CITY OF SPARKS MARINA CANAL CIRCULATING PUMP PWP #WA-2022-361

MAY 2022

CITY OF SPARKS OFFICIALS

CITY MANAGER

NEIL KRUTZ

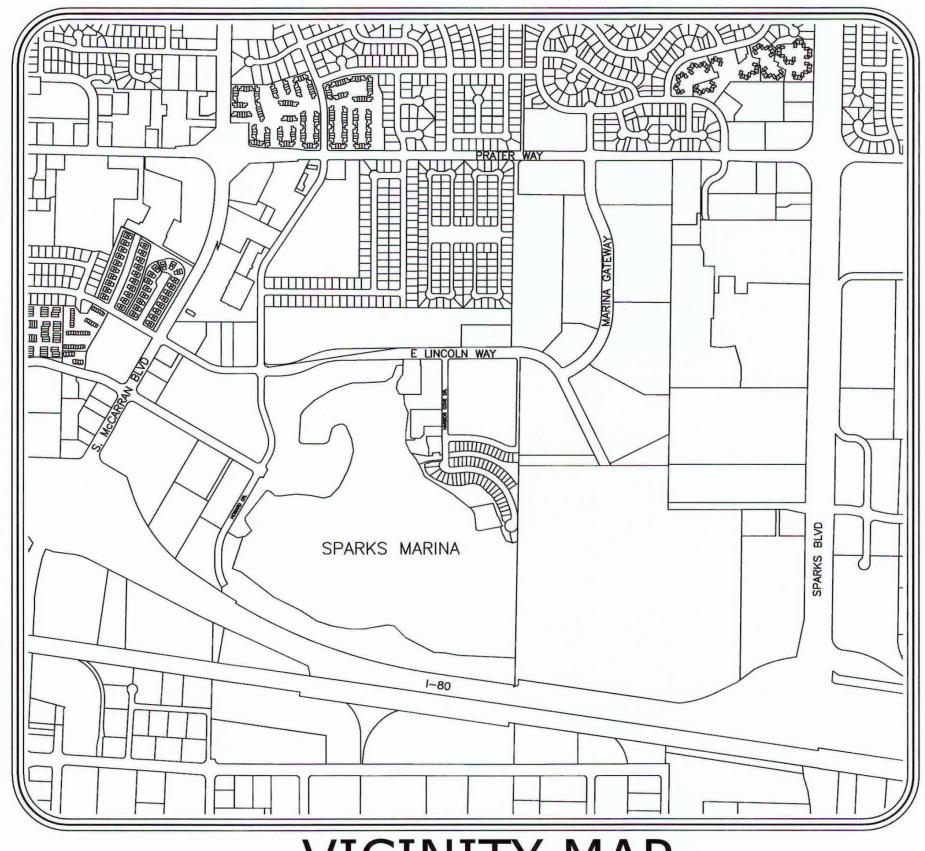


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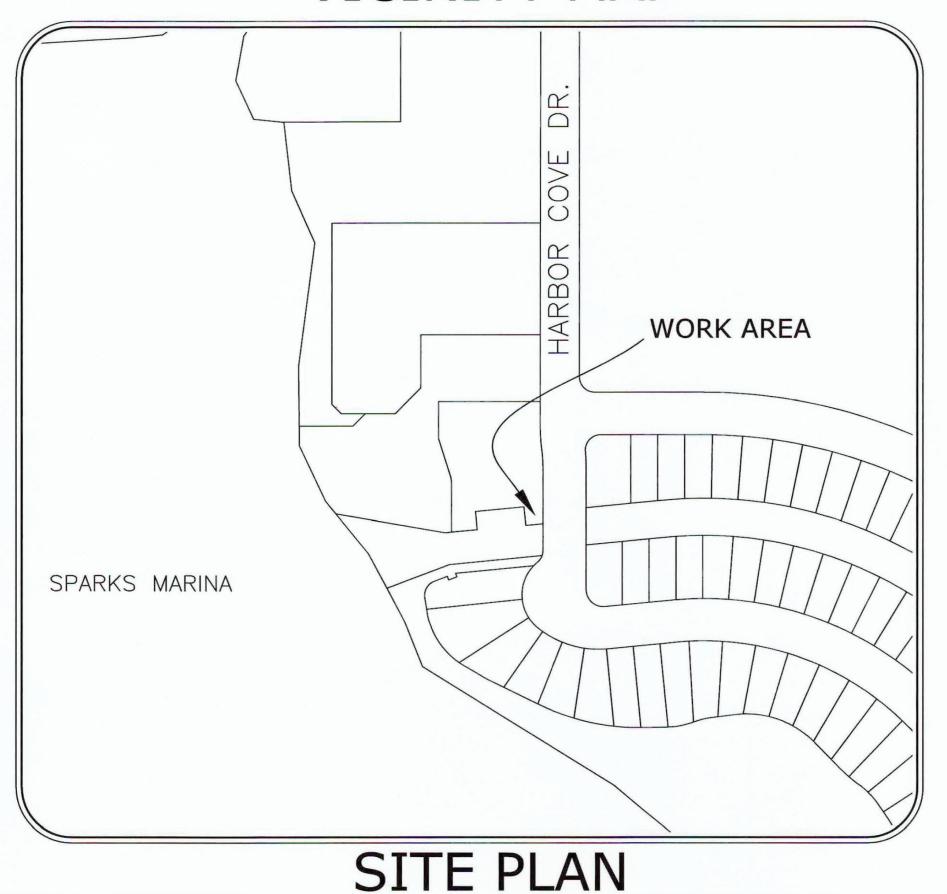
APPROVED BY:

JON R. ERICSON, P.E., P.T.O.E

CITY ENGINEER



VICINITY MAP



ENGINEER



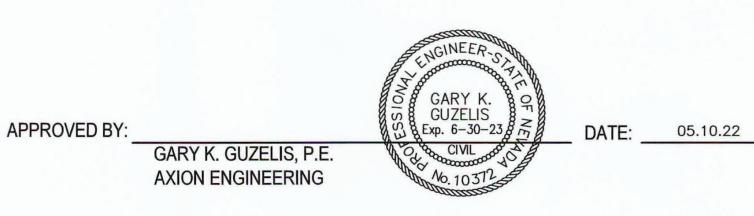
683 EDISON WAY - RENO, NEVADA 89503 PH 775-771-5554 / FX 775-357-8421

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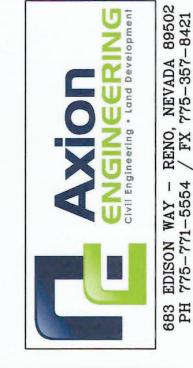
ABBREVIATIONS

AC ASPHALT CEMENT LINEAR FEET BEGINNING OF CURVE LP LOW POINT BF BOTTOM OF FOOTING M.D.D. MAXIMUM DRY DENSITY MIN. MINIMUM BVC BEGINNING OF VERTICAL CURVE MPOC MID POINT OF CURVE CB CATCH BASIN MW MONITORING WELL CL CENTERLINE PI POINT OF INTERSECTION DI DROP INLET PCC POINT OF COMPOUND CURVATURE DIP DUCTILE IRON PIPE PRC POINT OF REVERSE CURVATURE PVC POLYVINYL CHLORIDE ELEV..... ELEVATION EC END OF CURVE R RADIUS REF. REFERENCE EP EDGE OF PAVEMENT RET. RETURN EVC END OF VERTICAL CURVE EXIST..... EXISTING RCP REINFORCED CONCRETE PIPE RMJ RESTRAINED MECHANICAL JOINT (e) EXISTING FCA FLANGED COUPLING ADAPTER RT. RIGHT FF FINISH FLOOR R/W RIGHT OF WAY FFC FRONT FACE OF CURB SD STORM DRAIN SS SANITARY SEWER FG FINISH GRADE FHA FIRE HYDRANT ASSEMBLY SF SQUARE FEET SSMH SANITARY SEWER MANHOLE FL FLANGE FTG FITTING SDMH STORM DRAIN MANHOLE S SLOPE GB GRADE BREAK SL STREET LIGHT SOWF SLIP ON WELD FLANGE HORIZ..... HORIZONTAL IE INVERT ELEVATION STA. STATION LAT. LATERAL TC TOP OF CURB LT. LEFT VC VERTICAL CURB VPI VERTICAL POINT OF INTERSECTION



