Request for Proposal (RFP) No. MOK26-01 for
Mokelumne River Fish Hatchery Electrical Retrofit
Addendum 2

Notice is hereby given that RFP No. MOK26-01 "Mokelumne River Fish Hatchery Electrical Retrofit" of the East Bay Municipal Utility District has been revised as set forth below.

1. The full drawing set for Project No. MOK26-01 dated 10APR2026 is attached and replaces the version posted in the RFP.
2. Drawing 100-E-110 One-Line Diagram in the replacement drawing set provides the lengths of feeders that are associated with Key Notes 12.
3. The PG&E design drawing is provided for reference.
4. The existing underground conduits serving the current switchboard and control panel shall be retained and protected, not the stub-outs at the concrete pad to be demolished.
5. The contractor under this RFP shall be responsible for the existing generator's fuel removal.
6. The fuel capacity on the existing generator's base tank is 500 gallons.
7. The fuel for the new generator is the responsibility of the contractor under this RFP. "Polishing" fuel from the existing generator fuel tank may be proposed and considered under methodology.
8. The generator purchased is the 500 kW Cat Tier 4 Final (C18T4F) under contract with Blocka, Inc. Onsite testing and commissioning was not included in purchase of the generator and is the responsibility of the contractor under this RFP.
9. The generator vendor is responsible for the assembly of the components (exhaust, load bank, roof mounted load bank) and not the contractor under this RFP.
10. Vendor specification of the new generator is attached. Approximate dry weight is 12,000 lbs.
11. There is not a remote annunciator panel for the new generator.
12. Responsibility for the new generator's Air Quality Management District permit will be handled by Blocka, Inc. and EBMUD.
13. The dam's piezometers and pressure transducer sensors do not interface with equipment being demolished or replaced.
14. Note the Insurance requirements for this project and coordinate with your broker.
15. The due date for the proposals for RFP No. MOK26-01 "Mokelumne River Fish Hatchery Electrical Retrofit" has been extended to Wednesday, July 1 at 4:30 PM.

Contact I-Pei Hsiu with questions at (510) 287-0979 or ipei.hsiu@ebmud.com

THIS ADDENDUM MUST BE SUBMITTED WITH THE PROPOSAL FORM.

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN PROJECT

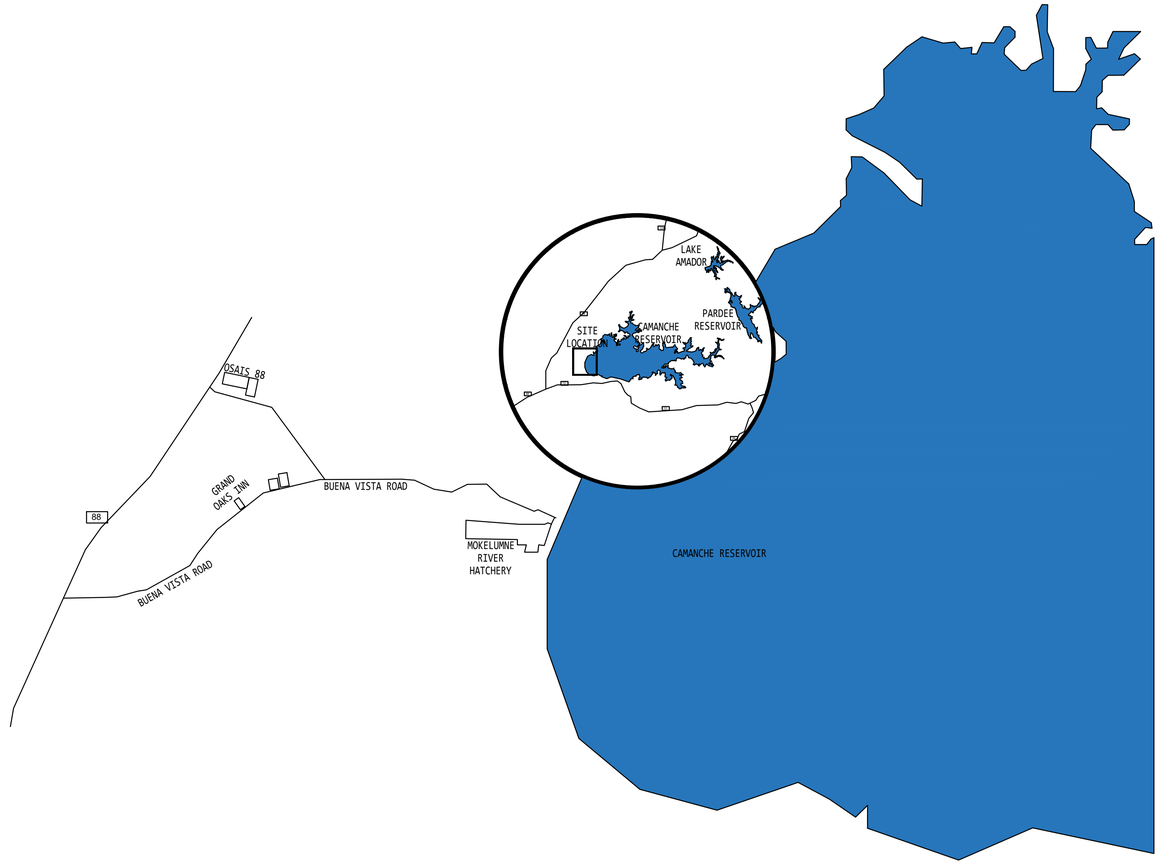
CONTRACT DRAWINGS AND SPECIFICATIONS

EAST BAY MUNICIPAL UTILITY DISTRICT

SPEC NO.2197

LIST OF PROJECT DRAWINGS
MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN PROJECT

GENERAL		
SHEET NO.	DRAWING NO.	DRAWING NAME
1	100-Z-011.1	LIST OF DRAWINGS AND PROJECT MAP
2	100-Z-011.2	GENERAL PROJECT NOTES
3	100-Z-011.3	ELECTRICAL PROJECT NOTES
4	100-Z-011.4	ELECTRICAL & STRUCTURAL PROJECT NOTES
5	100-Z-011.5	ELECTRICAL SYMBOLS & ABBREVIATIONS
-	-	-
ELECTRICAL DEMOLITION		
SHEET NO.	DRAWING NO.	DRAWING NAME
6	100-E-017	ELECTRICAL SITE PLAN DEMO - 1
7	100-E-018	ELECTRICAL SITE PLAN DEMO - 2
-	-	-
ELECTRICAL		
SHEET NO.	DRAWING NO.	DRAWING NAME
8	100-E-019	ELECTRICAL OVERALL SITE PLAN
9	100-E-020	NEW SWITCHBOARD & EMERGENCY GENERATOR PLAN
10	100-E-021	MODIFIED HATCHERY SUPPORTING EQUIPMENT PLANS
11	100-E-022	MODIFIED VALVE HOUSE PLAN
12	100-E-110	ONE-LINE DIAGRAM
13	100-E-111	EQUIPMENT ELEVATION & PLAN VIEWS
14	100-E-300	CONDUIT SCHEDULE
15	100-E-301	CABLE SCHEDULE
16	100-E-302	PANEL, LIGHTING, & PULL BOX SCHEDULES
17	100-E-303	MISCELLANEOUS SCHEMATICS
18	100-E-205	CONTROL PANEL ELEVATION & BILL OF MATERIALS
19	100-E-206	COMMUNICATION DIAGRAMS & INPUT/OUTPUT SCHEDULE
20	100-E-207	CONTROL PANEL POWER DIAGRAM
21	100-E-500	EQUIPMENT & DEVICE ASSET TAG LIST
22	100-E-900	ELECTRICAL DETAILS - 1
23	100-E-901	ELECTRICAL DETAILS - 2
24	100-E-902	GROUNDING DETAILS
-	-	-
-	-	-
STRUCTURAL		
SHEET NO.	DRAWING NO.	DRAWING NAME
25	100-S-040	GENERATOR & SWITCHBOARD PAD PLAN & SECTIONS
-	-	-
-	-	-



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5 WORKING DAYS UTILITY NOTIFICATION
PRIOR TO CONSTRUCTION

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

LIST OF DRAWINGS AND PROJECT MAP

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-Z-011.1	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

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CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER
KOOSHA TOOFAN
20418
Exp. SEPT. 30/2027
Electrical Engineer
STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN
DESIGN CHECKED BY: JOHN GUILLORY
DRAWN BY: KOOSHA TOOFAN
SR. PROJ ENGR. R.P.E. NO.: 20418
APPROVED: KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418

EBMUD

USER:KOOSHA TOOFAN
DATE:9/4/2025 1:22 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY
FINAL DESIGN SERVICES\DRAFTING\1-WORKING\100-Z-011.1 - LIST OF DRAWINGS AND PROJECT MAP.DWG

SPEC NO.2197

CODES & REGULATIONS

1. ALL ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND SHALL COMPLY WITH ALL NATIONAL AND LOCAL AUTHORITIES, ORDINANCES, AND CODES AT TIME OF INSTALLATION. THIS INCLUDES THE CALIFORNIA BUILDING CODE (IBC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA), AND AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

2. ALL CONSTRUCTION AND OPERATIONS BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS. PRIOR TO BEGINNING WORK, CONTACT OSHA FOR PERMIT REQUIREMENTS.

3. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH CURRENT CONSTRUCTION INDUSTRY STANDARDS AND WORKMANSHIP.

4. IN THE EVENT OF CODE CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL.

GENERAL NOTES

1. ALL EQUIPMENT SHALL BE NEW, UNUSED, AND U.L. LISTED (WHERE A U.L. LISTING IS AVAILABLE FOR THAT CLASS OF EQUIPMENT).

2. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, UNLESS A LONGER PERIOD IS SPECIFIED BY THE MANUFACTURER.

3. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGH THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.

4. VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.

5. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTOR OF CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.

6. PRIOR TO COMMENCING WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD LOCATE ALL AFFECTED UNDERGROUND UTILITIES MAIN AND SERVICE LINES AND POTHOLE ALL CONFLICTING UTILITIES PRIOR TO EXCAVATION. THE CONTRACTOR SHALL NOTIFY THE MEMBERS OF THE UNDERGROUND SERVICE ALERT (U.S.A.) 48 HOURS IN ADVANCE OF PERFORMING EXCAVATION WORK, BY CALLING THE TOLL-FREE NUMBER 811 FROM DIGALERT.ORG/CONTACT. THE KNOWN EXISTING BURIED UTILITIES AND PIPELINES ARE SHOWN ON THE DRAWINGS IN THEIR APPROXIMATE LOCATIONS. THERE IS NO GUARANTEE THAT ALL EXISTING PIPELINES AND OBSTRUCTIONS ARE SHOWN OR THAT LOCATIONS INDICATED ARE ACCURATE.

7. CONSTRUCTION MATERIALS TESTING, AND INSPECTION SHALL COMPLY WITH THESE CONSTRUCTION DOCUMENTS. FAILURE TO MEET ANY OF THE LISTED REQUIREMENTS SHALL BE CAUSE FOR REJECTION.

8. CONTRACTOR SHALL KEEP ONE ACCURATE, LEGIBLE SET OF AS-BUILT DRAWINGS AT THE SITE AND AVAILABLE FOR REVIEW BY THE ENGINEER IN CONTRACTOR'S FIELD OFFICE THROUGHOUT THE PROJECT. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE DISTRICT FOR APPROVAL PRIOR TO FINAL ACCEPTANCE OF THE WORK.

9. ALL MANUFACTURED EQUIPMENT, ACCESSORIES, AND MATERIALS SHALL BE USED AS INTENDED BY THE CONTRACTOR, IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS.

10. COORDINATE ELECTRICAL WORK WITH THAT OF OTHER TRADES. REFER TO STRUCTURAL DRAWINGS. COORDINATION SHALL OCCUR PRIOR TO FABRICATION, PURCHASE, AND INSTALLATION OF WORK.

11. THOROUGHLY TEST ALL LINES, FEEDERS, EQUIPMENT, AND DEVICES WITH MAXIMUM LOADS TO ASSURE PROPER OPERATION.

12. COMPLETION OF WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE PROJECT SCHEDULE. SCHEDULE INSTALLATION WITH OTHER TRADES TO ENSURE PROJECT MILESTONES ARE MET.

13. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. PROVIDE COMPONENTS REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS INCLUDING RACEWAYS, CONDUCTORS, BOXES, SUPPORTS, AND SIMILAR ITEMS.

14. DEVICE LOCATIONS ARE APPROXIMATE. COORDINATE DEVICE LOCATIONS AND ELEVATIONS WITH APPROPRIATE DOCUMENTS INCLUDING CASEWORK SHOP DRAWINGS AND INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.

15. DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS AND STUB-UPS. THESE ARE TO BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR SHALL COORDINATE CONDUIT STUB-UP LOCATIONS BASED UPON APPROVED EQUIPMENT SHOP DRAWINGS.

16. THE CONTRACTOR SHALL NOTIFY THE DISTRICT REGARDING ANY DISCREPANCIES OR AMBIGUITIES, WHICH MAY EXIST IN THE DRAWINGS PRIOR TO ROUGH IN.

17. WHERE THE DRAWINGS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.

18. THE PROJECT CONTRACTOR SHALL EXERCISE DUE CAUTION AND SHALL CAREFULLY PRESERVE BENCHMARKS AND SURVEY REFERENCE POINTS, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT BY A CALIFORNIA REGISTERED PROFESSIONAL LAND SURVEYOR.

19. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN, OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.

GENERAL NOTES (CONTINUED)

20. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES AND VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS DURING THE PERFORMANCE OF THIS CONTRACT WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PRESERVATION OF ALL SUCH FACILITIES IN THE AREA OF CONSTRUCTION AND SHALL NOTIFY UTILITY COMPANIES A MINIMUM OF FORTY-EIGHT HOURS IN ADVANCE OF ANY CONSTRUCTION.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE. THE COST OF REPLACING EXISTING IMPROVEMENTS WITH SAME LEVEL OF QUALITY SHALL BE INCLUDED IN THE CONTRACT BID PROCESS.

22. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS WITHIN THE PROJECT SITE, STAGING AREAS, AND ACCESS ROAD TO THE SITE, DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS INCLUDES THE SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

23. REQUIRE ALL NECESSARY PERMITS AND COMPLY WITH ALL LOCAL CODES AND ORDINANCES FOR EXCAVATIONS OR TRENCHES FIVE (5) FEET OR MORE IN DEPTH.

24. WHENEVER PAVEMENT IS BROKEN OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE SPECIFICATIONS, THE CONTRACTOR SHALL REPLACE THE PAVEMENT, AFTER PROPER BACKFILLING, WITH PAVEMENT MATERIALS EQUAL TO OR BETTER THAN THE MATERIALS USED IN THE ORIGINAL PAVING. THE FINISHED PAVEMENT SHALL BE SUBJECT TO THE APPROVAL OF THE DISTRICT.

25. EXACT LIMITS OF PAVEMENT REMOVAL AND RECONSTRUCTION SHALL BE DETERMINED IN COORDINATION WITH THE DISTRICT.

26. DUST SHALL BE CONTROLLED IN COMPLIANCE WITH LOCAL AUTHORITY.

27. ALL DRAINAGE PATTERNS SHALL BE MAINTAINED AT ALL TIMES DURING AND AFTER CONSTRUCTION.

28. PERFORM ALL VERIFICATION, OBSERVATIONS, TESTING, AND EXAMINATION OF WORK PRIOR TO THE ORDERING OF ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE DISTRICT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT, AND DISCREPANCIES.

29. UNAUTHORIZED CHANGES & USES: THE ENGINEER 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.

30. ALL OPEN TRENCHES SHALL BE APPROPRIATELY PLATED OVER, WHEN THE CONTRACTOR IS NOT ACTIVELY WORKING IN SAID TRENCH.

31. PRIOR TO OPENING AN EXCAVATION, THE CONTRACTOR SHALL DETERMINE WHETHER UNDERGROUND INSTALLATIONS; I.E., SEWER, WATER, FUEL, ELECTRIC LINES, ETC., WILL BE ENCOUNTERED AND IF SO, WHERE SUCH UNDERGROUND INSTALLATION ARE LOCATED, WHEN THE EXCAVATION APPROACHES THE LOCATION OF SUCH UNDERGROUND INSTALLATION, THE EXACT LOCATION SHALL BE DETERMINED BY CAREFUL PROBING OR HAND DIGGING; AND, WHEN IT IS UNCOVERED, ADEQUATE PROTECTION SHALL BE PROVIDED FOR THE EXISTING INSTALLATION BY THE CONTRACTOR.

32. THE DISTRICT SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED.

33. A TEN (10) DAY NOTICE SHALL BE GIVEN FOR ANY PLANNED DISRUPTION, AND THE DISTRICT OR ASSOCIATED UTILITY COMPANY TO BE AFFECTED SHALL BE NOTIFIED IMMEDIATELY UPON ANY UTILITY SERVICE DISRUPTION OTHER THAN SPECIFIED PREVIOUSLY.

34. EXISTING OVERHEAD ELECTRIC AND TELEPHONE TRANSMISSION LINES MAY BE LOCATED AT OR NEAR THE SITE. THESE OVERHEAD UTILITIES ARE NOT SHOWN ON THE DRAWINGS. EXTREME CAUTION SHALL BE USED WHEN WORKING IN THE VICINITY OF OVERHEAD UTILITIES SO AS TO PREVENT INJURY TO WORKMEN OR DAMAGE TO THE UTILITIES.

35. ALL EXISTING WATER, SEWER, AND DRAINAGE STRUCTURES AND PIPING SHALL BE PROTECTED DURING CONTRACTOR'S OPERATION. IF DAMAGED AS PART OF WORK, ALL DAMAGED UTILITIES AND STRUCTURES SHALL BE REPLACED AS GOOD OR BETTER THAN EXISTING CONDITIONS.

36. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR PROTECTING EXISTING TREES NOT IDENTIFIED FOR REMOVAL. ANY TREE DAMAGED SHALL BE REPLACED BY THE CONTRACTOR AS DIRECTED BY THE DISTRICT.

37. CONTRACTOR SHALL COORDINATE AND NOTIFY THE DISTRICT 5 BUSINESS DAYS PRIOR TO WHEN WORK IS READY FOR INSPECTIONS. NO UNDERGROUND WORK SHALL BE BURIED PRIOR TO INSPECTION BY THE DISTRICT. THE PRESENCE OR ABSENCE OF THE DISTRICT WILL NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR THE PROPER PERFORMANCE OF WORK.

38. CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF ALL MATERIALS THAT ARE TO BE REMOVED FROM THE SITE, INCLUDING SURPLUS EXCAVATION MATERIALS AND DEBRIS. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A SAFE, NEAT, AND ORDERLY CONDITION. THE CONTRACTOR SHALL DELIVER MATERIALS OR EQUIPMENT TO BE SALVAGED AND RETURNED TO THE DISTRICT AT THE LOCATION TO BE DETERMINED BY THE DISTRICT. MATERIALS MAY INCLUDE MECHANICAL/ELECTRICAL SYSTEMS THAT MAY BE DEMOLISHED AS PART OF THE WORK. REMOVED MATERIALS SHALL BE DISPOSED OF USING A LICENSED CARTING SERVICE.

39. ALL TRAFFIC CONTROL SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL AND DISTRICT STANDARDS.

GENERAL NOTES (CONTINUED)

40. CONTRACTOR SHALL COMPLY WITH ALL STATE AND COUNTY LAWS AND ORDINANCES RELATING TO SAFETY AND CHARACTER OF WORK, EQUIPMENT, AND LABOR PERSONNEL. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO CONFORMANCE TO TRAFFIC CONTROL REQUIREMENTS, INCLUDING PROVISIONS AND MAINTENANCE OF BARRICADES, TRENCH COVERS, AND PREPARATION AND IMPLEMENTATION OF TRAFFIC CONTROL PLANS AS REQUIRED.

41. MANHOLE ENTRY AND/OR ENTRY TO ANY EXCAVATION OR STRUCTURE GREATER THAN FOUR (4) FEET DEEP SHALL BE IN FULL COMPLIANCE WITH THE CONFINED SPACE ENTRY REQUIREMENTS OF CALIFORNIA AND FEDERAL OSHA.

42. CONTRACTOR SHALL PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING, ADHERING TO, AND MAINTAINING THE SWPPP FOR THE DURATION OF THE PROJECT. THE SWPPP SHALL BE SUBMITTED TO THE DISTRICT FOR APPROVAL PRIOR TO THE START OF ANY WORK. THE DISTRICT MAY AT ANY TIME INSPECT AND OBSERVE COMPLIANCE WITH THE SWPPP.

43. CONTRACTOR SHALL PROVIDE TEMPORARY SECURITY FENCING FOR THE STAGING AREA. STAGING AREA LOCATION SHALL BE COORDINATED AND APPROVED BY THE DISTRICT. THE DISTRICT SHALL NOT BE RESPONSIBLE FOR SITE SECURITY.

44. CONTRACTOR SHALL POTHOLE TO EXPOSE ALL EXISTING PIPING AT UTILITY CROSSINGS AND PROPOSED CONNECTIONS TO DEVELOP INFORMATION TO FACILITATE PIPE FABRICATIONS AND CONNECTIONS. EXPOSURE AND MEASUREMENT SHALL OCCUR PRIOR TO PIPING SHOP DRAWING SUBMITTALS.

45. IN THE CASE OF AN INCONSISTENCY BETWEEN PLANS AND DOCUMENTS NOT CLARIFIED BY ADDENDUM, THE BETTER QUALITY OR GREATER QUANTITY OF WORK SHALL CONTROL.

46. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.

47. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE CONTRACT DRAWINGS.

48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.

49. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING, AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE DISTRICT.

50. THE CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.

51. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.

52. THE AREAS OF THE DISTRICT'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.

53. EQUIPMENT AND DEVICES SPECIFIED IN THESE CONTRACT DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR OR AN APPROVED EQUIVALENT APPROVED BY THE DISTRICT.

GRADING

1. ALL SURFACE DRAINAGE SHALL BE DIRECTED BY GRADING AT A POSITIVE GRADIENT AWAY FROM ANY PROPOSED SLABS OR FOUNDATIONS AND SHALL NOT BE REDIRECTED TOWARD ANY EXISTING STRUCTURES.

EQUIPMENT SHIPMENT & STORAGE

1. ALL EQUIPMENT SHALL BE CAREFULLY PROTECTED FOR SHIPPING. ALL OPENINGS SHALL BE PROTECTED BY PLYWOOD SECURELY FASTENED TO THE FRAMEWORK OF THE EQUIPMENT. EQUIPMENT SHALL BE ADEQUATELY COVERED DURING LOCAL DELIVERY.

2. FROM THE TIME OF RECEIPT UNTIL THE EQUIPMENT IS ENERGIZED FOR CONSTRUCTIVE PLANT OPERATIONS UNLESS SUCH EQUIPMENT IS BEING WORKED ON, EQUIPMENT SHALL BE CONSIDERED IN STORAGE. WHILE IN STORAGE, A 120V SINGLE-PHASE POWER SOURCE SHALL BE AVAILABLE AND CONNECTED TO THE SPACE HEATERS IN ALL EQUIPMENT ITEMS SO EQUIPPED.

3. UNLESS STORED INDOORS, EQUIPMENT SHALL BE AT LEAST 1 FOOT ABOVE GRADE COVERED WITH AT LEAST TWO LAYERS OF HEAVY POLYETHYLENE PLASTIC SHEETS AND ANCHORED TO PREVENT DAMAGE BY HIGH WINDS. ALL EQUIPMENT SHALL BE PROTECTED FROM DUST AND MOISTURE PRIOR TO AND DURING CONSTRUCTION. THE CONTRACTOR IS CAUTIONED THAT CONCRETE FINISHING AND PAINTING, ETC., IN THE VICINITY OF THE EQUIPMENT SHALL NOT PROCEED IF UNPROTECTED EQUIPMENT IS INSTALLED

4. THE CONTRACTOR SHALL BEAR COMPLETE RESPONSIBILITY FOR THE PROTECTION OF DISTRICT-SUPPLIED AND CONTRACTOR-SUPPLIED EQUIPMENT PRIOR TO FINAL ACCEPTANCE BY THE DISTRICT OF THE WORK. WHEN ALL THE OTHER WORK IN THE AREA IS COMPLETE, AND AFTER ELECTRICAL EQUIPMENT TESTING IS COMPLETE, THE CONTRACTOR SHALL REPAIR BY SPRAY PAINTING, AFTER PROPERLY PREPARING THE SURFACE, ALL SCRATCHES OR DEFECTS IN THE FINISH OF THE EQUIPMENT. ONLY IDENTICAL PAINT FURNISHED BY THE EQUIPMENT MANUFACTURER SHALL BE USED FOR SUCH PURPOSES.

ALL GENERAL NOTES APPLY TO ALL SHEETS OF THESE CONTRACT DOCUMENTS, AS IF THEY WERE WRITTEN IN THE ENTIRETY ON EACH SHEET.

USERKOOSHA TOOFAN
DATE:5/16/2026 11:23 AM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\1-WORKING\100-Z-011.2 - GENERAL PROJECT NOTES.DWG

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NO.	DATE	REVISION	BY	REC.	APP.

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6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — No. 20418 — Exp. SEPT. 30/2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY:	KOOSHA TOOFAN
DESIGN CHECKED BY:	JOHN GUILLORY
DRAWN BY:	KOOSHA TOOFAN
SR. PROJ ENGR. R.P.E. NO.:	20418
APPROVED:	KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.:	20418

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

GENERAL PROJECT NOTES

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-Z-011.2	0
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SPEC NO.2197

ELECTRICAL GENERAL NOTES

1. PROVIDE FIRE STOPPING SYSTEMS FOR CONDUIT AND RACEWAY SYSTEMS AT PENETRATIONS, SLEEVES, AND SLOTS OF FIRE RATED CONSTRUCTION FOR HORIZONTAL AND INTRABUILDING PATHWAYS AND SPACES.
2. ALL HOLES THROUGH MASONRY SHALL BE MADE WITH CORE DRILLS IF NOT SLEEVED THROUGH THE WALLS. IF CONDUITS REQUIRE CORE DRILLING, OTHER METHODS SUCH AS CHISELING OR HAMMERED OUT OPENINGS ARE NOT ACCEPTABLE. THE HOLES SHALL BE MADE NO LARGER THAN ¼ LARGER DIAMETER THAN THE CONDUIT. ALL OPENINGS SHALL BE GROUTED USING CONSTRUCTION-GRADE NON-SHRINK GROUT WHERE INSTALLED THROUGH CONCRETE AND CAULKED USING CONSTRUCTION-GRADE NATURAL CURE SILICONE CAULK WHERE INSTALLED THROUGH SIDING MATERIALS IF SHOWN, DRYWALL OR OTHER FINISHES ABOVE FINISH GRADE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS.
4. ALL CONDUITS LEAVING OR ENTERING PANELS, ENCLOSURES, AND SWITCHBOARDS FROM EXTERIOR OR COLD AREAS SHALL BE DUCT SEALED AT BOTH ENDS.
5. ALL INDOOR BUILDING CONDUIT PENETRATIONS INTO TOP, SIDE, OR BOTTOM OF ELECTRICAL ENCLOSURES ARE REQUIRED TO BE MADE USING MYERS HUBS FOR TERMINATION OF ELECTRICAL CIRCUITS.
6. ALL OUTDOOR BUILDING CONDUIT PENETRATIONS INTO SIDE OR BOTTOM OF ELECTRICAL ENCLOSURES ARE REQUIRED TO BE MADE USING WATERTIGHT MYERS HUBS FOR TERMINATION OF ELECTRICAL CIRCUITS. TOP CONDUIT PENETRATIONS INTO OUTDOOR INSTALLED ENCLOSURES IS PROHIBITED.
7. WHEN CONNECTIONS ARE COMPLETE IN THE CONNECTION BOX, COAT THE TERMINAL BLOCKS AND WIRE ENDS WITH PROTECTIVE COMPOUND, NO-OXIDE OR EQUAL, TO PREVENT CORROSION.
8. ALL PULL BOXES SHALL BE SIZED AS REQUIRED, WITH A MINIMUM SIZE OF 12” x 10” x 8”, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH NEC SECTION 314.28.
9. USE STAINLESS STEEL FASTENERS FOR MOUNTING OF JUNCTION BOXES OR OTHER DEVICES.
10. PROVIDE EQUIPMENT SUPPORTS, PIPE, AND DUCT HANGERS, AS REQUIRED TO SAFELY AND PERMANENTLY CARRY THE WEIGHT OF EQUIPMENT.
11. FACTORY SWEEPS SHALL BE USED AT ALL CONDUIT BENDS. FIELD BENDS ARE NOT ACCEPTABLE. WHEN FACTORY SWEEPS ARE UNAVAILABLE, SWEEPS SHALL BE SIZED TO MEET MINIMUM CABLE BENDING RADIUS OF 12 TIMES CABLE OUTER DIAMETER AND MAXIMUM SIDEWALL PRESSURE REQUIREMENTS.
12. PULL CABLES USING SUFFICIENT LUBRICATION PER CABLE MANUFACTURER’S RECOMMENDATIONS.
13. ALL BREAKERS SHALL HAVE TERMINALS RATED A MINIMUM OF 75°C.
14. ALL POWER CONDUCTORS FOR 480V AND BELOW SYSTEMS SHALL BE 600 VOLT RATED, STRANDED COPPER WITH TYPE THHN/THWN-2 INSULATION.
15. UNLESS SHOWN OTHERWISE, ALL LIGHTING & RECEPTACLE HOMERUNS SHALL BE 3/4" CONDUIT CONTAINING (AS A MINIMUM) (2) #12 AND (1) #12 GROUND.
16. SPARE WIRES SHALL BE TAPED AND COILED.
17. ALL WIRING (INTERNAL AND EXTERNAL) SHALL BE TAGGED AT BOTH ENDS WITH PREPRINTED WIRE MARKERS. THE CONTRACTOR SHALL SUBMIT THE WIRE MARKING CODE TO THE DISTRICT FOR ACCEPTANCE PRIOR TO THE MANUFACTURE OF THE EQUIPMENT.
18. LOCKOUT AND TAGOUT PROCEDURE SHALL BE COORDINATED WITH THE DISTRICT. LIVE/ENERGIZED WORK IS NOT ALLOWED WITHOUT PRIOR APPROVAL OF THE DISTRICT.
19. CONNECTORS FOR 480V AND BELOW RATED POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER.
20. ALL WIRING INSTALLATIONS TO FOLLOW MANUFACTURER’S INSTRUCTIONS AND RECOMMENDATIONS.
21. THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OR THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN.
22. ALL ABOVE-GROUND RACEWAYS SHALL BE GALVANIZED RIGID STEEL (GRS) CONDUIT. ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 RIGID PVC. CONDUITS TRANSITIONING FROM BELOW GRADE TO ABOVE GRADE SHALL BE PVC-COATED RIGID STEEL CONDUIT, EXTENDING A MINIMUM OF 18 INCHES ABOVE FINISHED GRADE BEFORE CONTINUING AS GALVANIZED RIGID STEEL (GRS) CONDUIT.

