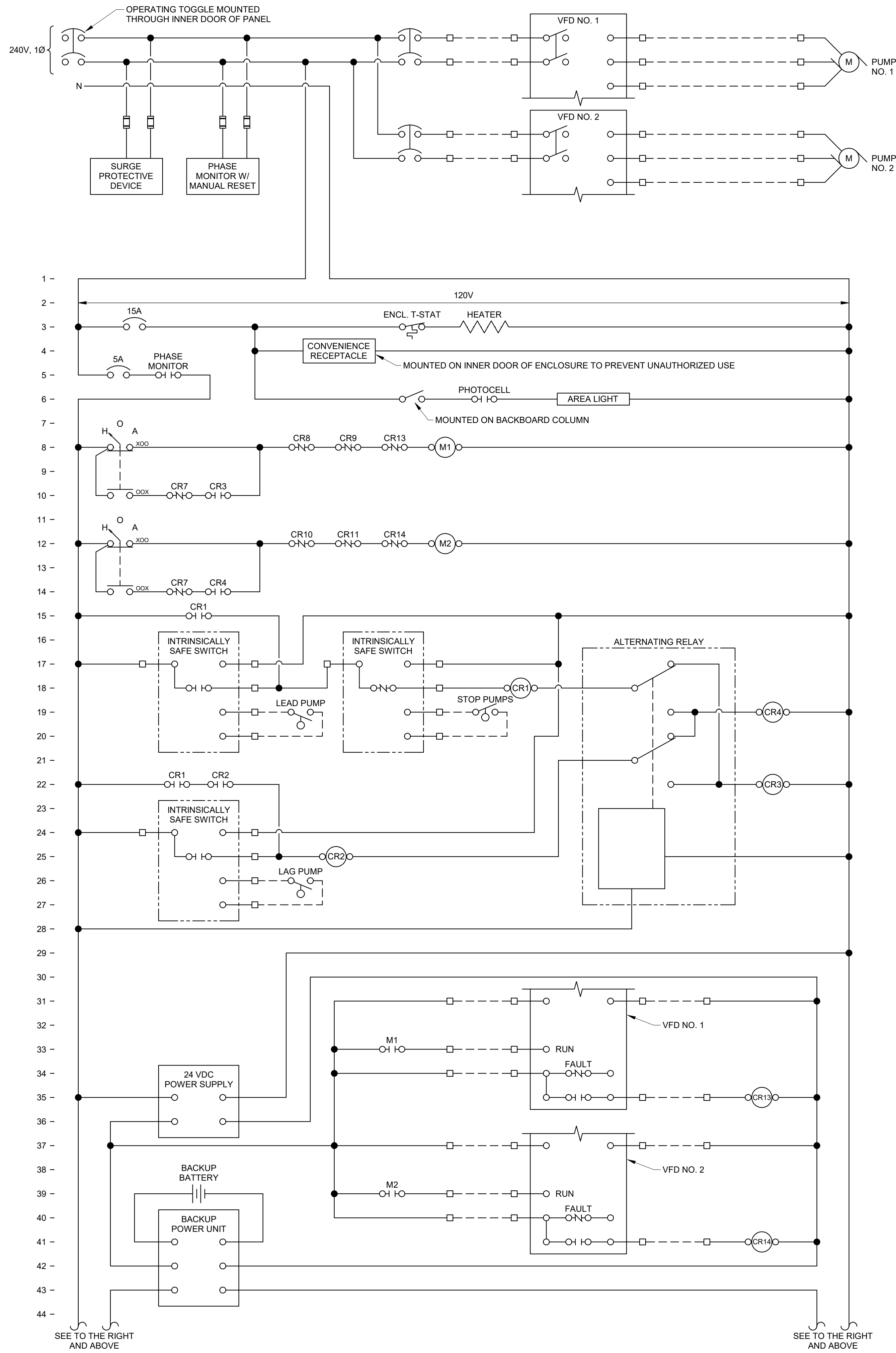
**CONTROL SEQUENCE:**

1. PUMP OPERATION SHALL BE PREVENTED WHENEVER THE PHASE MONITOR IS IN A FAULT CONDITION.
2. PUMP OPERATION SHALL BE PREVENTED WHENEVER THE WATER LEVEL IS BELOW THE LOW LEVEL FLOAT ELEVATION.
3. EACH PUMP SHALL HAVE A DEDICATED HAND-OFF-AUTO (HOA) SWITCH.
4. WHEN OFF IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL BE OFF.
5. WHEN MANUAL (HAND) IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL RUN. THE OPERATOR MAY CHOOSE TO TURN ON EITHER OR BOTH PUMPS SIMULTANEOUSLY.
6. WHEN AUTO IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL OPERATE AUTOMATICALLY ACCORDING TO THE WET WELL FLOAT ELEVATIONS:
  - A. THE WET WELL SHALL HAVE (5) FLOATS: LOW LEVEL, STOP PUMPS, LEAD PUMP, LAG PUMP, AND HIGH LEVEL. FLOAT ELEVATIONS SHALL BE FINALIZED DURING CONSTRUCTION WITH OWNER INPUT.
  - B. WHEN THE LIQUID LEVEL IN THE WET WELL RISES ABOVE THE STOP PUMPS AND LEAD PUMP LEVELS, THE LEAD PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMPS LEVEL.
  - C. WHEN THE LIQUID LEVEL IN THE WET WELL RISES ABOVE THE STOP PUMPS, LEAD PUMP, AND LAG PUMP LEVELS, THE LAG PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMPS LEVEL.
7. THE CONTROL PANEL SHALL ALTERNATE THE LEAD AND LAG PUMPS UPON COMPLETION OF EACH PUMPING CYCLE.