TITLE SHEET

WSP WELDED STEEL PIPE



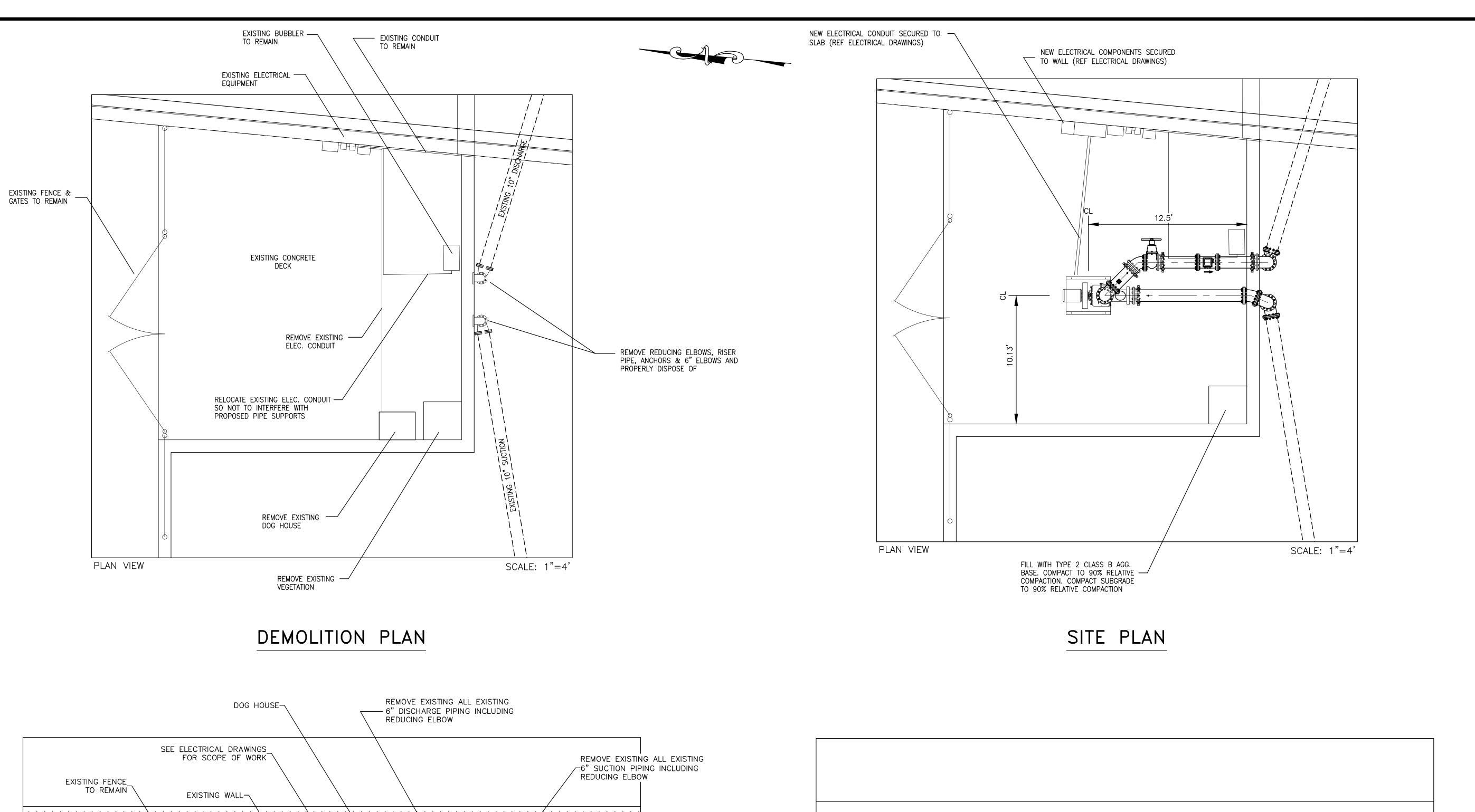


MARINA CANAL CIRCULATING PUMP VIL IMPROVEMENT PLAN TITLE SHEET SPARKS NEVADA

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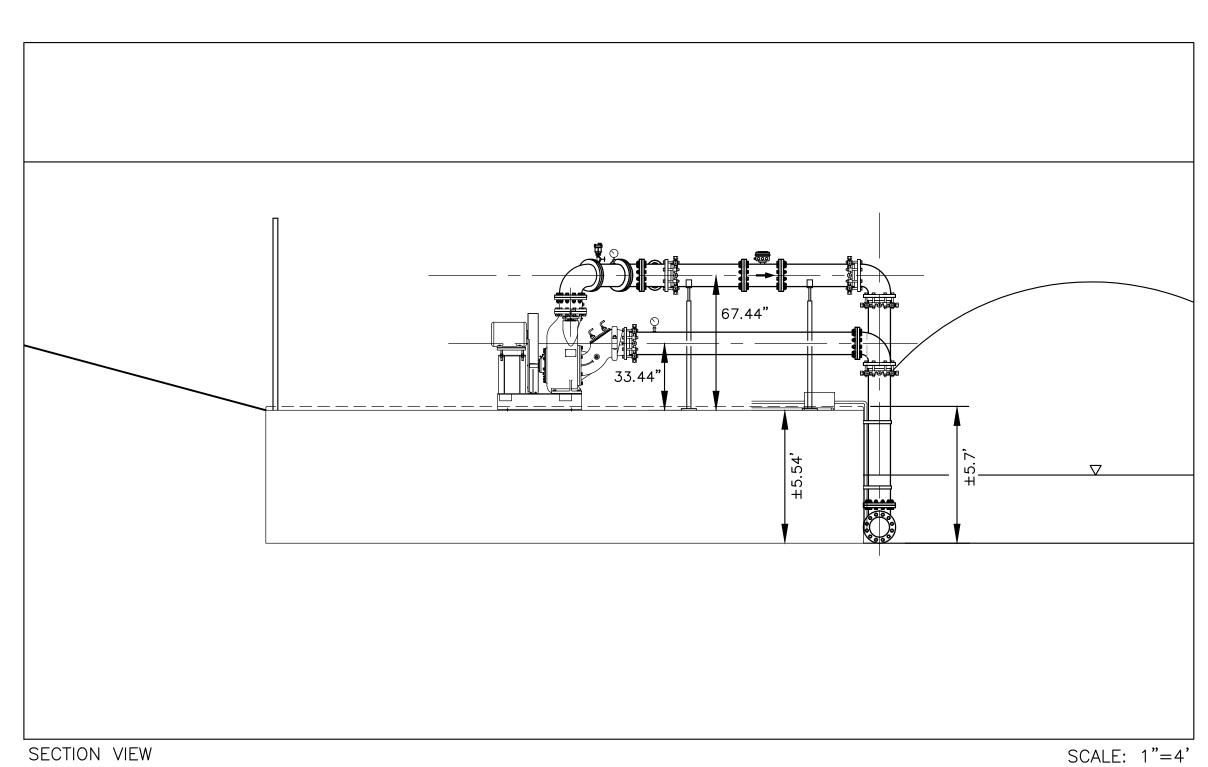


EXISTING GRADE

SECTION VIEW

ELECTRIC CONDUIT

SCALE: 1"=4'



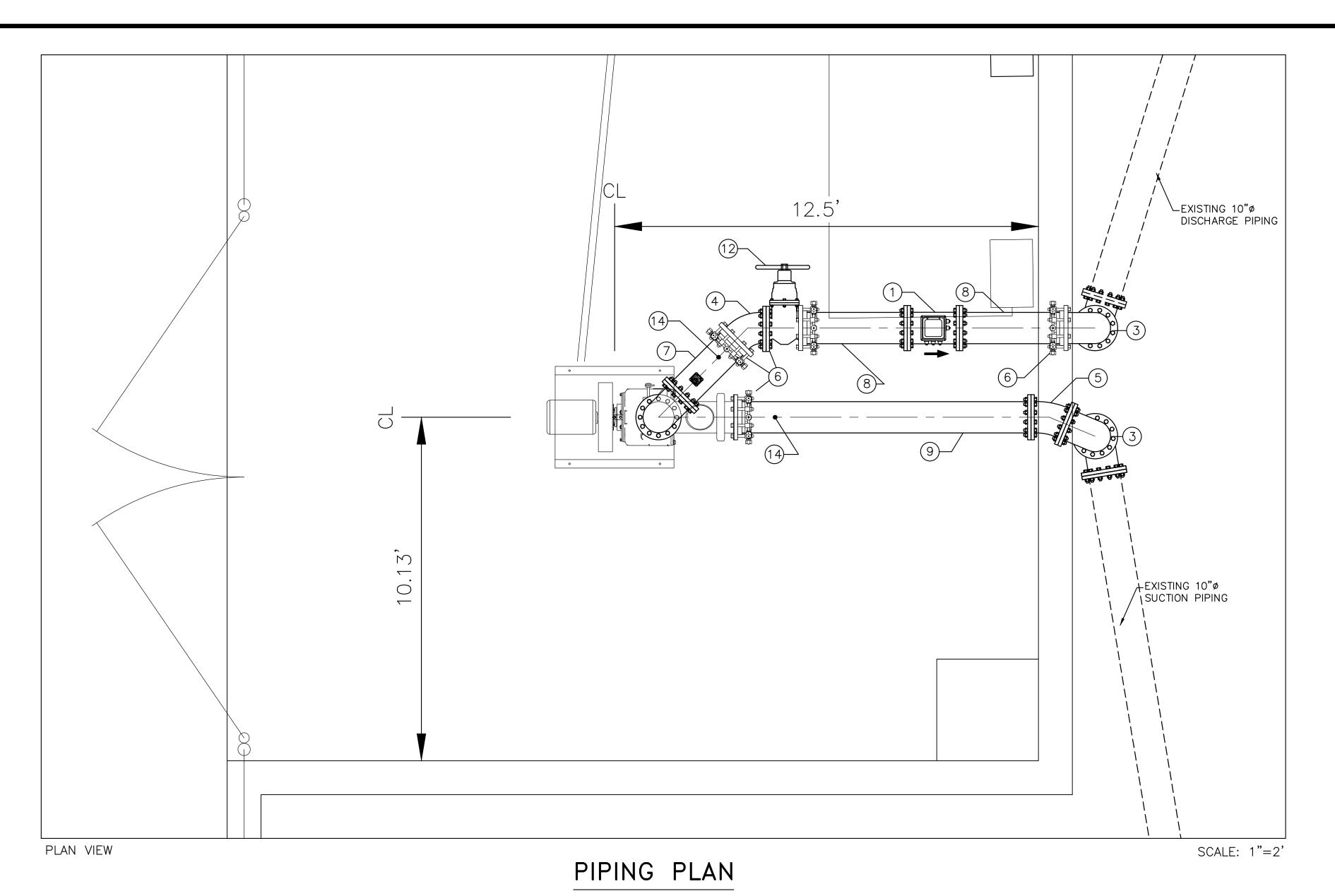
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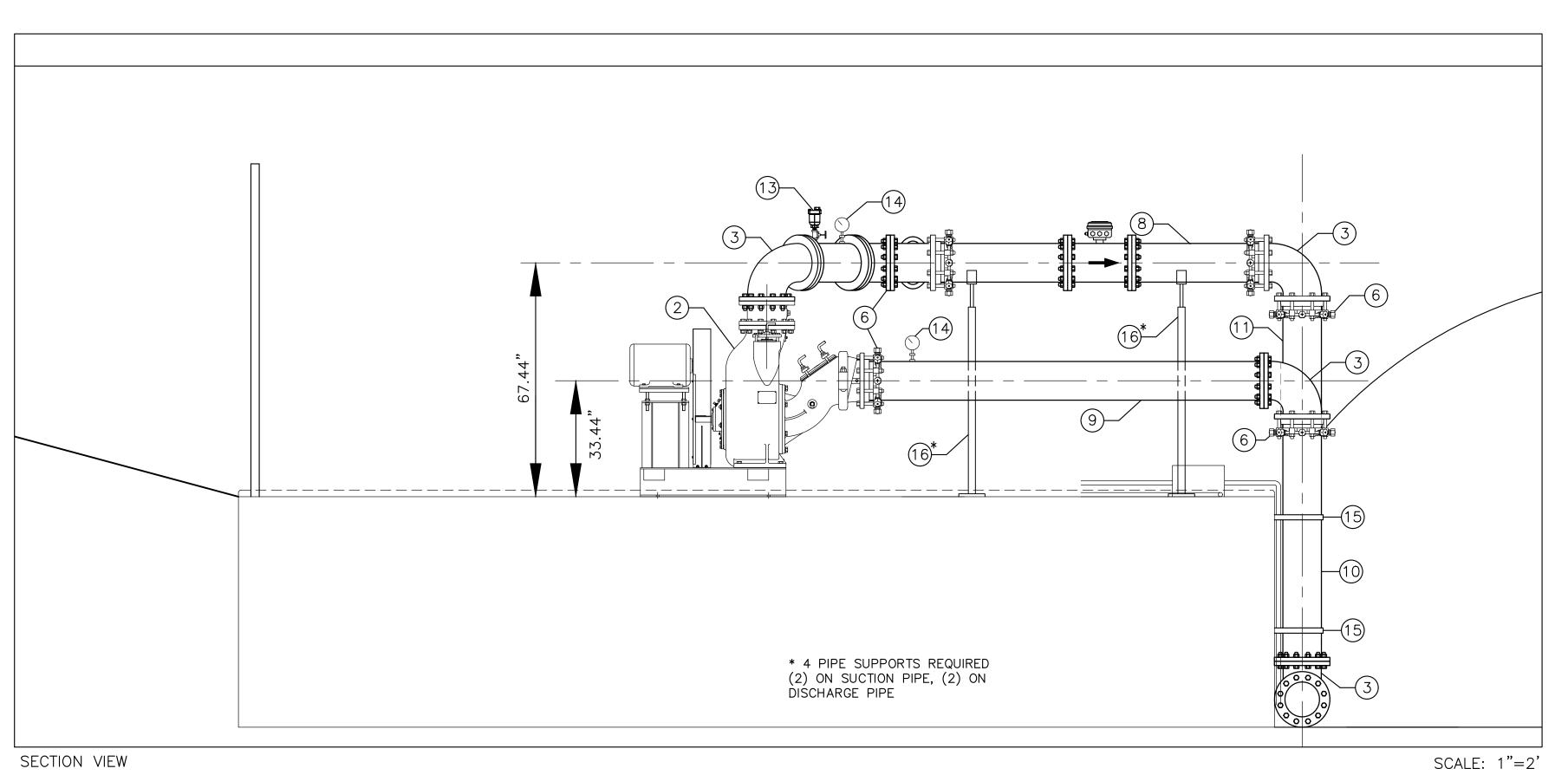


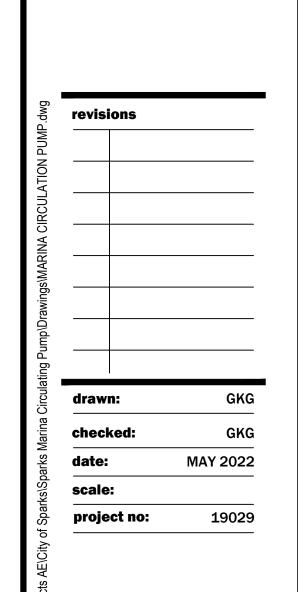


		MATERIAL LIST
ITEM No.	QTY.	DESCRIPTION
1	1	McCROMETER DURA MAG 10" FLOW METER w/REMOTE DISPLAY
		MOUNTED ADJACENT TO SCADA RTU, AC POWER, 420mA ANALO
		OUT, 50' POWER & ANALOG CABLES.
2	1	GORMAN RUPP T10A3S-B 10" SELF PRIMING CENTRIFUGAL
		PUMP MOUNTED ON 41546-719 BASE, 15 HP 1,800 RPM
		10"x10", 14.75" IMPELLER, 254T FRAME, 3 PHASE
		208-230/460VAC TEFC MOTOR (NO SUBSTITUTES)
3	5	10"ø 90° DUCTILE IRON FLANGED ELBOW
4	1	10"ø 45° DUCTILE IRON FLANGED ELBOW
5	1	10"ø 22.5° DUCTILE IRON FLANGED ELBOW
6	6	10"ø RESTRAINED FLANGE COUPLING ADAPTER
7	*LF	10"ø FLxFL DUCTILE IRON SPOOL (±27" FIELD DETERMINE)
8	*LF	10"ø FLxPE DUCTILE IRON SPOOL (±37" FIELD DETERMINE)
9	*LF	10"ø FLxPE DUCTILE IRON SPOOL (±103" FIELD DETERMINI
10	*LF	10"ø FLxPE DUCTILE IRON SPOOL (±70" FIELD DETERMINE)
11	*LF	10"ø FLxPE DUCTILE IRON SPOOL (±104" FIELD DETERMINE)
12	1	10"ø FLxFL GATE VALVE
13	1	APCO AIR RELEASE VALVE
14	2	PRESSURE GAUGE (SEE DETAIL SHEET)
15	4	STAINLESS STEEL PIPE ANCHOR
16	4	ADJUSTABLE PIPE SUPPORT, BOLTED TO FLOOR WITH
		MORTAR LEVELING PAD

