IMPROVEMENT PLANS FOR

SPARKS MARINA PUMP STATION

SPARKS NEVADA

BID #16/17-013 PWP #WA-2017-104

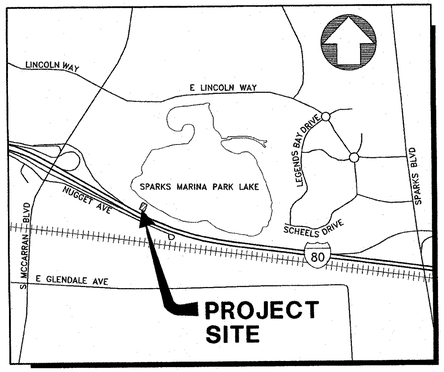
BID SET

BASIS OF BEARINGS:

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983/1994, HIGH ACCURACY REFERENCE NETWORK (NAD 83/94-HARN), AS DETERMINED USING REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS WITH CORRECTIONS TRANSMITTED BY THE NORTHERN NEVADA COOPERATIVE REAL TIME NETWORK GPS (NNCRN GPS). THE BEARING BETWEEN GPS REFERENCE STATION "SSB2"- SS2SM10000 AND "SPK2"- N53SM01134 IS TAKEN AS SOUTH 06°09'01" EAST. ALL DIMENSIONS SHOWN ARE GROUND DISTANCES. COMBINED GRID-TO-GROUND FACTOR = 1.000197939.

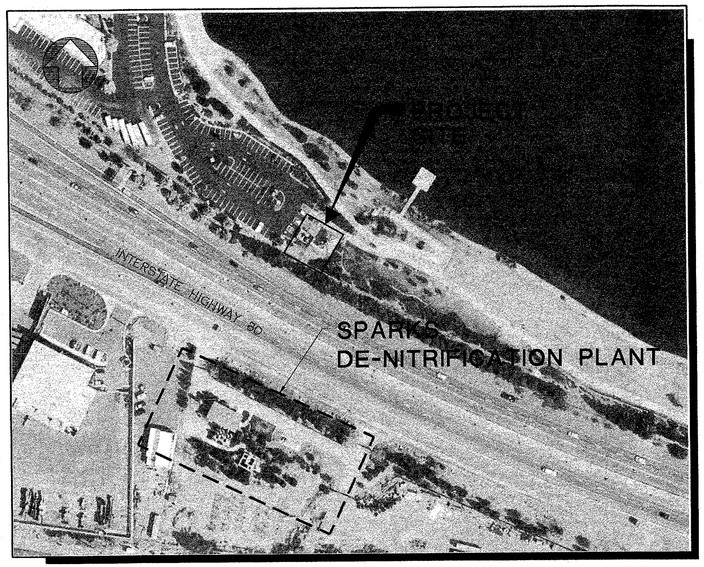
BASIS OF ELEVATIONS:

BASIS OF ELEVATION IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1983 (NAVD 88) AS TAKEN FROM CITY OF SPARKS BENCHMARK 82, WITH A PUBLISHED ELEVATION OF 4399.76 FT. BENCHMARK 82 IS DESCRIBED AS BEING A DRIVE RIVET AND 2 INCH ALUMINUM WASHER IN THE TOP OF CURB RETURN AT THE NORTHEAST CORNER OF VICTORIAN AVENUE AND NORTH McCARRAN BOULEVARD.



VICINITY MAP

NOT TO SCALE



SITE PLAN

NOT TO SCALE

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CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD _____ AND THE DESIGN CONSULTANT HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF_____ OR THE DESIGN CONSULTANT.

UNAUTHORIZED CHANGES & USES: THE DESIGN CONSULTANT PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

CITY OF SPARKS APPROVAL

John Martini, P.E.
Community Services Director

CITY OF SPARKS APPROVAL

Andrew Hummel, P.E.
Utility Manager

ENGINEER:

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd
Reno, NV 89502
Tel 775.823.4068
Fax 775.823.4066

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
DRAWN BY: LGS, TJK
DESIGNED BY: SPS
CHECKED BY: SPS

PROFESSIONAL ENGINEER-STATE OF NEVADA
STEVEN P. STRICKLAND
Exp: 6-30-18
CIVIL
No. 15972

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd
Reno, NV 89502
Tel 775.823.4068
Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NEVADA

TITLE SHEET

WASHOE COUNTY

PROJECT NO.
8042.017

DRAWING
T-1

SHT 1 OF 17

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GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE BOOK "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" (2007 EDITION) INCLUDING ANY ADDITIONS AND MODIFICATIONS THAT ARE SET FORTH IN THE DRAWINGS AND SPECIFICATIONS.

2. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION AND SHORING PROCEDURES AND CONFORM TO THE LATEST O.S.H.A. REQUIREMENTS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DAILY REMOVAL OF ALL CONSTRUCTION MATERIALS SPILLED ON PAVED STREETS, ONSITE AND OFFSITE.

5. THE CONTRACTOR SHALL PURSUE THE WORK IN A CONTINUOUS AND DILIGENT MANNER, CONFORMING TO ALL THE PERTINENT SAFETY REGULATIONS, TO INSURE A TIMELY COMPLETION OF THE PROJECT.

6. THE CONTRACTOR SHALL NOTIFY ALL ENTITIES INVOLVED (PUBLIC AND PRIVATE) 48 HOURS PRIOR TO BEGINNING CONSTRUCTION, AND 24 HOURS PRIOR NOTICE FOR ALL SURVEYING AND INSPECTIONS DURING CONSTRUCTION.

7. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND FEES REQUIRED FOR CONSTRUCTION.

8. ALL EXISTING UTILITY LOCATIONS, SIZES, AND DESCRIPTIONS AS SHOWN ON THESE DRAWINGS ARE FROM SURFACE OBSERVATIONS USED IN CONJUNCTION WITH AVAILABLE RECORDS, REFERENCE MAPS, DRAWINGS, AND VERBAL STATEMENTS SUPPLIED BY UTILITY COMPANIES, AND MAY NOT BE WHOLLY ACCURATE OR RELIABLE. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES WHICH MAY BE AFFECTED BY THE WORK TO OBTAIN ASSISTANCE IN THE LOCATION OF EXISTING MAINS AND SERVICE CONNECTIONS. THE CONTRACTOR SHALL ALSO CALL U.S.A. (1-800-227-2600) PRIOR TO BEGINNING WORK.

9. THE WORK IN THIS CONTRACT INCLUDES ALL ONSITE AND OFFSITE WORK SHOWN ON THESE DRAWINGS, DESCRIBED IN THE SPECIFICATIONS, OR REASONABLY IMPLIED.

10. THE CONTRACTOR SHALL, AT ALL TIMES DURING CONSTRUCTION, PROTECT FROM DAMAGE EXISTING IMPROVEMENTS ON AND AROUND THE SITE, INCLUDING, BUT NOT LIMITED TO, PAVEMENT, CURB & GUTTER, SIDEWALK, LANDSCAPING, SIGNAGE, STORM & SANITARY SEWERS, AND ALL UTILITIES. THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR THE REPAIR OF ANY IMPROVEMENTS (EXISTING OR PROPOSED) DAMAGED THROUGHOUT THE COURSE OF CONSTRUCTION.

11. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AT ALL TIMES EMERGENCY ACCESS TO THE PROJECT SITE TO THE SATISFACTION OF THE CITY OF RENO FIRE DEPARTMENT.

12. THE CONTRACTOR SHALL, UPON COMPLETION OF THE PROJECT, PREPARE AND SUBMIT TO THE OWNER RECORD DRAWINGS INDICATING BY DIMENSION AND DESCRIPTION ANY FACILITY CONSTRUCTED CONTRARY TO THAT SHOWN ON THESE PLANS.

13. INSPECTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH CITY OF SPARKS STANDARDS OR THE STANDARD SPECIFICATIONS, WHICH EVER IS THE MORE STRINGENT.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, ADJACENT STREETS, AND IMPROVEMENTS DURING THE PERIOD OF CONSTRUCTION.

CONSTRUCTION NOTES

1. CONSTRUCTION HOURS. CONSTRUCTION ACTIVITIES AT THE DEVELOPMENT MAY COMMENCE NO EARLIER THAN 7:00 A.M. AND MUST CEASE NO LATER THAN 7:00 P.M. MONDAY THROUGH SATURDAY. CONSTRUCTION ACTIVITIES INCLUDE ANY START-UP OF MACHINERY WHICH INVOLVES MATERIAL NOISE TO ANY ADJOINING RESIDENCE OR BUSINESS. THE FOREGOING LIMITATIONS SHALL NOT BE APPLICABLE TO ANY ACTIVITIES INVOLVING DUST CONTROL PROCEDURES PURSUANT TO THE DUST CONTROL PLAN, AS HEREINAFTER DEFINED, VEHICLE OR EQUIPMENT MAINTENANCE, DELIVERY OR MATERIAL (EXCLUDING, HOWEVER, HAULING OF FILL OR DIRT), OR IN THE EVENT OF AN ACTIVITY IN RESPONSE TO AN EMERGENCY SITUATION AT THE DEVELOPMENT. NOTWITHSTANDING THE FOREGOING, THE PARTIES ACKNOWLEDGE THAT THE CONTRACTOR MAY SUBMIT A PLAN TO THE PROJECT MANAGER FOR APPROVAL FOR TEMPORARY PERIODS OF CONSTRUCTION ACTIVITIES ON A TWENTY-FOUR (24) HOUR, SEVEN (7) DAY A WEEK BASIS IN THE EVENT IT BECOMES NECESSARY IN ORDER TO COMPLETE PAVING ACTIVITIES PRIOR TO THE ONSET OF ADVERSE WEATHER CONDITIONS. SUCH PLAN MAY INCLUDE TEMPORARY CONSTRUCTION LIGHTING, BUT SHALL PROVIDE FOR REASONABLE MITIGATION FROM SUCH LIGHTING AND NOISE FOR SURROUNDING RESIDENCES AND/OR BUSINESSES.

2. CONSTRUCTION YARD. CONTRACTOR SHALL BE ENTITLED TO MAINTAIN A CONSTRUCTION STORAGE YARD OR YARDS (THE CONSTRUCTION YARD) AT THE LOCATION AT THE DEVELOPMENT APPROVED FROM TIME TO TIME IN ACCORDANCE WITH THE PROVISIONS OF THIS AGREEMENT. PRIOR TO THE ESTABLISHMENT OF ANY CONSTRUCTION YARD AT THE DEVELOPMENT, CONTRACTOR SHALL SUBMIT TO THE PROJECT MANAGER A PLAN FOR EACH CONSTRUCTION YARD AT THE DEVELOPMENT, WHICH PLAN SHALL DESCRIBE THE LOCATION OF THE CONSTRUCTION YARD(S), THE FENCING AND SCREENING TO BE INSTALLED THEREAT AND THE ASPHALT APRON TO BE CONSTRUCTED AT THE JUNCTION OF THE PAVED ROAD ADJOINING THE CONSTRUCTION YARD. THE HOURS OF OPERATION OF THE CONSTRUCTION YARD SHALL BE NO EARLIER THAN 7:00 A.M. AND NO LATER THAN 7:00 P.M., MONDAY THROUGH SATURDAY. THE FOREGOING LIMITATIONS ON HOURS AND DAYS OF OPERATION SHALL NOT APPLY TO RELATED OPERATIONS RELATED TO DUST CONTROL, VEHICLE MAINTENANCE OR MATERIAL DELIVERIES TO THE CONSTRUCTION YARD.

ABBREVIATIONS

AB	AGGREGATE BASE	LF	LINEAR FEET
AC	ASPHALT CONCRETE PAVEMENT	MAX	MAXIMUM
AVRV	AIR VACUUM RELIEF VALVE	MH	MANHOLE
BC	BEGIN CURVE	MIN	MINIMUM
BM	BENCH MARK	MJ	MECHANICAL JOINT
BVC	BEGIN VERTICAL CURVE	N	NORTH
BOW	BACK OF WALK	NTS	NOT TO SCALE
℄ ,CL	CENTER LINE	ℙ	PLATE OR PROPERTY LINE
CY	CUBIC YARD	PCC	POINT OF COMPOUND CURVE
CONST	CONSTRUCT	PE	PLAIN END
CR	CURB RETURN	PI	POINT OF INTERSECTION
D	DRAIN	PIVC	PI OF VERTICAL CURVE
DI	DROP INLET	PL	PROPERTY LINE
DIA	DIAMETER	PP	POWER POLE
DIP	DUCTILE IRON PIPE	PRC	POINT OF REVERSE CURVATURE
DS	DOWNSTREAM	PSF	POUNDS PER SQUARE FOOT
E	EAST	PSI	POUNDS PER SQUARE INCH
EC	END CURVE	PVC	POLYVINYL CHLORIDE
EL/ELEV	ELEVATION	PVMT	PAVEMENT
EP	EDGE OF PAVEMENT	R	RADIUS
EX	EXISTING	RCP	REINFORCED CONCRETE PIPE
EXIST	EXISTING	ROW	RIGHT OF WAY
EVC	END OF VERTICAL CURVE	RT	RIGHT
FE	FLANGED END	R/W	RIGHT OF WAY
FG	FINISH GRADE	S	SOUTH
FL	FLOW LINE	SCH	SCHEDULE
FT	FEET	SHT	SHEET
FTG	FOOTING	SPECS	SPECIFICATIONS
GALV	GALVANIZED	STA	STATION
GR	GRATE	STD	STANDARD
GB	GRADE BREAK	SW	SIDEWALK
HI	HYDRAULIC INSTITUTE	T	TANGENT
HP	HIGH POINT	TBC	TOP BACK OF CURB
HDPE	HIGH DENSITY POLYETHYLENE	TYP	TYPICAL
HP	HORSE POWER	W	WEST
INV	INVERT	WM	WATER MAIN
JT	JOINT		

GENERAL

- CONCRETE
- REINFORCEMENT IN SECTION
- PRECAST CONCRETE
- MORTAR, GROUT OR PLASTER
- GRATING SPAN
- WOOD
- BATT INSULATION
- OPENING IN SLAB OR WALL
- OPENING WITH GRATING COVER
- WATER SURFACE
- NATURAL GROUND OR GRADE
- GRANULAR MATERIAL SUCH AS CRUSHED ROCK OR GRAVEL
- ASPHALT CONCRETE SURFACING

REFERENCE SYMBOL

- 1 / C-2 — SECTION DESIGNATION; DRAWN ON DWG NO. C2
- 1 / C-2 — DETAIL DESIGNATION; DRAWN ON DWG NO. C2

BID SET

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
DRAWN BY: LCS
DESIGNED BY: SPS
CHECKED BY: SPS

PROFESSIONAL ENGINEER - STATE OF NEVADA - STEVEN P. STRICKLAND - EXP. 6/30/17 - CIVIL - 15972 - 9/12/16

WOOD ROGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive Tel 775.823.4068
Reno, NV 89511 Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NOTES, SYMBOLS AND ABBREVIATIONS
WASHOE COUNTY NEVADA

PROJECT NO. 8042.017

DRAWING N-1

SHT 2 OF 17

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GENERAL MATERIAL AND EQUIPMENT REQUIREMENTS

1. ALL MATERIALS AND EQUIPMENT FURNISHED FOR THE PROJECT SHALL BE OF A MANUFACTURER WHO HAS BEEN REGULARLY ENGAGED IN THE DESIGN AND MANUFACTURE OF SUBJECT PRODUCTS/MATERIALS AND DEMONSTRATES, TO THE SATISFACTION OF THE ENGINEER, THE QUALITY IS EQUAL TO EQUIPMENT MADE BY THOSE MANUFACTURERS SPECIFICALLY NAMED HEREIN. THE MANUFACTURER SHALL HAVE SUPPLIED COMPLETE AND SIMILAR UNITS OR PRODUCTS THAT HAVE BEEN IN SUCCESSFUL OPERATION FOR AT LEAST FIVE (5) YEARS.

2. ALL EQUIPMENT SHALL BE OF NEW STURDY CONSTRUCTION OF AMPLE STRENGTH FOR ALL STRESSES THAT MAY OCCUR DURING FABRICATION, TRANSPORTATION, ERECTION, AND DURING CONTINUOUS OR INTERMITTENT OPERATIONS AND SHALL BE ADEQUATELY STAYED, OR BRACED AND ANCHORED, AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. APPEARANCE AS WELL AS UTILITY SHALL BE GIVEN CONSIDERATION IN THE DESIGN OF DETAILS.

3. THE FURNISHING AND INSTALLATION OF EQUIPMENT SHALL INCLUDE TESTING, PAINTING, CHECKING LEVELS AND ALIGNMENT, FURNISHING AND PLACING OF LUBRICANTS OF WHATEVER TYPE, AND FURNISHING OF FACTORY TRAINED SERVICE MECHANICS OR ENGINEERS WHERE CALLED FOR. ALL EQUIPMENT, WHEN FINALLY INSTALLED, SHALL BE COMPLETE AND READY FOR OPERATION WITHOUT BINDING OR OVERLOADING OF CRITICAL COMPONENTS. THE CONTRACTOR SHALL FURNISH ALL APPURTENANCES, PIPING, VALVES, FITTINGS, WIRING, SUPPORTS, HANGERS, ETC. AS ARE REQUIRED TO PLACE THE EQUIPMENT IN FIRST CLASS OPERATING CONDITION AND IN A NEAT AND WORKMANLIKE MANNER.

4. THE ARRANGEMENT OF EQUIPMENT SHOWN ON THE DRAWINGS IS BASED UPON INFORMATION AVAILABLE AT THE TIME OF DESIGN AND IS NOT INTENDED TO SHOW EXACT DIMENSIONS PECULIAR TO A SPECIFIC MANUFACTURER. THE DRAWINGS ARE, IN PART, DIAGRAMMATIC, AND SOME FEATURES OF THE ILLUSTRATED EQUIPMENT INSTALLATION MAY REQUIRE REVISION TO MEET ACTUAL EQUIPMENT INSTALLATION REQUIREMENTS. STRUCTURAL SUPPORTS, FOUNDATIONS, CONNECTED PIPING, AND VALVES SHOWN MAY HAVE TO BE ALTERED TO ACCOMMODATE THE EQUIPMENT PROVIDED. NO ADDITIONAL PAYMENT WILL BE MADE FOR SUCH REVISIONS AND ALTERATIONS WHICH SHALL BE ACCOMPLISHED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

5. SUBMITTALS SHALL BE MADE FOR EACH EQUIPMENT/MATERIAL ITEM OR GROUP OF RELATED EQUIPMENT ITEMS, INCLUDING BUT NOT LIMITED TO, SHOP DRAWINGS, CERTIFICATES OF COMPLIANCE, MANUFACTURER DATA, AND SAMPLES. CONTRACTOR SHALL FORWARD TO THE PROJECT ENGINEER SIX (6) COPIES OF EACH SUBMITTAL WITH ENGINEER APPROVED SUBMITTAL COVER SHEET ATTACHED TO EACH. COMMENTS ON SUBMITTALS SHALL BE RETURNED TO CONTRACTOR WITHIN FIFTEEN (15) DAYS OF SUBMITTAL. CONTRACTOR MAY BE RESPONSIBLE FOR THE COST OF SUBMITTAL REVIEW IN THE EVENT INADEQUATE SUBMITTALS RESULT IN MORE THAN 2 REVIEWS OF A SUBMITTAL. ALL SUBMITTALS SHALL BE IDENTIFIED BY SUBMITTAL NUMBER AND ITEM ON THE LETTER OF TRANSMITTAL. SUBMITTALS SHALL BE NUMBERED CONSECUTIVELY AND RESUBMITTALS SHALL HAVE A LETTER SUFFIX. WITHIN A REASONABLE TIME AFTER RECEIPT OF SAID SUBMITTAL COPIES, THE ENGINEER WILL RETURN THREE (3) MARKED COPIES INDICATING ONE OF THE FOLLOWING FOUR (4) ACTIONS: "NO EXCEPTIONS TAKEN"; "MAKE CORRECTIONS NOTED"; "REVISE AND RESUBMIT"; OR "REJECTED." APPROVAL BY THE ENGINEER SHALL NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS IN SUCH DRAWINGS, NOR FROM RESPONSIBILITY FOR COMPLYING WITH REQUIREMENTS OF THE CONTRACT DRAWINGS. IF SHOP DRAWINGS SHOW VARIATIONS FROM CONTRACT REQUIREMENTS, CONTRACTOR SHALL DESCRIBE SUCH VARIATIONS IN WRITING, SEPARATE FROM THE DRAWINGS, AT TIME OF SUBMISSION. ALL SUCH VARIATIONS MUST BE APPROVED BY THE ENGINEER.

6. THE CONTRACTOR SHALL SUBMIT PER THE ABOVE FOUR (4) COPIES (AND ONE COPY ON DISK) OF O&M MANUALS COMPRISED OF MANUFACTURER DATA AND O&M INSTRUCTIONS FOR EACH EQUIPMENT SYSTEM IN ACCORDANCE THE FOLLOWING FORMAT: TABLE OF CONTENTS; MANUFACTURER CONTACT LIST; DESCRIPTION OF EACH EQUIPMENT/MATERIAL ITEM INCLUDING FUNCTION, NORMAL OPERATING CHARACTERISTICS, AND LIMITING CONDITIONS; MANUFACTURER DATA INCLUDING PERFORMANCE CURVES, ENGINEERING DATA, SHOP DRAWINGS, FACTORY AND FIELD TEST REPORTS, AND COMPLETE NOMENCLATURE AND MODEL NUMBERS OF REPLACEMENT PARTS; MANUFACTURER O&M DATA INCLUDING INSTALLATION INSTRUCTIONS AND RECOMMENDED MAINTENANCE ACTIVITIES/INTERVALS; AS-BUILT DRAWINGS; AND WARRANTIES. WARRANTIES SHALL GUARANTEE EQUIPMENT AND MATERIALS AGAINST DEFECT FOR A PERIOD OF NO LESS THAN ONE (1) YEAR FOLLOWING FINAL PROJECT ACCEPTANCE BY THE CITY.

7. EQUIPMENT SHALL BE SHIPPED IN SEALED, WEATHERTIGHT, ENCLOSED CONVEYANCES, AND PROTECTED AGAINST DAMAGING STRESSES DURING TRANSPORT AND HANDLING. DAMAGE SHALL BE CORRECTED TO CONFORM TO THE REQUIREMENTS OF THE CONTRACT BEFORE THE ASSEMBLY IS INCORPORATED INTO THE WORK. THE CONTRACTOR SHALL BEAR THE COSTS ARISING OUT OF DISMANTLING, INSPECTION, REPAIR, AND REASSEMBLY.

8. FLANGES ON EQUIPMENT AND APPURTENANCES PROVIDED UNDER THIS SECTION SHALL CONFORM IN DIMENSIONS AND DRILLING TO ANSI B16.1, CLASS 150 OR 300 AS SHOWN ON THE PLANS. PIPE THREADS SHALL CONFORM IN DIMENSION AND LIMITS OF SIZE TO ANSI B1.1, COARSE THREAD SERIES, CLASS 2 FIT. THREADED FLANGES SHALL HAVE A STANDARD TAPER PIPE THREAD CONFORMING TO ANSI B1.20.1. UNLESS OTHERWISE SPECIFIED, FLANGES SHALL BE FLAT FACED. FLANGE ASSEMBLY BOLTS SHALL BE TYPE 316 STAINLESS STEEL. CONTRACTOR SHALL COORDINATE FLANGE FACES (FLAT VS RAISED FACE ON ALL APPURTENANCES AND MATERIALS.

9. NAMEPLATES SHALL BE PROVIDED ON EACH ITEM OF EQUIPMENT AND SHALL CONTAIN THE SPECIFIED EQUIPMENT NAME OR ABBREVIATION AND EQUIPMENT NUMBER. EQUIPMENT NAMEPLATES SHALL BE ENGRAVED OR STAMPED ON STAINLESS STEEL AND FASTENED TO THE EQUIPMENT IN AN ACCESSIBLE LOCATION WITH STAINLESS STEEL SCREWS OR DRIVE PINS.

10. ANY AND ALL TOOLS, INSTRUMENTS, OR ACCESSORIES OF A SPECIAL NATURE THAT ARE REQUIRED TO ASSEMBLE, DISASSEMBLE, MAINTAIN, OR REPAIR ANY ITEM OF EQUIPMENT SHALL BE FURNISHED BY THE CONTRACTOR WITH THAT PIECE OF EQUIPMENT. SPECIAL TOOLS SHALL BE TAGGED AND WELL MARKED INDICATING THEIR SERVICE AND THE PIECE OF EQUIPMENT FOR WHICH THEIR USE IS INTENDED. OPERATION AND MAINTENANCE MANUALS SHALL CONTAIN A LIST AND DESCRIPTION OR PICTORIAL REPRESENTATION OF ALL SPECIAL TOOLS REQUIRED FOR A GIVEN PIECE OF EQUIPMENT.