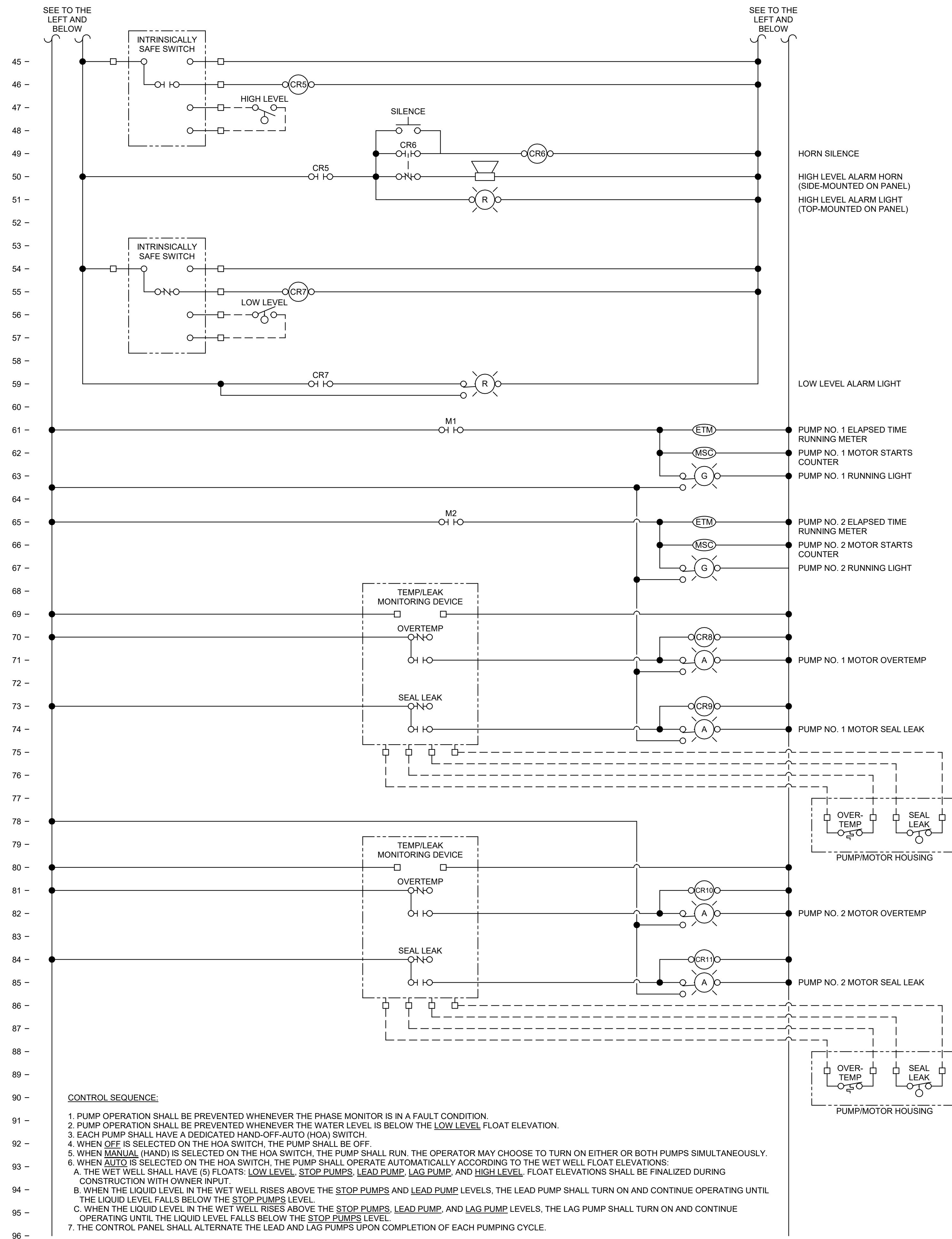


**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA 50848, MO  
www.klinger.com  
573.365.5988





1 PUMP CONTROL DIAGRAM - LIFT STATION 5 (CAMPSITE 1)  
NTS



**CONTROL SEQUENCE:**

- PUMP OPERATION SHALL BE PREVENTED WHENEVER THE PHASE MONITOR IS IN A FAULT CONDITION.
- PUMP OPERATION SHALL BE PREVENTED WHENEVER THE WATER LEVEL IS BELOW THE LOW LEVEL FLOAT ELEVATION.
- EACH PUMP SHALL HAVE A DEDICATED HAND-OFF-AUTO (HOA) SWITCH.
- WHEN OFF IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL BE OFF.
- WHEN MANUAL (HAND) IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL RUN. THE OPERATOR MAY CHOOSE TO TURN ON EITHER OR BOTH PUMPS SIMULTANEOUSLY.
- WHEN AUTO IS SELECTED ON THE HOA SWITCH, THE PUMP SHALL OPERATE AUTOMATICALLY ACCORDING TO THE WET WELL FLOAT ELEVATIONS:
  - THE WET WELL SHALL HAVE (5) FLOATS: LOW LEVEL, STOP PUMPS, LEAD PUMP, LAG PUMP, AND HIGH LEVEL. FLOAT ELEVATIONS SHALL BE FINALIZED DURING CONSTRUCTION WITH OWNER INPUT.
  - WHEN THE LIQUID LEVEL IN THE WET WELL RISES ABOVE THE STOP PUMPS AND LEAD PUMP LEVELS, THE LEAD PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMPS LEVEL.
  - WHEN THE LIQUID LEVEL IN THE WET WELL RISES ABOVE THE STOP PUMPS, LEAD PUMP, AND LAG PUMP LEVELS, THE LAG PUMP SHALL TURN ON AND CONTINUE OPERATING UNTIL THE LIQUID LEVEL FALLS BELOW THE STOP PUMPS LEVEL.
- THE CONTROL PANEL SHALL ALTERNATE THE LEAD AND LAG PUMPS UPON COMPLETION OF EACH PUMPING CYCLE.

STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR

BIDDING DOCUMENTS



JOSIAH B. MOORE - ENGINEER  
MO # PE-2022038556

**KLINGNER & ASSOCIATES, P.C.**  
Engineers • Architects • Surveyors  
Columbia, Missouri  
907 East Ash Street  
Burlington, IA, Peoria, IA, Hannibal, MO  
www.klinger.com  
573.955.5988

