THE CITY OF FIRCREST

# CITY OF FIRCREST

## 44TH STREET AND 67TH AVENUE LIFT STATION UPGRADE PROJECT

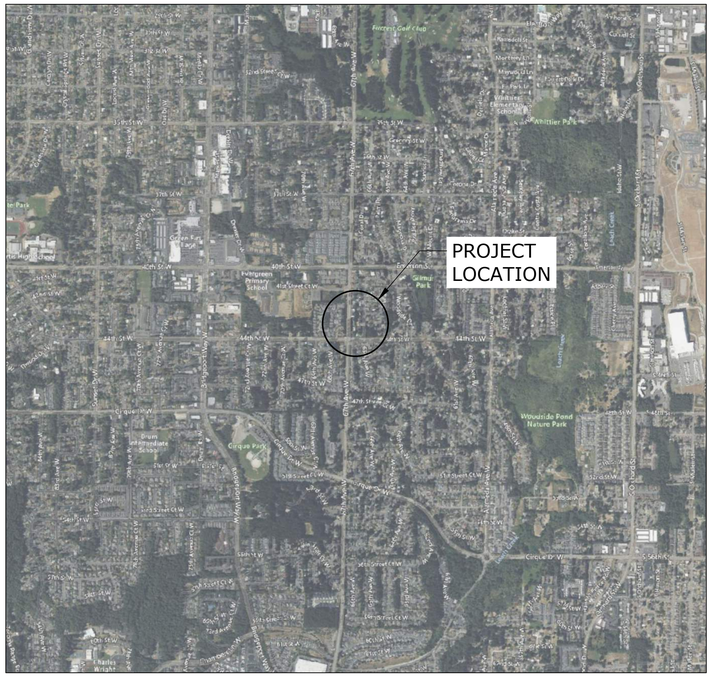
OCTOBER 2023

INDEX OF DRAWINGS

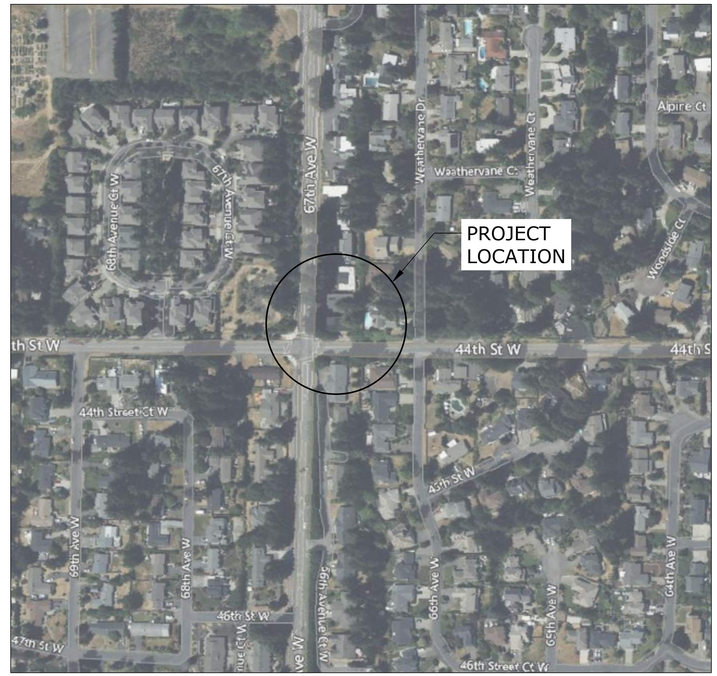


CITY OFFICIALS

| | |
|---|---|
| COUNCIL MEMBERS | BRETT WITTNER (MAYOR)<br>JOE BARRENTINE (MAYOR PRO TEMPORE)<br>HUNTER GEORGE<br>NIKKI BUFFORD<br>DAVID VIAFORE<br>SHANNON REYNOLDS<br>JIM ANDREWS |
| CITY MANAGER | DAWN MASKO |
| PUBLIC WORKS DIRECTOR | TYLER BEMIS |
| UTILITY FOREMAN | JEFF DAVIS |




VICINITY MAP
SCALE: 1"=1/4MI




LOCATION MAP
SCALE: 1"=200'

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# GENERAL NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF FIRCREST STANDARDS.

2. CITY OF FIRCREST DATUM SHALL BE USED FOR ALL VERTICAL CONTROL (NGVD 1929)

3. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE CITY OF FIRCREST PRIOR TO THE START OF CONSTRUCTION.

4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING UNDERGROUND LOCATE LINE AT 1-800-424-5555 A MINIMUM OF TWO (2) BUSINESS DAYS PRIOR TO ANY EXCAVATION.

5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE A COPY OF THESE APPROVED PLANS ON THE CONSTRUCTION SITE AT ALL TIMES.

6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK. ANY DISCREPANCIES OR CHANGES TO THE DESIGN SHALL FIRST BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER AND THE CITY OF FIRCREST.

7. ALL LINES SHALL BE CLEANED AND PRESSURE TESTED IN CONFORMANCE WITH THE SPECIFICATIONS PRIOR TO FINAL RESTORATION. A VACUUM TEST OF ALL MANHOLES SHALL ALSO BE REQUIRED.

8. PRIOR TO BACKFILL, ALL MAINS AND APPURTENANCES SHALL BE INSPECTED AND APPROVED BY THE CITY OF FIRCREST. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FOR CORRECTION OF ANY DEFICIENCIES AND/OR FAILURES AS DETERMINED BY SUBSEQUENT TESTING AND INSPECTIONS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE CITY OF FIRCREST FOR THE REQUIRED INSPECTIONS.

9. ALL SAFETY STANDARDS AND REQUIREMENTS SHALL COMPLY WITH OSHA, WISHA AND WASHINGTON STATE DEPARTMENT OF LABOR AND INDUSTRY.

10. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ANY DEBRIS IN MANHOLES AND MAINS ASSOCIATED WITH THE PROJECT AFTER THE LINES ARE CLEANED AS OUTLINED ABOVE

11. THE DISTANCES SHOWN ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS SHALL BE INTERPRETED TO REFER TO THE HORIZONTALLY PROJECTED PLANES UNLESS OTHERWISE INDICATED. LINEAL FOOTAGE OF PIPING SHOWN ON THE DRAWINGS REFERS TO THE HORIZONTAL LENGTHS.

12. EROSION CONTROL MEASURES SHALL BE TAKEN BY THE CONTRACTOR DURING CONSTRUCTION TO PREVENT SILT AND DEBRIS FROM ENTERING THE EXISTING STORM DRAINAGE FACILITIES AND WATERWAYS. EROSION CONTROL BEST MANAGEMENT PRACTICES SHALL BE IN COMPLIANCE WITH THESE PLANS AND THE CITY OF FIRCREST MUNICIPAL CODE.

13. CONTRACTOR TO RESTORE ALL LANDSCAPING, SIDEWALKS, CURBS, DRIVEWAYS, PAVEMENT AND OTHER FEATURES DAMAGED DURING CONSTRUCTION TO EQUAL OR BETTER CONDITION.

14. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS NECESSARY TO OBTAIN SUFFICIENT WATER, POWER AND LIGHTING FOR CONSTRUCTION PURPOSES.

15. RESTRAIN ALL DUCTILE IRON PIPING, MECHANICAL JOINT VALVES, TEES, BENDS, COUPLINGS AND FITTINGS AS NOTED ON PLANS.

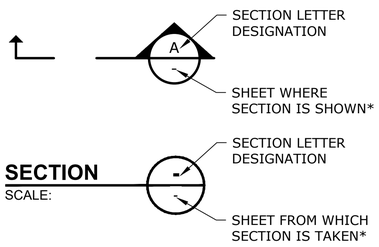
16. WORK IDENTIFIED ON THESE PLANS AND ASSOCIATED CONSTRUCTION DOCUMENTS INCLUDE WORK ON AN EXISTING PUBLIC SANITARY SEWER SYSTEM. THE EXISTING SANITARY SEWER SYSTEM AND COMPONENTS MUST REMAIN IN OPERATION AT ALL TIMES. SANITARY SEWER FLOW IS CONTINUOUS AND CANNOT BE TURNED OFF.

# ABBREVIATIONS:

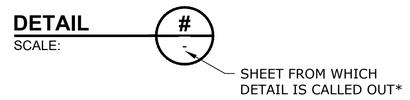
| | |
|---|---|
| AL | ALUMINUM |
| APPVD | APPROVED |
| BEP | BEST EFFICIENCY POINT |
| BOTT | BOTTOM |
| BOW | BOTTOM OF WALL |
| CL | CLASS |
| CONC | CONCRETE |
| CPLG | COUPLING |
| CR | CRUSHED ROCK |
| CSBC | CRUSHED SURFACING BASE COURSE |
| D | DRAIN |
| DEG | DEGREE |
| DIA | DIAMETER |
| DWG(S) | DRAWING(S) |
| E | EAST |
| EA | EACH |
| ECC | ECCENTRIC |
| EL/ELEV | ELEVATION |
| ELEC | ELECTRICAL |
| EQ | EQUAL |
| ESMT | EASEMENT |
| EW | EACH WAY |
| EXIST | EXISTING |
| FLG | FLANGE(D) |
| FM | FORCE MAIN |
| GSE | GROUND SURFACE ELEVATION |
| IE | INVERT ELEVATION |
| INFL | INFLUENT |
| LTF | LENGTH-TO-FIT |
| MAX | MAXIMUM |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MIN | MINIMUM |
| N | NORTH |
| NTS | NOT TO SCALE |
| PE | PLAIN END |
| PT | POINT |
| PVC | POLYVINYL CHLORIDE |
| REQD | REQUIRED |
| RFCA | RESTRAINED FLANGE COUPLING ADAPTER |
| S | SOUTH |
| SHT(S) | SHEET(S) |
| SLP | SLOPE |
| SS | SANITARY SEWER |
| SST | STAINLESS STEEL |
| S/W | SIDEWALK |
| TYP | TYPICAL |
| TOW | TOP OF WALL |
| W | WEST |
| W/ | WITH |

# SECTION AND DETAIL DESIGNATIONS

## SECTION DESIGNATIONS




## DETAIL DESIGNATIONS




* NOTE: IF PLAN AND SECTION FOR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON THE SAME DRAWINGS, DRAWING NUMBER IS REPLACED WITH A DASH.

| NO. | DATE | BY | REVISION |
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BRIAN M. CASEY — STATE OF WASHINGTON — 46632 — REGISTERED PROFESSIONAL ENGINEER
October 3, 2023

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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**GENERAL NOTES, ABBREVIATIONS & LEGEND**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET **G-2**

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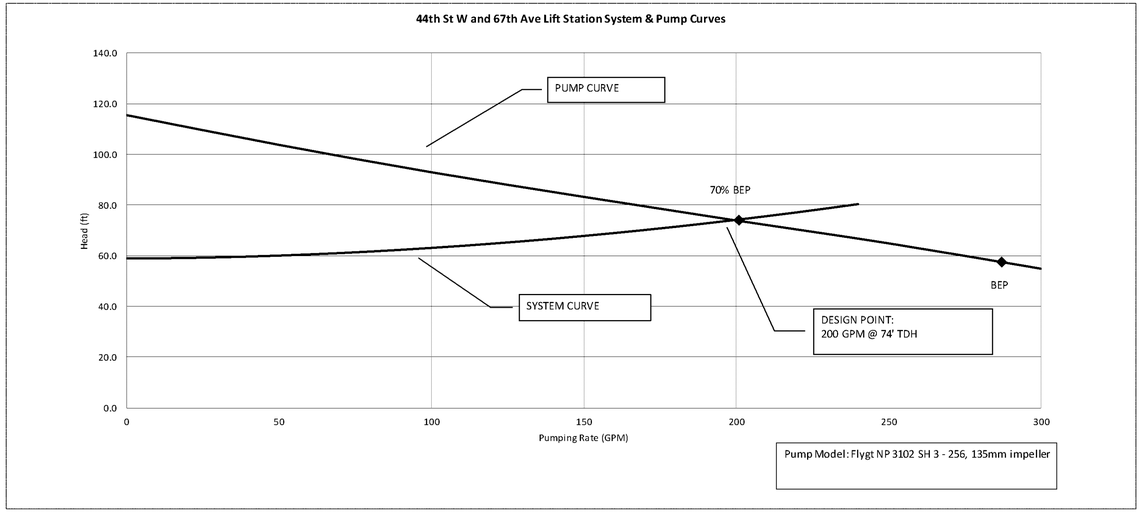
# PUMP AND SYSTEM CURVES




# DESIGN DATA SUMMARY

| DESIGN DATA SUMMARY TABLE | |
|---|---|
| **PUMP STATION** | |
| LOCATION | NE CORNER OF 44TH ST AND 67TH AVE |
| PUMP STATION TYPE | DUPLEX SUBMERSIBLE |
| PUMP TYPE | (2) CONSTANT SPEED, NON-CLOG |
| DESIGN PEAK HOURLY INFLUENT FLOW (GPM) | 40 |
| PUMP CAPACITY (GPM, PER PUMP) AT 100% OF RATED SPEED | 200 GPM @ 74' TDH |
| MAXIMUM PUMP STARTS PER HOUR, PER PUMP | 6 |
| MOTOR HORSEPOWER, HP | 7.3 HP |
| WET WELL LEVEL CONTROL TYPE | PRESSURE TRANSDUCER |
| WET WELL OPERATING VOLUME, PUMPS OFF TO LEAD PUMP ON (GAL) | 630 |
| OVERFLOW POINT/OVERFLOW DISCHARGE ELEVATION (FT) | WET WELL LID, EL=351.5 |
| AUXILIARY POWER TYPE | STANDBY DIESEL GENERATOR |
| AUXILIARY POWER LOCATON | ONSITE |
| AUXILIARY POWER OUTPUT | 30 KW |
| AUXILIARY POWER FUEL TANK CAPACITY | 132 GALLONS |
| AUXILIARY POWER TRANSFER SWITCH | AUTOMATIC |
| ALARM TELEMETRY TYPE | CELLULAR |
| EPA RELIABILITY CLASS | 1 |
| | |
| **FORCE MAIN (EXISTING)** | |
| SIZE AND TYPE | 4" PVC |
| LENGTH TO DISCHARGE | 500 FT |
| TYPE OF DISCHARGE | MANHOLE NORTH OF 44TH ST |
| AVERAGE DETENTION TIME | 50 MIN @ CURRENT AVERAGE DAY FLOW |

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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**DESIGN DATA**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET **G-3**