11. THE CONTRACTOR SHALL CAUSE EACH ITEM OF EQUIPMENT TO BE INSTALLED, ALIGNED AND TESTED. AS SPECIFIED FOR SPECIFIC EQUIPMENT, INSTALLATION AND TESTING SHALL BE DONE UNDER THE DIRECTION OF INSTALLATION ENGINEERS WHO HAVE BEEN FACTORY TRAINED BY THE EQUIPMENT MANUFACTURER, AND UPON COMPLETION OF THE PROJECT AND AS A CONDITION PRECEDENT TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL FURNISH WRITTEN CERTIFICATION FROM THE EQUIPMENT MANUFACTURERS THAT EACH ITEM HAS BEEN INSTALLED, ALIGNED, AND TESTED CORRECTLY AND THAT THE INSTALLATION MEETS ALL OF THE MANUFACTURER'S REQUIREMENTS FOR EFFICIENT, TROUBLE-FREE OPERATION. THIS PROVISION, HOWEVER, SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITY FOR THIS PORTION OF THE WORK. THE CONTRACTOR SHALL PROVIDE FOR START-UP, TESTING, AND FIELD TRAINING OF TMWRF PERSONNEL TO THE SATISFACTION OF TMWRF, IN ADDITION TO THE CONTRACTOR'S OWN COMMISSIONING OF SYSTEMS AS DESCRIBED ABOVE AND HEREIN. THE CONTRACTOR SHALL FURNISH ALL REQUIRED MATERIALS FOR TESTING AND SHALL PERFORM ALL WORK, ALL IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS. DUE TO THE OPERATIONAL CONSTRAINTS OF THE PUMP STATION, THE CONTRACTOR SHALL ANTICIPATE A SEPARATE START-UP FOR EACH PUMP PUT BACK INTO SERVICE.

NOTE:

SPECIFICATIONS WITH NEXT SUBMITTAL

PIPING AND JOINTS

1. SUBMIT MILL CERTIFICATES, LAYING DIAGRAMS, AND MANUFACTURER CERTIFICATES OF COMPLIANCE FOR PIPE MATERIALS, MECHANICAL CONNECTIONS, AND LININGS/COATINGS. SUBMIT FIELD TESTING REPORTS.

2. STEEL PIPE: STEEL SHALL CONFORM TO AWWA C200/ASTM A53 TYPE E OR S, ~~SCHEDULE 40~~, STD. (SCHEDULE 3/8" PIPE THICKNESS. STEEL PIPE SHALL BE FUSION EPOXY LINED ~~AND EXTERNAL COATED PURPLE IN ACCORDANCE WITH AWWA~~ C213 FIELD WELDING OF JOINTS WILL NOT BE ALLOWED. FLANGES SHALL BE FULL FACE IN ACCORDANCE WITH AWWA C207 CLASS E OR ANSI B16.1 CLASS 150 OR 300 AND SHALL BE COMPATIBLE WITH EQUIPMENT. FITTINGS SHALL BE IN ACCORDANCE WITH AWWA C208 OR ANSI B31.1 AND SHALL MAINTAIN A PRESSURE CAPACITY EQUAL TO OR GREATER THAN PIPE. 1 1

3. HYDROSTATIC FIELD TESTING: HYDROSTATIC TESTING SHALL BE PERFORMED FOR A MINIMUM OF TWO (2) HOURS IN ACCORDANCE WITH SECTION 4 OF AWWA C600 AND M11.

4. EXISTING PIPING OR FITTINGS TO BE REUSED SHALL BE RECOATED WITH GREEN EPOXY COATING.

MISCELLANEOUS METALWORK AND HARDWARE

1. HARDWARE/FASTENERS: SCREWS, BOLTS, THREADED DOWELS, WASHERS, AND NUTS SHALL COMPLY WITH ASTM A593/A594 (STAINLESS STEEL – TYPE 316) GRADE 1 OR BETTER, AS IDENTIFIED ON THE DRAWINGS. NUTS SHALL BE CAPABLE OF DEVELOPING THE FULL STRENGTH OF THE BOLTS. ALL FASTENERS SHALL BE THREADED IN ACCORDANCE WITH ANSI B1.1, UNIFIED NATIONAL COARSE THREAD (UNC) THREADS. THE LENGTH OF ALL BOLTS SHALL BE SUCH THAT AFTER JOINTS ARE MADE UP, EACH BOLT SHALL EXTEND THROUGH THE ENTIRE NUT BY AT LEAST THREE (3) FULL THREADS, BUT IN NO CASE MORE THAN ONE-HALF (1/2) INCH BEYOND THE NUT. ANTI-GALL/ANTI-SEIZE COMPOUND SHALL BE APPLIED TO ALL FASTENERS PRIOR TO ASSEMBLY. COMPOUND SHALL BE RAMCO, TRX-SYNLUBE; RAMCO, ANTI-SEIZE; HUSK-IT, HUSKY LUBE-O-SEAL; OR EQUAL AND SHALL BE APPLIED EACH TIME FASTENERS ARE ASSEMBLED.

2. DIELECTRIC KITS: FLANGE GASKETS SHALL BE FULL-FACE, ONE-EIGHTH (1/8) INCH THICK, HIGH-DENSITY NEOPRENE-FACED PHENOLIC GASKETS IN ACCORDANCE WITH AWWA C207. HARDWARE SHALL SHALL INCLUDE BOLTS, NUTS, AND FLAT WASHERS. ONE-PIECE, PHENOLIC INSULATING WASHERS AND SLEEVES/BUSHINGS SHALL BE PROVIDED FOR EACH FLANGE BOLT WHERE DISSIMILAR METALS ARE USED. ALTERNATE GASKET/WASHER/SLEEVE MATERIALS MAY BE SUBSTITUTED WHICH HAVE A MINIMUM DIELECTRIC STRENGTH PER ASTM D229 OF 500 VOLTS/MIL AND A MINIMUM COMPRESSIVE STRENGTH OF 25,000 PSI. DIELECTRIC FLANGE KITS SHALL BE AS MANUFACTURED BY PIPELINE SEAL AND INSULATOR, INC., HOUSTON, TX OR EQUAL.

BUTTERFLY VALVE

1. BUTTERFLY VALVE SHALL BE FULL LUG STYLE DESIGN COMPATIBLE WITH CLASS ANSI CLASS 150 FLANGES. VALVE SHALL BE DEZURIK MODEL OR APPROVED EQUAL.

2. VALVE SHALL BE MANUAL WORM-GEAR OPERATED WITH A DISC POSITION INDICATOR DESIGNATING THE OPEN AND CLOSED POSITION OF THE VALVE. A 12" MIN. DIAMETER HANDWHEEL SHALL BE PROVIDED AND THE DIRECTION OF ROTATION SHALL BE COUNTER-CLOCKWISE FOR OPENING.

3. VALVE SEAT SHALL BE MECHANICALLY HELD IN POSITION AND REPLACEABLE.

4. MATERIAL SHALL BE AS FOLLOWS:

   A. VALVE BODY: CARBON STEEL

   B. STEM: 316 SS, ASTM 276
   C. DISC: 316 SS
   D. SEAT/RINGS: PTFE

5. BUTTERFLY VALVE SHALL BE RATED FOR DRIP TIGHT SHUTOFF UP TO THE FULL RATING OF THE VALVE. THE VALVE SHALL BE RATED FOR A WORKING PRESSURE OF 200 PSI.

6. VALVE SHALL HAVE A BLOW OUT PROOF STEM DESIGN PER API 609.

7. VALVE SHALL BE EPOXY LINED AND EXTERNAL COATED, GREEN. COATING SHALL BE NO LESS THAN 16 MILS. DFT.

DISMANTLING JOINT

1. DISMANTLING JOINT SHALL PROVIDE A FLEXIBLE LENGTH, WEDGE TYPE, FULLY RESTAINED JOINT; ROMAC DJ400, SMITH BLAIR MODEL 975 OR APPROVED EQUAL.

2. SUBMIT MANUFACTURER DATA, SPECIFICATIONS, DIMENSION DRAWINGS AND COATING FOR DISMANTLING JOINT.

3. DISMANTLING JOINT SHALL BE MANUFACTURED FROM ASTM A36 STEEL. FLANGES SHALL BE AWWA STEEL RING FLANGES WITH ANSI CLASS 300 BOLT CIRCLES MATCHING THE EXISTING PUMP STATION EQUIPMENT.

4. BOLTS AND TIE RODS SHALL BE STAINLESS STEEL TYPE 316.

5. NBR GASKETS SHALL BE MADE FROM RUBBER COMPOUNDED FOR WATER AND SEWER SERVICE IN ACCORDANCE WITH ASTM D 2000 MBA810Z.

6. DISMANTLING JOINT SHALL BE FUSION BONDED EPOXY COATED, GREEN. COATING THICKNESS SHALL BE NO LESS THAN 16 MILS. DFT.

7. DISMANTLING JOINT SHALL BE RATED FOR A WORKING PRESSURE OF 200 PSI.

8. REQUIRED DIMENSIONS FOR EACH DISMANTLING JOINT MAY VARY FROM PUMP TO PUMP. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING FABRICATION AND ASSEMBLY OF REVISED PIPING, INCLUDING DISMANTLING JOINT.

SWING CHECK VALVE

1. SUBMIT MANUFACTURER DATA, SPECIFICATIONS, AND DIMENSION DRAWINGS FOR VALVE AND COATING

2. THE CHECK VALVE SHALL BE SWING VALVE FULL BODY FLANGED WITH DOMED ACCESS COVER. THE SWING CHECK DISC SHALL BE THE ONLY MOVING PART.

3. THE VALVE BODY SHALL HAVE FULL FLOW EQUAL TO THE NOMINAL DIAMETER AT ANY POINT THROUGH THE VALVE. THE ACCESS PORT SHALL ALLOW REMOVAL OF THE VALVE DISC WITHOUT REMOVAL OF THE VALVE FROM THE PIPELINE. THE VALVE BODY SHALL BE ASTM A536 GRADE 65-45-12, CLASS B DUCTILE IRON COATED AND LINED WITH ANSI/NSF61 APPROVED FUSION BONDED EPOXY COATING, GREEN. THE VALVE SHALL BE DESIGNED, MANUFACTURED, AND TESTED IN ACCORDANCE WITH ANSI/AWWA STANDARD C550.

4. THE DISC SHALL BE RAISED ONE PIECE STAINLESS STEEL AND EQUIPED WITH A MOLDED RESILIENT SEAT MOUNTED ON THE DISC WITH AN INTERGRAL RING FOR DRIP TIGHT SEALING. SEATS SHALL BE SECURED WITH STAINLESS STEEL FASTENERS AND MUST BE FIELD REMOVABLE WITHOUT REMOVING THE VALVE FROM THE PIPELINE.

5. THE VALVE SHALL BE FURNISHED WITH A LEVEL AND SPRING CLOSURE .

PUMP SPECIFICATIONS

1. FURNISH SUBMITTALS INCLUDING DIMENSION DRAWINGS, DETAILED MATERIALS LIST INCLUDING MATERIAL DESIGNATIONS AND FINISHES, PUMP DATA AND CERTIFIED PERFORMANCE CURVE, NON-WITNESSED FACTORY TEST REPORTS AND CERTIFICATE OF CORRECT INSTALLATION.

2. PUMPS SHALL BE PEERLESS VERTICAL TURBINE OR APPROVED EQUAL.

3. PUMPS SHALL CONFORM TO THE FOLLOWING PERFORMANCE REQUIREMENTS:
   DESIGN OPERATING FLOW: 2200 GPM
   DESIGN OPERATING HEAD: 64 FT TDH
   DESIGN NPSH: 15 FT
   BOWL EFFICIENCY: 75% MIN.
   PUMP SPEED: 1800 RPM (MAX) VFD
   MOTOR RATING: 50 HP
   SUCTION DIAMETER: 10⅝
   DISCHARGE DIAMETER: 10⅝
   MOTOR: 3 PHASE/60 HZ/460V
   PUMPS SHALL BE WARANTEED FOR 1 YEAR OR 2500 HOURS OF OPERATION

4. PUMP HEAD:
   PUMP HEAD SHALL BE HIGH GRADE CAST IRON OR FABRICATED STEEL COMPATIBLE TO MOUNT THE MOTOR. HEAD SHALL BE PROVIDED WITH A 10⅝ FLANGED DISCHARGE OUTLET CONFORMING TO ANSI CLASS 150 BOLT PATTERN. DISCHARGE HEAD SHALL BE PROVIDED WITH MECHANICAL SEALS.

5. PUMP COLUMN
   COLUMN SHALL BE PROVIDED TO THE LENGTH SHOWN ON THE PLANS. COLUMN PROVIDED SHALL BE FURNISHED IN INTERCHANGEABLE SECTIONS NOT MORE THAN 10 FEET IN LENGTH, AND SHALL BE CONNECTED WITH THREADED, SLEEVE TYPE COUPLINGS. THE JOINTS ARE TO BE BUTTED TO INSURE PERFECT ALIGNMENT AFTER ASSEMBLY.

   THE LINE SHAFT SHALL BE TURNED, GROUND AND POLISHED PRECISION SHAFTING OF AMPLE SIZE TO OPERATE THE PUMP WITHOUT DISTORTION OR VIBRATION. THE SHAFT SHALL BE FURNISHED IN INTERCHANGEABLE SECTIONS NOT MORE THAN 10 FEET IN LENGTH.AND SHALL BE COUPLED WITH STRONG STEEL COUPLINGS MACHINED FROM SOLID BAR STEEL. A NON-CORROSIVE FLAME SPRAYED STAINLESS STEEL JOURNAL SHALL BE PLACED ON EACH SHAFT AT THE BEARING POINT. THE JOURNAL O.D. WILL BE FLUSH WITH THE SHAFT O.D.

   THE COLUMN ASSEMBLY SHALL HAVE BRONZE BEARING RETAINERS THREADED INTO THE PIPE COUPLINGS AND RETAINED BY BUTTED PIPE ENDS.EACH BEARING RETAINER SHALL CONTAIN A WATER LUBRICATED CUTLESS RUBBER BEARING DESIGNED FOR VERTICAL TURBINE PUMP SERVICE.

6. PUMP BOWL ASSEMBLY
   THE PUMP BOWLS SHALL BE OF CLOSE GRAINED CAST IRON HAVING A MINIMUM TENSILE STRENGTH OF 30,000 PSI, FREE FROM BLOW HOLES, SAND HOLES, AND ALL OTHER FAULTS; ACCURATELY MACHINED AND FITTED TO CLOSE DIMENSIONAL TOLERENCES.

   THE IMPELLER SHAFT SHALL BE OF STAINLESS STEEL OF NOT LESS THAN 12% CHROME. THE IMPELLER SHAFT SHALL BE SUPPORTED BY A COMBINATION OF WATER LUBRICATED FLUTED RUBBER AND BRONZE BEARINGS.

   IMPELLERS SHALL BE OF CAST IRON ACCURATELY MACHINED AND FINISHED, AND MECHANICALLY BALANCED. THEY SHALL BE SECURELY FASTENED TO THE IMPELLER SHAFT WITH A TAPERED BUSHING.

   EACH BOWL SHALL HAVE AN IMPELLER SEAL RING TO PREVENT SLIPPAGE OF WATER BETWEEN THE BOWL AND IMPELLER. THE IMPELLERS SHALL BE ADJUSTABLE BY MEANS OF A TOP SHAFT NUT AT THE TOP OF THE MOTOR.

7. A STRAINER HAVING A NET INLET AREA OF NOT LESS THAN FOUR TIMES THE AREA OF TH SUCTION PIPE SHALL BE PROVIDED.

ROOF HATCH

1. SUBMITTAL SHALL INCLUDE DETAILS OF EACH HATCH TYPE, SIZE AND DESCRIPTION OF COMPONENTS, MATERIALS, ATTACHMENT DEVICES, DESCRIPTION OF FRAME AND FINISH AND CONSTRUCTION DETAILS. INDICATE INSTALLATION PROCEDURES AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
2. ROOF ACCESS HATCH, 36 IN. WIDE X 48 INCH OPENING, WITH HINGE ON THE 36 INCH SIDE. POWDER COATED 14 GAUGE GALVANIZED STEEL, SELF FLASHING BASE.
3. HATCH COMPONENTS OR MATERIALS SHALL BE ASTM CERTIFIED UNDER SPECIFICATIONS A792/A792M-06A; A653/A653M-06A; C726-05; AND A36/A36M-05.
4. HATCH SHALL BE 14 GAUGE GALVANIZED STEEL WITH 12" HIGH CURB AND 3-5/8" WIDE FLANGE FOR SECURING TO ROOF DECK. ALL CORNERS ARE FULLY WELDED AND MITERED. HINGE IS A HEAVY DUTY BOX-TYPE.
5. COVER SHALL BE 14 GAUGE GALVANIZED STEEL EXTERIOR AND 22 GAUGE LINER WITH WITH A TPE RUBBER DRAFT-SEAL GASKET DOOR SEAL. ONE INCH THICK INSULATION LINER IS BUILT INTO COVER.
6. STEEL ROOF HATCH COVERS SHALL BE APPROVED TO SUPPORT A MINIMUM LIVE LOAD OF 40 LBS./FT2 WITH A MAXIMUM DEFLECTION OF 1/140TH OF THE SPAN, MAXIMUM NEGATIVE LOAD OF 50 LBS./FT2 WIND UPLIFT, AND 110 MPH WIND LOAD WHEN COVER IS IN AN OPEN POSITION.
7. THE CURB SHALL INCLUDE A 1" FIBERBOARD INSULATION SURROUNDING THE BASE, AND 1" INSULATION BETWEEN THE EXTERIOR COVER AND LINER.
8. HARDWARE SHALL INCLUDE CORROSION RESISTANT HEAVY-DUTY HINGE, SLAM LATCH, HEAVY GAUGE AUTOMATIC HOLD OPEN ARM WITH RED GRIP, COMPRESSION SPRING-OPERATED CYLINDERS, EXTERIOR HANDLE WITH INTEGRAL PADLOCK HASP, AND INTERIOR LOCKING HANDLE WITH INTERIOR PADLOCK HASP.
9. FINISHED HATCH SHALL BE POWDER COATED TO MATCH ROOF COLOR
10. ROOF HATCH SHALL BE J.L. INDUSTRIES OR APPROVED EQUAL

BID SET

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
DRAWN BY: LCS
DESIGNED BY: SPS
CHECKED BY: SPS

STEVEN P. STRICKLAND, EXP: 06/30/2017, CIVIL, STATE OF NEVADA, PROFESSIONAL ENGINEER, 9/16/16

WOOD RODGERS
INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive
Reno, NV 89511
Tel 775.823.4068
Fax 775.823.4066

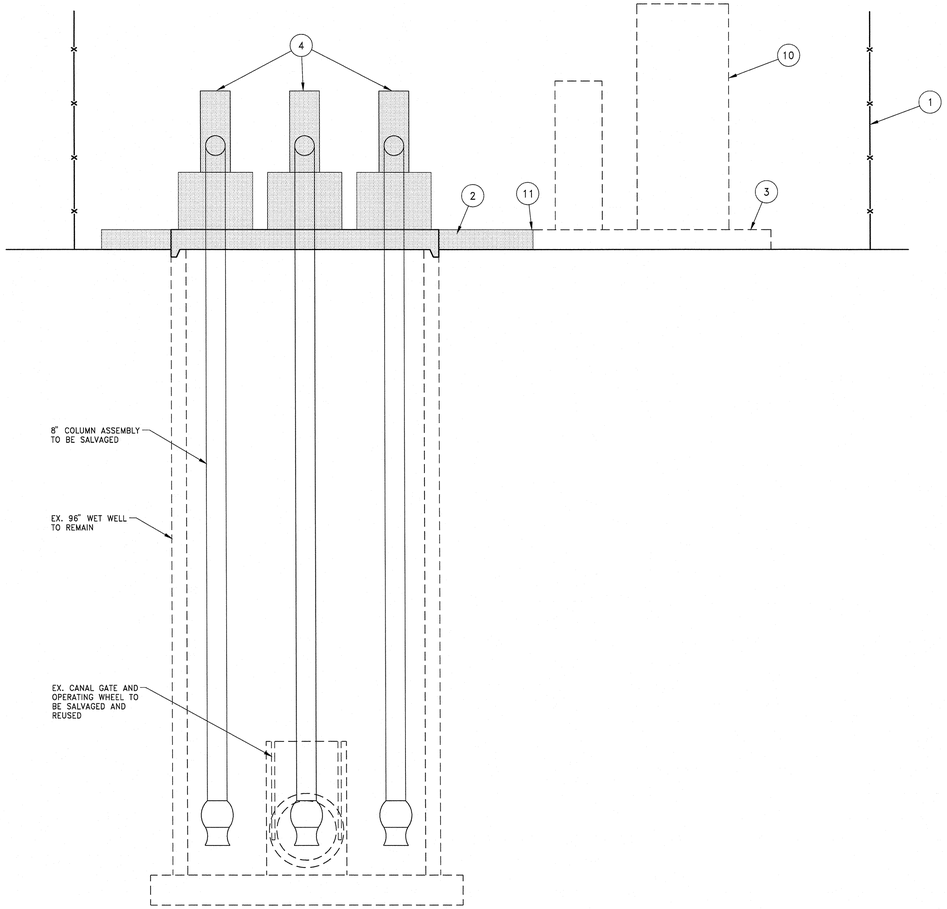
IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NEVADA
WASHOE COUNTY

GENERAL NOTES

PROJECT NO. 8042.017

DRAWING N-2

SHT 3 OF 17



SECTION
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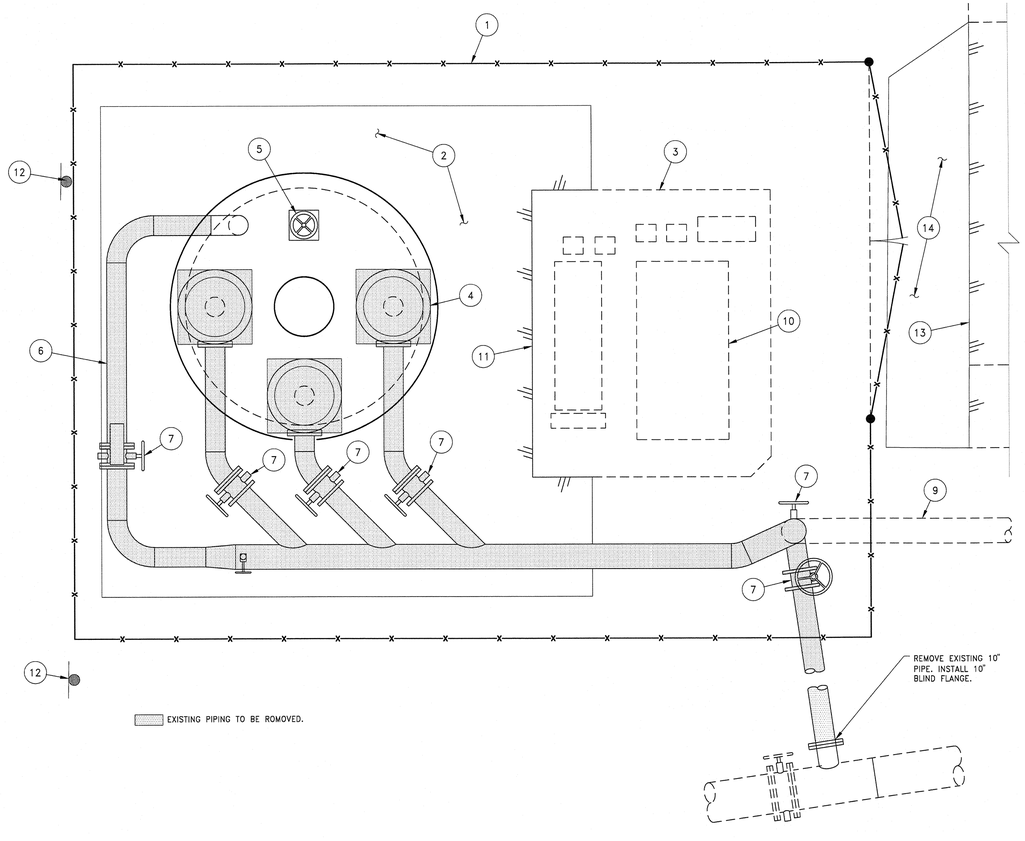

DEMOLITION PLAN
SCALE: 1/2"=1'-0"

NOTE:
CONTRACTOR TO TAKE CARE WHEN DEMOLISHING EXISTING CONCRETE SLAB TO PRESERVE EXISTING ELECTRICAL CONDUITS.

