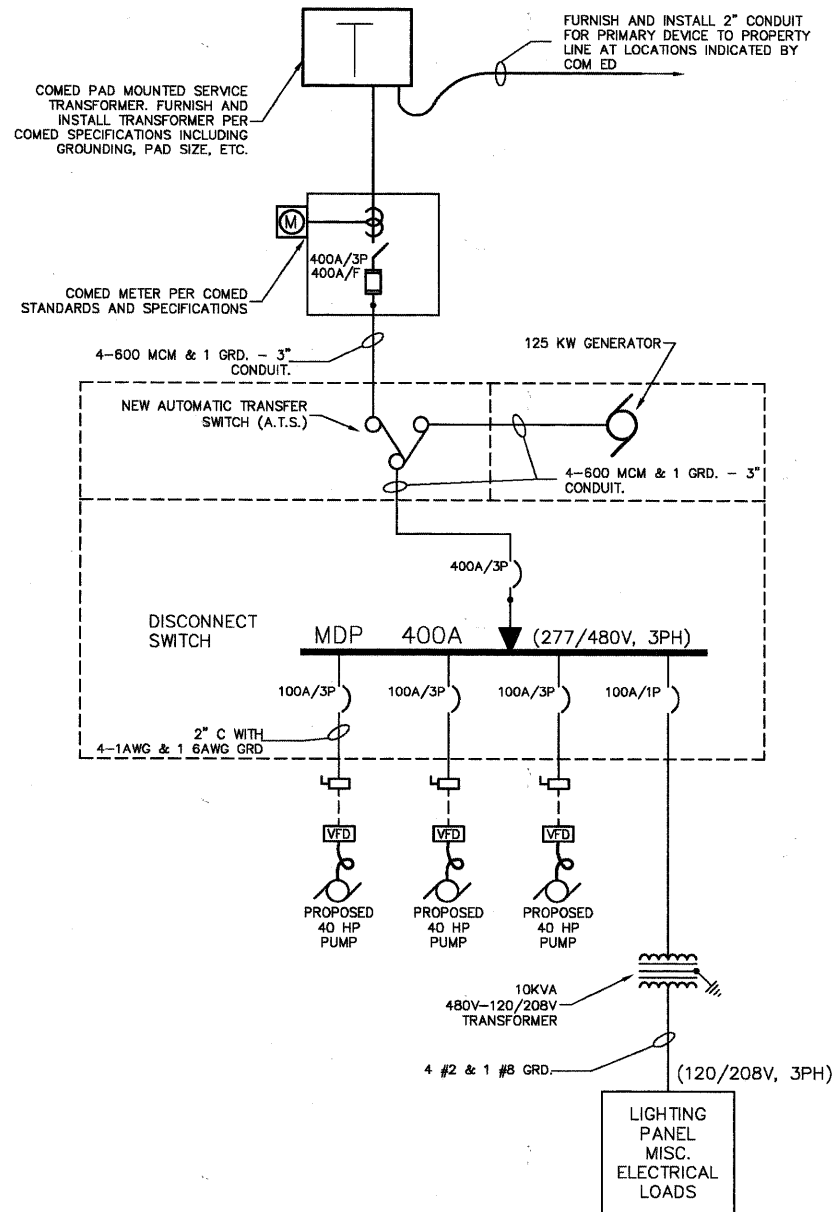


**ONE-LINE SCHEMATIC RISER DIAGRAM**



**SPECIFICATIONS**

**PART 1 - GENERAL**

- 1.1 FURNISH AND INSTALL ALL LABOR AND MATERIALS NECESSARY TO PROVIDE A COMPLETE INSTALLATION OF ALL ELECTRICAL SERVICES AND SYSTEMS INDICATED AND AS MAY BE REQUIRED TO MAKE THE WORK COMPLETE FOR THE PURPOSE INTENDED. LAYOUTS SHOWN ARE DIAGRAMMATIC - INSTALL FIXTURES, DEVICES, EQUIPMENT AND CONDUITS TO MEET ACTUAL FIELD CONDITIONS.
- 1.2 BIDDING REQUIREMENTS: VISIT SITE PRIOR TO BIDDING TO BE FULLY ACQUAINTED WITH ALL FIELD CONDITIONS AND TO DETERMINE FULL EXTENT OF WORK REQUIRED. COORDINATE NEW INSTALLATIONS WITH EXISTING SYSTEMS. ANY ITEMS NOT SPECIFICALLY INDICATED ON DRAWINGS THAT ARE IN CONFLICT WITH CONTRACT WORK SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER PRIOR TO BID FOR A DECISION. BIDDERS SHALL ACQUAINT THEMSELVES WITH THE WORKING CONDITIONS AND REQUIREMENTS OF THE ENTIRE PROJECT, AS ANY CONTRACT FOR THIS WORK WILL BE BASED UPON FURNISHING ALL LABOR AND MATERIALS REQUIRED TO ENTIRELY COMPLETE WORK READY FOR USE.
- 1.3 CODES: ALL WORK SHALL COMPLY WITH LOCAL, MUNICIPAL, STATE ELECTRICAL CODES. ALL MATERIALS SHALL BE IN COMPLIANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
- 1.4 OBTAIN AND PAY FOR ALL LICENSES, PERMITS AND INSPECTIONS FOR ALL WORK REQUIRED. ALL CERTIFICATES OF INSPECTION SHALL BE DELIVERED TO THE ENGINEER.
- 1.5 SHOP DRAWINGS TO BE SUBMITTED (SIX COPIES) FOR ALL FIXTURES, EQUIPMENT, DEVICES AND MATERIALS WITHIN 14 DAYS OF CONTRACT AWARDING FOR REVIEW. ANY MINOR CHANGES IN LOCATION FROM THOSE SHOWN ON THE DRAWINGS SHALL BE MADE WITHOUT CHARGE IF SO DIRECTED BY THE ARCHITECT BEFORE INSTALLATION.
- 1.6 ANY CHANGES IN THE LOCATION OF THE EQUIPMENT, ETC., FROM THOSE SHOWN ON THE DRAWINGS SHALL BE MADE IF SO DIRECTED BY THE OWNER BEFORE INSTALLATION.
- 1.7 OWNER TRAINING IN THE PROPER OPERATION, MAINTENANCE AND SERVICING OF ALL SYSTEMS IS TO BE PROVIDED. DIGITALLY RECORD (AUDIO AND VIDEO) ALL TRAINING SESSIONS. PROVIDE IN A BOUND FORM TWO (2) SETS OF OPERATIONS, MAINTENANCE AND INSTRUCTION MANUALS, INCLUDING INFORMATION ON SPARE PARTS, LUBRICATION SCHEDULE, WIRING DIAGRAMS, ETC., FOR ALL MATERIALS AND EQUIPMENT. PROVIDE TWO (2) SETS OF ACCURATELY MARKED "AS BUILT" PRINTS, ELECTRONIC FILE OF AS-BUILTS, AND TWO COPIES OF TRAINING SESSION VIDEO (DVD FORMAT). THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE LIFT STATION.
- 1.8 WARRANTY ANY DEFECTS TO ALL EQUIPMENT, MATERIALS FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF THE BUILDING BY THE ARCHITECT AND ENGINEER. DEFECTIVE FIXTURES, EQUIPMENT AND MATERIALS SHALL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER. GUARANTEE THAT ALL WORKMANSHIP IS OF HIGH QUALITY AND THAT ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT FULFILLS THE REQUIREMENTS OF THE SPECIFICATIONS. CONDUCT TESTS ON ANY EQUIPMENT FURNISHED WHEN SO REQUESTED BY THE ENGINEER.

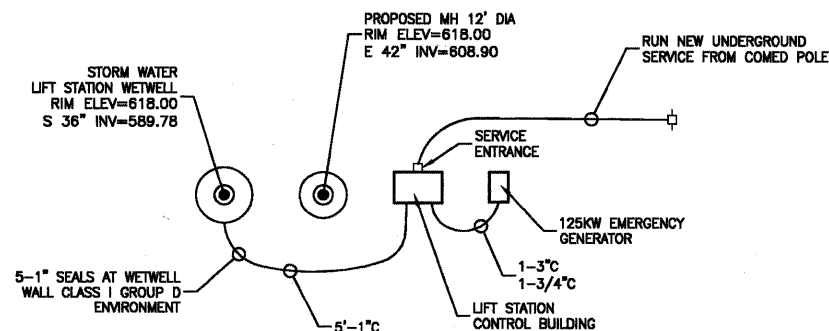
**PART 2 - GENERAL COORDINATION - NOT USED**

**PART 3 - EXECUTION**

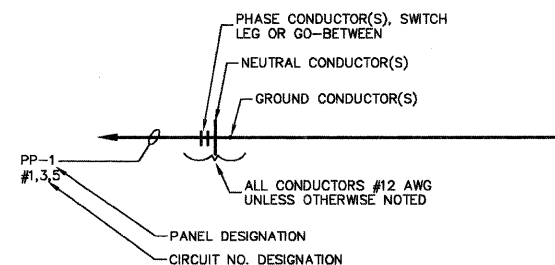
- 3.1 THE PANEL SCHEDULES ARE PROVIDED FOR ASSISTANCE ONLY IN UNDERSTANDING THE LOADING ON THE VARIOUS CIRCUITS AND THE CIRCUIT DESIGNATIONS DESIRED FOR THE PANEL DIRECTORIES. THE PANEL SCHEDULES MUST BE BALANCED BY THE CONTRACTOR UPON COMPLETION OF THE WORK TO COMPLY WITH CODE. IN ADDITION, THE PANEL SCHEDULES DO NOT IDENTIFY THE TYPES OF CIRCUIT BREAKERS TO BE USED (SUCH AS GFCI, HACR, SHUNT TRIP UNITS, ETC.) NOR DO THE SCHEDULES IDENTIFY ALL CIRCUIT BREAKERS REQUIRED. (SUCH AS C/B'S FEEDING SURGE PROTECTION UNITS). REFER TO THE REST OF THE DRAWINGS AND THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND DETAILED INFORMATION.