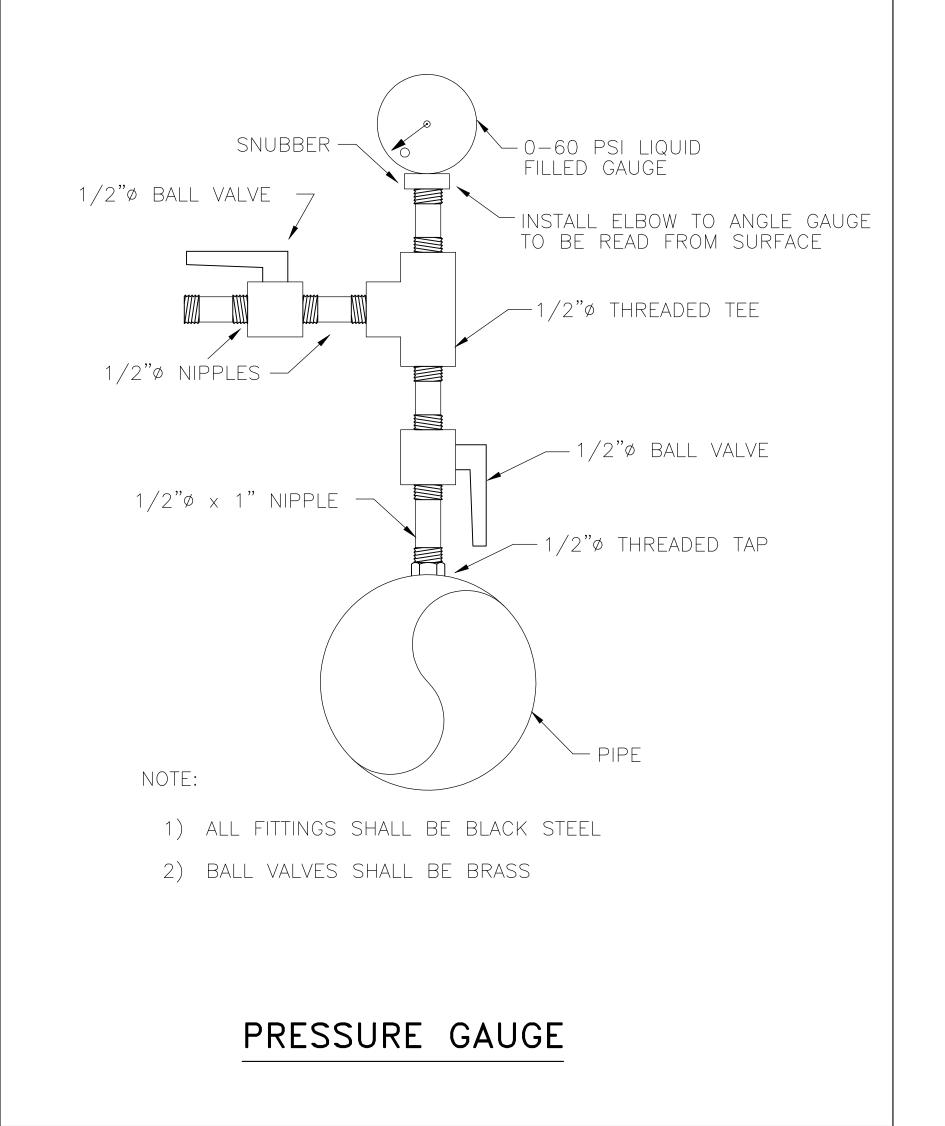
* LF = FIELD DETERMINE

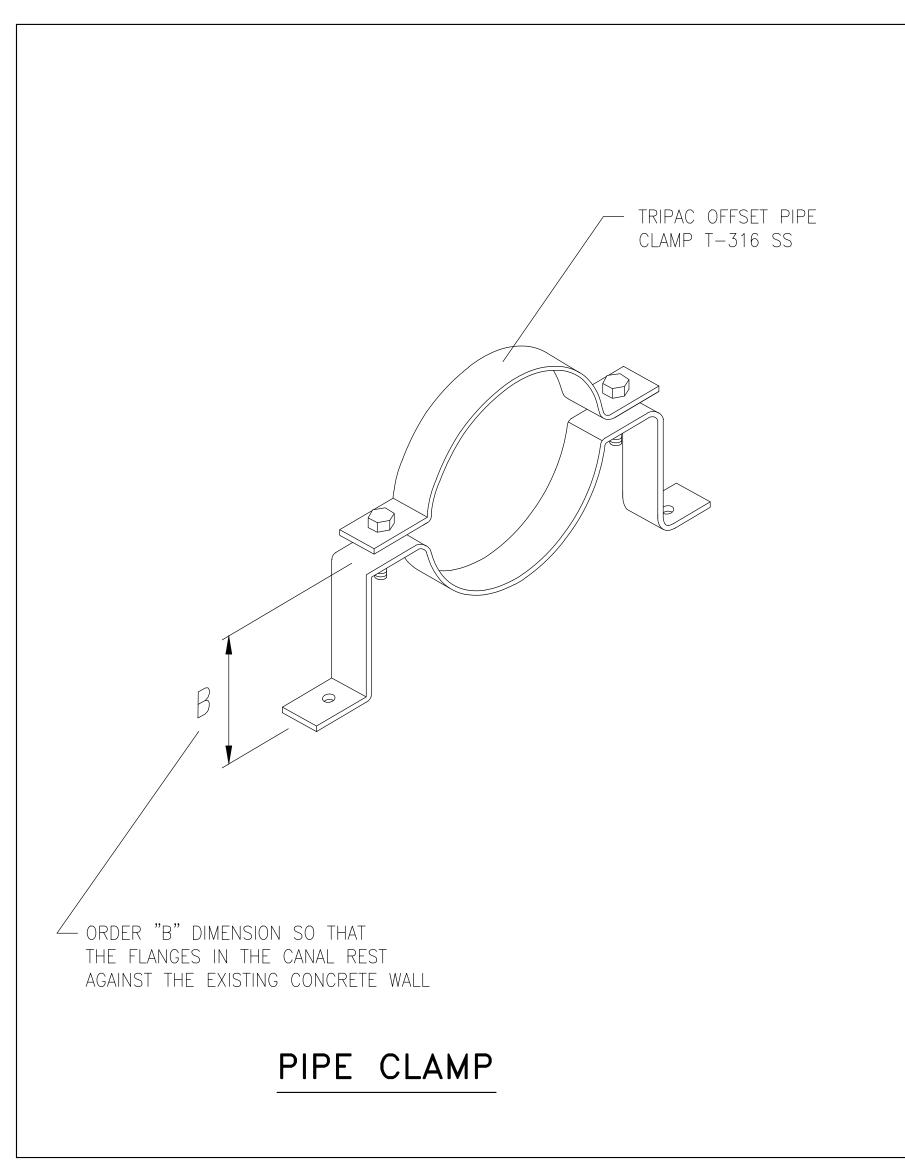
MARINA CANAL CIRCULATION PUMP MP IMPROVEMENT PLANS PIPING PLAN

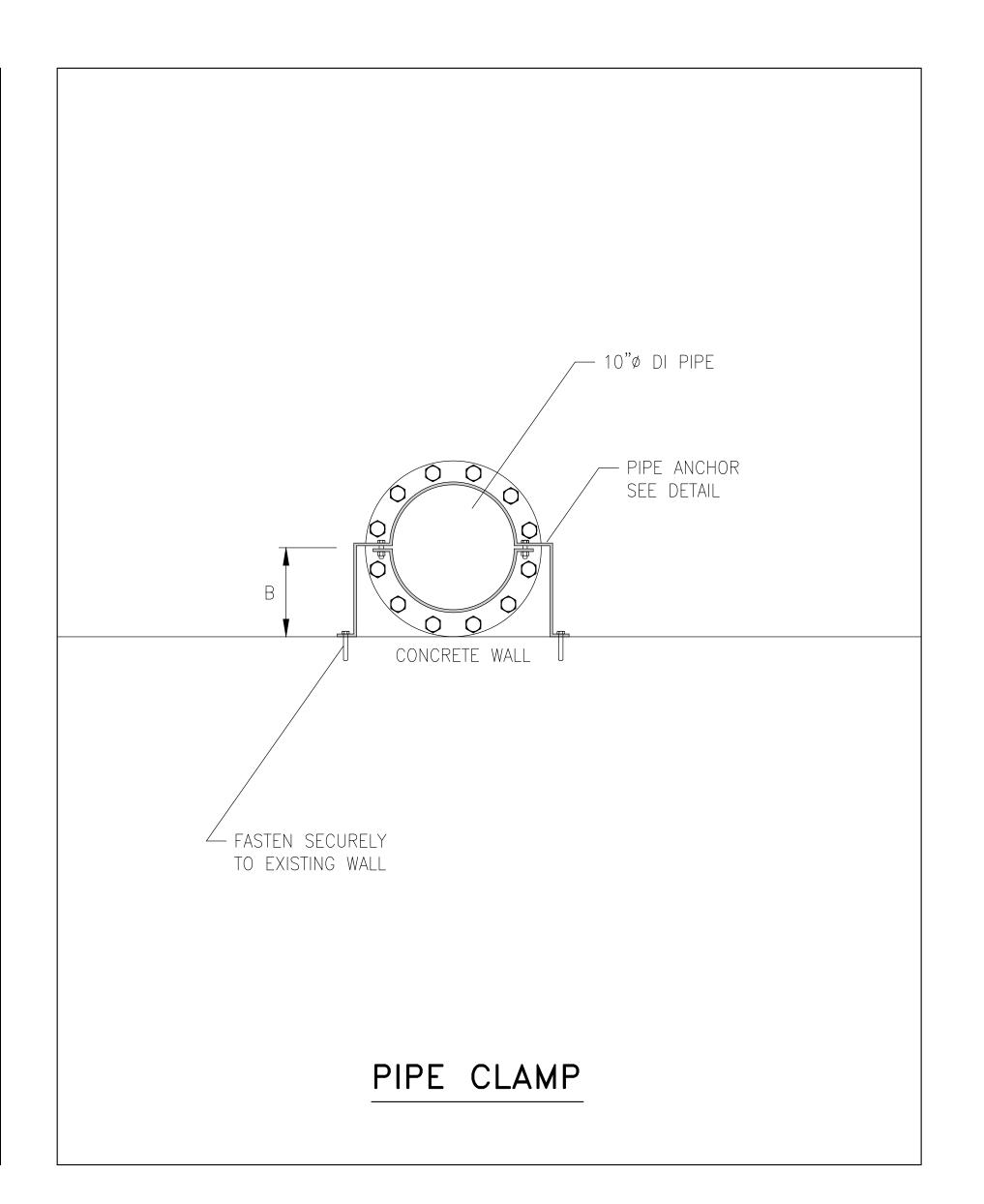


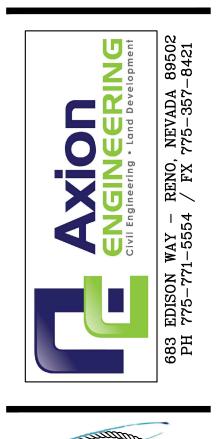


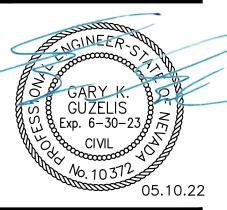
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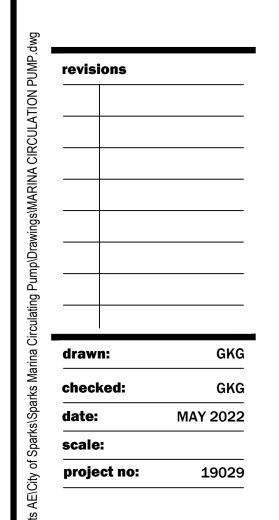








PUMP IMPROVEMENT PLANS PETAIL SHEET SPARKS, NEVADA



ELECTRICAL SPECIFICATIONS

CONSIDER THE GENERAL AND SPECIFIC CONDITIONS OF THE CONTRACT AND THE COMPLETE SET OF DRAWINGS AS PART OF THIS DIVISION OF THE SPECIFICATIONS. WHERE REQUIREMENTS OF THIS DIVISION DO NOT COINCIDE WITH GENERAL AND SPECIAL CONDITIONS, THE STRICTER REQUIREMENTS WILL GOVERN.

