

2. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL ELECTRICAL WORK.

3. COORDINATE ELECTRICAL WORK WITH RELATED WORK SHOWN AND SPECIFIED ELSEWHERE

4. WORK INCLUDED: THE CONTRACTOR SHALL PERFORM ALL THE WORK REQUIRED (INCLUDING THE FURNISHING OF ALL SUPERVISION, LABOR, SERVICES, TOOLS, MATERIALS AND EQUIPMENT AND THE PERFORMANCE OF ALL OPERATIONS AND INCIDENTALS NECESSARY) FOR A COMPLETE, SAFE AND RELIABLE ELECTRICAL INSTALLATION, ADJUSTED, TESTED AND READY FOR OPERATION. THE ELECTRICAL WORK (NEW AND MODIFICATION OF EXISTING) IS GENERALLY DESCRIBED AS FOLLOWS:

DEMOLITION.

DISCONNECTION AND RECONNECTION OF POWER AND CONTROLS FOR PUMP REPLACEMENT.

PROGRAMMING, VFD RECONFIGURATION, ETC. FOR PUMP REPLACEMENT.

GROUNDING SUPPORTS

MOISTURE. FIRE AND DUST STOPPING AND SEALING.

TEMPORARY CONSTRUCTION POWER AND LIGHTING TESTING AND COMPLETING

OBTAINING AND PAYING FOR ALL REQUIRED LICENSES. PERMITS. INSPECTIONS AND FFFS

WORK NOT INCLUDED: THE FOLLOWING ELECTRICAL SYSTEM RELATED WORK WILL BE PROVIDED BY THE OWNER, GENERAL CONTRACTOR, OR OTHER SUBCONTRACTORS WORKING DIRECTLY WITH THE OWNER:

PUMP CONTRACTOR: SUBMERSIBLE PUMP

6. EXISTING CONDITIONS: BEFORE SUBMITTING BID. EXAMINE EXISTING SITE AND EQUIPMENT CONDITIONS TO DETERMINE EFFECT ON EXECUTION OF THE ELECTRICAL WORK AND INCLUDE COSTS IN BID.

THE CONTRACTOR SHALL COORDINATE THE WORK AND COOPERATE WITH THE OWNER, OTHER TRADES, AND SYSTEM CONTRACTORS TO HAVE THE WORK COMPLETED TO THE BEST A DVANTAGE, INSURE THERE ARE NO INTERFERENCES, PROVIDE REASONABLE PPORTUNITY FOR THE OTHER TRADES AND CONTRACTORS TO COMPLETE THEIR WORK

8. WORK UNDER THIS PROJECT WILL BE UNDERTAKEN WITH THE FACILITY IN FULL OPERATION.

9. CONTRACTOR SHALL COORDINATE WORK TO AVOID DISTURBANCE TO BUILDING OPERATIONS AND PERSONNEL, AND TO ALLOW ACCESS FOR BOTH PERSON TO AND WITHIN ALL PORTIONS OF THE FACILITY AND VEHICLES TO THE FACILITY.

ANY AND ALL COSTS INCURRED FOR NON-STANDARD HOURS, DOUBLE SHIFTS, OVERTIME, ETC. OR ANY OTHER COSTS ASSOCIATED WITH COMPLETING THE PROJECT WITHIN THE COMPLETION TIMES REQUIRED SHALL BE INCLUDED WITHOUT INCREASE IN CONTRACT SUM.

10. THE COMPLETED INSTALLATION SHALL BE DONE IN A NEAT & WORKMANLIKE MANNER, SHALL BE SUITABLE FOR THE LOCATION, AND SHALL BE IN ACCORDANCE ALL LAWS, RULES & REGULATIONS IN EFFECT AT THE SITE (INCLUDING THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE (INC.). THE WASHINGTON STATE LECTRICAL SAFETY STANDARDS, ADMINISTRATION AND INSTALLATION CODE (WAC 296-46B)

ALL SYSTEMS, EQUIPMENT, DEVICES, RACEWAYS, CABLES, ETC. INDICATED ARE NEW UNLESS NOTED OTHERWISE.

ALL ELECTRICAL MATERIALS SHALL BE "UL" (UNDERWRITER'S LABORATORIES, INC.) LISTED, LABELED AND APPROVED FOR THE SERVICE INTENDED WHERE UL STANDARDS HAVE BEEN ESTABLISHED. ALL ELECTRICAL MATERIAL SHALL BE NEW UNLESS SPECIFICALLY NOTEO OTHERWISE.