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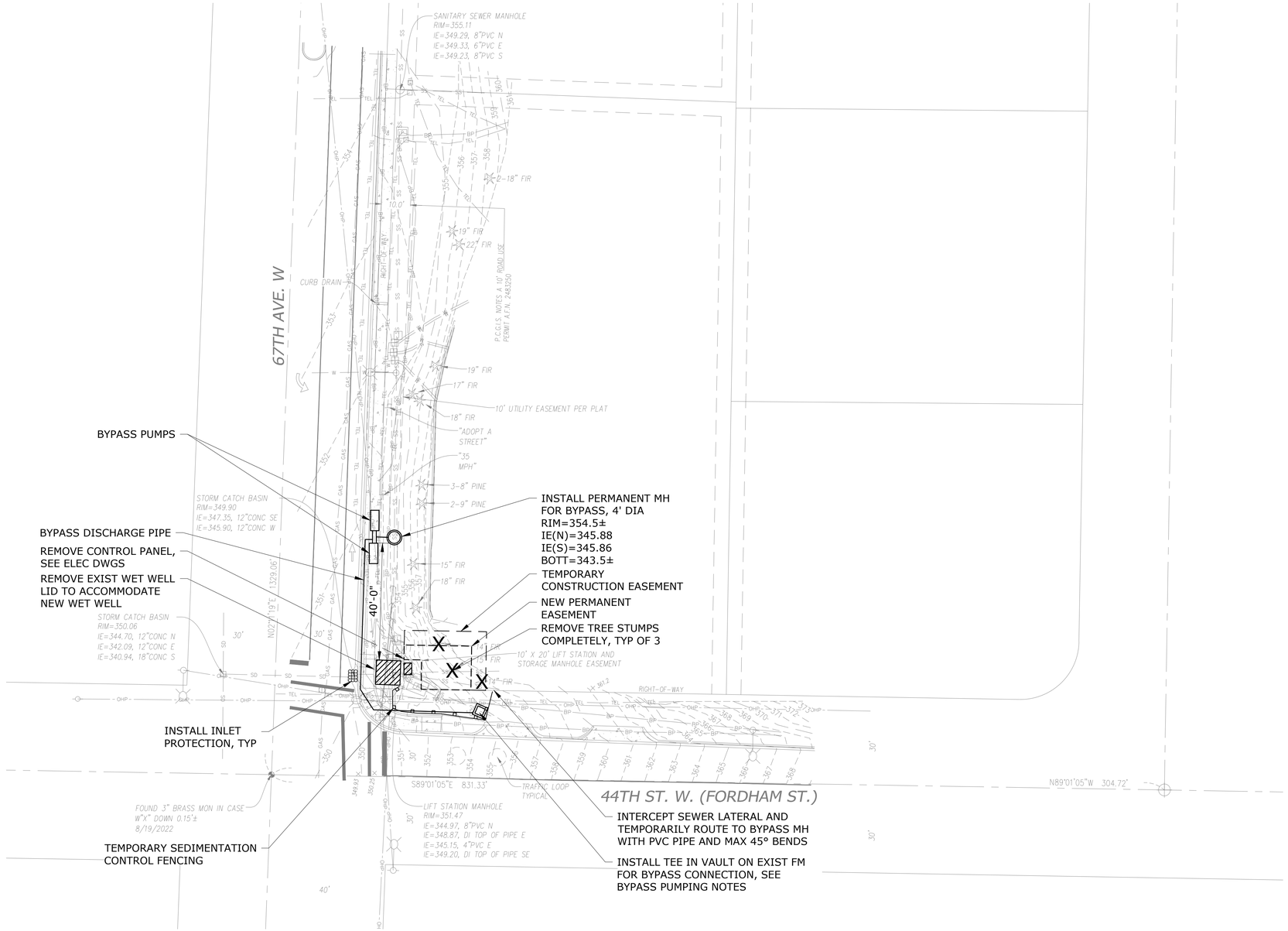


## PLAN
SCALE: 1"=20'

## SHEET NOTES:

1. LIFT STATION CONSTRUCTION REQUIRES DETAILS PLANNING OF CONSTRUCTION SEQUENCING AND COORDINATION TO PROVIDE UNINTERRUPTED WASTEWATER UTILITY SERVICE WITH THE EXISTING LIFT STATION, BYPASS PUMPING AND ULTIMATELY THE UPGRADED LIFT STATION. CONTRACTOR SHALL PREPARE AND SUBMIT A DETAILED WORK SEQUENCE PLAN TO THE CITY FOR REVIEW PRIOR TO INITIATING CONSTRUCTION ACTIVITIES.

2. CONTRACTOR SHALL MAINTAIN ALL EXISTING ACCESS POINTS (VEHICLE OR OTHERWISE) IN A SAFE MANNER THROUGHOUT CONSTRUCTION UNLESS OTHERWISE APPROVED IN WRITING BY AFFECTED PRIVATE PROPERTY OWNER.

## BYPASS PUMPING NOTES:

1. CONTRACTOR SHALL FURNISH, INSTALL AND OPERATE TEMPORARY BYPASS PUMPING SYSTEM, INCLUDING PUMPS, VALVES, PIPING, TEMPORARY RESTRAINT AS REQUIRED AND CONTROL PANELS AND OTHER ELECTRICAL EQUIPMENT, FOR DURATION FOR ALL LIFT STATION SHUTDOWNS. SEE SPECIFICATION 01 51 50, TEMPORARY PUMPING AND PIPING.

2. CONTRACTOR SHALL PROVIDE MINIMUM BYPASS PUMPING SYSTEM REQUIREMENT AS SPECIFIED, INCLUDING ONE OPERATING PUMP AND ONE BACKUP PUMP.

3. CONTRACTOR SHALL PROVIDE INDEPENDENT CONTROL SYSTEM TO FACILITATE BYPASS PUMP OPERATION AND TELEMETRY SYSTEM THAT WILL INDICATE ALARMS BOTH LOCALLY AND REMOTELY, AS IDENTIFIED IN THE SPECIFICATIONS.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS RELATED TO TEMPORARY PUMPING, INCLUDING ALL POWER COSTS.

5. BYPASS PUMPING SYSTEM SHALL REMAIN ONLINE UNTIL AFTER SUCCESSFUL STARTUP AND TESTING OF NEW FACILITIES HAS BEEN CONDUCTED AND ACCEPTED BY THE CITY.

6. SURCHARGING OF THE GRAVITY SEWER SYSTEM ABOVE THE CROWN OF THE PIPE IN THE BYPASS MANHOLE SHALL NOT BE ALLOWED.

7. BYPASS PUMPING WILL REQUIRE A TEMPORARY BLOCKAGE OF THE FLOW INTO THE EXISTING WET WELL TO FACILITATE CONSTRUCTION.

8. CONTRACTOR SHALL INSTALL A 6"x4" MJxFLG TEE ON THE EXISTING FORCE MAIN WITH 4" FLG PV AND BLIND FLANGE ON VERTICAL RISE. INSTALL ALL COMPONENTS IN A PRECAST CONCRETE VAULT, MODEL 444-LA BY OLDCASTLE, OR APPVD EQ. VAULT TO HAVE LARGEST HATCH AVAILABLE W/ H-20 LOAD RATING. ADJUST VAULT TO GROUND SURFACE.

## DEMOLITION NOTES:

1. PRIOR TO INITIATING CONSTRUCTION, CONTRACTOR SHALL SECURE SITE TO PROVIDE A SAFE WORKING ENVIRONMENT AND TO PREVENT UNAUTHORIZED ACCESS TO THE SITE.

2. CONSTRUCTION AREA IS UNDER AND AROUND OVERHEAD UTILITY LINES. CONTRACTOR SHALL COORDINATE WITH UTILITY PROVIDERS AHEAD OF STARTING CONSTRUCTION AND ESPECIALLY PRIOR TO TREE REMOVAL.

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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**DEMOLITION, BYPASS PUMPING & EROSION CONTROL PLAN**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET **LS-1**

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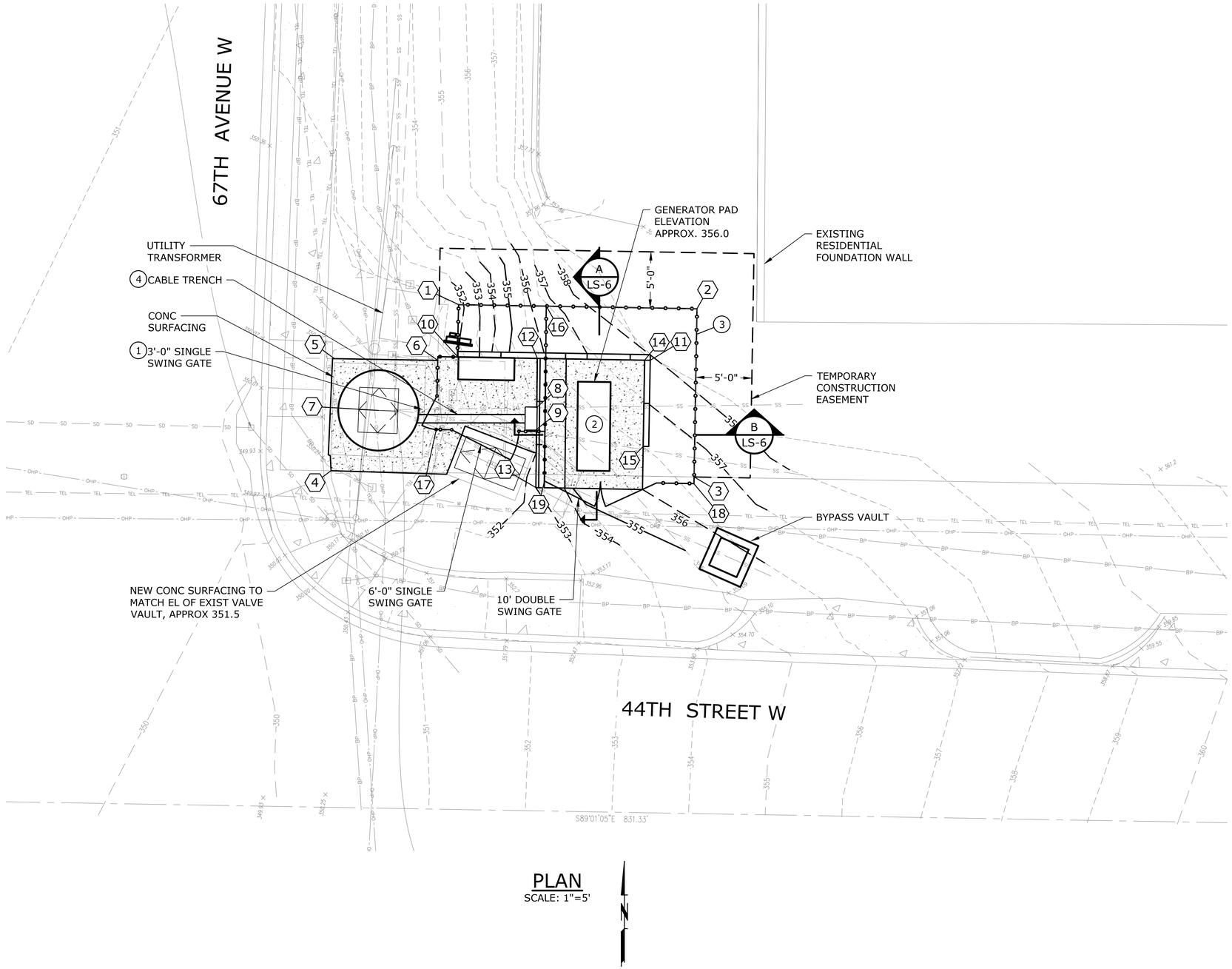


PLAN
SCALE: 1"=5'

SHEET NOTES:

1. CONTRACTOR SHALL STAKE AND MARK OUT EASEMENT AND WALLS BEFORE STARTING CONSTRUCTION.

2. CONTRACTOR SHALL POTHOLE LOCATION OF ALL UTILITIES IN THE AREA OF FENCE POSTS PRIOR TO START OF FENCING INSTALLATION.

3. FINAL FENCING LOCATION TO BE FIELD VERIFIED WITH OWNER.

4. WHERE CONC IS NOT REQUIRED INSIDE FENCING, CONTRACTOR SHALL STRIP ALL VEGETATION TO A MIN OF 6" DEPTH, LAY HEAVY DUTY WEED BARRIER, AND PLACE OPEN GRADING DRAIN ROCK.

5. WHERE GROUND IS DISTURBED OUTSIDE OF FENCED AREA, CONTRACTOR SHALL RESTORE TO MATCH VEGETATION IMMEDIATELY ADJACENT TO DISTURBED AREA(S).

KEY NOTES:

1. ALIGN GATE OVER TOP OF CABLE TRENCH TO PROVIDE ACCESS TO GRATE AND CABLES.
2. DIESEL BACKUP POWER GENERATOR BY GENERAC W/132 GAL DOUBLE-CONTAMINATED FUEL TANK.
3. 6' HIGH CHAINLINK FENCE W/ BLACK VINYL COATING. COORDINATE FINAL LAYOUT WITH CITY PRIOR TO INSTALLATION.
4. 6" x 8" PREFORMED POLYMER CONCRETE TRENCH FOR CABLES WITH BOTTOM SLOPE TO WET WELL AND SST LOCKING GRATED LID.

## POINT DATA TABLE

| PT NO. | DESCRIPTION | NORTHING | EASTING |
|---|---|---|---|
| 1 | CORNER OF EASEMENT AND FENCE | N693553.15 | E1136920.08 |
| 2 | CORNER OF EASEMENT AND FENCE | N693552.78 | E1136941.34 |
| 3 | CORNER OF EASEMENT | N693537.78 | E1136941.08 |
| 4 | CORNER OF CONCRETE AND EASEMENT | N693538.34 | E1136908.70 |
| 5 | CORNER OF CONCRETE AND EASEMENT | N693548.34 | E1136909.00 |
| 6 | CORNER OF CONCRETE AND EASEMENT | N693548.18 | E1136918.22 |
| 7 | CENTER OF WET WELL | N693543.72 | E1136912.93 |
| 8 | NE CORNER OF PUMP TERMINAL PANEL | N693543.99 | E1136927.05 |
| 9 | SE CORNER OF PUMP TERMINAL PANEL | N693541.99 | E1136927.02 |
| 10 | SW CORNER FACE OF WALL A BOTT | N693548.48 | E1136920.02 |
| 11 | SE CORNER FACE OF WALL A BOTT | N693548.18 | E1136937.17 |
| 12 | NW CORNER FACE OF WALL B BOTT | N693548.35 | E1136927.09 |
| 13 | SW CORNER FACE OF WALL B BOTT | N693536.84 | E1136926.97 |
| 14 | NW CORNER FACE OF WALL C BOTT | N693548.19 | E1136936.67 |
| 15 | SW CORNER FACE OF WALL C BOTT | N693540.51 | E1136936.54 |
| 16 | FENCE CORNER | N693553.01 | E1136927.90 |
| 17 | FENCE CORNER | N693542.02 | E1136918.08 |
| 18 | FENCE CORNER | N693537.19 | E1136941.06 |
| 19 | FENCE CORNER | N693537.42 | E1136927.73 |

| NO. | DATE | BY | REVISION |
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October 3, 2023

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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**SITE LOCATION, GRADING & RESTORATION PLAN**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET **LS-2**

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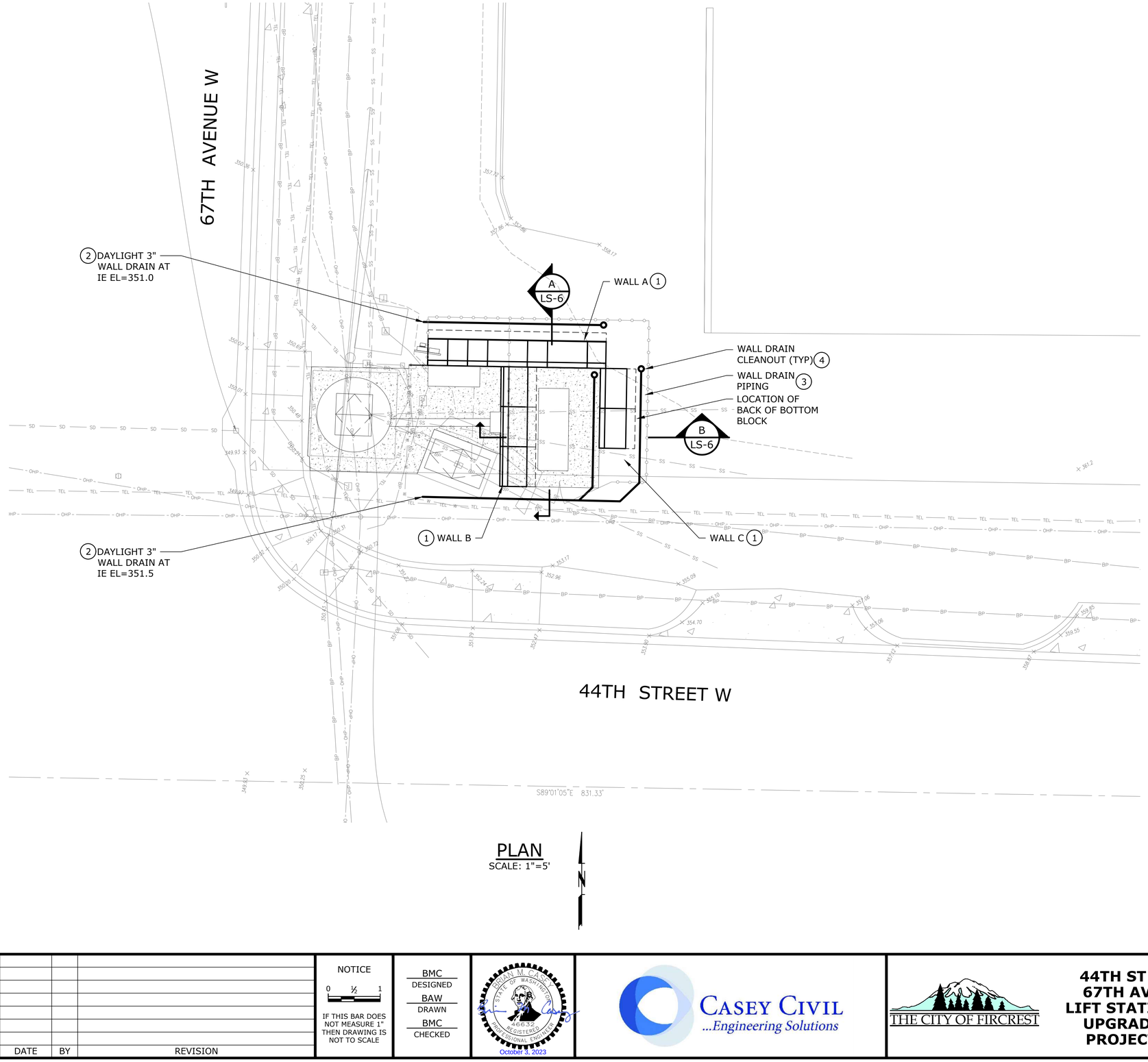