- 3.2 COORDINATE ALL EQUIPMENT ELECTRICAL REQUIREMENTS (VOLTAGES, PHASE, LOAD, ETC.) WITH OTHER TRADES TO AVOID CONFLICTS.
- 3.3 REFER TO PLANS FOR ADDITIONAL ELECTRICAL WORK AND REQUIREMENTS. FURNISH, INSTALL AND LOCATE DISCONNECT SWITCHES AT EQUIPMENT/MOTOR LOCATION, AS REQUIRED, AND IN ACCORDANCE WITH CODE.
- 3.4 LAYOUT IS DIAGRAMMATIC AND CONTRACTOR SHALL INSTALL DEVICES, CONDUIT AND EQUIPMENT TO MEET ACTUAL FIELD CONDITIONS.
- 3.5 VISIT SITE PRIOR TO BID TO DETERMINE AND VERIFY ALL EXISTING ELECTRICAL SYSTEMS TO VERIFY QUANTITIES AND LOCATIONS OF EXISTING SYSTEMS TO DETERMINE FULL EXTENT OF DEMOLITION WORK. CONTRACTOR SHALL INCLUDE IN HIS BID ALL NECESSARY MODIFICATIONS TO THE EXISTING CONDITIONS AS REQUIRED, TO ALLOW FOR PROPER INSTALLATION OF HIS WORK. ADJUST INSTALLATIONS TO MEET FIELD CONDITIONS AS REQUIRED FOR A COMPLETE AND PROPER INSTALLATION. ALL EXISTING EQUIPMENT, CONDUIT, PIPING, ETC. SHALL BE REMOVED AS NOTED ON DRAWINGS AND AS REQUIRED TO MEET NEW SCOPE OF WORK.
- 3.6 ANY HIDDEN CONDITIONS IDENTIFIED THROUGH THE COURSE OF CONSTRUCTION SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITTEN FORM FOR REVIEW AND DIRECTION. FAILURE TO DO SO SHALL MAKE THE CONTRACTOR RESPONSIBLE FOR ANY AND ALL REQUIRED CHANGES AND COSTS TO CORRECT SAID HIDDEN CONDITION. ALL EXISTING EQUIPMENT NOT IDENTIFIED SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR REVIEW AS TO WHETHER THE EQUIPMENT SHALL REMAIN AND BE RECONNECTED TO THE NEW SERVICES, BE RELOCATED, BE ABANDONED, ETC.
- 3.7 ALL EXISTING LIGHTING FIXTURES, ELECTRICAL DEVICES, CONDUIT, ETC., SHALL BE REMOVED AS NOTED ON DRAWINGS AND AS REQUIRED TO MEET NEW SCOPE OF WORK. ALL EXISTING ELECTRICAL EQUIPMENT AND LIGHTING FIXTURES SHALL REMAIN PROPERTY OF THE OWNER AND SHALL BE PROPERLY STORED ON SITE, OR DESIGNATED TO BE ABANDONED AND REMOVED FROM SITE AS DIRECTED BY OWNER.
- 3.8 EXISTING CIRCUITRY NOT INTERRUPTED BY THE WORK SHALL REMAIN AS IS UNLESS SPECIFICALLY NOTED OTHERWISE.
- 3.9 EXISTING CIRCUITRY (TO REMAIN) INTERRUPTED BY THE WORK SHALL BE PROPERLY RECONNECTED AS REQUIRED FOR A COMPLETE OPERATING SYSTEM.
- 3.10 EXISTING CONDUIT MAY BE REUSED (CONTRACTOR'S OPTION) WHEREVER POSSIBLE. REMOVE ALL EXISTING BRANCH CIRCUIT WIRING AND INSTALL NEW AS SHOWN OR AS REQUIRED WHERE CIRCUITS ARE INTERRUPTED AND TO BE EXTENDED TO PANELS.
- 3.11 DEENERGIZE AFFECTED CIRCUITS AND REMOVE ALL ELECTRICAL EQUIPMENT, DEVICES, FIXTURES, CONDUIT, WIRING, ETC. CAREFULLY REMOVE ALL ITEMS.
- 3.12 DISCONNECT ELECTRICALLY OPERATED EQUIPMENT WHERE REMOVAL BY ANOTHER CONTRACTOR IS REQUIRED.
- 3.13 PROVIDE ALL LIGHTING FIXTURES OF THE TYPE, QUALITY, FINISH AND MANUFACTURER SHOWN ON DRAWINGS. ALL FLUORESCENT FIXTURES SHALL MEET NEMA CLASS "P" BALLAST REQUIREMENTS.
