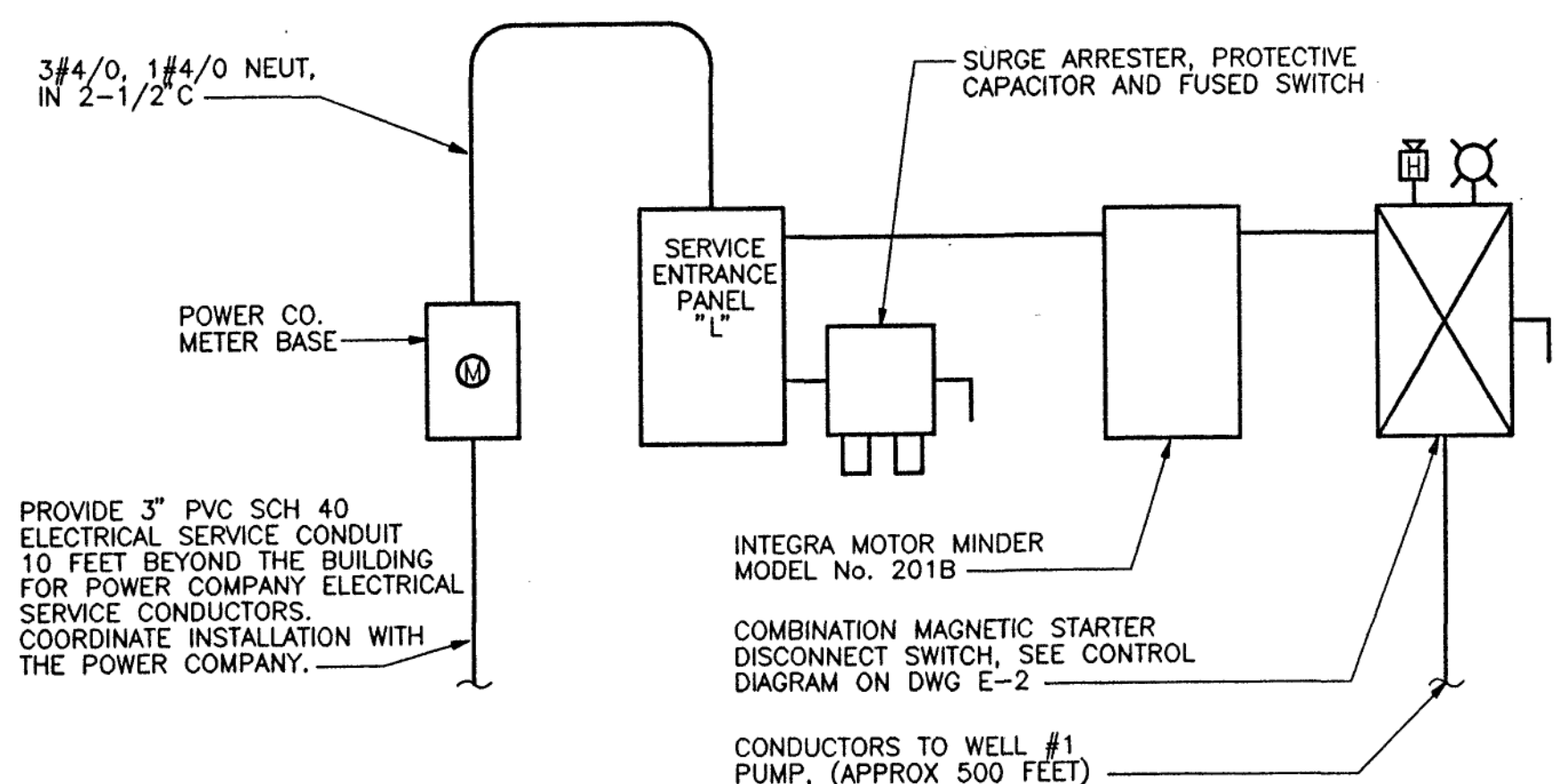


POWER & LIGHTING PLAN - WATERWORKS BUILDING  
3/8" = 1' - 0"