PLAN
SCALE: 1"=5'

N

SHEET NOTES:

1. CONTRACTOR SHALL STAKE AND MARK OUT EASEMENT AND WALLS BEFORE STARTING CONSTRUCTION.

KEY NOTES:

1. GRAVITY BLOCK WALL SHALL BE CONCRETE GREY, COBBLESTONE, MANUFACTURED BY REDI ROCK, OR APPROVED EQUAL.
2. INSTALL ANIMAL GUARD CAP ON PIPE OUTLET WITH SCREW RESTRAINT. MESH TO BE SST, MAX 1/4" SQUARE.
3. WALL DRAIN PIPE IE TO MATCH BOTTOM OF BLOCK WALL PER DET 1, SHT LS-5. SHARED DRAIN PIPE FOR WALL B AND C SHALL HAVE A CONSISTENT SLOPE WITH NO GREATER THAN 45 DEG BENDS.
4. CLEANOUT SHALL RISE VERTICALLY FROM HORIZONTAL DRAIN PIPE THROUGH TWO 45 DEG BENDS OR OTHER APPVD FITTING(S). CLEANOUT COVER SHALL BE CAST IRON WITH THREADED CAP AND SINGLE SQUARE NUT/KEY.

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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**WALL LAYOUT & WALL DRAIN PIPING PLAN**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET **LS-3**

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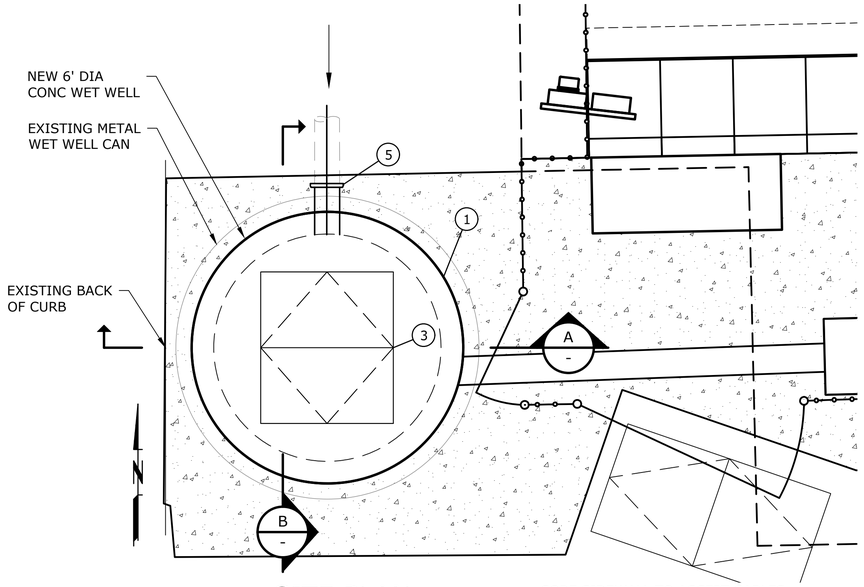
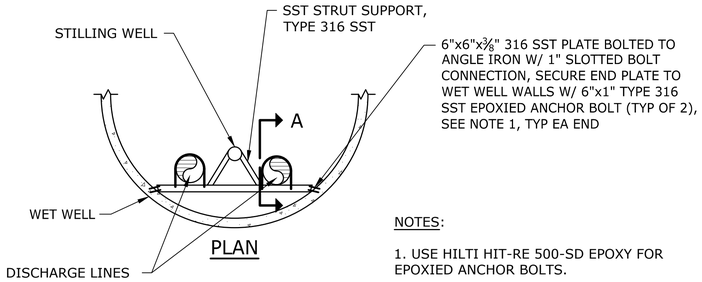



SITE PLAN
SCALE: 1"=1/2'

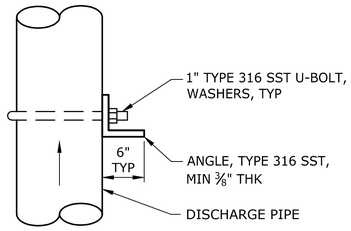



PLAN

NOTES:

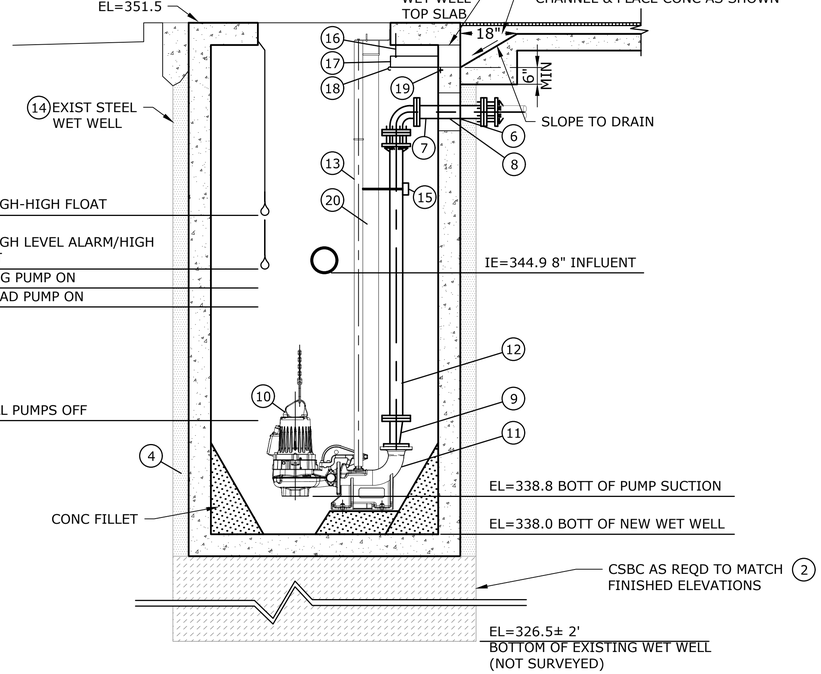
1. USE HILTI HIT-RE 500-SD EPOXY FOR EPOXIED ANCHOR BOLTS.

2. WELD ACCORDING TO CURRENT AMERICAN WELDING SOCIETY (AWS) STANDARDS WITH E70XX ELECTRODES.

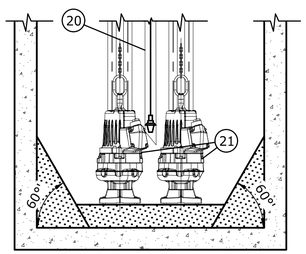



SECTION A

DISCHARGE PIPE SUPPORT 1
SCALE: NTS




WET WELL A
SCALE: 1"=1/2'




SECTION-WET WELL B
SCALE: 1"=1/2'

SHEET NOTES:

1. A NEW CONCRETE WET WELL WILL BE INSTALLED WITHIN THE EXISTING STEEL WET WELL. CONTRACTOR MUST CLEAN THE WET WELL AND REMOVE ANY PIPING AND SUPPORTS THAT WILL INTERFERE WITH INSTALLATION OF THE NEW WET WELL BEFORE PLACING BASE ROCK FOR NEW WET WELL TO REST ON. CONTRACTOR TO CHECK EXISTING WET WELL FOR VERTICAL ALIGNMENT AND ANY MATERIAL IRREGULARITIES THAT MAY IMPACT THE ABILITY TO PLACE THE NEW WET WELL PRIOR TO START OF CONSTRUCTION.

2. CONTRACTOR SHALL ALIGN PUMPS, PIPING, LIFTING COMPONENTS AND HATCH TO ACCOMMODATE PUMP INSTALLATION AND REMOVAL WITHOUT BINDING.

3. EPOXY ANCHOR SYSTEM SHALL BE HILTI HI-RE 500 V3 OR APPROVED EQUAL, ANCHOR EMBEDMENT SHALL BE PER ACI 318.

KEY NOTES:

1. INSTALL 6' DIA MH TO SERVE AS NEW WET WELL
2. CSBC COMPACTED TO AT LEAST 95% OF MAX DRY DENSITY
3. H-20 RATED AL DOUBLE LEAF HATCH 42"x48", MODEL HS-2B BY LW PRODUCTS, OR APPVD EQ. CONTRACTOR TO COORDINATE HATCH LOCATION WITH PUMP INSTALLATION TO FACILITATE EASY INSTALLATION AND REMOVAL OF PUMP PER MFR RECOMMENDATIONS
4. PLACE AND COMPACT SAND TO FILL ANNULAR VOID BETWEEN EXISTING WET WELL AND NEW WET WELL
5. REMOVE METAL WET WELL CAN, AS REQD TO EXPOSE SUFFICIENT LENGTH OF PIPE. INSTALL BELL END OF PVC PIPE ONTO EXISTING PIPE AND EXTEND INTO NEW WET WELL. FILL VOID OUTSIDE OF WET WELL W/ CONC, OR AS DIRECTED BY OWNER. USE NONSHRINK GROUT TO SEAL PENETRATION INTO NEW WET WELL.
6. REMOVE PIPE AND METAL WET WELL CAN, AS REQD TO EXPOSE SUFFICIENT LENGTH OF PIPE. INSTALL RFCA AND SPOOL, AS REQD TO CONNECT TO NEW DISCHARGE PIPING. FILL VOID OUTSIDE OF WET WELL W/ CONC, OR AS DIRECTED BY OWNER. USE NONSHRINK GROUT TO SEAL PENETRATION INTO NEW WET WELL.
7. 4"DI SPOOL, FLG, LTF
8. RFCA
9. 4"x3" ECC RDCR, FLG
10. SUBMERSIBLE WASTEWATER PUMP (TYP OF 2)
11. PUMP DISCHARGE ELBOW PER MFR. ANCHOR TO WET WELL BASE PER MFR RECOMMENDATIONS
12. 4"DIP, FLGxPE, LTF
13. 2" DIA TYPE 316 SST GUIDE RAIL, TYP OF 4. INSTALL PER MFR RECOMMENDATIONS
14. REMOVE STEEL WET WELL, AS NEEDED TO ACCOMMODATE NEW WET WELL AND SURROUNDING SURFACING
15. LATERAL PIPE SUPPORT, SEE DETAIL THIS SHEET
16. MIN ¾" DIA THREADED ROD W/ ANCHORING EPOXY, TYP OF 2, SEE NOTE 3
17. 8"W X 4" D SST CABLE TRAY, EXTEND TO WET WELL HATCH OPENING
18. EXTEND BOTTOM OF CHANNEL AND RADIUS SHEET TO PROTECT CABLES
19. MIN ½" DIA EPOXY ANCHOR, TYP OF 3, SEE NOTE 3
20. 5" SCHED 40 PVC PIPE STILLING WELL, CUT BOTTOM OF STILLING WELL AT 45 DEG AT 12" ABOVE WET WELL BOTTOM. SUPPORT STILLING WELL W/ SST STRUT AT WET WELL TOP AND AT INTERMEDIATE PIPE SUPPORT.
21. SUBMERSIBLE LEVEL TRANSUCER, SET AS DIRECTED BY ENGINEER

| NO. | DATE | BY | REVISION |
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NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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BAW DRAWN
BMC CHECKED

BRIAN M. CASEY — STATE OF WASHINGTON — 46532 — REGISTERED PROFESSIONAL ENGINEER
October 3, 2023

CASEY CIVIL ...Engineering Solutions

THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**LIFT STATION PLAN & SECTION**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
**LS-4**
X **of** 18

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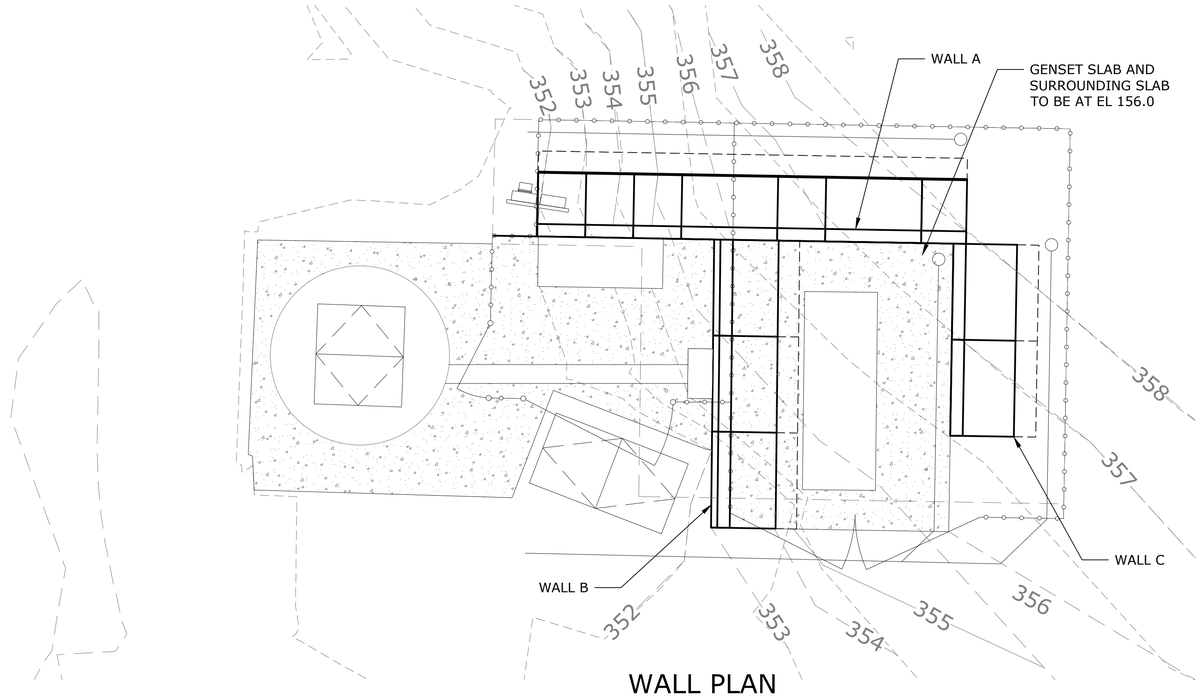


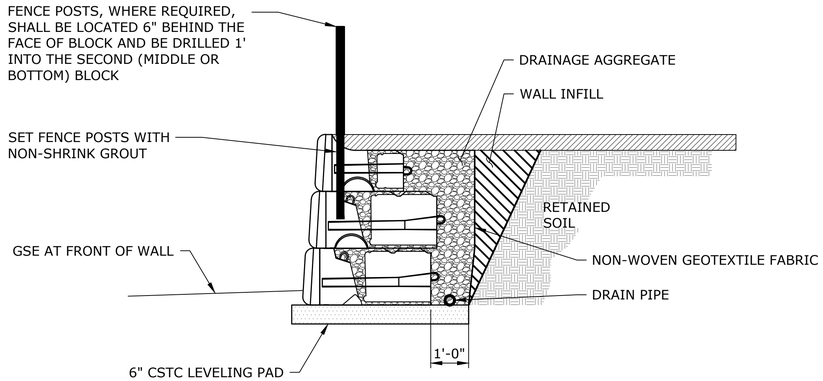

## WALL PLAN
SCALE: NTS

WALL CONSTRUCTION NOTES:

1. DESIGN IS BASED ON REDI ROCK. ANY PROPOSED ALTERNATE MFRS MAY REQUIRE DIFFERING QUANTITIES OF BLOCKS, EXCAVATION, BACKFILL, LEVELING COURSES, ETC. DESIGN IS BASED ON SILTY SAND OR CLAYEY SAND, SUPPORTING A 250 PSF LOAD ABOVE THE WALL.