MODULAR PLC PROGRAMMING & TESTING

1. CONTRACTOR SHALL PROVIDE NECESSARY PROGRAMMING OF MODULAR PLC SYSTEM TO FACILITATE INCORPORATION OF ANY DISCRETE AND ANALOG I/O INSTALLED IN THIS PROJECT ALONG WITH DEVICE CONNECTED VIA COMMUNICATING CABLING (ETHERNET).
2. COORDINATE WITH DISTRICT FOR THE INCORPORATION OF MODULAR PLC I/O AND DATA INTO DISTRICT OWNED AND PROGRAMMED SCADA SYSTEM.
3. CONTRACTOR SHALL FULLY FUNCTION TEST ALL I/O AND COMMUNICATION CABLE CONNECTED DEVICES FOR PROPER OPERATION. COORDINATE WITH DISTRICT FORCES FOR ANY ADDITIONAL FUNCTION TESTING AND COMMISSIONING SUPPORT FOR INCORPORATION OF MODULAR PLC SYSTEM INTO THE OVERALL SCADA NETWORK.

GROUNDING NOTES

1. GROUND RODS FOR THIS PROJECT SHALL BE ¾” X 10’ COPPER CLAD STEEL, UNLESS NOTED OTHERWISE.
2. MULTIPLE ROD GROUNDING SYSTEMS SHALL BE CONNECTED TOGETHER WITH 4/0 BARE STRANDED COPPER CABLE. ALL BELOW GROUND CONNECTIONS SHALL BE EXOTHERMIC WELDED (CADWELD).
3. PROVIDE 1” PVC CONDUIT SLEEVES FOR GROUNDING CABLE PENETRATIONS THROUGH CONCRETE FLOORS AND/OR WALLS.
4. CONNECTING SURFACES OF STEEL AND CABLES SHALL BE THOROUGHLY CLEANED TO BRIGHTNESS AND PREPARED PRIOR TO COMPLETING THE CONNECTION.
5. LOCATION OF GROUND RODS AND GROUNDING CABLE SHOWN ON GROUNDING PLAN DRAWING IS APPROXIMATE, UNLESS LOCATED BY DIMENSIONS. FIELD DETERMINE EXACT LOCATIONS TO SUIT JOB SITE CONDITIONS AND TO AVOID OBSTRUCTIONS. BRANCH GROUNDING CABLE CONNECTION TO MAIN GROUNDING CABLE SHALL BE TEE TAP AS SHOWN IN THE CONSTRUCTION DRAWINGS. INSTALL UNDERGROUND GROUNDING CABLE, IN GENERAL, A MINIMUM TWENTY-FOUR (24) INCHES BELOW FINISHED GRADE.
6. COMPLETELY AND EFFECTIVELY GROUND ELECTRICAL EQUIPMENT AS REQUIRED BY THE NEC AND EQUIPMENT MANUFACTURER.
7. TOP OF GROUND RODS SHALL BE EMBEDDED 12” MINIMUM BELOW GRADE.
8. A GROUND CONDUCTOR SIZED PER NEC ARTICLE 250 IS REQUIRED IN ALL CONDUITS.
9. ALL CONDUITS SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR.
10. LABEL ALL CONNECTIONS AT GROUND BUSBARS, EQUIPMENT, AND TEST WELLS. APPLY METAL TAGS TO CABLES; LABELS SHALL INDICATE CABLE PURPOSE AND POINT OF TERMINATION FOR THE OPPOSITE END OF CABLE.
11. ALL REQUIRED BONDS MAY NOT BE SHOWN; PROVIDE ADDITIONAL BONDS TO ALL DEVICES, INSTRUMENTS, CABINETS, CONTROL VALVES, ETC. AS REQUIRED TO COMPLY WITH UL AND NEC.
8. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS, AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
9. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATH POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
10. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTION TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
11. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS, AND EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION, BEFORE BEING PERMANENTLY CONCEALED.
12. ALL EXISTING GROUND BARS, WIRES, AND CONNECTIONS SHALL BE FIELD VERIFIED. ANY DEFICIENT ITEMS SHALL BE REPLACED AS REQUIRED TO ACHIEVE ADEQUATE GROUNDING REQUIRED
13. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
14. ALL STEEL STRUCTURES AND ALL MISCELLANEOUS STEEL, INCLUDING LIGHT FRAMEWORK, STEEL SUPPORT STRUCTURES, AND METAL BUILDINGS, SHALL BE SOLIDLY CONNECTED TO THE EXISTING GROUNDING ELECTRODE SYSTEM WITH 4/0 BARE COPPER GROUND CABLE.

FIELD SERVICES & TRAINING

1. UPON REQUEST AND CONFIRMATION OF DISTRICT, CONTRACTOR SHALL COORDINATE WITH VENDORS TO PROVIDE MANUFACTURER’S FIELD SERVICES AND OPERATOR TRAINING FOR UP TO ONE (1) 2-HOUR SESSION UPON COMPLETION OF START-UP AND COMMISSIONING.
2. THE TRAINING DATE SHALL BE SELECTED BY THE DISTRICT. THE CONTRACTOR SHALL PROVIDE WRITTEN CONFIRMATION TO THE DISTRICT AT LEAST TWO (2) WEEKS BEFORE THE TRAINING IS HELD. AT THE SAME TIME, THE CONTRACTOR SHALL SUBMIT A TRAINING AGENDA, SPECIFIC TO THE PROJECT AND THE APPLICABLE SECTION. THE AGENDA SHALL INCLUDE A DETAILED COURSE OVERVIEW, COURSE OBJECTIVES, A COURSE OUTLINE, AND THE ESTIMATED DURATION OF EACH TOPIC.
3. CONTRACTOR SHALL ARRANGE FOR AND SECURE A VIDEOGRAPHER TO DIGITALLY RECORD AND PROFESSIONALLY EDIT THE TRAINING SESSION FOR EACH INSTALLED EQUIPMENT, SYSTEM, AND FACILITY. FINALIZED VIDEOS SHALL BE PROVIDED IN MP4 FORMAT BY ELECTRONIC TRANSFER.
4. THE TRAINING SHALL INCLUDE, BUT IS NOT LIMITED TO, THE GENERATOR, SWITCHBOARD, ATS, CONTROL PANEL, AND ASSOCIATED EQUIPMENT. IT SHALL ALSO PROVIDE A THOROUGH REVIEW OF THE FINAL APPROVED O&M MANUAL, DRAWINGS, AND DIAGRAMS (E.G., CONTROL WIRING), WITH TOPICS SPECIFICALLY ADDRESSING THE MAINTENANCE AND OPERATION OF ALL APPLICABLE EQUIPMENT, SYSTEMS, AND FACILITIES.

ELECTRICAL TESTING REQUIREMENTS

GENERAL FIELD TESTING

1. INSTALLATION OF THE ELECTRICAL EQUIPMENT SHALL BE COMPLETE AND THE ENGINE-GENERATOR PACKAGE SYSTEM SHALL BE SERVICED, ADJUSTED, AND READY FOR USE BEFORE THE FIELD TESTS ARE SCHEDULED.
2. REPAIRS AND ADJUSTMENTS SHALL BE MADE BY THE CONTRACTOR AS REQUIRED TO ACHIEVE SATISFACTORY PERFORMANCE OF THE ELECTRICAL EQUIPMENT. IF REPAIRS OR ADJUSTMENTS ARE MADE DURING THE TESTS, ADDITIONAL TESTING SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE DISTRICT.
3. RECORDS OF THE TESTS SHALL BE MADE BY THE CONTRACTOR, AND COPIES OF THE TEST RECORDS SHALL BE SUBMITTED TO THE ENGINEER.
4. THE CONTRACTOR SHALL SUBMIT DETAILED FIELD TEST PROCEDURES TO THE ENGINEER FOR REVIEW. TESTS SHALL NOT BEGIN UNTIL THE ENGINEER HAS APPROVED THE TEST PROCEDURES.
5. THE SUPPLIER SHALL PROVIDE ALL LABOR, TOOLS, TEST EQUIPMENT, SOFTWARE, FUEL, LABOR, MATERIAL AND TECHNICAL SUPERVISION TO PERFORM THE FIELD TESTING UNDER THIS TESTING REQUIREMENT SECTION, UNLESS SPECIFICALLY NOTED OTHERWISE.
6. THE ONSITE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND TERMINATING FIELD WIRING AND COMMUNICATION CABLE(S) TO THE EQUIPMENT SUPPLIED UNDER THIS CONTRACT FROM FIELD DEVICES AND OTHER EQUIPMENT. THE SUPPLIER FIELD TECHNICIANS SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR AND HIS ONSITE TESTING AGENCY IN VERIFYING PROPER INPUT, REGISTRATION, AND SCALING OF ALL HARDWIRED I/O TO THE CONTROL PANEL.
7. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A RECOGNIZED TESTING SERVICE AGENCY FOR THE PURPOSE OF PERFORMING INSPECTIONS AND TESTS FOR EQUIPMENT SAFETY AND OPERABILITY, AND FUNCTIONALLY VERIFY THE CONTROL SYSTEM OPERATES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
8. THE INTENT OF THESE TESTS IS TO ASSURE THAT ALL ELECTRICAL EQUIPMENT INSTALLED BY THE CONTRACTOR UNDER THIS CONTRACT IS OPERATIONAL WITHIN INDUSTRY AND MANUFACTURER'S TOLERANCES AND TO FUNCTIONALLY TEST ALL NEW SYSTEMS AND THEIR INTEGRATION WITH EXISTING SYSTEMS, WHICH INCLUDES ALL NEW EQUIPMENT INTERFACING WITH THE EXISTING AUTOMATIC TRANSFER SWITCH AND EXISTING SCADA SYSTEM. NEW EQUIPMENT TO BE TESTED INCLUDE THE NEW SWITCHBOARD (SWBD-01), NEW AUTOMATIC TRANSFER SWITCH (ATS-01) AND EMERGENCY GENERATOR (EGEN-01), AND NEW CONTROL PANEL (CPNL-01) WITH PLC (PLC-01).
9. CONTRACTOR SHALL SUBMIT PROOF OF TESTING SERVICE AGENCY'S QUALIFICATIONS TO DISTRICT FOR APPROVAL.
10. THE CONTRACTOR AND THE ELECTRICAL TESTING SERVICE AGENCY SHALL RESOLVE ANY DEFICIENCIES AND RETEST IN A TIMELY MANNER TO FACILITATE THE PROJECT START-UP AND OPERATION.
11. THE CONTRACTOR SHALL PERFORM ROUTINE INSULATION RESISTANCE, CONTINUITY, AND ROTATION TESTS FOR ALL DISTRIBUTION AND UTILIZATION EQUIPMENT.
12. ANY SYSTEM MATERIAL OR WORKMANSHIP WHICH IS FOUND DEFECTIVE ON THE BASIS OF ELECTRICAL TESTS SHALL BE REPLACED AND RETESTED AT NO ADDITIONAL COST TO THE DISTRICT.
13. THE TESTING SERVICE SHALL MAINTAIN A WRITTEN RECORD OF ALL TESTS AND UPON COMPLETION OF THE PROJECT, AND ASSEMBLE AND CERTIFY A FINAL TEST REPORT.
14. THE INSPECTIONS AND TESTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING APPLICABLE CODES AND STANDARDS FOR THE GENERATOR, SWITCHBOARD AND COMPONENTS WITHIN, ATS, LOW-VOLTAGE CABLING, AND COMMUNICATION CABLING. INCLUDE ALL REQUIRED AND OPTIONAL TESTS AS THEY APPLY TO THE STANDARDS. THE TESTING STANDARDS ARE AS FOLLOWS:
    - 14.1. INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA), ATS-2003 ACCEPTANCE TESTING SPECIFICATIONS FOR ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND SYSTEMS.
    - 14.2. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION - NEMA
    - 14.3. AMERICAN SOCIETY FOR TESTING AND MATERIALS - ASTM
    - 14.4. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS - IEEE
    - 14.5. AMERICAN NATIONAL STANDARDS INSTITUTE - ANSI
    - 14.6. STATE AND LOCAL CODES AND ORDINANCES
    - 14.7. INSULATED CABLE ENGINEERS ASSOCIATION - ICEA
    - 14.8. OSHA PART 1910; SUBPART S, 1910.308
    - 14.9. NATIONAL FIRE PROTECTION ASSOCIATION - NFPA

ELECTRICAL TESTING REQUIREMENTS (CONTINUED)

ON-SITE GENERATOR / ATS / LOAD BANK TESTING REQUIREMENTS

- ELECTRICAL TESTING CANNOT BEGIN UNTIL DISTRICT COMPLETES ALL WIRING AND PROGRAMMING FOR INTEGRATION OF NEW EQUIPMENT AND DEVICES INTO SCADA. CONTRACTOR SHALL COORDINATE WITH THE DISTRICT OVER THE TESTING SCHEDULING.
- ON UTILITY POWER, BRING ALL LOADS TO MAX SPEEDS/FLOWS.
- SIMULATE LOSS OF UTILITY BY TRIPPING SWITCHBOARD (SWBD-01) 1000A-3P MAIN BREAKER.
- OBSERVE ATS-01 SWITCH TO EMERGENCY AND EGEN-01 STARTUP.
- OBSERVE EGEN-01 CAPABLE OF STARTING ALL LOADS AT MAX SPEEDS/FLOWS.
- WAIT 2-HOURS WITH EMERGENCY POWER RUNNING.
- SIMULATE RETURN OF UTILITY POWER BY CLOSING SWITCHBOARD (SWBD-01) 1000A-3P MAIN BREAKER.
- OBSERVE ATS-01 TRANSFER BACK TO NORMAL AFTER SOME TIME DELAY.
- OBSERVE ATS-01 RUNNING EGEN-01 FOR X MINUTES OF "COOL DOWN".
- DURING THE TEST, OBSERVE EGEN-01 POWER OUTPUT ON EGEN-01 CONTROLLER DISPLAY AND VERIFY COMMUNICATION SIGNALS PRESENT AT SCADA. ALSO, VERIFY EXISTING SCADA DFS RECEIVES STATUS OF ATS-01 IN EMERGENCY. VERIFY ALL HARDWIRE AND COMMUNICATION CABLE I/O ADDED PER THIS CONTRACT IS AVAILABLE IN EXISTING SCADA SYSTEM. THIS INCLUDES YORK CHILLER, UV PANEL, FILTRATION PANEL, ATS-02, EGEN-02, ATS-01, EGEN-01, AND LB-01 I/O. PROGRAMMING OF EXISTING SCADA SYSTEM FOR INTEGRATION OF THESE I/O TO BE BY OTHERS IN COORDINATION WITH THE CONTRACTOR.
- SIMULATE NEW ATS-01/EGEN-01 FAILED/UNAVAILABLE BY OPENING NEW EGEN-01 BREAKER. SIMULATE LOSS OF PRIMARY EMERGENCY POWER BY OPENING EGEN-01 800A-3P MAIN BREAKER. OBSERVE AFTER GENERATOR SUPPLIER COORDINATED TIME DELAY THE TRANSITION TO EMERGENCY AND STARTING OF EXISTING ATS-02/EGEN-02 FOR YORK CHILLER. AFTER VERIFICATION OF ATS-02/EGEN-02 OPERATION, SIMULATE RETURN OF ATS-01/EGEN-01 BY CLOSING EGEN-01 800A-3P BREAKER. OBSERVE ATS-01 TRANSFER TO EGEN-01, OBSERVE ATS-02 TRANSFER TO 'NORMAL'. RETURN TO UTILITY BY CLOSING SWITCHBOARD (SWBD-01) 1000A-3P MAIN BREAKER.
- TEST THE LOAD BANK FOR EGEN-01 AT BELOW 30% OF THE GENERATOR'S FULL LOAD AND ABOVE 30% TO VERIFY ITS OPERATION. WHEN THE GENERATOR OPERATES BELOW 30% OF ITS FULL LOAD, THE LOAD BANK SHALL MAINTAIN A MINIMUM OF 30% LOAD ON THE GENERATOR. WHEN THE GENERATOR OPERATES ABOVE 30% LOAD, THE LOAD BANK SHALL NOT OPERATE. ALL LOAD BANK STEPS SHALL BE TESTED.
- TEST ALL EXISTING EQUIPMENT CONNECTED TO THE NEW SWITCHBOARD (SWBD-01) FOR FULL OPERATION.

START-UP TESTING

THE SUPPLIER SHALL PERFORM THOROUGH START-UP TESTING IN COORDINATION WITH THE DISTRICT. THE DESIGNATED SUPPLIER COMMISSIONING ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTAL OF TEST PROCEDURES, TEST SCHEDULING AND COORDINATION, AND DOCUMENTATION AND SUBMITTAL OF TEST RESULTS. START-UP TESTS SHALL INCLUDE:

A. POINT-TO-POINT WIRE CHECKING OF ALL PLC INPUT/OUTPUT CIRCUITS.

B. VERIFICATION OF PROPER FUNCTIONING OF ALL ANALOG I/O LOOPS.

C. VERIFY PROPER REGISTRATION, FUNCTIONING, AND DISPLAY/LOGGING OF ALL ALARMS.

D. WITH ALL OUTPUTS DISABLED, MANUALLY ACTIVATE EACH INPUT DEVICE AND CHECK FOR STATUS CHANGE AT THE APPROPRIATE INPUT POINT.

E. WITHOUT CAUSING ANY UNDESIRABLE ACTIONS TO OCCUR, USE “FORCING” TO VERIFY THAT EACH DISCRETE AND ANALOG OUTPUT IS PROPERLY ADDRESSED AND WIRED.

F. VERIFY PROPER COMMUNICATION, DATA EXCHANGE, AND CONTROL FUNCTIONALITY WITH OTHER ONSITE PLCS AND SCADA SYSTEMS. PROGRAMMING OF THESE OTHER SYSTEMS FOR TRANSMISSION/RECEPTION OF DATA, SET-POINTS AND CONTROL FUNCTIONALITY WILL BE BY OTHERS. SUPPLIER SHALL COOPERATE IN THE VERIFICATION OF END-TO-END FUNCTIONALITY AND INTEGRATION OF THESE SYSTEMS.

G. VERIFY PROPER OPERATION OF CONTROL SYSTEM TO LOSS OF COMMUNICATION AND DETECTION, ALARMING, AND RECOVERY FROM COMMUNICATION FAILURE.

H. SCHEDULE AND PERFORM DEMONSTRATION TESTING OF ALL I/O TO BE WITNESSED BY DESIGNATED DISTRICT’S REPRESENTATIVE.

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NO.	DATE	REVISION	BY	REC.	APP.

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6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — No. 20418 — Lic. EXPIRES: 09/30/2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
SR. PROJ ENGR. R.P.E. NO.: 20418	
APPROVED: KOOSHA TOOFAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ELECTRICAL PROJECT NOTES

PROJ NO.: MOK26-01	100-Z-011.3	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

SPEC NO.2197

FIELD QUALITY CONTROL FOR WIRE/CABLE INSTALL

AFTER INSTALLING CONDUCTORS AND CABLES AND BEFORE ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, PERFORM THE FOLLOWING VISUAL AND MECHANICAL INSPECTIONS:

- VERIFY CABLES AND CONDUCTORS COMPLY WITH THE CONTRACT DOCUMENTS.
- VERIFY CABLES AND CONDUCTORS ARE BRACED FOR SHORT CIRCUIT STRESSES WHERE SPECIFIED.
- VERIFY CABLES AND CONDUCTORS ARE CORRECTLY IDENTIFIED AT EACH TERMINATION, SPLICE, AND TAP WHERE APPLICABLE.
- VERIFY CORRECT PHASE ROTATION IS MAINTAINED THROUGHOUT PROJECT.
- INSPECT ALL EXPOSED SECTIONS OF CABLES AND CONDUCTORS FOR PHYSICAL DAMAGE AND CORRECT CONNECTION.
- INSPECT ALL BOLTED AND COMPRESSION CONNECTIONS.
- VERIFY PHASE IDENTIFICATION IS A, B, C, LEFT TO RIGHT, FRONT TO BACK AND TOP TO BOTTOM. IF CORRECTIONS ARE REQUIRED CHANGE FEEDER AND BRANCH CIRCUIT IDENTIFICATION AT EACH END OF CIRCUIT SO THAT CORRECT PHASE IDENTIFICATION IS MAINTAINED THROUGHOUT THE PROJECT. IF INCORRECT IDENTIFICATION IS NOTED ON EXISTING SYSTEMS NOTIFY THE ENGINEER AND DISTRICT FOR ACTION TO BE TAKEN.

DATA & COMMUNICATION CABLE

1. DATA AND COMMUNICATION CABLES SHALL BE USED FOR DATA EXCHANGE THROUGHOUT THE WORK. MAJOR CATEGORIES AND TYPES OF DATA AND COMMUNICATION CABLES ARE LISTED BELOW IN NOTE #2. ADDITIONAL SPECIAL CABLES IN COMPLIANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND THE REQUIREMENTS OF THE WORK SHALL BE PROVIDED AS NECESSARY.
2. CATEGORY 6A ETHERNET CABLE SHALL CONSIST OF FOUR (4) TWISTED PAIRS OF #23 AWG SOLID BARE COPPER CONDUCTORS WITH POLYOLEFIN INSULATION. CABLE SHALL INCLUDE AN OVERALL ALUMINUM/POLYESTER FOIL SHIELD WITH DRAIN WIRE, GEL-FILLED WATER BLOCKING, AND UV-RESISTANT POLYOLEFIN OUTER JACKET SUITABLE FOR OUTSIDE PLANT (OSP) APPLICATIONS. CABLE SHALL BE BELDEN OSP6AF OR APPROVED EQUAL.

FIBER OPTIC CABLE

1. FIBER OPTIC CABLE IN DUCT: FIBER CABLE SHALL BE OF THE HEAVY-DUTY, LOOSE-TUBE TYPE, INTENDED FOR OUTDOOR USE IN DIRECT BURIAL, DUCT, CABLE TRAY, OR AERIAL APPLICATIONS. CABLE SHALL BE DOUBLE-JACKETED WITH AN OUTER AND INNER MDPE JACKET SEPARATED BY A FIBERGLASS STRENGTH MEMBER. FIBER COUNT SHALL BE SIX (6) MULTIMODE, 62.5MM OPTICAL FIBERS PER CABLE. FIBER SHALL BE INSTALLED IN 2.5M DIAMETER, GEL-FILLED BUFFER TUBES. BUFFER TUBES SHALL BE GROUPED SYMMETRICALLY AROUND A DIELECTRIC CENTRAL STRENGTH MEMBER AND SURROUNDED BY A WATER BLOCKING AGENT. CABLE SHALL BE SUITABLE FOR A MAXIMUM 600LB INSTALLATION TENSION. FIBER OPTIC CABLE OPERATING TEMPERATURE RANGE SHALL BE -40°C TO +80°C.
2. THE FIBER OPTIC CABLE SHALL MEET THE FOLLOWING SPECIFICATIONS AT 850NM AND 1300NM WAVELENGTHS. AT 850NM, THE MAXIMUM ATTENUATION SHALL NOT EXCEED 3.5DB/KM, WITH A MINIMUM BANDWIDTH OF 220MHZ-KM AND A MAXIMUM GIGABIT TRANSMISSION DISTANCE OF 300 METERS. AT 1300NM, THE MAXIMUM ATTENUATION SHALL NOT EXCEED 1.0DB/KM, WITH A MINIMUM BANDWIDTH OF 600MHZ-KM AND A MAXIMUM GIGABIT TRANSMISSION DISTANCE OF 550 METERS.

SWITCHBOARD (SWBD-01) NOTES

1. SWITCHBOARD: BASIS OF DESIGN SHALL BE EATON POW-R-LINE XPERT SWITCHBOARD, OR APPROVED EQUAL. SWITCHBOARD SHALL BE FRONT ACCESS / FRONT AND REAR ALIGNMENT, TYPE 3R (NON-WALK-IN) FLAT ROOF, 480Y/277V, 3-PHASE, 4-WIRE. BUS SHALL BE 1200A SILVER-PLATED COPPER. MINIMUM INTERRUPTING RATING SHALL BE 65 kAIC. BUS BRACING RATING SHALL BE 65 kA.
2. 1000A UTILITY METERING - PACIFIC GAS & ELECTRIC (PG&E).
3. SWITCHBOARD SHALL BE NEMA 3R OUTDOOR TYPE, FREE-STANDING, FRONT ACCESSIBLE, AND FRONT AND REAR ALIGNED WITH DEPTH AS SHOWN ON THE DRAWINGS. SIDE ACCESS SHALL NOT BE REQUIRED. ALL CONNECTIONS, LOAD TERMINATIONS, AND BUS MAINTENANCE SHALL BE ACCESSIBLE FROM THE FRONT OR THE TOP. ALL PROTECTIVE DEVICES SHALL BE GROUP-MOUNTED, FRONT REMOVABLE, AND ARRANGED TO PERMIT AGAINST-THE-WALL MOUNTING.
4. MAIN CIRCUIT BREAKER SHALL BE CAPABLE OF BEING RACKED IN OR OUT WITH THE COMPARTMENT DOOR CLOSED. A MECHANICAL INDICATOR SHALL BE PROVIDED ON THE DRAWOUT CASSETTE TO SHOW BREAKER POSITION STATUS AS EITHER "CONNECTED," "TEST," OR "DISCONNECTED."
5. MAIN CIRCUIT BREAKER SHALL BE ELECTRICALLY OPERATED AT 120VAC FROM THE CONTROL POWER TRANSFORMER INTERNAL TO THE SWITCHGEAR ASSEMBLY. BREAKER OPERATING MECHANISM SHALL BE ELECTRICALLY CHARGED, STORED ENERGY TYPE. CHARGING MOTOR SHALL INCLUDE A LIMIT SWITCH FEATURE AND AN ANTI-PUMP RELAY. MAKE PROVISIONS FOR MANUAL CHARGING OF THE MECHANISM AND FOR SLOW CLOSING OF THE CONTACTS FOR INSPECTION AND ADJUSTMENT.
6. A MANUFACTURER'S PLAQUE SHALL BE FASTENED TO THE FRONT OF THE SWITCBOARD. THE PLAQUE SHALL INDICATE MODEL NUMBER, SERIAL NUMBER, AMPERES, VOLTS, SHORT CIRCUIT RATING, ETC.
7. PROVIDE INTERIOR LED LIGHTS AND LIGHT SWITCH. POWER FOR THE SPACE HEATERS AND LIGHTS SHALL BE OBTAINED FROM THE CONTROL POWER TRANSFORMER WITHIN THE SWITCHBOARD.
8. PRIOR TO FABRICATION, SUBMIT THE FOLLOWING TO THE ENGINEER FOR APPROVAL: SHOP DRAWINGS OF THE PROPOSED EQUIPMENT DEMONSTRATING COMPLIANCE WITH THIS SPECIFICATION AND PG&E'S SERVICE REQUIREMENTS ("GREEN BOOK") FOR ELECTRIC SWITCHBOARDS: 0 THROUGH 600 VOLTS. THE ENGINEER WILL SUBMIT THESE SHOP DRAWINGS TO PG&E FOR APPROVAL. DRAWINGS SHALL INCLUDE THE DISTRICT'S NAME AND JOB LOCATION. UNDER NO CIRCUMSTANCES SHALL MANUFACTURING PROCEED WITHOUT BOTH PG&E AND ENGINEER APPROVAL OF THIS SUBMITTAL.

   EQUIPMENT SUBMITTALS SHALL ALSO INCLUDE ELEVATION AND PLAN VIEWS, COMPARTMENT ARRANGEMENTS, DIMENSIONS, WEIGHTS, SHIPPING SPLITS, AND METERING LAYOUTS. PROVIDE SINGLE-LINE DIAGRAMS AND POINT-TO-POINT COMPARTMENT WIRING DIAGRAMS FOR METERING, RELAY, AND CONTROL CIRCUITS, WITH WIRE AND TERMINAL NUMBERS CLEARLY INDICATED. INCLUDE DETAILS OF BUS MATERIALS, RATINGS, AND INSULATION. PRODUCT DATA SHEETS AND CATALOG NUMBERS SHALL BE SUBMITTED FOR CIRCUIT BREAKERS AND FINGER-SAFE FUSE SWITCHES USED IN CONTROL CIRCUITS, LISTING ALL OPTIONS, TRIP ADJUSTMENTS, AND ACCESSORIES FURNISHED SPECIFICALLY FOR THIS PROJECT. TIME-CURRENT CHARACTERISTIC CURVES FOR EACH PROTECTIVE DEVICE PROVIDED SHALL ALSO BE SUBMITTED. AN ITEMIZED BILL OF MATERIALS SHALL BE INCLUDED FOR ALL METERING, ACCESSORIES, AND CONTROL EQUIPMENT. SUBMITTAL TO INCLUDE WARRANTY AND MAINTENANCE INFORMATION.

   PRIOR TO DELIVERY, SUBMIT ANCHORING CALCULATIONS AND CERTIFICATION THAT THE SWITCHGEAR HAS BEEN DESIGNED AND CONSTRUCTED TO WITHSTAND SEISMIC FORCES, IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.

EMERGENCY GENERATOR (EGEN-01) NOTES

1. THE ENGINE GENERATOR UNIT SHALL BE DELIVERED INCLUDING UNLOADING AS APPLICABLE TO THE SITE.
2. GENERATOR ACCESSORIES INCLUDE BATTERIES, BATTERY CHARGER, BLOCK HEATER, THERMOSTATICALLY CONTROLLED STRIP HEATER, OUTPUT TERMINAL BOX, 100% RATED 480V 3-POLE 65KAIC SOLID STATE LSIG CIRCUIT BREAKER, CRITICAL SILENCER, FAILURE AND RUN RELAY, AIR CLEANER INDICATOR, AND GOVERNOR ELECTRONIC-SPEED CONTROL.
3. THE UL 2200 STATIONARY ENGINE GENERATOR SET SHALL BE SUPPLIED WITH ROOF MOUNTED LOAD BANK AND AUTOMATIC CONTROLLER. THE LOAD BANK SHALL BE RATED FOR 50% GENERATOR OUTPUT CAPACITY AND SHALL BE CAPABLE OF SWITCHING RESISTIVE ELEMENTS ACCORDING TO THE GENERATOR OUTPUT, IN A MINIMUM OF FIVE (5) STEPS. THE LOAD BANK SHALL BE COMPRISED OF RESISTIVE ELEMENTS AND CONTACTORS TO ACHIEVE ITS SWITCHING STAGES.
4. THE LOAD BANK SHALL BE SUPPLIED AND INSTALLED BY THE FACTORY OR DEALER, REMOVED FOR SHIPPING, AND REINSTALLED AT JOB SITE BY CONTRACTOR. THE GENERATOR SET SHALL BE SUPPLIED WITH A SOUND ATTENUATED WEATHERPROOF ENCLOSURE, PROVIDING A SOUND LEVEL OF 75 DB(A) WHILE THE GENERATOR IS OPERATING AT 100% LOAD AT 7 METERS (23 FEET).
5. LOAD BANK SHALL BE CONFIGURED TO MAINTAIN MINIMUM 30% LOAD ON GENERATOR IN ALL OPERATION SCENARIOS.
6. LOAD BANK SHALL BE CONSTRUCTED FROM GALVANIZED STEEL, FORMED INTO A RIGID ENCLOSURE MATCHING THE HEIGHT AND WIDTH OF THE ENGINE RADIATOR OR DUCT, AND DESIGNED FOR NEMA 3R OUTDOOR CONSTRUCTION, WITH LIFTING EYES AND RADIATOR DUCT FLANGES PROVIDED FOR COMPLETE INSTALLATION. RESISTIVE LOAD ELEMENTS SHALL BE FABRICATED FROM CORROSION-RESISTANT MATERIALS SUCH AS CHROMIUM ALLOY WIRE AND SHALL BE SUITABLE FOR OPERATION ACROSS THE FULL RANGE OF OUTPUT TEMPERATURES FROM THE DIESEL ENGINE DRIVEN GENERATOR SYSTEM, WITH LOAD STEPS PROVIDED AT 50 KW INTERVALS FROM NO LOAD TO FULL LOAD. LOAD BANK SHALL BE FULLY COOLED BY THE DIESEL ENGINE RADIATOR FAN COOLING AIR, WITH NO ADDITIONAL COOLING SYSTEMS REQUIRED FOR PROPER OPERATION.
7. CONTRACTOR SHALL SUBMIT ALL REQUIRED APPLICATIONS AND PAY ALL ASSOCIATED FEES FOR THE GENERATOR ENGINE PERMITS, TO THE GOVERNING AIR QUALITY BOARD AFTER APPROVAL OF THE GENERATOR SUBMITTAL(S) BY EBMUD. PERMIT APPROVAL ALLOWS FOR GENERATOR PROCUREMENT AND CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF THE ENGINE GENERATOR, RELATED FUEL STORAGE SYSTEMS, LOAD BANK, AND SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAYING ALL FEES ASSOCIATED WITH THE INSTALLATION, INCLUDING THE AIR QUALITY PERMIT. UPON PERMIT APPROVAL, THE CONTRACTOR SHALL INSTALL THE ENGINE-GENERATOR SET IN COMPLIANCE WITH CONDITIONS IN THE PERMITS, AND THEREAFTER, OBTAIN FIELD APPROVAL FROM THE LOCAL AIR QUALITY MANAGEMENT DISTRICT INSPECTOR.
9. SUPPLY GENERATOR WITH OPTIONAL INPUT EXPANSION MODULE, OUTPUT EXPANSION MODULE, AND REMOTE ANNUNCIATOR MODULE.
10. GENERATOR SHALL BE TIER 4 FINAL RATED.
11. GENERATOR: BASIS OF DESIGN SHALL BE CATERPILLAR MODEL D350DC DIESEL ENGINE DRIVEN GENERATOR SET WITH C18 ENGINE, OR APPROVED EQUAL. GENERATOR SHALL BE RATED 480V, 3-PHASE, 60 HZ, 500 KW / 625 KVA. GENERATOR SET SHALL MEET ALL SPECIFIED ELECTRICAL RATINGS, EMISSIONS REQUIREMENTS, AND ACCESSORIES INDICATED IN THE CONTRACT DOCUMENTS.
12. THE DIESEL ENGINE DRIVEN GENERATOR SET MANUFACTURER'S AND DEALER'S STANDARD WARRANTY SHALL IN NO EVENT BE FOR A PERIOD OF LESS THAN TWO (2) YEARS FROM DATE OF INITIAL START-UP OF THE SYSTEM OR 2500 OPERATING HOURS, WHICHEVER COMES FIRST. IT SHALL INCLUDE REPAIR LABOR, REASONABLE TRAVEL EXPENSE NECESSARY FOR REPAIRS AT THE JOBSITE, AND EXPENDABLES (LUBRICATING OIL, FILTERS, ANTIFREEZE, AND OTHER SERVICE ITEMS MADE UNUSABLE BY THE DEFECT) USED DURING THE COURSE OF REPAIR. SUBMITTALS RECEIVED WITHOUT WRITTEN WARRANTIES AS SPECIFIED WILL BE REJECTED IN THEIR ENTIRETY.
13. EXHAUST SILENCERS AND EXHAUST PIPING SHALL BE INSULATED WITH HIGH TEMPERATURE INSULATION BLANKETS CONSISTING OF A WOVEN 300 SERIES STAINLESS STEEL WIRE MESH LINER, TYPE E FIBERGLASS INSULATION (MIL SPEC MIL-I-16411-E), AND A COLD FACE OF FLEXIBLE SILICONE-IMPREGNATED FIBERGLASS CLOTH. BLANKETS SHALL BE 1 INCH THICK WITH A MINIMUM DENSITY OF 11.3 LBS/CU. FT., AND SHALL BE CUSTOM FITTED TO TIGHTLY COVER PIPE, FLANGES, FLEXIBLE CONNECTORS, AND EXHAUST SILENCERS. ALL EDGES OF THE COLD FACE CLOTH SHALL BE MACHINE STITCHED WITH PERMANENTLY MOUNTED STAINLESS STEEL HOOKS, AND BLANKETS SHALL BE LACED IN PLACE WITH STAINLESS STEEL TIE WIRE, DESIGNED TO BE READILY REMOVABLE FOR EQUIPMENT MAINTENANCE. ACCEPTABLE MANUFACTURERS INCLUDE ADVANCED THERMAL PRODUCTS, INC. (TYPE D FILOMAT) AND PLANT INSULATION CO., EMERYVILLE, CA (HARMAT 11.3#/1200F), OR EQUAL AS APPROVED BY THE ENGINEER.
14. PROVIDE SENSORS AND ANNUNCIATOR PANEL TO INDICATE AND ALARM THE FOLLOWING ENGINE MALFUNCTIONS, AND SHUT DOWN THE ENGINE ON FAILURE OF FUNCTIONS NOTED:
    - HIGH WATER TEMPERATURE
    - LOW WATER TEMPERATURE
    - LOW FUEL
    - LOW OIL PRESSURE
    - OVERSPEED
    - RUNNING
    - FAIL TO START
    - EMERGENCY SHUTDOWN
    - BATTERY CHARGER

EMERGENCY GENERATOR (EGEN-01) NOTES (CONTINUED)

15. THE SUBMITTAL SHALL SHOW ALL WIRING, INCLUDING BOTH SCHEMATIC AND TERMINAL DIAGRAMS, AS WELL AS INTERCONNECTION WIRING OF THE ENGINE AND GENERATOR. A SCALED DRAWING SHALL BE SUBMITTED FOR APPROVAL SHOWING ALL DETAILS OF THE ENGINE GENERATOR, SUPPORT BASE AND MOUNTING, FUEL TANK, SILENCER, CIRCUIT BREAKER, LOAD BANK, CONTROLLER, BATTERY, CHARGER, AND CONTROL PANEL.

    THE SUBMITTAL SHALL ALSO INCLUDE PRODUCT DATA SUCH AS PROTOTYPE TEST CERTIFICATION AND A SPECIFICATION SHEET IDENTIFYING ALL STANDARD AND OPTIONAL ACCESSORIES TO BE SUPPLIED. PROVIDE A SCHEMATIC WIRING DIAGRAM, DIMENSIONAL PLAN AND ELEVATION DRAWING, AND AN INTERCONNECTION DIAGRAM THAT CLEARLY IDENTIFIES BY TERMINAL NUMBER EACH REQUIRED INTERCONNECTION BETWEEN THE GENERATOR SET AND THE TRANSFER SWITCH.

    IN ADDITION, THE SUBMITTAL SHALL INCLUDE A CERTIFICATE VERIFYING THAT THE GENERATOR SET IS LISTED TO UL 2200 OR HAS BEEN SUBMITTED TO AN INDEPENDENT THIRD-PARTY CERTIFICATION PROCESS FOR COMPLIANCE AS INSTALLED, INCLUDING VERIFICATION OF AIR BOARD EMISSIONS WITHIN THE APPLICABLE JURISDICTION. A FACTORY TEST AND EVALUATION REPORT, MANUFACTURER'S INSTALLATION AND OPERATING INSTRUCTIONS, SOURCE QUALITY CONTROL DOCUMENTATION, AND ANY REQUIRED FIELD OR SITE QUALITY CONTROL REPORT SHALL ALSO BE SUBMITTED. A MANUFACTURER'S REPORT, SPECIAL PROCEDURE SUBMITTAL, AND QUALIFICATION STATEMENT SHALL BE PROVIDED FOR REVIEW AS APPLICABLE.

PG&E COORDINATION NOTES

1. PRIOR TO THE START OF ANY WORK, THE CONTRACTOR SHALL ATTEND THE PRE-CONSTRUCTION MEETING WITH PG&E AND THE DISTRICT TO REVIEW AND CONFIRM THE DELINEATION OF WORK SCOPE BETWEEN THE CONTRACTOR AND PG&E, PG&E REQUIREMENTS, AS WELL AS TO DISCUSS THE REQUIRED DOWNTIMES FOR PG&E TO COMPLETE THEIR DEMOLITION AND INSTALLATION WORK.
2. THE CONTRACTOR SHALL EXTEND THE THREE (3) 5" PG&E T-13680 TRANSFORMER SECONDARY CONDUITS FROM THEIR EXISTING STUB-OUT LOCATION IN THE EXISTING SWITCHBOARD INCOMING SECTION TO THE NEW SWITCHBOARD LOCATION, IN ACCORDANCE WITH PG&E ENGINEERING DRAWINGS.
3. THE CONTRACTOR SHALL PROVIDE A SOIL COMPACTION REPORT AT THE NEW SWITCHBOARD (SWBD-01) LOCATION. THE CONTRACTOR SHALL COORDINATE WITH PG&E PRIOR TO POURING THE NEW EQUIPMENT PAD AND CONFIRM ALL SOIL REPORT REQUIREMENTS ARE ACCEPTABLE AND APPROVED BY PG&E.
4. THE NEW FOUNDATION PAD SHALL EXTEND A MINIMUM OF 48" IN FRONT OF THE ELECTRIC METER SECTION, AS SHOWN ON STRUCTURAL SHEET 100-S-040.
5. THE CONTRACTOR SHALL COORDINATE WITH PG&E TO INSPECT AND APPROVE THE NEW SERVICE CONDUIT INSTALLATION PRIOR TO BACKFILLING THE TRENCH.
6. PG&E WILL PERFORM THE FOLLOWING IN TWO PHASES:

   PHASE 1: DISCONNECT AND REMOVE EXISTING SERVICE CONDUCTORS AND REMOVE THE CT AND ELECTRIC METER.

   PHASE 2: PULL AND TERMINATE NEW CONDUCTORS FROM TRANSFORMER T-13680 TO THE NEW SWITCHBOARD (SWBD-01), AFTER THE CONTRACTOR HAS COMPLETED THE NEW CONDUIT INSTALLATION.

EMERGENCY GENERATOR (EGEN-01) STRUCTURAL NOTES

1. GENERATOR
   - 1.1. GENERATOR DRY WEIGHT: 16,343 LBS (INCLUDES GENSET, SOUND ENCLOSURE, SUB-BASE FUEL TANK, FUEL AND MISCELLANEOUS PARTS, e.g., CIRCUIT BREAKER).
   - 1.2. FUEL TANK TOTAL CAPACITY 700 GALLONS x 7.2 LBS/GALLON = 5040 LBS.
   - 1.3. LOAD BANK: 250 LBS
   - 1.4. TOTAL WEIGHT: 21,650 LBS.
2. DESIGN CODES:
   - 2.1. CALIFORNIA BUILDING CODE 2022
   - 2.2. ACI 318-19
3. EARTHQUAKE DESIGN DATA:
   - 3.1. RISK CATEGORY: II.
   - 3.2. SEISMIC IMPORTANCE FACTOR I/e: 1.0.
   - 3.3. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS, SS= 0.51 AND S1 =0.2.
   - 3.4. SITE SOIL CLASS: D.
   - 3.5. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS, SDS= 0.54 AND SD1= 0.37.

GEOTECHNICAL DESIGN DATA & RECOMMENDATIONS

1. MAXIMUM NET ALLOWABLE BEARING PRESSURE FOR SHALLOW SPREAD FOOTING: 3000 PSF.
2. NEW SLAB-ON-GRADE SHALL BE SUPPORTED ON COMPACTED SELECT FILL. THE COMPACTED FILL SHALL BE AT LEAST ONE FOOT THICK BENEATH CONCRETE SLABS.
3. MATERIAL FOR SELECT FILL SHALL BE INORGANIC, WELL GRADED, FREE OF ROCKS OR CLODS GREATER THAN 4 INCHES IN GREATEST DIMENSION, AND HAVE LOW POTENTIAL FOR EXPANSION.
4. THE MATERIAL SHALL HAVE A LIQUID LIMIT LESS THAN 35, A PLASTICITY INDEX LESS THAN 15 AND A MAXIMUM OF 25 PERCENT PASSING THE No. 200 SIEVE.
5. AS PER GEOTECHNICAL REPORT RECOMMENDATIONS, THE AVAILABLE ON-SITE FILL AND NATIVE MATERIAL ARE ANTICIPATED TO BE SUITABLE FOR USE AS SELECT FILL.
6. ALL LOOSE SOIL SHALL BE REMOVED TO PLACING ANY CONCRETE UNLESS NOTED OTHERWISE.
7. ALL SOFT OR ORGANIC TOPSOIL SHALL BE REMOVED PRIOR TO SLAB PLACEMENT.

GENERAL STRUCTURAL NOTES

1. THIS PLAN HAS BEEN DESIGNED BASED ON DRAWINGS AND INFORMATION SUPPLIED BY OTHERS. ADKO ENGINEERING IS NOT RESPONSIBLE FOR DESIGN REVISIONS NECESSARY DUE TO INCORRECT INFORMATION THAT IT RELIED ON FOR THE DESIGN.
2. ENGINEER WILL NOT SUPERVISE, DIRECT, CONTROL OR HAVE AUTHORITY OVER OR BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO, OR FOR ANY FAILURE OF THE CONTRACTOR TO COMPLY WITH LAWS AND REGULATIONS APPLICABLE TO THE FURNISHING OR PERFORMANCE OF WORK.
3. ALL WORKERS SHALL BE PROPERLY TRAINED FOR SAFETY AND USE OF ALL EQUIPMENT.
4. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE OSHA STANDARDS INCLUDING FALL PROTECTION.
5. ADKO ENGINEERING ASSUMES NO RESPONSIBILITY FOR WORK SITE SAFETY PRACTICES. PERSONAL WORKER PROTECTION, OR ANY JOB SITE CONDITIONS. ADKO ENGINEERING WARRANTS THE STRUCTURAL INTEGRITY OF THE DESIGN AS STATED AND / OR SHOWN ON THE DESIGN DRAWINGS FOR THE FINAL PRODUCT ONLY AND IS NOT RESPONSIBLE FOR ANY STRUCTURAL OR SAFETY DEFICIENCIES AT ANY STAGE OF ERECTION OTHER THAN FINAL PRODUCT.
6. FINAL DESIGN AND LOCATION OF THE EQUIPMENT FOUNDATION PAD SHALL BE COORDINATED WITH THE FINAL APPROVED SHOP DRAWINGS AND THE DISTRICT PRIOR TO ROUGH-IN.

CONCRETE NOTES

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 P.S.I.AT 28 DAYS. CEMENT SHALL CONFORM TO ASTM C-150, TYPE I SPECIFICATIONS. CONCRETE SHALL BE AIR ENTRAINED BETWEEN 5% AND 8%. NORMAL WEIGHT AGGREGATE SHALL COMPLY WITH ASTM C-33 SPECIFICATIONS. CONCRETE SHALL BE OBTAINED FROM A SINGLE SOURCE. WATER SHALL BE CLEAN, POTABLE AND FREE OF DELETERIOUS MATERIAL. THE MAXIMUM WATER TO CEMENT RATIO IS 0.5.
2. THE CONCRETE SHALL BE THOROUGHLY WORKED AROUND THE REINFORCEMENT, AROUND EMBEDDED FIXTURES AND INTO THE CORNER OF FORMS.
3. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE HOT OR COLD TEMPERATURES. COMPLY WITH ACI 305 "HOT WEATHER CONCRETING" AND/OR ACI 306 "COLD WEATHER CONCRETING". CONCRETE SHALL NOT BE PLACED ON FROZEN SOIL.
4. ALL CONCRETE AND REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ALL LATEST BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
5. REINFORCING SHALL COMPLY WITH ASTM A-615 SPECIFICATIONS FOR DEFORMED TYPE GRADE 60 STEEL. REINFORCEMENT SHALL BE LAPPED 2'-0" MINIMUM AT ALL SPLICE LOCATIONS AND TIED WITH WIRE. SPLICES SHALL BE KEPT TO A MINIMUM.
6. REINFORCING BARS SHALL NOT BE WELDED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.
7. REINFORCED CONCRETE SHALL BE DESIGNED, MIXED AND PLACED IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI CODE AND APPLICABLE ASTM STANDARDS.
8. CONCRETE SHALL BE MIXED IN APPROVED TRANSIT MIXERS. MAXIMUM ELAPSED TIME FROM THE TIME THAT WATER IS ADDED TO THE MIX UNTIL THE CONCRETE IS DEPOSITED IN THE WORK SHALL NOT EXCEED 90 MINUTES. ONLY THOSE ADMIXTURES SPECIFIED IN THE CONTRACTORS MIX DESIGN SUBMITTAL SHALL BE USED. CONCRETE SHALL BE MIXED.
9. FOR NOT LESS THAN 70 NOR MORE THAN 100 REVOLUTIONS AT MIXING SPEED PRIOR TO PLACEMENT. MAXIMUM SLUMP SHALL NOT EXCEED 4".
10. ENGINEER'S PRIOR APPROVAL MUST BE SECURED FOR ALL SUBSTITUTIONS.
11. UNLESS OTHERWISE NOTED, THE MINIMUM CLEAR DISTANCE BETWEEN THE FACE OF CONCRETE AND THE OUTSIDE OF THE REINFORCING BARS SHALL BE 1".
12. BEFORE ANY CONCRETE IS PLACED, APPLICABLE DRAWINGS SHALL BE CHECKED TO DETERMINE THAT ANCHOR BOLTS, EMBEDDED STEEL, PIPING, CONDUITS, GROUNDING WIRES, OPENINGS, ETC. ARE PROPERLY PLACED.
13. IF GROUT IS NEEDED BELOW BASE PLATES FOR LEVELING PURPOSES A MINIMUM OF 1.5" OF STRUCTURAL NON-SHRINK GROUT SHALL BE USED UNLESS OTHERWISE NOTED.
14. STRUCTURAL GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
15. PROPOSED STRUCTURES ARE NOT INTENDED FOR HUMAN OCCUPANCY.

3" ON ORIGINAL DOCUMENT
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REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — 20418 — Lic. DEPT. 30/2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
SR. PROJ ENGR. R.P.E. NO.: 20418	
APPROVED: KOOSHA TOOFAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ELECTRICAL & STRUCTURAL PROJECT NOTES

PROJ NO.: MOK26-01	100-Z-011.4	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

SPEC NO.2197

SYMBOLS LEGEND

CONDUIT RUN UNDERGROUND OR IN CONCRETE

DP-1 — CONDUIT HOME RUN TO PANEL DP1, CIRCUIT NO. 1
SHORT MARKS INDICATE NO. OF POWER CONDUCTORS, LONG DASH DENOTES NEUTRAL, SHORT DASH DENOTES LINE, CURVED LINE DENOTES GROUND

EXPOSED CONDUIT

CONDUIT BENDS TOWARD OBSERVER

CONDUIT BENDS AWAY FROM OBSERVER

GROUND GRID WIRE

RAILING

FLEXIBLE LIQUID - TIGHT CONDUIT CONNECTION

P001 — INDICATES CONDUIT NUMBER
SEE CABLE AND CONDUIT SCHEDULE

X — POLE MOUNTED LIGHT FIXTURE
X - LIGHTING SCHEDULE DESIGNATION

120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20.

100AT / 100AF — MOLDED CASE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED: 100A - TRIP RATING IN AMPERES
AT - AMPERES TRIP
AF - AMPERES FRAME
MCP - MOTOR CIRCUIT PROTECTOR

MEDIUM VOLTAGE STARTER

N.O. CONTACT

N.C. CONTACT

NORMALLY OPEN - TIME DELAY

NORMALLY CLOSED - TIME DELAY

OL — OVERLOAD RELAY CONTACTS

FUSE

L — INDICATING LIGHT:
G-GREEN
R-RED

FIELD TERMINATION (DEVICES)

52 — MEDIUM OR HIGH VOLTAGE DRAWOUT BREAKER

* — FULL VOLTAGE NON-REVERSING STARTER, NEMA SIZE AS INDICATED BY *

X — FLUORESCENT LIGHT FIXTURE
X - LIGHTING SCHEDULE DESIGNATION

LUG

CONDUIT PENETRATION THROUGH WALL

1 — KEY NOTE

J — JUNCTION BOX

ETM — ELAPSED TIME METER

CT — CURRENT TRANSFORMER,
RATIO AND NUMBER OF CT'S AS NOTED

FUSED DISCONNECT SWITCH
3 POLE UNLESS OTHERWISE NOTED

HEATER

CR — CONTROL RELAY

M — MOTOR STARTER CONTACTOR

50/51 — INSTANTANEOUS AND TIME OVERCURRENT RELAY

51 — TIME OVERCURRENT RELAY

86 — LOCKOUT RELAY (HAND RESET)

59N — GROUND FAULT OVERVOLTAGE RELAY

EMERGENCY LIGHTING PACK

GROUND ROD

PUSHBUTTON STATION

DISCONNECT SWITCH

THERMOSTAT OR MOTOR TEMP. SWITCH

5 — INDUCTION MOTOR, (NUMBER INDICATES HORSEPOWER)

OVERLOAD RELAY

ALARM HORN

MOTION DETECTOR

P1 — INDICATES CONDUIT NUMBER - SEE CABLE AND CONDUIT SCHEDULE

INDICATES CONDUIT NUMBER - SEE CABLE AND CONDUIT SCHEDULE

ABBREVIATIONS

3W	3-WIRE
4W	4-WIRE
A	AMPERE
AC	ALTERNATING CURRENT
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
CPT	CONTROL POWER TRANSFORMER (IN INDIVIDUAL STARTER CUBICLE)
CMD	COMMAND
CR	CONTROL RELAY
Cu	COPPER
CV	CONTROL VALVE
DC	DIRECT CURRENT
DIA	DIAMETER
DOX	DIGITAL OUTPUT AUXILIARY
DPDT	DOUBLE PULL DOUBLE THROW
EGEN	EMERGENCY GENERATOR
FS	FLOW SWITCH
G, EG	EQUIPMENT GROUND
GFCT	GROUND FAULT CURRENT TRANSFORMER
GFI	GROUND FAULT INTERRUPTING
GRD	GROUND
HP	HORSEPOWER
HZ	HERTZ
INST	INSTANTANEOUS
JB	JUNCTION BOX
kV	KILO (1000) VOLT
kVA	KILO (1000) VOLT AMPERES
kW	KILO (1000) WATT
LD	LEAK DETECTION
LR	LATCHING RELAY
LS	LEVEL SWITCH
LSL	LEVEL SWITCH LOW
LT	LEVEL TRANSMITTER
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
LTCH	LATCH
M	METER
MAX	MAXIMUM
MIN	MINIMUM
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTIVE RELAY
MTS	MANUAL TRANSFER SWITCH
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NO	NUMBER, NORMALLY OPEN
OL	OVERLOAD RELAY
P	POLE
PB	PULL BOX, PUSH BUTTON
pf	POWER FACTOR
PFR	PHASE FAILURE RELAY
PH, Ø	PHASE
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER METER
PRESS	PRESSURE
PRI	PRIMARY
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RECT	RECTIFIER
RCPT	RECEPTACLE
RTD	RESISTANCE TEMPERATURE DETECTOR
RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
RVSS	REDUCED VOLTAGE SOFT STARTER
SEC	SECONDARY
SPD	SURGE PROTECTIVE DEVICE
SS	SELECTOR SWITCH, STAINLESS STEEL
SW	SWITCH
SWBD	SWITCHBOARD
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TDDO	TIME DELAY DROP OUT
TDPU	TIME DELAY PICKUP
TDR	TIME DELAY RELAY
Th-MAG	THERMAL-MAGNETIC
TSH	TEMPERATURE SWITCH HIGH
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
T-STAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
UPT	UNSHIELDED TWISTED PAIR
V	VOLTAGE, VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VS	VIBRATION SWITCH
WP	WEATHERPROOF
W	WATTS
XFMR	TRANSFORMER
ZS	LIMIT SWITCH
XMTR	TRANSMITTER
(E)	EXISTING
(N)	NEW

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WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — PROJ. NO. 20418 — Exp. SEPT. 30/2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY:	KOOSHA TOOFAN
DESIGN CHECKED BY:	JOHN GUILLORY
DRAWN BY:	KOOSHA TOOFAN
SR. PROJ ENGR. R.P.E. NO.:	20418
APPROVED:	KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.:	20418

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811 OR 1-800-422-4133

5 WORKING DAYS UTILITY NOTIFICATION
PRIOR TO CONSTRUCTION

GENERAL NOTE:

1. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

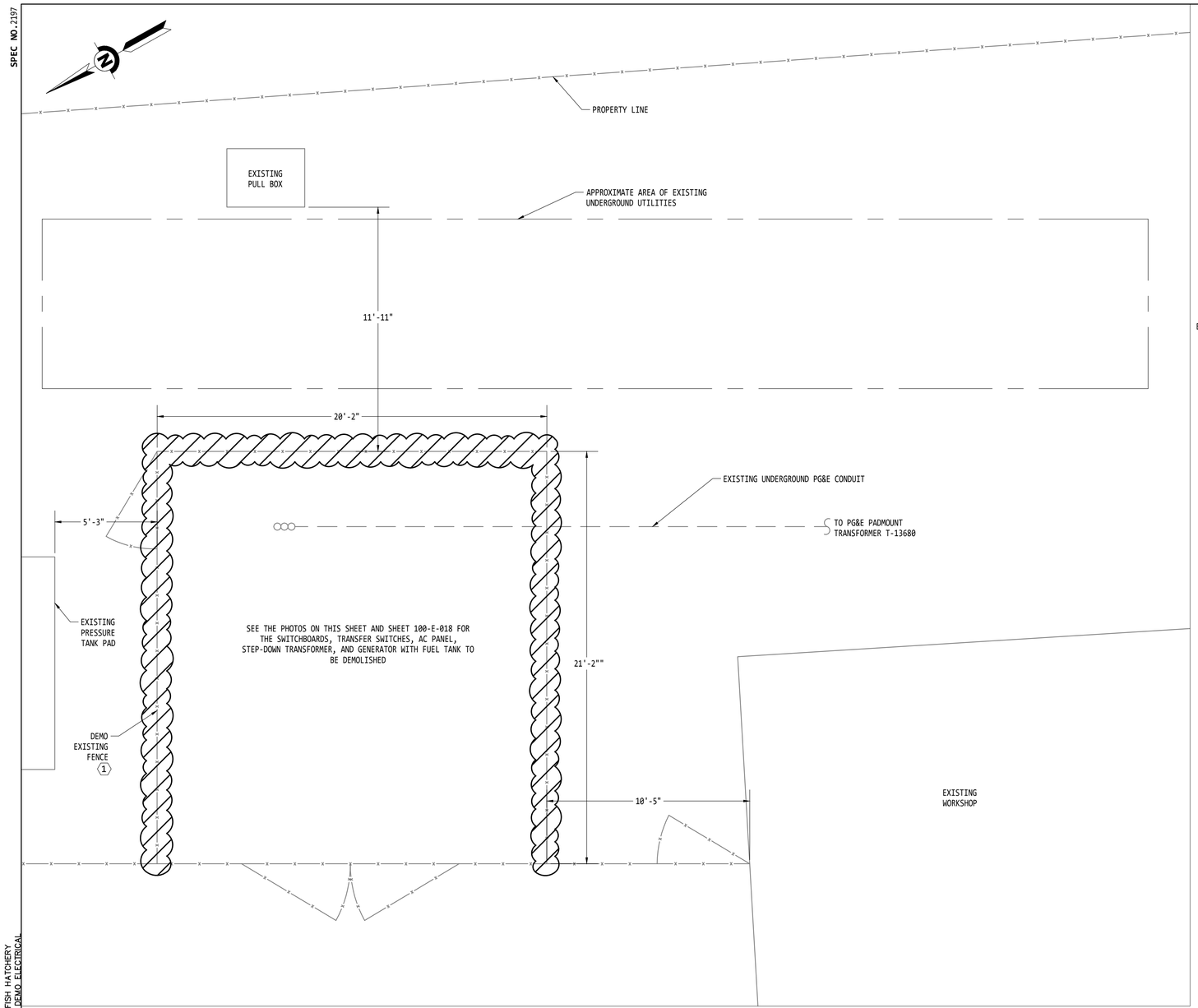
ELECTRICAL SYMBOLS & ABBREVIATIONS

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-Z-011.5	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USERKOOSHA TOOFAN
DATE:9/9/2026 10:18 AM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01_DRAFTING\1-WORKING\100-Z-011.5 - ELECTRICAL SYMBOLS & ABBREVIATIONS.DWG

ELECTRICAL

SPEC NO. 2197



DEMO SITE PLAN

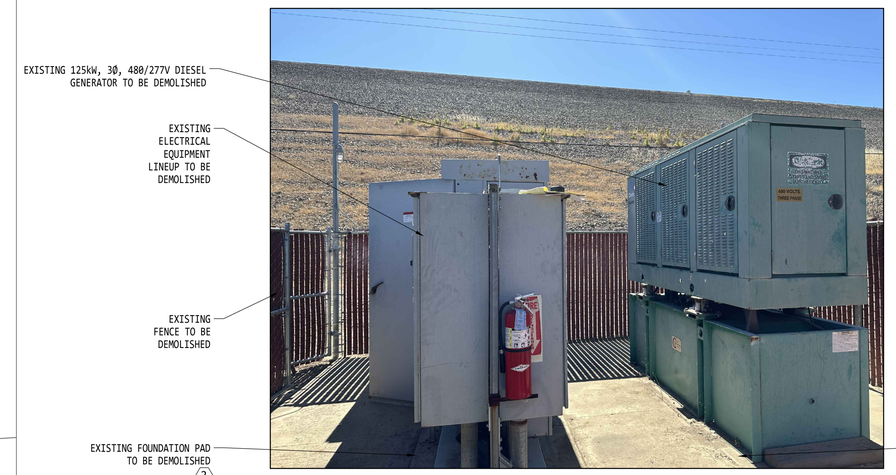
NOT TO SCALE

GENERAL NOTES

1. ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE FIELD VERIFIED.
2. ALL EXISTING UTILITIES ARE NOT SHOWN ON THIS SHEET. CONTRACTOR SHALL FIELD VERIFY EXACT UTILITY LOCATIONS PRIOR TO ROUGH IN. HAND DIG AROUND ALL UTILITIES IN CLOSE PROXIMITY TO THE INSTALLATION OF THE ELECTRICAL EQUIPMENT TO AVOID DAMAGING ANY UTILITY LINE.
3. THIS DRAWING IS BASED ON FIELD PHOTOS AND MEASUREMENTS. CONTRACTOR SHALL VERIFY ELEVATIONS, LOCATIONS AND CONDITION OF EXISTING STRUCTURES, AND EQUIPMENT SHOWN ON THIS DRAWING, AS REQUIRED. ALL PROJECT VERIFICATIONS SHALL BE PERFORMED PRIOR TO THE ROUGH-IN, AND CONTRACTOR SHALL COORDINATE ANY DISCREPANCIES WITH THE DISTRICT.
4. CONTRACTOR SHALL DEMOLISH ELECTRICAL EQUIPMENT, HAUL, AND PROPERLY DISPOSE OF ALL EQUIPMENT IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED DISPOSAL FEES AND SAFETY COMPLIANCE.

KEY NOTES

1. DEMO EXISTING FENCE AS SHOWN.
2. DEMO THE EXISTING EQUIPMENT FOUNDATION PAD TO ALLOW FOR THE CONSTRUCTION OF THE NEW FOUNDATION PAD, ENSURING PROPER STRUCTURAL INTEGRITY, LOAD DISTRIBUTION, AND ALIGNMENT WITH THE NEW EQUIPMENT INSTALLATION REQUIREMENTS.



EXISTING SWITCHBOARD & GENERATOR

NOT TO SCALE

OVERALL SITE PLAN

NOT TO SCALE

LEGEND

UNDERGROUND CONDUIT

EXISTING (FADED LINES)

DEMOLITION

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6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER KOOSHA TOOFAN 20418 Exp. 09.30.2027 Electrical Engineer STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
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PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

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EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

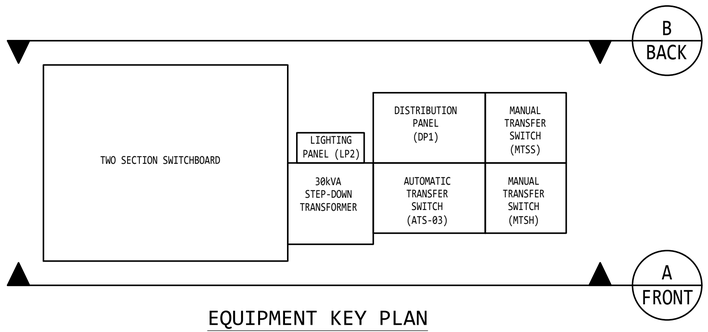
MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ELECTRICAL SITE PLAN DEMO – 1

PROJ NO.: MOK26-01			
SCALE: AS SHOWN	100-E-017		0
DATE: 10APR2026	STRUCT.	DISC. NUMBER	REV.

USER:KOOSHA TOOFAN
DATE:9/4/2025 2:08 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\1-WORKING\100-E-017 - DEMO ELECTRICAL SITE PLAN - 1.DWG

SPEC NO.2197



EQUIPMENT KEY PLAN

NOT TO SCALE

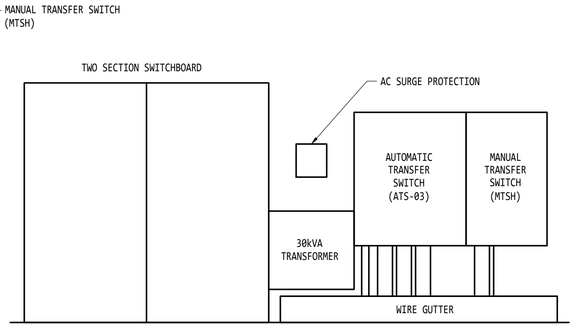
GENERAL NOTE

1. CONTRACTOR SHALL DEMOLISH ELECTRICAL EQUIPMENT, HAUL, AND PROPERLY DISPOSE OF ALL EQUIPMENT IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED DISPOSAL FEES AND SAFETY COMPLIANCE.

KEY NOTE

1. CONTRACTOR SHALL COORDINATE WITH PG&E TO REQUEST THE RELOCATION OR REPLACEMENT OF THE EXISTING ELECTRIC METER CONNECTION AND ACCOMPANYING HARDWARE (E.G., PULLING AND TERMINATING OF WIRES FED FROM EXISTING PG&E TRANSFORMER T-13680 AND EXTENSION OR RELOCATION OF SERVICE CONDUIT), BEFORE PLACEMENT OF NEW EQUIPMENT.

FRONT SIDE OF EQUIPMENT LINEUP TO BE DEMOLISHED

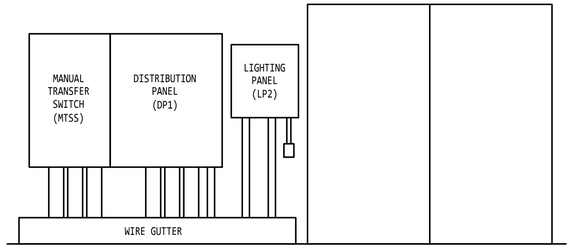


EQUIPMENT LINEUP ELEVATION - FRONT SIDE

NOT TO SCALE

A
-

BACK SIDE OF EQUIPMENT LINEUP TO BE DEMOLISHED



EQUIPMENT LINEUP ELEVATION - BACK SIDE

NOT TO SCALE

B
-

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REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — 20418 — Lic. SEPT. 30/2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
SR. PROJ ENGR R.P.E. NO.: 20418	
APPROVED: KOOSHA TOOFAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ELECTRICAL SITE PLAN DEMO – 2

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100–E–018	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USERKOOSHA TOOFAN
DATE3/16/2026 4:26 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY ENGINEERING SERVICES\01-DRAFTING\1-WORKING\100-E-018 - DEMO ELECTRICAL SITE PLAN - 2.DWG

SPEC NO.2197

GENERAL NOTES

1. REFER TO SHEETS 100-E-017 AND 100-E-018 FOR EQUIPMENT TO BE DEMOLISHED.
2. NOT ALL CONDUITS ARE SHOWN ON THIS SHEET. REFER TO SITE PLAN DRAWINGS 100-E-020 AND 100-E-021.

KEY NOTES

1. SEE SHEET 100-E-022 FOR ROUTING OF FIBER CONDUIT CT2033 AND CONTROL CONDUIT CT2023 INTO EXISTING VALVE HOUSE AND INTO THE EXISTING COMMUNICATION PANEL.
2. SEE SHEET 100-E-021 FOR DETAILED PAD MODIFICATIONS.

EXISTING FENCE LINE TO REMAIN
EXISTING PRESSURE TANK
EXISTING EQUIPMENT PAD #2 (2)
NEW PULL BOX (PB-01)
12kV PG&E POWER POLE & RISER
EXISTING WORKSHOP
EXISTING T-13680 12,000:V:480/277V 750kVA, 3Ø PG&E PADMOUNT TRANSFORMER
CT2000E CT2000F CT2000G
CT2000A CT2000B CT2000C CT2000D
NEW SWITCHBOARD (SWBD-01) AND CONTROL PANEL (CPNL-01) LINEUP LOCATION
NEW EMERGENCY GENERATOR (EGEN-01)
CT2033 CT2023
CT2022
CT2029
EXISTING EQUIPMENT PAD #1 WITH EXISTING 250kW GENERATOR (EGEN-02) (2)
EXISTING YORK CHILLER
CONDUITS CT2023 & CT2033 RISERS (1)
EXISTING VALVE HOUSE WHERE NEW FIBER CABLE TERMINATES

LEGEND

NEW (BOLD LINES) ——————

EXISTING (FADED LINES) ——————

ELECTRICAL OVERALL SITE PLAN

NOT TO SCALE

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DESIGN CHECKED BY:	JOHN GUILLORY
DRAWN BY:	KOOSHA TOOFAN
SR. PROJ ENGR. R.P.E. NO.:	20418
APPROVED:	KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.:	20418

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ELECTRICAL OVERALL SITE PLAN

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-019	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

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DATE:2/3/2026 3:10 PM
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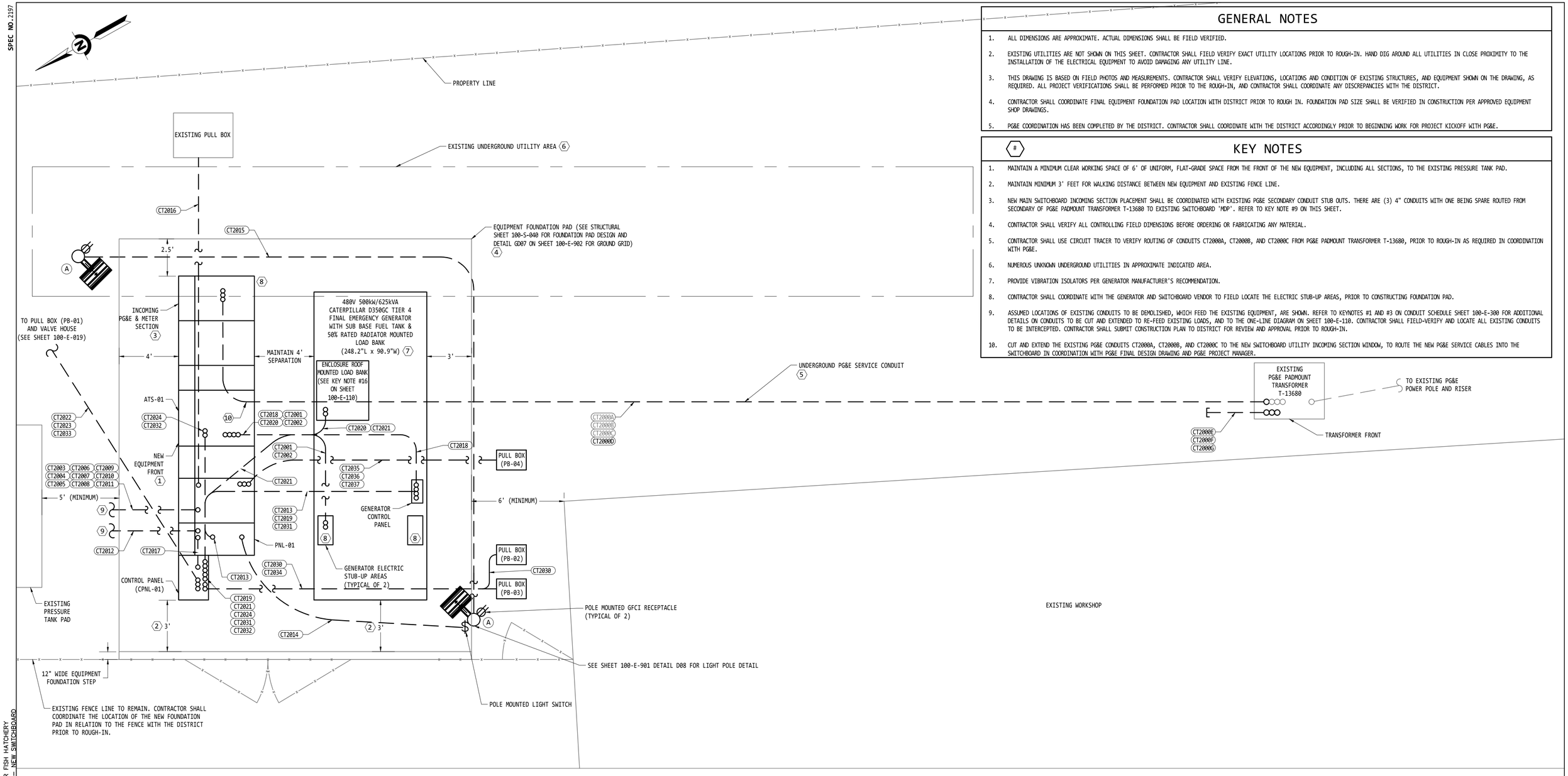
SPEC NO.2197



GENERAL NOTES

1. ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE FIELD VERIFIED.
2. EXISTING UTILITIES ARE NOT SHOWN ON THIS SHEET. CONTRACTOR SHALL FIELD VERIFY EXACT UTILITY LOCATIONS PRIOR TO ROUGH-IN. HAND DIG AROUND ALL UTILITIES IN CLOSE PROXIMITY TO THE INSTALLATION OF THE ELECTRICAL EQUIPMENT TO AVOID DAMAGING ANY UTILITY LINE.
3. THIS DRAWING IS BASED ON FIELD PHOTOS AND MEASUREMENTS. CONTRACTOR SHALL VERIFY ELEVATIONS, LOCATIONS AND CONDITION OF EXISTING STRUCTURES, AND EQUIPMENT SHOWN ON THE DRAWING, AS REQUIRED. ALL PROJECT VERIFICATIONS SHALL BE PERFORMED PRIOR TO THE ROUGH-IN, AND CONTRACTOR SHALL COORDINATE ANY DISCREPANCIES WITH THE DISTRICT.
4. CONTRACTOR SHALL COORDINATE FINAL EQUIPMENT FOUNDATION PAD LOCATION WITH DISTRICT PRIOR TO ROUGH IN. FOUNDATION PAD SIZE SHALL BE VERIFIED IN CONSTRUCTION PER APPROVED EQUIPMENT SHOP DRAWINGS.
5. PG&E COORDINATION HAS BEEN COMPLETED BY THE DISTRICT. CONTRACTOR SHALL COORDINATE WITH THE DISTRICT ACCORDINGLY PRIOR TO BEGINNING WORK FOR PROJECT KICKOFF WITH PG&E.

KEY NOTES

1. MAINTAIN A MINIMUM CLEAR WORKING SPACE OF 6' OF UNIFORM, FLAT-GRADE SPACE FROM THE FRONT OF THE NEW EQUIPMENT, INCLUDING ALL SECTIONS, TO THE EXISTING PRESSURE TANK PAD.
2. MAINTAIN MINIMUM 3' FEET FOR WALKING DISTANCE BETWEEN NEW EQUIPMENT AND EXISTING FENCE LINE.
3. NEW MAIN SWITCHBOARD INCOMING SECTION PLACEMENT SHALL BE COORDINATED WITH EXISTING PG&E SECONDARY CONDUIT STUB OUTS. THERE ARE (3) 4" CONDUITS WITH ONE BEING SPARE ROUTED FROM SECONDARY OF PG&E PADMOUNT TRANSFORMER T-13680 TO EXISTING SWITCHBOARD 'MDP'. REFER TO KEY NOTE #9 ON THIS SHEET.
4. CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
5. CONTRACTOR SHALL USE CIRCUIT TRACER TO VERIFY ROUTING OF CONDUITS CT2000A, CT2000B, AND CT2000C FROM PG&E PADMOUNT TRANSFORMER T-13680, PRIOR TO ROUGH-IN AS REQUIRED IN COORDINATION WITH PG&E.
6. NUMEROUS UNKNOWN UNDERGROUND UTILITIES IN APPROXIMATE INDICATED AREA.
7. PROVIDE VIBRATION ISOLATORS PER GENERATOR MANUFACTURER'S RECOMMENDATION.
8. CONTRACTOR SHALL COORDINATE WITH THE GENERATOR AND SWITCHBOARD VENDOR TO FIELD LOCATE THE ELECTRIC STUB-UP AREAS, PRIOR TO CONSTRUCTING FOUNDATION PAD.
9. ASSUMED LOCATIONS OF EXISTING CONDUITS TO BE DEMOLISHED, WHICH FEED THE EXISTING EQUIPMENT, ARE SHOWN. REFER TO KEYNOTES #1 AND #3 ON CONDUIT SCHEDULE SHEET 100-E-300 FOR ADDITIONAL DETAILS ON CONDUITS TO BE CUT AND EXTENDED TO RE-FEED EXISTING LOADS, AND TO THE ONE-LINE DIAGRAM ON SHEET 100-E-110. CONTRACTOR SHALL FIELD-VERIFY AND LOCATE ALL EXISTING CONDUITS TO BE INTERCEPTED. CONTRACTOR SHALL SUBMIT CONSTRUCTION PLAN TO DISTRICT FOR REVIEW AND APPROVAL PRIOR TO ROUGH-IN.
10. CUT AND EXTEND THE EXISTING PG&E CONDUITS CT2000A, CT2000B, AND CT2000C TO THE NEW SWITCHBOARD UTILITY INCOMING SECTION WINDOW, TO ROUTE THE NEW PG&E SERVICE CABLES INTO THE SWITCHBOARD IN COORDINATION WITH PG&E FINAL DESIGN DRAWING AND PG&E PROJECT MANAGER.

ELECTRICAL SITE PLAN

NOT TO SCALE

LEGEND

- UNDERGROUND CONDUIT
- ABOVEGROUND CONDUIT
- NEW (BOLD LINES)
- EXISTING (FADED LINES)

3" ON ORIGINAL DOCUMENT

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PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

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EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

NEW SWITCHBOARD & EMERGENCY GENERATOR PLAN

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-020	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USERKOOSHA TOOFAN
DATE:3/19/2026 2:25 PM
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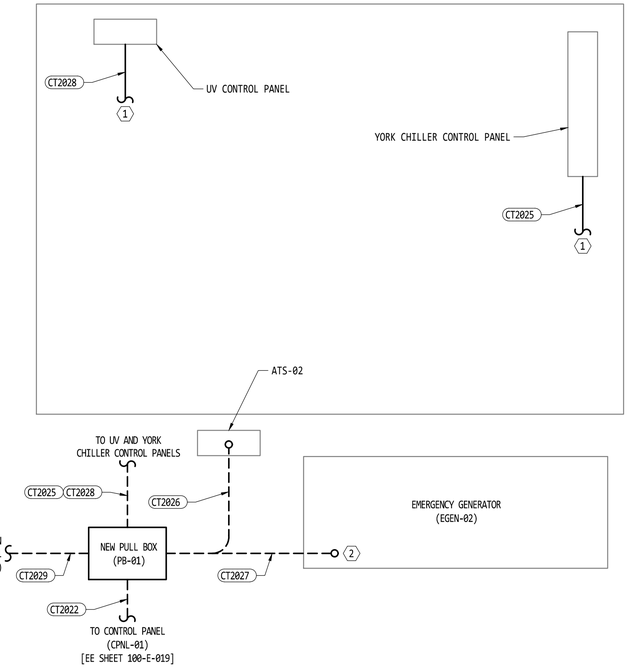
SPEC NO.2197



EXISTING EQUIPMENT PAD #1

NOT TO SCALE

EXISTING EQUIPMENT PAD #2

NOT TO SCALE

EXISTING EQUIPMENT PAD #2

NOT TO SCALE

EXISTING EQUIPMENT PAD #1

NOT TO SCALE

EXISTING EQUIPMENT PAD #1

NOT TO SCALE

KEY NOTES

1. CONTRACTOR SHALL UTILIZE CONDULET CONDUIT BODIES AS REQUIRED TO FACILITATE THE ROUTING OF CONDUIT FROM EXISTING EQUIPMENT ALONG THE IN-PLACE CONCRETE FOUNDATION, TRANSITIONING TO SUBGRADE TO NEW PULL BOX (PB-01). FINAL CONDUIT ROUTING SHALL BE COORDINATED WITH AND APPROVED BY THE DISTRICT PRIOR TO ROUGH-IN.
2. CONDUIT PURPOSED FOR GENERATOR CONTROLS SHALL BE INSTALLED INSIDE THE EXISTING EMERGENCY GENERATOR CONDUIT STUB-UP WINDOW VIA CORE DRILLING THROUGH THE EXISTING FOUNDATION AND UNDERMINING TO INTERCEPT.

EXISTING EQUIPMENT PAD #1

NOT TO SCALE

LEGEND

UNDERGROUND CONDUIT ----------

ABOVEGROUND CONDUIT ———

NEW (BOLD LINES) ———

EXISTING (FADED LINES) ———

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OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

MODIFIED HATCHERY SUPPORTING EQUIPMENT PLANS

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-021	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

KOOSHA TOOFAN
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SPEC NO. 2197

VICINITY OF NEW CONTROL PANEL INSTALLATION LOCATION (SEE OVERALL SITE PLAN SHEET 100-E-019)

UNDERGROUND CONDUITS CT2023 AND CT2033 SHALL BE ROUTED FROM THE NEW CONTROL PANEL TO THE EXISTING VALVE HOUSE ON THE OPPOSITE SIDE OF THE FENCE, WHERE THE NEW EQUIPMENT IS NOT INSTALLED

TO EXISTING VALVE HOUSE ③

NEW CONTROL PANEL TO EXISTING VALVE HOUSE

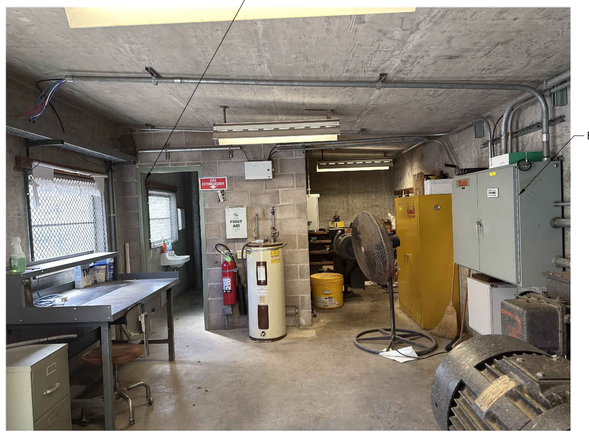
NOT TO SCALE

VALVE HOUSE

PROPOSED VALVE HOUSE PENETRATION LOCATION FOR CONDUITS CT2023 AND CT2033 USING LB CONDUIT BODIES

EXISTING VALVE HOUSE EXTERIOR

NOT TO SCALE



PROPOSED PENETRATION LOCATION OF NEW CONDUITS CT2023 AND CT2033 INSIDE VALVE HOUSE

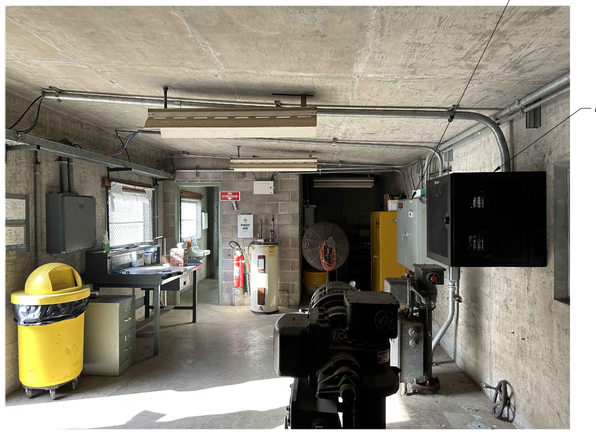
EXISTING CONTROL PANEL

EXISTING VALVE HOUSE INTERIOR ①④

NOT TO SCALE

KEY NOTES

1. CONTRACTOR SHALL FIELD ROUTE CONDUIT INTO EXISTING APC CABINET. FINAL CONDUIT ROUTING SHALL BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO ROUGH-IN.
2. CONTRACTOR SHALL TERMINATE NEW CONDUIT CT2033 AT THE EXISTING APC CABINET AND PULL NEW FIBER CABLE INTO THE CABINET WITH TWO SERVICE LOOPS. THE DISTRICT SHALL MAKE THE FINAL CABLE CONNECTION INSIDE THE PANEL. CONTRACTOR TO SUPPLY AND INSTALL FIBER SPLICE BOX IN APC CABINET FOR DISTRICT USE.
3. FOR SAFE DIGGING, CONTACT 811 (USA NORTH - CALL BEFORE YOU DIG) TO VERIFY TRENCH LOCATION IN COORDINATION WITH THE DISTRICT. HAND DIGGING IS REQUIRED DUE TO A PRESSURIZED SEWER LINE BELOW GRADE IN THE APPROXIMATED TRENCH AREA.
4. CONTRACTOR SHALL TERMINATE NEW SPARE CONDUIT CT2023 AT THE EXISTING CONTROL PANEL.



EXISTING CONTROL PANEL

APC CABINET

EXISTING VALVE HOUSE INTERIOR ①④

NOT TO SCALE

EXISTING CONTROL PANEL ④

APC CABINET ②

APC CABINET EXTERIOR ①④

NOT TO SCALE

APC CABINET INTERIOR ①

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EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

MODIFIED VALVE HOUSE PLAN

PROJ NO.: MOK26-01	100-E-022	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

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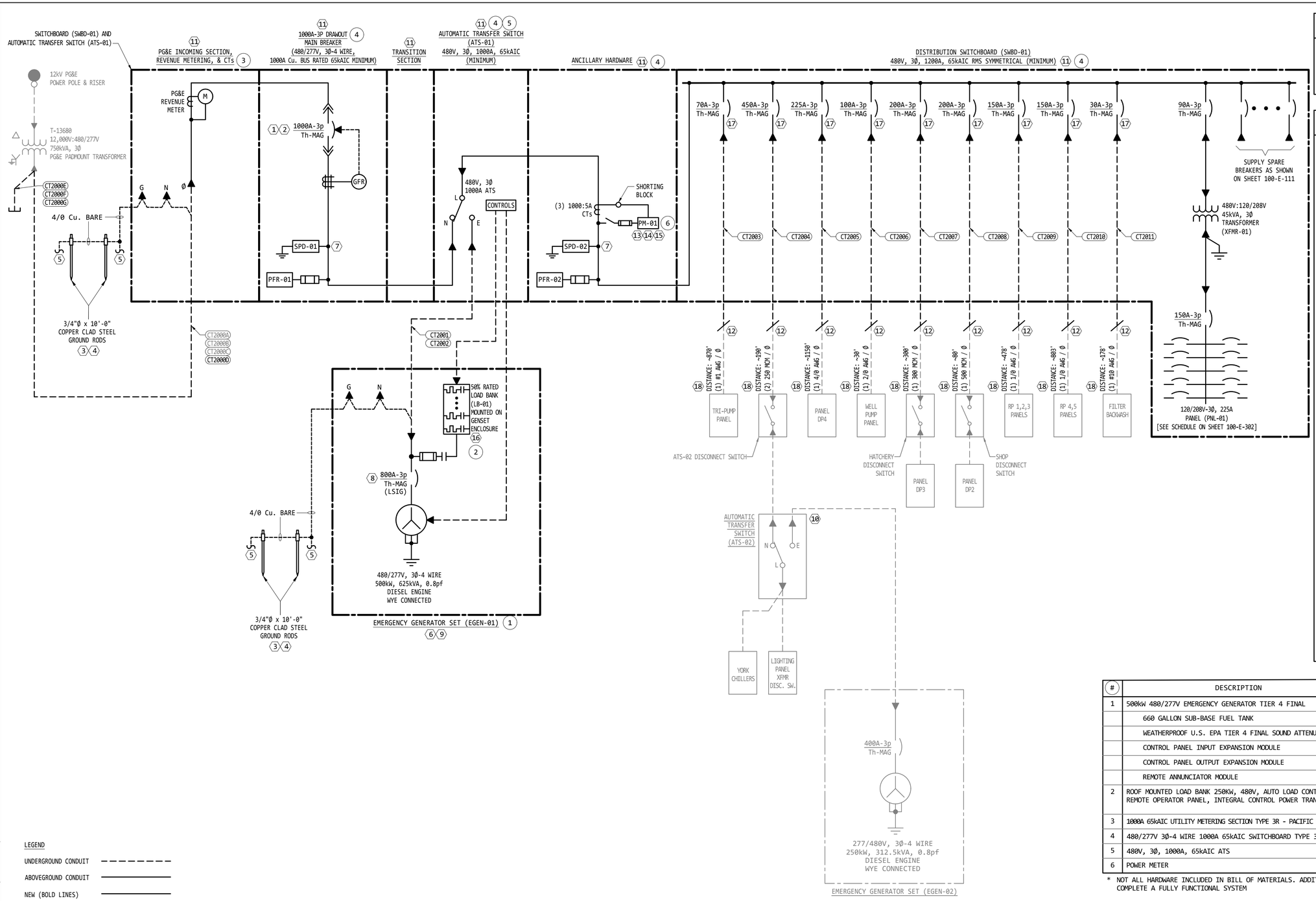
SPEC NO. 2197



GENERAL NOTES

1. CONTRACTOR TO PROVIDE PG&E APPROVED METERING ENCLOSURES. UTILITY METER AND CT TO BE PROVIDED BY PG&E. CONTRACTOR SHALL COORDINATE WITH PG&E FOR METER & CT REQUIREMENTS PRIOR TO ISSUANCE OF SHOP DRAWINGS.
2. CONTRACTOR SHALL COORDINATE WITH THE PG&E PROJECT REPRESENTATIVE AND PG&E GREENBOOK FOR THE CUTOVER TO THE NEW SWITCHBOARD METERING SECTION.

KEY NOTES

1. MAIN CIRCUIT BREAKER SHALL BE 100% RATED AND SHALL BE EQUIPPED WITH AN ARC FLASH REDUCTION MAINTENANCE SYSTEM (ARMS) AND GROUND FAULT PROTECTION RELAY.
2. PROVIDE WITH AUXILIARY BREAKER STATUS CONTACTS.
3. INSTALL AND SIZE GROUND RODS AS SHOWN ON THIS SHEET.
4. PER NEC SECTION 250.56, MAINTAIN A SEPARATION OF NOT LESS THAN 6-FEET BETWEEN THE INSTALLED GROUND RODS.
5. EXTEND TO EXISTING GROUNDING ELECTRODE SYSTEM (GES), WHICH SHALL BE FIELD LOCATED BY CONTRACTOR.
6. GROUND GENERATOR PER MANUFACTURER'S REQUIREMENTS.
7. SURGE PROTECTIVE DEVICE (SPD) IS MOUNTED DIRECTLY ADJACENT TO ITS FEEDER CIRCUIT BREAKER. KEEP WIRING AS SHORT AND AS STRAIGHT AS POSSIBLE.
8. EMERGENCY GENERATOR SUPPLIED WITH A 100% RATED GENERATOR BREAKER. BREAKER SHALL HAVE AN 800A FRAME WITH A 400A TRIP PLUG.
9. EMERGENCY GENERATOR SUPPLIED WITH A BELLY TANK SIZED FOR MINIMUM 24 HOURS OF CONTINUOUS RUN TIME AT 50% LOAD.
10. CONTRACTOR SHALL SET ATS-02 CONTROLLER TO DELAY TRANSITION TO EGEN-02 VIA ATS CONTROLLER. WITH LOSS OF UTILITY POWER, NEW 500kW EMERGENCY GENERATOR (EGEN-01) SHALL BE THE PRIMARY EMERGENCY BACK UP POWER SOURCE. IF BOTH UTILITY AND THE 500kW EMERGENCY GENERATOR ARE DOWN, THEN THE EXISTING 250kW EMERGENCY GENERATOR (EGEN-02) SHALL OPERATE TO PROVIDE BACKUP POWER TO THE YORK CHILLERS AND LIGHTING PANEL (LP) TRANSFORMER. THIS EXISTING ATS-02 CONTROLLER TIME DELAY SETTING SHALL BE COORDINATED WITH THE NEW ATS-01 DURING STARTUP AND COMMISSIONING.
11. NEW MAIN SWITCHBOARD (SWBD-01) AND ATS-01 TO REPLACE EXISTING PANEL MDP, PANEL DP1 & LP2, MANUAL TRANSFER SWITCHES MTSS AND MTSH, ATS-03, AND 30kVA STEP-DOWN TRANSFORMER.
12. BREAK INTO EXISTING CONDUIT. EXTEND NEW CONDUIT, SIZE MATCHING EXISTING, INTO NEW SWITCHBOARD (SWBD-01). DEMO EXISTING CABLING, PULL NEW CABLES IN KIND, AND TERMINATE TO NEW SWITCHBOARD (SWBD-01). COORDINATE WITH DISTRICT FOR FINAL APPROVED CUT-OVER LOCATIONS.
13. USE SHORTING BLOCKS FOR INCOMING CURRENT (CT) CIRCUITS, AND FUSE BLOCKS FOR INCOMING VOLTAGE CIRCUITS, TO CREATE AN INTERMEDIATE CONTACT POINT BETWEEN THE POWER METER AND LOAD.
14. POWER METER SHALL BE POWERED FROM PNL-01.
15. 5A LOAD CURRENT ØA,B,C USING #10 THHN/THWN COPPER CONDUCTORS, AND 480V POTENTIAL ØA,B,C USING #12 THHN/THWN COPPER CONDUCTORS.
16. THE LOAD BANK IS TO BE SET UP WITH AN AUTOMATIC LOAD ADDER/REMOVER TO MAINTAIN A MINIMUM LOAD OF 30% AT ALL TIMES, REGARDLESS OF THE FACILITY LOADS CONNECTED WHEN THE GENERATOR IS RUNNING.
17. CONFIRM THAT THE RATING OF THE NEW BREAKER MATCHES THE RATING OF THE EXISTING BREAKER BEING REPLACED FOR THE EXISTING FED LOAD, PRIOR TO ISSUANCE OF SHOP DRAWINGS.
18. ESTIMATED DISTANCE FROM SOURCE TO LOAD AND CABLE RATING ARE SHOWN. EQUIPMENT GROUNDING CONDUCTOR NOT LISTED AND SHALL BE PROVIDED IN ACCORDANCE WITH NEC REQUIREMENTS.

#	DESCRIPTION	MANUFACTURER (OR EQUAL)	PART #	QTY
1	500kW 480/277V EMERGENCY GENERATOR TIER 4 FINAL	CATERPILLAR	C18 T4F	1
	660 GALLON SUB-BASE FUEL TANK	CATERPILLAR	-	1
	WEATHERPROOF U.S. EPA TIER 4 FINAL SOUND ATTENUATED ENCLOSURE	CATERPILLAR	-	1
	CONTROL PANEL INPUT EXPANSION MODULE	CATERPILLAR	-	1
	CONTROL PANEL OUTPUT EXPANSION MODULE	CATERPILLAR	-	1
	REMOTE ANNUNCIATOR MODULE	CATERPILLAR	-	1
2	ROOF MOUNTED LOAD BANK 250kW, 480V, AUTO LOAD CONTROL, REMOTE OPERATOR PANEL, INTEGRAL CONTROL POWER TRANSFORMER	TRYSTAR	MODEL L	1
3	1000A 65kAIC UTILITY METERING SECTION TYPE 3R - PACIFIC GAS & ELECTRIC	EATON	-	1
4	480/277V 3Ø-4 WIRE 1000A 65kAIC SWITCHBOARD TYPE 3R	EATON	IFS POW-R-LINE XPERT	1
5	480V, 3Ø, 1000A, 65kAIC ATS	ASCO	ASCO-300	1
6	POWER METER	EATON	PXM1300	1

* NOT ALL HARDWARE INCLUDED IN BILL OF MATERIALS. ADDITIONAL HARDWARE SHALL BE SUPPLIED AS REQUIRED TO COMPLETE A FULLY FUNCTIONAL SYSTEM

LEGEND

UNDERGROUND CONDUIT	
ABOVEGROUND CONDUIT	
NEW (BOLD LINES)	
EXISTING (FADED LINES)	
SPD	SURGE PROTECTIVE DEVICE
GFR	GROUND FAULT RELAY
PFR	POWER FAIL RELAY
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
Th-MAG	THERMAL MAGNETIC
CT	CURRENT TRANSFORMER

3" ON ORIGINAL DOCUMENT
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ONE-LINE DIAGRAM

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NO.	DATE	REVISION	BY	REC.	APP.

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SR. PROJ ENGR., R.P.E. NO.:	20418
APPROVED:	KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.:	20418

EBMUD

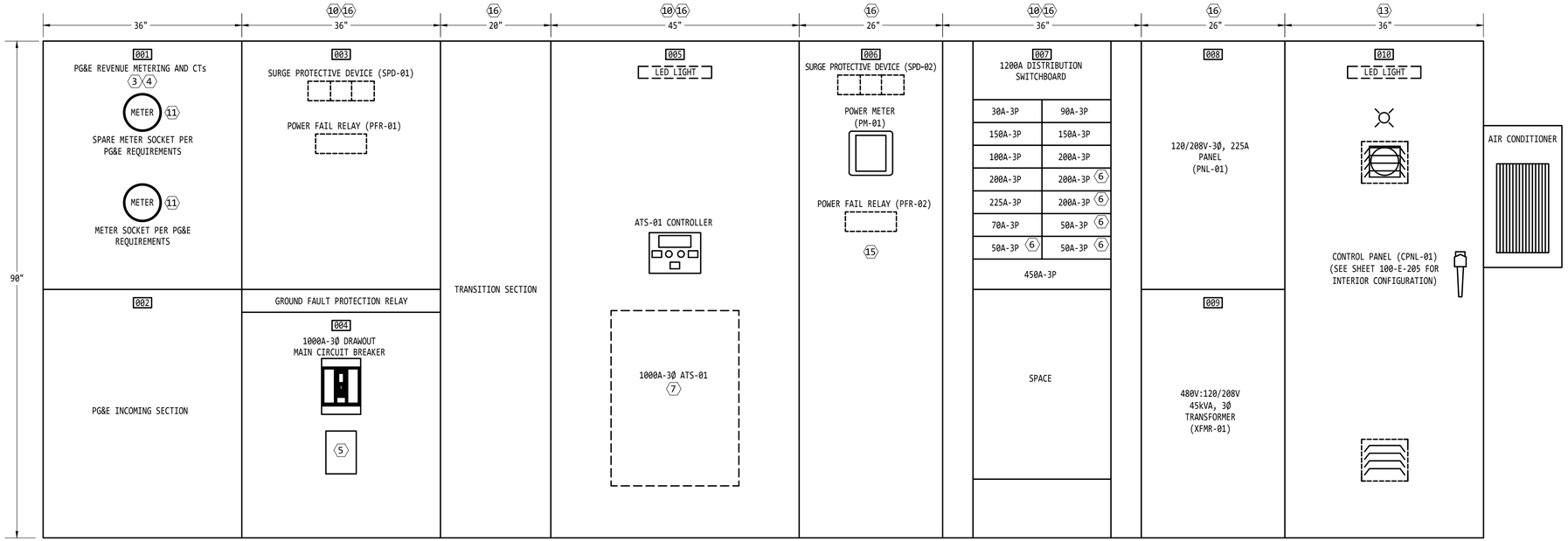
EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ONE-LINE DIAGRAM

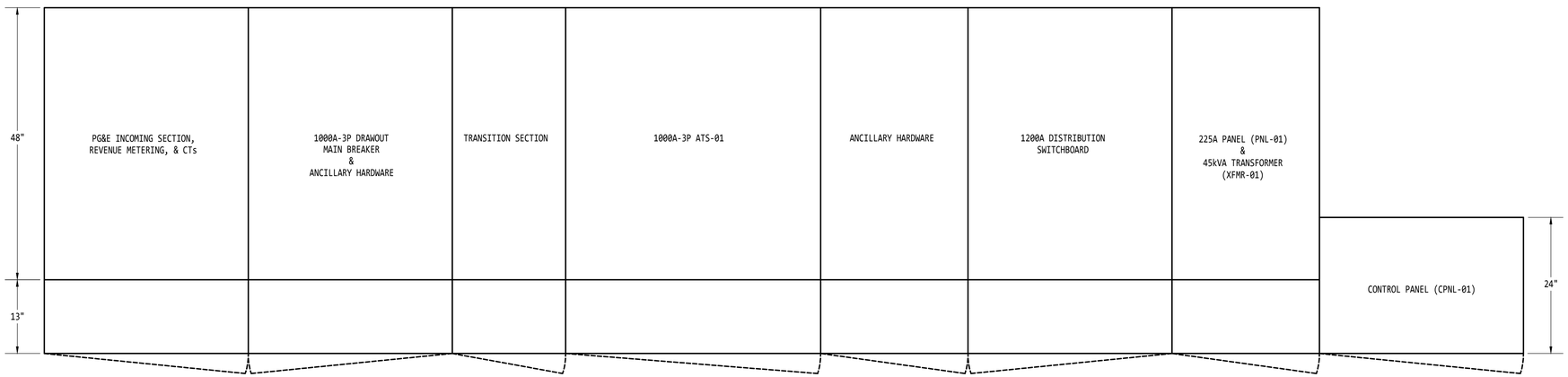
PROJ NO.: MOK26-01	100-E-110		0
SCALE: AS SHOWN			
DATE: 10APR2026	STRUCT.	DISC.	NUMBER / REV.

SPEC NO.2197



SWITCHBOARD (SWBD-01), ATS (ATS-01), & CONTROL PANEL (CPNL-01) ELEVATION VIEW 1 2 8 9 10 12 14

NOT TO SCALE
(SHOWN WITH WEATHER WRAP DOORS REMOVED FOR CLARITY)



SWITCHBOARD (SWBD-01), ATS (ATS-01), & CONTROL PANEL (CPNL-01) PLAN VIEW

NOT TO SCALE

GENERAL NOTES

1. ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE PER APPROVED SHOP DRAWINGS.
2. INSTALL SUN SHIELD TO PROTECT THE EQUIPMENT LINEUP, INCLUDING THE CONTROL PANEL, FROM DIRECT SUNLIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
4. SUPPLY HEATER PACKAGE, WHICH INCLUDES HEATER, THERMOSTAT, AND FUSED DISCONNECT FOR EACH SECTION.

KEY NOTES

1. CONTRACTOR TO COORDINATE SWITCHBOARD REQUIREMENTS WITH PG&E PRIOR TO ISSUANCE OF SHOP DRAWINGS.
2. MANUFACTURER TO INSTALL SPACE HEATERS POWERED FROM 225A PNL-01, WITH THERMOSTAT AND APPROPRIATE WIRING, IN SWITCHBOARD. SPACE HEATERS SHALL BE SUPPLIED WITH LABELED HEATER DISCONNECTS FOR SAFETY DURING MAINTENANCE.
3. UTILITY CTs SHALL BE LOCATED WITHIN APPROVED CT COMPARTMENTS APPROVED BY PG&E.
4. SUPPLY A DUAL-SOCKET METERING PANEL IN SWITCHBOARD PER PG&E REQUIREMENTS.
5. MAIN CIRCUIT BREAKER TO BE EQUIPPED WITH AN ARC FLASH REDUCTION MAINTENANCE SYSTEM AND GROUND FAULT PROTECTION RELAY.
6. SPARE BREAKER.
7. ASCO 300 ATS SHALL BE INSTALLED BY SWITCHBOARD SUPPLIER PRIOR TO SHIPMENT TO PROJECT LOCATION.
8. EQUIPMENT TO BE EATON POW-R-LINE-C OR APPROVED EQUAL. EQUIPMENT SHALL BE FRONT ACCESS ONLY.
9. SWITCHBOARD SHALL BE NEMA 3R OUTDOOR RATED.
10. SWITCHBOARD (SWBD-01) REAR SECTION SHALL HAVE AN IR WINDOW.
11. CONTRACTOR SHALL COORDINATE WITH PG&E TO SUPPLY A METER SOCKET, ENCLOSURE, AND METER COMPLIANT WITH UTILITY STANDARDS PRIOR TO ISSUANCE OF SHOP DRAWINGS.
12. THE DESIGN OF THE SWITCHBOARD (SWBD-01) IS SUCH THAT ALL CABLING BETWEEN SECTIONS ARE HOUSED BETWEEN SWITCHBOARD (SWBD-01) SECTIONS. IF APPROVED SHOP DRAWINGS OF CONTRACTOR SUPPLIED SWITCHBOARD (SWBD-01) REQUIRE EXTERNAL CONDUIT AND WIRES TO MAKE CONNECTIONS BETWEEN SECTIONS, THIS EQUIPMENT SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE DISTRICT.
13. CONTROL PANEL SHALL MATCH OTHER SECTIONS IN HEIGHT AND ENCLOSURE COLOR.
14. FRONT ACCESS ONLY, FRONT AND REAR ALIGN, AND FLAT ROOF.
15. PROVIDE A GFCI RECEPTACLE ON THE FRONT OF COMPARTMENT. THE RECEPTACLE SHALL BE CONNECTED TO PNL-01 CIRCUIT #8.
16. PROVIDE SIGHTGLASS WINDOW IN ENCLOSURE FOR USE WITH AN IR CAMERA. IR SIGHTGLASS SHALL INCLUDE A 3-INCH IR CRYSTAL INSERT THAT PROVIDES DIRECT LINE OF SIGHT FOR INFRARED INSPECTIONS, IS TRANSPARENT TO VISIBLE LIGHT, AND SERVES AS A PHYSICAL BARRIER BETWEEN THE CAMERA AND THE TARGET. SIGHTGLASS SHALL HAVE AN ANODIZED ALUMINUM HOUSING WITH AN ALUMINUM SECURITY COVER, STAINLESS STEEL TAMPERPROOF SCREWS, A LOW-SMOKE AND FUME GASKET, AND OVERALL IP65 INGRESS PROTECTION. THE COVER SHALL SWIVEL OPEN TO PROVIDE QUICK ACCESS TO THE IR WINDOW.

EQUIPMENT NAMEPLATE LEGEND

NUMBER	1ST LINE	2ND LINE	3RD LINE
001	PG&E REVENUE METERING AND CTs	-	-
002	PG&E INCOMING SECTION	-	-
003	LINE SIDE	AUXILIARY DEVICES	-
004	1000A-3Ø	MAIN CIRCUIT BREAKER	-
005	1000A-3Ø	ATS	-
006	LOAD SIDE	AUXILIARY DEVICES	-
007	1200A	DISTRIBUTION SWITCHBOARD	-
008	120/208V-3Ø	225A PANEL	-
009	480V:120/208V	45kVA, 3Ø	TRANSFORMER
010	CONTROL PANEL	-	-

LEGEND

UNDERGROUND CONDUIT
ABOVEGROUND CONDUIT
NEW (BOLD LINES)
EXISTING (FADED LINES)

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

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CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER KOOSHA TOOFAN 20418 Exp. SEPT. 30/2027 Electrical Engineer STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
SR. PROJ ENGR, R.P.E. NO.: 20418	
APPROVED: KOOSHA TOOFAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

EQUIPMENT ELEVATION & PLAN VIEWS

PROJ NO.: MOK26-01	100-E-111	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USER:KOOSHA TOOFAN
DATE:3/19/2026 3:00 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\DRAFTING\1-WORKING\100-E-111 - EQUIPMENT ELEVATION & PLAN VIEWS.DWG

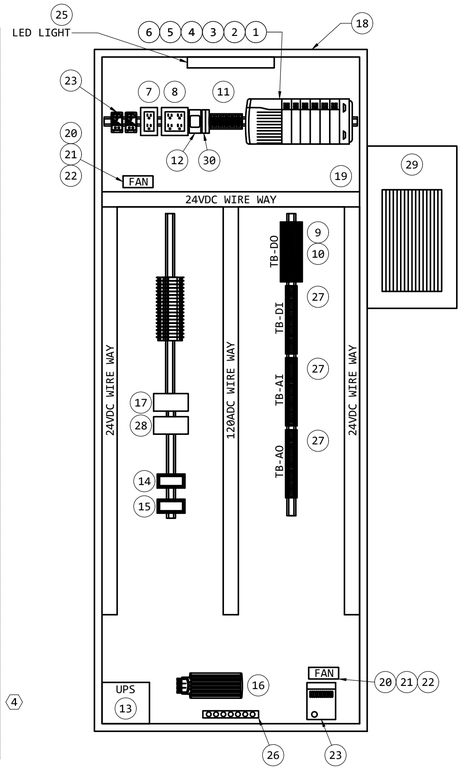
SPEC NO. 2197

#	DESCRIPTION	MANUFACTURER (OR EQUAL)	PART #	QTY
1	COMPACTLOGIX CONTROLLER	ALLEN BRADLEY	5069-L3100ERM	1
2	DI 16 CH 24VDC	ALLEN BRADLEY	5069-IB16	3
3	DO 16 CH 24VDC	ALLEN BRADLEY	5069-OB16	1
4	AI 8 CH 24VDC 4-20mA	ALLEN BRADLEY	5069-IF8	1
5	AO 8 CH 24VDC 4-20mA	ALLEN BRADLEY	5069-OF8	1
6	SERIAL INTERFACE MODULE	ALLEN BRADLEY	5069-SERIAL	1
7	DUPLEX GFCI CONVENIENCE RECEPTACLE	-	-	-
8	UPS RECEPTACLE	-	-	-
9	AUXILIARY RELAYS	ALLEN BRADLEY	700-HB32Z24	16
10	AUXILIARY RELAY BASES	ALLEN BRADLEY	700-HN127	16
11	ETHERNET SWITCH	N-TRON	108TX	1
12	POWER FAIL RELAY	TIME-MARK	2652	-
13	1500VA 120V UPS	APC	SMT 1500 WITH AP9613	1
14	4-20 mADC SURGE SUPPRESSOR	BOURNS	-	1
15	4-20 mADC ISOLATOR	AGM	4000-13EA-DIN	1
16	HEATER	-	-	-
17	120VAC SURGE ARRESTOR	JOSTYN	1260	1
18	ENCLOSURE NEMA 3R DEADFRONT 90"x24"x36"	-	-	1
19	BACKPANEL FOR ITEM 25	-	-	1
20	PANEL FAN	HOFFMANN	A-4AXFN	2
21	FAN BRACKET	HOFFMANN	A-BRKT4	2
22	FAN GUARD	HOFFMANN	A-GARD4	2
23	FAN & HEATER THERMOSTATS	HOFFMANN	D-AH2002A	1
24	PUSH TO TEST INDICATION LIGHT-RED	ALLEN BRADLEY	800H	1
25	PANEL LIGHT (LED)	-	-	1
26	GROUND BUS	-	-	1
27	TERMINAL BLOCKS, FUSE HOLDERS, ETC.	PHOENIX CONTACT	-	-
28	120VAC-24VDC POWER SUPPLY	ALLEN BRADLEY	1606-XL120D	1
29	AIR CONDITIONER	HOFFMAN	-	1 (4)
30	SERIAL TO FIBER CONVERTER	MOXA	TCF-90	1
31	-	-	-	-

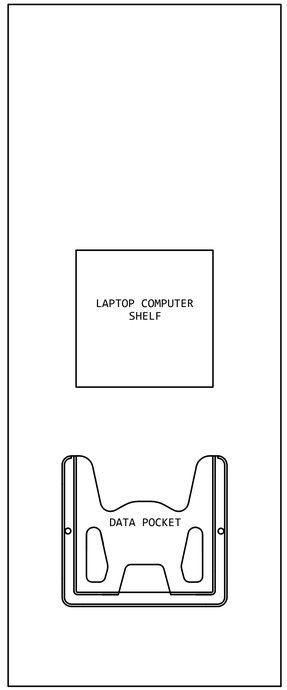
NEW CONTROL PANEL (CPNL-01) BILL OF MATERIALS

#	DESCRIPTION	MANUFACTURER (OR EQUAL)	PART #	QTY
1	FIBER SPLCE BOX	BELDEN	-	1 (5)
2	-	-	-	-
3	-	-	-	-

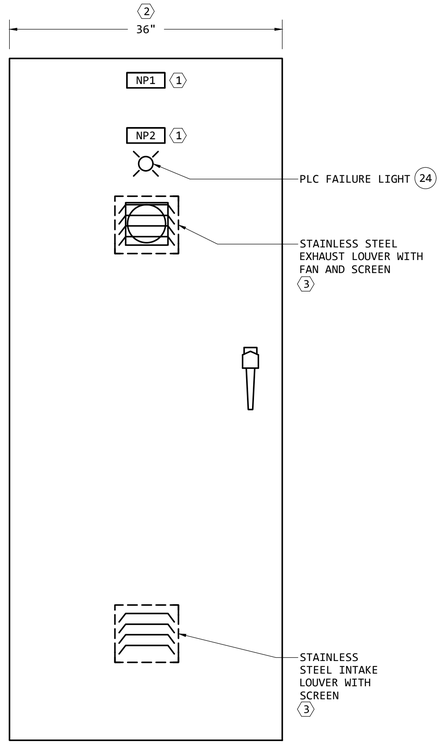
VALVE HOUSE EXISTING APC CABINET BILL OF MATERIALS



CONTROL PANEL (CPNL-01)
INTERIOR ELEVATION
NOT TO SCALE



CONTROL PANEL (CPNL-01)
INTERIOR DOOR ELEVATION
NOT TO SCALE



CONTROL PANEL (CPNL-01)
EXTERIOR DOOR ELEVATION
NOT TO SCALE

GENERAL NOTES

1. REPRESENTATIVE OF MAJOR COMPONENTS ONLY, IN CONTROL PANEL.
2. WIRE SPARE PLC I/O POINTS TO TERMINAL BLOCKS.
3. CONTRACTOR SHALL SUPPLY ANY ADDITIONAL DEVICES AS REQUIRED, TO COMPLETE A FULLY FUNCTIONAL SYSTEM.
4. CONTROL WIRING SHALL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.

KEY NOTES

1. SUPPLY WITH CUSTOM ENGRAVED PHENOLIC NAMEPLATES.
2. CONTROL PANEL SHALL BE 36" IN WIDTH.
3. SUPPLY CONTROL PANEL INTAKE LOUVERS WITH SCREENS AS REQUIRED FOR PROPER ENCLOSURE VENTILATION.
4. THE CONTRACTOR SHALL SIZE THE AC UNIT APPROPRIATELY TO ENSURE PROPER COOLING OF THE HEAT LOAD WITHIN THE CONTROL PANEL.
5. SUPPLY LOOSE FOR INSTALLATION IN EXISTING APC CABINET IN VALVE HOUSE. SEE SHEET 100-E-022 KEY NOTE #2.

NP #	NAMEPLATE (NP) SCHEDULE
NP1	CONTROL PANEL
NP2	PLC FAILURE

A DATA POCKET SHALL BE MOUNTED TO THE INSIDE OF THE PANEL ENCLOSURE OUTER DOOR. NO PENETRATIONS THROUGH THE DOOR SHALL BE ALLOWED FOR MOUNTING. THE DATA POCKET SHALL BE HOFFMANN ADP2 OR APPROVED EQUAL.

A LAPTOP COMPUTER SHELF SHALL BE MOUNTED TO THE INSIDE OF THE PANEL ENCLOSURE OUTER DOOR. NO PENETRATIONS THROUGH THE DOOR SHALL BE ALLOWED FOR MOUNTING. THE LAPTOP COMPUTER SHELF SHALL BE HOFFMANN AASHLF1818 LARGE FOLDING SHELF, 18" x 18", STEEL OR APPROVED EQUAL. MOUNT 36" ABOVE FINISHED FLOOR.

3" ON ORIGINAL DOCUMENT
0 1 2 3

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EETSINC
6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER
KOOSHA TOOFAN
20418
Lic. DEPT. 30/2027
Electrical Engineer
STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN
DESIGN CHECKED BY: JOHN GUILLORY
DRAWN BY: KOOSHA TOOFAN
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EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

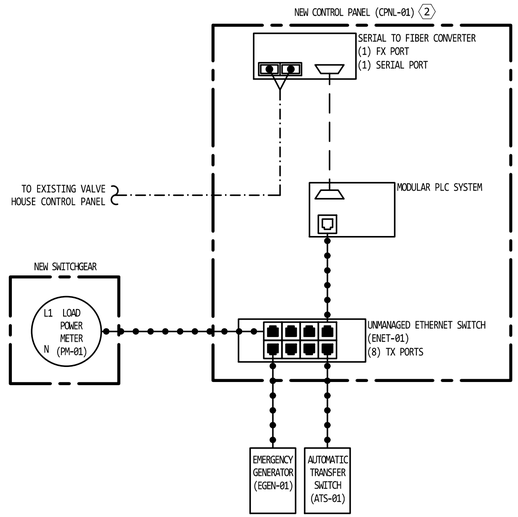
MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

CONTROL PANEL ELEVATION & BILL OF MATERIALS

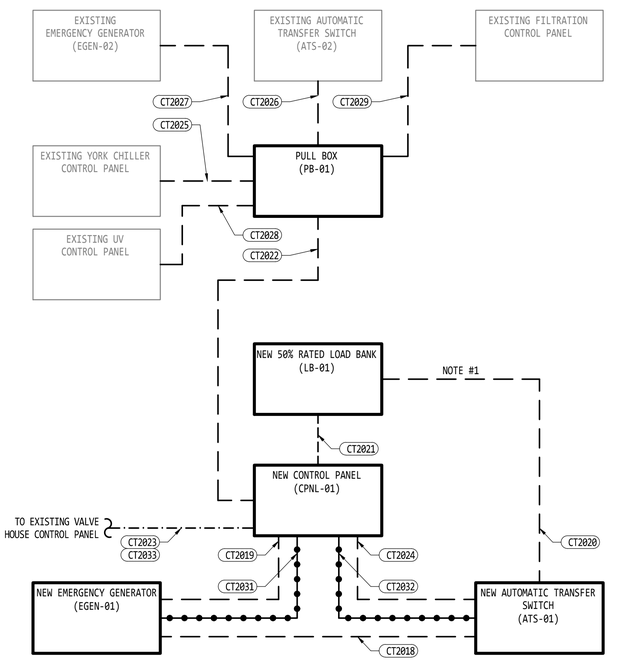
PROJ NO.: MOK26-01	100-E-205	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USERKOOSHA TOOFAN
DATE3/17/2026 12:09 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\1-WORKING\100-E-205 - CONTROL PANEL ELEVATION & BOM.DWG

SPEC NO.2197



COMMUNICATION DIAGRAM



STATUS SIGNAL/ALARM BLOCK DIAGRAM

DETAIL NOTE:

1. AUTOMATIC LOAD DUMP COMMAND CIRCUIT SHALL BE WIRED TO THE LOAD BANK TO DISCONNECT AND DISABLE ALL LOAD STEPS USING A NORMALLY CLOSED (NC) SET OF AUXILIARY CONTACTS FROM THE AUTOMATIC TRANSFER SWITCH (ATS-01). ALL RELEVANT AND REQUIRED CONTACTS SHALL BE UTILIZED TO ACHIEVE LOAD DUMP FUNCTIONALITY.

3" ON ORIGINAL DOCUMENT
0 1 2 3

PLC POINT #	DEVICE	DESCRIPTION
DI-001	EGEN-01	GENERATOR IN RUNNING
DI-002	EGEN-01	GENERATOR LOW FUEL
DI-003	EGEN-01	GENERATOR ALARM
DI-004	EGEN-01	GENERATOR FAIL TO START
DI-005	EGEN-01	GENERATOR EMERGENCY SHUTDOWN
DI-006	EGEN-01	GENERATOR BATTERY CHARGER
DI-007	ATS-01	ATS-01 IN NORMAL
DI-008	ATS-01	ATS-01 IN EMERGENCY
DI-009	LB-01	LOAD BANK OVER TEMPERATURE
DI-010	LB-01	LOAD BANK LOAD DUMP
1 DI-011	52a	MAIN BREAKER 52a STATUS
DI-012	ATS-02	ATS-02 IN NORMAL
DI-013	ATS-02	ATS-02 IN EMERGENCY
DI-014	PFR-01	NORMAL UTILITY POWER AC FAIL
DI-015	PFR-02	NORMAL/EMERGENCY LOAD POWER AC FAIL
DI-016	PFR-03	CONTROL PANEL (CPNL-01) AC FAIL
DI-017	PR-UF	CONTROL PANEL (CPNL-01) DC FAIL
DI-018	ZS-01	CONTROL PANEL DOOR SWITCH
DI-019	YC	YORK CHILLER COMPRESSOR #1 FAIL
DI-020	YC	YORK CHILLER COMPRESSOR #2 FAIL
DI-021	YC	YORK TEMPERATURE HIGH
DI-022	YC	YORK CHILLER ASSISTANCE PUMP #1 FAIL
DI-023	YC	YORK CHILLER ASSISTANCE PUMP #2 FAIL
DI-024	UV	UV SYSTEM FAIL
DI-025	FS	FILTRATION SYSTEM FAIL
DI-026	EGEN-02	GENERATOR IN RUNNING
DI-027	EGEN-02	GENERATOR LOW FUEL
DI-028	EGEN-02	GENERATOR ALARM
DI-029	EGEN-02	GENERATOR FAIL TO START
DI-030	EGEN-02	GENERATOR EMERGENCY SHUTDOWN
DI-031	EGEN-02	GENERATOR BATTERY CHARGER
DI-032	-	-
DI-033	-	-
DI-034	-	-
DI-035	-	-
DI-036	-	-
DI-037	-	-
DI-038	-	-
DI-039	-	-
DI-040	-	-
DI-041	-	-
DI-042	-	-
DI-043	-	-
DI-044	-	-
DI-045	-	-
DI-046	-	-
DI-047	-	-
DI-048	-	-
DO-001	-	-
DO-002	-	-
DO-003	-	-
DO-004	-	-
DO-005	-	-
DO-006	-	-
DO-007	-	-
DO-008	-	-
DO-009	-	-
DO-010	-	-
DO-011	-	-
DO-012	-	-
DO-013	-	-
DO-014	-	-
DO-015	-	-
DO-016	-	-

PLC POINT #	DEVICE	DESCRIPTION
AI-001	-	-
AI-002	-	-
AI-003	-	-
AI-004	-	-
AI-005	-	-
AI-006	-	-
AI-007	-	-
AI-008	-	-
AO-001	-	-
AO-002	-	-
AO-003	-	-
AO-004	-	-
AO-005	-	-
AO-006	-	-
AO-007	-	-
AO-008	-	-

CONTROL PANEL (CPNL-01) INPUT/OUTPUT SCHEDULE

GENERAL NOTES

1. TELEMETRY SHALL BE FULLY FUNCTIONAL PRIOR TO DISTRICT ACCEPTANCE.
2. CONTRACTOR SHALL COMPLETE CONTROL CABLING FOR A FULL FUNCTIONAL SYSTEM.
3. ALL NETWORK CONFIGURATION AND PROGRAMMING BY OTHERS.