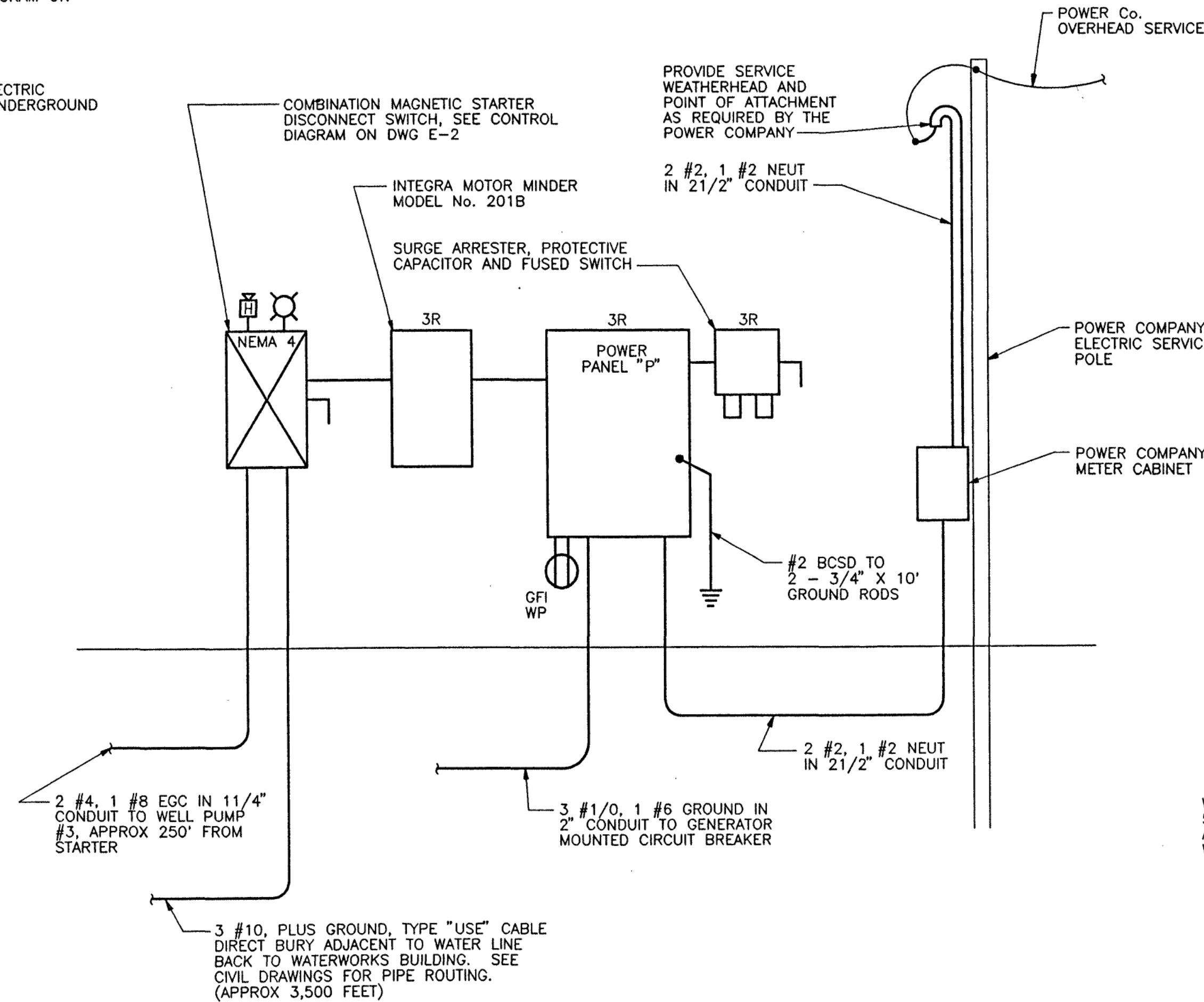
HEADWORKS BUILDING ELECTRIC SERVICE DIAGRAM  
NOT TO SCALE

ABBREVIATIONS

A/AMP	AMPERE(S)
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AIC	AMPS INTERRUPTING CAPACITY
ARR	ARRESTER
AT	AMPERE TRIP
BCSD	BARE COPPER SOFT DRAWN
BFG	BELOW FINISHED GRADE
C	CONDUIT
CH	COUNTER HEIGHT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DISC	DISCONNECT
EA	EACH
EGC	EQUIPMENT GROUNDING CONDUCTOR
EQPT	EQUIPMENT
EXIST	EXISTING
FLA	FULL LOAD AMPS
FRAC	FRACTIONAL
FVNR	FULL VOLTAGE, NON-REVERSING
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HP	HORSEPOWER
KVA	KILOVOLT-AMPERE
KW	KILOWATTS
LED	LIGHT EMITTING DIODE
MCCB	MOLDED CASE CIRCUIT BREAKER
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
OL'S	OVERLOADS
PH	PHASE
PVC	POLY VINYLE CHLORIDE
SCH	SCHEDULE
TYP	TYPICAL
V	VOLT(S)
W	WATT(S), WIRE, WIDE