2. BOTTOM BLOCKS ARE APPROXIMATELY 40" DEEP AND REQUIRE 12" OF ADDITIONAL EXCAVATION BEHIND THE BLOCK TO ACCOMMODATE PERFORATED DRAIN PIPE AND FREE DRAINING BACKFILL MATERIAL.

3. LEVELING BASE UNDER BOTTOM BLOCK SHALL BE MIN 6" CRUSHED SURFACING TOP COURSE, COMPACTED TO MIN 95% MAX DRY DENSITY.




## TYPICAL WALL DETAIL
SCALE: 1/2"=1'

1
LS-3




## WALL A PROFILE
SCALE: 1"=2'




## WALL B PROFILE
SCALE: 1"=2'




## WALL C PROFILE
SCALE: 1"=2'

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BRIAN M. CASEY — STATE OF WASHINGTON — 46632 — REGISTERED PROFESSIONAL ENGINEER
October 3, 2023

CASEY CIVIL ...Engineering Solutions

THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**WALL PLAN, PROFILES & DETAILS**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
**LS-5**
8 of 18

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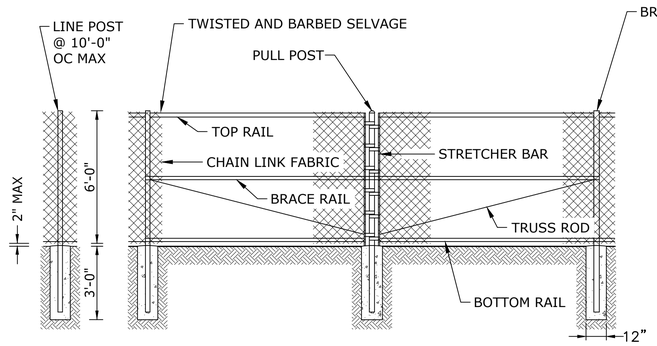
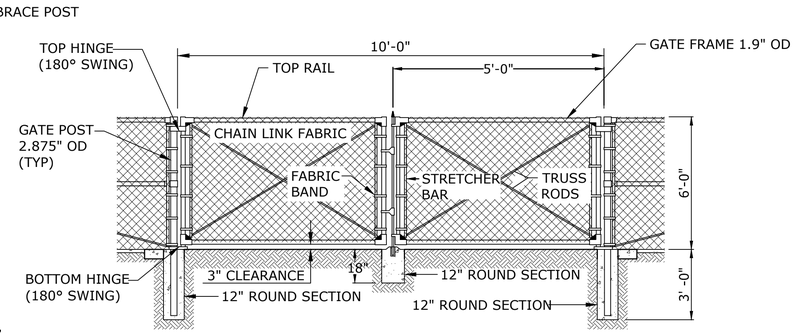



FENCE 1
SCALE: NTS



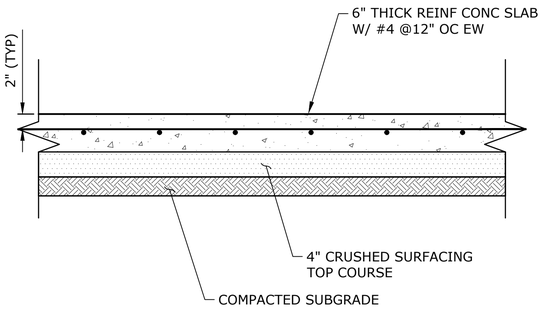

GATE 2
SCALE: NTS

FENCE AND GATE NOTES:

1. ALL FITTINGS, FASTENERS AND FABRIC TIES SHALL BE HOT DIP GALVANIZED.
2. CONCRETE SHALL BE MINIMUM 2500 PSI AT 28 DAYS.
3. PROVIDE BRACE RAIL BETWEEN END POSTS AND LINE POSTS, LENGTHS AS REQUIRED.
4. PROVIDE GATE STOPS AND DROP RECEIVERS SET IN CONCRETE, EACH GATE.
5. FENCING FABRIC, BRACE RAILS AND POSTS SHALL ALL BE BLACK VINYL COATED.
6. SINGLE SWING GATE SHALL BE SIMILAR TO DOUBLE GATE WITH DOUBLE HASP GATE LOCKING ASSEMBLY.

NOTES:

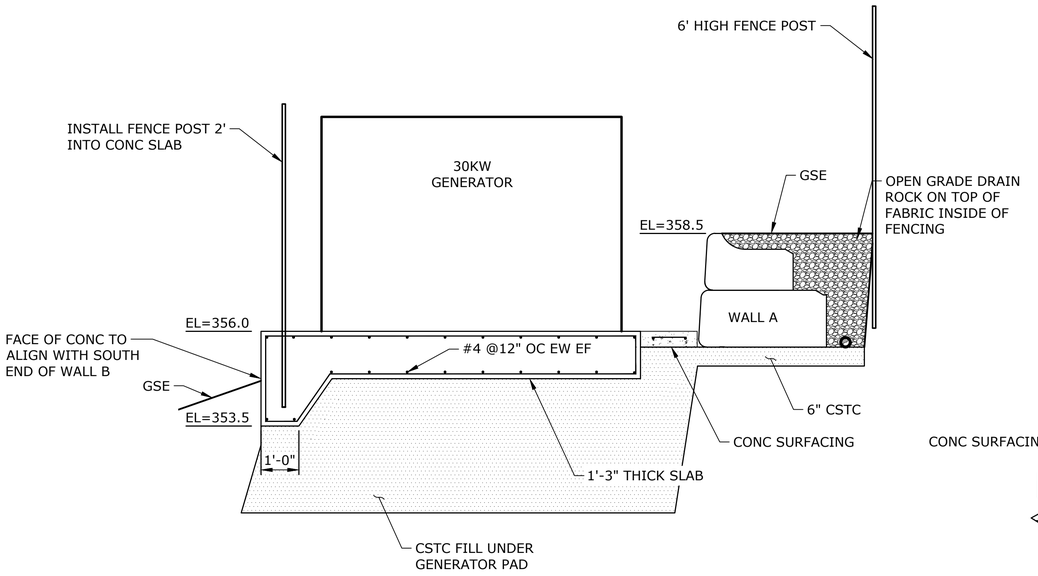
1. GENERATOR PAD SHALL BE MIN 9' x 4' NOT INCLUDING THICKENED EDGE AT SOUTH END. PAD DIMS SHALL BE INCREASED IF REQUIRED TO PROVIDE SUFFICIENT EDGE DISTANCE FOR ANCHORS.
2. PAD DIMENSIONS AND RELATIVE GENERATOR LOCATION TO BE APPROVED BY CITY.
3. GENERATOR ANCHORAGE DESIGN TO BE PROVIDED BY CONTRACTOR, STAMPED AND SIGNED BY PROFESSIONAL ENGINEER LICENSED IN WASHINGTON.
4. CONCRETE SHALL BE COMMERCIAL CONCRETE CLASS 3000 OR BETTER, REINFORCED STELL ASTM A615 GRADE 60.
5. REINFORCED STEEL TO BE PLACED IN ACCORDANCE WITH ACI 318.



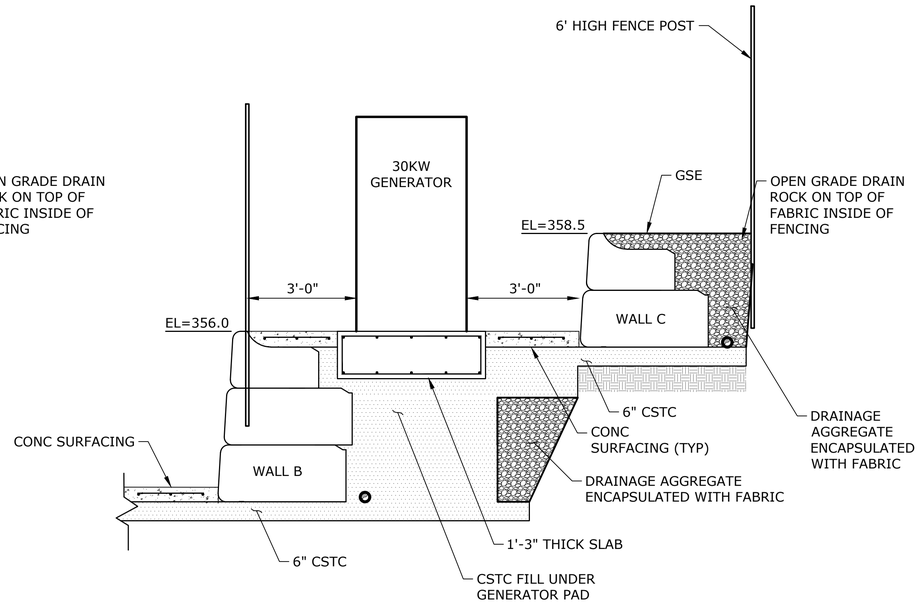

NOTE:

1. CONCRETE SHALL BE COMMERCIAL CONCRETE CLASS 3000 OR BETTER, REINFORCED STEEL ASTM GRADE 60.

CONCRETE SURFACING 3
SCALE: NTS




SECTION A / LS-3
SCALE: 1/2"=1'




SECTION B / LS-3
SCALE: 1/2"=1'

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BRIAN M. CASEY — STATE OF WASHINGTON — 46632 — REGISTERED PROFESSIONAL ENGINEER
October 3, 2023

CASEY CIVIL ...Engineering Solutions

THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**CIVIL/MECHANICAL DETAILS**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET **LS-6**

9 of 18

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## GENERAL NOTES

1. ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE, INSTALLATION DRAWINGS, CONSTRUCTION SPECIFICATIONS AND LOCAL CODES. ALL MATERIALS SHALL BE NEW AND LISTED BY THE UNDERWRITERS' LABORATORY INC. (UL). ALL ELECTRICAL WORK SHALL BE INSTALLED IN A GOOD AND WORKMANLIKE MANNER.
2. REFER TO THE ELECTRICAL CIRCUIT SCHEDULE FOR CIRCUIT IDENTIFICATIONS, ROUTING, CONDUCTOR SIZES, ETC.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER DISCIPLINES AS REQUIRED TO MITIGATE INTERFERENCES.
4. CONDUIT MATERIAL SHOWN ON ELECTRICAL PLANS ARE SPECIFIC FOR THE LOCATION WHERE THE CONDUIT STARTS. CONTRACTOR IS RESPONSIBLE FOR TRANSITIONING TO APPROVED CONDUIT MATERIAL BASED ON LOCATION AND IN ACCORDANCE TO ELECTRICAL SPECIFICATIONS.

## SYMBOLS

- NEW ELECTRICAL EQUIPMENT
- EXISTING ELECTRICAL EQUIPMENT
- EQUIPMENT TO BE DEMO'D OR REMOVED
- SURFACE MOUNTED LED LUMINAIRE *
- RECESSED MOUNTED LED LUMINAIRE *
- WALL MOUNTED LED LUMINAIRE *

* SHADED LUMINAIRE INDICATES BATTERY BACKED UNIT

- POLE MOUNTED LUMINAIRE
- $ $3 — WALL SWITCH STANDARD TOGGLE, DESIGNATOR
  3 = 3-WAY
  D = DIMMER
  T = TIMER
- GFI — DUPLEX, QUADPLEX RECEPTACLE, W/DESIGNATOR
  GFI = GROUND FAULT INTERRUPTING
  WP = WEATHERPROOF
  +48 = HEIGHT AFF.
- DISCONNECT RECEPTACLE AND PLUG
- SPECIAL EQUIPMENT CONNECTION AS SHOWN
- MOTOR CONNECTION, HORSEPOWER INDICATED
- J (J) — JUNCTION BOX
- 20A 30A — DISCONNECT SWITCH, AMPERAGE RATING SHOWN
- F 60/40 — FUSED DISCONNECT SWITCH, SWITCH AND FUSE RATING SHOWN
  60/40 = 60A SWITCH WITH 40A FUSE
- 5A — FUSE, SIZE SHOWN
- THERMAL MAGNETIC CIRCUIT BREAKER
- 30AC 150AT — MAGNETIC ONLY CIRCUIT BREAKER (MOTOR CIRCUITS ONLY) CONTINUOUS CURRENT RATING AND TRIP SETTINGS SHOWN
- 2 — MOTOR STARTER, SIZE SHOWN

- M — METERBASE W/UTILITY METER
- SSRV — SOLID STATE REDUCED VOLTAGE STARTER (SOFT START)
- LINE OR LOAD REACTOR, IMPEDENCE SHOWN
- T — TRANSFORMER
- CURRENT TRANSFORMER
- GROUND ROD
- GROUND ROD TEST WELL
- AUTOMATIC TRANSFER SWITCH
- GROUND CONNECTION PER NEC ARTICLE 250
- CR — 120V CONTROL RELAY, DPDT MINIMUM
- CR — 24VDC CONTROL RELAY, DPDT MINIMUM
- RELAY CONTACT - NO, NC
- PUSHBUTTON OR SWITCH CONTACT BLOCK - NO, NC
- OFF / HAND / AUTO — THREE POSITION SWITCH
- R R — PUSH-TO-TEST LED PILOT LIGHT
- FLOAT SWITCH - NO, NC
- TEMPERATURE SWITCH - NO, NC
- LIMIT SWITCH - NO, NC
- TIME DELAY CONTACTS, NORMALLY OPEN TIMED CLOSED NORMALLY CLOSED TIMED OPEN
- ETM — ELAPSED TIME METER
- CNT — COUNTER
- SPD — SURGE PROTECTIVE DEVICE
- ISB — INTRINSICALLY SAFE BARRIER
- ISR — INTRINSICALLY SAFE RELAY

- FU 1A — FUSED TERMINAL, SIZE SHOWN
- FIELD TERMINAL
- LOCAL TERMINAL OR LUG CONNECTION
- S — SMOKE/HEAT DETECTOR
- I — INTRUSION SWITCH
- T — THERMOSTAT/TEMPERATURE TRANSMITTER
- MD — MOTION DETECTOR/OCCUPANCY SENSOR
- CONDUIT SEAL-OFF
- CONDUIT CONCEALED UNDERFLOOR OR UNDERGROUND
- CONDUIT CONCEALED IN WALL OR ABOVE CEILING IN FINISHED AREAS, EXPOSED IN PROCESS AND EQUIPMENT AREAS.
- CONDUIT UP
- CONDUIT DOWN
- CONDUIT UP FROM UNDERGROUND RACEWAY
- CONDUIT STUB
- FLEXIBLE CONDUIT OR MFR CABLE
- XXX / XXX — HOME RUN, ELECTRICAL PANEL DESTINATION SHOWN.

1. RUNS MARKED WITH CROSS-HATCHES INDICATE NUMBER OF NO.12 WIRE. LARGER GAUGES ARE SHOWN OR NOTED ELSEWHERE. LONG CROSS HATCH INDICATES NEUTRAL, SHORT INDICATES PHASE CONDUCTOR, SLANT INDICATES GROUND WIRE PER NEC ARTICLE 250.
2. FOR UNMARKED CONDUIT RUNS, CONTRACTOR SHALL INSTALL REQUIRED NUMBER OF WIRES FOR POWER AND/OR CONTROL OF ELEMENTS IN CIRCUIT(S) SHOWN. SIZE OF WIRE SHALL BE NO. 12, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
3. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
4. DASHED LINE INDICATE CONDUITS CONCEALED UNDERGROUND OR UNDERFLOOR.
5. SOLID HOME RUN INDICATES CONDUIT ABOVE CEILING IN FINISHED AREA, CONCEALED IN WALL OR EXPOSED IN PROCESS AND EQUIPMENT AREAS.