KEY NOTES

1. 52A CONTACT OPENS WHEN THE BREAKER (52) OPENS. 52A CONTACT CLOSES WHEN 52 CLOSES.
2. COMMUNICATION HARDWARE LOCATED INSIDE CONTROL PANEL (CPNL-01) SHOWN ON SHEET 100-E-205.

COMPACTLOGIX INPUTS

COMMUNICATION SIGNALS

INPUT #	DEVICE	DESCRIPTION
1	ATS (ATS-01)	OPERATIONAL DATA
2	GENERATOR (EGEN-01)	OPERATIONAL DATA
3	POWER METER (PM-01)	VOLTAGE (3Ø)
4	POWER METER (PM-01)	CURRENT (3Ø)
5	POWER METER (PM-01)	POWER (W/VA/VAR)
6	POWER METER (PM-01)	POWER FACTOR

NO.	DATE	REVISION	BY	REC.	APP.

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6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

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KOOSHA TOOFAN
No. 20418
Exp. SEPT. 30/2027
Electrical Engineer
STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
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SR. PROJ ENGR. R.P.E. NO.: 20418	
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EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

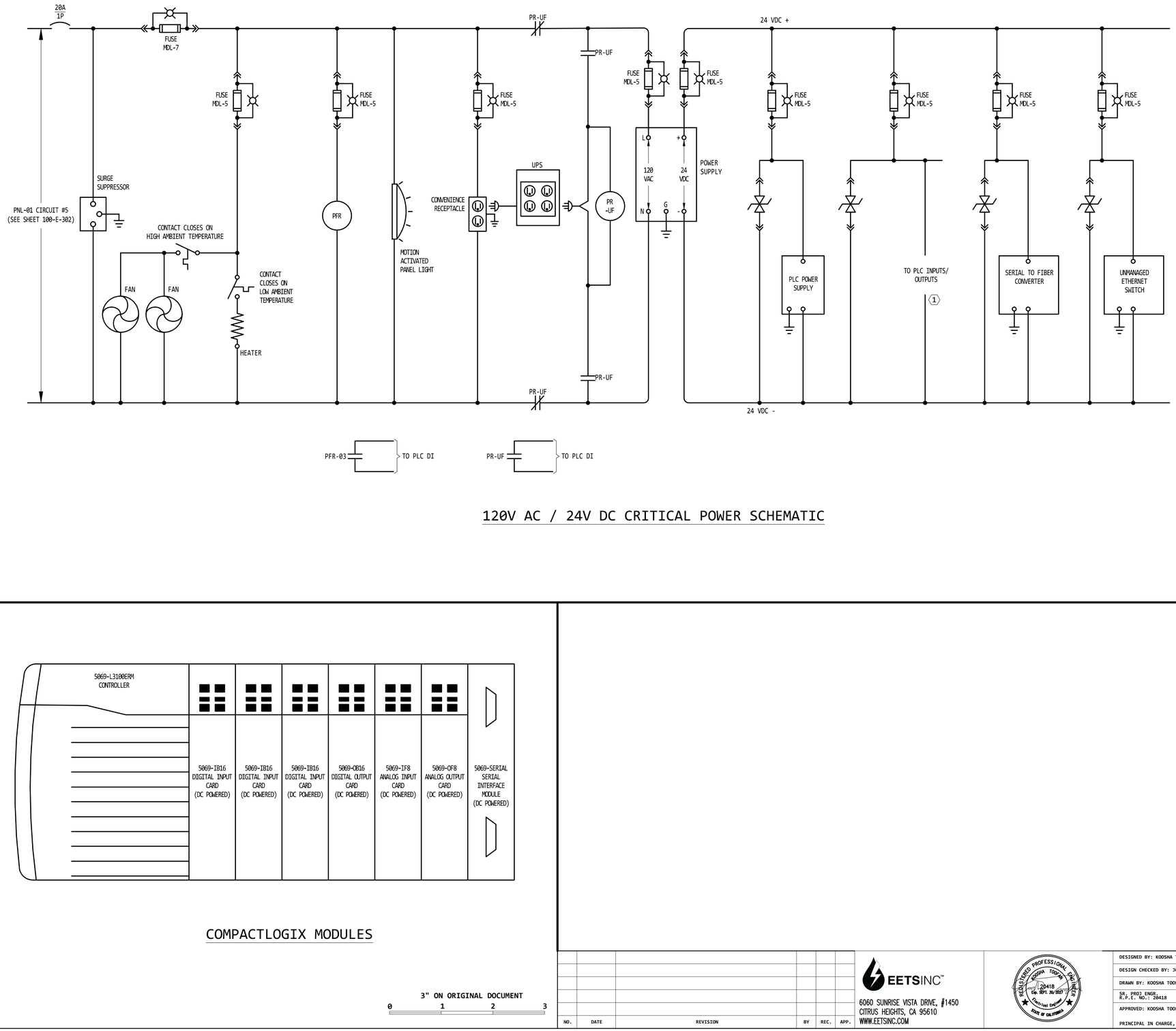
MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

COMMUNICATION DIAGRAMS & INPUT/OUTPUT SCHEDULE

PROJ NO.: MOK26-01			
SCALE: AS SHOWN	100-E-206		0
DATE: 10APR2026	STRUCT.	DISC. NUMBER	REV.

USERKOOSHA TOOFAN
DATE=4/2/2026 1:59 PM
FILE: Z:\JOBS 2025\1ST QUARTER\35-101_EBMUD MOKELUMNE RIVER FISH HATCHERY DIGITAL DESIGN SERVICES\07-DRAFTING\1-WORKING\100-E-206 - COMMUNICATION DIAGRAM.DWG

SPEC NO.2197



120V AC / 24V DC CRITICAL POWER SCHEMATIC

GENERAL NOTES

1. SUPPLY 25% SPARE AC AND DC CIRCUITS.
2. ALL DIGITAL OUTPUTS TO UTILIZE INTERPOSING DISCRETE RELAYS TO ACTIVATE FINAL LOADING.

KEY NOTE

1. SUB-FUSE ALL INDIVIDUAL SIGNAL CONDITIONERS, ISOLATORS AND INSTRUMENTS.

COMPACTLOGIX MODULES

3" ON ORIGINAL DOCUMENT
0 1 2 3

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6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

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EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

CONTROL PANEL POWER DIAGRAM

PROJ NO.: MOK26-01	100-E-207	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USERKOOSHA TOOFAN
DATE:4/2/2026 1:58 PM
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POWER DESIGN SERVICES\01-DRAFTING\1-WORKING\100-E-207 - CONTROL PANEL
POWER DIAGRAM.DWG

SPEC NO. 2197

FUNCTION	CONDUIT NO.	CONDUIT SIZE	CONDUIT TYPE	CABLE NUMBER	FROM	TO	REFERENCE DRAWING	REMARKS
POWER	CT2000A	5"	PVC SCH 40	A1P1A	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	100-E-110, 100-E-020, 100-E-019	EXISTING PG&E SERVICE CONDUIT
POWER	CT2000B	5"	PVC SCH 40	A1P1B	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	100-E-110, 100-E-020, 100-E-019	EXISTING PG&E SERVICE CONDUIT
POWER	CT2000C	5"	PVC SCH 40	A1P1C	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	100-E-110, 100-E-020, 100-E-019	EXISTING PG&E SERVICE CONDUIT (TO BE CAPPED FOR FUTURE USE)
POWER	CT2000D	5"	PVC SCH 40	A1P1D	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	100-E-110, 100-E-020, 100-E-019	PG&E SERVICE CONDUIT (TO BE CAPPED FOR FUTURE USE)
POWER	CT2000E	5"	PVC SCH 40	A1P1E	EXISTING PG&E TRANSFORMER (T-13680)	STUB UP NEAR EXISTING PG&E TRANSFORMER (T-13680)	100-E-110, 100-E-020, 100-E-019	PG&E STUBBED CONDUIT NEXT TO TRANSFORMER FOR FUTURE USE
POWER	CT2000F	5"	PVC SCH 40	A1P1F	EXISTING PG&E TRANSFORMER (T-13680)	STUB UP NEAR EXISTING PG&E TRANSFORMER (T-13680)	100-E-110, 100-E-020, 100-E-019	PG&E STUBBED CONDUIT NEXT TO TRANSFORMER FOR FUTURE USE
POWER	CT2000G	5"	PVC SCH 40	A1P1G	EXISTING PG&E TRANSFORMER (T-13680)	STUB UP NEAR EXISTING PG&E TRANSFORMER (T-13680)	100-E-110, 100-E-020, 100-E-019	PG&E STUBBED CONDUIT NEXT TO TRANSFORMER FOR FUTURE USE
POWER	CT2001	4"	PVC SCH 40	A1P2A	NEW ATS-01	NEW EMERGENCY GENERATOR (EGEN-01)	100-E-110, 100-E-020	-
POWER	CT2002	4"	PVC SCH 40	A1P2B	NEW ATS-01	NEW EMERGENCY GENERATOR (EGEN-01)	100-E-110, 100-E-020	-
POWER	CT2003	(1)(3)	PVC SCH 40	A1P3	NEW SWITCHBOARD (SWBD-01)	EXISTING TRI-PUMP PANEL	100-E-110, 100-E-020	-
POWER	CT2004	(1)(3)	PVC SCH 40	A1P4	NEW SWITCHBOARD (SWBD-01)	EXISTING ATS-02 DISCONNECT SWITCH	100-E-110, 100-E-020	-
POWER	CT2005	(1)(3)	PVC SCH 40	A1P5	NEW SWITCHBOARD (SWBD-01)	EXISTING PANEL DP4	100-E-110, 100-E-020	-
POWER	CT2006	(1)(3)	PVC SCH 40	A1P6	NEW SWITCHBOARD (SWBD-01)	EXISTING WELL PUMP PANEL	100-E-110, 100-E-020	-
POWER	CT2007	(1)(3)	PVC SCH 40	A1P7	NEW SWITCHBOARD (SWBD-01)	EXISTING PANEL DP3	100-E-110, 100-E-020	-
POWER	CT2008	(1)(3)	PVC SCH 40	A1P8	NEW SWITCHBOARD (SWBD-01)	EXISTING PANEL DP2	100-E-110, 100-E-020	-
POWER	CT2009	(1)(3)	PVC SCH 40	A1P9	NEW SWITCHBOARD (SWBD-01)	EXISTING RP 1,2,3 PANELS	100-E-110, 100-E-020	-
POWER	CT2010	(1)(3)	PVC SCH 40	A1P10	NEW SWITCHBOARD (SWBD-01)	EXISTING RP 4,5 PANELS	100-E-110, 100-E-020	-
POWER	CT2011	(1)(3)	PVC SCH 40	A1P11	NEW SWITCHBOARD (SWBD-01)	EXISTING FILTER BACKWASH	100-E-110, 100-E-020	-
POWER	CT2012	(1)(3)	PVC SCH 40	A1P12	NEW 120/208V-3Ø PANEL (PNL-01)	EXISTING LIFT STATION	100-E-020	-
POWER	CT2013	2"	PVC SCH 40	A1P13	NEW 120/208V-3Ø PANEL (PNL-01)	NEW EMERGENCY GENERATOR (EGEN-01)	100-E-020	-
POWER	CT2014	1"	PVC SCH 40	A1P14	NEW 120/208V-3Ø PANEL (PNL-01)	WEST LIGHT POLE	100-E-020	-
POWER	CT2015	1"	PVC SCH 40	A1P15	WEST LIGHT POLE	EAST LIGHT POLE	100-E-020	-
POWER	CT2016	4"	PVC SCH 40	A1P16	NEW SWITCHBOARD (SWBD-01)	EXISTING PULL BOX	100-E-020	-
POWER	CT2017	1"	PVC SCH 40	A1P17	NEW 120/208V-3Ø PANEL (PNL-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020	-
CONTROL	CT2018	1"	PVC SCH 40	A1P18	NEW ATS-01	NEW EMERGENCY GENERATOR (EGEN-01)	100-E-020, 100-E-206	-
CONTROL	CT2019	1 1/2"	PVC SCH 40	A1P19	NEW EMERGENCY GENERATOR (EGEN-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020, 100-E-206	-
CONTROL	CT2020	1" (2)	PVC SCH 40	A1P20	NEW ATS-01	NEW LOAD BANK (LB-01)	100-E-020, 100-E-206	-
CONTROL	CT2021	1" (2)	PVC SCH 40	A1P21	NEW LOAD BANK (LB-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020, 100-E-206	-
CONTROL	CT2022	3"	PVC SCH 40	A1P22	NEW PULL BOX (PB-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020, 100-E-021, 100-E-206, 100-E-019	-
CONTROL	CT2023	2"	PVC SCH 40	A1P23	NEW CONTROL PANEL (CPNL-01)	EXISTING VALVE HOUSE CONTROL PANEL	100-E-020, 100-E-022, 100-E-206, 100-E-019	-
CONTROL	CT2024	2"	PVC SCH 40	A1P24	NEW ATS-01 SECTION	NEW CONTROL PANEL (CPNL-01)	100-E-020, 100-E-206	-
CONTROL	CT2025	1"	PVC SCH 40	A1P25	EXISTING YORK CHILLER CONTROL PANEL	NEW PULL BOX (PB-01)	100-E-021, 100-E-206	-
CONTROL	CT2026	1"	PVC SCH 40	A1P26	EXISTING ATS-02	NEW PULL BOX (PB-01)	100-E-021, 100-E-206	-
CONTROL	CT2027	1"	PVC SCH 40	A1P27	EXISTING EMERGENCY GENERATOR (EGEN-02)	NEW PULL BOX (PB-01)	100-E-021, 100-E-206	-
CONTROL	CT2028	1"	PVC SCH 40	A1P28	EXISTING UV CONTROL PANEL	NEW PULL BOX (PB-01)	100-E-021, 100-E-206	-
CONTROL	CT2029	1"	PVC SCH 40	A1P29	EXISTING FILTRATION CONTROL PANEL	NEW PULL BOX (PB-01)	100-E-021, 100-E-206, 100-E-019	-
CONTROL	CT2030	2"	PVC SCH 40	A1P30	NEW CONTROL PANEL (CPNL-01)	NEW PULL BOX (PB-02)	100-E-020	SPARE CONDUIT FOR FUTURE STATUS/ALARM SIGNALS
INSTRUMENTATION	CT2031	1"	PVC SCH 40	A1P31	NEW EMERGENCY GENERATOR (EGEN-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020, 100-E-206	-
INSTRUMENTATION	CT2032	2"	PVC SCH 40	A1P32	NEW ATS-01 SECTION	NEW CONTROL PANEL (CPNL-01)	100-E-020, 100-E-206	-
INSTRUMENTATION	CT2033	2"	PVC SCH 40	A1P33	NEW CONTROL PANEL (CPNL-01)	EXISTING VALVE HOUSE APC CABINET	100-E-020, 100-E-022, 100-E-206, 100-E-019	-
INSTRUMENTATION	CT2034	2"	PVC SCH 40	A1P34	NEW CONTROL PANEL (CPNL-01)	NEW PULL BOX (PB-03)	100-E-020	SPARE CONDUIT FOR FUTURE STATUS/ALARM SIGNALS
POWER	CT2035	2"	PVC SCH 40	A1P35	NEW SWITCHBOARD (SWBD-01)	EXISTING PULL BOX	100-E-020	-
POWER	CT2036	2"	PVC SCH 40	A1P36	NEW SWITCHBOARD (SWBD-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020	-
POWER	CT2037	2"	PVC SCH 40	A1P37	NEW SWITCHBOARD (SWBD-01)	NEW CONTROL PANEL (CPNL-01)	100-E-020	-

CONDUIT SCHEDULE

KEY NOTES

1. CONTRACTOR SHALL VERIFY EXISTING CONDUIT MEET NEC REQUIREMENTS FOR SIZING. IF IN COMPLIANCE, MATCH CONDUIT SIZE TO CONDUIT FEEDING EXISTING LOAD. CONTRACTOR SHALL CONTACT THE DISTRICT IN THE EVENT OF ANY CONDUIT SIZING ISSUES.
2. CONTRACTOR SHALL COORDINATE THE ROUTING OF CONDUITS FROM ATS-01 AND THE CONTROL PANEL TO THE LOAD BANK IN ACCORDANCE WITH THE APPROVED GENERATOR AND LOAD BANK SHOP DRAWINGS PRIOR TO ROUGH-IN. THE LOAD BANK SHALL BE INSTALLED ON TOP OF THE EMERGENCY GENERATOR ENCLOSURE.
3. ASSUMED CONDUIT LOCATIONS APPEAR ON SITE PLAN DRAWINGS AND ELECTRICAL DETAILS. CONTRACTOR TO FIELD LOCATE AND CUT AND EXTEND THESE CONDUITS FROM EQUIPMENT IDENTIFIED IN SCHEDULE ON THIS SHEET AS REQUIRED.

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NO.	DATE	REVISION	BY	REC.	APP.

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6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — No. 20418 — EXP. SEPT. 30, 2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
SR. PROJ ENGR. R.P.E. NO.: 20418	
APPROVED: KOOSHA TOOFAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

CONDUIT SCHEDULE

PROJ NO.: MOK26-01	100-E-300	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

SPEC NO. 2197

FUNCTION	CABLE			FROM	TO	ROUTING	REFERENCE DRAWING	REMARKS
	NO.	SIZE	TYPE					
POWER	A1P1A	1000A	QPX	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	CT2000A	100-E-110, 100-E-020, 100-E-019	WIRES TO BE PULLED BY PG&E
POWER	A1P1B	1000A	QPX	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	CT2000B	100-E-110, 100-E-020, 100-E-019	WIRES TO BE PULLED BY PG&E
POWER	A1P1C	(1) PPR	3/16" Ø POLY PULL ROPE	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	CT2000C	100-E-110, 100-E-020, 100-E-019	-
POWER	A1P1D	(1) PPR	3/16" Ø POLY PULL ROPE	EXISTING PG&E TRANSFORMER (T-13680)	NEW SWITCHBOARD (SWBD-01) INCOMING SECTION	CT2000D	100-E-110, 100-E-020, 100-E-019	-
POWER	A1P1E	(1) PPR	3/16" Ø POLY PULL ROPE	EXISTING PG&E TRANSFORMER (T-13680)	STUB UP NEAR EXISTING PG&E TRANSFORMER (T-13680)	CT2000E	100-E-110, 100-E-020, 100-E-019	-
POWER	A1P1F	(1) PPR	3/16" Ø POLY PULL ROPE	EXISTING PG&E TRANSFORMER (T-13680)	STUB UP NEAR EXISTING PG&E TRANSFORMER (T-13680)	CT2000F	100-E-110, 100-E-020, 100-E-019	-
POWER	A1P1G	(1) PPR	3/16" Ø POLY PULL ROPE	EXISTING PG&E TRANSFORMER (T-13680)	STUB UP NEAR EXISTING PG&E TRANSFORMER (T-13680)	CT2000G	100-E-110, 100-E-020, 100-E-019	-
POWER	A1P2A	(3) 600kCMIL & (1) 1/0 GRD.	Cu. 600V XHHW-2	NEW ATS-01	NEW EMERGENCY GENERATOR (EGEN-01)	CT2001	100-E-110, 100-E-020	-
POWER	A1P2B	(3) 600kCMIL & (1) 1/0 GRD.	Cu. 600V XHHW-2	NEW ATS-01	NEW EMERGENCY GENERATOR (EGEN-01)	CT2002	100-E-110, 100-E-020	-
POWER	A1P3	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING TRI-PUMP PANEL	CT2003	100-E-110, 100-E-020	-
POWER	A1P4	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING ATS-02 DISCONNECT SWITCH	CT2004	100-E-110, 100-E-020	-
POWER	A1P5	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING PANEL DP4	CT2005	100-E-110, 100-E-020	-
POWER	A1P6	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING WELL PUMP PANEL	CT2006	100-E-110, 100-E-020	-
POWER	A1P7	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING PANEL DP3	CT2007	100-E-110, 100-E-020	-
POWER	A1P8	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING PANEL DP2	CT2008	100-E-110, 100-E-020	-
POWER	A1P9	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING RP 1,2,3 PANELS	CT2009	100-E-110, 100-E-020	-
POWER	A1P10	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING RP 4,5 PANELS	CT2010	100-E-110, 100-E-020	-
POWER	A1P11	(1)	Cu. 600V XHHW-2	NEW SWITCHBOARD (SWBD-01)	EXISTING FILTER BACKWASH	CT2011	100-E-110, 100-E-020	-
POWER	A1P12	(1)	Cu. 600V XHHW-2	NEW 120/208V-3Ø PANEL (PNL-01)	EXISTING LIFT STATION	CT2012	100-E-020	-
POWER	A1P13	(2) #8 & (1) #10 GRD.	Cu. 600V XHHW-2	NEW 120/208V-3Ø PANEL (PNL-01)	NEW EMERGENCY GENERATOR (EGEN-01)	CT2013	100-E-020	(2)
POWER	A1P14	(4) #10 & (1) #10 GRD.	Cu. 600V XHHW-2	NEW 120/208V-3Ø PANEL (PNL-01)	WEST LIGHT POLE	CT2014	100-E-020	POLE MOUNTED LIGHT & GFCI
POWER	A1P15	(4) #10 & (1) #10 GRD.	Cu. 600V XHHW-2	WEST LIGHT POLE	EAST LIGHT POLE	CT2015	100-E-020	POLE MOUNTED LIGHT & GFCI
POWER	A1P16	(1) PPR	3/16" Ø POLY PULL ROPE	NEW SWITCHBOARD (SWBD-01)	EXISTING PULL BOX	CT2016	100-E-020	PROVISION FOR FUTURE POWER CIRCUITS
POWER	A1P17	(2) #10 & (1) #10 GRD.	Cu. 600V XHHW-2	NEW 120/208V-3Ø PANEL (PNL-01)	NEW CONTROL PANEL (CPNL-01)	CT2017	100-E-020	-
CONTROL	A1P18	(2) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	NEW ATS-01	NEW EMERGENCY GENERATOR (EGEN-01)	CT2018	100-E-020, 100-E-206	GENERATOR CALL TO RUN
CONTROL	A1P19	(18) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	NEW EMERGENCY GENERATOR (EGEN-01)	NEW CONTROL PANEL (CPNL-01)	CT2019	100-E-020, 100-E-206	GENERATOR STATUS/ALARM SIGNALS
CONTROL	A1P20	(2) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	NEW ATS-01	NEW LOAD BANK (LB-01)	CT2020	100-E-020, 100-E-206	(3)
CONTROL	A1P21	(4) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	NEW LOAD BANK (LB-01)	NEW CONTROL PANEL (CPNL-01)	CT2021	100-E-020, 100-E-206	LOAD BANK STATUS/ALARM SIGNALS
CONTROL	A1P22	(1) PPR, (36) #12 & (1) #12 GRD.	Cu. 600V XHHW-2 & 3/16" Ø POLY PULL ROPE	NEW PULL BOX (PB-01)	NEW CONTROL PANEL (CPNL-01)	CT2022	100-E-020, 100-E-021, 100-E-206, 100-E-019	ATS-02/EGEN-02/FILTRATION/YORK CHILLER/UV PANELS STATUS/ALARM SIGNALS
CONTROL	A1P23	(1) PPR	3/16" Ø POLY PULL ROPE	NEW CONTROL PANEL (CPNL-01)	EXISTING VALVE HOUSE CONTROL PANEL	CT2023	100-E-020, 100-E-022, 100-E-206, 100-E-019	ATS STATUS/ALARM SIGNALS
CONTROL	A1P24	(10) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	NEW ATS-01 SECTION	NEW CONTROL PANEL (CPNL-01)	CT2024	100-E-020, 100-E-206	ATS, 52a, PFR-01, & PFR-02 STATUS/ALARM SIGNALS
CONTROL	A1P25	(10) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	EXISTING YORK CHILLER CONTROL PANEL	NEW PULL BOX (PB-01)	CT2025	100-E-021, 100-E-206	STATUS/ALARM SIGNALS
CONTROL	A1P26	(4) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	EXISTING ATS-02	NEW PULL BOX (PB-01)	CT2026	100-E-021, 100-E-206	STATUS/ALARM SIGNALS
CONTROL	A1P27	(12) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	EXISTING EMERGENCY GENERATOR (EGEN-02)	NEW PULL BOX (PB-01)	CT2027	100-E-021, 100-E-206	STATUS/ALARM SIGNALS
CONTROL	A1P28	(4) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	EXISTING UV CONTROL PANEL	NEW PULL BOX (PB-01)	CT2028	100-E-021, 100-E-206	STATUS/ALARM SIGNALS
CONTROL	A1P29	(4) #12 & (1) #12 GRD.	Cu. 600V XHHW-2	EXISTING FILTRATION CONTROL PANEL	NEW PULL BOX (PB-01)	CT2029	100-E-021, 100-E-206, 100-E-019	STATUS/ALARM SIGNALS
CONTROL	A1P30	(1) PPR	3/16" Ø POLY PULL ROPE	NEW CONTROL PANEL (CPNL-01)	NEW PULL BOX (PB-02)	CT2030	100-E-020	PROVISION FOR FUTURE FACILITY CONTROL WIRES
INSTRUMENTATION	A1P31	(1) CAT 6E	CATEGORY 6E ETHERNET	NEW EMERGENCY GENERATOR (EGEN-01)	NEW CONTROL PANEL (CPNL-01)	CT2031	100-E-020, 100-E-206	OPERATIONAL DATA TRANSFER
INSTRUMENTATION	A1P32	(2) CAT 6E	CATEGORY 6E ETHERNET	NEW ATS-01 SECTION	NEW CONTROL PANEL (CPNL-01)	CT2032	100-E-020, 100-E-206	ATS-01 & POWER METER DATA TRANSFER
INSTRUMENTATION	A1P33	(1) 24 STRAND SINGLE MODE FO (4)	-	NEW CONTROL PANEL (CPNL-01)	EXISTING VALVE HOUSE APC CABINET	CT2033	100-E-020, 100-E-022, 100-E-206, 100-E-019	DATA TRANSFER TO HEADQUARTERS
INSTRUMENTATION	A1P34	(1) PPR	3/16" Ø POLY PULL ROPE	NEW CONTROL PANEL (CPNL-01)	NEW PULL BOX (PB-03)	CT2034	100-E-020	PROVISION FOR FUTURE FACILITY INSTRUMENT CABLES
POWER	A1P35	(1) PPR	3/16" Ø POLY PULL ROPE	NEW SWITCHBOARD (SWBD-01)	EXISTING RP 1,2,3 PANELS	CT2009	100-E-110, 100-E-020	-
POWER	A1P36	(1) PPR	3/16" Ø POLY PULL ROPE	NEW SWITCHBOARD (SWBD-01)	EXISTING RP 4,5 PANELS	CT2010	100-E-110, 100-E-020	-
POWER	A1P37	(1) PPR	3/16" Ø POLY PULL ROPE	NEW SWITCHBOARD (SWBD-01)	EXISTING FILTER BACKWASH	CT2011	100-E-110, 100-E-020	-

KEY NOTES

1. CONTRACTOR SHALL VERIFY EXISTING CONDUCTORS MEET NEC REQUIREMENTS FOR SIZING. IF IN COMPLIANCE, MATCH CONDUCTOR RATING AND COUNT TO CONDUCTORS CURRENTLY FEEDING EXISTING LOAD.
2. CONTRACTOR SHALL CONFIRM THE CONDUIT FILL FOR FEEDING NEW GENERATOR (EGEN-01) AUXILIARY LOADS USING APPROVED GENERATOR SHOP DRAWINGS PRIOR TO PULLING CONDUCTORS. THE EXISTING FILL SHOWN IN THE CONDUIT SCHEDULE IS SIZED FOR A SINGLE 50A, 240V, 1Ø CIRCUIT. IF ANY DISCREPANCIES EXIST, THE CONTRACTOR SHALL NOTIFY THE DISTRICT TO AMEND THE FILL AND UPSIZE THE CONDUIT AS NECESSARY.
3. AUTOMATIC LOAD DUMP COMMAND CIRCUIT WIRED TO LOAD BANK TO DISCONNECT AND DISABLE ALL LOAD STEPS FROM A NORMALLY CLOSED (NC) SET OF AUXILIARY CONTACTS FROM THE AUTOMATIC TRANSFER SWITCH (ATS-01).
4. FIBER OPTIC CABLE SHALL BE CORNING CLASS LOOSE TUBE OS2 SINGLE MODE 24 STRAND.

CABLE SCHEDULE

USER:KOOSHA TOOFAN
DATE:19/2026 2:29 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\1-WORKING\100-E-301 - CABLE SCHEDULE.DWG

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EETSINC™
6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — No. 20418 — EXP. SEPT. 30, 2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN
DESIGN CHECKED BY: JOHN GUILLORY
DRAWN BY: KOOSHA TOOFAN
SR. PROJ ENGR. R.P.E. NO.: 20418
APPROVED: KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

CABLE SCHEDULE

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-301	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

SPEC NO.2197

SYMBOL	QUANTITY	TAG	CATALOG #	ARRANGEMENT	DESCRIPTION	LLF	LUM LUMENS	LUMINAIRE WATTS	TOTAL WATTS	VOLTAGE	NOTES
	2	A	FXLEDSSF @ 137W_4K	SINGLE	FLOOD LIGHT WITH SLIPFITTER MOUNTING ARM	1.000	17898	129.343	256.686	120	20' DARK BRONZE POLE WITH GFCI RECEPTACLE

LIGHTING SCHEDULE ⟨1⟩⟨3⟩⟨4⟩⟨5⟩

PANEL: '01' TYPE: AS SPECIFIED FRAME: 225A MAIN: 150A-3P ⟨2⟩

SERVICE: 120/208 VOLT, 3Ø-4 WIRE MOUNT: INSIDE SWITCHBOARD (SWBD-01)

LOAD	KW	CB	#	S/N	#	CB	KW	LOAD
NEW GENERATOR AUXILIARY LOADS	-	30/2 ⟨6⟩	1	X	2	20/1	-	(2) NEW OUTDOOR POLE-MOUNTED LIGHTS
			3	X	4	20/1	-	(2) NEW OUTDOOR GFCI RECEPTACLES
NEW CONTROL PANEL (CPNL-01)	-	20/1	5	X	6	20/1	-	CONTROL PANEL (CPNL-01) AC UNIT
EXISTING LIFT STATION	-	60/3	7	X	8	20/1	-	SWITCHBOARD GFCI
			9	X	10	20/1	-	POWER METER
			11	X	12	20/1	-	SWITCHBOARD HEATERS
SPARE	-	20/1	13	X	14	20/1	-	SPARE
SPARE	-	20/1	15	X	16	20/1	-	SPARE
SPACE	-	20/1	17	X	18	20/1	-	SPACE
	-	-	19	X	20	-	-	
	-	-	21	X	22	-	-	
	-	-	23	X	24	-	-	
	-	-	25	X	26	-	-	
	-	-	27	X	28	-	-	
	-	-	29	X	30	-	-	

PANEL SCHEDULE

ITEM #	PULL BOX TAG	DESCRIPTION	MAKE/MODEL	PLAN SHEET REFERENCE	DESCRIPTION
1	PB-01	MINIMUM INNER DIMENSIONS: 16"(L) x 10"(W)	CHRISTY B1730	100-E-019	CONTROL WIRING FOR YORK CHILLER AND OTHER EQUIPMENT
2	PB-02	MINIMUM INNER DIMENSIONS: 16"(L) x 10"(W)	CHRISTY B1730	100-E-020	CONTROL PULL BOX FOR FUTURE WIRING
3	PB-03	MINIMUM INNER DIMENSIONS: 16"(L) x 10"(W)	CHRISTY B1730	100-E-020	INSTRUMENTATION PULL BOX FOR FUTURE WIRING
4	PB-04	MINIMUM INNER DIMENSIONS: 16"(L) x 10"(W)	CHRISTY B1730	100-E-020	POWER PULL BOX FOR FUTURE WIRING

PULL BOX SCHEDULE

KEY NOTES

1. CONTRACTOR SHALL VERIFY MOUNTING REQUIREMENTS OF ALL LIGHT FIXTURES AND COORIDNATE WITH LIGHT FIXTURE SUPPLIER TO FURNISH ALL REQUIRED MOUNTING HARDWARE AND ACCESSORIES THAT ARE SUITABLE FOR THE SPECIFIC MOUNTING SURFACE AND ENVIRONMENT, REGARDLESS OF WHAT IS SPECIFIED IN THE LUMINARIES SCHEDULE.
2. PANEL SHALL BE RATED 22kAIC RMS SYMMETRICAL MINIMUM.
3. GFCI RECEPTACLE SHALL BE WEATHER RESISTANT AND RATED FOR OUTDOOR USE, AND SHALL BE EQUIPPED WITH GROUND FAULT PROTECTION.
4. LIGHT SHALL BE CONTROLLED VIA LIGHT SWITCH ONLY. NO PHOTOCELL OPERATION PERMITTED.
5. THE LOCATIONS OF THE LIGHTING FIXTURES ARE SHOWN DIAGRAMMATICALLY ON PLAN SHEET 100-E-020. VERIFY EXACT LOCATIONS WITH SITE CONDITIONS DURING INSTALLATION. COORDINATE FINAL INSTALLATION LOCATIONS WITH THE DISTRICT PRIOR TO ROUGH-IN.
6. COORDINATE BREAKER RATING FOR GENERATOR AUXILIARY LOADS WITH THE APPROVED GENERATOR SUBMITTAL. ADJUST BREAKER RATING AS REQUIRED.

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CITRUS HEIGHTS, CA 95610
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REGISTERED PROFESSIONAL ENGINEER KOOSHA TOOFAN No. 20418 Exp. 06-30-2027 Electrical Engineer STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN
DESIGN CHECKED BY: JOHN GUILLORY
DRAWN BY: KOOSHA TOOFAN
SR. PROJ ENGR, R.P.E. NO.: 20418
APPROVED: KOOSHA TOOFAN
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

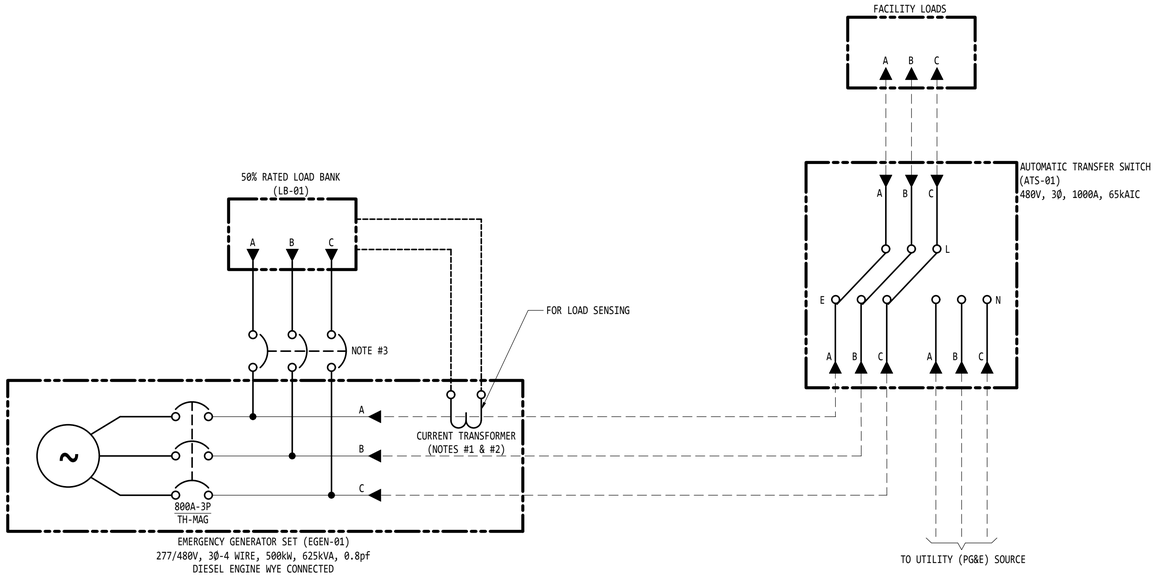
MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

PANEL, LIGHTING, & PULL BOX SCHEDULES

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-302	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USER:KOOSHA TOOFAN
DATE:3/16/2026 3:25 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\02-DRAFTING\1-WORKING\100-E-302 - PANEL LIGHTING, PULL BOX SCHEDULES.DWG

SPEC NO.2197

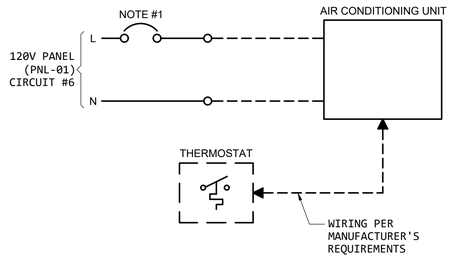


LOAD BANK LOAD MONITORING SCHEMATIC

DETAIL NOTES:

1. INSTALL THE CT BETWEEN THE LOAD BANK AND BUILDING LOAD LOCATION AS SHOWN. PLACING THE CT BETWEEN THE LOAD BANK AND GENERATOR WILL RESULT IN LOAD BANK FAILURE.
2. CT SHALL BE INSTALLED TO MONITOR THE A-PHASE LEG AS SHOWN TO MAINTAIN AN OPERATOR-SETTABLE MINIMUM LOAD OF 30% ON THE EMERGENCY GENERATOR WHEN RUNNING AT ALL TIMES.
3. SIZE BREAKER AS REQUIRED.

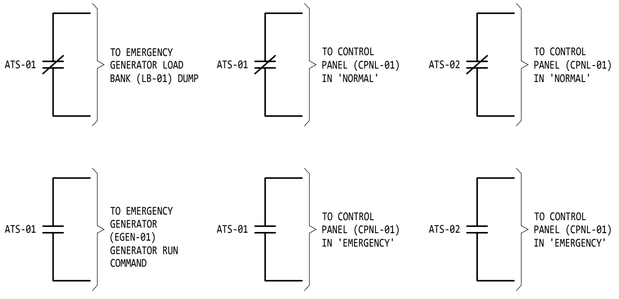
CONTROL PANEL (CPNL-01) INTRUSION SWITCH SCHEMATIC



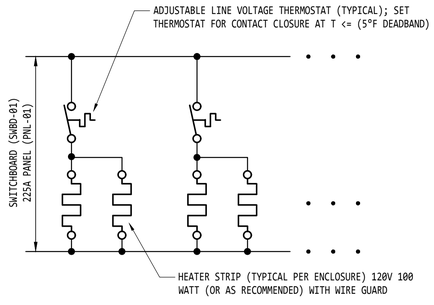
CONTROL PANEL (CPNL-01) AIR CONDITIONING UNIT CONTROL SCHEMATIC

DETAIL NOTE:

1. CONTRACTOR SHALL SIZE THE A/C UNIT BASED ON THE CONTROL PANEL'S CALCULATED HEAT LOAD AND SHALL SIZE THE FEEDER CIRCUIT BREAKER FROM PANEL PNL-01 ACCORDINGLY.



ATS SCHEMATICS



SWITCHBOARD (SWBD-01) & ATS-01 HEATER CONTROL SCHEMATIC

DETAIL NOTE:

1. EACH SWITCHBOARD ENCLOSURE SHALL HAVE A THERMOSTATICALLY CONTROLLED STRIP HEATER. EACH THERMOSTAT SHALL CONTROL NO MORE THAN TWO STRIP HEATERS IN ADJACENT PANELS OR SECTIONS.

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FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY ENGINEERED SERVICES\07-DRAFTING\1-WORKING\100-E-303 - MISCELLANEOUS SCHEMATICS.DWG

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

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REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — 20418 — Lic. DEPT. 30/2027 — Electrical Engineer — STATE OF CALIFORNIA

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EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

MISCELLANEOUS SCHEMATICS

PROJ NO.: MOK26-01	100-E-303	0
SCALE: AS SHOWN		
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SPEC NO.2197

MOKELUMNE RIVER HATCHERY	
ASSET TAG LIST	NEW EQUIPMENT DESCRIPTION
SWBD-01	480V 1000A SWITCHBOARD
ATS-01	480v, 3Ø, 1000A AUTOMATIC TRANSFER SWITCH
EGEN-01	500kW, 480/277V, 3Ø-4 WIRE EMERGENCY GENERATOR
LB-01	50% RATED LOAD BANK
XFMR-01	45kVA 480:120/208V-3Ø TRANSFORMER
PNL-01	120/208V-3Ø 225A PANELBOARD
CPNL-01	CONTROL PANEL
PM-01	POWER METER
ENET-01	ETHERNET SWITCH
PLC-01	COMPACTLOGIX PLC
-	-
-	-
-	-
-	-

ASSET TAG LIST

USER:KOOSHA TOOFAN
DATE:4/4/2025 8:18 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\1-WORKING\100-E-500 - EQUIPMENT ASSET TAG LIST.DWG

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Electrical Engineer
STATE OF CALIFORNIA

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EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ASSET TAG LIST

PROJ NO.: MOK26-01	100-E-500	0
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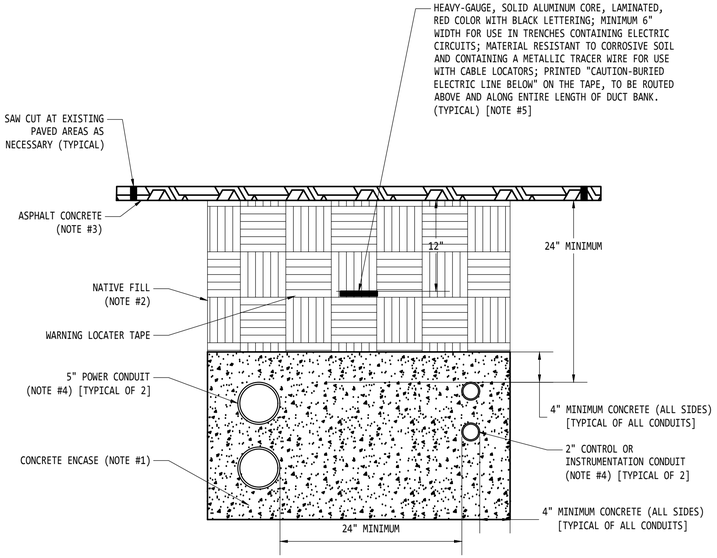
SPEC NO. 2197

D01
TYP



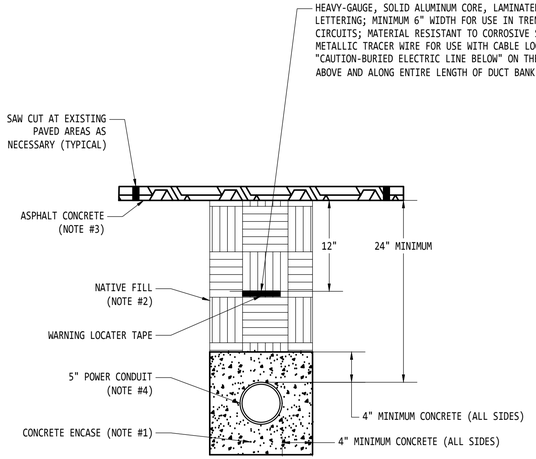
TYPICAL POWER & CONTROL/INSTRUMENTATION 2 x 2 CONDUIT DUCT BANK DETAIL

NOT TO SCALE

DETAIL NOTES:

1. CONCRETE SHALL HAVE A STRENGTH OF 1000 PSI AND SHALL BE PIGMENTED RED.
2. NATIVE BACKFILL SHALL BE COMPACTED TO 95% RELATIVE DENSITY.
3. REPLACE IN KIND ASPHALT CONCRETE AND STRUCTURAL BASE AS REQUIRED. CONTRACTOR SHALL PATCH, RESURFACE, AND REPLACE ANY PARTS OF THE PROJECT ASPHALT CONCRETE AFFECTED BY THE NEW TRENCH, WITH THICKNESS AND QUALITY TO MATCH EXISTING.
4. PLACE CONDUIT RUNS IN PLASTIC SPACERS (RATED FOR DIRECT BURIAL) EVERY 5' ALONG LENGTH OF RUN, AND TIE CONDUITS TO PREVENT FLOATATION DURING CONCRETE PLACEMENT. SPACERS NOT SHOWN IN DETAIL.
5. DURING BACKFILLING OF TRENCH, INSTALL CONTINUOUS UNDERGROUND LINE WARNING TAPE DIRECTLY ABOVE RACEWAY AT 12-INCHES BELOW FINISHED GRADE. USE MULTIPLE TAPES WHERE WIDTH OF MULTIPLE LINES INSTALLED EXCEEDS 16-INCHES OVERALL.

D02
TYP



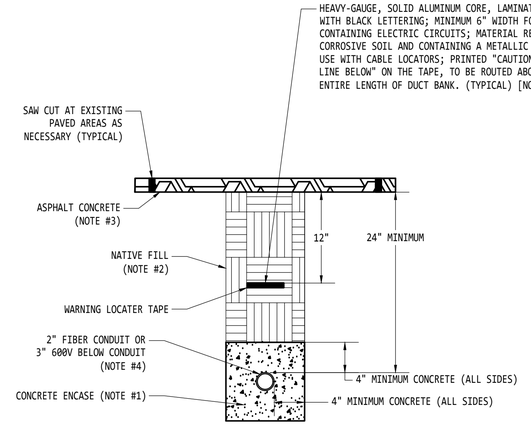
TYPICAL POWER 1 x 1 CONDUIT DUCT BANK DETAIL

NOT TO SCALE

DETAIL NOTES:

1. CONCRETE SHALL HAVE A STRENGTH OF 1000 PSI AND SHALL BE PIGMENTED RED.
2. NATIVE BACKFILL SHALL BE COMPACTED TO 95% RELATIVE DENSITY.
3. REPLACE IN KIND ASPHALT CONCRETE AND STRUCTURAL BASE AS REQUIRED. CONTRACTOR SHALL PATCH, RESURFACE, AND REPLACE ANY PARTS OF THE PROJECT ASPHALT CONCRETE AFFECTED BY THE NEW TRENCH, WITH THICKNESS AND QUALITY TO MATCH EXISTING.
4. PLACE CONDUIT RUNS IN PLASTIC SPACERS (RATED FOR DIRECT BURIAL) EVERY 5' ALONG LENGTH OF RUN, AND TIE CONDUITS TO PREVENT FLOATATION DURING CONCRETE PLACEMENT. SPACERS NOT SHOWN IN DETAIL.
5. DURING BACKFILLING OF TRENCH, INSTALL CONTINUOUS UNDERGROUND LINE WARNING TAPE DIRECTLY ABOVE RACEWAY AT 12-INCHES BELOW FINISHED GRADE. USE MULTIPLE TAPES WHERE WIDTH OF MULTIPLE LINES INSTALLED EXCEEDS 16-INCHES OVERALL.

D03
TYP

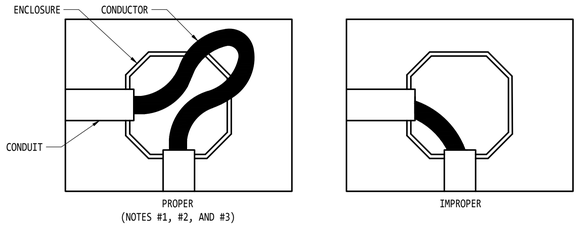


TYPICAL COMMUNICATION & CONTROL 1 x 1 DUCT BANK DETAIL

DETAIL NOTES:

1. CONCRETE SHALL HAVE A STRENGTH OF 1000 PSI AND SHALL BE PIGMENTED RED.
2. NATIVE BACKFILL SHALL BE COMPACTED TO 95% RELATIVE DENSITY.
3. REPLACE IN KIND ASPHALT CONCRETE AND STRUCTURAL BASE AS REQUIRED. CONTRACTOR SHALL PATCH, RESURFACE, AND REPLACE ANY PARTS OF THE PROJECT ASPHALT CONCRETE AFFECTED BY THE NEW TRENCH, WITH THICKNESS AND QUALITY TO MATCH EXISTING.
4. PLACE CONDUIT RUNS IN PLASTIC SPACERS (RATED FOR DIRECT BURIAL) EVERY 5' ALONG LENGTH OF RUN, AND TIE CONDUITS TO PREVENT FLOATATION DURING CONCRETE PLACEMENT. SPACERS NOT SHOWN IN DETAIL.
5. DURING BACKFILLING OF TRENCH, INSTALL CONTINUOUS UNDERGROUND LINE WARNING TAPE DIRECTLY ABOVE RACEWAY AT 12-INCHES BELOW FINISHED GRADE. USE MULTIPLE TAPES WHERE WIDTH OF MULTIPLE LINES INSTALLED EXCEEDS 16-INCHES OVERALL.

D04
TYP



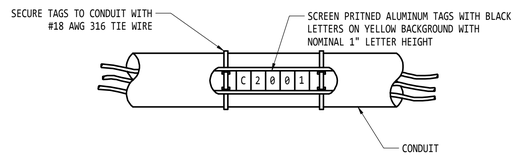
PULL THROUGH ENCLOSURE

NOT TO SCALE

DETAIL NOTES:

1. DO NOT PULL CABLES AND CONDUCTORS DIRECTLY ACROSS SHORT AND SHARP ANGLES. AFTER PULLING A CABLE OR CONDUCTOR COMPLETELY OUT OF ONE SIDE OF AN ENCLOSURE, FEED THE CABLE OR CONDUCTOR INTO THE OTHER SIDE OF THE ENCLOSURE AND PULL THAT SEGMENT.
2. MINIMUM BENDING RADII MUST BE MAINTAINED.
3. WHEN CABLES AND CONDUCTORS TRANSITION OUT OF CONDUITS IN ENCLOSURES, USE INSULTATING BUSHINGS MADE OF PLASTIC AS REQUIRED TO MAINTAIN THE SAFETY OF CABLE AND CONDUCTOR RUNS.

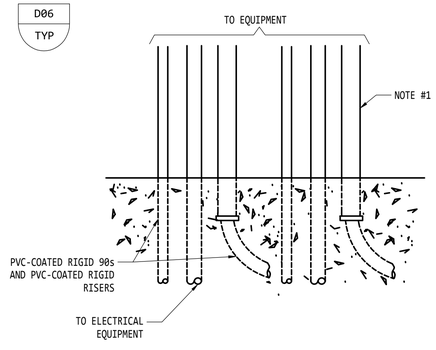
D05
TYP



CONDUIT MARKING SYSTEM

NOT TO SCALE

D06
TYP



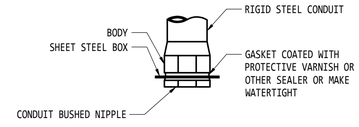
CONDUIT RISER

NOT TO SCALE

DETAIL NOTE:

1. ALL CONDUITS FROM UNDERGROUND TO ABOVEGROUND 90s AND RISER PIPES SHALL BOTH BE PVC-COATED RIGID.

D07
TYP



CONDUIT ENTRANCE DETAIL

NOT TO SCALE

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EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

ELECTRICAL DETAILS – 1

PROJ NO.: MOK26-01	100–E–900	0
SCALE: AS SHOWN		
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

NO.	DATE	REVISION	BY	REC.	APP.

3" ON ORIGINAL DOCUMENT
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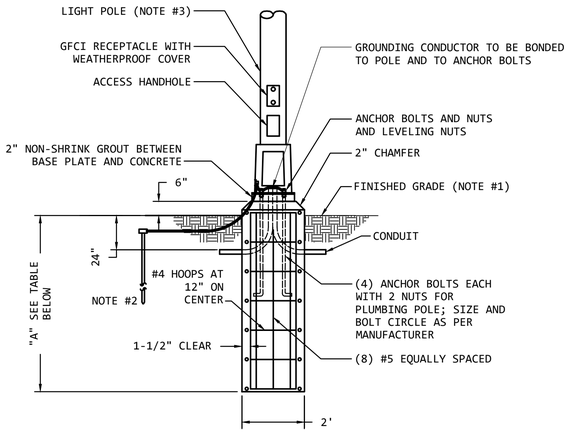
USERKOOSHA TOOFAN
DATE8/21/2025 12:16 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\07-DRAFTING\1-WORKING\100-E-900 - ELECTRICAL DETAILS - 1.DWG

SPEC NO.2197

D08
TYP



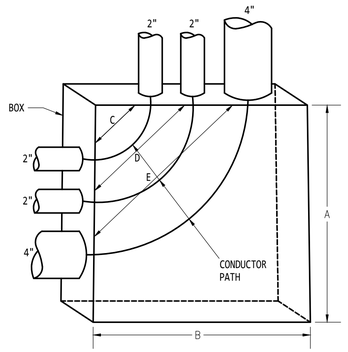
LIGHT STANDARD BASE

NOT TO SCALE

DETAIL NOTES:
1. FOUNDATION TO BEAR AGAINST ORIGINAL SOIL OR 90% COMPACTED BACKFILL OF APPROVED TYPE.
2. 3/4"Ø x 10'-0" COPPER CLAD STEEL GROUND ROD.
3. ADD LIGHT SWITCH AS SHOWN IN PLAN VIEW ON SHEET 100-E-020.

POLE HEIGHT	EMBEDMENT "A"
10'-0	5'-6"
20'-0	6'-6"
30'-0	7'-6"

D09
TYP



A = (6 x 4 INCH) + 2 INCH + 2 INCH
= 28 INCH MINIMUM

B = (6 x 4 INCH) + 2 INCH + 2 INCH
= 28 INCH MINIMUM

C = 6 x 2 INCH
= 12 INCH MINIMUM REQUIRED BETWEEN RACEWAYS ENCLOSING THE SAME CONDUCTOR

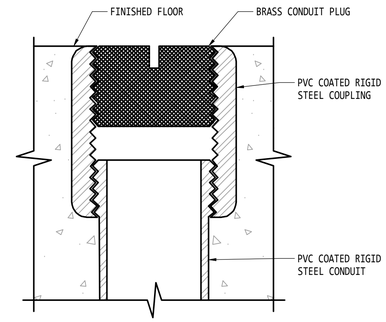
D = 6 x 2 INCH
= 12 INCH MINIMUM REQUIRED BETWEEN RACEWAYS ENCLOSING THE SAME CONDUCTOR

E = 6 x 4 INCH
= 24 INCH MINIMUM REQUIRED BETWEEN RACEWAYS ENCLOSING THE SAME CONDUCTOR

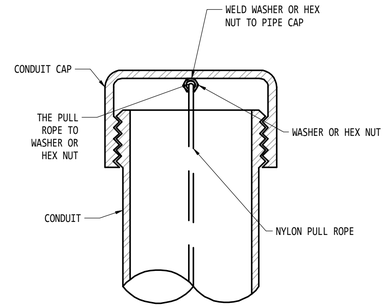
RACEWAY ENCLOSING SAME 600V & BELOW CONDUCTORS IN BOX

NOT TO SCALE
(SEE NEC SECTION 314.28 FOR BOX SIZING)

D10
TYP



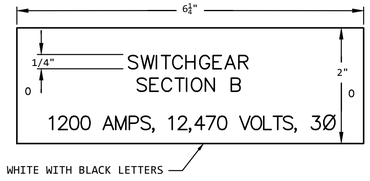
ENCASE CONDUITS



EXPOSED CONDUITS

SPARE CONDUIT

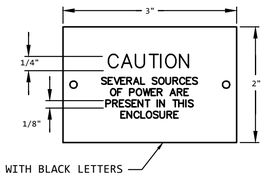
NOT TO SCALE



SWITCHGEAR SECTION NAMEPLATE

NOT TO SCALE
(NOTES #1 & #2)

DETAIL NOTES:
1. PLAQUE DIMENSIONS SHALL BE ADJUSTED AS REQUIRED.
2. ENGRAVED PHENOLIC PLAQUE.



CAUTION NAMEPLATE

NOT TO SCALE
(NOTE #1)

DETAIL NOTE:
1. PLAQUE DIMENSIONS SHALL BE ADJUSTED AS REQUIRED.

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EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

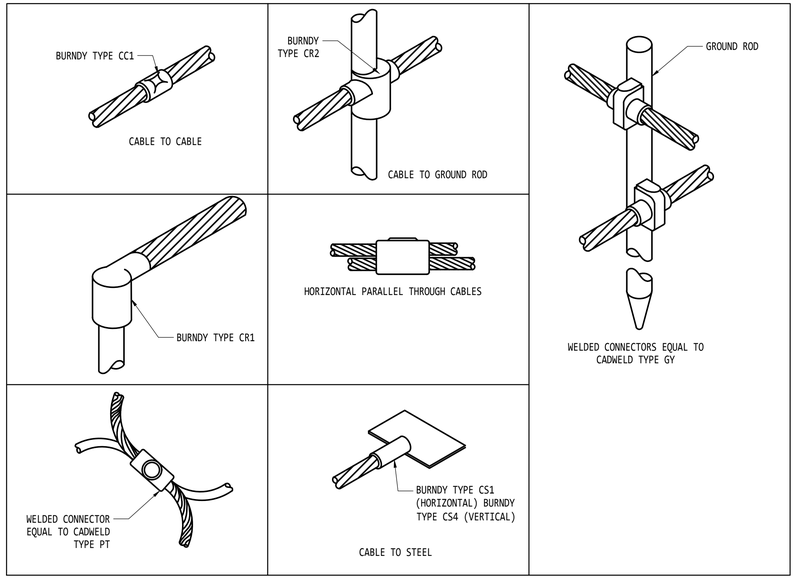
ELECTRICAL DETAILS – 2

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-901	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

USER:KOOSHA TOOFAN
DATE:3/15/2026 2:54 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\100-E-901 - ELECTRICAL DETAILS - 2.DWG

SPEC NO.2197

GD01
TYP



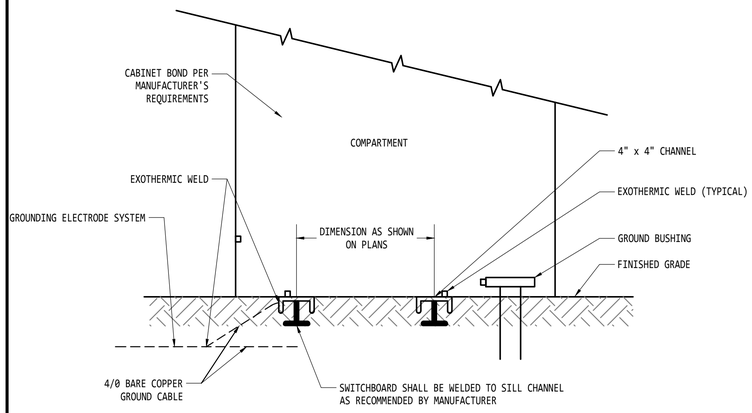
GD02
TYP

CADWELD INSTALLATION NOTES

1. PREPARATION OF CABLE
   - A. CONDUCTORS SHOULD BE CLEAN, SHINY, AND DRY TO HELP ENSURE A GOOD WELD.
   - B. CORROSION MUST BE CLEANED FROM CONDUCTORS WITH A CARD CLOTH BRUSH OR A CABLE CLEANING BRUSH. KEEP TOOLS CLEAN TO AVOID CONTAMINATION.
   - C. OIL AND/OR GREASE SHOULD BE REMOVED FROM CONDUCTORS.
   - D. WET CONDUCTORS MUST BE DRIED WITH A TORCH HEAD OR OTHER SUITABLE MEANS.
   - E. BENT CONDUCTORS (OR CONDUCTORS WHICH HAVE BEEN "BIRD-CAGED") CAN PREVENT THE MOLD FROM CLOSING TIGHTLY, WHICH CAN CAUSE LEAKS.
2. PREPARATION OF GROUND RODS
   - A. GROUND ROD ENDS THAT HAVE BEEN MUSHROOMED BY DRIVING MUST BE CUT OFF AS THEY WILL HOLD THE MOLD OPEN AND CAUSE LEAKAGE DURING THE WELDING PROCEDURE.
   - B. GROUND ROD MUST BE CLEAN, SHINY AND DRY TO HELP ENSURE A GOOD WELD. CORROSION MUST BE REMOVED AS IT MAY CAUSE POROSITY IN THE WELD.
3. PERFORM WELDING
   - A. VERIFY THE FOLLOWING
     1. MOLD IS CORRECT FOR THE CONDUCTOR SIZE AND APPLICATION. DO NOT MODIFY MOLDS.
     2. WELDING MATERIAL INDICATED ON MOLD TAG IS AVAILABLE.
     3. HANDLE CLAMP AND/OR FRAME IS ATTACHED TO THE MOLD AND PROPERLY ADJUSTED.
     4. IGNITOR UNIT IS IN WORKING ORDER.
     5. MAKE SURE MOLD IS CLEAN AND DRY AND IS IN GOOD CONDITION.
   - B. DRY THE MOLD BY HEATING WITH TORCH TO ABOUT 250° F (120° C).
   - C. POSITION MOLD ON CONDUCTOR AND/OR AGAINST SURFACE FOLLOWING APPROPRIATE INSTRUCTION SHEET PROVIDED WITH MOLD.
   - D. CLOSE MOLD. LOCK TIGHTLY WITH HANDLE CLAMPS / FRAME TOGGLES.
   - E. IGNITING WELDING MATERIAL. ALLOW APPROXIMATELY 30 SECONDS FOR COMPLETION OF THE REACTION AND SOLIDIFICATION OF WELD METAL.
   - F. OPEN AND REMOVE THE MOLD. USE CARE TO PREVENT CHIPPING THE MOLD AND CLEAN AS REQUIRED.

* COORDINATE INSTALLATION WITH MANUFACTURER

GD03
TYP

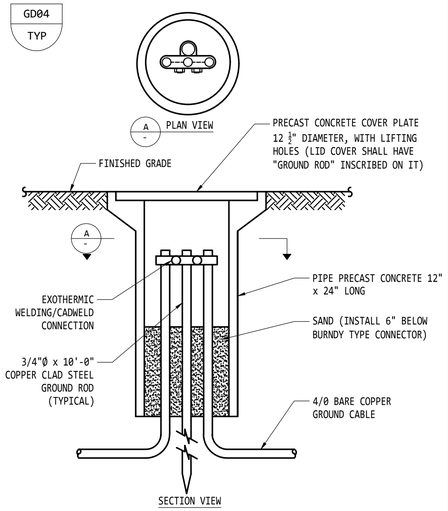


ENCLOSURE GROUNDING

NOT TO SCALE

(SECTION VIEW OF SWITCHGEAR SHOWING GROUNDING METHOD)

GD04
TYP

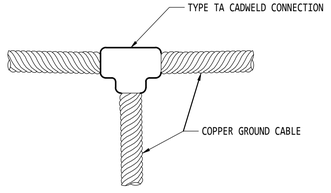


GROUND WELL

NOT TO SCALE

(*BURNDY OR ACCEPTABLE EQUAL)

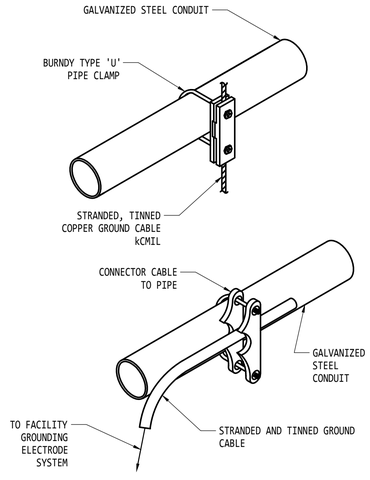
GD05
TYP



GROUND CABLE CONNECTION

NOT TO SCALE

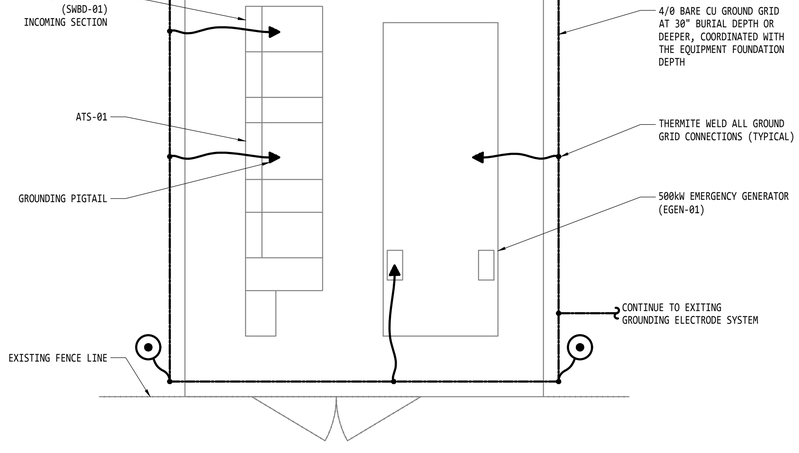
GD06
TYP



CONDUIT GROUNDING

NOT TO SCALE

GD07
TYP



NEW EQUIPMENT GROUND GRID

NOT TO SCALE

USERKOOSHA TOOFAN
DATE8/28/2025 4:34 PM
FILE: Z:\JOBS 2025\1ST QUARTER\25-101_EBMUD MOKELUMNE RIVER FISH HATCHERY FINAL DESIGN SERVICES\01-DRAFTING\1-WORKING\100-E-902 - GROUNDING DETAILS - 1.DWG

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

EETSINC™
6060 SUNRISE VISTA DRIVE, #1450
CITRUS HEIGHTS, CA 95610
WWW.EETSINC.COM

REGISTERED PROFESSIONAL ENGINEER — KOOSHA TOOFAN — No. 20418 — Lic. Exp. SEPT. 30/2027 — Electrical Engineer — STATE OF CALIFORNIA

DESIGNED BY: KOOSHA TOOFAN	
DESIGN CHECKED BY: JOHN GUILLORY	
DRAWN BY: KOOSHA TOOFAN	
SR. PROJ ENGR. R.P.E. NO.: 20418	
APPROVED: KOOSHA TOOFAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 20418	

EBMUD

DETAILS ON THIS SHEET ARE TYPICAL ONLY AND ALL INSTALLATION AND REQUIREMENTS SHOULD BE COORDINATED WITH THE CONTRACTED VENDOR.

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

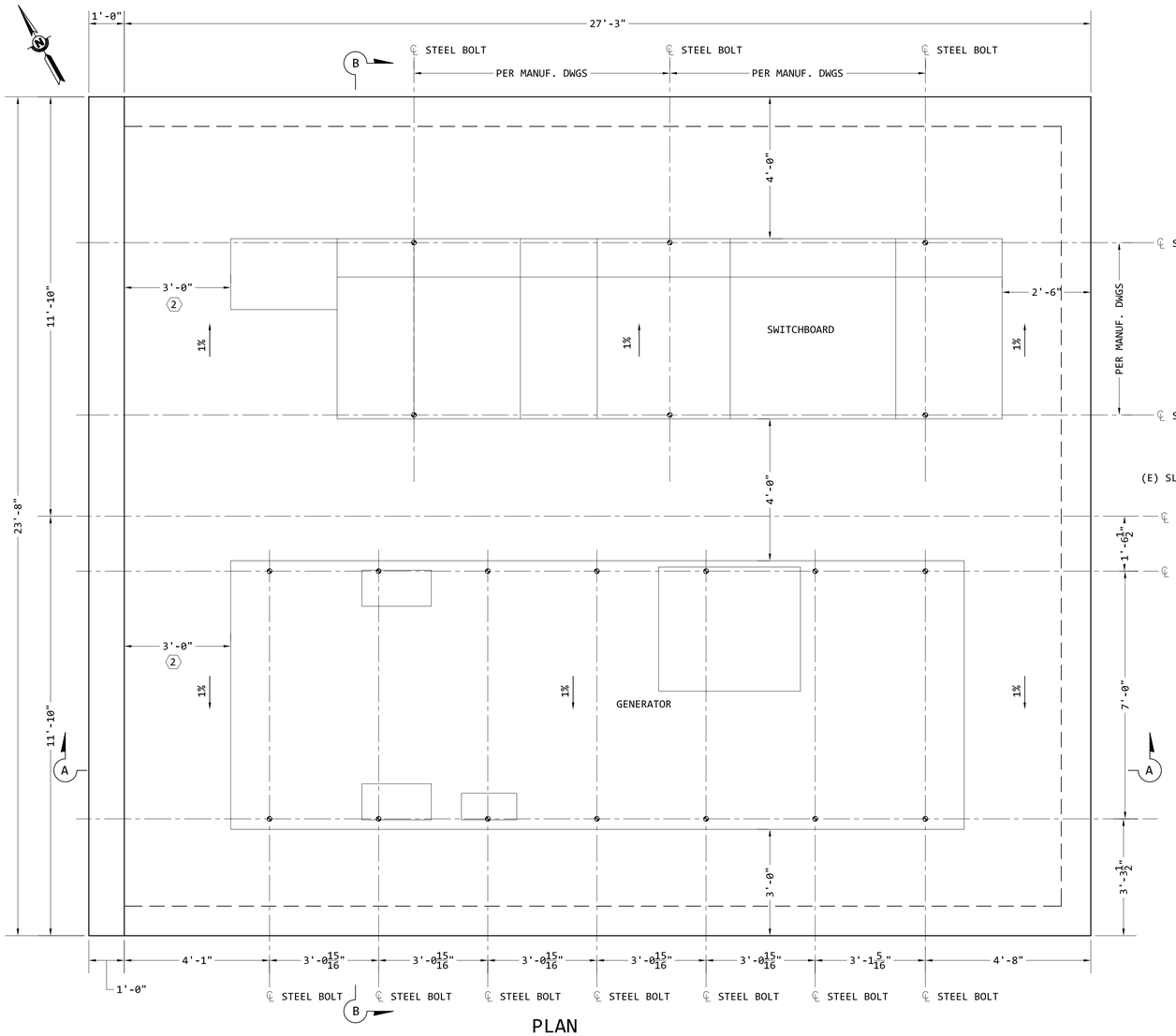
MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN
ELECTRICAL

GROUNDING DETAILS

PROJ NO.: MOK26-01		
SCALE: AS SHOWN	100-E-902	0
DATE: 10APR2026	STRUCT. DISC. NUMBER	REV.

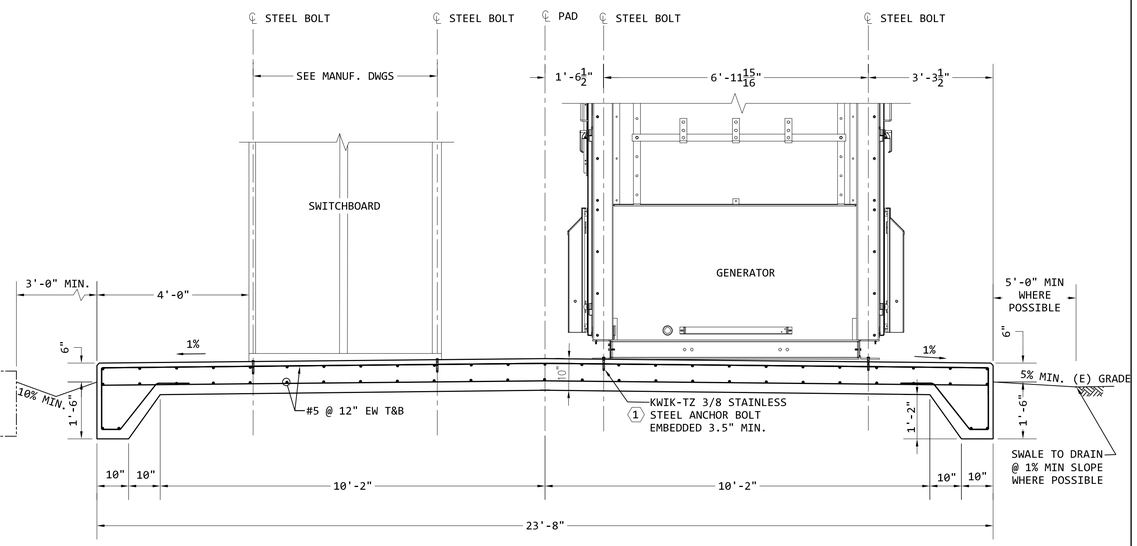
STRUCTURAL

SPEC NO. 2197



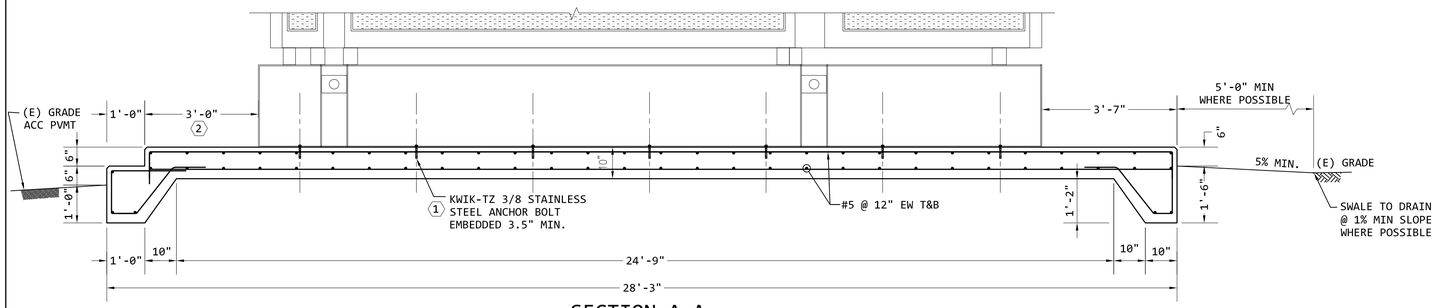
PLAN

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



SECTION B-B

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



SECTION A-A

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

LEGEND

INDICATES EXISTING

INDICATES CENTERLINE

1 0 1 2

1/2 INCH = 1 FT

KEY NOTES

1. ANCHOR BOLT:
   a. ALL NUTS & WASHERS ARE MADE FROM TYPE 304 OR TYPE 316 STAINLESS STEEL RESPECTIVELY.
   b. NUTS MEET THE DIMENSIONAL REQUIREMENT OF ASTM F 594.
   c. WASHERS MEET THE DIMENSIONAL REQUIREMENT OF ANSI B18.22.1, TYPE A, PLAIN.
   d. EXPANSION SLEEVE (WEDGES) ARE MADE OF FROM TYPE 316 STAINLESS STEEL.
   e. ANCHORS SHALL BE INSTALLED ACCORDING TO INSTRUCTIONS BY MANUFACTURER
2. MAINTAIN MINIMUM 3' FEET FOR WALKING DISTANCE BETWEEN NEW EQUIPMENT AND EXISTING FENCE LINE.

GENERAL NOTES

1. ALL STRUCTURAL CONCRETE SHALL HAVE A 28 DAYS CYLINDER STRENGTH OF 4000 PSI, UNLESS OTHERWISE NOTED. AND SHALL CONFORM TO BUILDING CODE REQUIREMENT FOR REINFORCED CONCRETE ACI 318-19.
2. CEMENT CONFORMING TO ASTM C-150 .
3. CHAMFER ABOVE GRADE JOINTS, EDGES & EXTERNAL CORNERS OF CONCRETE 3/4" (ARTICLE 4.2.4 OF ACI 543R-00), UNLESS OTHERWISE INDICATED.
4. EXCEPT AS OTHERWISE NOTED, ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, HOT ROLLED DEFORMED BARS GRADE 60 (FY = 60 KSI).
5. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE 3".
6. CONTRACTOR TO VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

NO.	DATE	REVISION	BY	REC.	APP.

ADKO Engineering
130 DIAMOND CREEK PL
ROSEVILLE, CA 95747
(916) 788-0100
(916) 788-0159 (FAX)

REGISTERED PROFESSIONAL ENGINEER
Majdi Kanaan
No. 50238
EXP. 6-30-27
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: H. HASHIMI	
DESIGN CHECKED BY: MAJDI KANAAN	
DRAWN BY: H. HASHIMI	
SR, PROJ ENGR, R.P.E. NO.: 50238	
APPROVED: MAJDI KANAAN	
PRINCIPAL IN CHARGE, R.P.E. NO.: 50238	

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

MOKELUMNE RIVER HATCHERY
ELECTRICAL DESIGN

GENERATOR & SWITCHGEAR PAD
PLAN & SECTIONS

PROJ NO.: MOK26-01			
SCALE: AS SHOWN	100-S-040		1
DATE: 10APR2026	STRUCT.	DISC. NUMBER	REV.

1200A PANEL RELOCATION

LIKE FOR LIKE FOR EBMUD – NO ADDED LOAD
25800 MCINTIRE RD
CLEMENTS

PRIMARY VOLTAGE: 12 kV	INSULATION DIST: D
LATITUDE: 38.22496	LONGITUDE: –121.024120
SOURCE SIDE DEVICE: 15863	
SUB & CIRCUIT: LOCKEFORD 2102	
DSGN SAG: N/A	RAPTOR ZONE: YES
LOADING AREA: LIGHT	ARRESTER DIST: 2
CORROSION AREA: NON	
EXEMPT EQUIP.INST.: N/A	FIRE AREA: SRA–TIER 1

ENGINEERING AND PLANNING DEPT.
3136 BOEING WAY
STOCKTON, CA 95206

811 Know what's below. Call before you dig.

NO ENVIRONMENTAL ISSUES

GAS CONFLICT: NO

NEAR LOC: N/A

EST: OSCAR GUZMAN	209.479.2692
ADE: TERRENCE MURPHY	510.227.0849
SUPV: BRYAN MICHAELIS	925.337.3165
REP: BRANDON WRIGHT	510.333.5389
PLNR: N/A	N/A
NOTIF: 131099735	JPA#: N/A
SCALE: 1"=100'	DATE: 6/6/25
PM: 35641858	SHEET: 1 OF 1 REV. 0

1200A MS
277/480v 3ø
EST DEM:
1ø= 0
3ø= 201.8KVA
SCI= 22,000
V.D= 1.34v

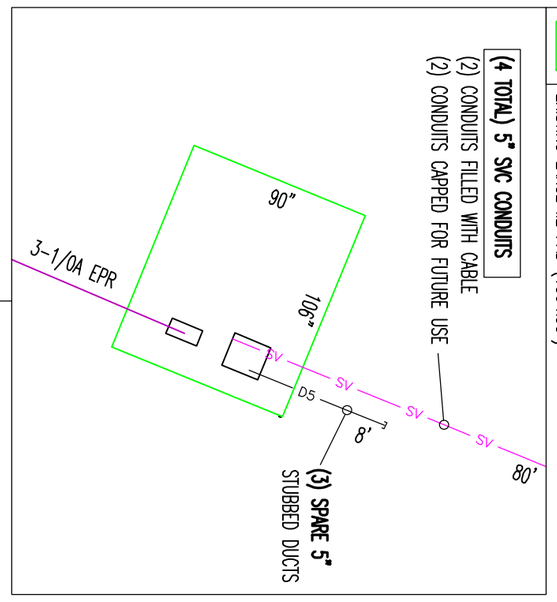
CGC: 318485362871
277/480v 3ø
CSD: 201.8KVA

PGE TO: LIFT & RE-INSTALL PM TX, REMOVE & INSTALL FACILITIES, PULL CABLE, TRANSFER EXISTING METER
APPLICANT TO: PERFORM ALL TRENCHING, SUBWORK & BACKFILLING ONLY

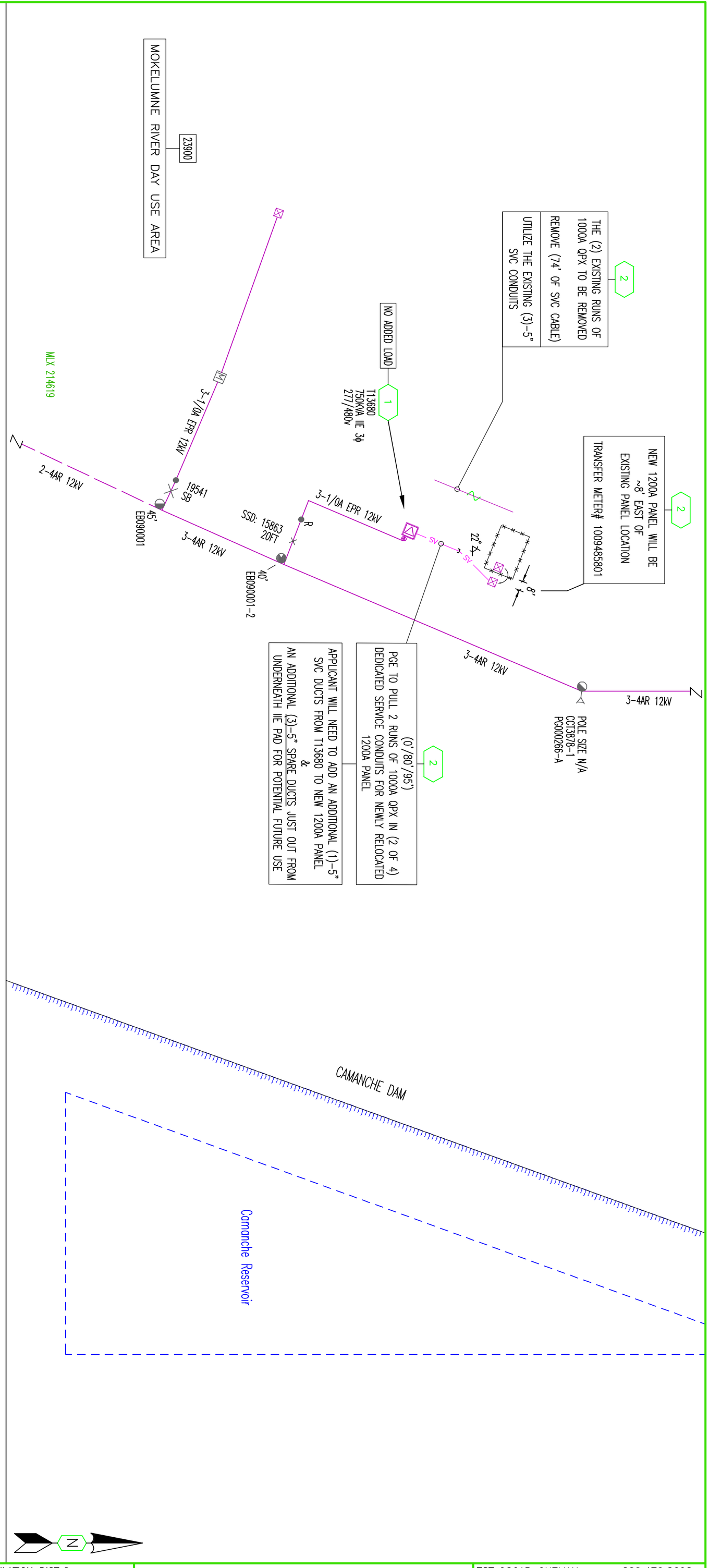
NO PERMIT/ TCP/ FLAGGING OR LAND RIGHTS NEEDED
ALL WORK TAKING PLACE ON PRIVATE PROPERTY

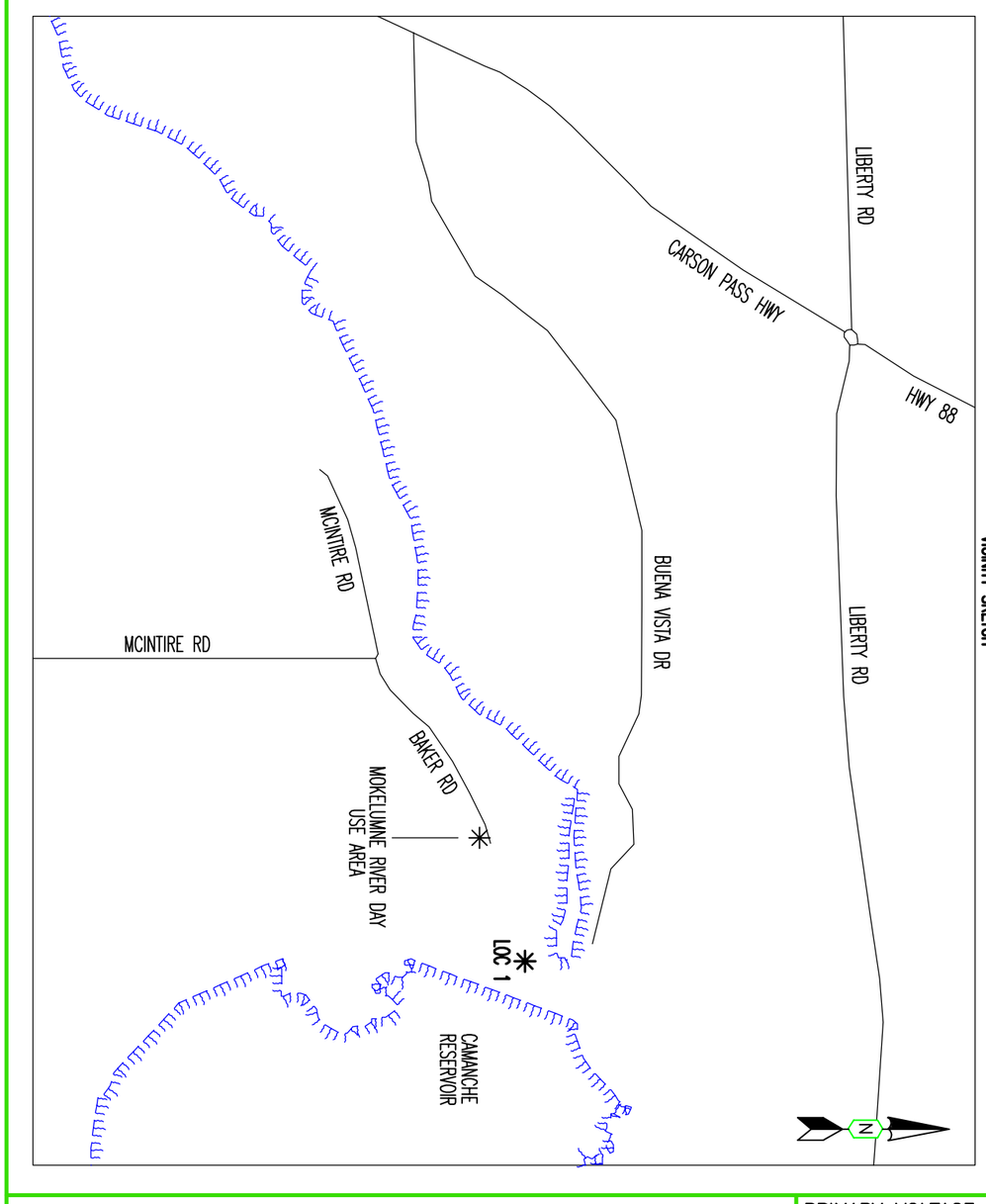
1 EXISTING LARGE IIE PAD (106"x90")

(4 TOTAL) 5" SVC CONDUITS
(2) CONDUITS FILLED WITH CABLE
(2) CONDUITS CAPPED FOR FUTURE USE



APPLICANT TO INSTALL /HAVE A TOTAL OF (7) 5" CONDUITS
(4) TOTAL FROM PM TX TO NEW 1200A PANEL
(3) SPARE 5" STUBBED & CAPPED OUT FROM UNDERNEATH TX





Product Specifications For C18 (60 Hz) Tier 4

Generator Set Specifications

Maximum Rating	500 ekW
Minimum Rating	455 ekW
Emissions/Fuel Strategy	U.S. EPA Tier 4 Final
Voltage	480 Volts
Frequency	60 Hz
Speed	1800 rpm
Duty Cycle	Standby, Prime

Engine Specifications

Engine Model	C18 ATAAC, I-6, 4-Stroke Water-Cooled Diesel
Bore	1455.7 in
Stroke	7.2 in
Displacement	1106.4 in^3
Compression Ratio	14.5:1
Aspiration	Air to Air Aftercooled
Fuel System	Electronic unit injection
Governor Type	Adem™A4

C18 (60 Hz) Tier 4 Standard Equipment

Air Inlet

Air cleaner

Exhaust System

Exhaust manifold - dry

Cooling

Package mounted radiator

Fuel System

Fuel cooler
Engine fuel transfer pump
Primary fuel filter w/integral water separator and secondary filter
Fuel priming pump
Flexible fuel lines

Exhaust

Exhaust flange outlet

Fuel

Primary fuel filter with integral water separator
Fuel priming pump
Secondary fuel filters

Generator

Matched to the performance and output characteristics of Cat engines
IP23 Protection
Load adjustment module provides engine relief upon load impact and improves load acceptance and recovery time

Power Termination

Busbar

Lube System

Oil filter and dipstick
Lubricating oil
Oil drain lines with valve; piped to edge of base
Fumes disposal, piped to front of radiator
Oil cooler

Control Panel

GCCP Genset Controller

Mounting

Rubber vibration isolators

Protection System

Safety shutoffs for: Higher water temperature - Overspeed - Low oil pressure

Cooling System

Thermostats and housing, full open temperature 92 deg C (198 deg F)
Coolant level sensor
Coolant level sight gauge
Fan and belt guards
Jacket water pump, gear driven, centrifugal
Coolant drain line with valve; terminated on edge of base
Caterpillar extended life coolant

Starting/Charging

24V, 45 Amp Charging alternator
24 Volt electric starting motor
24 volt starting motor
Batteries

General

Paint - Caterpillar yellow except rails and radiators gloss black
Paint, Caterpillar yellow
Operation and maintenance manual pack and OMM storage compartment
Parts book
Vibration damper

Control System

Local annunciator
Programmable Input / Output: 2 programmable digital inputs - 2 programmable relay outputs (Form A) - 2 programmable relay outputs (Form C)
Suitable for use as service equipment label
Separation plate
Control panel mounting location
Breaker box mounting location
Optional external analog input
Remote annunciators
GCCP 1.2
Communications: Customer data link (RS485 Modbus RTu) - Serial annunciator module data link for local and remote annunciator IVR - Integrated Voltage Regulation (Digital) - EM10 Excitation Module
Controls include: Run/auto/ stop/control - Speed adjust - Voltage adjust - Engine cycle crank - Emergency stop pushbutton
Digital indication for: rpm - DC volts - operating hours - Oil pressure (psi, kPa or bar) - Coolant temperature (C or F) - Volts (L-L & L-N), frequency (Hz) - Amps (per phase & average) - Power factor (per phase & average) - kW (per phase & average) - kVA (per phase & average) - kVAr (per phase and average) - kW-hr (total) - kVAr-hr (total)

Programmable protective relaying functions: Generator phase sequence - Over/under voltage (27/59) - Over/under frequency (81 o/u) - Overcurrent (50/51)
Warning/shutdown with common LED indication of shutdowns for: Low oil pressure - high coolant temperature - Overspeed - Emergency stop - Failure to start (overcrank) - Low coolant temperature - Low coolant level
Control panel options: Dust proof control panel - volt free contact - Device server - Ground fault relay

Governing System

Cat electronic governor (ADEM A4)

Generator And Attachments

Segregated low voltage (AC/DC) wiring panel
Brushless, self-excited 2/3 pitch, random wound.
Insulation Class H and temperature rise
AREP generator
CIP - generators
IP23 Protection
Power center, IP22 bottom cable entry

Air Inlet System

Single element air filter
Air cleaner - Heavy duty
Air cleaner - Single element

Extended Service Coverage

Silver, Gold and Platinum coverage

Circuit Breakers

3 Pole 100% rated

C18 (60 Hz) Tier 4 Optional Equipment

Control System

Ground fault relay
Dust proof control panel
Breaker box mounting location
Volt free contact
Device server
Separation plate
Remote annunciators
GCCP 1.5
Local annunciator
Remote E-stop button
Optional external analog input
Control panel mounting

Exhaust

Industrial, residential, critical mufflers

Generator

Anti-condensation heater
Excitation: [ ]Permanent magnet excitation (PMG) Excited (PM) [ ]Internally Excited (IE)
Oversize and premium generators

Power Termination

Circuit breakers, UL listed

Generators And Attachments

AREP generator
CIP generators
Space heater
Generator mounting and duct plate

Air Inlet System

Single element air filter
Dual element air cleaner

Certifications

Certificate of Compliance
IBC Certification wind load

Circuit Breakers

Motorized single circuit breaker
Neutral bars
Power cables
Dual breakers first circuit breaker (CB2) LS/I package mounted
Current transformers
Package mounted single circuit breakers
Dual breakers first circuit breaker (CB1) LS/I package mounted
Auxiliary contacts

Cooling System

Aftertreatment guard
Standard radiator

Enclosures

Sound attenuated enclosures

Exhaust System

Flange kits
Exhaust flexible fittings

Fuel System

660 gallon base tank

Generator Attachments

Permanent magnet excitation (PMG) generator

Mounting System

Standard base wide
5 Gallon spill containment
Optional CB shroud
Overfill prevention valve
Locking fuel fill

Starting / Charging System

Battery disconnect switch
Jacket water heater
Shore power control group
10 Amp dual Battery charger

TESTS

PGS Test report @ 0.8 power factor
4 Hour factory test (un-witnessed)
PGS Test report @ 1.0 power factor
Generator test report