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

SEWAGE LIFT STATIONS

THOUSAND HILLS STATE  
PARK, 20431 STATE HWY 157  
KIRKSVILLE, MO 63501-7069

PROJECT # X2302-03  
SITE # 5114  
ASSET # 7815114035

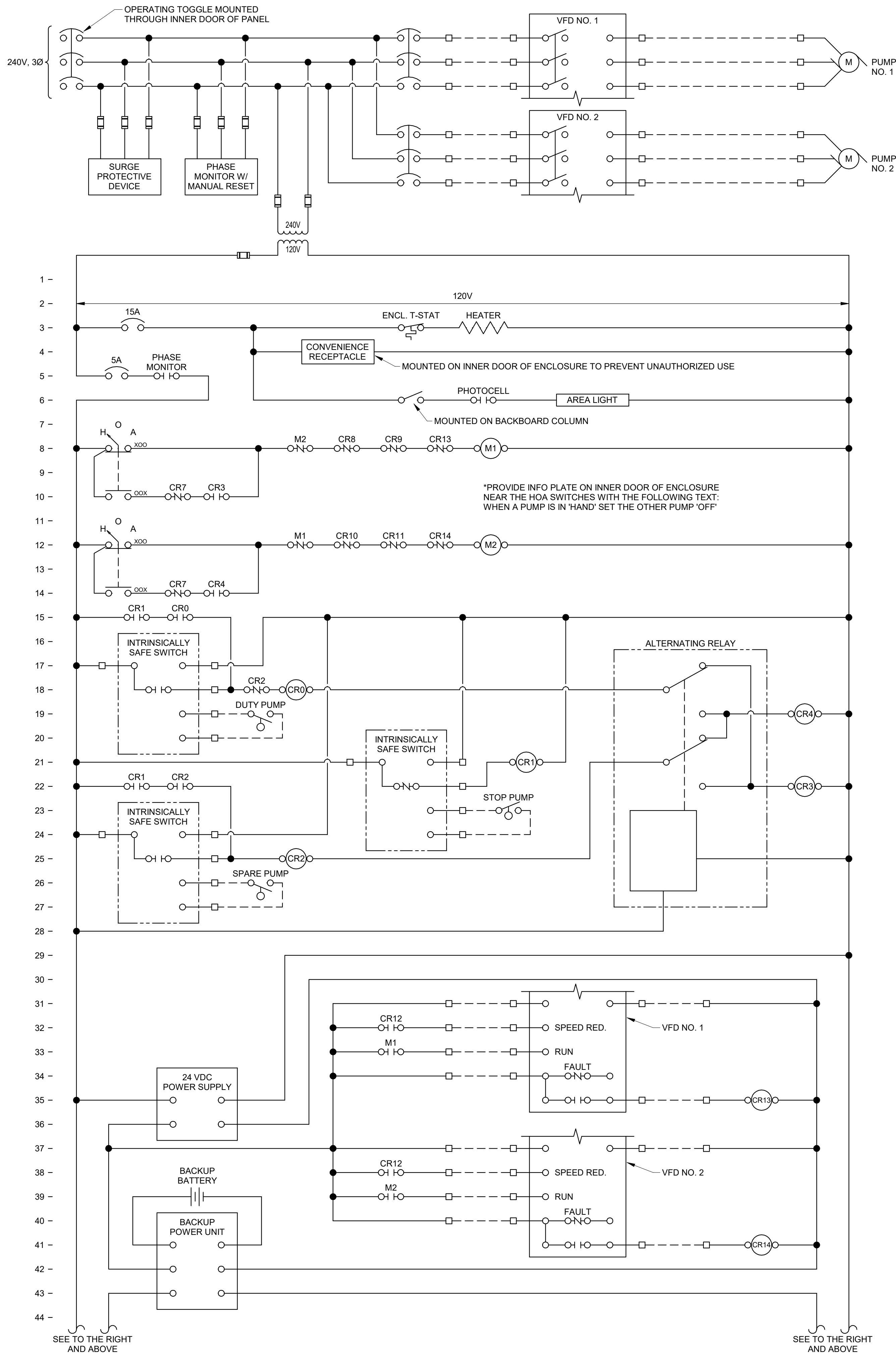
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 02/12/2024

CAD DWG FILE: E804  
DRAWING BY: JBM  
CHECKED BY: JJN  
DESIGNED BY: JBM

SHEET TITLE:  
**CTRL DIAGRAM -  
LIFT STATION 5**

SHEET NUMBER:  
**E804**  
17 OF 18 SHEETS  
February 12, 2024





1 PUMP CONTROL DIAGRAM - LIFT STATION 6 (LAGOON)  
NTS