NOTES:

1. REMOVE EX. FENCE AND GATES
2. REMOVE EX. CONCRETE SLAB AROUND PUMPS
3. CONCRETE SLAB UNDER ELECTRICAL PADS TO REMAIN
4. REMOVE EX. PUMP HEAD AND CONCRETE PEDISTAL (TYP. OF 3)
5. EX. CANAL GATE AND OPERATING WHEEL TO BE SALVAGED AND REUSED
6. REMOVE EX. PIPING, INSULATION AND APPURTENANCES
7. REMOVE AND SALVAGE EX. VALVES
8. CUT EX. PIPE AND CAP
9. EX. 10" DISCHARGE PIPE TO REMAIN
10. SEE ELECTRICAL PLANS FOR ELECTRICAL MODIFICATIONS
11. SAWCUT LINE
12. REMOVE EX. HC PARKING POSTS AND SIGNS FOR BUILDING CONSTRCUTION, REINSTALL
13. SAWCUT LINE AT EXISTING CONCRETE JOINT
14. REMOVE EXISTING CONCRETE APRON

BID SET

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
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DESIGNED BY: SPS
CHECKED BY: SPS

STEVEN P. STRICKLAND
EXP. 6/30/17
9/12/16

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
8440 Reno Corporate Drive Tel 775.823.4068
Reno, NV 89511 Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NEVADA
WASHOE COUNTY

DEMOLITION PLAN

PROJECT NO.
8042.017

DRAWING
DE-1

SHT 4 OF 17

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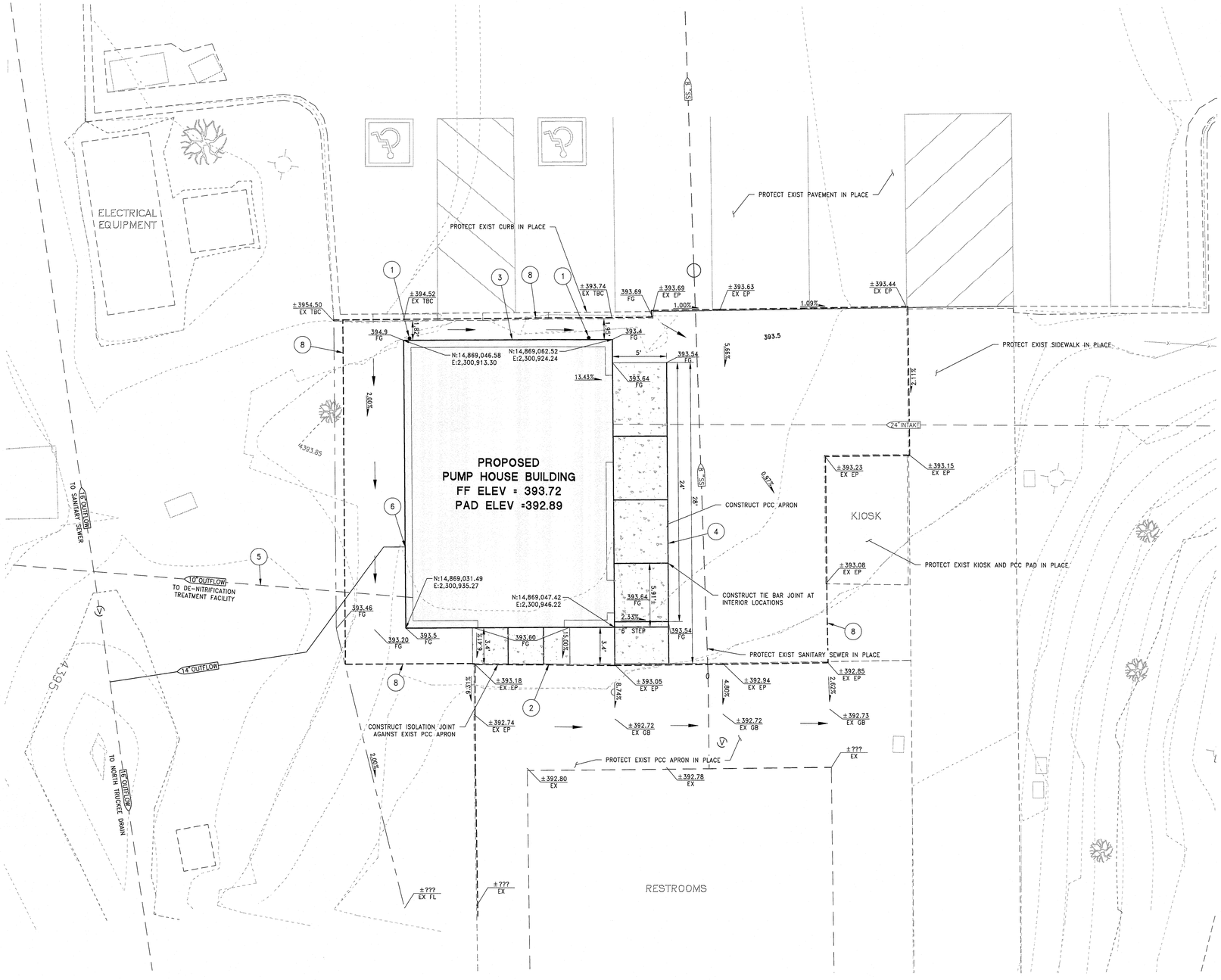

5' 2.5' 0 5'

SCALE: 1" = 5'

NOTES:

1. REINSTALL HC PARKING SIGN ON BUILDING
2. SAWCUT EXIST CONCRETE AT JOINT LINE
3. PROPOSED PUMP HOUSE BUILDING (REF. ARCH. PLANS)
4. 4" PCC CONCRETE APRON (REF. DETAIL 1 / SHT D-1)
5. EXISTING 10" WATER PIPE TO REMAIN
6. CONSTRUCT 14" WATER MAIN (SEE SHEET ME-1)

LEGEND:

- PROPOSED BUILDING PAD
- PCC CONCRETE APRON
- 4390 — EXISTING CONTOURS
- GRADING / CONSTRUCTION LIMITS
- PROPOSED DRAINAGE SWALE
- PROPOSED CONTOUR
- 14"W — PROPOSED WATER MAIN

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
DRAWN BY: LCS, TJK
DESIGNED BY: SPS
CHECKED BY: SPS

PROFESSIONAL ENGINEER - STATE OF NEVADA
STEVEN P. STRICKLAND
No. 15972
9/2/16

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive Tel 775.823.4068
Reno, NV 89511 Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NEVADA

SITE AND GRADING PLAN
WASHOE COUNTY

PROJECT NO. 8042.017

DRAWING GP-1

SHT 5 OF 17

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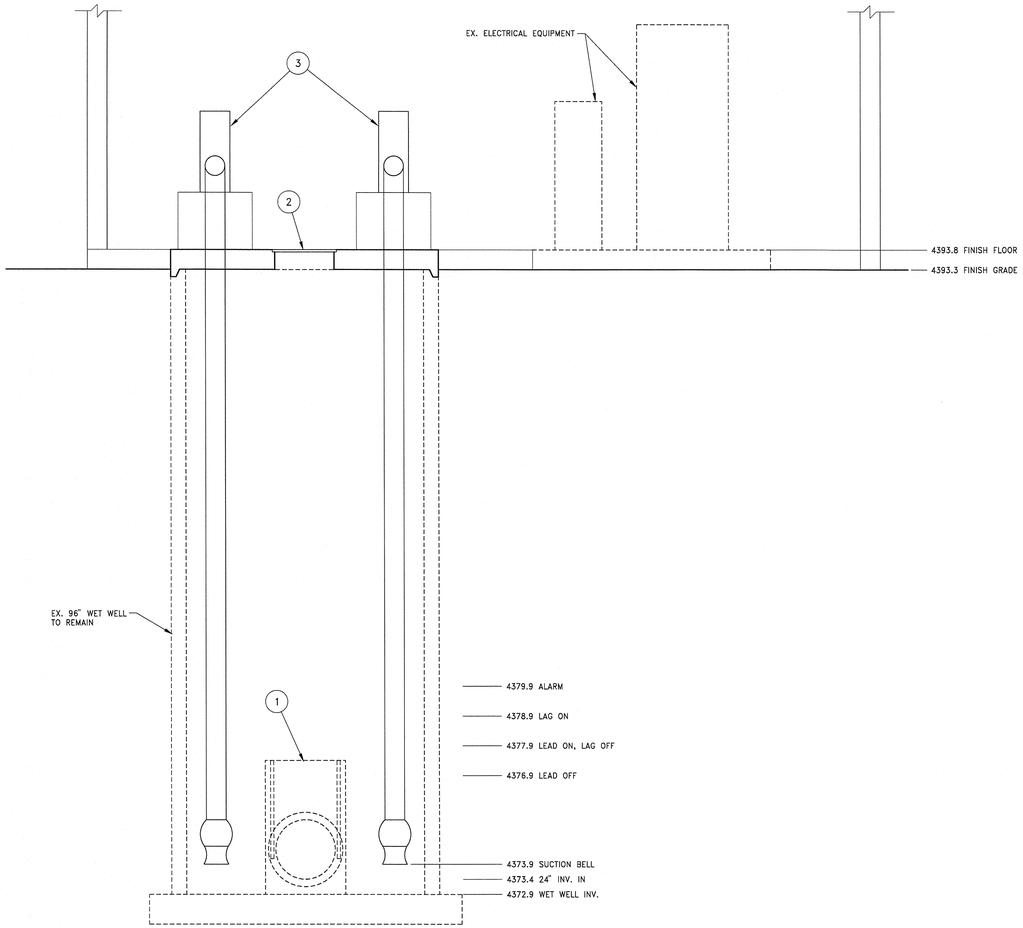

SECTION
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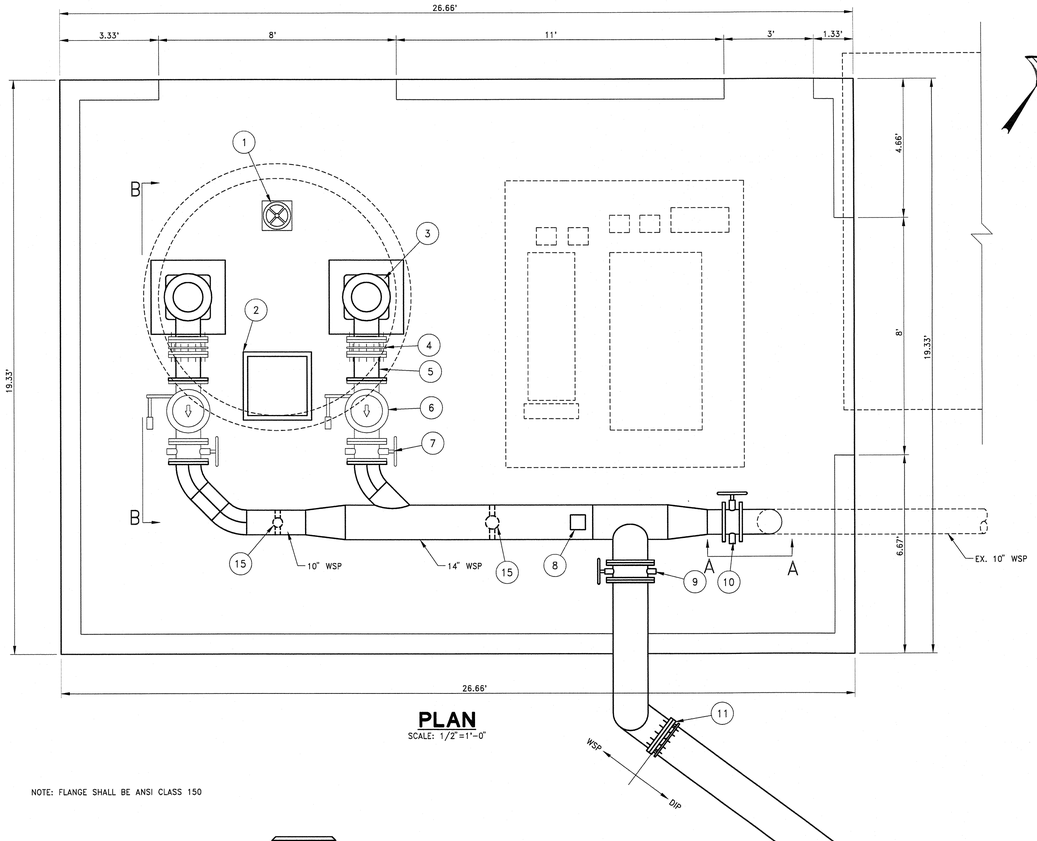
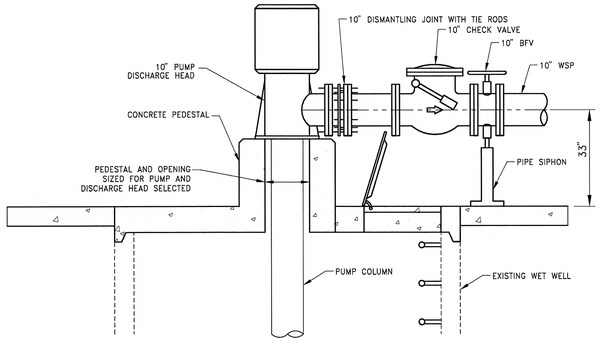


PLAN
SCALE: 1/2"=1'-0"

NOTE: FLANGE SHALL BE ANSI CLASS 150

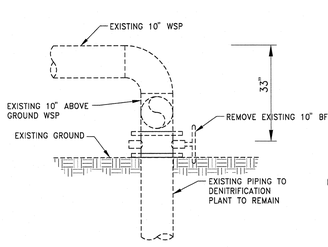
NOTES:

1. INSTALL SALVAGED CANAL GATE AND OPERATING ASSEMBLY
2. 24" X 24" ACCESS HATCH
3. PUMP DISCHARGE HEAD (2 EA.)
4. 10" DISMANTLING JOINT W/TIE RODS
5. 10" SPOOL
6. 10" CHECK VALVE
7. 10" BUTTERFLY VALVE
8. FLOW METER
9. 14" BUTTERFLY VALVE (FLGxFLG)
10. 10" BUTTERFLY VALVE (FLGxFLG)
11. 14" FLANGE COUPLING ADAPTER (RESTRAINED)
12. 14" 45° ELBOW (RESTRAINED)
13. 14"x16" WELD-ON TAPPING SLEEVE
14. 14"x16" WELD-ON TAPPING SLEEVE
15. PIPE SUPPORT

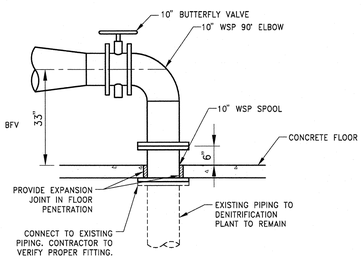


SECTION B-B
N.T.S.

EXISTING



PROPOSED



SECTION A-A

BID SET

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
DRAWN BY: LCS, TJK
DESIGNED BY: SPS
CHECKED BY: SPS

STEVEN P. STRICKLAND
EXP. 06/30/2017
CIVIL
15972
STATE OF NEVADA
PROFESSIONAL ENGINEER

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive
Reno, NV 89511
Tel 775.823.4068
Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NEVADA
WASHOE COUNTY

MECHANICAL PLAN

PROJECT NO. 8042.017
DRAWING ME-1
SHT 6 OF 17

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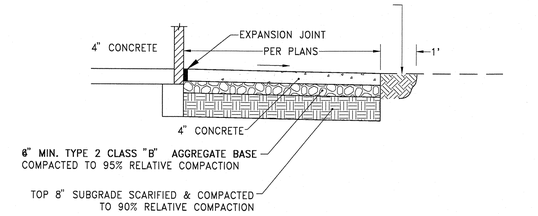
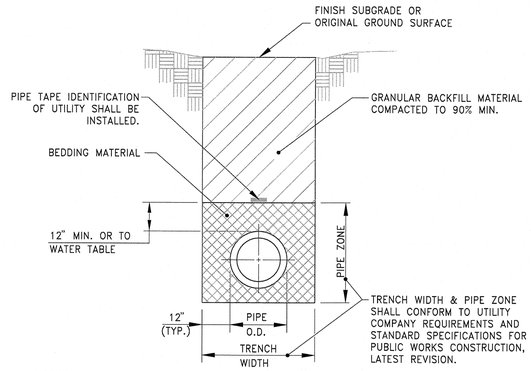
BACKFILL SHALL BE TO 90% RELATIVE COMPACTION BEHIND SIDEWALK FOR A HORZ. DISTANCE OF 1 FOOT, WITH A MATCH TO EXISTING GRADE OF NOT EXCEEDING A 3:1 SLOPE.



NOTES:

1. PORTLAND CEMENT CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 202 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION FOR CONCRETE EXPOSED TO FREEZE-THAW ENVIRONMENTS.
2. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED EVERY 5 FEET ON SIDEWALKS WIDER THAN 5 FEET, JOINTING PATTERN SHALL BE 0.8 TO 1.2 TIMES THE WIDTH OF SIDEWALK, NOT TO EXCEED 8 FEET. THE JOINTS SHALL PENETRATE TO A DEPTH OF 2 INCHES AND BE CONSTRUCTED IN CONFORMANCE WITH SECTION 312.09.02 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
3. EXPANSION JOINTS SHALL BE CONSTRUCTED AT LOCATIONS DESIGNATED IN SECTION 312.09.01A OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
4. TYPE 2 CLASS B AGGREGATE BASE SHALL CONFORM TO SECTION 200 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, AND SHALL BE MECHANICALLY COMPACTED IN CONFORMANCE WITH SECTION 308.05 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

6" PCC APRON
N.T.S.



NOTES:

1. BEDDING MATERIAL SHALL CONFORM TO OWNING-UTILITY COMPANY REQUIREMENTS AS APPROVED BY THE ENGINEER. FOR CITY-OWNED UTILITIES, BEDDING MATERIAL SHALL BE CLASS "A", "B", OR "C", COMPACTED TO 90% MINIMUM.
2. ALL EXCAVATIONS SHALL CONFORM TO THE LATEST O.S.H.A. REQUIREMENTS. SHORING OR SLOPED CUT MAY BE NECESSARY, BUT THERE WILL BE NO PAYMENT FOR ADDITIONAL EXCAVATION, BEDDING, BACKFILL, OR SHORING.

TRENCH EXCAVATION/BACKFILL DETAIL
N.T.S.

BID SET

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER, 2016
SCALE: AS SHOWN
DRAWN BY: LCS, TJK
DESIGNED BY: SPS
CHECKED BY: SPS

PROFESSIONAL ENGINEER STATE OF NEVADA
STEVEN P. STRICKLAND
EXPIRES 06/30/2017
No. 15972

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive Tel 775.823.4068
Reno, NV 89511 Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
NEVADA
WASHOE COUNTY

PUMP BUILDING ELEVATIONS

PROJECT NO. 8042.017
DRAWING D-1
SHT 7 OF 17

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
A / E1	DETAIL IDENTIFICATION: TOP IS DETAIL/BOTTOM IS SHEET NUMBER
1 / E1	NOTE IDENTIFICATION: NOTE NO. 1 ON SHEET E-1
ES 1	EQUIPMENT SCHEDULE IDENTIFICATION
	DUPLEX GFCI RECEPTACLE
	SINGLE OUTLET GFCI RECEPTACLE
$	SPST SWITCH; +42" A.F.F. U.O.N.
$HOA	HAND-OFF-AUTO SWITCH; +42" A.F.F. U.O.N.
	RED-TRIANGLE SHUNT-TRIP BREAK-GLASS STATION
(#)	MOTOR/PUMP (# INDICATES HORSEPOWER)
	GROUND
M	METER
	CIRCUIT BREAKER
OT	OVER-TEMPERATURE SENSOR
TX	EQUIPMENT TRANSMITTER
FM	FLOW METER SENSOR
SL	SEAL-LEAK SENSOR
M	MOTOR STARTER COIL
MS	MOISTURE SENSOR
SA	SAMPLER UNIT
TC	TIME CLOCK
T	TEMPERATURE SENSOR
pH	pH/ORP SENSOR
ETM	ELAPSED TIME METER
PEC	PHOTO ELECTRIC CELL
DA	DOOR ALARM PANEL
HD	HEAT DETECTOR
	GROUNDING ELECTRODE GROUND-ROD
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT STUB
	PHASE CONDUCTOR; #12 THHN IN 1" C. U.O.N.
	CODE SIZE GROUND BONDING CONDUCTOR PER N.E.C. TABLE 250-95
	NEUTRAL CONDUCTOR; #12 THHN IN 1" C. U.O.N.
	UNDERGROUND FEEDER, (2)-#12 THHN IN 1" C. U.O.N.
	EXPOSED RUN, PARALLEL TO STRUCTURE IN UNFINISHED AREAS; (2)-#12 THHN IN 1" C. U.O.N.
LA-1,3,5	HOME RUN INDICATION. EX: 3-#12'S WITH 1-#12 NEUTRAL, AND 1-GROUND IN 3/4"C. TO PANELBOARD-LA, CIRCUITS 1,3,5
—8760—	BELDEN #8760 2/c #18 SHIELDED 600V CABLE IN 3/4"C.
	SLASHES INDICATE NO. OF #14 MTW STRANDED CONTROL CONDUCTORS IN CONDUIT.
XXXXXXX	EQUIPMENT/CONDUCTORS TO BE REMOVED
RTU	REMOTE TELEMETRY UNIT
N.T.S.	NOT TO SCALE
C.	CONDUIT
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
OAA	OR APPROVED ALTERNATE
B.C.	BARE COPPER
GRSC	GALVANIZED RIGID STEEL CONDUIT
F.M.	FLOW METER
E.C.	EMPTY CONDUIT
D.S.	DISCONNECT SWITCH
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
PVC-GRSC	PVC-COATED GALVANIZED RIGID STEEL CONDUIT
ATL	ACROSS-THE-LINE STARTING
BFG	BELOW FINISHED GRADE
(E)	EXISTING
WP	WEATHER-PROOF
GFI	GROUND FAULT INTERRUPT
G/N	SOLIDLY GROUNDED NEUTRAL BUS
	SAFETY DISCONNECT SWITCH (FRAME/FUSE/POLE#)
	FULL-VOLTAGE NON-REVERSING MOTOR STARTER
CR#	RELAY COIL AND ASSOCIATED CONTACTOR
A	PUSH-TO-TEST LED PILOT LIGHT (R: RED, G: GREEN, A: AMBER)

GENERAL ELECTRICAL REQUIREMENTS:

A. FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE ELECTRICAL SYSTEM.

B. ALL WORK SHALL CONFORM WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, NATIONAL BOARD OF FIRE UNDERWRITERS, APPLICABLE LOCAL CODES, AND POWER COMPANY STANDARDS.

C. ALL MATERIAL SHALL BE NEW AND CONFORM WITH THE REQUIREMENT OF THE UNDERWRITER'S LABORATORIES, INC.

D. WORKMANSHIP AND NEAT APPEARANCE SHALL BE OF THE SAME LEVEL OF IMPORTANCE AS ITS ELECTRICAL AND MECHANICAL EFFICIENCY.

E. COORDINATE ALL WORK WITH THAT OF OTHER CONTRACTORS ON THE JOB AND ALSO WITH THAT OF THE OWNER. ANY COST FOR EXTRA WORK OR MATERIALS RESULTING FROM LACK OF COORDINATION, SHALL BE BORNE BY THIS CONTRACTOR.

F. POWER CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM (UNLESS OTHERWISE NOTED). #8 AWG AND LARGER SHALL BE STRANDED. ALL CONDUCTORS TO BE TYPE XHHW-2. ALL WIRING SHALL BE INSTALLED IN CONDUIT. CONTROL CONDUCTORS TO BE #14 XHHW-2 STRANDED.

G. ALL CONDUIT WITHIN 18" (ABOVE AND BELOW) OF GRADE OR FINISHED FLOOR TO BE GALVANIZED RIGID STEEL. ALL CONDUIT BELOW 18" OF GRADE TO BE PVC-TYPE SCHEDULE-40. ALL UNDERGROUND ELBOWS TO BE GALVANIZED RIGID STEEL (GRS). ALL METALLIC CONDUITS IN CONTACT WITH EARTH TO BE EITHER PVC-GRSC OR HALF-LAP WRAPPED IN SCOTCH-50 ELECTRICAL TAPE. FOR CONDUITS INSTALLED OUTDOORS, PROVIDE A WATER-TIGHT CONDUIT SYSTEM, (IMC OR GRS ONLY) INCLUDING THREADED HUBS AT EQUIPMENT PENETRATIONS, LIQUID-TIGHT CONNECTORS, & SEALS.