13. ALL OPERATIONS SHALL BE CONDUCTED IN A MANNER TO AVOID THE RISK OF HARM TO PERSONS OR DAMAGE TO PROPERTY. DAMAGE SHALL IMMEDIATELY BE REPAIRED. CONSTRUCTION EQUIPMENT & TOOLS SHALL BE IN GOOD OPERATING CONDITION, AND BE DESIGNED FOR THE WORK REQUIRED.

POWER INTERRUPTIONS (WHETHER TO THE ENTIRE SYSTEM OR TO INDIVIDUA BULDINGS, PANELS, EQUIPMENT, DEVICES, ETC.) SHALL BE KEPT TO AN ABSOLUTE MINIMUM, AND SHALL NOT BE DONE WITHOUT PRIOR APPROVAL, 2 WEEKS ADVANCED SCHEDULING & COORDINATION MEETING WITH THE OWNER. SECONDARY VERIFICATION THAT POWER INTERRUPTION WILL OCCUR IS ALSO REQUIRED 48 HOURS PRIOR TO THE DATE OF OCCURRENCE. THIS ALSO APPLIES TO TESTING.

15. EQUIPMENT, BOXES, ETC. SHALL BE INSTALLED PLUMB & TRUE, AND BE FIRMLY SUPPORTED EITHER DIRECTLY OR INDIRECTLY BY A SOUND & SAFE STRUCTURAL MEMBER.

16. ROUTING OF EXISTING CONDUITS INDICATED IS APPROXIMATE ONLY.

17. DEFINITIONS

THE TERM "CONTRACTOR" USED THROUGHOUT THESE SPECIFICATIONS AND ON THE ELECTRICAL DRAWINGS SHALL BE UNDERSTOOD TO MEAN THE ELECTRICAL CONTRACTOR, ALL OTHER WORK SHALL BE CALLED OUT BY NAME

"FURNISH" MEANS TO SUPPLY AND DELIVER TO THE PROJECT, READY FOR INSTALLATION AND IN OPERABLE CONDITION.

"INSTALL" MEANS TO INCORPORATE IN THE WORK FINAL POSITION, COMPLETE ANCHORED, CONNECTED, AND IN OPERABLE CONDITION

"PROVIDE" MEANS FURNISH AND INSTALL.

F.O.I.C. - FURNISHED BY OTHERS, INSTALLED BY CONTRACTOR

18. WIRING METHODS

NCH CIRCUITS - PVC CONDUIT BELOW GRADE (WITH GRS CONDUIT RISERS AND ELBOWS) AND EMT ABOVE GRADE.

CONTROLS, FIRE ALARM, ETC. - PVC CONDUIT BELOW GRADE (WITH GRS CONDUIT RISERS AND ELBOWS) AND EMT ABOVE GRADE.

FLEX - SHALL BE USED FOR FINAL CONNECTIONS TO VIBRATING EQUIPMENT & ITUTED FOR EMT WHEN RUN CONCEALED WITHIN WALLS & CEILINGS. FLEX SHALL NOT BE USED FOR HOME RUNS.

19 RACEWAYS

EXPOSED RACEWAYS SHALL BE RUN AS NEATLY & UNOBTRUSIVELY AS POSSIBLE EAP-DEED RACEWAYS SHALLED RUNNAS NEATH & UNOBTRUSTVELT AS POSSIBLE, SUPPORTED AS REQUIRED, PARALLEL OR AT RIGHT ANGLES TO CEILINGS, WALLS & STRUCTURAL MEMBERS.

RACEWAYS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE

INTERIOR, EXPOSED IN PUMP ROOM - ELECTRICAL METALLIC TUBING (EMT).

EXTERIOR ABOVE GRADE - GALVANIZED RIGID STEEL CONDUIT (GRS) EXTERIOR BELOW GRADE - POLYVINYL CHLORIDE CONDUIT (PVC), EXCEPT CONDUIT BENDS & RISERS SHALL BE GALVANIZED RIGID STEEL (GRS).

RACEWAYS SHALL BE SIZED SO THAT THE CABLE FILL DOES NOT EXCEED 40%,

RIGID STEEL CONDUIT SHALL BE HOT-DIPPED GALVANIZED WITH THREADED COUPLINGS AND CONNECTORS.

ELECTRICAL METALLIC TUBING SHALL BE ELECTRO-GALVANIZED STEEL.

LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE PVC COATED GALVANIZED STEEL.

NO CONDUIT SHALL BEND MORE THAN 360 DEGREES BEFORE THE END OF ITS RUN. BENDS IN CONDUITS SHALL BE MADE WITHOUT FLATTENING, KINKING OR REDUCING THE CROSS-SECTIONAL AREA OF THE CONDUIT. CONDUIT CUTS SHALL BE MADE SQUARE WITH A PROPER CUTTING TOOL. THE INSIDE AND OUTSIDE OF ALL CONDUIT ENDS SHALL BE REAMED TO ELIMINATE BURRS AND ROUGH EDGES, THEN WIPED CLEAN.

SUITABLE BUSHINGS SHALL BE USED ON ALL CONDUIT TERMINATIONS.

CONDUIT SYSTEMS SHALL BE COMPLETE, SNAKED AND CLEANED BEFORE

20 RACEWAY FITTINGS

CONNECTORS, COUPLINGS, ETC. FOR EMT SHALL BE STEEL RAINTIGHT

BOXES SHALL ACCOMMODATE ANY DEVICE TO BE INSTALLED AND SHALL BE SIZED AS REQUIRED BY THE APPLICABLE CODES FOR NUMBER AND SIZE OF CONDUITS AND CABLES ENTERING AND LEAVING; EXCEPT MINIMUM AS NOTED BELOW.

INDOOR BOXES ABOVE GRADE IN DRY LOCATIONS SHALL BE STANDARD STAMPED GALVANIZED STEEL TYPE, SUITABLE FOR EMBEDMENT IN CONCRETE AND/OR MASONRY WHERE REQUIRED.

UNLESS NOTED OTHERWISE, LARGER SIZE PULL AND JUNCTION BOXES SHALL BE FABRICATED FROM CODE GAUGE GALVANIZED STEEL

ALL WIRING SHALL BE ENCLOSED WITHIN THE RACEWAY SYSTEM.

FEEDER, BRANCH CIRCUIT & EQUIPMENT GROUND CABLES SHALL BE 1/C COPPER, STRANDED, #12 AWG UNLESS NOTED OTHERWISE, WITH 600V TYPE XHHW OR THHN/THWN INSULATION.

BRANCH CIRCUIT & EQUIPMENT GROUND CABLES WITHIN A CONDUIT SYSTEM SHALL BE 1/C COPPER STRANDED, #12 AWG (UNLESS NOTED OTHERWISE), WITH 600V TYPE XHHW OR THHN/THWN INSULATION.

LOW VOLTAGE (CLASS 2) CONTROL CABLE SHALL BE SINGLE CONDUCTOR COPPER VITH 600 VOLT TYPE XHHW OR THWN/THHN INSULATION IF INSTALLED IN CONDUIT. THE MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG UNLESS NOTED OTHERWISE

INSTRUMENT CABLE, UNLESS OTHERWISE REQUIRED BY THE PARTICULAR INSTRUMENT, SHALL BE 2 CONDUCTOR (TWISTED PAIR) SOLID COPPER WITH 300 VOLT PVC INSULATION, 100% ALUMINUM POLYESTER SHIELD, STRANDED COPPER DRAIN WIRE, WITH AN OVERALL PVC JACKET. THE MINIMUM CONDUCTOR SIZE SHALL

BEFORE SPLICES AND CONNECTIONS ARE MADE, CONTACT SURFACES SHALL BE THOROUGHLY CLEANED. CONNECTIONS SHALL BE BOTH MECHANICALLY & ELECTRICALLY SECURE. TAKE CARE NOT TO NICK CONDUCTORS DURING INSULATION REMOVAL.

WIRE AND CABLE SHALL NOT BE EXPOSED TO WEATHER OR MECHANICAL DAMAGE LONGER THAN NECESSARY. CUT ENDS OF CABLE SHALL IMMEDIATELY BE SEALED.

CABLE SHALL BE UNROLLED FROM REELS, OR REMOVED FROM CARTONS, AND INSTALLED IN A MANNER WHICH WILL PREVENT KINKING, CRUSHING OR EXCESSIVE TENSION ON CONDUCTORS AND INSULATION. CABLE PULLING LUBRICANTS OF A TYPE HAVING NO DAMAGING EFFECT ON THE INSULATION, SHALL BE USED TO MINIMIZE PULLING STRESSES ON THE CABLE.

CABLE SHALL BE INSTALLED OR DRAWN INTO THE CONDUIT SYSTEM ONLY AFTER ALL WORK OF ANY NATURE THAT COULD CAUSE INJURY TO THE CABLE IS COMPLETED. THE CONDUIT SYSTEM SHALL BE COMPLETE, SNAKED AND CLEANED BEFORE PULLING ANY CABLE.