- P1 — ELECTRICAL CIRCUIT IDENTIFICATION
- P1 P2 / C1 C2 — MULTIPLE ELECTRICAL CIRCUITS, SEPARATE CONDUITS
- 1"C– P1 P2 / P3 P4 — MULTIPLE ELECTRICAL CIRCUITS, COMMON CONDUIT (SIZE SHOWN)

## ABBREVIATIONS

| | |
|---|---|
| a | CIRCUIT BREAKER AUX. CONTACT, CLOSED WHEN BREAKER IS CLOSED |
| A | AMMETER, AMPERES |
| AC | ALTERNATING CURRENT |
| A/D | ANALOG TO DIGITAL |
| AF | AMPERE FRAME |
| AFE | ACTIVE FRONT END (VFD) |
| AIC | AMPERES INTERRUPTING CAPACITY |
| ALT | ALTERNATOR |
| A/M | AUTO/MANUAL CONTROLLER |
| ANN | ANNUNCIATOR |
| AS | AMMETER SWITCH |
| ASD | ADJUSTABLE SPEED DRIVE |
| AT | AMPERE TRIP |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AUTO | AUTOMATIC |
| AWG | AMERICAN WIRE GAGE |
| b | CIRCUIT BREAKER AUX. CONTACT, CLOSED WHEN BREAKER IS OPEN |
| BCG | BARE COPPER GROUND |
| C | CONDUIT, CONTACTOR |
| CAP | CAPACITOR |
| CB | CIRCUIT BREAKER |
| CC | CONTROL CABLE, CLOSING COIL |
| CHH | COMMUNICATION HANDHOLE |
| CL | CHLORINE |
| CKT | CIRCUIT |
| CMH | COMMUNICATION MANHOLE |
| CO | CONDUIT ONLY |
| COMM | COMMUNICATION |
| CON | CONTACTOR |
| COND | CONDUCTOR |
| CONT | CONTINUED, CONTINUATION |
| CPT | CONTROL POWER TRANSFORMER |
| CP | CONTROL PANEL |
| CR | CONTROL RELAY |
| CS | CONTROL SWITCH |
| CT | CURRENT TRANSFORMER |
| CVLS | CHECK VALVE LIMIT SW |
| DC | DIRECT CURRENT |
| DIAG | DIAGRAM |
| DISC | DISCONNECT |
| DISTR | DISTRIBUTION |
| DP | DISTRIBUTION PANEL |
| DPDT | DOUBLE POLE, DOUBLE THROW |
| DPST | DOUBLE POLE, SINGLE THROW |
| EXST | EXISTING |
| EF | EXHAUST FAN |
| EHH | ELECTRICAL HANDHOLE |
| ELEM | ELEMENTARY |
| EMERG | EMERGENCY |
| EFFL | EFFLUENT |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| ETM | ELAPSED TIME METER |
| FACP | FIRE ALARM CONTROL PANEL |
| FIN FL | FINISHED FLOOR |
| FLEX | FLEXIBLE |
| FLUOR | FLUORESCENT |
| FO | FIBER OPTIC |
| FREQ | FREQUENCY |
| FU | FUSE |
| FUT | FUTURE |
| FVNR | FULL VOLTAGE, NON REVERSING |
| FVR | FULL VOLTAGE, REVERSING |
| FWD | FORWARD |
| GA | GAUGE |
| GEN | GENERATOR |
| GFI | GROUND FAULT INTERRUPTER |
| GRS | GALVANIZED RIGID STEEL |
| $H_2O_2$ | HYDROGEN PEROXIDE |
| HMI | HUMAN MACHINE INTERFACE |
| HOA | HAND-OFF-AUTOMATIC |
| HOR | HAND-OFF-REMOTE |
| HORZ | HORIZONTAL |
| HPS | HIGH PRESSURE SODIUM |
| HTR | HEATER |
| HV | HIGH VOLTAGE |
| HZ | HERTZ (CYCLES PER SECOND) |
| INCAND | INCANDESCENT |
| I/O | INPUT/OUTPUT |
| I.S. | INTRINISICALLY SAFE |
| JB | JUNCTION BOX |
| KA | KILOAMPERES |
| KCMIL | THOUSANDS OF CIRCULAR MILS |
| KV | KILOVOLTS |
| KVA | KILOVOLT AMPERES |
| KVAR | KILOVOLT AMPERES REACTIVE |
| KVARH | KILOVOLT AMPERES REACTIVE HOURS |
| KW | KILOWATTS |
| KWH | KILOWATT HOURS |
| LCP | LIGHTING CONTROL PANEL |
| LP | LIGHTING PANEL |
| LPS | LOW PRESSURE SODIUM |
| LTG | LIGHTING |
| LT(S) | LIGHT(S) |
| (M) | MODIFIED |
| Ma | MILLIAMPERES |
| MCC | MOTOR CONTROL CENTER |
| MCP | MOTOR CIRCUIT PROTECTOR |
| MOV | MOTOR OPERATED VALVE |
| MS | MOTOR STARTER |
| MTD | MOUNTED |
| MTG | MOUNTING |
| MTS | MANUAL TRANSFER SWITCH |
| (N) | NEW |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUFACTURER'S ASSOC. |
| NEUT | NEUTRAL |
| NO | NORMALLY OPEN, NUMBER |
| NTS | NOT TO SCALE |
| OVHD | OVERHEAD |
| OL | THERMAL OVERLOAD RELAY |
| OT | OVER TEMPERATURE |
| PB | PULLBOX, PUSHBUTTON |
| PD | POSITIVE DISPLACEMENT |
| PE | PHOTOELECTRIC |
| PEC | PHOTOELECTRIC CELL |
| PF | POWER FACTOR |
| pH | MEASURE OF ACIDITY OR ALKALINITY |
| PH | PHASE |
| PLC | PROGRAMMABLE LOGIC CONTROLLER |
| PM | POWER MONITOR |
| PNL | PANEL |
| PNLBD | PANELBOARD |
| PRI | PRIMARY |
| PS | PRESSURE SWITCH |
| PSI | POUNDS PER SQUARE INCH |
| PWR | POWER |
| (RL) | RELOCATE |
| (RLD) | RELOCATED |
| RCPT | RECEPTACLE |
| RCT | REPEAT CYCLE TIMER |
| RPM | REVOLUTIONS PER MINUTE |
| RT | RESET TIMER |
| SCR | SILICON CONTROLLED RECTIFIER |
| SD | SMOKE DETECTOR |
| SDBC | SOFT-DRAWN BARE COPPER |
| SEC | SECONDS, SECONDARY |
| SECT | SECTION |
| SF | SUPPLY FAN |
| SHH | SIGNAL HANDHOLE |
| SIG | SIGNAL |
| SN | SOLID NEUTRAL |
| SPEC | SPECIFICATIONS |
| SPD | SURGE PROTECTIVE DEVICE |
| SPDT | SINGLE POLE, DOUBLE THROW |
| SS | STAINLESS STEEL |
| SSRV | SOLID STATE REVESE VOLTAGE |
| SW | SWITCH |
| SWBD | SWITCHBOARD |
| SWGR | SWITCHGEAR |
| SYNC | SYNCHRONIZING |
| TB | TERMINAL BOX, TERMINAL BOARD TELEPHONE |
| TC | CABINET |
| TEMP | TEMPERATURE |
| TP | TWISTED PAIR UNSHIELDED |
| TSP | TWISTED SHIELDED PAIR |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| UH | UNIT HEATER |
| UV | ULTRA VIOLET |
| V | VOLTS |
| VA | VOLT-AMPERES |
| VFD | VARIABLE FREQUENCY DRIVE |
| VAR | VOLT AMPERES REACTIVE |
| VERT | VERTICAL |
| VH | VAR-HOUR |
| VS | VOLTMETER SWITCH |
| W | WIRE, WATTS |
| WHM | WATTHOUR METER |
| WHDM | WATTHOUR DEMAND METER |
| WP | WEATHERPROOF |
| WTRT | WATERTIGHT |


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AK #1018436
PROJECT#:22.36.01


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RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLIS — STATE OF WASHINGTON — 57964 — REGISTERED PROFESSIONAL ENGINEER — 10-3-23

CASEY CIVIL ...Engineering Solutions

THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**ELECTRICAL LEGEND, SYMBOLS AND ABBREVIATIONS**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-1**

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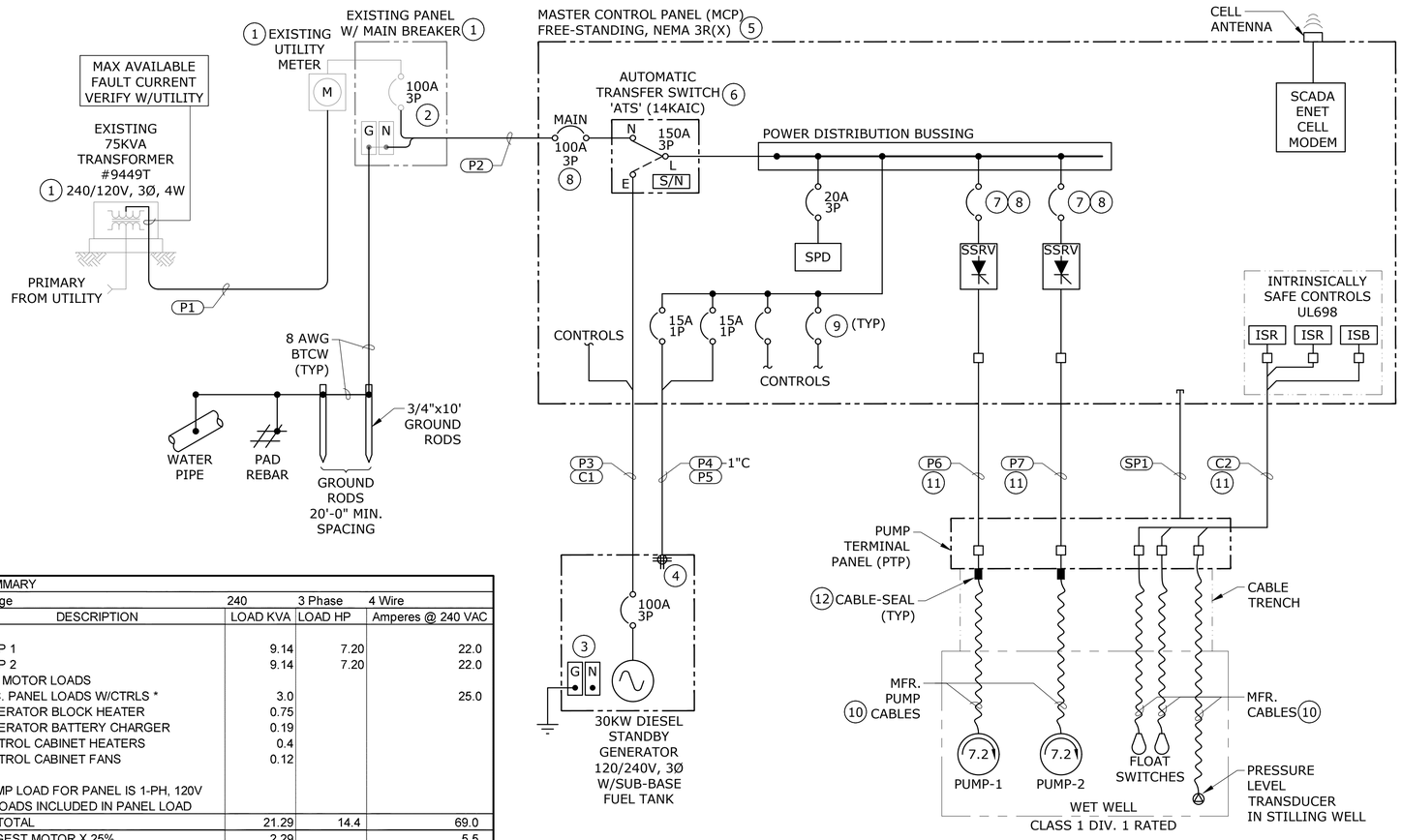


| LOAD SUMMARY | | | | |
|---|---|---|---|---|
| Voltage | | 240 | 3 Phase | 4 Wire |
| QTY. | DESCRIPTION | LOAD KVA | LOAD HP | Amperes @ 240 VAC |
| 1 | PUMP 1 | 9.14 | 7.20 | 22.0 |
| 1 | PUMP 2 | 9.14 | 7.20 | 22.0 |
| | NON MOTOR LOADS | | | |
| | MISC. PANEL LOADS W/CTRLS * | 3.0 | | 25.0 |
| 1** | GENERATOR BLOCK HEATER | 0.75 | | |
| 1** | GENERATOR BATTERY CHARGER | 0.19 | | |
| 2** | CONTROL CABINET HEATERS | 0.4 | | |
| 2** | CONTROL CABINET FANS | 0.12 | | |
| | * - AMP LOAD FOR PANEL IS 1-PH, 120V | | | |
| | ** - LOADS INCLUDED IN PANEL LOAD | | | |
| | SUBTOTAL | 21.29 | 14.4 | 69.0 |
| | LARGEST MOTOR X 25% | 2.29 | | 5.5 |
| | NON-MOTOR LOADS X 25% | 2.60 | | 6.3 |
| | SPARE CAPACITY (10%) | 2.87 | | 6.9 |
| | TOTAL | | | 87.7 |

SHEET NOTES:

1. ALL CONDUCTORS TO BE COPPER, UNLESS SPECIFICALLY NOTED OTHERWISE.
2. GROUNDING METHOD SHALL BE VIA RACEWAY AND EQUIPMENT GROUNDING CONDUCTOR POWER NEC ARTICLE 250.
3. ALL AIC EQUIPMENT VALUES SHOWN ARE MINIMUM RATINGS.

KEY NOTES:

1. EXISTING 240V, 3Ø UTILITY PADMOUNT TRANSFORMER. CONTRACTOR TO COORDINATE DISCONNECTION AND RELOCATION OF EXISTING LIFT STATION SERVICE AND METERING AS REQUIRED.
2. PROVIDE WARNING SIGN READING "UTILITY SERVICE DISCONNECT DOES NOT DISCONNECT GENERATOR".
3. REMOVE NEUTRAL/GROUND BOND FROM GENSET. SYSTEM IS SOLIDLY GROUNDED THROUGH ATS AND IS NOT A SEPARATELY DERIVED SYSTEM.
4. FIELD INSTALL QUADRAPLEX RECEPTACLE WITH IN-USE WEATHER-PROOF HOUSING IN GENERATOR ENCLOSURE FOR CONNECTION OF BATTERY CHARGER AND BLOCK HEATER.
5. MASTER CONTROL PANEL SUPPLIED BY CITY'S EXISTING SCADA AND INSTRUMENTATION AND CONTROLS PROVIDER, S&B INC. CONTRACTOR TO COORDINATE AND INSTALL UNIT AND INTERCONNECTIONS TO FIELD EQUIPMENT.
6. AUTOMATIC TRANSFER SWITCH PROVIDED WITH SOLID NEUTRAL AND PROGRAMMED DELAY TRANSFER OPTIONS. EQUIPMENT IS SUPPLIED AS PART OF THE MASTER CONTROL PANEL. SEE NOTE 5 ABOVE.
7. CIRCUIT BREAKERS TO BE SIZED PER MFR. RECOMMENDATIONS.
8. CIRCUIT BREAKERS TO BE PROVIDED WITH LOCKOUT MECHANISM.
9. DISTRIBUTION BREAKERS QUANTITY AND SIZES AS REQUIRED FOR LOW VOLTAGE CONNECTIONS INSIDE MOTOR CONTROL PANEL.
10. MFR'S CABLING TO BE ROUTED VIA CABLE TRENCH TO WET WELL.
11. CIRCUITS TO PUMP DISCONNECT PANEL SHALL BE INSTALLED IN CONTINUOUS SECTION OF RGS CONDUIT FROM TRANSITION BELOW GRADE/SLAB AT CONDUIT BURIAL DEPTH, ALLOWING FOR NO USE OF SEAL OFF PER NEC ARTICLE 501.15 (B2) EXCEPTION NO. 1.
12. PROVIDE COMPOUND BARRIER CABLE CONNECTOR AS A MEANS OF SEALING THE CABLES. APPLETON PROTEX SERIES OR APPROVED. VERIFY REQUIREMENT AND INSTALL ONLY IF REQUIRED BY THE LOCAL AHJ. IF NOT REQUIRED PROVIDE WEATHER-PROOF CORD GRIP.

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e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:22.36.01

| NO. | DATE | BY | REVISION |
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NOTICE
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RSC DESIGNED
RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLIS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 10-3-23

CASEY CIVIL ...Engineering Solutions

THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

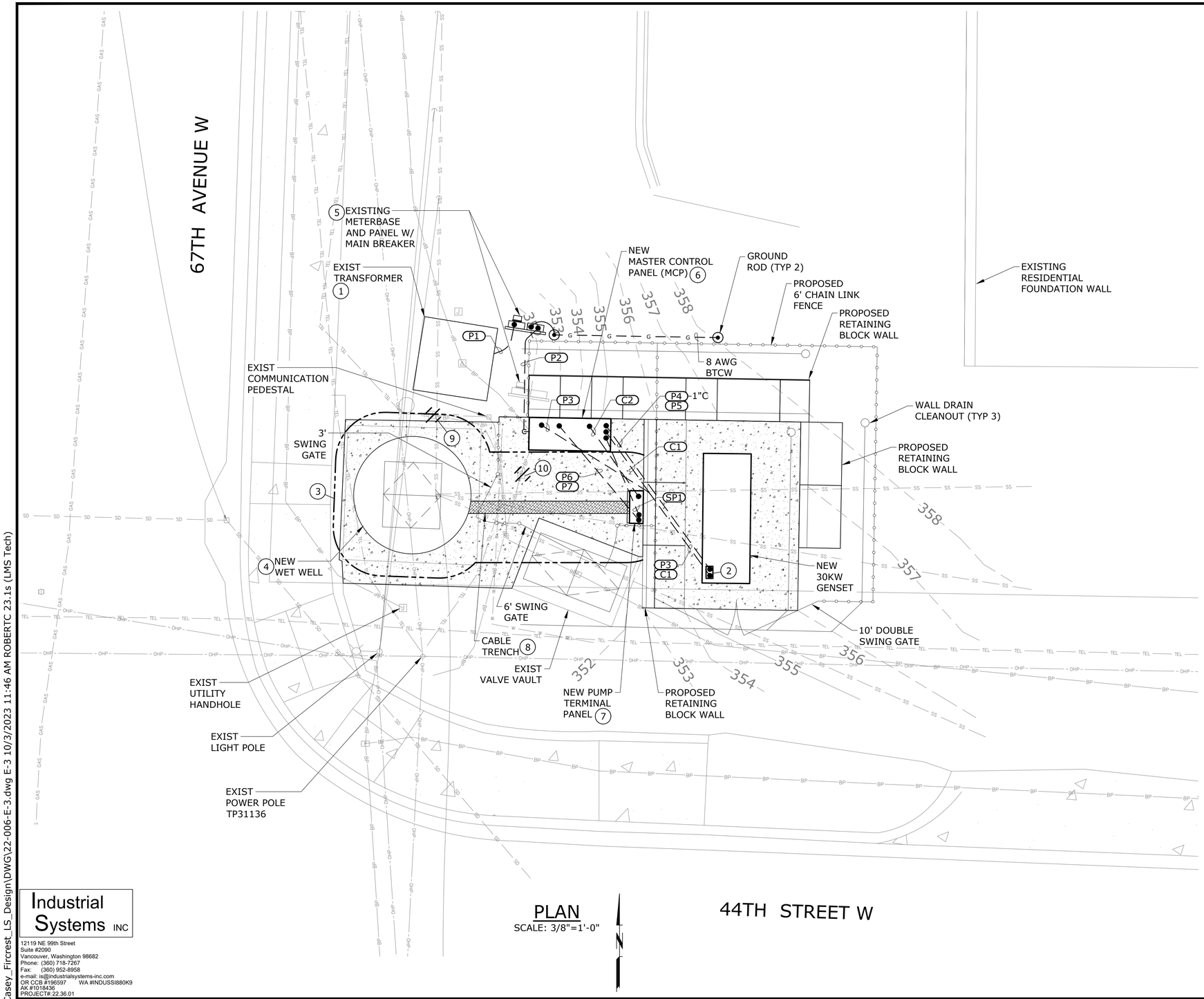
**ONE-LINE DIAGRAM AND LOAD SUMMARY**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-2**

11 of 18

P:\Projects\22.36.01_Casey_Fircrest_LS_Design\DWG\22-006-E-2.dwg E-2 10/3/2023 11:44 AM ROBERTC 23.1s (LMS Tech)




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

SHEET NOTES:

1. THE CONTRACTOR SHALL COORDINATE ALL TPU (TACOMA PUBLIC UTLITIES) REQUIREMENTS WITH TPU PRIOR TO CONSTRUCTION.
   CONTACT: JOHN HILOTON
   PHONE: (253) 208-4410
   EMAIL: JHILOTON@CI.TACOMA.WA.US

2. CONTRACTOR TO COORDINATE RELOCATION OF THE EXISTING SERVICE AND EXISTING METER WITH UTLITY AND OWNER FOR EXACT LOCATION.

3. CONTRACTOR TO DEMO ALL EXISTING ELECTRICAL EQUIPMENT INCLUDING CONDUIT AND WIRING IN IT'S ENTIRETY. THIS SHALL INCLUDE DEMO OF CONDUITS AND CONDUCTORS BETWEEN THE EXISTING ELECTRICAL EQUIPMENT AND WET WELL. SEE KEY NOTE 10 BELOW.

4. TAKE NOTE OF ELEVATION CHANGES AND SEE LS-3 AND LS-5 FOR COORDINATING CONDUITS AND GROUNDING WITH NEW RETAINING WALL AND DRAINS.

KEY NOTES:

1. EXISTING 240V, 3Ø UTILITY PADMOUNT TRANSFORMER #9449T. CONTRACTOR TO COORDINATE DISCONNECTION AND RELOCATION OF EXISTING LIFT STATION SERVICE.
2. COORDINATE GENERATOR STUB-UP LOCATIONS WITH MANUFACTURER.
3. CLASS 1 DIV. 2 GROUP D BOUNDARY AREA IN AN ENVELOPE 18" ABOVE GRADE 3' LATERALLY FROM HATCH OPENINGS OF THE WET WELL AND CABLE TRENCH. INTERIOR OF WET WELL IS CLASS 1 DIV. 1 GROUP D SPACE.
4. SEE DRAWING E-4 FOR WET WELL ELEVATION AND ELECTRICAL CONNECTIONS.
5. RELOCATE EXISTING STRUT STAND WITH METER AND MAIN BREAKER PANEL. INSTALL NEW CONCRETE BASE FOR STAND IF NEEDED.
6. SEE DRAWING E-6 FOR MOTOR CONTROL PANEL ELEVATION AND PANEL LAYOUT.
7. SEE DRAWING E-4 FOR PUMP TERMINAL PANEL DETAILS. CIRCUITS TO PUMP TERMINAL PANEL TO BE INSTALLED IN A CONTINUOUS SECTION OF RGS CONDUIT FROM TRANSITION BELOW GRADE/SLAB AT CONDUIT BURIAL DEPTH TO PANEL. NO UNIONS OR FITTINGS TO BE INSTALLED.
8. CABLE TRENCH FOR ROUTING OF MFR. CABLES FOR PUMPS AND LEVEL EQUIPMENT. SEE DRAWINGS LS-2.
9. EXISTING MOTOR AND FLOAT CONNECTION HANDHOLE TO BE REMOVED AS PART OF THE DEMO.
10. EXISTING ELECTRICAL EQUPMENT ON FRAME INCLUDING METER, MAIN DISCONNECT, MOTOR CONTROL PANEL, FLOAT SWITCH PANEL, DOUBLE THROW SWITCH W/ GENERATOR RECEPTACLE TO BE DEMO'D. EXISTING SCADA PANEL AND ANTENNA TO BE SALVAGED TO OWNER.

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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**ELECTRICAL SITE PLAN**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-3**

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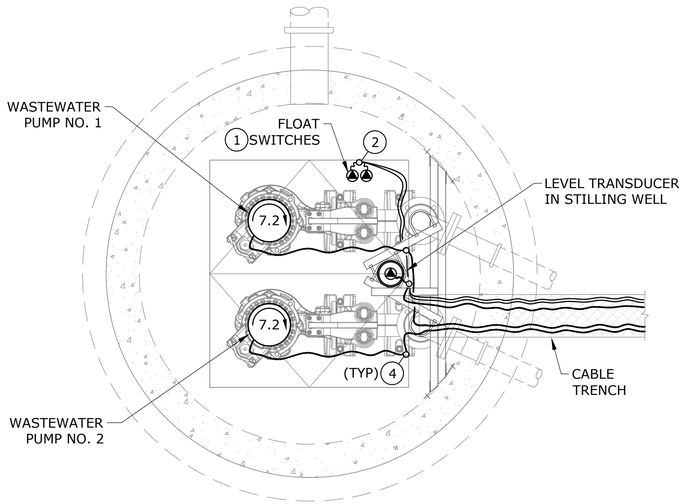
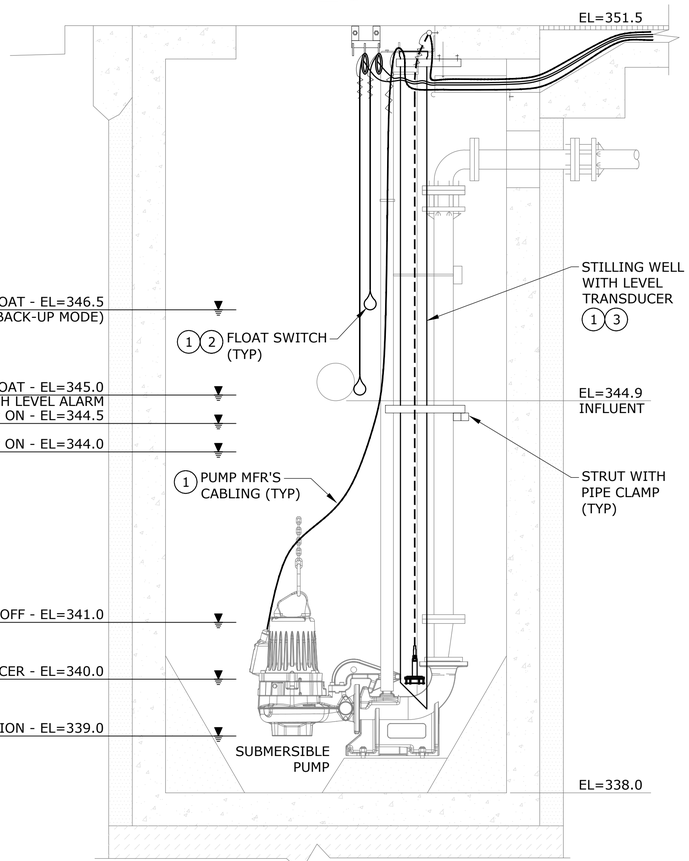
KEY NOTES:

1. MANUFACTURER'S CABLING TO BE LONG ENOUGH TO ROUTE TO PUMP TERMINAL PANEL WITHOUT SPLICING.
2. SEE DETAIL 6/E-8 FOR MOUNTING DETAIL.
3. SEE SHEET LS-4 FOR MOUNTING DETAIL. ENSURE INSTALLATION DOES NOT IMPEDE THE LIFTING IN/OUT OF PUMPS.
4. SEE DETAIL 7/E8 FOR PUMP CABLING DETAIL. USE SIMILAR INSTALLATION FOR LEVEL TRANSDUCER.
5. VERIFY ELEVATION INFORMATION WITH CIVIL DISCIPLINE FOR MOUNTING AND SETPOINTS FOR LEVEL TRANSDUCER AND FLOAT LOCATIONS.

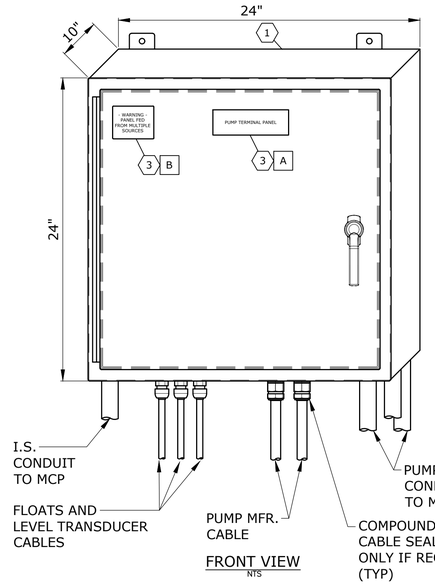


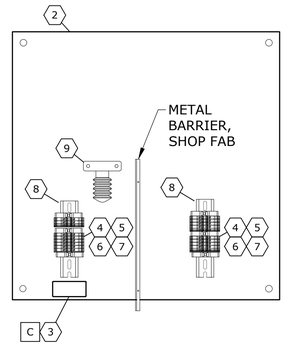

## WET WELL PLAN & ELEV DETAIL

SCALE: 3/4"=1'-0"

1 / -




FRONT VIEW
NTS



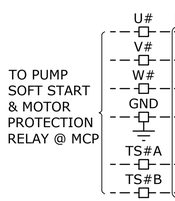

INTERIOR VIEW
NTS

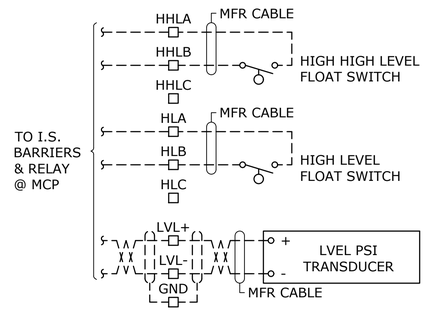
NOTE:
CIRCUITS TO PUMP TERMINAL PANEL TO BE INSTALLED IN A CONTINUOUS SECTION OF RGS CONDUIT FROM TRANSITION BELOW GRADE/SLAB AT CONDUIT BURIAL DEPTH TO PANEL. NO UNIONS OR FITTINGS TO BE INSTALLED.

A

| ITEM | NAMEPLATE SCHEDULE |
|---|---|
| A | PUMP TERMINAL PANEL |
| B | -WARNING- PANEL FED FROM MULTIPLE SOURCES |
| C | INTRINSICALLY SAFE AREA |
| | |

| # ITEM | QUANTITY | DESCRIPTION | MANUFACTURER | CATALOG NUMBER | EQUALS ALLOWED |
|---|---|---|---|---|---|
| 1 | 1 | NEMA 4 ENCLOSURE, 24"x24"x10" | SAGINAW | SCE-24EL2410SSLPL | YES |
| 2 | 1 | BACK PANEL | SAGINAW | SCE-24P24 | YES |
| 3 | 3 | PHENOLIC NAMEPLATE (SEE NAMEPLATE SCHEDULE) | PANEL FABRICATOR CHOICE | | YES |
| 4 | A/R | TERMINAL BLOCK (NON FUSED) | PANEL FABRICATOR CHOICE | | YES |
| 5 | A/R | TERMINAL BLOCK END STOP | PANEL FABRICATOR CHOICE | | YES |
| 6 | A/R | TERMINAL BLOCK END PLATE | PANEL FABRICATOR CHOICE | | YES |
| 7 | A/R | TERMINAL BLOCK (GROUND) | PANEL FABRICATOR CHOICE | | YES |
| 8 | A/R | DIN RAIL | PANEL FABRICATOR CHOICE | | YES |
| 9 | 1 | ANEROID BELLOWS | KPSI | 815 | NO |
| | | | | | |

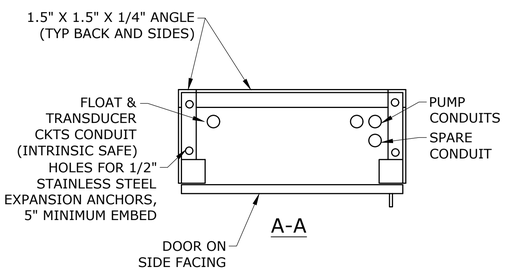


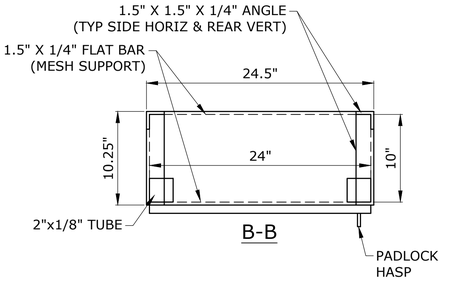



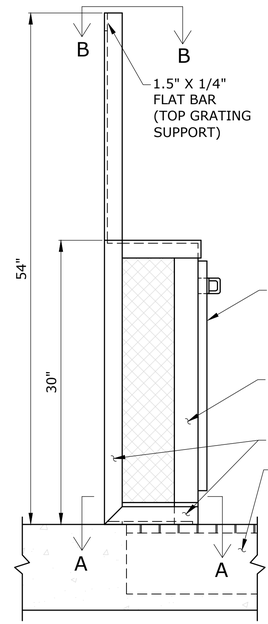

## PUMP TERMINAL PANEL DETAILS

SCALE: 3/4"=1'-0"

2 / -




FRAME NOTES:

1. ALL MATERIALS TO BE STAINLESS STEEL.
2. BACK AND SIDES OF STAND TO BE ENCASED WITH EXPANDED METAL MESH, WELDED TO STAND AND FRAME (1/2"X13MM).
3. COVER DOOR WITH SAME MESH AS STAND.
4. CONTRACTOR TO VERIFY ALL DIMENSIONS AND CLEARANCES WITH ACTUAL PANEL BEING PROVIDED.

## PUMP TERMINAL PANEL STAND

SCALE: 3/4"=1'-0"

3 / -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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**WET WELL PLAN, ELEVATION AND PUMP TERMINAL PANEL DETAILS**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-4**

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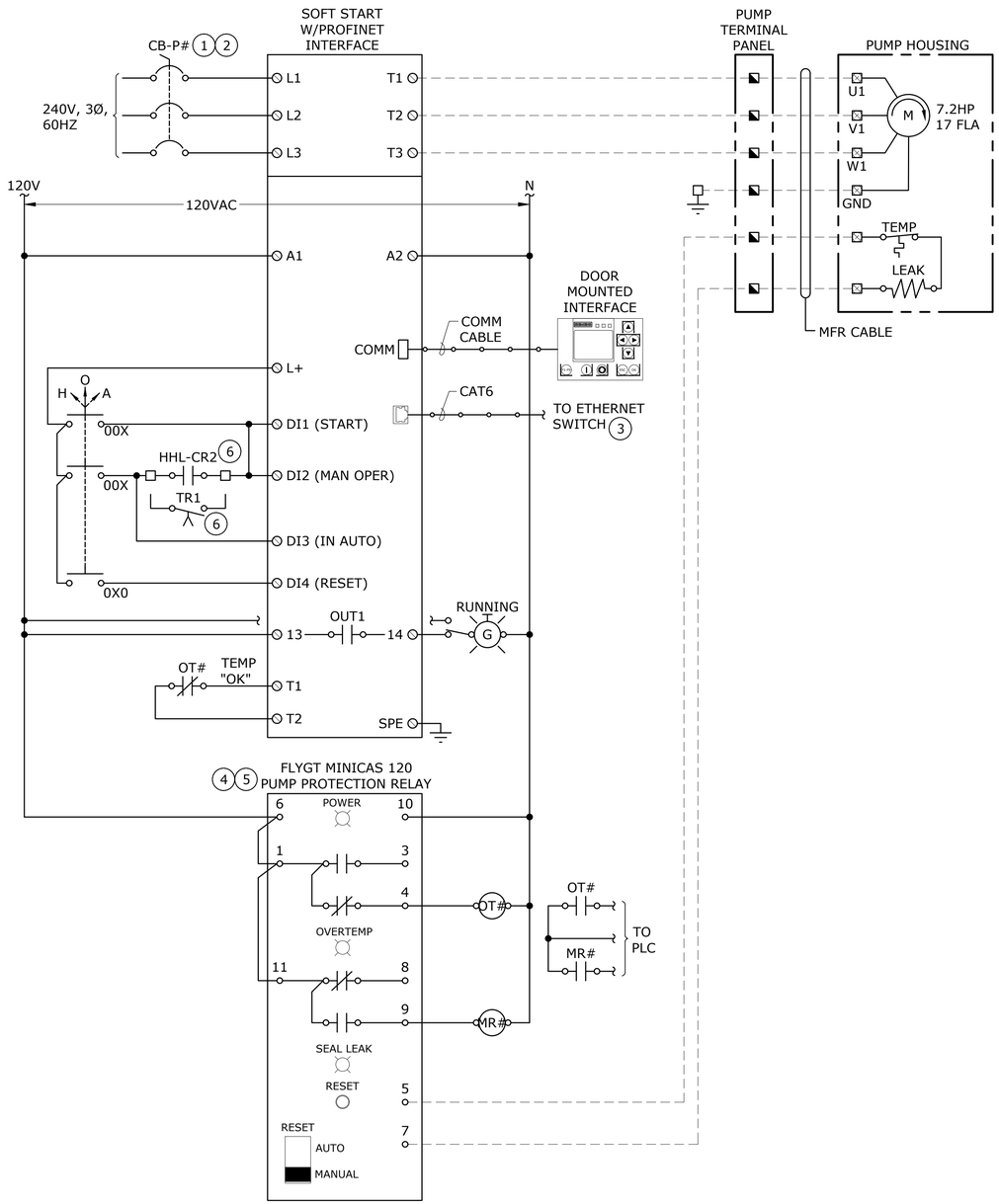
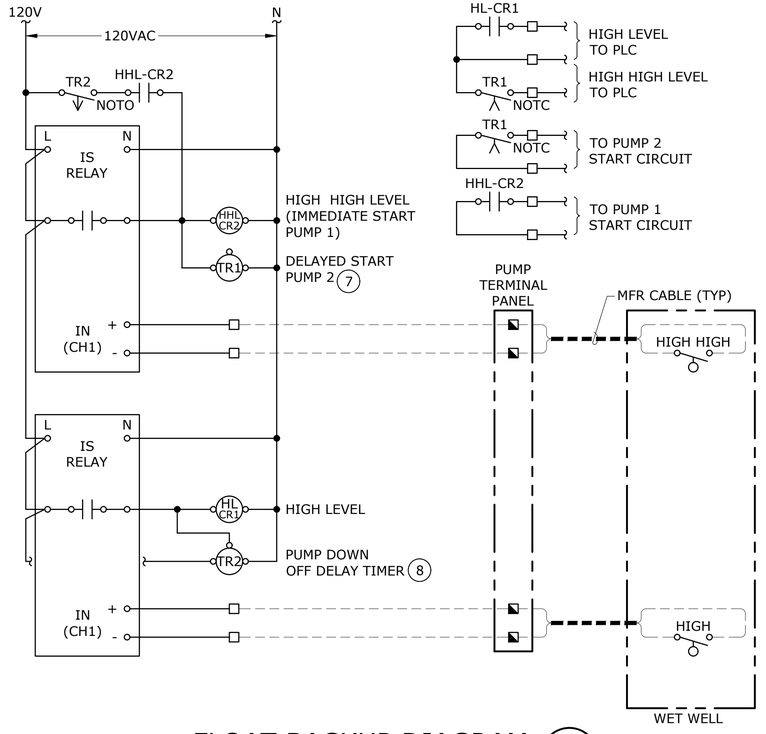



## MOTOR DIAGRAM 1

SCALE: NONE

NOTE:
1. CIRCUIT BREAKER & RELAY IDENTIFIER

   # = 1 FOR PUMP 1
   # = 2 FOR PUMP 2




## FLOAT BACKUP DIAGRAM 2

SCALE: NONE

KEY NOTES:

1. CIRCUIT BREAKERS TO BE SIZED PER MFR. RECOMMENDATIONS.
2. CIRCUIT BREAKERS TO BE PROVIDED WITH LOCKOUT MECHANISM.
3. SEE DRAWING E-7 FOR INTERCONNECTION DIAGRAM.
4. PUMP PROTECTION RELAY AND BASE TO BE PROVIDED BY THE PUMP MANUFACTURER AND INSTALLED IN THE MASTER CONTROL PANEL BY THE PANEL SUPPLIER.
5. FLYGT MINICAS 120 SENSOR. THERMAL CONTACT CLOSED IN "NORMAL CONDITION", OPENING ON FAULT. LEAK CONTACT OPEN IN "NORMAL CONDITION", CLOSING ON FAULT. MOUNT IN PANEL DOOR.
6. HHL-CR2 CONTACT CONNECTIONS ARE FOR PUMP NO. 1. TR1 CONTACT CONNECTIONS ARE FOR PUMP NO. 2, ALLOWING A SMALL DELAY FOR PUMP CALL.
7. SET TR1 PUMP DELAY TIMER FOR 10 SECONDS TO STAGGER PUMP START IN FLOAT BACKUP MODE.
8. SET TR2 PUMP DOWN DELAY TIMER IN FIELD TO SHUTOFF AT PUMP OFF ELEVATION.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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**MOTOR CONTROL AND FLOAT BACKUP DIAGRAMS**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

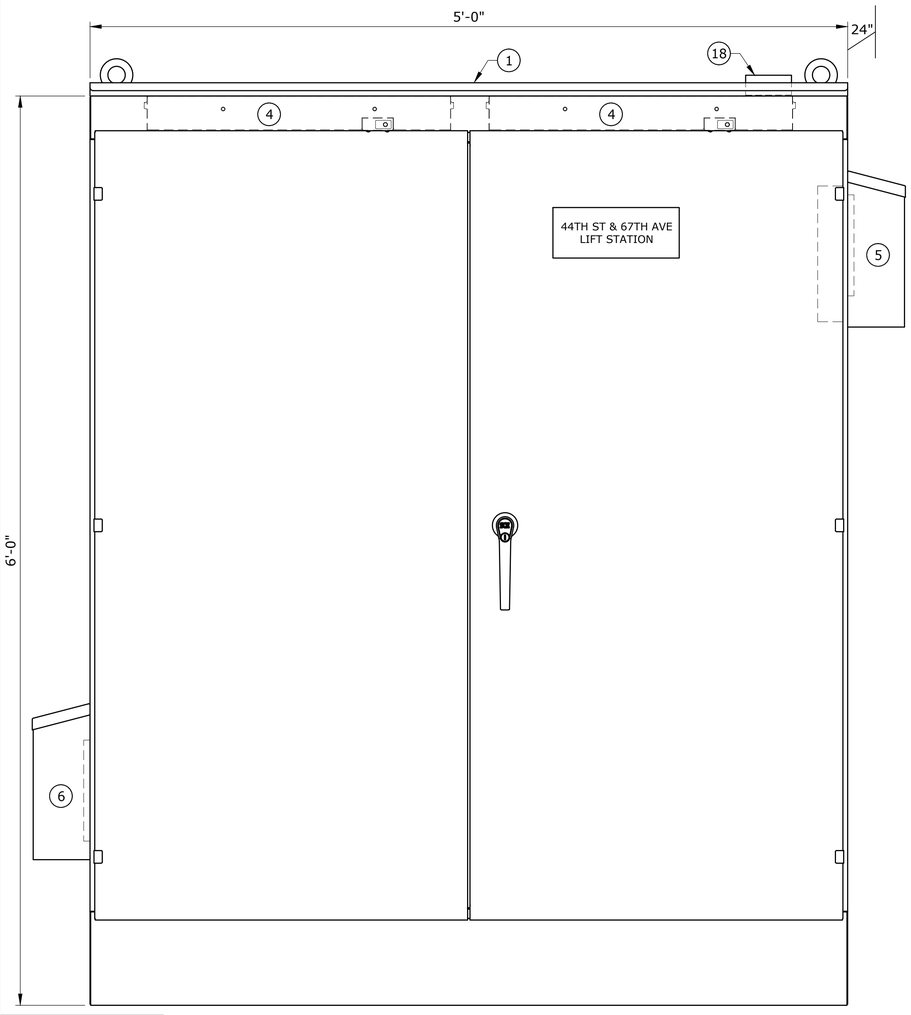
SHEET **E-5**

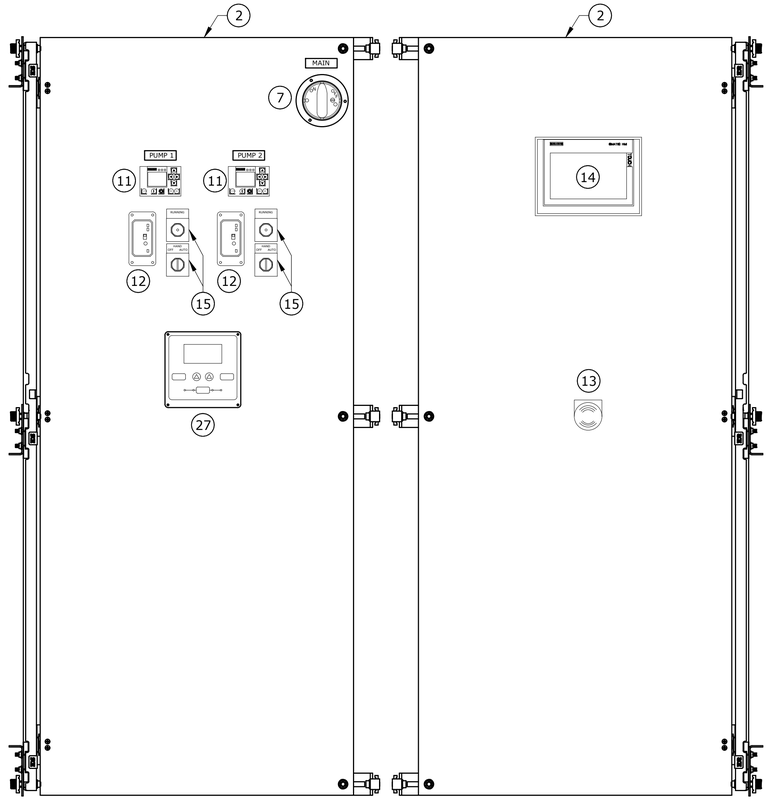
SHEET NOTES:

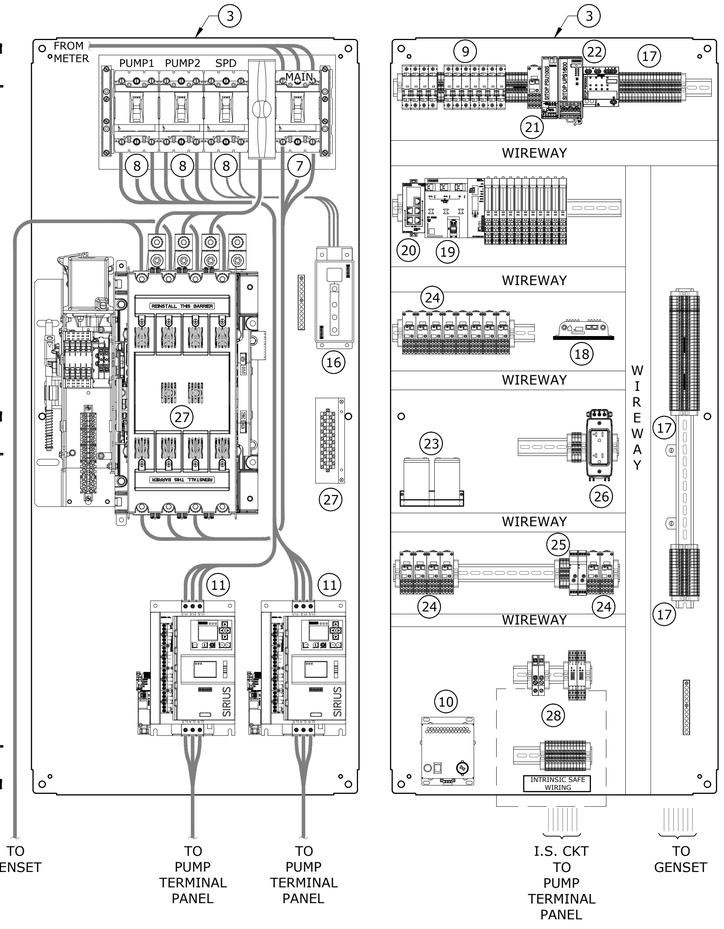
1. LAYOUT IS SHOWN FOR REFERENCE OF ANTICIPATED UNIT TO BE PROVIDED BY THE I&C CONTRACTOR. FINAL LAYOUT AND EQUIPMENT TO BE AS REQUIRED AND PROVIDED BY S&B, INC.

KEY NOTES:

1. ENCLOSURE, NEMA 3R(X) STAINLESS STEEL, 72Hx60Wx24D W/ NEMA 3R DRIP SHIELD
2. SWING OUT PANELS
3. INNER PANELS
4. PANEL LIGHTS
5. FAN W/ NEMA 3R SHROUD
6. EXHAUST GRILLE W/ NEMA 3R SHROUD
7. MAIN BREAKER W/ THROUGH DOOR DISCONNECT
8. POWER CIRCUIT BREAKER
9. DISTRIBUTION CIRCUIT BREAKERS
10. PANEL HEATER W/ INTEGRAL T-STAT
11. SOLID STATE SOFT STARTER W/PROFINET COMMUNICATION MODULE AND KEYPAD W/ DISPLAY.
12. PUMP PROTECTION RELAY (MOISTURE/LEAK)
13. OPERATOR IN TROUBLE PUSHBUTTON
14. OPERATOR INTERFACE TERMINAL (OIT)
15. HAND/OFF/AUTO 3-POSITION SWITCH AND RUN INDICATOR LIGHT
16. SURGE PROTECTIVE DEVICE (SPD)
17. TERMINAL BLOCKS
18. CELLULAR MODEM & ANTENNA
19. PLC CPU AND MODULES
20. ETHERNET SWITCH
21. DC POWER SUPPLY
22. DC UPS
23. DC BATTERIES W/ FABBED TRAY
24. CONTROL RELAYS
25. TIME DELAY RELAYS
26. 120V DUPLEX RECEPTACLE FOR TEST EQUIPMENT
27. AUTOMATIC TRANSFER SWITCH W/ DOOR MOUNTED CONTROLLER AND FIELD TERMINAL BLOCK
28. INTRINSICALLY SAFE BARRIER, RELAYS AND TERMINAL BLOCKS FOR LEVEL TRANSDUCER AND FLOATS. INTRINSIC WIRE AREA.





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10-3-23

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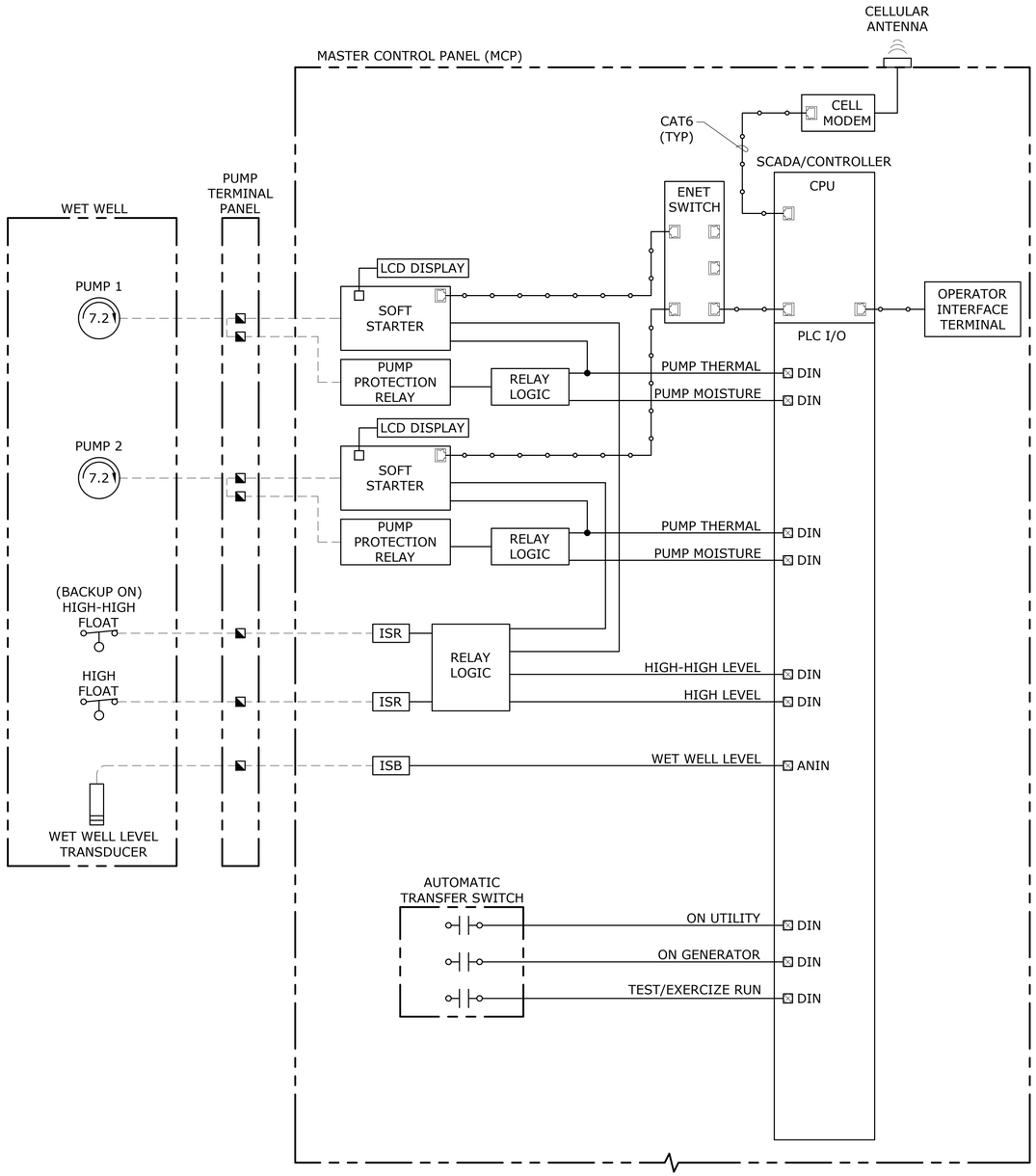
THE CITY OF FIRCREST

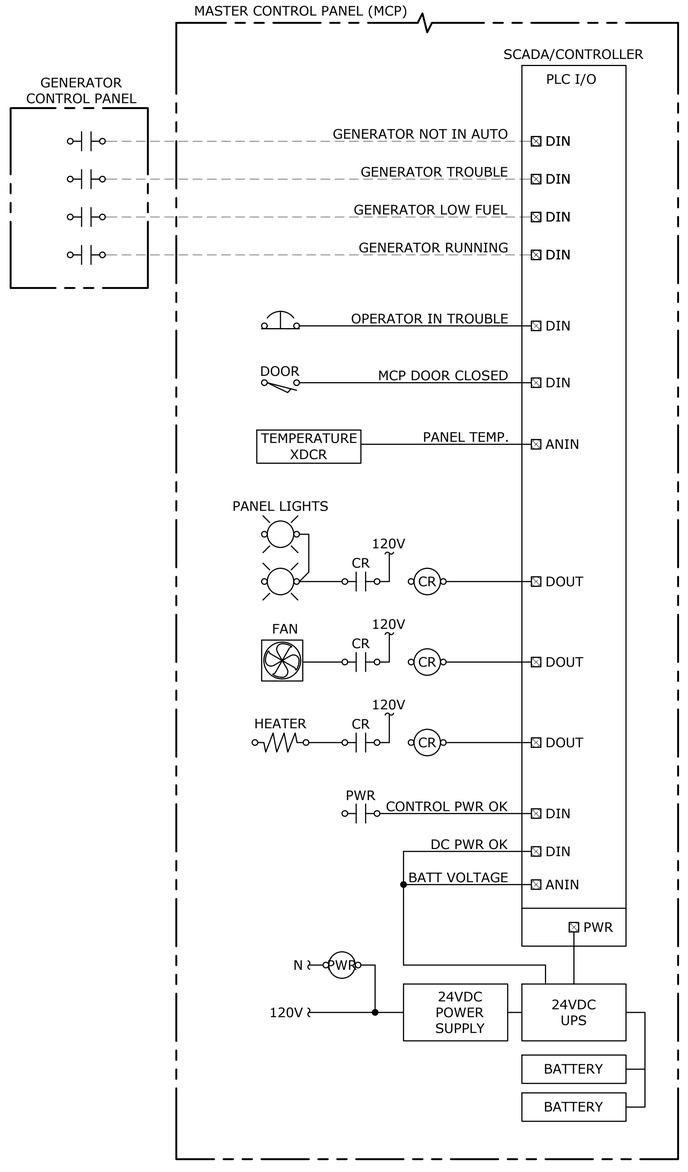
**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**MASTER CONTROL PANEL (MCP) LAYOUT**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-6**




SHEET NOTES:

1. MASTER CONTROL PANEL BASED ON PREVIOUS CONTROL STRATEGY AND DESIGN FROM THE CITY'S INSTRUMENTATION AND CONTROLS CONTRACTOR, S&B INC.

2. S&B INC. TO PROVIDE FULL PANEL DESIGN, PROGRAMMING, STARTUP AND IMPLEMENT PER CITY'S EXISTING SCADA SYSTEM STANDARDS.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THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**BLOCK DIAGRAM AND CONTROL INTERCONNECTION DETAIL**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-7**

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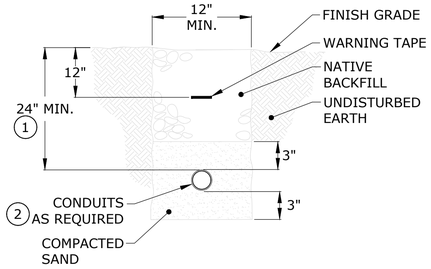
## DETAIL NOTES

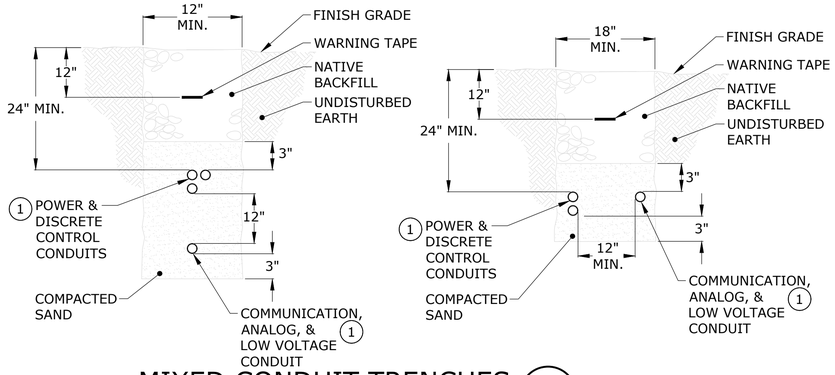
1. VERIFY TRENCH DEPTH AND COVERING FOR INCOMING SERVICE CONDUIT WITH LOCAL UTLITY.
2. COORDINATE WITH CIVIL DISCIPLINE FOR INTERSECTING PIPES.



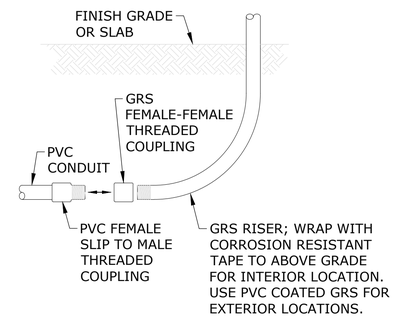

## TYP. CONDUIT TRENCH (1/-)
SCALE: NONE

## DETAIL NOTES

1. COORDINATE WITH CIVIL DISCIPLINE FOR INTERSECTING PIPES.




## MIXED CONDUIT TRENCHES (2/-)
SCALE: NONE




## CONDUIT TRANSITION (3/-)
SCALE: NONE




## GROUND ROD (4/-)
SCALE: NONE




## REBAR GROUNDING (5/-)
SCALE: NONE




## FLOAT CABLE MTG DETAIL (6/-)
SCALE: NONE




### DETAIL NOTES

1. THIS DETAIL TO BE USED IF MFR. PUMP GUIDE DOES NOT HAVE HANGER PROVISIONS FOR MFR PUMP CABLES. PROVIDE SUPPORT GRIP REGARDLESS OF MOUNTING BRACKET USED.

## 1 PUMP CABLE & XMTTR MOUNT DETAIL (7/-)
SCALE: NONE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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLIS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 10-3-23

CASEY CIVIL ...Engineering Solutions

THE CITY OF FIRCREST

**44TH ST & 67TH AVE LIFT STATION UPGRADE PROJECT**

**ELECTRICAL DETAILS AND SCHEDULES**

PROJECT NO.: 22-006 | SCALE: AS SHOWN | DATE: October 2023

SHEET **E-8**

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ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE ELLIPSE SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, TSP - FOR TWISTED SHIELDED PAIR, TST - TWISTED SHIELDED TRIAD AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

| CIRCUIT NUMBER | FROM | TO | CONDUCTORS | RACEWAY | NOTES |
|---|---|---|---|---|---|
| P1 | UTILITY TRANSFORMER | RELOCATED METERBASE AND MAIN BREAKER PANEL | PULL CORD | 2 | CONDUCTORS BY UTLITY |
| P2 | RELOCATED METERBASE AND MAIN BREAKER PANEL | MASTER CONTROL PANEL (MCP) | (3) 2 AWG, P<br>(1) 2 AWG, N<br>(1) 8 AWG, G | 1.5 | |
| P3 | AUTOMATIC TRANSFER SWITCH (ATS) IN MCP | GENERATOR | (3) 2 AWG, P<br>(1) 2 AWG, N<br>(1) 8 AWG, G | 1.5 | |
| P4 | MCP | GENERATOR | (1) 12 AWG, P<br>(1) 12 AWG, N<br>(1) 12 AWG, G | 3/4 | BLOCK HEATER CKT |
| P5 | MCP | GENERATOR | (1) 12 AWG, P<br>(1) 12 AWG, N<br>(1) 12 AWG, G | 3/4 | BATTERY CHARGER CKT |
| P6 | MCP | PUMP TERMINAL PANEL (PTP) | (3) 10 AWG, P<br>(1) 10 AWG, G<br>(2) 14 AWG, C | 1 | PUMP NO. 1 POWER<br><br>SEAL LEAK/THERMAL CKT |
| P7 | MCP | PUMP TERMINAL PANEL (PTP) | (3) 10 AWG, P<br>(1) 10 AWG, G<br>(2) 14 AWG, C | 1 | PUMP NO. 2 POWER<br><br>SEAL LEAK/THERMAL CKT |
| C1 | MCP | GENERATOR | (8) 14 AWG, C<br>(1) 12 AWG, G | 1 | (1) GENERATOR START CKT FOR ATS<br>(3) GENERATOR STATUS CKTS |
| C2 | MCP | PUMP TERMINAL PANEL (PTP) | (4) 14 AWG, C<br>(1) 18 AWG, TSP<br>(1) 12 AWG, G | 1 | FLOAT CKTS<br>LEVEL CKT |
| SP1 | MCP | PUMP TERMINAL PANEL (PTP) | PULL CORD | 1 | SPARE CONDUIT |
| | | | | | |


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PROJECT#: 22.36.01


| NO. | DATE | BY | REVISION |
|---|---|---|---|
| | | | |

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**CIRCUIT SCHEDULE**

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SHEET **E-9**