H. WIRING DEVICES SHALL BE HUBBELL, OR EQUAL. ALL DEVICES SHALL BE EQUAL TO THE FOLLOWING AND SHALL HAVE WHITE DEVICE PLATES:
ENCLOSURE SWITCHES:
A. SPST HUBBELL NO. 1221-I
ENCLOSURE RECEPTACLES:
A. GFCI DUPLEX 20A, 125V HUBBELL NO. GF5262-I

I. THIS CONTRACTOR SHALL GUARANTEE TO THE OWNER ALL WORK PERFORMED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE.

J. ALL CONDUCTOR CRIMPING ON CONDUCTORS #6 AWG OR GREATER TO BE HYDRAULICALLY CRIMPED, USING FULLY ANNULAR DIE-TYPE CRIMPER (MATCH COLOR TO EQUIPMENT RATING).

K. PROVIDE NEW TYPED PANEL DIRECTORIES FOR ALL NEW AND MODIFIED 120/208/240V LOAD CENTERS AND PANELBOARDS. PROVIDE BLACK PHENOLIC NAMEPLATES FOR BREAKERS INSTALLED IN 277/480V PANELS.

L. SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS AND/OR MANUFACTURERS DESCRIPTIVE DATA ON ALL PROPOSED ELECTRICAL EQUIPMENT FOR APPROVAL WITHIN THIRTY (30) DAYS AFTER AWARD OF CONTRACT. THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PREPARED BY HIS SUPPLIERS AND SHALL MARK ALL COPIES AS ACCEPTABLE TO HIM. THE CONTRACTOR'S ACCEPTANCE SHALL INCLUDE CERTIFICATION THAT THE REQUIRED ELECTRICAL CONNECTIONS HAVE BEEN NOTED AND THAT EQUIPMENT CAN BE INSTALLED IN THE SPACE AVAILABLE.

M. INSTALL ALL EMPTY CONDUITS WITH PULL STRING.

N. ELECTRIC EQUIPMENT SHALL BE AS MANUFACTURED BY EATON, SQUARE-D, OR ALLEN-BRADLEY, OR AS SPECIFIED IN THE EQUIPMENT SCHEDULE (OTHERS ON PRIOR APPROVAL). PANELBOARDS SHALL BE OF THE BOLT-ON CIRCUIT BREAKER TYPE.

O. PROVIDE THE SERVICES OF A FULLY TRAINED AND EQUIPPED TESTING COMPANY (TEST PERFORMED BY CONTRACTOR WILL NOT BE ACCEPTED) TO TEST, CALIBRATE, AND WHERE NECESSARY, PLACE IN OPERATION THE ELECTRICAL SYSTEM:

(A) PHASE OVER-CURRENT DEVICES ON ALL FEEDERS.
(B) GROUND FAULT PROTECTIVE DEVICES.
(C) GROUND RESISTANCE TEST FOR GROUNDING ELECTRODE SYSTEMS USING FALL OF POTENTIAL METHOD.
(D) CONDUCTOR INSULATION TESTING BY WAY OF 1000VDC.

TESTS SHALL BE COMPLETE ENOUGH TO BE CONCLUSIVE AND TO INSURE 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 (SSW)" AND "EARTH RESISTANCE TESTING" PUBLISHED BY THE JAMES G. BIDDLE COMPANY.

P. ALL SURFACE OUTLET BOXES TO BE "FS" CAST STEEL WITH MATCHING COVERS.

Q. ALL CONCRETE WORK TO BE PER CIVIL AND/OR STRUCTURAL DRAWINGS, SPECIFICATIONS, REQUIREMENTS, AND DIAGRAMS.

R. FINAL CONDUIT ROUTING FOR NEW CONDUIT SYSTEMS TO BE DETERMINED BY ELECTRICAL CONTRACTOR; HOWEVER SEPARATE DEDICATED CONDUITS SHALL BE PROVIDED FOR ANALOG SIGNAL, DISCRETE SIGNAL, AND POWER. DO NOT USE EQUIPMENT ENCLOSURES AS PASS-THROUGH WIRE-WAY.

S. ALL COVER CONTROLS SHALL BE 30.5mm NEMA TYPE.

T. PROVIDE CORD GRIP CONNECTORS FOR INSTRUMENT CABLES WHICH DO NOT HAVE INTEGRAL CONDUIT THREADING/PORT.

U. PARALLEL FEEDERS SHALL INCLUDE (3)-PHASE CONDUCTORS, (1)-NETURAL CONDUCTORS, & (1)-GROUND CONDUCTOR IN A SINGLE CONDUIT FOR EACH SET CALLED FOR.
EXAMPLE: (3)-PARALLEL SETS INCLUDES (3)-CONDUITS & (15)-CONDUCTORS.

V. OFFER ALL EQUIPMENT TO BE REMOVED TO CITY OF SPARKS PERSONNEL FOR SALVAGE. ANY ITEMS NOT SELECTED BY CITY OF SPARKS FOR SALVAGE TO BECOME PROPERTY OF THE CONTRACTOR AND BE REMOVED AND DISPOSED OF PROPERLY.

W. CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

208Y/120V - BLACK, RED, BLUE
NEUTRAL - WHITE

480Y/120V - BROWN, ORANGE, YELLOW
NEUTRAL - GRAY

SIGNAL
120VAC - YELLOW, 24VDC - BLUE

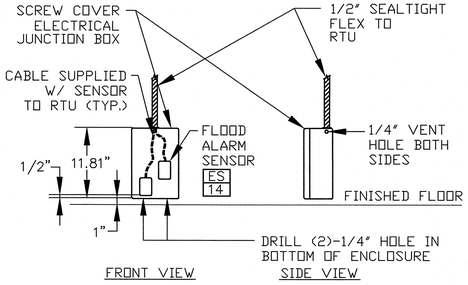
X. METALLIC CONDUIT FITTINGS AND ACCESSORIES SHALL BE STEEL, COMPRESSION TYPE. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.

EQUIPMENT SCHEDULE

ES

ITEM	QUANTITY	DESCRIPTION
1	1	MODIFICATIONS TO EXISTING METERING SWITCHBOARD TO INCLUDE: 1. (1)-480Y/277V POWER MONITOR (EA,V,kW),Ø) WITH MODBUS COMMUNICATION MODULE 2. (1)-160kA/Ø 480Y/277V SURGE PROTECTIVE DEVICE WITH EVENT-COUNTER & ALARM CONTACTS 3. (1)-400A/3P BACK-FED MAIN-CIRCUIT BREAKER WITH 24VDC SHUNT-TRIP COIL 4. (1)-40A/3P TRANSFORMER FEEDER BREAKER 5. (1)-15A/3P UNIT HEATER FEEDER BREAKER 6. (2)-70A/3P PUMP MOTOR STARTER FEEDER BREAKERS EQUIPMENT MANUFACTURER SHALL MATCH EXISTING SWITCHGEAR (SQUARE-D). SEE SWITCHGEAR ELEVATION AND SINGLE-LINE DIAGRAM FOR DETAILS.
2	1	30kVA 480Dx208Y/120V 3-PHASE 150°C-RISE NEMA-1 VENTILATED DRY-TYPE TRANSFORMER WITH WEATHERSHIELD AND (2)/+2.5 & (4)/-2.5% TAPS. EATON #V48M28T30EE & #WS38.
3	1	125A 208Y/120V 3-PHASE 18-CLT NEMA-3R LOAD CENTER WITH INSULATED/BONDABLE SPLIT NEUTRAL & 208Y/120V 50kA/Ø SURGE PROTECTION DEVICE. EATON #CH18L3125R & #SP1-208Y.
4	1	7.5kW 480V 3-PHASE ELECTRIC UNIT HEATER WITH UNIT-MOUNTED THERMOSTAT & WALL-MOUNT BRACKET. QMARK #MUH074, #UHMT1, & #B10.
5	1	1/10HP 120V DIRECT DRIVE CENTRIFUGAL UPBLAST WALL EXHAUST FAN WITH THERMOSTATIC CONTROL AND 10"Hx10"W 120V MOTORIZED BACK-DRAFT WALL DAMPER. ACME #PDURFW & #AW. INCLUDE DAMPER MOTORIZING KIT & 120V COOLING LINE-VOLTAGE THERMOSTAT.
6	1	12"Hx12"W ADJUSTABLE ALUMINUM LOUVER WITH 120V ACTUATOR. NCA #A-1AD-4 & BELIMO #FSLF120-FC.
7	2	77A 60HP 480Y/277V 3Ø LOCKABLE NEMA-12 31"Wx18"Dx48"H HEAVY-DUTY VARIABLE FREQUENCY DRIVE WITH 90A 3Ø COMBINATION CIRCUIT BREAKER DISCONNECT, 3% IMPEDANCE LINE REACTOR, LED OPERATOR INTERFACE TERMINAL (WITH FULL NUMERIC KEYPAD), PUSH-TO-TEST LED STATUS PILOT LIGHTS (RUN, READY, FAULT: VERIFY COLOR PREFERENCE WITH OPERATORS), ELAPSED TIME METER, EMERGENCY-STOP MUSHROOM PUSHBUTTON, RESET PUSHBUTTON, POTENTIOMETER, HAND-OFF-AUTO SELECTOR SWITCH, START-STOP PUSHBUTTONS, MODBUS-TCP COMMUNICATION OPTION, 22-INCH FLOOR STAND, GROUNDED DOOR, FILTERED LOUVERS, & BLACK PHENOLIC NAMEPLATES WITH WHITE ENGRAVED CHARACTERS. ALL COVER CONTROLS TO BE MOUNTED ON A DEAD-FRONT DOOR. VERIFY VFD DETAILS & REQUIREMENTS WITH SINGLE-LINE, PROPOSED ELEVATION, & SCADA DIAGRAMS. EATON #SVX-060-4-A-2X-7-0-0-BXX-1-2-B-0-0 (OPTIONS AS DESCRIBED).
8	1	24V WEATHER-PROOF SHUNT-TRIP STATION WITH A 12" RED POWDER-COATED STEEL TRIANGLE. RED DOT #CKLSVU (COVER) & SCHNEIDER ELECTRIC #9001SKR9RH13 (BUTTON).
9	1	PUMP STATION RTU - SEE SCADA DIAGRAM & REQUIREMENTS FOR DETAILS.
10	1	120V FLOW METER SENSOR & TRANSMITTER WITH 4-20mA OUTPUT. SIEMENS 5100W MAG-METER, MAG5000 TRANSMITTER FOR SENSOR MOUNTING. INCLUDE ELECTRODE & COIL CABLE (VERIFY CABLE LENGTH IN FIELD). COORDINATE METER RATINGS WITH CIVIL REQUIREMENTS & SPECIFICATIONS.
11	2	4-20mA 24VDC PIEZO-ELECTRIC HERMETICALLY SEALED MOTOR VIBRATION SENSOR. IMI-SENSORS #649A03.
12	2	4-20mA 316 STAINLESS STEEL SUBMERSIBLE PRESSURE TRANSDUCER WITH POLYURETHANE CABLE & SIGNAL TRANSITION BOX. DRUCK #PTX-1830 & #STE-110A (VERIFY EXACT MODEL & CABLE LENGTH WITH SITE CONDITIONS & APPLICATION).
13	1	4-20mA 24VDC AIR TEMPERATURE DETECTOR (RTD). DWYER INSTRUMENTS #RHP-3W11.
14	1	MOISTURE SENSOR, FLOOD ALARM - (2)-EACH WATER-BUG #WB200 & HOFFMAN #ASE12X8X4NK.
15	1	24VDC SPST N.O., 90°C FIXED TEMPERATURE RATE OF RISE HEAT DETECTOR. EDWARDS SIGNALING 282-PL WITH #280A-PL MOUNTING PLATE.
16	1	DOOR ALARM KEYPAD & MAGNETIC DOOR SWITCHES. IEI #212W AND (3)-GRI #200-36HD.
17	2	VALVE POSITION 'OPEN/CLOSE' LIMIT-SWITCHES. VERIFY EXACT PART/MODEL WITH VALVE EQUIPMENT MANUFACTURER.
18	1	HIGH-PRESSURE ALARM SWITCH. MERCOID #DA-7031-153-81-#3325(-10/30). VERIFY EXACT MODEL/RATINGS WITH CIVIL/WATER SYSTEM REQUIREMENTS.

REMARKS: CONTRACTOR TO COORDINATE EQUIPMENT SCHEDULE QUANTITIES WITH ELECTRICAL DRAWINGS AND MODIFY AS REQUIRED.



A / E1 MOISTURE SENSOR DETAIL
SCALE: 1" = 1'-0"

BID SET

JENSEN ENGINEERING INC. Electrical Engineers
9655 Gateway Drive, Reno, Nevada 89521-2988
Ph. (775) 852-2288, Fax (775) 852-3388
email: jeneng@nvbell.net, web: www.jeneng.com

DATE	ENGR INIT	DESCRIPTION	NO

DATE: SEPTEMBER 12, 2016
SCALE: AS SHOWN
DRAWN BY: MJJ
DESIGNED BY: MJJ
CHECKED BY: MJJ

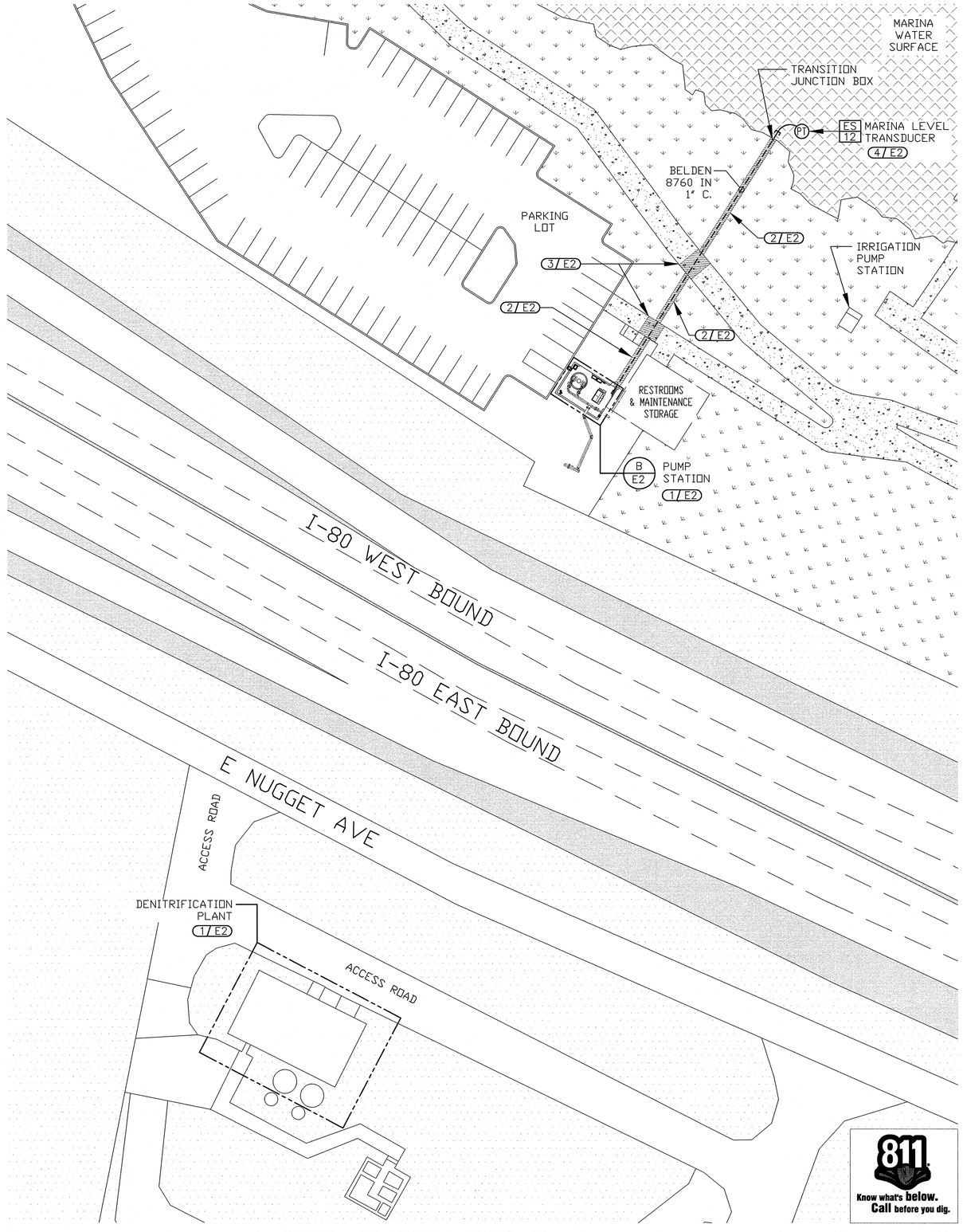
WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive, Reno, NV 89511
Tel 775.823.4068, Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
LEGEND, GENERAL REQUIREMENTS, & EQUIPMENT SCHEDULE
WASHOE COUNTY, NEVADA

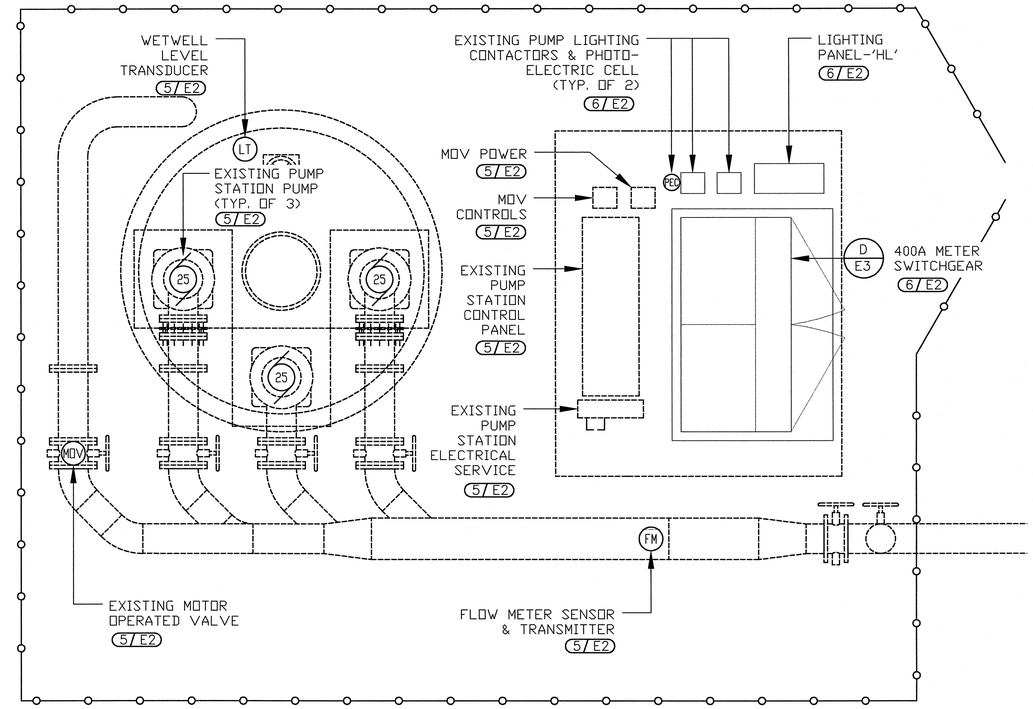
PROJECT NO. V38DN

DRAWING E1

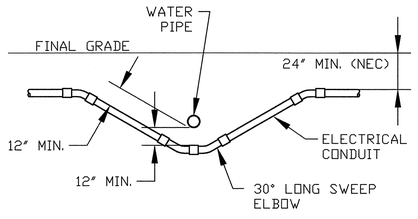
SHT 1 OF 6



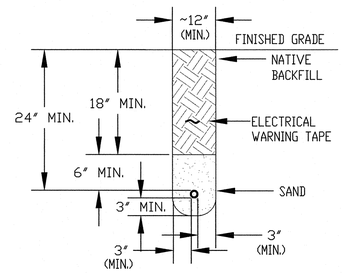
A E2 PUMP STATION SITE PLAN
SCALE: 1" = 30'-0"



B E2 PUMP STATION DEMOLITION PLAN
SCALE: 1/2" = 1'-0"



C E2 WATER CROSSING DETAIL
SCALE: 1/4" = 1'-0"



MINIMUM TRENCH REQUIREMENTS SHOWN. MODIFY TRENCH WIDTH AS NECESSARY FOR ADDITIONAL CONDUITS. PROVIDE AND INSTALL PULL-LINE IN ALL EMPTY CONDUITS FOR FUTURE CONDUCTOR PULLS. SEE CIVIL SHEETS FOR PAVEMENT PATCH REQUIREMENTS, MATERIALS, & PLACEMENT SPECIFICATIONS FOR BEDDING AND BACKFILL.

D E2 BRANCH TRENCH DETAIL
SCALE: 1" = 1'-0"

SHEET NOTES

/E2

1. CONTRACTOR TO ESTABLISH A CELLULAR-LINK BETWEEN NEW PUMP STATION AND EXISTING DENITRIFICATION PLANT. PROVIDE EQUIPMENT SUITABLE FOR MAINTAINING A RELIABLE WIRELESS-CELLULAR COMMUNICATION LINK BETWEEN THE TWO SITES. INCLUDE ALL TRANSMITTERS, ANTENNAS, MASTS, CABLING, AND ACCESSORIES FOR A COMPLETELY FUNCTIONAL WIRELESS CELLULAR-LINK AND INCORPORATE WITH THE EXISTING DENITRIFICAION SCADA SYSTEM.
2. TRENCH, INSTALL CONDUIT, BACKFILL, AND REPLACE LANDSCAPING TO MATCH ORIGINAL CONDITIONS. REPAIR ANY IRRIGATION EQUIPMENT (SPRINKLER SYSTEM) DAMAGED DURING THE COURSE OF CONSTRUCTION.
3. BREAKOUT CONCRETE AT CONTROL JOINTS, TRENCH, INSTALL CONDUIT, BACKFILL, AND REPLACE CONCRETE SIDEWALK & CURB TO MATCH ORIGINAL CONDITIONS.
4. PROVIDE A COMPLETE MARINA LEVEL SENSING METHOD WITH EQUIPMENT TO INCLUDE TRANSDUCER, COUNTER-WEIGHT, A SIGNAL TRANSITION JUNCTION BOX MOUNTED ON AN 18" STAINLESS STEEL UNISTRUT POST, AND ALL REQUIRED ACCESSORIES FOR A WEATHER-TIGHT INSTALLATION. CONDUIT STUB-UP EXTENDING UP TO JUNCTION BOX SHALL BE RMC-TYPE CONDUIT. SUBMIT EQUIPMENT FOR A FUNCTIONAL LEVEL SENSING SYSTEM FOR APPROVAL.
5. REMOVE EXISTING EQUIPMENT AS WELL AS ASSOCIATED CONDUITS & CONDUCTORS. COORDINATE REMOVAL OF EQUIPMENT WITH ASSOCIATED ENTITIES/AGENCIES. CAP UNDERGROUND CONDUITS ABANDONED IN-PLACE AND SEAL PENETRATIONS WATER-TIGHT.
6. EXISTING EQUIPMENT TO REMAIN FOR USE IN CONJUNCTION WITH NEW PUMP STATION BUILDING AND EQUIPMENT. PRESERVE EQUIPMENT IN PLACE AS WELL AS EXISTING ASSOCIATED CONDUITS & CONDUCTORS.

9/12/16

BID SET

JENSEN ENGINEERING INC. Electrical Engineers
9655 Gateway Drive, Reno, Nevada 89521-2968
Ph. (775) 852-2288, Fax (775) 852-3388
email: jeneng@nvbell.net, web: www.jeneng.com

NO.	DESCRIPTION	ENGR INIT	DATE

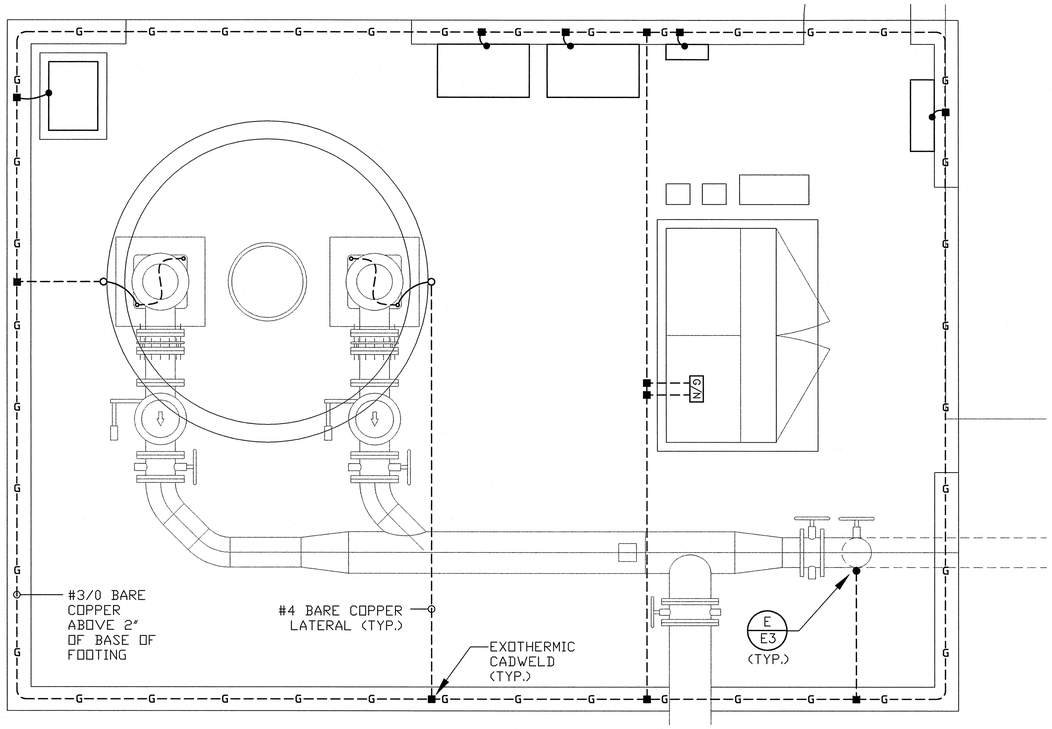
DATE: SEPTEMBER 12, 2016
SCALE: AS SHOWN
DRAWN BY: MJJ
DESIGNED BY: MJJ
CHECKED BY: MJJ

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive
Reno, NV 89511
Tel 775.823.4068
Fax 775.823.4066

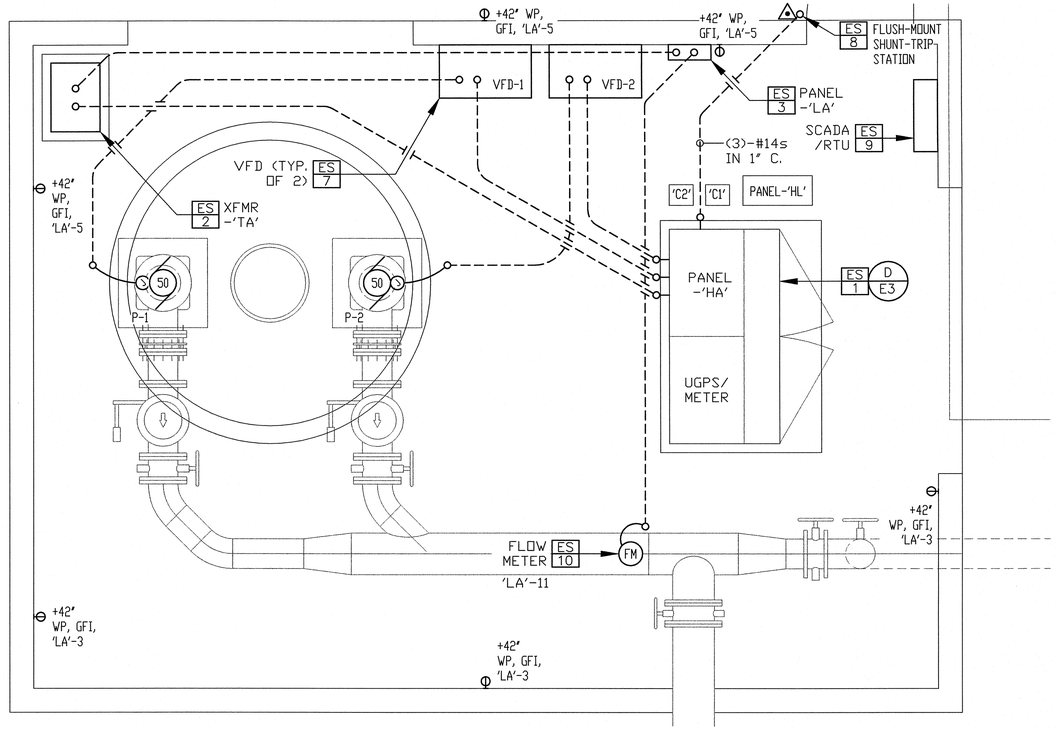
IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
PROJECT SITE PLAN, DEMOLITION PLAN, & SITE DETAILS
WASHOE COUNTY NEVADA

PROJECT NO. V38DN

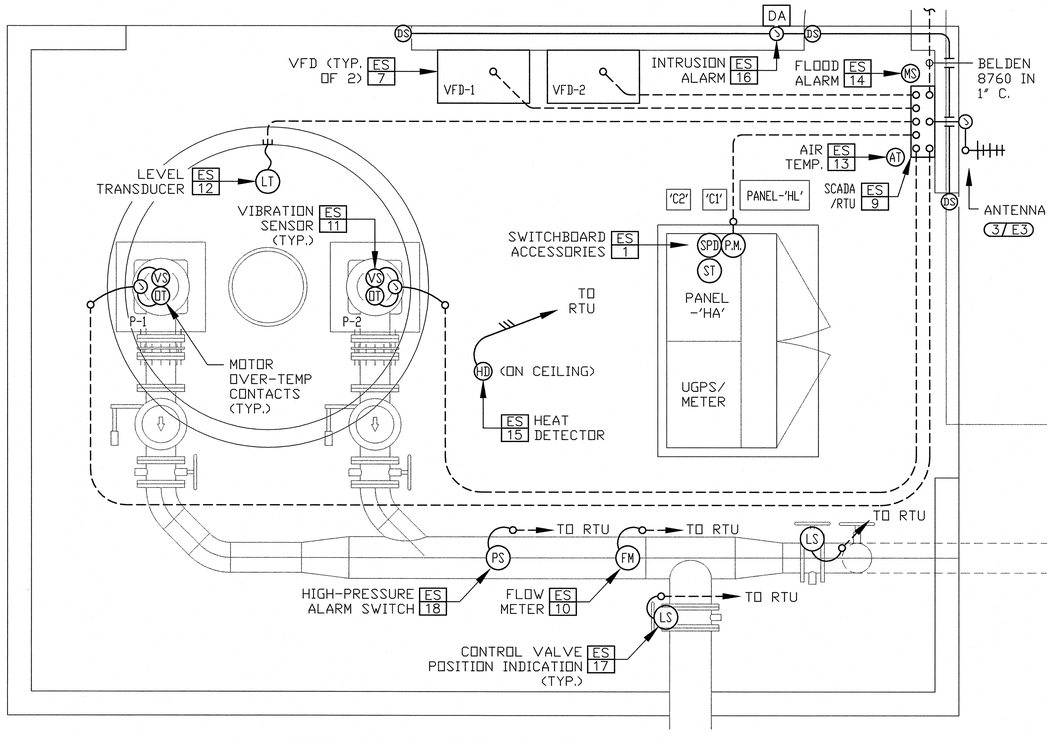
DRAWING E2



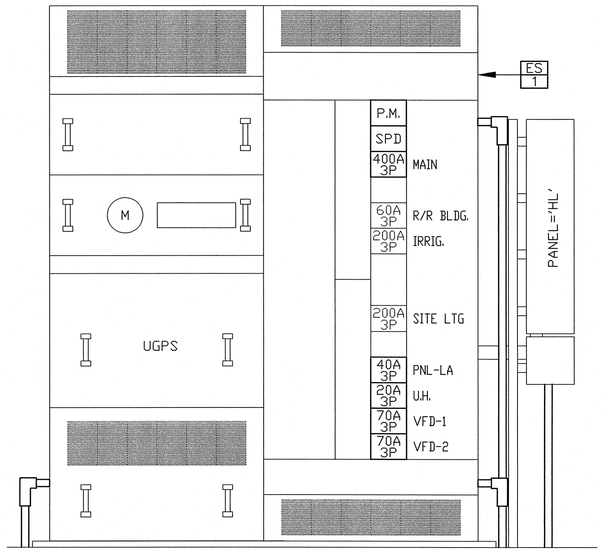
A E3 BUILDING GROUNDING PLAN
SCALE: 1/2" = 1'-0"



B E3 BUILDING POWER PLAN (1/E3)
SCALE: 1/2" = 1'-0"

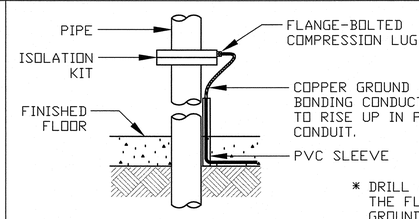


C E4 BUILDING SIGNAL PLAN (2/E3)
SCALE: 1/2" = 1'-0"



D E3 SWITCHBOARD ELEVATION
SCALE: 1" = 1'-0"

CONTRACTOR SHALL RETAIN SQUARE-D (SCHNEIDER) FIELD SERVICES (NO SUBSTITUTES) FOR SWITCHGEAR MODIFICATION WORK. MODIFICATIONS TO BE MADE TO THE EXISTING SQUARE-D SWITCHBOARD (AS NECESSARY TO INCORPORATE NEW CONFIGURATION AND LOADS) SHALL BE PERFORMED BY SQUARE-D (SCHNEIDER) FIELD SERVICES AND BE ALL-INCLUSIVE (INCLUDE MODIFICATIONS TO EXISTING BUSSING SYSTEM, NEW CABLING / CONDUCTORS, AND ANY/ALL REQUIRED ACCESSORIES FOR FITTING / MOUNTING / INCORPORATING NEW EQUIPMENT). REFERENCE SERVICE QUOTE #37471637.



E E3 BONDING DETAIL
SCALE: NOT TO SCALE

* DRILL A HOLE INTO THE FLANGE FOR GROUNDING LUG CONNECTION WITH A DIAMETER LESS THAN 1/2 OF FLANGE THICKNESS.

SHEET NOTES (1/E3)

1. SEE SINGLE-LINE DIAGRAM FOR CONDUCTOR AND CONDUIT TYPES NOT LISTED HERE.
2. SEE SCADA/RTU DIAGRAM FOR CONDUCTOR AND CONDUIT TYPES NOT LISTED HERE.
3. PROVIDE ALL REQUIRED EQUIPMENT FOR A WIRELESS CELLULAR-LINK AS DESCRIBED IN THE SCADA/RTU DIAGRAM TO INCLUDE ANTENNA, MAST, CABLING, COMPATIBLE TRANSMITTING SYSTEM, ETC. VERIFY EXACT EQUIPMENT REQUIREMENTS WITH CITY OF SPARKS SCADA OPERATION PERSONNEL.

9/12/16

BID SET

JENSEN ENGINEERING INC. Electrical Engineers
9655 Gateway Drive, Reno, Nevada 89521-2968
Ph. (775) 852-2288, Fax (775) 852-3388
email: jeneng@nvbell.net, web: www.jeneng.com

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER 12, 2016
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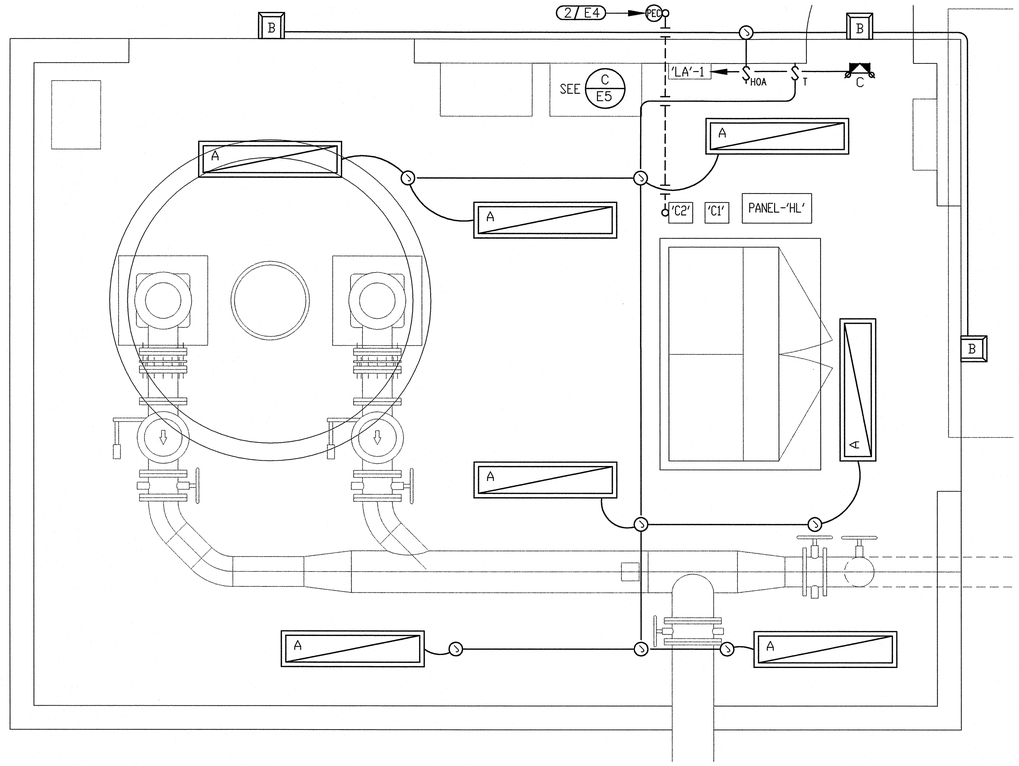
CHECKED BY: MJJ

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive
Reno, NV 89511
Tel 775.823.4068
Fax 775.823.4066

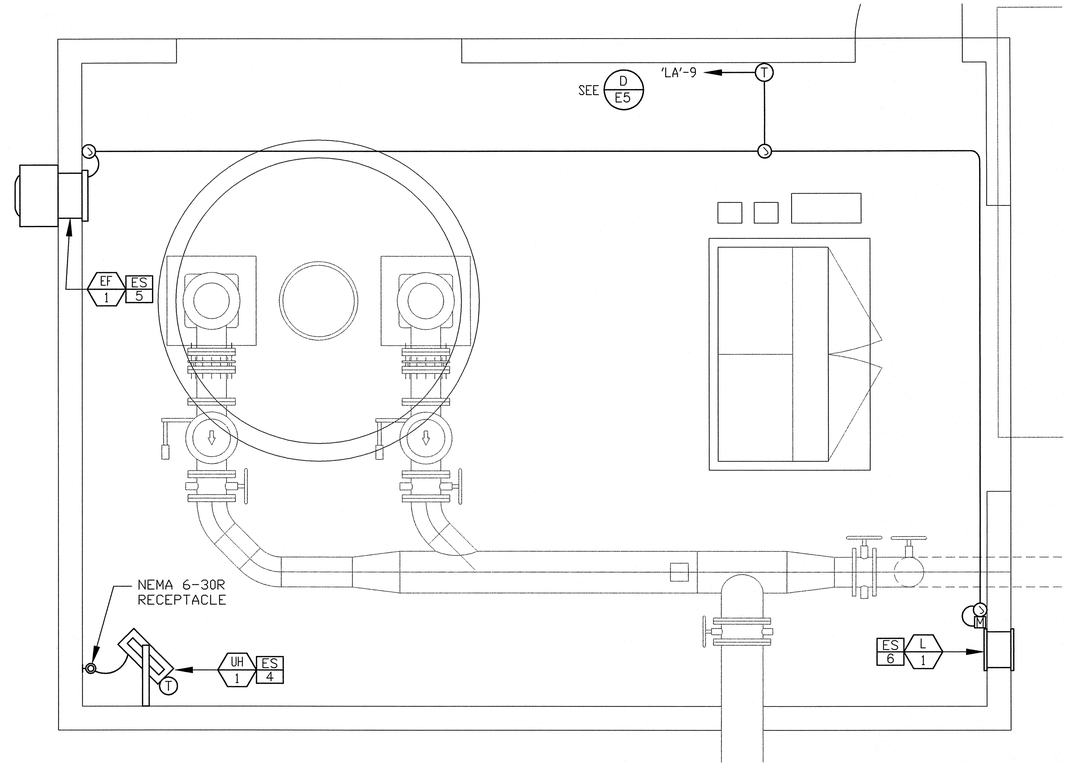
IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
BUILDING GROUNDING PLAN, POWER PLAN, SIGNAL PLAN, AND DETAILS
WASHOE COUNTY NEVADA

PROJECT NO. V38DN

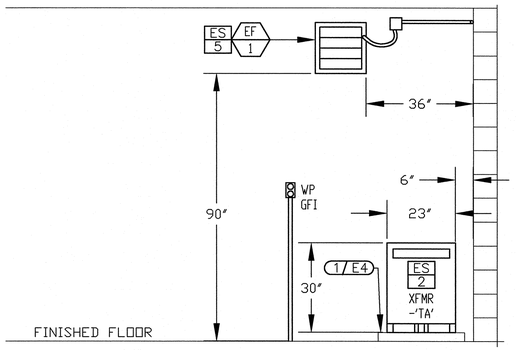
DRAWING E3



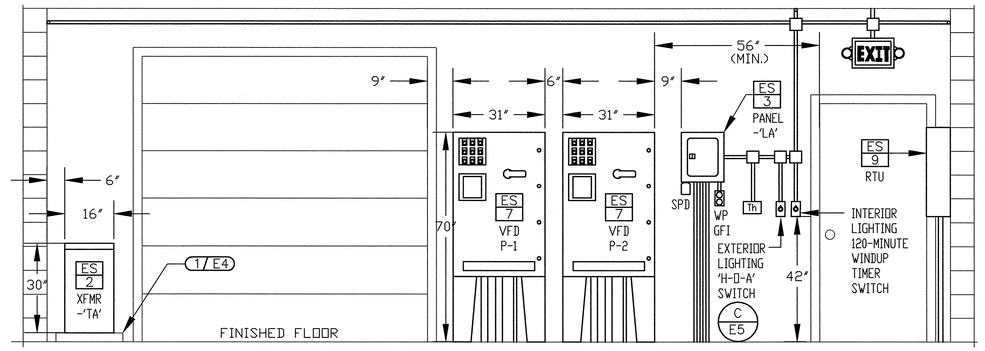
A E4 BUILDING LIGHTING PLAN
SCALE: 1/2" = 1'-0" (SEE LUMINAIRE SCHEDULE)



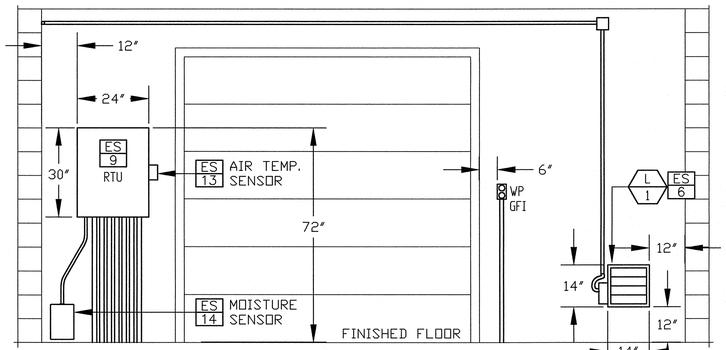
B E4 BUILDING MECH CONNECTIONS PLAN
SCALE: 1/2" = 1'-0" (SEE MECH EQUIP CONNECITON SCHEDULE)



C E4 INTERIOR WEST ELEVATION
SCALE: 1/2" = 1'-0"



D E4 INTERIOR NORTH ELEVATION
SCALE: 1/2" = 1'-0"



E E4 INTERIOR EAST ELEVATION
SCALE: 1/2" = 1'-0"

TYPE	VA	DESCRIPTION	MTG.	QTY	LAMP TYPE
A	63	120V 525mA 61W 4100K LED CEILING-MOUNTED, WET-LOCATION, INDUSTRIAL INTERIOR FIXTURE WITH ACRYLIC FROSTEND LENS AND WET-LOCATION FITTING. LITHONIA #FEM4-LED-4L-IMAFL-WLFEND	CEIL. MOUNT	7	LED
B	53	120V 700mA 47W 4000K WALL-MOUNTED EXTERIOR LIGHTING FIXTURE WITH MOTION/AMBIENT LIGHT SENSOR, WIDE THROW DISTRIBUTION (SR2), & EMERGENCY BATTERY PACK. LITHONIA #WST-LED-2-10A700/40K-SR2-MVOLT-PIR-DDBXD.	+120" WALL	2	LED
C	5	120V 150mA 1.5W LED BATTERY-BACKED EMERGENCY EXIT LIGHT. LITHONIA #LHQM-LED-R-HO	+96" WALL	1	LED

D E4 LUMINAIRE SCHEDULE
SCALE: NOT TO SCALE

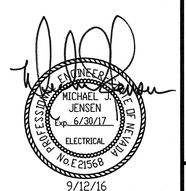
SYMBOL	DESCRIPTION	DISCONNECT MEANS	WIRE & CONDUIT	SOURCE
EF 1	EXHAUST FAN-1	20A/1P 250V N12 MOTOR RATED SWITCH	(2)-#12 & #12 GND IN 3/4" C.	'LA'-9
LA 1	LOUVER & ACTUATOR-1	20A/1P 250V N12 MOTOR RATED SWITCH	(2)-#12 & #12 GND IN 3/4" C.	'LA'-9
UH 1	UNIT HEATER-1	NEMA L16-20R CORD & PLUG SET	(3)-#12 & #12 GND IN 3/4" C.	'HA'-31,32,33

E E4 MECHANICAL EQUIPMENT CONNECTION SCHEDULE
SCALE: NOT TO SCALE

CONTRACTOR SHALL RETAIN A DESIGN-BUILD MECHANICAL CONTRACTOR FOR MECHANICAL EQUIPMENT INSTALLATION (FAN & LOUVER INSTALLATION WORK). CONTRACTOR TO PROVIDE EQUIPMENT AND WORK TO INCLUDE ALL REQUIRED ACCESSORIES (DUCTING, WALL-MOUNTING, ETC.) FOR A FUNCTIONING WEATHER-TIGHT, AUTOMATIC LOUVER SYSTEM.

SHEET NOTES
/E4

1. PROVIDE A 3"-TALL CONCRETE HOUSEKEEPING PAD FOR GROUND-MOUNTED TRANFORMER. PAD SHALL EXTEND A MINIMUM OF 3-INCHES AROUND EQUIPMENT FOOTPRINT. VERIFY CONCRETE REQUIREMENTS & REINFORCEMENT WITH CIVIL SPECIFICATIONS.
2. RELOCATE EXISTING MARINA SITE LIGHTING PHOTOCELL TO NORTH WALL OF NEW PUMP BUILDING. CONNECT TO EXISTING CONTACTOR WITH (2)-#14s & #14 GND IN 1" C. MOUNT AT 84" A.F.G.



9/12/16

BID SET

JENSEN ENGINEERING INC. Electrical Engineers
9655 Gateway Drive, Reno, Nevada 89521-2968
Ph. (775) 852-2288, Fax (775) 852-3388
email: jeneng@nvbell.net, web: www.jeneng.com

NO.	DESCRIPTION	ENGR INIT	DATE

DATE: SEPTEMBER 12, 2016
SCALE: AS SHOWN
DRAWN BY: MJJ
DESIGNED BY: MJJ
CHECKED BY: MJJ

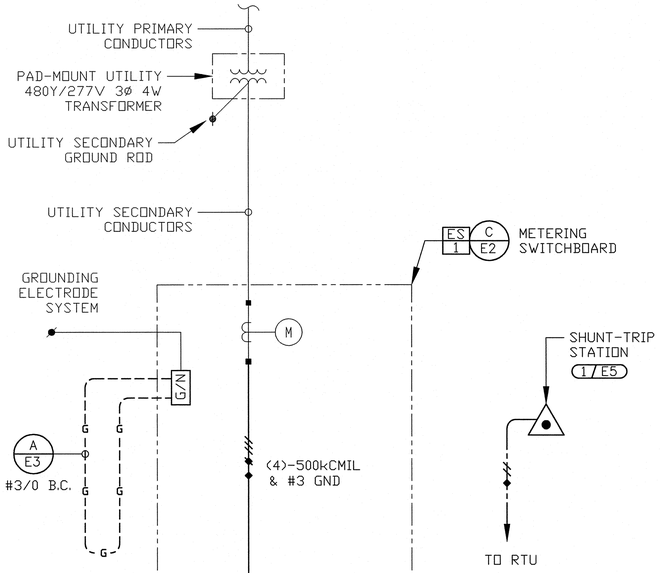
WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
5440 Reno Corporate Drive
Reno, NV 89511
Tel 775.823.4068
Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
BUILDING LIGHTING & MECHANICAL PLANS, INTERIOR ELEVATIONS, & SCHEDULES
WASHOE COUNTY NEVADA

PROJECT NO. V38DN

DRAWING E4

SHT 4 OF 6



SINGLE-LINE LOAD (kVA) SUMMARY:

CIRCUIT	DESCRIPTION		LOAD
1,2,3	POWER MONITOR	=	0.00
4,5,6	SURGE PROT. DEV.	=	0.00
7,8,9	MAIN CIRCUIT BREAKER	=	0.00
10,11,12	3-POLE SPACE	=	0.00
13,14,15	MAINT. & REST. BLDG	=	*
16,17,18	MARINA SITE LTG.	=	*
19,20,21	BLANK	=	0.00
22,23,24	BLANK	=	0.00
25,26,27	MARINA IRR. PANEL	=	*
28,29,30	3-POLE SPACE	=	0.00
31,32,33	PANEL-'LA'	=	15.00
34,35,36	UNIT HEATER-1	=	7.50
37,38,39	50HP BOOSTER PUMP	=	54.04
40,41,42	50HP BOOSTER PUMP	=	54.04
	kVA SUBTOTAL	=	130.58
	* NEC PEAK DEMAND	=	69.07
	kVA TOTAL	=	199.65
	AVERAGE LINE AMPS @480V, 3-PHASE	=	241.