23. GROUNDING

ALL ELECTRICAL EQUIPMENT, BOXES, DEVICES, SHALL BE PROVIDED WITH A GROUND FAULT RETURN PATH BY MEANS OF THE INTEGRITY OF THE METALLIC CONDUIT SYSTEM (WHERE APPLICABLE) & AN INSULATED GROUNDING CONDUCTOR INSTALLED WITH THE CIRCUIT CONDUCTORS. CONDUIT SHALL BE CLOSELY & TIGHTLY FITTED IN COUPLINGS, CONNECTORS, ETC. AND BE PROPERLY BONDED TO PROVIDE AN ELECTRICALLY CONTINUOUS LOW RESISTANT GROUND PATH. CONTINUITY TESTS SHALL BE MADE TO VERIFY THE CONTINUITY OF THE GROUNDING SYSTEM & ALL GROUND FAULT RETURN PATHS.

EQUIPMENT GROUND CABLES SHALL BE 1/C COPPER, WITH 600V TYPE XHHW OR THHN/THWN INSULATION.

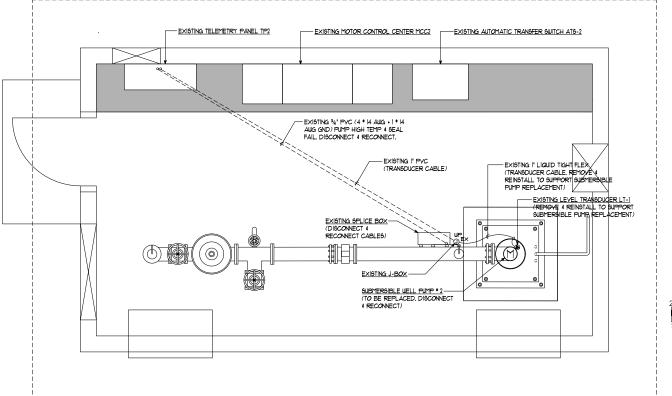
DEMOLITION NOTES:

CONTRACTOR SHALL REMOVE EXISTING EQUIPMENT, DEVICES, ETC. AS INDICATED IN THE WORK AREA AND ALL ASSOCIATED CONDUIT, BOXES, CABLES, ETC. SHALL BE REMOVED TO THEIR POINT OF ORIGIN &/OR DESTINATION,

2 UNLESS NOTED OTHERWISE CONCEALED RACEWAYS ARE ALLOWED TO REMAIN EXCEPT WIRING SHALL BE REMOVED. EXISTING CONCEALED RACEWAYS ARE ALLOWED TO BE RE-USED IF IN GOOD CONDITION & SUITABLE FOR THE NEW

EXISTING FEEDERS, CIRCUITS, CONDUITS, CABLES, ETC. INTERRUPTED DUE TO THE SYSTEM UPGRADE SHALL BE RE-CONNECTED AS REQUIRED TO MAINTAIN THE ORIGINAL FUNCTION.

ALL SURPLUS MATERIAL REMOVED DURING THE DEMOLITION SHALL BE INSPECTED BY THE OWNER, AND THOSE ITEMS SELECTED SHALL REMAIN THE PROPERTY OF THE OWNER, ALL REMAINING SURPLUS MATERIALS SHALL BE REMOVED FROM THE SITE & DISPOSED OF BY THE CONTRACTOR ACCORDING TO ALL APPLICABLE



HORIZONTAL SCALE

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REVISIONS



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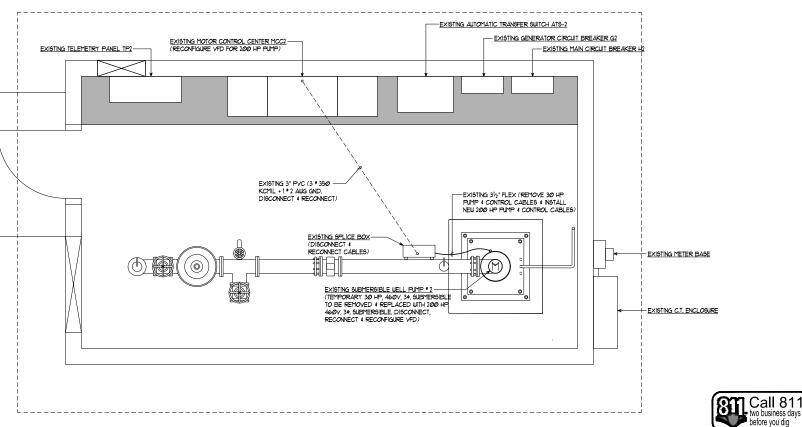
PECIFICATIONS

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ELECTRICAL - SHOP WELL # 2 CONTROL & ANCILLARIES PLAN



- SHOP WELL # 2 POWER PLAN

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