2.0 WORK INCLUDED

PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, APPARATUS, ETC. INCLUDING THOSE REASONABLY INFERRED, AS REQUIRED FOR A COMPLETE INSTALLATION OF ANY ELECTRICAL WORK SHOWN WITHIN THESE ELECTRICAL CONSTRUCTION DOCUMENTS, OR DETAILED IN THE ELECTRICAL SPECIFICATIONS. ALL ELECTRICAL WORK SHALL BE PERFORMED BY LICENSED ELECTRICIANS AND TECHNICIANS. REPAIRS AND REPLACEMENTS FOR DEFECTIVE EQUIPMENT OR MATERIALS AS COVERED BY WARRANTEE/GUARANTEE SHALL BE CONSIDERED WITHIN THE SCOPE OF WORK AND SHALL BE PERFORMED AT NO ADDITIONAL COST (EXCEPTION: LIGHTING LAMPS).

3.0 RELATED WORK SPECIFIED ELSEWHERE

ELECTRICAL CONSTRUCTION DOCUMENTS AND ELECTRICAL SPECIFICATION SECTION SHALL BE CONSIDERED AS A WHOLE. ALL ELECTRICAL WORK SHALL ACCOMODATE THE REQUIREMENTS OF THIS DIVISION TO ENSURE PROPER PERFORMANCE OF ELECTRICAL WORK REQUIRED BY OTHER DIVISIONS.

4.0 SITE INVESTIGATION

ELECTRICAL CONTRACTOR SHALL THOROUGHLY INVESTIGATE ALL EXISTING CONDITIONS AT THE PROJECT SITE PRIOR TO SUBMITTING A BID.

5.0 REGULATIONS AND STANDARDS

ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF: THE 2017 NATIONAL ELECTRICAL CODE (NEC.), APPLICABLE PUBLICATIONS OF NATIONAL FIRE PROTECTION AGENCY (NFPA.), INTERNATIONAL BUILDING CODE (IBC), NECA 1-2015 STANDARD FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION, AMERICANS WITH DISABILITIES ACT (ADA), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), THE REQUIREMENTS OF THE FIRE MARSHALL, AND ANY UTILITY COMPANY STANDARDS AS DETAILED IN UTILITY WORK ORDER DRAWINGS. ADDITIONALLY, ALL STATE AND LOCAL CODES AND ORDINANCES SHALL BE UPHELD. CONTRACTOR SHALL NOT OMIT ANY COMPONENT OR PORTION OF THESE ELECTRICAL CONSTRUCTION DOCUMENTS WHICH MAY EXCEED THE LISTED STANDARDS. NO ELECTRICAL WORK DETAILED IN THE ELECTRICAL CONSTRUCTION DOCUMENTS OR ELECTRICAL SPECIFICATION SECTION SHALL BE INTERPRETED TO PERMIT WORK WHICH FAILS TO CONFORM TO THESE REQUIRMENTS. WHERE CONFLICTS OCCUR, HIGHER STANDARDS SHALL GOVERN. RULINGS AND INTERPRETATIONS BY GOVERNING AGENCIES SHALL BE CONSIDERED A PART OF THIS DIVISION IF COMMONLY IMPOSED UPON THE TRADE PRIOR TO SUBMISSION OF BID.

ELECTRICAL CONTRACTOR SHALL INCLUDE ALL FEES AND ROYALTIES FOR TESTS AND INSPECTIONS. UTILITY COMPANY CHARGES FOR PERMANENT CONNECTION TO ELECTRICAL SERVICE ARE NOT THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

1.0 DRAWINGS AND SPECIFICATIONS

1.1 ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS, AND INSTALLATION REQUIREMENTS OF ALL ELECTRICAL EQUIPMENT PRIOR TO "ROUGH-IN" (INCLUDING RECEPTACLES, SWITCHES, CONDUITS, SWITCHBOARDS, PANELBOARD, ETC.). LOCATIONS SHALL BE VERIFIED FOR APPROPRIATE SPACE (LENGTH, WIDTH, AND HEIGHT) AND CLEARANCE PRIOR TO FABRICATING OR ORDERING ANY EQUIPMENT OR MATERIALS. ALL DISCREPANCIES SHALL BE REPORTED TO THIS ENGINEER IMMEDIATELY. FINAL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS.

- 12 ELECTRICAL CONTRACTOR SHALL SUBMIT WRITTEN REQUEST-FOR-INFORMATION (RFI) DOCUMENTS TO THIS ENGINEER PRIOR TO PERFORMING ANY WORK WHERE AMBIGUITY ARISES. ELECTRICAL CONTRACTOR SHALL NOT PERFORM ANY FIELD MODIFICATIONS OR DEVIATIONS FROM THE ELECTRICAL CONSTRUCTION DOCUMENTS AND/OR SPECIFICATIONS WITHOUT APPROVED WRITTEN RESPONSE FROM THIS ENGINEER THROUGH AN APPRORPIATELY SUBMITTED RFI.
- 1.3 ELECTRICAL CONTRACTOR SHALL PERFORM ELECTRICAL WORK PER MANUFACTURER'S DIRECTIONS WHERE SAID DETAILS ARE NOT SPECIFICALLY COVERED OR INDICATED BY THESE ELECTRICAL CONSTRUCTION DOCUMENTS AND ELECTRICAL SPECIFICATIONS. WHEN CONFLICT ARISES, SECTION 1.2 OF THIS SPECIFICATION SHALL DICTATE
- 1.4 ALL SERVICES RENDERED BY THIS ENGINEER ARE PROFESSIONAL OPINIONS AND RECOMMENDATIONS, ONLY. UNDER NO CIRCUMSTANCE IS IT THE INTENT OF THIS ENGINEER TO DIRECTLY CONTROL THE PHYSICAL ACTIVITIES OF THE CONTRACTOR OR HIS EMPLOYEES.

80 MATERIALS

8.1 APPEARANCE AND FINISH OF MATERIALS SHALL BE OF THE HIGHEST STANDARDS. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, OPERATING NORMALLY, AND OF HIGHEST AVAILABLE QUALITY. ANY DEFECTIVE MATERIALS SHALL BE IDENTIFIED AND REMOVED FROM SITE, IMMEDIATELY.

- 82 PROVIDE UNDERWRITERS LABORATORY (UL) LISTED MATERIALS AND EQUIPMENT WHEREVER STANDARDS FOR SAID ITEMS HAVE BEEN ESTABLISHED. UNLISTED DEVICES SHALL BE INSTALLED IN EQUIPMENT NORMALLY LISTED OR LABELED. AND SHALL CONFORM TO UL STANDARDS AS FAR AS POSSIBLE.
- 8.3 ALL CATALOG NUMBERS ARE GIVEN TO ASSIST IN IDENTIFYING THE BASIC REQUIREMENTS OF THIS PROJECT AND INDICATE THE MINIMUM LEVEL OF QUALITY. CATALOG NUMBERS WILL, GENERALLY, NOT SPECIFY COLOR AND ACCESSORIES. CONSULT OWNER AND ARCHITECT FOR COLOR AND ACCESSORY DETAILS.

90 CLEAN WORK

REGULARLY REMOVE DEBRIS FROM THE PROJECT SITE, AS REQUIRED, DURING CONSTRUCTION. CLEAN ALL RACEWAYS, FIXTURES, AND OTHER EQUIPMENT PRIOR TO FINAL ACCEPTANCE BY OWNER.

100 CLOSING IN OF UNINSPECTED WORK INSPECTION AND APPROVAL.

ELECTRICAL CONTRACTOR SHALL NOT CLOSE IN OR CONCEAL ANY ELECTRICAL WORK PERFORMED PRIOR TO

ILO STANDARO FIELD TESTS

II.I ELECTRICAL CONTRACTOR SHALL RETAIN A FULLY TRAINED AND EQUIPPED TESTING COMPANY (TEST PERFORMED BY CONTRACTOR SHALL NOT BE ACCEPTED) TO PERFORM THE FOLLOWING TESTS AND CALIBRATION OF THE ELECTRICAL SYSTEM AND SHALL PROVIDE THE ENGINEER WITH TABULATED AND SIGNED TEST REPORTS FOR THE

CONDUCTOR INSULATION TESTING: TEST POWER CONDUCTORS USING A 1000 VOLT DC MEGGER (100 MEGA-OHM MINIMUM) INSULATION TESTER. TEST CONDUCTORS INSTALLED IN PLACE, DISCONNECTED AT BOTH ENDS, AND ACCORDING TO TEST EQUIPMENT MANUFACTURES INSTRUCTIONS. MINIMUM RESISTANCE VALUES SHALL BE 50 MEGOHMS AFTER 30 SECONDS.

GROUND RESISTANCE TEST: TEST MAIN GROUNDING ELECTRODE SYSTEM USING THREE POINT FALL OF POTENTIAL TESTER. PERFORM TEST ACCORDING TO TEST EQUIPMENT MANUFACTURES INSTRUCTIONS. MAXIMUM GROUND RESISTANCE OF THE GROUNDING ELECTRODE SYSTEM SHALL BE 10 OHMS MAXIMUM. IF MEASURED GROUND RESISTANCE IS GREATER THAN 10 OHMS, CONTRACTOR SHALL PROVIDE AND INSTALL ONE 3/4" X 8' COPPER CLAD GROUND ROD WITH *2 Cu CONNECTION TO THE GROUNDING ELECTRODE SYSTEM.

POLARITY TESTS: TEST ALL UTILIZATION EQUIPMENT, OUTLETS, AND RECEPTACLES FOR PROPER POLARITY. POLARITY SHALL COMPLY WITH NEC REQUIREMENTS.

CHECK ALL MECHANICAL LUGS FOR PROPER TENSION. <u>COMPLETE MECHANICAL LUG CONNECTIONS USING A</u> <u>CALIBRATED TORQUE WRENCH (OR SCREWDRIVER) ACCORDING TO LUG MANUFACTURES TIGHTENING</u>

TESTS SHALL BE COMPLETE ENOUGH TO BE CONCLUSIVE AND TO ENSURE PROPER OPERATION. THIS SHALL BE CERTIFIED IN TEST REPORTS SUBMITTED TO THE ENGINEER. ALL FAULTY EQUIPMENT SHALL BE REPLACED AND TESTED UNTIL SATISFACTORY RESULTS ARE OBTAINED. TESTS SHALL BE NON-DESTRUCTIVE AND PROCEDURES USED SHALL BE APPROVED BY THE ENGINEERING SERVICE STANDARD SCOPES OF WORK AND "EARTH RESISTANCE TESTING' PUBLISHED BY THE JAMES G. BIDDLE COMPANY.

- 11.2 PROVIDE SHORT-CIRCUIT, DEVICE SETTING COORDINATION, AND ARC-FLASH STUDIES PERFORMED BY A NETA CERTIFIED AGENCY, SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA. INCLUDE PERSONAL PROTECTION EQUIPMENT CATEGORY INDICATION LABELS FOR EACH PIECE OF SWITCHING ELECTRICAL
- 11.3 ANY WORK WHICH FAILS TO MEET THE REQUIREMENTS OF THESE ELECTRICAL CONSTRUCTION DOCUMENTS, OR ANY OF THE ABOVE-LISTED TESTING SHALL BE CONSIDERED DEFECTIVE AND SHALL BE PROMPTLY CORRECTED UNDER

ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL SWITCHGEAR EQUIPMENT INCLUDING SWITCHBOARDS, TRANSFORMERS, MOTOR CONTROL CENTERS, PANELBOARDS, SAFETY SWITCHES, ETC. NAMEPLATES SHALL INDICATE DEVICE DESIGNATION, EQUIPMENT SERVED, VOLTS/PHASE/WIRE, AND SOURCE FEEDING THE EQUIPMENT. PROVIDE ALL PANELBOARDS WITH NEW AND ACCURATE TYPED DIRECTORIES, INSTALLED UNDER CLEAR PLASTIC COVER. PROVIDE DIRECTORY INFORMATION TO OWNER FOR APPROVAL PRIOR TO FINALIZATI*O*N.

13.1 PROVIDE AND INSTALL APPROVED UL LISTED ASSEMBLY AND EMPLOY ARCHITECTURALLY APPROVED METHODS FOR WATER-TIGHT PENETRATION OF EXTERIOR WALLS. CONSULT ARCHITECT FOR DETERMINATION OF PENETRATION

13.2 PROVIDE AND INSTALL APPROVED UL LISTED MATERIALS AND EMPLOY ARCHITECTURALLY APPROVED METHODS FOR PENETRATION OF FIRE-RATED ASSEMBLIES. ELECTRICAL CONTRACTOR SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SURFACE PENETRATIONS. CONSULT ARCHITECT FOR DETERMINATION OF PENETRATION LOCATIONS INTO FIRE-RATED ASSEMBLIES.

14.0 EXCAYATION AND BACKFILL

- 14.1 PROVIDE ALL EXCAVATION, BACKFILL, TRENCHING, SHORING, PUMPING, COMPACTION, ETC. REQUIRED FOR ALL ELECTRICAL WORK DETAILED IN THE ELECTRICAL CONSTRUCTION DOCUMENTS AND THIS ELECTRICAL SPECIFICATION. CONFORM TO REQUIREMENTS OF EARTHWORK SECTION WHERE THIS SPECIFICATION DOES NOT
- 14.2 COORDINATE WITH EARTHWORK CONTRACTOR TO INSTALL RACEWAYS AND CONDUIT ROUTES PROMPTLY. ELECTRICAL CONTRACTOR SHALL PERFORM BACKFILL UPON INSPECTION AND APPROVAL
- 14.3 UNDERGROUND ELECTRICAL WORK SHALL BE PERFORMED WITH CONSIDERATION FOR EXISTING SERVICES. ELECTRICAL CONTRACTOR SHALL PROMPTLY AND COMPLETELY REPAIR OR REPLACE ANY SYSTEMS DISRUPTED DURING ELECTRICAL INSTALLATION AND RETURN TO WORKING ORDER.
- 14.4 BACKFILL SHALL CONFORM TO REQUIREMENTS OF EARTHWORK SPECIFICATION SECTION AND SHALL BE FREE OF ROCKS OR OTHER DEBRIS, AND SHALL BE COMPACTED TO FINISHED GRADE.

15.0 SUPPORTS AND FASTENINGS

FOR FIVE (5) TIMES THE ACTUAL LOAD.

ALL MOUNTING HARDWARE TO BE STEEL, UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL SUPPORTS AND HANGARS FOR ALL RACEWAYS, CABINETS, BOXES, BACK-BOXES, AND ALL OTHER EQUIPMENT. DESIGN OF SUPPORTS AND FASTENERS SHALL BE MADE USING PRE-ENGINEERED AND MANUFACTURED COMPONENTS DESIGNED FOR THE INTENDED USE. SUPPORTS AND FASTENERS SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTIONS AND IN GENERAL CONFORMANCE WITH THE RECOMMENDATIONS OF NECA STANDARD 1-2015 AND NECA STANDARD 101-2013. ANCHORS, BOLTS, SUPPORT SYSTEMS, HANGERS, ETC. SHALL FEATURE ADEQUATE CORROSION RESISTANCE FOR THE APPLICATION. RACEWAY SUPPORTS SHALL BE TRAPEZE TYPE WITH BEAM CLAMPS, THREADED RODS, AND STRUCTURAL CHANNELS. SELECTION OF SUPPORTS AND FASTENING METHODS SHALL BE BASED ON SIZE AND WEIGHT OF COMPONENTS SUPPORTED, AS WELL AS SAFETY AND ACCESSIBILITY. ALL SUPPORTS AND HANGARS SHALL BE RATED

ELECTRICAL CONTRACTOR SHALL COORDINATE THE ELECTRICAL INSTALLATION WORK WITH ALL OTHER CONTRACTORS. REFER TO PLANS AND SPECIFICATIONS OF OTHER TRADES. ELECTRICAL CONTRACTOR SHALL CONSULT OTHER CONTRACTORS TO ENSURE TIMELY AND APPROPRIATE CONNECTIONS AND INTERFACE WITH PLUMBING, MECHANICAL, FIRE/6MOKE DAMPER6, OR OTHER EQUIPMENT. ALL REQUIRED WIRING AND CONTROL COMPONENTS SHALL BE CONSIDERED PART OF THE SCOPE OF WORK.

17.0 RECORD DRAWINGS

ELECTRICAL CONTRACTOR SHALL PROVIDE A NEAT AND COMPLETE SET OF 'AS-BUILT' RECORD DRAWINGS TO THE OWNER WITHIN TEN (10) DAYS OF FINAL ACCEPTANCE OF WORK. RECORD DRAWINGS SHALL INDICATE ALL DEVIATIONS FROM THE ELECTRICAL CONSTRUCTION DOCUMENTS, LOCATIONS OF STUB-OUTS AND CONCEALED ITEMS (PER FIELD DIMENSIONS) RECORD DRAWINGS SHALL BE OF EQUAL TO OR HIGHER QUALITY THAN THESE ELECTRICAL CONSTRUCTION DOCUMENTS (INCLUDING SIZE, CLARITY AND MEDIUM). ALL MAINTENANCE AND OPERATING MANUALS AS WELL AS ANY ADDITIONAL INSTRUCTIONS, SHALL BE CONSIDERED A PART OF THE RECORD DRAWINGS.

18.0 ELECTRICAL SUBMITTALS

ELECTRICAL CONTRACTOR SHALL SUBMIT ELECTRONIC COPY OF FACTORY SHOP-DRAWINGS FOR ALL ELECTRICAL COMPONENTS PROPOSED FOR THIS PROJECT TO THIS ENGINEER, AND TO THE OWNER. ELECTRICAL CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THIS ENGINEER, AND THE OWNER, OF ALL PROVIDED MANUFACTURER'S DATA SHEETS FOR ALL SWITCHGEAR, LIGHTING FIXTURES, WIRING DEVICES, FIRE ALARM SYSTEM COMPONENTS, MOTOR CONTROL CENTERS, PANELBOARDS, ETC. ANY PROPOSED SUBSTITUTIONS SHALL MEET THE PROJECT REQUIREMENTS EXACTLY, AND SHALL BE OF EQUAL OR GREATER QUALITY IN ALL RESPECTS, AND REQUIRE THIS ENGINEER'S APPROVAL. SUBSTITUTION PROPOSALS MUST BE SUBMITTED NO LESS THAN TEN (10) WORKING DAYS PRIOR TO BID ACCEPTANCE. ELECTRICAL CONTRACTOR SHALL ORDER AND/OR RELEASE ANY MATERIALS PROMPTLY AFTER SUBMITTAL APPROVAL. NO SUBSITUTIONS OR ALTERNATE METHODS SHALL BE ACCEPTED AS A RESULT OF UNTIMELY WORK.

19.0 ELECTRICAL DEMOLITION

ELECTRICAL DEMOLITION AS REQUIRED FOR THE ELECTRICAL SCOPE OF WORK SHALL BE CONSIDERED A PART OF THE SCOPE OF WORK, REMOVE AND RETIRE ALL ELECTRICAL COMPONENTS WHERE IN CONFLICT WITH NEW CONSTRUCTION OR DESIGN. EXISTING CONCEALED CONDUITS MAY BE ABANDONED IN PLACE WHERE THIS DOES NOT CAUSE CONFLICT. REMOVE ALL CONDUCTORS FROM ABANDONED OR DEMOLISHED CONDUITS/RACEWAYS. PROVIDE AND INSTALL ANY COMPONENTS REQUIRED FOR COMPLETE RECONNECTION OF CIRCUITS WHERE DEMOLITION HAS CAUSED INTERRUPTION. RELOCATE AND RECONFIGURE EXISTING EQUIPMENT AS REQUIRED TO ACCOMODATE CONDITIONS. ALL EXISTING EQUIPMENT REMOVED DURING THE COURSE OF THIS PROJECT SHALL BE OFFERED TO THE OWNER FOR SALVAGE. ANY EQUIPMENT SELECTED BY THE OWNER SHALL BE DELIVERED TO THE OWNER ON SITE. ALL REMAINING EQUIPMENT BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A SAFE AND LEGAL MANNER.

20.0 OWNERSHIP OF DOCUMENTS

THESE ELECTRICAL CONSTRUCTION DOCUMENTS AND SPECIFICATIONS CONSTITUTE THE INTELLECTUAL PROPERTY OF JENSEN ENGINEERING, INC, AND ALL RIGHTS ARE RESERVED BY JENSEN ENGINEERING, INC., THESE MATERIALS SHALL REMAIN AS THE INTELLECTUAL PROPERTY OF JENSEN ENGINEERING, INC. AND MAY NOT BE REPRODUCED, DISTRIBUTED, OR USED FOR ANY OTHER PURPOSE, EXCEPT FOR THE PROJECT FOR WHICH THEY ARE INTENDED, WITHOUT THE EXPLICIT WRITTEN CONSENT OF JENSEN ENGINEERING, INC.

21.0 ONGOING OPERATIONS

ELECTRICAL CONSTRUCTION WORK SHALL BE PERFORMED WITH ALL DUE CONSIDERATION FOR ONGOING OPERATIONS AT THE PROJECT SITE AND SHALL MINIMIZE DISRUPTIONS IN EVERY RESPECT. PROVIDE AND INSTALL BARRICADES, DUST CONTAINMENT, NOISE ABATEMENT, ETC. TO ENSURE SAFETY AND COMFORT OF NON-CONSTRUCTION PERSONNEL ON THE PROJECT SITE. ANY INTERRUPTIONS TO EXISTING FIRE-ALARM, DATA/COMMUNICATION, OR ELECTRICAL SERVICES SHALL BE COORDINATED WITH THE OWNER AND THIS ENGINEER PRIOR TO ENGAGEMENT. DISRUPTIONS SHALL BE TEMPORARY AND MUST BE SCHEDULED 48 HOURS IN ADVANCE.

ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY POWER SERVICE AND DISTRIBUTION FOR ALL TRADES WHICH REQUIRE SERVICE DURING CONSTRUCTION. TEMPORARY POWER SERVICE SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC, AS WELL AS OSHA. COSTS OF TEMPORARY POWER ARE NOT THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

ELECTRICAL CONTRACTOR SHALL COMPLETELY IDENTIFY ANY COMPONENTS WHERE DIRECTED TO MATCH EXISTING, AND SHALL PROVIDE AND INSTALL THE ITEM(S) EXACTLY. WHERE EXACT REPLACEMENT IS NOT AVAILABLE, NEW EQUIPMENT SHALL MATCH EXISTING EQUIPMENT IN FUNCTION AND APPEARNCE, AND MUST BE OF EQUAL OR GREATER QUALITY THAN EXISTING EQUIPMENT. WHERE SCOPE OF WORK OCCURS AT AN EXISTING FACILITY, ALL MATERIALS AND WORKMANSHIP SHALL BE OF GREATER QUALITY THAN EXISTING. TRANSITIONS FROM NEW WORK AREAS TO EXISTING AREAS SHALL BE SEAMLESS IN APPEARANCE AND FUNCTION.

ALL CONDUCTORS SHALL CONFORM TO THE REQUIREMENTS STATED UNDER SECTION 5.0 OF THIS ELECTRICAL SPECIFICATION, AND UL LISTING STANDARDS. ALL CONDUCTORS SHALL BE COPPER STANDARD AMERICAN WIRE GAUGE. SOFT-DRAWN, CONCEALED IN CONDUIT. CONDUCTORS SIZED #10 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS SIZED *8 AWG AND LARGER SHALL BE STRANDED. MINIMUM WIRE SIZE SHALL BE #12 AWG, UNLESS OTHERWISE NOTED. CONDUCTOR INSULATION SHALL BE TYPE XHHW-2 600 VOLT RATED. CONDUCTORS SHALL BE CONTINUOUS FROM ORIGIN TO EQUIPMENT WITHOUT SPLICES, PER NEC. WHERE REQUIRED, SPLICES SHALL OCCUR IN SPLICE BOXES PER THIS SPECIFICATION. WIRE/CABLE SHALL BE HANDLED TO AVOID DAMAGE TO BOTH CONDUCTOR AND INSULATION. WIRE/CABLE SHALL BE DELIVERED IN STANDARD COILS OR REELS WITH SUITABLE PROTECTION FROM WEATHER AND DAMAGE DURING STORAGE, HANDLING, AND INSTALLATION. PROVIDE CORD GRIP CONNECTORS FOR INSTRUMENT CABLES WHICH DO NOT HAVE INTEGRAL CONDUIT THREADING/PORT. INSTRUMENTATION-SIGNAL WIRES SHALL BE YELLOW FOR 120YAC, AND BLUE FOR 24YDC. COLOR CODE POWER CONDUCTORS CONSISTENTLY THROUGHOUT THE PROJECT ACCORDING TO THE FOLLOWING OUTLINE:

VOLTAGE	PHASE A	PHASE B	PHASE C	NEUTRAL	GROUND
120/240V, 1¢	BLACK	RED		WHITE	GREEN
120/2084, 34	BLACK	RED	BLUE	WHITE	GREEN
277/48ØV, 3¢	BROWN	ORANGE	YELLOW	GRAY	GREEN OR GREEN/YELLOW STRIPE

25.1 CONDUIT AND CONDUCTOR ROUTES SHALL BE DETERMINED BY THE ELECTRICAL CONTRACTOR AT THE TIME OF INSTALLATION AND ARE SHOWN ON THESE PLANS FOR EXPLANATIVE PURPOSES. PROVIDE AND INSTALL GREEN INSULATED GROUNDING WIRE IN ALL CONDUITS. INSTALL PULL STRINGS IN ALL EMPTY CONDUITS.

- 25.2 TYPE RMC AND IMC (RIGID METALLIC CONDUIT & INTERMEDIATE METALLIC CONDUIT): ALL LOCATIONS EXPOSED TO PHYSICAL DAMAGE OR EXTERIOR ELEMENTS, INCLUDING EXPOSED ON ROOF, SHALL BE RIGID GALVANIZED STEEL (OR INTERMEDIATE METALLIC CONDUIT). ALL CONDUIT RISERS WITHIN 18" OF FINISHED GRADE SHALL BE WRAPPED TYPE RMC/IMC. PROVIDE CONDUIT HUBS FOR ALL OUTDOOR CONDUIT TERMINATIONS
- 25.3 TYPE RNC (PVC SCHEDULE 40) CONDUIT SHALL BE PERMITTED FOR UNDERGROUND AND UNDER CONCRETE SLAB APPLICATIONS. UNDERGROUND CONDUITS SHALL BE BURIED IN SAND ENVELOPE, MINIMUM OF 24" (TWO FEET) BELOW FINISHED GRADE, PROVIDE AND INSTALL GREEN INSULATED GROUNDING WIRE IN ALL NON-METALLIC CONDUITS, ALL ELBOWS AND EXPOSED RISERS SHALL BE RMC (GRS) AND SHALL BE PYC COATED OR HALF-LAP WRAPPED WITH SCOTCH 50 TAPE.
- 25.4 TYPE EMT CONDUIT SHALL BE PERMITTED FOR ALL INTERIOR LOCATIONS WHERE NOT SUBJECT TO PHYSICAL DAMAGE. ALL INTERIOR HOMERUNS SHALL BE TYPE EMT. ALL FITTINGS SHALL BE STEEL. ALL CONNECTORS SHALL HAVE INSULATED THROATS.
- 25.5 TYPE FMC CONDUIT SHALL BE USED FOR SHORT CONNECTIONS TO MOTORS AND EQUIPMENT FOR INDOOR LOCATIONS.
- 25.6 TYPE LFMC SHALL BE USED FOR SHORT CONNECTIONS TO MOTORS AND EQUIPMENT IN WET OR OUTDOOR
- 25.1 TYPE MC CABLES OR TYPE AC CABLES SHALL ONLY BE USED FOR INDOOR CONCEALED LOCATIONS, IF ALLOWED BY OWNER, AND SHALL NOT OPERATE MORE THAN ONE CIRCUIT.
- 25.8 TYPE LFNC SHALL NOT BE USED.
- 25.9 TYPE ENT SHALL NOT BE USED.
- 25.10 TYPE NM, NMC, AND NMS CABLES SHALL NOT BE USED.

26.0 TERMINATIONS AND SPLICES

CONNECTORS SHALL BE SCOTCHLOK OR APPROVED EQUAL FOR WIRE SIZES #14 AWG THROUGH #8 AWG. USE SOLDERLESS, FULLY ANNULAR PRESSURE TYPE CONNECTIONS FOR ALL OTHERS.

27.0 RECEPTACLES, SWITCHES, WIRING DEVICES AND PLATES

PROVIDE AND INSTALL INDUSTRIAL GRADE RECEPTACLES, SWITCHES, PILOT LIGHTS, ETC. AS INDICATED IN THE ELECTRICAL CONSTRUCTION DOCUMENTS, SWITCHES SHALL BE RATED 20A AT 27TY, EQUIVALENT TO HUBBLE 1221 SERIES. CONVENIENCE RECEPTACLES SHALL BE RATED 20A AT 120V, EQUIVALENT TO HUBBLE 5262 SERIES. PROVIDE OTHER RECEPTACLES WITH NEMA CONFIGURATIONS AS REQUIRED FOR THE EQUIPMENT SERVED. PROVIDE HEAVY DUTY METAL WEATHERPROOF 'IN-USE' COVERS WITH GASKETED SPRING LIFT DOORS FOR EXTERIOR AND WET-LOCATIONS. PROVIDE CAST STEEL TYPE 'FSD' BOXES AND COVERS FOR WIRING DEVICES IN EXPOSED WORK AREAS. PROVIDE ONE PIECE COVERS AND GANG OUTLETS TO SUIT THE DEVICES LOCATION.

28.0 SWITCHGEAR AND DISTRIBUTION EQUIPMENT

ALL ELECTRICAL SWITCHGEAR EQUIPMENT SHALL BE OF THE SAME MANUFACTURER. ACCEPTABLE MANUFACTURES ARE: EATON, ABB-GE, SIEMENS, OR SQUARE-D, ALLEN-BRADLEY (NO SUBSTITUTES). SERVICE EQUIPMENT SHALL BE FULLY ENCLOSED, FACTORY ASSEMBLED, AND SHALL OPERATE PER SERVING ELECTRICAL UTILITY STANDARDS. ALL MECHANICAL LUGS SHALL BE 15°C. RATED AND SUITABLE FOR THE APPLIED CONDUCTOR. SWITCHBOARDS AND PANELBOARDS SHALL HAVE COPPER BUSSING. PANELBOARDS SHALL HAVE DOOR IN DOOR COVERS AND SHALL USE BOLT-IN TYPE CIRCUIT BREAKERS. ALL COVER CONTROLS SHALL BE 30mm NEMA-TYPE. CONTRACTOR SHALL PROVIDE AND INSTALL 4" CONCRETE HOUSE-KEEPING PAD FOR ALL FREE STANDING ELECTRICAL EQUIPMENT (SWITCHBOARDS, TRANSFORMERS, ETC.).

ALL FUSED AND NON-FUSED SAFETY DISCONNECT SWITCHES SHALL BE OF THE SAME MANUFACTURER. SAFETY DISCONNECT SWITCHES SHALL BE HEAVY DUTY, FULLY ENCLOSED, FACTORY ASSEMBLED, AND LOCKABLE.

SHORT CIRCUIT INTERRUPTING VALUES, AS INDICATED ON THESE ELECTRICAL CONSTRUCTION DOCUMENTS, REFER TO BOTH BUS-BAR BRACING LEVELS, AND CIRCUIT BREAKER INTERRUPTING RATINGS. SERIES RATING OF SHORT CIRCUIT WITHSTAND LEVELS IS ONLY ALLOWED IF SUPPORTED BY MANUFACTURER'S DATA AND IS ALLOWED BY LOCAL CODE. ANY PROPOSED SERIES RATING OF ELECTRICAL COMPONENETS SHALL BE CLEARLY IDENTIFIED. ELECTRICAL CONTRACTOR SHALL PROVIDE SUPPORTING DOCUMENTATION FOR SERIES RATED EQUIPMENT IN THE ELECTRICAL SUBMITTAL DATA SHEETS.

ALL ELECTRICAL WORK THAT IS ACCESSIBLE TO THE PUBLIC SHALL BE TAMPER-PROOF AND VANDAL RESISTANT. ALL EQUIPMENT WITH OPERABLE-DOOR ENCLOSURES SHALL BE LOCKING TYPE, OR PAD-LOCKING.

32.0 GROUNDING AND BONDING

PROVIDE AND INSTALL GROUNDING FOR ALL EQUIPMENT AND SYSTEM NEUTRAL IN ACCORDANCE WITH NEC ARTICLE 250.

UPON ACCEPTANCE OF OPERATION AND MAINTENANCE INSTRUCTIONS AND RECORD DRAWINGS, THIS ENGINEER SHALL

MAKE A FINAL OBSERVATION OF THE PROJECT AND GENERATE A LIST OF UNACCEPTABLE ITEMS. FINAL PROJECT ACCEPTANCE SHALL NOT BE CONSIDERED COMPLETE UNTIL ALL ITEMS IN THIS LIST HAVE BEEN CORRECTED.

340 PRELIMINARY OPERATION

IF THE OWNER DEMANDS THAT ANY PORTION OF THE ELECTRICAL SYSTEM BE OPERATED PRIOR TO FINAL COMPLETION AND ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL CONSENT, AND SUCH OPERATION SHALL BE PERFORMED UNDER SUPERVISION AND DIRECTION OF THE CONTRACTOR. ALL OPERATING EXPENSE THEREOF SHALL BE PAID BY THE OWNER PRELIMINARY OPERATION AND PAYMENT THEREOF SHALL NOT BE CONSTRUED AS ACCEPTANCE OF WORK.

ELECTRICAL CONTRACTOR SHALL PROVIDE A GUARANTEE OF THE ELECTRICAL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. LIGHTING LAMPS ARE EXEMPT FROM THIS REQUIREMENT, HOWEVER, LAMPS SHALL BE NEW AND IN PERFECT OPERATING CONDITION AT THE TIME OF FINAL ACCEPTANCE.

____ JENSEN

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ENGINEERING

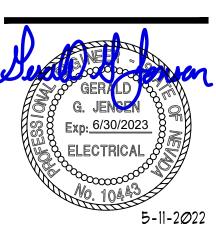
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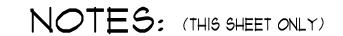
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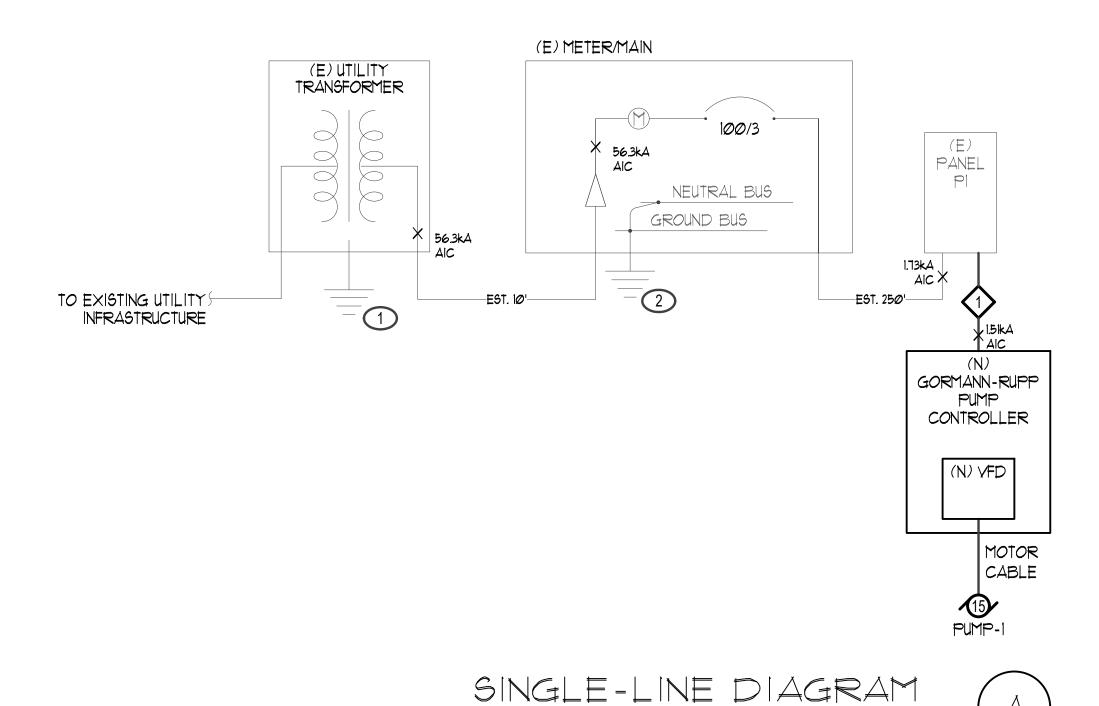
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- (1) EXISTING NV ENERGY TRANSFORMER SECONDARY GROUND ROD.
- 2 EXISTING MAIN ELECTRICAL SERVICE GROUND.



SCALE: NOT TO SCALE

BY JENSEN ENGINEERING, INC.				FEEDER SCHEDUL	E							
FDR FROM No.	to	QUANTITY PARALLEL	CONDUIT	CONDUCTORS	LOAD PHASES	LOAD VOLTAGE	LOAD CURRENT	LOAD P. FACTOR	APPROX.	VOLTAGE DROP %	CONDUCTOR RESISTANCE	CONDUCTOR REACTANCE
(E) PANEL PI	(N) PUMP CONTROLLER	1	2"	(4) - #4 Cu & (1) - #8 Cu GND	3	208	52	Ø.85	25'	0.471%	0.490	0.051
2. ALL PYC CONDUIT SHALL C 3. ALL CONDUCTORS SHALL E 4. ALL UTILITY CONDUITS SHA	BE SCHEDULE 40 UNLESS OTHERWISE NOTED. CARRY AN EQUIPMENT GROUNDING CONDUCTOR BE COPPER WIRE TYPE THHN/THWN 90° RATED I ALL BE INSTALLED ACCORDING TO UTILITY COMI R ENGINEER'S PURPOSES ONLY, AND ARE NOT TO	NSULATION. PANY STANDAR	PDS.	T. 25Ø-122.								

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				(E) MAIN BREAKER	3	100		# 8	Ø	3	(N) PUMP CONTROLLER **	6500			t
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	BRE	AKER	6 ARE	TO MATCH PANEL MANUFACT	TURER.										1
											LINE AMPS TOTAL KVA LOAD	58	54	58	\rfloor

	MS	B SCHEDULE		
P05	DESCRIPTION	BREAKER SIZE	kya Lo	AD
1	(E) PANEL PI	100/3	20.50	
		TOTAL KVA LOAD:	20.50	
		a 2Ø8√, 3¢ =	57.	AMPERES

ELECTRICAL SERV LOAD SUMMARY	
DESCRIPTION	LOAD (kya)
PUMP 1 (15HP) PANEL PI	17.40 3.00
CONNECTED LOAD TOTAL	20.40
AMPS @ 208V, 3¢ =	57. AMPS
+25% LARGEST MOTOR (10HP) +25% CONTINUOUS LOAD	4.35 Ø.75
NEC OCPD LOAD:	25.5
NEC OCPD AMPS @ 208V, 3¢ =	71. AMPS
EXISITNG BUS: 125-AMF EXISTING OCPD: 100-AM	

SCADA/RTU GENERAL SPECIFICATIONS

- QUALIFICATIONS FOR THE INSTRUMENTATION & SCADA PANEL SYSTEM INTEGRATOR: SYSTEM INTEGRATOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, TOOLS, AND TRANSPORTATION NECESSARY TO DESIGN, MANUFACTURE, FURNISH, INSTALL, AND TEST EQUIPMENT TO BE INTEGRATED INTO A COMPLETE FUNCTIONING WATER SYSTEM SCADA AND MONITORING SYSTEM. THE SYSTEM INTEGRATOR SHALL BE RESPONSIBLE FOR THE CALIBRATION OF THE PRIMARY MEASUREMENT DEVICES USED FOR SYSTEM MONITORING AND CONTROL. SYSTEMS INTEGRATOR SHALL PROVIDE ALL REQUIRED PROGRAMMING \$ INTEGRATION WITH CITY OF SPARKS' MASTER SCADA SYSTEM. ACCEPTABLE INTEGRATORS: AS SPECIFIED, RETAINED, AND PAID FOR BY CITY OF SPARKS.
- 2. CONTRACTOR TO PROVIDE ALL SIGNAL CABLES/CONDUCTORS AND SHALL BE INSTALLED IN CONDUIT (I" MINIMUM UNLESS OTHERWISE NOTED).
- 3. COLOR CODE SIGNAL WIRES AS FOLLOWS: AC = YELLOW
- DC = BLUE
- 4. PROVIDE FUTURE & SPARE I/O CAPACITY, MINIMUM 6 SPARE EACH FOR DISCRETE & ANALOG (INPUT, & OUTPUT), 24-TOTAL.
- 5. SCADA CABINET TO BE ALL INCLUSIVE FOR MONITORING, CONTROLLING, ALARM REPORTING, AND COMMUNICATION AS REQUIRED FOR THE LISTED SIGNALS. INCLUDE ALL REQUIRED RELAYS, TERMINATION BLOCKS, WIRING, FUSES, PROGRAMMABLE LOGIC CONTROLLER, ANALOG & DISCRETE I/O, NEMA-4 CABINET, CABINET BACKPANEL, SWING-OUT DOOR KIT, PANDUIT, POWER SUPPLY, 24-HOUR BATTERY BACK-UP WITH BATTERY CHARGER, RADIO EQUIPMENT, A DEDICATED CONVENIENCE RECEPTACLE, AN INDUSTRIAL 10/100 MANAGED ETHERNET 8-PORT SWITCH, CABLING, ETC.

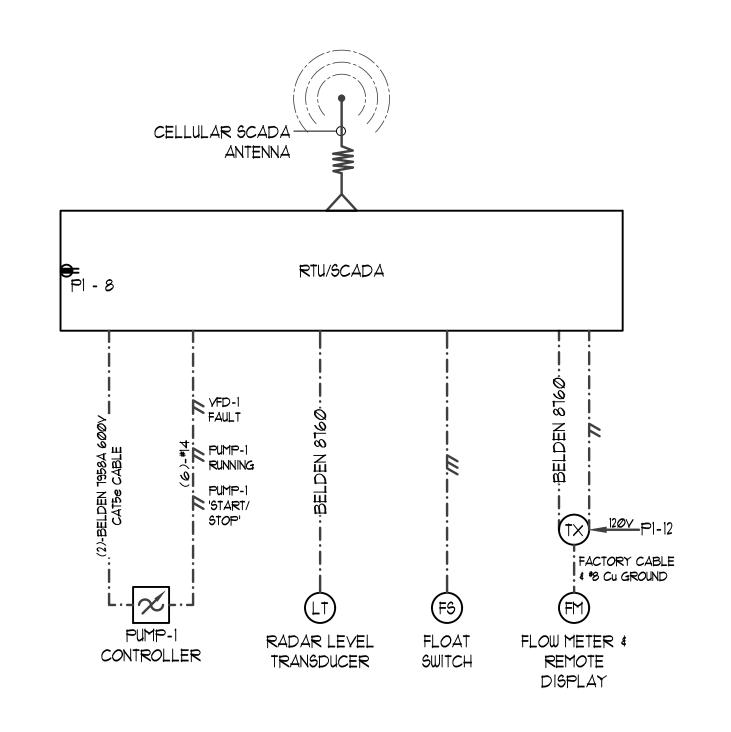
- 6. RTU TO HAVE PASSWORD PROTECTED, PROGRAMMABLE SET-POINTS FOR LISTED CONTROL ITEMS THROUGH COLOR LED-BACKLIT TOUCH-SCREEN OIT BASED ON MONITORING, ALARM, & COMMUNICATION REQUIREMENTS. SETS POINTS SHALL INCLUDE PUMP 'START/STOP' AS WELL AS PROGRAMMING FOR FLOW.
- 1. SUBMIT SCADA CABINET EQUIPMENT, LAYOUTS, AND WIRING DIAGRAMS FOR ENGINEERING APPROVAL PRIOR TO MANUFACTURE.
- 8. PROVIDE COMMISSIONING & AN OPERATION/MAINTENANCE MANUAL AND INSTRUCTION FOR ALL INSTALLED EQUIPMENT. SUBMIT MANUALS FOR ENGINEERING REVIEW AND APPROVAL.
- 9. TRAIN OWNER'S KEY PERSONNEL IN OPERATION OF ALL SET-POINTS, OPERATIONS, FUNCTIONS, ETC. ALLOW AT LEAST 4-HOURS OF TRAINING IN ADDITION TO START-UP.
- 10. PROVIDE CELLULAR BASED SCADA LINK.
- REMOTE ACCESSIBLE OPERATOR INTERFACE REQUIRED FOR MONITORING ALARM REPORTING AND CONTROL. INTERFACE TO BE ACCESSIBLE FROM A MOBILE DEVICE PLATFORM.
- 12. SAMSARA IG-21 IS ACCEPTABLE FOR COMBINED RTU/CELLULAR LINK. IF SAMSARA CANNOT SUPPORT MONITORING INPUTS LISTED, COORDINATE WITH ENGINEER FOR MONITORING/ALARM ADJUSTMENTS.

SCADA/RTU PERFORMANCE SPECIFICATION

CONTROL SYSTEM INTEGRATOR SHALL PROVIDE AND INSTALL COMPLETE LIFT-STATION COMMUNICATION SYSTEM INCLUDING REMOTE TERMINAL UNIT (RTU), INSTRUMENTATION, CABLING, EQUIPMENT, TERMINATIONS, PROGRAMMING, CALIBRATION, ETC.

- A. RTU SYSTEM SHALL MONITOR PUMP STATION FUNCTIONS AS FOLLOWS:
 - 1. CANAL 'DEPTH' 2. FLOW METER 'RATE'
- B. RTU SYSTEM SHALL GENERATE AND TRANSMIT ALARM CONDITIONS AS FOLLOWS:
 - 1. RTU 'INTRUSION' 2. VFD #1 'FAULT'
 - 3. RTU PRIMARY POWER 'FAILURE'

- C. RTU SYSTEM SHALL PROVIDE CONTROL FOR SYSTEM ELEMENTS AS FOLLOWS: MAIN-BREAKER SHUNT-TRIP
 - 2. PUMP-1 'START/STOP'
- D. RTU SYSTEM SHALL PROVIDE COMMUNICATIONS AS FOLLOWS: CITY OF SPARKS MASTER SYSTEM (CELLULAR)





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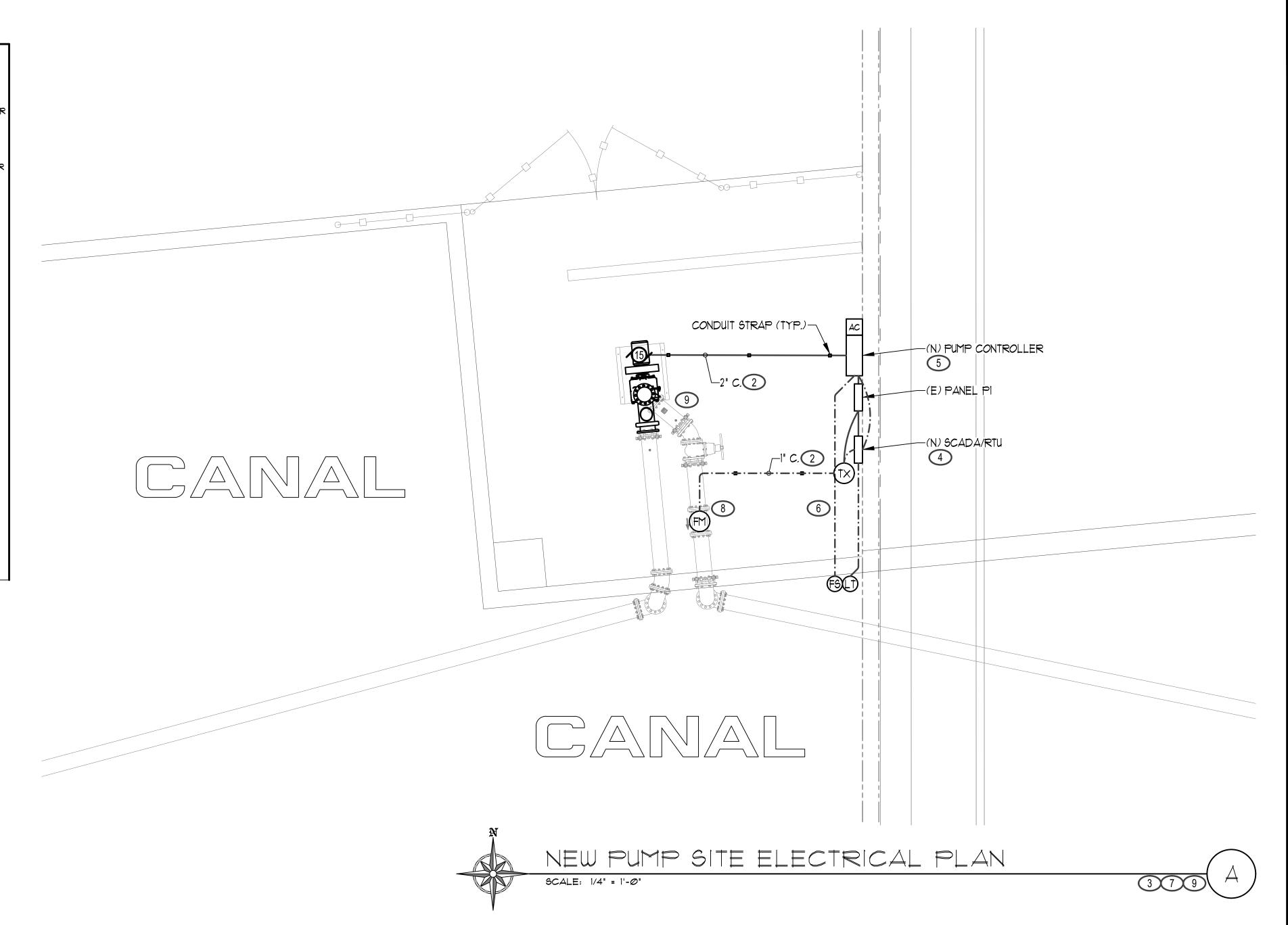
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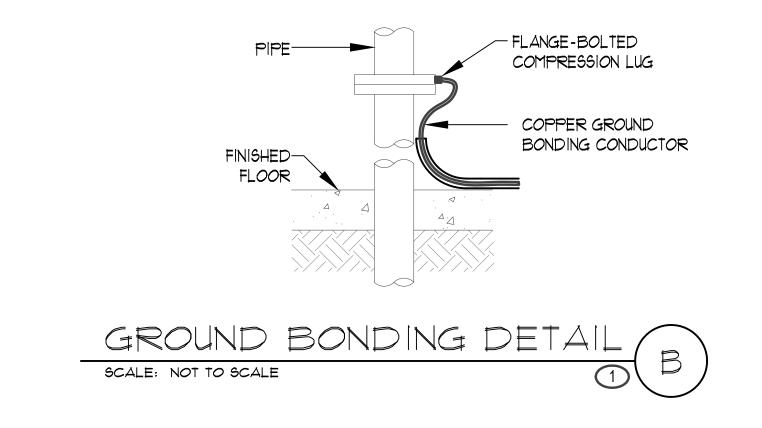
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YMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Ф	DOUBLE-OUTLET 'DUPLEX' RECEPTACLE		1-4, 1-POLE CIRCUIT PATH (1/2" CONDUIT, (2) - #12 Cu, UON) ABOVE FLOOR
₩	DOUBLE-OUTLET 'DUPLEX' GFI-TYPE RECEPTACLE	-///	1-4, 2-POLE CIRCUIT PATH ($\frac{1}{2}$ " CONDUIT, (3) - #12 Cu, UON) ABOVE FLOOR
Ш	DOUBLE-OUTLET 'DUPLEX' RECEPTACLE WITH USB CONNECTIONS	-////	3-¢, 3-POLE CIRCUIT PATH (1/2" CONDUIT, (4) - #12 Cu, UON) ABOVE FLOOR
#	QUADRUPLE-OUTLET 'QUAD' RECEPTACLE		RETURN CIRCUIT TO PANEL "HOMERUN" (CIRCUIT AS NOTED) ABOVE FLOOR
•	SPECIAL RECEPTACLE (VOLTAGE/CONFIGURATION AS NOTED)		1-4, 1-POLE CIRCUIT PATH (1/2" CONDUIT, (2) - #12 Cu, UON) BELOW FLOOR
8	SPECIAL RECEPTACLE (VOLTAGE/CONFIGURATION AS NOTED)	/44	1-4, 2-POLE CIRCUIT PATH ($\frac{1}{2}$ " CONDUIT, (3) - #12 Cu, UON) BELOW FLOOR
Φ	JUNCTION BOX	/44/-	3-¢, 3-POLE CIRCUIT PATH (1/2" CONDUIT, (4) - #12 Cu, UON) BELOW FLOOR
<u> </u>	THERMOSTAT		RETURN CIRCUIT TO PANEL "HOMERUN" (CIRCUIT AS NOTED) BELOW FLOOR
d	FLOOR MOUNT RECEPTACLE		CIRCUIT BREAKER (AMPS/POLES AS NOTED)
맙	SAFETY DISCONNECT SWITCH (SIZE/VOLTAGE/CONFIGURATION AS NOTED)		FUSE (AMPS/POLES AS NOTED)
	TELEPHONE/DATA JUNCTION BACKBOX	+48"	48' MOUNTING HEIGHT AFF. (ACTUAL HEIGHT AS NOTED)
\$	SINGLE-POLE TOGGLE SWITCH (VOLTAGE AS REQUIRED)	AFF.	ABOVE FINISHED FLOOR
\$,	MULTI-STATION 'THREE-WAY' TOGGLE SWITCH (VOLTAGE AS REQUIRED)	A.F.G.	ABOVE FINISHED GRADE
\$	SOLID STATE DIMMING SWITCH (VOLTAGE AS REQUIRED)	A.T.S.	AUTOMATIC TRANSFER SWITCH
ф,	MOTOR-RATED TOGGLE SWITCH (VOLTAGE AS REQUIRED)	С	CONDUIT
∳ ∞	OCCUPANCY SENSING (MOTION SENSOR) SWITCH	СВ	CIRCUIT BREAKER
函	I' CONDUIT INTO ACCESSIBLE CEILING SPACE	CLG	CEILING
	PANELBOARD (NAME/AMP/PHASE/VOLTAGE/CONFIGURATION AS NOTED)	(D)	DEMOLISH DEMOLISH
	TRANSFORMER (NAME/KVA RATING/PHASE/VOLTAGE AS NOTED)	(E)	EXISTING
(1)	MECHANICAL EQUIPMENT INDICATOR	(F)	FUTURE
	PHOTO ELECTRIC CELL	FACP	FIRE ALARM CONTROL PANEL
TC)	TIME CLOCK	F.B.O.	FURNISHED BY OTHERS
(D)	DUCT DETECTOR FIRE ALARM SYSTEM COMPONENT	GFI	GROUND FAULT INTERRUPTING TYPE
(SD)	SMOKE DETECTOR FIRE ALARM SYSTEM COMPONENT	LY	LOW YOLTAGE
\bigoplus	HEAT DETECTOR FIRE ALARM SYSTEM COMPONENT	MCB	MAIN CIRCUIT BREAKER
	CONTACTOR	MSB	MAIN SWITCH BOARD
₽D-	HORN/STROBE COMBINATION FIRE ALARM SYSTEM COMPONENT	(N)	NEW
<u> </u>	SHUNT TRIP STATION	NL NL	NIGHT LIGHT
•	EMERGENCY STOP (MYSHROOM-STYLE PUSH-BUTTON)	(RR)	REMOVE AND REPLACE
$\langle \times \rangle$	MOTOR (HORSEPOWER AS NOTED)	TYP	TYPICAL
igotimes	SHEET NOTE INDICATOR	ug .	UNDER GROUND
\otimes	SHEET/EQUIPMENT NOTE INDICATOR	UON	UNLESS OTHERWISE NOTED
∇	EQUIPMENT NOTE INDICATOR	WP	WEATHER PROOF
Å	REVISION 'DELTA' NOTE INDICATOR	XFMR	TRANSFORMER
\otimes	FEEDER NOTE INDICATOR		
	DETAIL/SHEET NOTE INDICATOR		

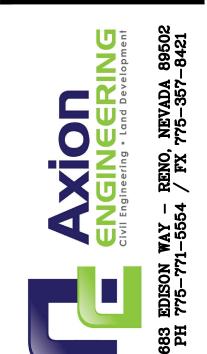
NOTES: (THIS SHEET ONLY)

- DRILL A HOLE INTO THE FLANGE FOR GROUNDING LUG CONNECTION WITH A DIAMETER LESS THAN 1/2 OF FLANGE THICKNESS.
- 2 ELECTRICAL CONTRACTOR SHALL SECURE CONDUIT ONTO CONCRETE PAD. ENSURE ALL NECESSARY EQUIPMENT IS INSTALLED CORRECTLY FOR A COMPLETE AND WORKING SYSTEM.
- 3 ELECTRICAL CONTRACTOR AND SYSTEMS INTEGRATOR SHALL COORDINATE AND VERIFY WITH PUMP MANUFACTURER/SUPPLIER FOR ALL POWER REQUIREMENTS, CONTROLS REQUIREMENTS, AND FINAL LOCATIONS FOR ALL NEW EQUIPMENT PRIOR TO ROUGH-IN.
- 4 ELECTRICAL CONTRACTOR SHALL COORDINATE WITH SYSTEM INTEGRATOR FOR THE INSTALLATION OF A NEW PUMP-STATION SCADA/RTU PANEL. NEW SCADA/RTU PANEL SHALL MONITOR AND CONTROL PUMP-STATION. SEE SCADA/RTU DIAGRAM FOR DETAILS AND REQUIREMENTS.
- 5) PUMP CONTROLLER SHALL BE GORMANN-RUPP, NO SUBSTITUTIONS SHALL BE ALLOWED.
- 6 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND SECURING CONDUIT TO WALL FOR NEW CANAL LEVEL TRANSDUCER. COORDINATE REQUIREMENTS OF CONDUIT WITH SYSTEMS INTEGRATOR PRIOR TO ROUGH IN. ENSURE ALL NECESSARY EQUIPMENT IS INSTALLED CORRECTLY PER MANUFACTURER'S INSTRUCTION FOR A COMPLETE AND WORKING SYSTEM.
- (7) ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL UNUSED AND DEMOLISHED ELECTRICAL EQUIPMENT WITHIN THE PROJECT AREA.
- 8 ELECTRICAL CONTRACTOR SHALL VERIFY WITH CITY OF SPARKS FOR FINAL LOCATION OF FLOW METER REMOTE DISPLAY (ADJACENT TO RTU). COORDINATE WITH SYSTEMS INTEGRATOR TO ENSURE ALL MOUNTING HARDWARE AND CABLING IS PROVIDED FOR A COMPLETE AND WORKING SYSTEM.
- 9 ELECTRICAL CONTRACTOR SHALL GROUND METAL PIPING SYSTEM PER NEC 250, AND FLOW METER MANUFACTURER'S REQUIREMENTS.





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