* PEAK DEMAND LOAD REPORTED FOR EXISTING LOADS FROM NV-ENERGY = 44.20kW
44.20kW / 0.8 POWER FACTOR = 55.25kVA
CALCULATION FOR EXISTING LOADS PER NEC ARTICLE 220.87:
1.25 x 55.25kVA = 69.07kVA

SHEET NOTES

/E5

1. (3)-#12 IN 1" C. BETWEEN SHUNT-TRIP STATION & RTU. CIRCUIT BREAKERS. PROVIDE A MINIMUM 12" RED IDENTIFICATION TRIANGLE AT SHUNT-TRIP STATION. MOUNT SHUNT-TRIP IN A FLUSH-MOUNTED WEATHER-TIGHT BACK BOX AT +84" A.F.G.

2. WIRE EXTERIOR FIXTURES FOR OPERATION AS FOLLOWS:
   1. HAND = LUMINAIRES 'ON'
   2. OFF = LUMINAIRES 'OFF'
   3. AUTO = MOTION DETECTOR 'ON'

   VERIFY WIRING CONNECTIONS WITH MANUFACTURER'S RECOMMENDATIONS.

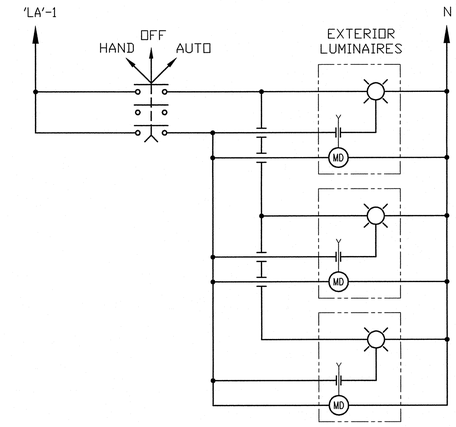
PANELBOARD SCHEDULE

PANEL-'LA' — LOCATION: PUMP STATION BUILDING — MOUNTING: SURFACE
208Y/120V — 3-PHASE, 4-WIRE — BUS AMPERES: 125A

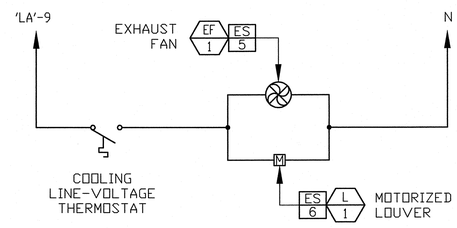
CKT	LOAD KVA A-ø	LOAD KVA B-ø	LOAD KVA C-ø	BREAKER AMP	BREAKER P	DESCRIPTION	DESCRIPTION	BREAKER AMP	BREAKER P	LOAD KVA A-ø	LOAD KVA B-ø	LOAD KVA C-ø	CKT
1	0.56			20	1	BUILDING LIGHTING	SPARE	20	1	0.00			2
3		0.54		20	1	RECEPTACLES	SPARE	20	1		0.00		4
5			0.54	20	1	RECEPTACLES	SPARE	20	1			0.00	6
7	0.50			20	1	SCADA/RTU	SPARE	20	1	0.00			8
9		0.56		20	1	EF-1 & L-1	SPARE	20	1		0.00		10
11			0.30	20	1	FLOW-METER	SPARE	20	1			0.00	12
13	0.00			—	—	----------	----------	—	—	0.00			14
15		0.00		80	3	MAIN BREAKER	SPD	30	3		0.00		16
17			0.00	—	—	----------	----------	—	—			0.00	18
	1.06	1.10	0.84	KVA (SUBTOTAL)				KVA (SUBTOTAL)		0.00	0.00	0.00	
	1.06	1.10	0.84	KVA (TOTAL)									
	0.00	0.00	0.00	AMPERES									

REMARKS:

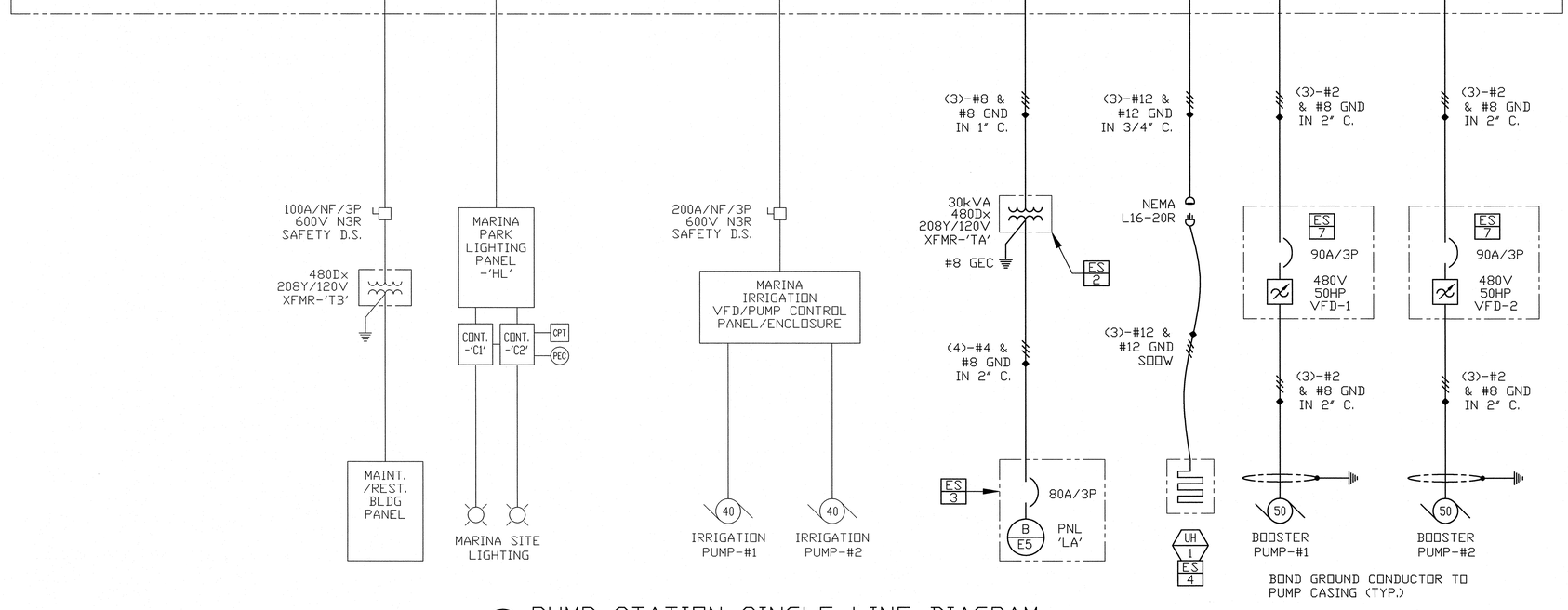
B E5 PANEL-'LA' SCHEDULE
SCALE: NOT TO SCALE — ES 3



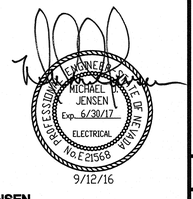
C E5 LIGHTING CONTROL DIAGRAM
SCALE: NOT TO SCALE — 2/E5



D E5 EXHAUST FAN & LOUVER CONTROL DIAGRAM
SCALE: NOT TO SCALE



A E5 PUMP STATION SINGLE-LINE DIAGRAM
SCALE: NOT TO SCALE



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9655 Gateway Drive, Reno, Nevada 89521-2968
Ph. (775) 852-2288, Fax (775) 852-3388
email: jeneng@nvbell.net, web: www.jeneng.com

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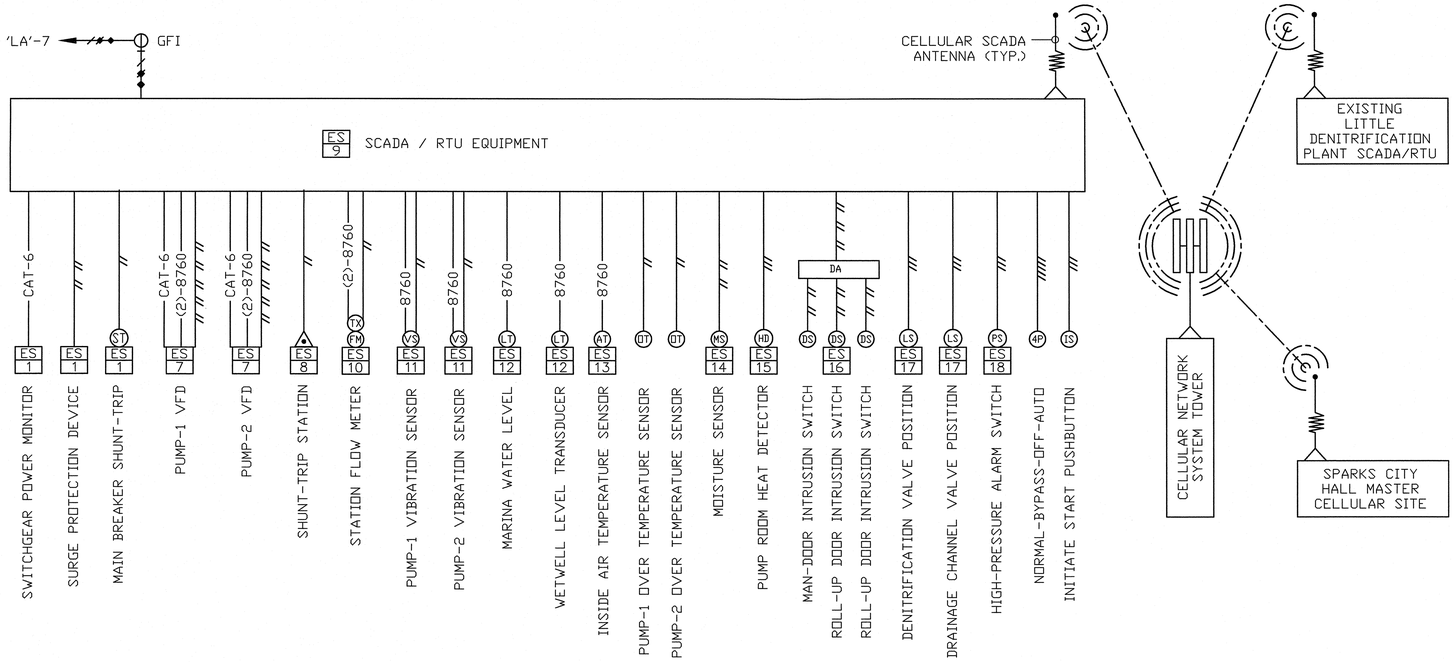
5440 Reno Corporate Drive, Reno, NV 89511
Tel 775.823.4068, Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
SINGLE-LINE DIAGRAM, PANEL SCHEDULE, & LIGHTING/MECH CONTROL DIAGRAMS
WASHOE COUNTY — NEVADA

PROJECT NO. V38DN

DRAWING E5

SHT 5 OF 6



A / E6 SCADA / RTU DIAGRAM & REQUIREMENTS

SCALE: NOT TO SCALE

RTU, INSTRUMENTATION, & EQUIPMENT COMMUNICATIONS/CONTROLS TO BE PROGRAMMED, CALIBRATED, & COORDINATED BY CONTROL SYSTEM INTEGRATOR. REMOTE TERMINAL UNIT "RTU" TO MONITOR AND CONTROL PUMP STATION FUNCTIONS AS FOLLOWS:

A. MONITORING

1. SPD COUNTER 'EVENT'
2. PUMP 'COMM." (x2)
3. PUMP 'SPEED REFERENCE' (x2)
4. PUMP 'RUNNING' (x2)
5. PUMP 'IN-AUTO' (x2)
6. SHUNT-TRIP STATION 'TRIP'
7. FLOW METER 'TOTAL'
8. FLOW METER 'RATE'
9. PUMP VIBRATION 'LEVEL' (x2)
10. MARINA WATER 'LEVEL'
11. WETWELL WATER 'LEVEL'
12. PUMP ROOM 'AIR TEMP'
13. CONTROL VALVE 'OPEN/CLOSED' (x2)

B. CONTROL

1. MAIN CIRCUIT BREAKER 'TRIP'
2. PUMP VFD 'START/STOP' (x2)
3. PUMP VFD 'SPEED COMMAND' (x2)
4. INITIATE 'START' PUSHBUTTON
5. NORMAL-BYPASS-OFF-AUTO

C. COMMUNICATION

1. EXISTING DENITRIFICATION PLANT
2. EXISTING TMWRF MASTER SYSTEM

D. NETWORK

1. VFD-1
2. VFD-2
3. POWER MONITOR (A/V/KVA)

E. SPARE

1. VFD 'AUXILIARY' (x2)

F. ALARMS

1. PUMP VFD 'FAULT' (x2)
2. PUMP 'OVER-TEMP' (x2)
3. RTU PRIMARY 'POWER FAILURE'
4. PUMP VIBRATION 'ALARM' (x2)
5. PUMP OVER-TEMP 'ALARM' (x2)
6. MOISTURE 'LOW/HIGH ALARM'
7. HEAT DETECTOR 'ALARM'
8. HIGH-PRESSURE 'ALARM'
9. PUMP-STATION 'INTRUSION'
10. RTU 'INTRUSION'
11. COMMUNICATION 'FAULT'

A. 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, CELLULAR-LINK EQUIPMENT, COLOR LED-BACKLIT 10.4" TOUCH-SCREEN OPERATOR INTERFACE TERMINAL (OIT), A DEDICATED CONVENIENCE RECEPTACLE, AN INDUSTRIAL 10/100 MANAGED ETHERNET 8-PORT SWITCH, CABLING, ETC.

B. 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.

C. SUBMIT SCADA CABINET EQUIPMENT, LAYOUTS, AND WIRING DIAGRAMS FOR ENGINEERING APPROVAL PRIOR TO MANUFACTURE.

D. CONTROL CABINET IS TO BE COMPLETE WITH SOFTWARE INTERFACE THROUGH DOOR-MOUNTED OPERATOR INTERFACE TERMINAL (OIT). SCADA CABINET TO HAVE PASSWORD PROTECTION & PROGRAMMABLE SET-POINTS FOR LISTED CONTROL ITEMS. INCLUDE INTERFACE SOFTWARE & CONFIGURE INTERFACE BASED ON SCADA CABINET REQUIREMENTS.

E. MARINA WATER LEVEL TO DETERMINE PUMP OPERATION. PUMPS ARE TO ALTERNATE STARTS. VERIFY CONTROL & MONITORING REQUIREMENTS WITH CIVIL SEQUENCE OF OPERATION & CITY OF SPARKS COUNTY WATER SYSTEM OPERATIONS PERSONNEL.

F. RTU TO INCORPORATE SELECTOR SWITCH AND PUSHBUTTON PUMP STATION CONTROL:
   1) MANUAL OPERATION - SINGLE PUMP TO DENITRIFICATION PLANT (CONFIRM VALVE)
   2) BYPASS OPERATION - TWO PUMPS TO DRAINAGE DITCH (CONFIRM VALVE)
   3) PUMP-STATION OFF - INHIBIT PUMP 'RUN' FOR BOTH PUMPS
   4) AUTOMATIC OPERATION - PUMP OPERATION DETERMINED BY RTU/SCADA PROGRAM
   5) PUMP SYSTEM INITIATION/START PUSHBUTTON (IN EITHER POSITION-1 OR -2)

G. PROVIDE SPARE I/O CAPACITY, MINIMUM 6 SPARE EACH FOR DIRCRETE & ANALOG (INPUT, & OUTPUT), 24 TOTAL.

H. EXISTING MASTER SYSTEM TO BE UPGRADED & INCLUDE INTEGRATION OF NEW SCREENS FOR NEW MONITORING & CONTROL FUNCTIONS AS LISTED ABOVE. VERIFY EXISTING MASTER SYSTEM CONDITIONS.

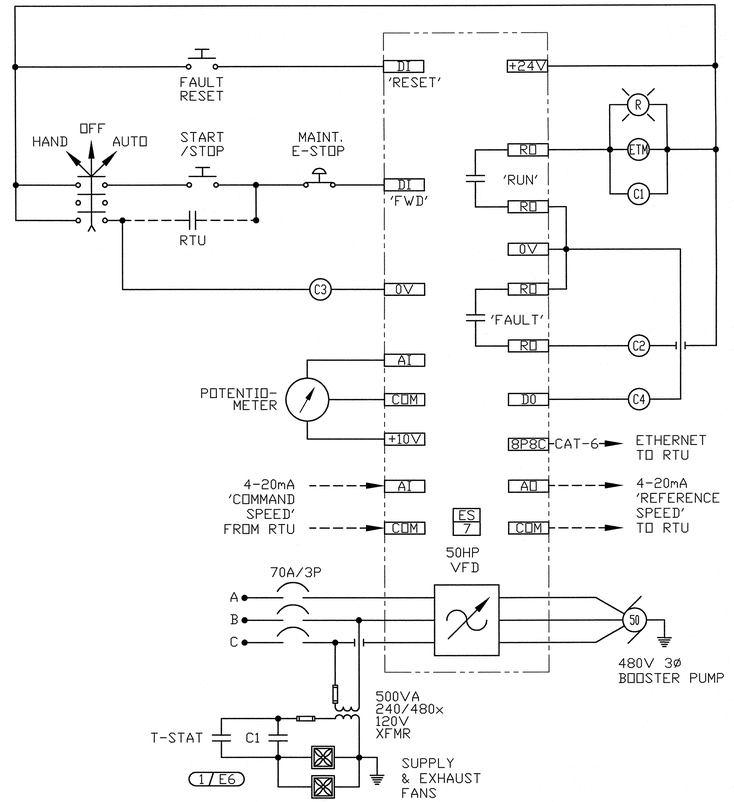
I. QUALIFICATIONS FOR THE INSTRUMENTATION SYSTEM INTEGRATOR: THE INSTRUMENTATION SYSTEM INTEGRATOR, SUPPLIER, AND INSTALLER SHALL BE ONE IN THE SAME AND HAVE A MINIMUM OF FIVE (5) YEARS EXPERIENCE IN SYSTEMS HAVING MICROPROCESSOR-BASED UNITS FOR MONITORING AND CONTROLLING WATER SYSTEMS. THE SYSTEM INTEGRATOR SHALL ALSO BE RESPONSIBLE FOR THE CALIBRATION OF THE PRIMARY MEASUREMENT DEVICES USED FOR SYSTEM MONITORING AND CONTROL. SYSTEM INTEGRATOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, TOOLS, AND TRANSPORTATION NECESSARY TO DESIGN, MANUFACTURE, FURNISH, INSTALL, AND TEST NEW EQUIPMENT TO BE INTEGRATED INTO A COMPLETE FUNCTIONING WATER SYSTEM CONTROL AND MONITORING SYSTEM. ACCEPTABLE INTEGRATORS ARE: SIERRA CONTROLS, TESCO, & GEORGE T. HALL CORPORATION (OTHERS ON PRE-APPROVAL ONLY).

J. COMMUNICATION AND PLC EQUIPMENT SHALL CONFORM TO CITY OF SPARKS MASTER SYSTEM. CONSULT CITY OF SPARKS PERSONNEL FOR FULL REQUIREMENTS ASSOCIATED WITH MASTER SCADA SYSTEM INTEGRATION.

K. CONTRACTOR TO PROVIDE ALL SIGNAL CABLES/CONDUCTORS AND SHALL BE INSTALLED IN CONDUIT (1" MINIMUM). INSTALL ANALOG AND DISCRETE SIGNALS INTO SEPARATE CONDUITS.

L. PROVIDE COMMISSIONING & AN OPERATION/MAINTENANCE MANUAL AND INSTRUCTION FOR ALL INSTALLED EQUIPMENT. SUBMIT MANUALS FOR ENGINEERING REVIEW AND APPROVAL.

M. TRAIN OWNER'S KEY WATER SYSTEM PERSONNEL IN OPERATION OF ALL SET-POINTS, OPERATIONS, FUNCTIONS, ETC. ALLOW AT LEAST 4-HOURS OF TRAINING.



B / E6 VFD DIAGRAM

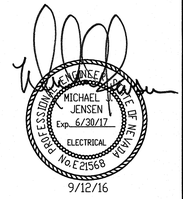
2 / E6 (TYPICAL OF 2)

SCALE: NOT TO SCALE

SHEET NOTES

7 / E6

1. VFD CABINET EXHAUST FAN SYSTEM TO RUN ON TWO CONDITIONS: WHEN THE VFD IS RUNNING & ON THERMOSTATIC CONTROL.
2. VFD DIAGRAM IS NOT A WIRING DIAGRAM, RATHER IS INTENDED TO DEPICT A MINIMUM SET OF REQUIREMENTS. VERIFY EXACT SEQUENCE OF OPERATION WITH EXISTING PROGRAMMING / CONDITIONS.
3. NEW PUMP STATION TO INCORPORATE A NEW CELLULAR BASED COMMUNICATION LINK WITH CITY OF SPARKS SCADA SYSTEM. SYSTEM INTEGRATOR TO PROVIDE ALL REQUIRED ACCESSORIES, COMPONENTS, EQUIPMENT, AND MODIFICATIONS TO FOR NEW SCADA EQUIPMENT TO ALLOW COMMUNICATION WITH THE CITY OF SPARKS CELLULAR SCADA NETWORK. CELLULAR LINK TO PERFORM CONTROL, ALARM, & STATUS DUTIES WITH SPARKS MASTER SYSTEM. VERIFY EXISTING SCADA REQUIREMENTS WITH CITY OF SPARKS PERSONNEL.



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9655 Gateway Drive, Reno, Nevada 89521-2968
Ph. (775) 852-2288, Fax (775) 852-3388
email: jeneng@nvbell.net, web: www.jeneng.com

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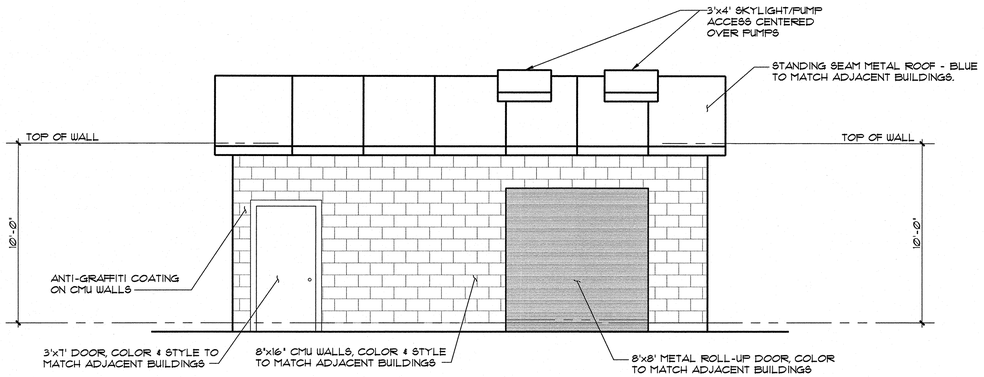
5440 Reno Corporate Drive, Reno, NV 89511
Tel 775.823.4068, Fax 775.823.4066

IMPROVEMENT PLANS FOR
SPARKS MARINA PUMP STATION
RTU/SCADA DIAGRAM & REQUIREMENTS, VFD DIAGRAM
WASHOE COUNTY NEVADA

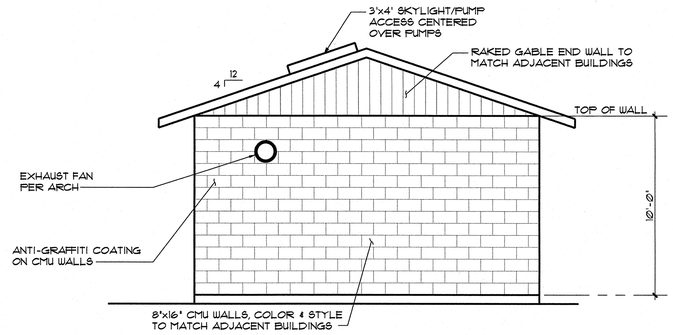
PROJECT NO. V38DN

DRAWING E6

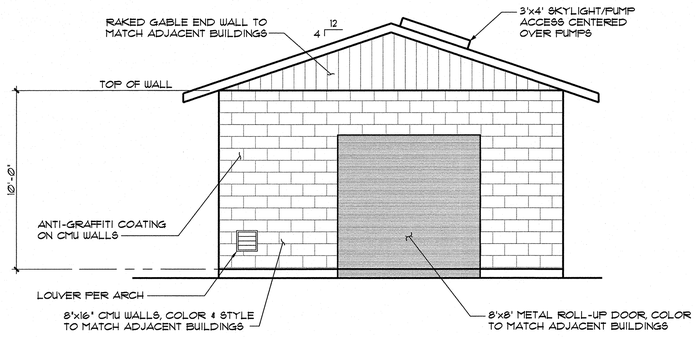
SHT 6 OF 6



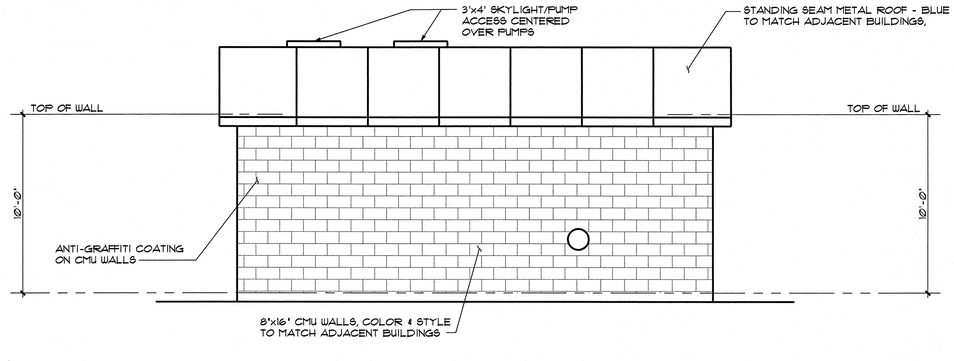
NORTH ELEVATION
SCALE 1/4" = 1'-0"



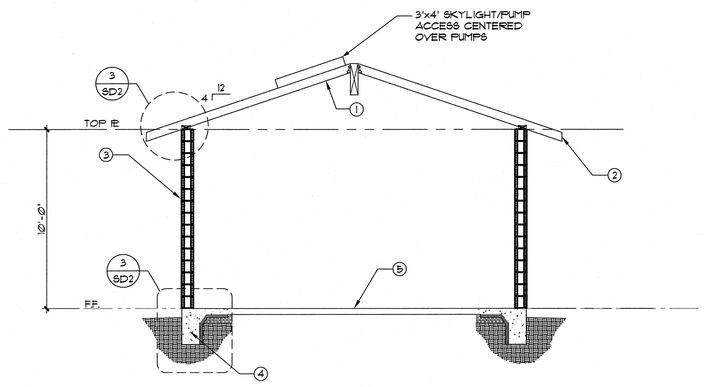
WEST ELEVATION
SCALE 1/4" = 1'-0"



EAST ELEVATION
SCALE 1/4" = 1'-0"



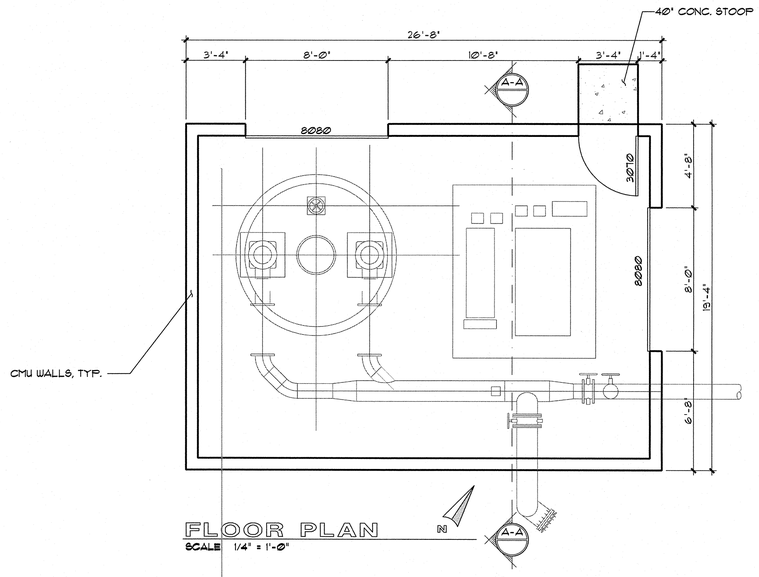
SOUTH ELEVATION
SCALE 1/4" = 1'-0"



SECTION "A-A"
SCALE 1/4" = 1'-0"

SECTION NOTES:

1. TYPICAL ROOF/ CEILING
   - ROOFING MATERIAL - SEE EXT. ELEV.
   - 2 LAYERS 15# FELT
   - T&G DECKING - SEE STRUCT.
   - RAFTERS - SEE STRUCTURAL
2. TYPICAL FASCIA
   - 2x8 FASCIA W/ 1x2 SHINGLE MOLD
3. TYPICAL EXTERIOR WALL
   - 8" CMU WALL W/ 2x WOOD STUD WALL ABV. CMU WALL
4. TYPICAL FOUNDATION
   - 16" WIDE CONC. MONO-POURED (TYP. U.N.O.) FOOTING. BOTTOM OF FOOTING MIN. 1'-6" BELOW FIN. GRADE. PAINT EXPOSED STEMWALL TO MATCH EXTERIOR.
5. CONCRETE SLAB
   - 10" CONC. SLAB W/ #4's @ 16" o/c E.W. TOP & BOTTOM. 3" CLEAR E.S. OVER 4" COMP. BASE OVER COMP. GRADE. PROVIDE 4 MIL. MOISTURE BARRIER W/ 1'-0" MIN. OVERLAP BTWN. CONC. AND EARTH, ONLY AS REQD.



FLOOR PLAN
SCALE 1/4" = 1'-0"

K2 ENGINEERING AND STRUCTURAL DESIGN
860 Maestro Dr., Ste. A
Reno, NV 89511
P: (775) 355-0505
F: (775) 355-0566
www.K2eng.net

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Sparks Marina
Sparks, Nevada

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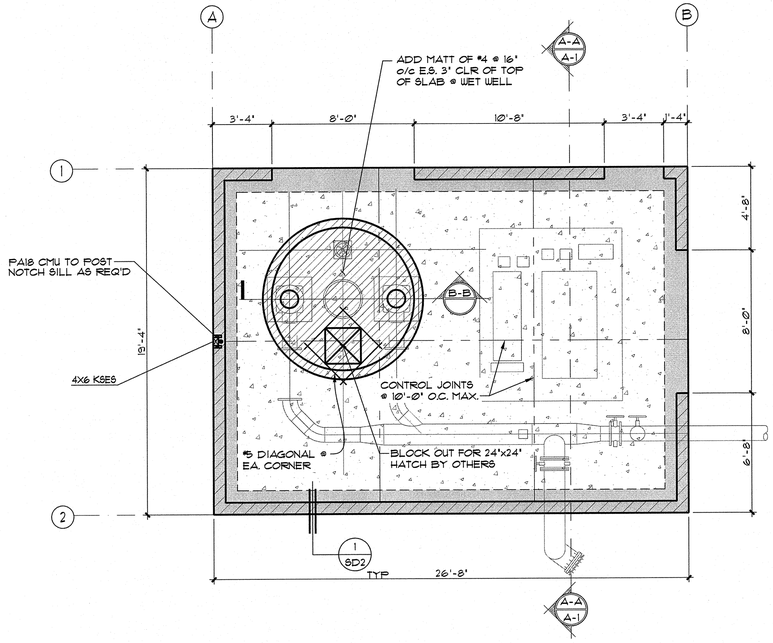
SEP 1 6 2016

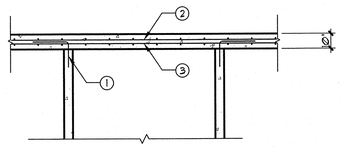
Revisions

Date	09/16/16
Drawn	SJS
Checked	BTK
Project No.	15-242

Floor Plan And Elevations

A-1





SECTION "B-B"

SCALE 1/4" = 1'-0"

SECTION NOTES:

1. #4 DOWEL @ 12" O/C, 12" EMBEDMENT — 24" / 12"
2. #4 @ 16" O/C E.S. 3" CLR OF TOP
3. #4 @ 16" O/C E.S. 3" CLR OF BOTTOM

FOUNDATION PLAN

SCALE 1/4" = 1'-0"

CONCRETE NOTES

CONC, MONO-POURED FOOTINGS TO BE 16" WIDE W/ 1-#4 REBAR CONT. 3" CLEAR FROM BOTTOM & 1-#4 REBAR CONT. @ TOP. FOOTING SHALL BEAR ON NATIVE SOILS IF SUITABLE OR AS DIRECTED BY SOILS ENGINEER. FOOTING SHALL BE A MIN. OF 1'-6" BELOW FINISHED GRADE.

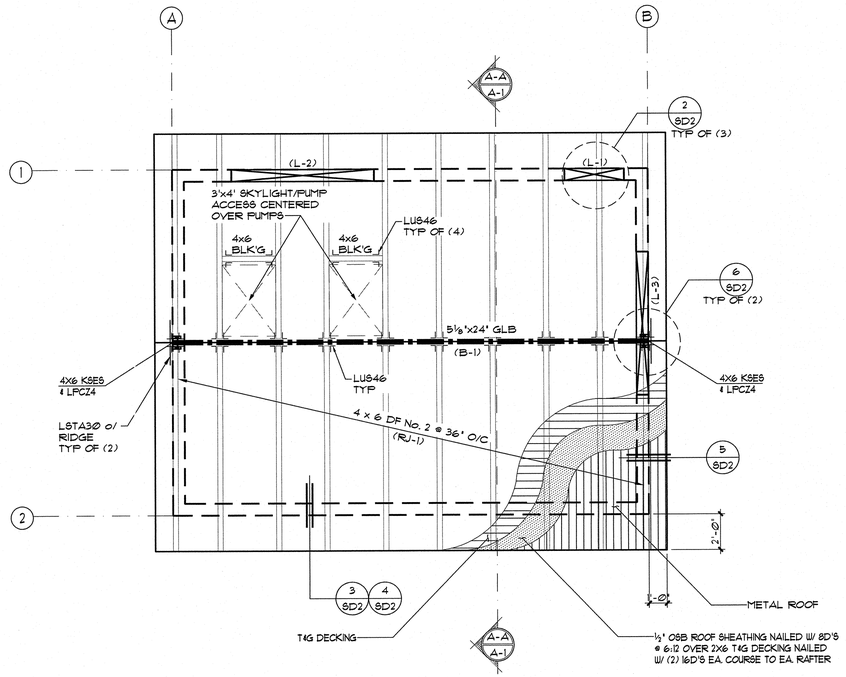
ALL SLABS TO BE 10" CONCRETE SLAB W/ #4 REBAR @ 16" O/C E.W., 3" CLEAR OF BOTTOM. SLAB SHALL BE PLACED OVER 4" TYPE-II BASE COMPACTED TO 95% ON COMPACTED NATIVE SOIL, IF SUITABLE.

FOR 2x SILL PLATE, USE ⅝"ø x 10" A.B. FOR 3x OR DOUBLE SILL PLATE, USE ⅝"ø x 12" A.B. EXTEND SILL BOLTS 7" INTO FOUNDATION MINIMUM, MAXIMUM SPACING SHALL BE 4'-0" O.C. WITH MINIMUM (2) BOLTS IN EACH SILL BOARD. BOLTS SHALL BE LOCATED NOT MORE THAN (12) NOR LESS THAN (7) BOLT DIAMETERS FROM EACH END OF SILL PIECE. MINIMUM 3"x3"x¼" THICK PLATE WASHERS SHALL BE INSTALLED ON EACH SILL BOLT.

SILL PLATE: USE FOUNDATION GRADE REDWOOD OR TIMBERSTRAND LSL TREATED W/ ZINC BORATE OR PRESSURE TREATED DOUGLAS FIR MUDSILL. SEE SHEARWALL SCHEDULE FOR IMPORTANT INFORMATION REGARDING SILL PLATES. FOR ALL SILL PLATES NOTED, USE 2x WALL WIDTH WOOD SILL. ALL SHEAR WALLS, EXCEPT TYPE "6" & "4", REQUIRE FOUNDATION SILL PLATES & ALL FRAMING MEMBERS RECEIVING EDGE NAILING FROM ABUTTING PANELS TO BE NOT LESS THAN A SINGLE 3" NOMINAL MEMBER. PLYWOOD JOINT & SILL PLATE NAILING SHALL BE STAGGERED IN ALL CASES.

FOUNDATION PLAN LEGEND

- 8" CMU WALL SOLID GROUTED W/ #4 BARS @ 32" O/C E.W. PROVIDE MIN 24" LAP SPLICES



ROOF FRAMING PLAN

SCALE 1/4" = 1'-0"

ROOF FRAMING NOTES

ROOF LOADS: SNOW 21# SQ. FT. : DEAD 20# SQ. FT.

ALL FRAMING HARDWARE NOTED SHALL BE "SIMPSON" INSTALL PER MANUFACTURES REQUIREMENTS.

ROOF PLAN LEGEND

- CMU LINTEL PER DETAIL
- WOOD BEAM OR HEADER
- WOOD RAFTER

LINTEL SCHEDULE SEE (2 SD2)

	MIN DEPTH (FT)	REINFORCEMENT @ TOP	REINFORCEMENT @ BOTTOM
L-1	1'-4"	(1) #4 BAR	(1) #4 BAR
L-2	1'-4	(1) #4 BARS	(2) #4 BARS
L-3	1'-4"	(1) #4 BARS	(2) #4 BARS

K2 ENGINEERING AND STRUCTURAL DESIGN
860 Maestro Dr., Ste. A
Reno, NV 89511
P: (775) 355-0505
F: (775) 355-0566
www.K2eng.net

Sparks Marina Pump Station

Sparks, Nevada

Sparks Marina

Brandt T. Kennedy, P.E.
Jared A. Krupa, P.E.

PROFESSIONAL ENGINEER — STATE OF NEVADA — BRANDT T. KENNEDY — Exp: 6-30-17 — CIVIL — No. 16872

SEP 1 6 2016

Revisions

Date	09/16/16
Drawn	SJS
Checked	BTK
Project No.	15-242

Shearwall/Roof Foundation Plan And Section

S-1

Project Structural Notes

K2 ENGINEERING ASSUMES THAT THE GENERAL CONTRACTOR AND ALL INVOLVED PARTIES HAVE READ AND UNDERSTAND NOTES LISTED IN PLANS.

GENERAL

1. ALL WORK, DETAILS OF DESIGN, WORKMANSHIP, AND MATERIALS SHALL CONFORM TO REQUIREMENTS OF THE 2012 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) OF THE INTERNATIONAL CODE COUNCIL AND THE APPLICABLE COUNTY/CITY BUILDING CODES.
2. K2 ENGINEERING EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED, OR COPIED IN ANY MATTER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO A THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF K2 ENGINEERING. IN THE EVENT OF UNAUTHORIZED REUSE OF THESE PLANS BY A THIRD PARTY, THE THIRD PARTY SHALL HOLD K2 ENGINEERING HARMLESS.
3. K2 ENGINEERING RESERVES THE RIGHT TO PERFORM OBSERVATION VISITS TO THE SITE AT ANY TIME. OBSERVATIONS ARE PERFORMED SOLELY FOR THE PURPOSE OF DETERMINING IF THE CONTRACTOR UNDERSTANDS DESIGN INTENT CONVEYED IN THE PLANS. OBSERVATIONS DO NOT GUARANTEE CONTACTOR'S PERFORMANCE AND ARE NOT TO BE CONSTRUED AS SUPERVISION OF THE PROJECT.
4. IN THE EVENT THAT CERTAIN EXISTING DIMENSIONS AND/OR CONDITIONS ARE FOUND TO BE DIFFERENT FROM THOSE SHOWN ON THE PLANS AND DETAILS, THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED SO THAT THE PROPER REVISIONS CAN BE MADE IF NECESSARY. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY ERRORS, DISCREPANCIES, OR OMISSIONS WHICH THE CONTRACTOR FAILED TO NOTIFY K2 ENGINEERING OF BEFORE CONSTRUCTION AND/OR FABRICATION OF THE WORK.
5. K2 ENGINEERING IS RESPONSIBLE FOR THE STRUCTURAL ITEMS IN THE PLANS ONLY. SHOULD ANY CHANGES BE MADE, OR SHOULD THE RESULTS OF THESE CALCULATIONS NOT BE FULLY OR PROPERLY TRANSFERRED TO THE PLANS, K2 ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE STRUCTURE.
6. THE DETAILS SHOWN ON THE DRAWINGS ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS. NO DEVIATIONS FROM STRUCTURAL DETAILS SHALL BE MADE WITHOUT THE PRIOR WRITTEN APPROVAL OF K2 ENGINEERING.
7. THE CALCULATIONS ARE BASED UPON A COMPLETE STRUCTURE. TEMPORARY SUPPORTS, ETC., ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HAVE NOT BEEN CONSIDERED BY K2 ENGINEERING. SHOULD AN UNFINISHED STRUCTURE BE SUBJECT TO LOADS, K2 ENGINEERING SHOULD BE CONSULTED FOR AN INTERIM DESIGN OR IF NOT, WILL ASSUME NO LIABILITY.
8. ALL NOTES ARE TYPICAL UNLESS NOTED OTHERWISE ON THE PLANS. ALL HARDWARE AND FRAMING MEMBERS SPECIFIED IN THE CALCULATIONS AND/OR PLANS ARE MINIMUMS AND LARGER MEMBERS OF EQUAL OR BETTER GRADE MAY BE SUBSTITUTED.

SITE WORK

1. K2 ENGINEERING HAS NOT MADE A GEOTECHNICAL REVIEW OF THE BUILDING SITE AND IS NOT RESPONSIBLE FOR GENERAL SITE STABILITY OR SOIL SUITABILITY FOR THE PROPOSED PROJECT. K2 ENGINEERING RECOMMENDS A REVIEW OF THE SITE BY A GEOLOGICAL ENGINEER OR A QUALIFIED CIVIL ENGINEER TO DETERMINE GENERAL SITE STABILITY AND SOIL SUITABILITY FOR THE PROJECT.
2. BUILDING SITES ARE ASSUMED TO BE DRAINED AND FREE OF CLAY OR EXPANSIVE SOIL. ALL FOOTINGS SHALL BE LEVEL OR STEPPED AND BEAR ON FIRM, STABLE, NATURAL, UNDISTURBED SOIL OR AN APPROVED COMPACTED FILL.
4. PERIMETER OR EXTERIOR FOOTING DEPTHS MUST EXTEND BELOW FROSTLINE (18" OR 24" AS PER LOCAL CODE REQUIREMENTS). ALL OTHER FOOTINGS (INTERIOR) SHALL BOTTOM 12" MINIMUM BELOW NATURAL UNDISTURBED GRADE.
5. BUILDING PADS SHALL BE GRADED 2% TOWARD APPROVED DRAINAGE FACILITIES AND PROVISIONS SHALL BE MADE TO CONTROL AND DRAIN SURFACE WATER AROUND BUILDING.
6. ASSUME CLASS D SOILS WITH ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF WITH A CONSTANT EXPANSION INDEX LESS THAN 20. SOIL BEARING PRESSURE HAS BEEN DETERMINED IN ACCORDANCE WITH IBC TABLE 1806.2.

FILL AND BACKFILL

1. FILL MATERIAL SHALL BE FREE FROM DEBRIS, VEGETATION, AND OTHER FOREIGN SUBSTANCES.
2. BACKFILL TRENCHES SHALL BE COMPACTED TO 90% DENSITY PER ASTM 1557 TO WITHIN 12" OF FINISHED GRADE. THE TOP 12" SHALL BE LANDSCAPE FILL.
3. BACKFILL AT PIPE TRENCHES SHALL BE COMPACTED ON BOTH SIDES OF PIPE IN 6" LIFTS.
4. WATERPROOF EXTERIOR FACES OF ALL FOUNDATION WALLS ADJACENT TO USABLE SPACES. WATERPROOFING OF ALL FOUNDATION AND RETAINING WALLS TO BE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR.
5. ALL BACKFILL AGAINST FOUNDATION WALLS MUST BE COMPACTED TO 90% RELATIVE DENSITY.
6. PROVIDE A 4" DIAMETER PVC PERFORATED DRAINPIPE AT GRADE SIDE OF ALL RETAINING WALLS. SLOPE PIPE TO DRAIN TO DAYLIGHT AND DRYWELL.

CONCRETE

1. REINFORCED CONCRETE WORK SHALL CONFORM TO APPLICABLE REQUIREMENTS OF THE IBC AND ACI STANDARD 318-11.
2. AGGREGATE SHALL CONFORM TO ASTM C33 FOR STONE CONCRETE.
3. CONCRETE STOOPS TO BE MACHINED MIXED AND PLACED IN ACCORDANCE WITH THE IBC.
4. COMPRESSION STRENGTH OF ALL REINFORCED CONCRETE SHALL NOT BE LESS THAN 3000 PSI AT 28 DAYS.
5. STRUCTURAL DESIGN BASED ON F'c = 2500 PSI (SPECIAL INSPECTION NOT REQUIRED).
6. USE NORMAL WEIGHT CONCRETE (145 PCF) FOR ALL CONCRETE. USE TYPE II CEMENT TYPICAL. IF SOIL CONTAINS SULFATE CONCENTRATIONS OF 2% OR MORE, USE TYPE V CEMENT.
7. THE MAXIMUM SLUMP SHALL NOT EXCEED 3". PLASTICIZERS MAY BE USED TO INCREASE SLUMP TO 8" MAXIMUM PROVIDED THEY DO NOT INCREASE SHRINKAGE.
8. MAXIMUM WATER/CEMENT RATIO SHALL BE .55 FOR 3000 PSI CONCRETE.
9. EXTERIOR SLABS ON GRADE SHALL CONTAIN NOT LESS THAN 5% NOR MORE THAN 6% ENTRAINED AIR.
10. FOLLOW RECOMMENDED PRACTICES FOR HOT AND COLD WEATHER CONCRETING BY OBSERVING ACI 305 AND ACI 306 GUIDELINES.
11. PROVIDE STANDARD CRACK CONTROL JOINTS IN ALL SLABS ON GRADE USING MAXIMUM DIMENSION OF 10 FEET FOR 4" SLABS AND 12 FEET FOR 6" SLABS. JOINT DEPTH SHALL NOT EXCEED ONE-FOURTH OF SLAB DEPTH.
12. TOP OF CONCRETE SLABS SHALL BE MINIMUM 6" ABOVE FINISHED GRADE.
13. PIPES MAY PASS THROUGH STRUCTURAL CONCRETE IN SLEEVES, BUT SHALL NOT BE EMBEDDED THEREIN. PIPES OR DUCTS EXCEEDING ONE-THIRD THE SLAB OR WALL THICKNESS SHALL NOT BE PLACED IN STRUCTURAL CONCRETE.
14. DO NOT PLACE CONCRETE UNTIL ALL REINFORCEMENT, CONDUIT, OUTLET BOXES, ANCHORS, HANGERS, SLEEVES, BOLTS, HOLDOWNS, ANCHOR BOLTS OR OTHER EMBEDDED MATERIALS AND ITEMS ARE SECURELY AND PROPERLY FASTENED IN THEIR PROPER PLACES AND POSITIONS.

MASONRY

1. ALL CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90, GRADE N. FM = 1500 PSI. USE 85 PCF MINIMUM WEIGHT UNITS ABOVE GRADE AND 110 PCF MINIMUM WEIGHT UNITS BELOW GRADE. USE MOISTURE CONTROLLED UNITS ONLY. USE OPEN-END MASONRY UNITS AS MUCH AS POSSIBLE AND AT WALL INTERSECTIONS.
2. ALL BRICK SHALL CONFORM TO ASTM C62, GRADE MW.
3. MORTAR FOR CONCRETE MASONRY SHALL CONFORM TO ASTM C270, TYPE S.
4. GROUT FOR CONCRETE MASONRY SHALL BE IN ACCORDANCE WITH IBC SECTION 2103. MINIMUM 28-DAY COMPRESSIVE STRENGTH SHALL NOT BE LESS THAN 2000 PSI.
5. ALL WALLS SHALL BE GROUTED SOLID. GROUT SHALL BE VIBRATED INTO PLACE AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 4' UNLESS APPROPRIATE CLEANOUT HOLES ARE PROVIDED IN ACCORDANCE WITH IBC.
6. AGGREGATES FOR MORTAR AND GROUT SHALL BE NATURAL SAND AND ROCK CONFORMING TO ASTM C-144 (MORTAR) AND C-404 (GROUT).
7. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C-150, TYPE I OR II, LOW ALKALI.
8. ALL CONCRETE BLOCK AND BRICK SHALL BE LAID IN RUNNING BOND.
9. WHEN ABSOLUTELY NECESSARY FOR CONSTRUCTION PURPOSES TO STOP OFF LONGITUDINAL RUNS OF MASONRY, STOP OFF ONLY BY RACKING BACK ONE-HALF UNIT LENGTH IN EACH COURSE. TOOTHING SHALL NOT BE PERMITTED.
10. MASONRY WALLS SHALL BE REINFORCED WITH #4'S VERT @ 32" O.C. & #4 @ 32" O.C. HORIZ. BAR SPLICES SHALL BE STAGGERED.

REINFORCING STEEL

1. REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM A615 GRADE 60 FOR ALL #5 AND LARGER BARS AND GRADE 40 FOR ALL #4 AND SMALLER BARS.
2. ALL DETAILS OF FABRICATION AND INSTALLATION OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH THE ACI MANUAL OF STANDARD PRACTICE.
3. WELDED FABRIC (MESH) SHALL CONFORM TO LATEST REVISED ASTM A185 AND BE FURNISHED IN FLAT SHEETS. SMOOTH WIRE FABRIC SHALL CONFORM TO ASTM A-85 HAVING A YIELD STRENGTH OF 60 KSI.
4. WELDING OF REINFORCING STEEL SHALL CONFORM TO AWS D12-1 USING LOW HYDROGEN ELECTRODES.
5. ALL BARS SHALL BE LAPPED WITH A MINIMUM OF 40 BAR DIAMETERS (2' MINIMUM) AT ALL SPLICES.
6. SPLICES OF HORIZONTAL REBAR IN WALLS AND FOOTINGS SHALL BE STAGGERED 4' MINIMUM.
7. DOWELS FOR WALLS AND COLUMNS SHALL BE THE SAME SIZE AND SPACING AS THE WALL/COLUMN REINFORCING.
8. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED AND ADEQUATELY SECURED IN POSITION BEFORE AND DURING PLACEMENT OF CONCRETE.
9. MASONRY REINFORCEMENT, BOLTS, ETC. SHALL HAVE MINIMUM GROUT COVERAGE OF THREE-FOURTHS OF AN INCH.
10. REINFORCEMENT COVER IN CAST-IN-PLACE CONCRETE SHALL BE AS FOLLOWS:
    A. 3" - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH
    B. 2" - FORMED SURFACES EXPOSED TO GROUND OR WEATHER

WOOD FRAMING NOTES

1. ALL LUMBER FRAMING AND BEARING STUDS TO BE DOUGLAS FIR-LARCH WITH MOISTURE CONTENT LESS THAN 19%.
   - GLUE LAMINATED TIMBER BEAMS TO BE APA/EWS MARKED 24F-V4. GLU-LAMS EXPOSED TO WEATHER SHALL BE RATED FOR EXTERIOR USE BY THE MANUFACTURER OR AN APPROVED PROTECTION FROM EXPOSURE SHALL BE PROVIDED.
   - LAMINATED VENEER LUMBER (LVL) TO BE 1.9E, Fb=2600 PSI, Fv= 285 PSI EQUIVALENT OR BETTER FOR MEMBERS LESS THAN 10" DEEP, CONNECT PLIES WITH (2) ROWS 16D BOX NAILS AT 12" O.C. FOR MEMBERS GREATER THAN 10" DEEP, CONNECT PLIES WITH (3) ROWS 16d BOX NAILS AT 12"O.C. FOR THREE PIECE MEMBER, NAILING SPECIFIED IS FROM EACH SIDE.
   - PARALLEL STRAND LUMBER (PSL) TO BE 2.0E, Fb= 2900 PSI Fv= 290 PSI EQUIVALENT OR BETTER.
   - 4x AND SMALLER FRAMING TO BE DF #2.
   - 6x AND LARGER FRAMING TO BE DF #1.
   - INTERIOR NON-BEARING STUDS AND PLATES MAY BE CONSTRUCTION GRADE OR BETTER.
2. APA RATED SHEATHING SHALL BE MANUFACTURED WITH EXTERIOR GLUE IN ACCORDANCE WITH THE REQUIREMENTS OF THE IBC AND PS 1-1, PS-2, OR APA PRP-108. SHEAR PLYWOOD SHALL BE C-D, C-C, 303 (T1-11), OR AN APPROVED EQUAL.
3. ALL RESAWN AND ROUGH SAWN BEAMS ARE TO BE FREE OF HEART CENTER.
4. ALL FRAMING CLIPS AND DEVICES SHALL BE "SIMPSON TIE" OR ICC APPROVED EQUAL.
5. MINIMUM NAILING FOR CONNECTION NOT INDICATED ON THE DRAWINGS SHALL BE IN ACCORDANCE WITH IBC .
6. ALL MULTIPLE TRIMMERS, MULTIPLE STUDS, OR POSTS SHALL BE STACKED IN ALL WALL FRAMING CONNECTED WITH POSITIVE CONNECTIONS. SOLID BLOCKING SIMILAR IN SIZE TO FRAMING ABOVE SHALL BE PROVIDED AT ALL FLOORS ALL THE WAY DOWN TO THE FOUNDATION.
7. DO NOT NOTCH BEAMS, JOISTS, OR STUDS.
8. ALL NAILS SHALL BE "COMMON" WIRE NAILS AND SHALL CONFORM TO THE FOLLOWING:

SIZE	SHANK DIA.	LENGTH	EQUIVALENT STAPLE SIZES
8d	0.131"	2½"	13 GA x 1-3/4"
10d	0.148"	3"	12 GA x 1-3/4"
16d	0.162"	3½"	

   - NO SUBSTITUTIONS UNLESS APPROVED IN WRITING BY K2 ENGINEERING OR SPECIFICALLY ADDRESSED IN THESE CALCULATIONS OR THE PLANS. ALL NAILS EXPOSED TO WEATHER SHALL BE GALVANIZED.
   - REFER TO SIMPSON SPECIFICATIONS FOR FRAMING HARDWARE ATTACHMENT REQUIREMENTS. ALL NAILS SHALL MEET THE REQUIREMENTS OF ASTM F 1667.
9. SHEATH AND NAIL ALL SHEAR PANELS AND GABLE END TRUSSES THE SAME AS THE SHEAR WALL ABOVE OR BELOW.
10. CONNECT DOUBLE STUDS, DOUBLE JOISTS, OR ANY OTHER MULTIPLE PIECE MEMBER W/ MIN. (2) ROWS 16d BOX NAILS @ 12" O.C.
11. TYPICAL LOAD BEARING AND EXTERIOR STUDWALL CONSTRUCTION:
    STUD HEIGHT ≤10'-0" - 2x4 @ 16" O.C.
    STUD HEIGHT ≤14'-0" - 2x6 @ 16" O.C.
    STUD HEIGHT ≤18'-0" - 1-3/4" x 5-1/2" L.V.L. @ 12" O.C.
    STUD HEIGHT ≤22'-0" - 1-3/4" x 7-1/4" L.V.L. @ 12" O.C.
    STUD HEIGHT ≤27'-0" - 1-3/4" x 9-1/4" L.V.L. @ 12" O.C.
12. USE (2) CONT. KING STUDS E.S. OF OPENINGS WHERE STUD HEIGHT EXCEEDS 10'-6" U.N.O. DO NOT BREAK CONT. KING STUDS BY SPANNING HEADER OVER MULTIPLE OPENINGS. ALWAYS RAKE/BALLOON FRAME STUDWALLS.
13. PORTIONS OF STRUCTURAL GLU-LAM BEAMS, WHICH ARE EXPOSED TO WEATHER, SHALL BE PRESSURE TREATED OR WOOD OF NATURAL RESISTANCE TO DECAY. EQUIVALENT PROTECTION MAY BE PROVIDED WITH TWO COATS MINIMUM OF SEALER.

ROOF FRAMING NOTES

1. ROOF LOADS: SNOW = 21 PSF : DEAD = 20 PSF
2. USE (1)-LAYER 5/8" (32/16) CDX APA RATED ROOF SHEATHING OR OSB EQUIVALENT, APPLY FACE GRAIN/LONG DIMENSION PERPENDICULAR TO SUPPORT FRAMING. STAGGER PANELS AND NAIL WITH 10d'S AT 6" O.C. EDGES AND BOUNDARIES AND 10d'S AT 12" O.C. FIELD. NAIL ALL DRAG MEMBERS, SHEAR PANELS, BLOCKING, E.T.C. W/ NAILS SPACED AT 4" O.C. SEE DETAIL FOR ADDITIONAL NAILING REQUIREMENTS.
3. USE (2) TRIMMERS AND (1) KING STUD UNDER ALL OPENINGS 6'-0" OR GREATER
4. CONNECT TRUSS BLOCKING AND GABLE END TRUSSES TO TOP PLATE OR BEAM BELOW WITH A35's, LTP4's, L70's, OR L550's @ 48" O.C. UNLESS NOTED OTHERWISE.
5. DOUBLE TOP PLATE LAP SPLICES SHALL BE 4'-0" MINIMUM AND FACE NAILED WITH (12)-16d NAILS.
6. THE FOLLOWING COLUMN/POST CAPS ARE INTERCHANGEABLE: CC, ECC, CCQ, & ECCQ.
7. WHERE HEADERS ARE PLACED HIGH IN THE WALL AND BREAK THE DOUBLE TOP PLATE, AN MSTC28 SHALL CONNECT THE HEADER TO THE TOP PLATE AT EACH END.
8. ENCLOSED ATTIC AND RAFTER SPACES SHALL HAVE CROSS VENTILATION BY OPENINGS EQUAL TO 1/150TH OF THE AREA. WHERE EAVE OR CORNICE VENTS ARE INSTALLED, INSULATION SHALL NOT BLOCK THE FREE FLOW OF AIR. A MINIMUM OF 1" OF AIR SPACE SHALL BE PROVIDED BETWEEN THE INSULATION AND ROOF SHEATHING. ROOFS WITH RAFTERS, BAYS AND/OR VAULTED CEILINGS MUST BE VENTILATED TO OUTSIDE AT RIDGE.

Design Parameters

CODE:	2012 IBC AND LOCAL DESIGN CRITERIA
PROJECT ELEVATION:	< 5000'
SITE CLASS:	D
WIND SPEED:	130 MPH (3 SECOND GUST)
WIND EXPOSURE:	C

DESIGN INCLUDES SNOW LOAD FOR DRIFT AND UNBALANCED LOADING.

FOUNDATION/FLOOR FRAMING NOTES

1. ALL EXTERIOR WALLS SHALL BE CONSIDERED SHEARWALLS NAILED AS TYPE "6" WALLS (SEE SHEARWALL SCHEDULE).
2. FLOOR SHEATHING SHALL BE T.&G. APA RATED STURD-I-FLOOR. APPLY FACE GRAIN/LONG DIMENSION PERPENDICULAR TO SUPPORT FRAMING. STAGGER PANELS AND NAIL WITH 10d AT 6" O.C. AT ALL EDGES AND BOUNDARIES (BLOCKING AT INTERIOR SHEAR WALLS, DRAG MEMBERS, ETC.), AND 10d AT 10" O.C. FIELD. GLUE AND NAIL THROUGHOUT.
3. FLOOR JOISTS SHALL BE BLOCKED SOLID @ ALL SUPPORT LINES (CONNECT BLOCKING TO WALL/BEAM BELOW WITH A35's @ TWICE THE JOIST SPACING), BENEATH ALL INTERIOR-BEARING WALLS, AND UNDER ALL HOLDOWNS. USE DOUBLE JOISTS BELOW ALL PARALLEL INTERIOR-BEARING WALLS. PROVIDE L.S.L. RIM BOARD THROUGHOUT. PROVIDE CRUSH BLOCKS, WEB STIFFENERS, ETC. PER MANUFACTURER'S SPECIFICATIONS.
4. ALL FLOOR OPENINGS SHALL BE BETWEEN JOISTS.
5. ALL HOLDOWNS SHALL BE INSTALLED AT THE TIME APPROPRIATE MEMBERS ARE FRAMED AND ACCORDING TO MANUFACTURER'S SPECIFICATIONS. IF STRUCTURE IS MULTIPLE STORIES, AS MUCH AS POSSIBLE, LINE FLOOR-TO-FLOOR HOLDOWNS UP WITH FLOOR-TO-FOUNDATION HOLDOWNS SO THAT HOLDOWNS ARE ATTACHED TO COMMON MEMBERS. USE SHEAR PLY NAILING TO ALL HOLDOWN MEMBERS.
6. PROVIDE FULL BEARING, FULL DEPTH BLOCKING UP TO FLOOR TO SUPPORT POSTS, DOUBLE STUDS, OR DOUBLE TRIMMERS ABOVE.
   - WHERE COLUMN BASE OR POST BASE IS CALLED OUT ON A PIER BENEATH THE SUBFLOOR, PROVIDE POST UP TO SUBFLOOR TO SUPPORT IDENTICAL POST ABOVE. USE (2) SIMPSON ST6224 ON OPPOSITE SIDES OF POST TO STRAP POST ABOVE THROUGH THE FLOOR TO THE POST BELOW.
7. ANCHOR BOLTS:
   - FOR 2x SILL PLATE, USE ⅝"ø x 10" A.B.
   - FOR 3x OR DOUBLE SILL PLATE, USE ⅝"ø x 12" A.B.
   EXTEND SILL BOLTS 7" INTO FOUNDATION MINIMUM, MAXIMUM SPACING SHALL BE 4'-0" O.C. WITH MINIMUM (2) BOLTS IN EACH SILL BOARD. BOLTS SHALL BE LOCATED NOT MORE THAN (12) NOR LESS THAN (7) BOLT DIAMETERS FROM EACH END OF SILL PIECE. MINIMUM 3"x3"x¼" THICK PLATE WASHERS SHALL BE INSTALLED ON EACH SILL BOLT. SPACE WASHER 1/2" FROM SHEATING OR RIM.
   - SILL PLATES: USE FOUNDATION GRADE REDWOOD OR TIMBERSTRAND L.S.L. TREATED WITH ZINC BORATE OR PRESSURE TREATED MUDSILL. SEE SHEARWALL SCHEDULE FOR IMPORTANT INFORMATION REGARDING SILL PLATES. FOR ALL SILL PLATES NOT NOTED, USE 2"x WALL WIDTH WOOD SILL. ALL SHEAR WALLS, EXCEPT TYPE "6" AND "4", REQUIRE FOUNDATION SILL PLATES AND ALL FRAMING MEMBERS RECEIVING EDGE NAILING FROM ABUTTING PANELS TO BE NOT LESS THAN A SINGLE 3" NOMINAL MEMBER. PLYWOOD JOINT AND SILL PLATE NAILING SHALL BE STAGGERED IN ALL CASES.
8. AN 8" WIDE CONCRETE FOUNDATION WALL SHALL BE CENTERED ON CONTINUOUS FOOTING BELOW W/ (1) #4 CONTINUOUS @ TOP OF WALL & #4 VERTICALS @ 32" O.C. MAX HOOKED AT FOOTING (ALTERNATE HOOKS).
9. CONTINUOUS CONCRETE FOOTINGS TO BE 16"X10" W/ (2) #4's CONT. STEP FOOTING AS REQUIRED TO BEAR ON NATIVE GRADE OR AS DIRECTED BY SOILS ENGINEER. EXTEND EXTERIOR FOOTING DEPTHS TO FROST LINE (2'-0").
10. THE FOLLOWING COLUMN/POST BASES ARE INTERCHANGEABLE: CB & CBQ OR CBS & CBSQ.
11. ALL SLABS TO BE 4" THICK CONCRETE W/ 6x6 10/10 WELDED WIRE FABRIC REINFORCING OR CONCRETE SHALL HAVE FIBERMESH ADDITIVE @ PLANT. SLAB SHALL BE PLACED OVER 4" TYPE-II BASE COMPACTED TO 90% RELATIVE DENSITY ON UNDISTURBED NATIVE SOIL.
12. REFERENCE HOLDOWN SCHEDULE FOR IMPORTANT INFORMATION PERTAINING TO FOOTINGS.
13. STAIRWAYS SHALL NOT BE LESS THAN 36" IN WIDTH. EVERY STAIRWAY SHALL HAVE MINIMUM 6'-8" HEADROOM. THE MAXIMUM VERTICAL HEIGHT ALLOWED BETWEEN LANDINGS IS 12'-0". THE RISE OF STEPS IN THE STAIRWAY SHALL NOT EXCEED 8", AND THE TREAD SHALL BE NOT LESS THAN 9".
14. STAIR HANDRAILS SHALL BE PLACED NOT LESS THAN 34" NOR MORE THAN 38" ABOVE LANDINGS AND THE NOSING OF THE TREADS. THEY SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE STAIRS AND THE ENDS SHALL BE RETURNED. IN RESIDENTIAL OCCUPANCIES HANDRAILS MAY HAVE STARTING NEWELS WITHIN THE FIRST TREAD. HANDGRIP PORTION OF HANDRAILS SHALL BE NOT LESS THAN 1¼" NOR MORE THAN 2" IN CROSS-SECTIONAL DIMENSION AND HAVE A SMOOTH GRIPPING SURFACE. A SPACE OF NOT LESS THAN 1½" SHALL BE PROVIDED BETWEEN THE WALL AND THE RAIL.
15. GUARDRAILS SHALL BE A MINIMUM OF 42" HIGH, U.N.O. NO OPENINGS OVER 4", TRIANGULAR OPENINGS FORMED BY THE RISER, TREAD AND BOTTOM RAIL OF A GUARD AT THE OPEN SIDE OF A STAIRWAY ARE PERMITTED TO BE OF SUCH SIZE THAT A SPHERE 6" IN DIAMETER CANNOT PASS THROUGH.
16. FIRE BLOCKING BETWEEN CHIMNEYS AND COMBUSTIBLE CONSTRUCTION SHALL BE INSTALLED AT 10'-0" INTERVALS, BOTH VERTICAL AND HORIZONTAL.
17. INSTALL ADHERED VENEER IN COMPLIANCE WITH LOCAL CODES. FOUNDATION SUPPORT REQUIRED FOR EXTERIOR ROCK VENEER. ANCHOR TIES SHALL BE PROVIDED TO HORIZONTAL JOINT REINFORCEMENT WIRE OF NO. 9 GAUGE OR EQUIVALENT.
18. EXTERIOR STUCCO WALLS SHALL HAVE A WEEP SCREED AT OR BELOW THE FOUNDATION PLATE LINE AND 4" ABOVE GRADE OR 2" ABOVE PAVED AREAS THAT WILL ALLOW TRAPPED WATER TO DRAIN TO THE EXTERIOR OF THE BUILDING. THE WEATHER-RESISTIVE BARRIER SHALL LAP THE ATTACHMENT FLANGE, AND THE EXTERIOR LATH SHALL COVER AND TERMINATE ON THE ATTACHMENT FLANGE OF THE SCREED.
19. COLUMNS OR POSTS LOCATED ON CONCRETE OR MASONRY FLOORS AND THAT SUPPORT PERMANENT STRUCTURES SHALL BE SUPPORTED BY CONCRETE PIERS OR METAL PEDESTALS PROJECTING ABOVE EXPOSED EARTH A MINIMUM OF 6" AND AT LEAST 1" ABOVE SUCH FLOORS UNLESS TREATED WOOD IS USED. INDIVIDUAL CONCRETE OR MASONRY PIERS SHALL PROJECT AT LEAST 8" ABOVE EXPOSED GROUND UNLESS THE COLUMNS OR POSTS THAT THEY SUPPORT ARE OF WOOD RESISTANT TO DECAY.
20. MINIMUM CLEARANCE FROM GROUND UNDER GIRDERS SHALL BE 12 INCHES± UNDER JOISTS SHALL BE 18 INCHES.
21. UNDERFLOOR VENTS SHALL EQUAL 1 SQUARE FOOT FOR EACH 150 SQUARE FEET OF UNDERFLOOR AREA, AND MUST PROVIDE CROSS VENTILATION.

K2 ENGINEERING AND STRUCTURAL DESIGN
860 Maestro Dr., Ste. A
Reno, NV 89511
P: (775) 355-0505
F: (775) 355-0566
www.K2eng.net

Sparks Marina Pump Station
Sparks Marina
Sparks, Nevada

Brandt T. Kennedy, P.E.
Jared A. Krupa, P.E.

PROFESSIONAL ENGINEER STATE OF NEVADA
BRANDT T. KENNEDY
Exp: 6-30-17
CIVIL
No. 16872

SEP 16 2016

Revisions
1
2
3

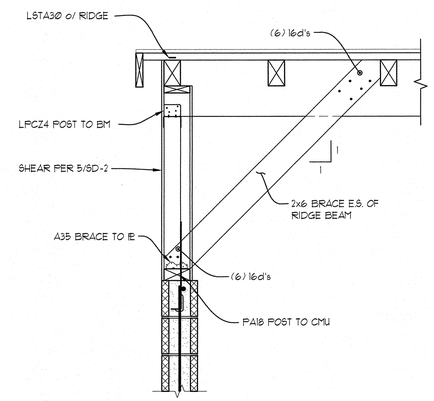
Date	09/16/16
Drawn	SJS
Checked	BTK
Project No.	15-242

Structural Notes & Schedules

SD-1

X	Not Used	X	Not Used	X	Not Used	X	Not Used	X	Not Used

X	Not Used	X	Not Used	X	Not Used	X	Not Used	6	Wall Bracing/Post Connection



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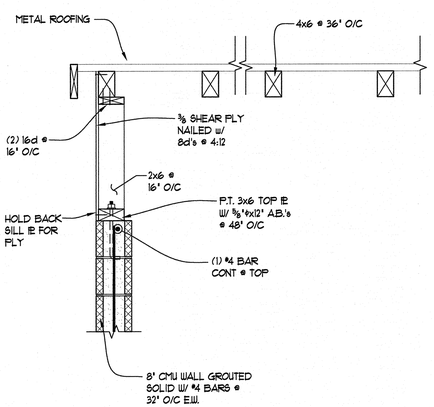
5	Framing Detail	4	Sill Plate Bolting	3	Framing Detail	2	Framing Detail	1	Typ. Mono Pour Foundation



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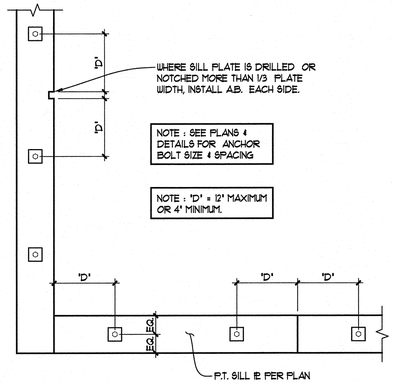

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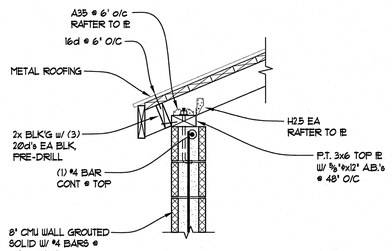

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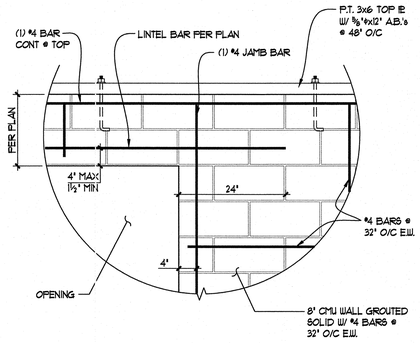

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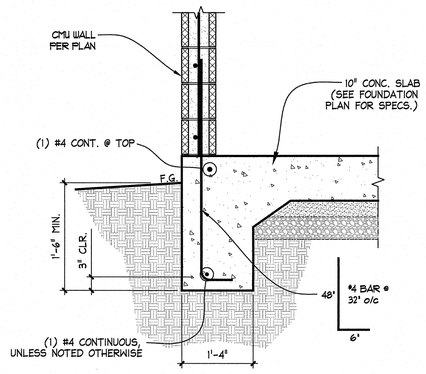

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Structural Details

SD-2