LEGEND

—	CONDUIT RUN CONCEALED IN WALLS AND EXPOSED ELSEWHERE
----	CONDUIT RUN CONCEALED IN OR BELOW FLOOR OR BELOW GRADE AS APPLICABLE
—○—	CONDUIT TURNING UP
—●—	CONDUIT TURNING DOWN
—	TICK MARKS: INDICATE NUMBER OF CONDUCTORS IN A CONDUIT IN ADDITION TO EGC. NO TICK MARKS INDICATE TWO CONDUCTORS IN ADDITION TO EGC
—→	HOMERUN TO PANELBOARD
⊙	FLUORESCENT LIGHTING FIXTURE
⊙	WALL MOUNTED LIGHTING FIXTURE
S	SINGLE POLE SWITCH
⊙ WP, GFI	NEMA 5-20R DUPLEX RECEPTACLE, "WP", WHERE USED, INDICATES WEATHERPROOF. "GFI", WHERE USED, INDICATES GROUND FAULT INTERRUPTER.
□	120/240 VOLT PANELBOARD
⊞	COMBINATION MAGNETIC STARTER
⊙	JUNCTION BOX
⊙	MOTOR
⊞	DISCONNECT SWITCH
⊙	CONTACTOR
⊞	CIRCUIT BREAKER
⊞	CONTACT, NORMALLY OPEN
⊞	PILOT LIGHT
⊞	GROUND ROD
⊞	GROUND GRID
⊞	CONNECTION TO GROUND
⊞	THERMOSTAT



WELL #3 - ELECTRIC SERVICE DIAGRAM  
NOT TO SCALE

ELECTRICAL SPECIFICATIONS:

1. PROVIDE NECESSARY ITEMS FOR A COMPLETE INSTALLATION OF ELECTRICALLY OPERATED EQUIPMENT SPECIFIED OR SHOWN ON THE CONTRACT DRAWING. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, 2002 EDITION.
2. PROVIDE LAMINATED PHENOLIC NAMEPLATES ON EACH STARTER, DISCONNECT AND THE LIKE INDICATING THE EQUIPMENT CONTROLLED AND WHERE FEED FROM. LETTERS SHALL BE 3/8" HIGH.
3. ALL EQUIPMENT SHALL BE UL LISTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE "NEC".
4. TEST ALL CONDUCTORS AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
5. PROVIDE MOTORS THAT ARE DESIGNED FOR THE INTENDED USE. MOTORS SHALL BE ENERGY EFFICIENT TYPE.
6. CONDUCTORS SHALL BE STRANDED COPPER WITH TYPE "USE" INSULATION FOR DIRECT BURY INSTALLATION. CONDUCTORS FOR INTERIOR USE SHALL BE TYPE "THHN/THWN" ALL CONDUCTORS SHALL BE RATED FOR 600 VOLTS.
7. CONDUCTORS SHALL BE COLOR CODED AS REQUIRED BY THE NEC.
8. BURIED CONDUITS SHALL BE PVC SCH 40, SIZED AS INDICATED. EXPOSED EXTERIOR CONDUITS SHALL BE GALVANIZED RIGID STEEL. INTERIOR CONDUITS IN DRY AREAS SHALL BE ELECTRICAL METALIC TUBING "EMT" TYPE. EMT CONDUIT FITTINGS SHALL BE COMPRESSION TYPE. INSTALL RUNS OF CONDUIT PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS, OR INTERSECTIONS OF VERTICAL PLANES.
9. PROVIDE PULL AND JUNCTION BOXES WHERE REQUIRED FOR CHANGES IN DIRECTION, AT JUNCTION POINTS, AND TO FACILITATE WIRE PULLING.
10. WIRING DEVICE AND JUNCTION BOXES SHALL BE METALLIC AND SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
11. WIRING DEVICES SHALL BE ROUGH SERVICE SPECIFICATIONS GRADE, 20 AMP RATED.
12. SEAL ALL WALL PENETRATIONS WITH SILICONE CAULKING DESIGNED FOR THE APPLICATION.
13. SAFETY SWITCHES OR DISCONNECTS SHALL BE HEAVY DUTY METAL ENCLOSED, WITH QUICK MAKE, QUICK-BREAK MECHANISM AND EXTERNAL PADLOCKABLE OPERATING HANDLE. ENCLOSURES SHALL BE NEMA 1 INDORS AND NEMA 3R EXTERIOR.
14. STARTERS SHALL BE COMBINATION TYPE WITH FUSES, OVERLOADS, CONTROL POWER TRANSFORMER SIZED FOR THE LOAD INDICATED, PHASE LOSS PROTECTION AND WITH CONTROL AND INDICATING DEVICES AS INDICATED IN THE PUMP CONTROL DIAGRAMS. MANUFACTURER OF STARTERS SHALL BE SQUARE - D, CUTLER HAMMER OR GENERAL ELECTRIC. ENCLOSURES SHALL BE NEMA TYPE 12 FOR INTERIOR LOCATIONS AND NEMA TYPE 4 FOR EXTERIOR LOCATIONS. THE MINIMUM NEMA SIZE STARTER SHALL BE NEMA SIZE 1. PROVIDE SUBMITTALS FOR PUMP STARTERS AND PUMP CONTROLLERS. PROVIDE WEATHER PROOF HORN AND FLASHING RED ALARM LIGHT FOR EXTERIOR INSTALLATIONS.
15. PANELBOARDS SHALL BE ENCLOSED DEAD-FRONT WITH FEATURES AND RATINGS AS SCHEDULED. CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE COMMERCIAL GRADE. PANELS KNOWN AS LOAD CENTERS WILL NOT BE ACCEPTED. BUS BARS SHALL BE COPPER. PROVIDE TYPED DIRECTORY CARDS.
16. PROVIDE GROUND CONDUCTORS IN ALL CONDUITS AND RACEWAYS. CONNECT TO ALL METAL ENCLOSURES IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
17. PROVIDE CT CABINET, METERING CONDUIT, AND SERVICE ENTRANCE CONDUITS AS REQUIRED BY THE POWER COMPANY FOR THE ELECTRICAL SERVICES.