- 3.14 PROVIDE ALL LAMP HOLDERS WITH THE PROPER SIZE AND TYPE LAMP AND AS SHOWN ON THE DRAWINGS. ALL LAMPS TO BE SYLVANIA OR GENERAL ELECTRIC. ALL LAMPS SHALL BE AS RECOMMENDED BY FIXTURE MANUFACTURER. NO LAMPS THAT HAVE BEEN USED DURING CONSTRUCTION OF THE BUILDING SHALL BE ACCEPTED. ALL LAMPS SHALL BE NEW AND INSTALLED, PRIOR TO SUBSTANTIAL COMPLETION AS DIRECTED BY THE ENGINEER.
- 3.15 PROVIDE PROPER AND SUFFICIENT SUPPORT FOR ALL FIXTURES AS REQUIRED FOR THE TYPE OF CEILING CONSTRUCTION.
- 3.16 MINIMUM CONDUIT SIZE SHALL BE 1/2" EMT; MINIMUM IMC OR RIGID H.W. CONDUIT SIZE TO BE 3/4". (VERIFY WITH LOCAL GOVERNING CODES PRIOR TO INSTALLATION.)
- 3.17 ALL COUPLINGS AND CONNECTORS SHALL BE GLAND OR SET SCREW TYPE.
- 3.18 MINIMUM WIRE SIZE SHALL BE #12 THWN (OR THHN) SOLID COPPER; OVER 75' RUNS SHALL BE MINIMUM #10 THWN COPPER UNLESS NOTED OTHERWISE ON THE PLANS.
- 3.19 PROVIDE PROPER AND SUFFICIENT GROUND CONNECTION FOR ALL ELECTRICAL DEVICES AND EQUIPMENT. ALL CONDUIT CONNECTIONS SHALL BE DRAWN UP TIGHT AND SECURE.
- 3.20 WIRE SPLICES AND JOINTS SHALL BE MECHANICALLY AND ELECTRICALLY PERFECT. TWISTED SPLICES AND JOINTS SHALL BE DRAWN UP TIGHT AND FITTED WITH PROPER SIZED SCOTCHLOK OR IDEAL ELECTRICAL SPRING CONNECTORS.
- 3.21 SOLDERLESS CONNECTORS AND LUGS SHALL BE USED ON ALL WIRES AND CABLES #6 AND LARGER. ALL SPLICES AND JOINTS #6 AND LARGER SHALL BE TIGHTLY TAPED WITH BEST GRADE TAPE OF A HIGH GRADE VINYLITE PLASTIC TO AN INSULATION VALUE EQUIVALENT OR IN EXCESS OF THAT OF THE WIRE INSULATION.
- 3.22 ALL SURFACE MOUNTED PULL BOXES, OUTLET BOXES, ETC., SHALL HAVE SUPPORTS INDEPENDENT OF CONDUIT SYSTEM AND SECURELY ANCHORED TO THE STRUCTURE. THE ENTIRE CONDUIT SYSTEM SHALL BE INDEPENDENTLY SUPPORTED FROM STRUCTURE. NO CONDUITS SHALL BE SUPPORTED FROM THE VENTILATING DUCTS, MECHANICAL PIPING OR THEIR HANGERS.
- 3.23 WHERE INDICATED ON THE DRAWINGS IN UNFINISHED SPACES, RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALL.
- 3.24 PROVIDE PULL WIRE IN EACH RACEWAY IN WHICH WIRING IS NOT INSTALLED.
- 3.25 WIRE COLOR CODING SHALL BE COORDINATED THROUGHOUT THE ENTIRE PROJECT/BUILDING FOR NEW AND EXISTING SYSTEMS.
- 3.26 IF MORE THAN THREE (3) PHASE (UNGROUND) CONDUCTORS ARE RUN IN THE SAME RACEWAY, CONDUCTOR AMPACITY SHALL BE DERATED IN ACCORDANCE WITH NEC ARTICLE 310.
- 3.27 PROVIDE A COMPLETE ELECTRICAL SERVICE AS INDICATED ON THE DRAWINGS OR REQUIRED.
- 3.28 PROVIDE NAMEPLATES AND DIRECTORIES FOR ALL PANELBOARDS.
- 3.29 PROVIDE GROUND FAULT INTERRUPTER DEVICES AND CIRCUITS AS REQUIRED BY LOCAL CODE AUTHORITIES.
- 3.30 VERIFY ALL EXISTING AND NEW MECHANICAL, ELECTRICAL, FIRE PROTECTION SYSTEMS AND MEDICAL GAS SERVICES PRIOR TO START OF NEW CONSTRUCTION. COORDINATE AND ADJUST NEW WORK AS REQUIRED TO AVOID CONFLICTS WITH EXISTING SERVICES AND NEW SERVICES PROVIDED BY OTHERS.
- 3.31 FURNISH AND INSTALL A GREEN GROUND WIRE IN ALL POWER CONDUITS. ALL DEVICES, EQUIPMENT, FIXTURES AND THE LIKE, MUST BE GROUNDED. MECHANICAL/ELECTRICAL BONDS OF THE METALLIC RACEWAY SYSTEM SHALL BE MAINTAINED.

**ELECTRICAL SITE LAYOUT**



**KEY TO ELECTRICAL CIRCUIT WIRING**



- NOTES:**
1. ALL WIRING SHALL BE #12 AWG, UNLESS OTHERWISE NOTED.
  2. MINIMUM CONDUIT SIZE SHALL BE 3/4" EXCEPT FOR THREE (3) WIRES OR LESS, OR CONTROL WIRING WITHIN BUILDINGS, WHICH MAY BE 1/2" CONDUIT.
  3. 1/2" FLEXSTEEL, GREENFIELD OR SEALITE SHALL BE THE MINIMUM SIZE INSTALLED.

FILE NAME = 0858\_02-PLAN-04 - P01

USER NAME =	DESIGNED - PKB	REVISED -
	CHECKED - PKB	REVISED -
PLOT SCALE =	DRAWN - PS	REVISED -
PLOT DATE = 12/23/10	CHECKED - AG	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

71ST STREET

LIFT STATION ELECTRICAL SCHEDULE

SCALE: NONE

SHEET NO. 94 OF 209 SHEETS STA. TO STA.

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1537	06-00050-00-GS	COOK	209	94
FED. ROAD DIST NO. 1 ILLINOIS			FED. AID PROJECT CRE-9003(709)	

CONTRACT NO. 63556