NOTES:

1. COORDINATE ELECTRICAL SERVICE WITH THE POWER COMPANY. SERVICE TO BUILDING SHALL BE RUN UNDERGROUND.
2. COORDINATE LOCATION OF ALL EXISTING AND PROPOSED UNDERGROUND UTILITIES BEFORE INSTALLING NEW UNDERGROUND ELECTRICAL WORK.
3. BRANCH CIRCUITRY FOR RECEPTACLES HAS NOT BEEN SHOWN. PROVIDE CIRCUIT CONDUCTORS AND CONDUIT AS INDICATED IN THE PANEL SCHEDULES. CONDUITS SHALL BE RUN EXPOSED OR UNDERGROUND AS INDICATED. ALL RECEPTACLES SHALL BE FLUSH MOUNTED.
4. ALL RECEPTACLES IN WATERWORKS BUILDING SHALL BE INSTALLED AT 48" AFF UNLESS OTHERWISE INDICATED.
5. NO CONDUIT OR JUNCTION BOXES SHALL BE INSTALLED EXPOSED ON THE EXTERIOR OF THE BUILDING.
6. ALL CONDUIT STRAPS SHALL BE NON-CORROSIVE, CAST METAL WITH STAINLESS STEEL HARDWARE.
7. POWER AND CONTROL/INSTRUMENTATION CABLES SHALL NOT BE INSTALLED WITHIN THE SAME CONDUIT.
8. PENN BREEZWAY FAN PACK, 3530 CFM AT .125" STATIC PRESSURE, 1/4 HP, 230 V, SINGLE PHASE. FAN PACK SHALL INCLUDE MODEL P180 FAN, GALVANIZED STEEL WALL SLEEVE, REAR FAN GUARD AND COMBINATION LOUVER/SHUTTER, OR APPROVED EQUAL. INSTALL BOTTOM OF UNIT AT 8'-0" AFF.
9. UNIT HEATER SHALL BE Q-MARK MODEL MUH-05, 5.0 KW, 240 VOLT, SINGLE PHASE, 650 CFM, OR APPROVED EQUAL WITH BUILT-IN T-STAT AND WALL MOUNTING BRACKET. INSTALL BOTTOM OF UNIT AT 8'-0" AFF.
10. TIMERS SHALL BE 24 HOUR WITH 2 NORMALLY OPEN AND 2 NORMALLY CLOSED SETS OF CONTACTS. TIMERS SHALL BE POWERED FROM 120 VOLTS CIRCUITS INDICATED.

PARTIAL SITE PLAN - WELL #3  
NOT TO SCALE

BERKLEY HOWELL & ASSOC.P.C.

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THE RETREAT  
WATER SYSTEM

UNION HALL DISTRICT FRANKLIN CO., VA.

ELECTRICAL

WATERWORKS BLDG POWER & LIGHTING PLAN  
ELECTRICAL SERVICE ONE LINE DIAGRAMS  
SPECIFICATIONS, NOTES, LEGEND & ABBREV

DATE: 3-11-03

TECHNICIAN: WAYNE

CHECKED BY: WOB

REVISIONS

NO.	DATE
	2-26-03

SCALES  
AS SHOWN

PROJ. NO. 020097 DIV.

SHEET NO. 15 OF 16

DRAWING NO. E-1

MANUSCRIPT DRAWING NUMBER: VIEWS TO CREATE THIS DRAWING: FIELDBOOK IDENTIFICATION: SURVEY DATUM USED: