A. GENERAL

1. EXAMINE THE SITE CONDITIONS VERY CAREFULLY AND THE SCOPE OF PROPOSED WORK TOGETHER WITH THE WORK OF ALL OTHER TRADES AND INCLUDE IN THE BID PRICE ALL COSTS FOR WORK SUCH AS EQUIPMENT AND WIRING MADE NECESSARY TO ACCOMMODATE THE ELECTRICAL SYSTEMS SHOWN AND SYSTEMS OF OTHER TRADES.
2. SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
3. PERFORM DETAILED VERIFICATION OF WORK PRIOR TO ORDERING THE ELECTRICAL EQUIPMENT AND COMMENCING CONSTRUCTION. ISSUE A WRITTEN NOTICE TO THE CONSULTANT OF ANY DISCREPANCIES.
4. OBTAIN ALL PERMITS, PAY ASSOCIATED FEES AND SCHEDULE INSPECTION.
5. SUBMIT SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. INDICATE DETAILS OF CONSTRUCTION, DIMENSIONS, CAPACITIES, WEIGHTS AND ELECTRICAL PERFORMANCE CHARACTERISTICS OF EQUIPMENT OR MATERIAL. WHERE APPLICABLE INCLUDE WIRING AND SINGLE LINE DIAGRAMS. ADVERTISING OR SALES LITERATURE SHALL NOT BE ACCEPTABLE AS SHOP DRAWINGS.
6. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, INSURANCE AND SERVICES TO COMPLETE THIS PROJECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND PRESENT IT AS FULLY OPERATIONAL TO THE SATISFACTION OF THE OWNER.
7. CARRY OUT WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
8. PRIOR TO BEGINNING WORK COORDINATE ALL POWER AND TELCO WORK WITH THE LOCAL UTILITY COMPANIES AS IT MAY APPLY TO THIS SITE. ALL WORK TO COMPLY WITH THE RULES AND REGULATIONS OF THE UTILITIES INVOLVED.
9. PROVIDE ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THE ELECTRICAL WORK. ANY DAMAGE DONE TO THE WORK ALREADY IN PLACE BY REASON OF THIS WORK SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE BY A QUALIFIED MECHANIC EXPERIENCED IN SUCH WORK. PATCHING SHALL BE UNIFORM IN APPEARANCE AND SHALL MATCH THE SURROUNDING SURFACE. DO NOT CUT STRUCTURAL MEMBERS WITHOUT APPROVAL OF THE CONSULTANT.
10. CORE DRILLING THROUGH WALLS AND FLOORS FOR CONDUIT AND CABLE INSTALLATION IS TO BE PROVIDED BY THE GENERAL CONTRACTOR AT LOCATIONS DETERMINED BY THE STRUCTURAL ENGINEER. REFER TO STRUCTURAL DRAWINGS AND COORDINATE WITH GENERAL CONTRACTOR FOR INSTALLATION OF CONDUITS AND CABLES THROUGH WALLS AND FLOORS.
11. WHERE CABLE OR CONDUITS PASS THROUGH FLOORS AND FIRE RATED WALLS, SEAL CORE DRILLED OPENINGS AROUND CONDUITS OR CABLES USING UL APPROVED FIRE–STOPPING SYSTEM AND UL LISTED SEALANT.
12. ENSURE THAT ALL LIGHT, POWER, HEAT, TELEPHONE AND OTHER ELECTRICAL AND MECHANICAL SYSTEMS AND SERVICES IN THE BUILDING REMAIN OPERATIONAL DURING THE COURSE OF THIS PROJECT. PROVIDE TEMPORARY SERVICES AS REQUIRED. INCLUDE ALL COSTS FOR TEMPORARY SERVICES IN THE BID PRICE. REMOVE ALL EXISTING EQUIPMENT, WIRING ETC. NOT BEING RE–USED UNDER NEW SCHEMES, WHETHER SHOWN ON DRAWINGS OR NOT.
13. FABRICATION AND INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM SHALL BE DONE IN A FIRST–CLASS WORKMANSHIP MANNER PER NECA STANDARD 1–2000 BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH WORK. WORK SHALL BE SCHEDULED IN AN ORDERLY MANNER SO AS NOT TO IMPEDE PROGRESS OF THE PROJECT.
14. DURING PROGRESS OF THE WORK, MAINTAIN AN ACCURATE RECORD OF THE INSTALLATION OF THE ELECTRICAL SYSTEMS, LOCATING EACH CIRCUIT PRECISELY AND DIMENSIONING EQUIPMENT, CONDUIT AND CABLE LOCATIONS. UPON COMPLETION OF THE INSTALLATION, TRANSFER ALL RECORD DATA TO BLACK LINE PRINTS OF THE ORIGINAL DRAWINGS IN RED AND SUBMIT THESE DRAWINGS AS RECORD DRAWINGS TO THE CONSULTANT.
15. AT THE COMPLETION OF THE PROJECT PROVIDE THREE SETS OF OPERATION AND MAINTENANCE MANUALS, BOUND IN 3–RING BINDERS, DULY LABELED, AND CONTAINING COMPLETE LIST OF REPLACEMENT PARTS, SHOP DRAWINGS AND CATALOG INFORMATION OF ALL MAJOR EQUIPMENT, SUCH AS TRANSFORMERS, LUMINAIRES, PANEL BOARDS, TRANSFER SWITCH, PANEL SCHEDULE, A/C SYSTEMS, TVSS, SECURITY SYSTEM, ETC.
16. THE COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF TIME OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE UPON WRITTEN NOTIFICATION AT THE EXPENSE OF THE CONTRACTOR.

B. SERVICE AND DISTRIBUTION

1. CONTRACTOR TO COORDINATE WITH LANDLORD AND/OR UTILITIES FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOK UP COSTS TO BE PAID BY CONTRACTOR. CONTRACTOR TO OBTAIN NECESSARY PERMITS, PAY ALL ASSOCIATED FEES AND SCHEDULE INSPECTIONS OF SERVICE WITH LOCAL AUTHORITIES HAVING JURISDICTION.
2. MAIN DISTRIBUTION CONFIGURATION SHALL BE BASED ON THE DESIGN INTENT.
3. VERIFY ALL DIMENSIONS AND CLEARANCES BY FIELD MEASUREMENTS PRIOR TO INSTALLATION.
4. BRANCH CIRCUIT PANEL BOARDS SHALL BE OF THE TYPE AND RATINGS AS SHOWN ON DRAWINGS. PANEL BOARDS SHALL BE CUTLER–HAMMER TYPE PRL2A OR APPROVED EQUAL. DISTRIBUTION BOARD SHALL BE CUTLER–HAMMER TYPE POW–R–LINE 4B OR APPROVED EQUAL.
5. PANEL BOARDS AND SPLITTERS SHALL HAVE COPPER MAINS AND SHALL BE OF THE CHARACTERISTICS AS NOTED ON THE DRAWINGS. AFTER COMPLETION OF WIRING, PROVIDE A TYPED DIRECTORY SHOWING A CLEAR DESCRIPTION OF EACH CIRCUIT BEING FED FROM PANEL AND PLACE IN METAL FRAME INSIDE DOOR.

C. BASIC MATERIALS AND METHODS

1. INSTALLATION, MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL SAFETY CODE (NEC), APPLICABLE STATE ELECTRICAL CODES, THE NATIONAL ELECTRICAL SAFETY CODE (NESC) AND THE TERMS, CONDITIONS AND REGULATIONS OF THE AUTHORITY HAVING LAWFUL JURISDICTION PERTAINING TO THE WORK REQUIRED. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL CONFORM TO THE APPLICABLE STANDARDS OF THE UNDERWRITERS LABORATORIES INC. (UL). THE LABEL OF AND LISTING BY UL IS MANDATORY.
2. ALL MATERIALS AND EQUIPMENT SHALL BE NEW. MATERIALS AND EQUIPMENT SHALL BE THE STANDARD PRODUCTS OF MANUFACTURER'S CURRENT DESIGN. ANY FIRST–CLASS PRODUCT MADE BY A REPUTABLE MANUFACTURER MAY BE USED PROVIDING IT CONFORMS TO THE CONTRACT REQUIREMENTS AND MEETS THE APPROVAL OF THE CONSULTANT AND THE OWNER. APPROVALS SHALL BE OBTAINED PRIOR TO INSTALLATION.
3. ARRANGE CONDUIT, WIRING, EQUIPMENT, AND OTHER WORK GENERALLY AS SHOWN, PROVIDING PROPER CLEARANCES AND ACCESS. CAREFULLY EXAMINE ALL CONTRACT DRAWINGS AND FIT THE WORK IN EACH LOCATION WITHOUT SUBSTANTIAL ALTERATION. WHERE DEPARTURES ARE PROPOSED BECAUSE OF FIELD CONDITIONS OR OTHER CAUSES, PREPARE AND SUBMIT DETAILED DRAWINGS FOR ACCEPTANCE. THE RIGHT IS RESERVED TO MAKE REASONABLE CHANGES IN LOCATION OF EQUIPMENT, CONDUIT, AND WIRING UP TO THE TIME OF ROUGH–IN OR FABRICATION.
4. THE CONTRACT DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ALL OFFSETS, BENDS, FITTINGS, PULL BOXES AND ACCESSORIES ARE NOT NECESSARILY SHOWN. PROVIDE ALL SUCH ITEMS AS MAY BE REQUIRED TO FIT THE WORK TO THE CONDITIONS.
5. MOUNTING HEIGHTS OF ALL WIRING DEVICES SHALL BE VERIFIED WITH THE CONSULTANT PRIOR TO INSTALLATION.
6. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 3R RATED UNLESS NOTED OTHERWISE.
7. MAINTAIN ALL CLEARANCES AS REQUIRED BY NEC.
8. SEAL AROUND CONDUITS AND AROUND CONDUCTORS WITHIN CONDUITS ENTERING THE MODULAR CABINETS WHERE PENETRATION OCCURS WITH A SILICONE SEALANT TO PREVENT MOISTURE PENETRATION INTO BUILDING.
9. SILICONE SEAL AROUND ALL BOLTS AND SCREWS USED TO SECURE EQUIPMENT TO EXTERIOR OF BUILDING.
10. MAKE NECESSARY CONNECTIONS FOR BATTERY IN EMERGENCY LIGHT FIXTURE. CONNECT EXTERIOR LIGHT FIXTURE (PROVIDED BY SHELTER MANUFACTURER) TO EXTERNAL JUNCTION BOX.

D. RACEWAYS AND BOXES

1. ALL WIRING FOR POWER AND SYSTEMS SHALL BE IN CONDUIT UNLESS DIRECTED OTHERWISE. ALL CONDUIT SHALL BE UL LABELED. MINIMUM SIZE CONDUIT SHALL BE 1/2 INCH TRADE SIZE UNLESS NOTED OTHERWISE.
2. UNLESS NOTED OTHERWISE, CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED IMC OR GALVANIZED RMC WITH LIQUID TIGHT FITTINGS. ALL EXTERIOR HARDWARE SHALL BE GALVANIZED STEEL.
3. CONDUIT INSIDE BUILDING IN AREAS WHERE CONDUIT IS SAFE FROM MECHANICAL DAMAGE AND WHERE CONCEALED IN DRYWALL, METAL FLASHING ETC. SHALL BE EMT WITH COMPRESSION FITTINGS. CONDUIT IN HIGH TRAFFIC AREA, IN AREAS OF RISK OF PHYSICAL DAMAGE AND IN STAIRWELLS SHALL BE GALVANIZED RMC.
4. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT SHALL BE INSTALLED IN LIQUID–TIGHT FLEXIBLE METAL CONDUIT.
5. CONDUIT WORK IN HAZARDOUS AREAS, OR AREAS WITH LARGE TEMPERATURE DIFFERENTIAL: USE RIGID STEEL OR IMC CONDUIT WITH CONDUIT SEAL FITTINGS, POURED WITH HARDENING COMPOUND AFTER CONDUCTORS ARE PULLED IN CONDUIT. SEALS SHALL BE INSTALLED PER NEC.
    1. ACCEPTABLE MANUFACTURERS OF SEALS:
        a. CROUSE–HINDS
        b. APPLETON
        c. KILLARK
        d. O–Z/GEDNEY

E. CONDUCTORS AND CONNECTORS

1. UNLESS NOTED OTHERWISE, ALL CONDUCTORS SHALL BE COPPER, MINIMUM SIZE #12 AWG, WITH THERMOPLASTIC INSULATION (TYPES THHN OR THWN) CONFORMING TO NEMA WC5 OR CROSS–LINKED POLYETHYLENE INSULATION (TYPE XHHW) CONFORMING TO NEMA WC7. INSULATION SHALL BE RATED FOR 90°C. CONDUCTORS SHALL BE SOLID FOR #10 AND SMALLER, STRANDED FOR #8 AND LARGER.
2. CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: 208/120V – BLACK (PHASE A), RED (PHASE B), BLUE (PHASE C), WHITE (NEUTRAL), GREEN (GROUND); 480/277V – BROWN (PHASE A), ORANGE (PHASE B), YELLOW (PHASE C), GRAY (NEUTRAL), GREEN (GROUND).
3. FOR COPPER CONDUCTORS #6 AWG AND SMALLER USE 3M SCOTCH–LOK OR T&B STA–KON COMPRESSION TYPE CONNECTORS WITH INTEGRAL OR SEPARATE INSULATION CAPS. FOR COPPER CONDUCTORS LARGER THAN #6 AWG USE SOLDERLESS, INDENT HEX SCREW OR BOLT TYPE PRESSURE CONNECTORS OR DOUBLE COMPRESSION C–CLAMP CONNECTORS, UNLESS SPECIFIED OTHERWISE ON DRAWINGS.
4. UNLESS NOTED OTHERWISE ALL LUGS SHALL BE TIN PLATED COPPER, TWO–HOLE, LONG BARREL, COMPRESSION TYPE.
5. CONDUCTOR LENGTHS SHALL BE CONTINUOUS FROM TERMINATION TO TERMINATION WITHOUT SPLICES. SPLICES ARE NOT ACCEPTABLE. IF SPLICES ARE UNAVOIDABLE PRIOR APPROVAL FROM THE CONSULTANT MUST BE OBTAINED.
6. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 80 UNLESS NOTED OTHERWISE.
7. ALL EMPTY CONDUIT INSTALLED FOR FUTURE INSTALLATION OF WIRES AND CABLES SHALL HAVE A PULL CORD.
8. PROVIDE CONDUIT EXPANSION/DEFLECTION FITTINGS WHERE CONDUITS CROSS EXPANSION JOINTS, FLOATING SLABS, OR ISOLATED SLABS. PROVIDE CONDUIT THRU–WALL SEALS WHERE CONDUITS CROSS BETWEEN INTERIOR AND EXTERIOR OR DAMP LOCATIONS. PROVIDE CONDUIT FIRE SEALS WHERE CONDUITS PASS THRU FIRE–RATED CONSTRUCTION.
9. WIREWAYS SHALL BE SHEET METAL SIZED AND SHAPED AS INDICATED. INCLUDE COUPLING, OFFSETS, ELBOWS, EXPANSION JOINTS, ADAPTERS, HOLDOWN STRAPS, END CAPS AND OTHER FITTINGS TO MATCH AND MATE WITH WIRE WAYS AS REQUIRED FOR COMPLETE SYSTEM. MANUFACTURERS: HOFFMAN, SQUARE–D OR APPROVED EQUAL.
10. HINGED COVER ENCLOSURES CONFORMING TO NEMA 250, TYPE 1, WITH CONTINUOUS HINGE COVER AND FLUSH LATCH, SIZED AS INDICATED. CABINETS TO CONFORM TO NEMA 250, TYPE 1, GALVANIZED STEEL BOX WITH REMOVABLE INTERIOR PANEL AND REMOVABLE FRONT, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL. HINGED DOOR IN FRONT COVER WITH FLUSH LATCH AND CONCEALED HINGE. MANUFACTURERS: HOFFMAN, O–Z/GEDNEY, T&B OR APPROVED EQUAL.
11. PROVIDE BOXES FOR ALL OUTLETS, DEVICES, CONNECTIONS, ETC. PROVIDE JUNCTION AND PULL BOXES AS REQUIRED. PROVIDE CAST METAL BOXES FOR SURFACE MOUNTED LOCATIONS AND STAMPED STEEL BOXES FOR INTERIOR DRY FLUSH–MOUNTED LOCATIONS. SHEET METAL BOXES SHALL CONFORM TO NEMA OS1; CAST–METAL BOXES SHALL CONFORM TO NEMA 81 AND SHALL BE SIZED IN ACCORDANCE WITH NEC UNLESS NOTED OTHERWISE.
12. PULL BOXES USED FOR FIBER OPTIC CABLES SHALL BE SIZED IN ACCORDANCE WITH THE CABLE MANUFACTURER'S INSTRUCTIONS SUCH THAT PROPER BENDING RADII OF THE FIBER OPTIC CABLE ARE MAINTAINED.

F. WIRING DEVICES

1. SWITCHES SHALL BE TOGGLE–TYPE, HORSEPOWER RATED, 120/277V, 20 AMP SPECIFICATION GRADE. DUPLEX RECEPTACLES SHALL BE RATED 20 AMPS, 125 VOLTS, NEMA5–20R, SPECIFICATION GRADE. MOUNTING HEIGHTS OF ALL WIRING DEVICES SHALL BE VERIFIED WITH THE OWNER PRIOR TO INSTALLATION.

G. PANELBOARDS

1. PANELBOARDS SHALL CONFORM TO NEMA PB 1, NEMA 250 TYPE 1, UL 50 AND 67, AND THE NEC. PANELBOARDS SHALL BE OF THE TYPE AND RATINGS AS SHOWN ON DRAWINGS. SERIES RATED PANELBOARDS ARE NOT ACCEPTABLE.
2. PANELBOARDS SHALL BE FACTORY ASSEMBLED WITH DOUBLE ROW CONSTRUCTION. PROVIDE FRONT COVER HINGED TO BOX ON ALL PANELBOARDS. PROVIDE TIN PLATED COPPER BUSSING, FULL–AMPACITY PHASE AND 100% AMPACITY NEUTRAL BUSES, 50% GROUND BUS.
3. PROVIDE CIRCUIT NUMBERING AND TYPEWRITTEN PANELBOARD SCHEDULE FOR EACH PANELBOARD.
4. ACCEPTABLE MANUFACTURERS: SQUARE D, GENERAL ELECTRIC, CUTLER–HAMMER.

H. SAFETY SWITCHES AND OVERCURRENT PROTECTION DEVICES

1. ENCLOSED, NON–FUSIBLE AND FUSIBLE SAFETY (DISCONNECT) SWITCHES SHALL CONFORM TO NEMA KS1 TYPE HD, SIZED AS INDICATED ON DRAWINGS. ENCLOSURE TO BE RATED NEMA TYPE 3R FOR OUTDOOR USE AND TYPE 1 FOR INDOOR USE UNLESS OTHERWISE NOTED. OPERATING MECHANISMS SHALL BE DESIGNED SO THAT THE SWITCHES MAY BE LOCATED IN THE OFF POSITION.
2. ACCEPTABLE MANUFACTURERS: SQUARE D, GENERAL ELECTRIC, CUTLER HAMMER, SIEMENS.
3. UNLESS NOTED OTHERWISE, PROVIDE CLASS J TIME DELAY FUSES FOR MAIN FEEDERS, CLASS RK1 TIME DELAY FUSES FOR MOTOR CIRCUITS, AND CLASS RK5 NON–TIME–DELAY FOR OTHER BRANCH CIRCUITS. INSTALL FUSES SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL. PROVIDE SIX (6) SETS OF SPARE FUSES AND A FUSE CABINET FOR EACH LOCATION WHERE FUSES ARE INSTALLED.
4. IN GENERAL, PROVIDE MOLDED CASE, BOLT–ON TYPE, AND THERMAL MAGNETIC TRIP CIRCUIT BREAKERS AS SHOWN AND AS REQUIRED FOR THIS PROJECT. MULTIPLE POLE BREAKERS SHALL BE SINGLE HANDLE, COMMON TRIP. PROVIDE HANDLE LOCKING DEVICES WHERE INDICATED. INTERRUPTING RATING AS INDICATED OR AS REQUIRED FOR AVAILABLE FAULT CURRENT.
5. FOR NEW OVERCURRENT DEVICES IN EXISTING EQUIPMENT, DEVICE VOLTAGE AND INTERRUPTING RATINGS SHALL MATCH EXISTING DEVICE RATINGS UNLESS NOTED OTHERWISE. BUS BARS, DRAWOUT AND PLUG–IN ASSEMBLIES, CONNECTORS, ADAPTERS, LUGS, AND OTHER HARDWARE SHALL BE OF THE SAME TYPE AND MANUFACTURE AS EXISTING EQUIPMENT. WHERE A DEVICE IS OBSOLETE AND THE MANUFACTURER DOES NOT OFFER AN EQUIVALENT REPLACEMENT DEVICE, PROVIDE WRITTEN NOTICE TO THE ENGINEER.
6. PROVIDE LABELS, CIRCUIT NUMBERING, AND UPDATED TYPEWRITTEN PANELBOARD SHEDULES FOR ALL PANELS AFFECTED BY THIS WORK.

I. GROUNDING

1. ALL SAFETY GROUNDING OF THE ELECTRICAL EQUIPMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH NEC.
2. GROUND LUGS ARE SPECIFIED UNDER "CONDUCTORS AND CONNECTORS".
3. ALL GROUND LUG AND COMPRESSION CONNECTIONS SHALL BE COATED WITH ANTI–OXIDANT AGENT, SUCH AS NO–OX, NOALOX, PENETROX OR KOPRSHIELD.
4. GROUND ALL EXPOSED METALLIC OBJECTS ON BUILDING EXTERIOR INCLUDING BUILDING TIE DOWN BRACKETS.
5. PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT.
6. DO NOT INSTALL GROUND RODS AND CONDUCTORS OUTSIDE OF PROPERTY LINE.
7. REMOVE ALL PAINT AND CLEAN ALL DIRT FROM SURFACES REQUIRING GROUND CONNECTIONS.
8. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. ALL BENDS TO BE A MINIMUM OF 8" RADIUS.
9. REPAIR ALL GALVANIZED SURFACES THAT HAVE BEEN DAMAGED BY EXOTHERMIC WELDING. USE ERICO T–319 GALVANIZING BAR.
10. ALL GROUND CONNECTIONS TO BE APPROVED FOR THE METALS BEING CONNECTED.
11. EXOTHERMIC WELDS TO BURIED GROUNDING SYSTEM SHALL BE PARALLEL TYPE, EXCEPT FOR BONDS TO GROUND RODS WHICH ARE TEE CONNECTIONS.
12. FOR MECHANICAL CONNECTIONS TO HATCHPLATE GROUND BARS USE A TWO–HOLE NEMA DRILLED CONNECTOR SUCH AS T&B 32007 OR APPROVED EQUAL.

J. DATA AND TELEPHONE WIRING

1. PROVIDE DATA OUTLETS WHERE SHOWN. EXACT TYPE OF DATA OUTLETS SHALL BE COORDINATED WITH THE OWNER. PROVIDE ALL ROUGH–IN AND EMPTY CONDUIT SYSTEM WHERE REQUIRED.
2. PROVIDE TELEPHONE OUTLETS WHERE SHOWN. TELEPHONE OUTLETS SHALL BE BUILDING STANDARD WITH WHITE FACEPLATE. PROVIDE ALL TELEPHONE WIRING AND CONDUIT. TERMINATE TELEPHONE WIRING AT A DEMARCATION POINT DETERMINED BY THE OWNER.

K. LIGHTING

1. PROVIDE ALL FLUORESCENT FIXTURES WITH T5 LAMPS, AND ELECTRONIC ENERGY SAVING BALLASTS.
2. LIGHTING SWITCHES SHALL BE TOGGLE–TYPE 277V 20 AMP SPECIFICATION GRADE WITH SINGLE AND THREE WAY AS SPECIFIED ON THE DRAWING.

L. IDENTIFICATION

1. ALL EQUIPMENT SHALL BE IDENTIFIED USING NAMEPLATES AND LABELS.
2. NAMEPLATES SHALL BE 1/8" THICK PLASTIC ENGRAVING SHEET, WHITE FACE, BLACK CORE, ENGRAVED WITH EQUIPMENT IDENTIFICATION AND ATTACHED TO EQUIPMENT WITH SELF–TAPPING SCREWS. CHEMICAL ADHESION PLATES ARE NOT ACCEPTABLE. LETTERS SHALL BE MINIMUM 1/4" HIGH.
3. LABELS SHALL BE EMBOSSED PLASTIC WITH MINIMUM 1/4" HIGH LETTERS. LABELS SHALL BE USED FOR IDENTIFYING CONDUIT, CABLES, JUNCTION BOXES, RECEPTACLES ETC.
4. WORDING ON NAMEPLATES AND LABELS MUST BE APPROVED BY THE ENGINEER PRIOR TO MANUFACTURING.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR INSIDE THE LEASE SPACE SHALL HAVE AN ENGRAVED TAG ATTACHED AT EACH END IDENTIFYING THE ORIGINATING AND TERMINATING POINT.

N. TESTING AND COMMISSIONING

1. CONDUCT INSULATION RESISTANCE, RESISTANCE MEASUREMENTS THROUGH ALL NEW BOLTED CONNECTIONS, AND CONTINUITY TESTS OF ALL NEW FEEDERS TO INSURE CORRECT CABLE CONNECTION PER NETA ACCEPTANCE TESTING SPECIFICATIONS FOR ELECTRIC POWER DISTRIBUTION EQUIPMENT AND SYSTEMS STANDARDS. SUBMIT TEST REPORTS TO ENGINEER AND INCLUDE IN PROJECT CLOSE–OUT DOCUMENTATION PROVIDED TO OWNER.
2. CARRY OUT TESTING AND COMMISSIONING OF ALL MAJOR ELECTRICAL EQUIPMENT SUCH AS SWITCHBOARDS, DISTRIBUTION BOARDS, GENERATOR, AUTOMATIC TRANSFER SWITCH, MOTOR STARTERS, ETC. ENGAGE THE SERVICES OF SUPPLIERS OF EQUIPMENT IN FACILITATING TESTING AND COMMISSIONING.
3. TESTING AND COMMISSIONING OF GENERATOR SET, AUTOMATIC TRANSFER SWITCH, AND SOLID–STATE CIRCUIT BREAKERS SHALL BE CARRIED OUT IN THE PRESENCE OF THE ENGINEER. NOTIFY THE ENGINEER SEVEN WORKING DAYS IN ADVANCE OF THE TEST DATE.

O. FINAL SITE CLEAN UP

1. UPON COMPLETION OF THE INSTALLATION, THE ELECTRICAL CONTRACTOR SHALL REVIEW AND CHECK THE ENTIRE INTALLATION, CLEAN EQUIPMENT AND DEVICES, AND REMOVE SURPLUS MATERIALS AND TRASH FROM THE OWNER'S PROPERTY LEAVING THE WORK IN NEAT, CLEAN ORDER AND IN COMPLETE WORKING CONDITION.
2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ANY CARTONS, DEBRIS, AND TRASH FOR EQUIPMENT INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING EQUIPMENT FURNISHED BY THE OWNER OR OTHERS AND REMOVED FROM PACKAGING BY THE ELECTRICAL CONTRACTOR.

P. LIGHTNING PROTECTION SYSTEM

ALL LIGHTNING PROTECTION SYSTEM WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH NFPA 780, UL96A, LPI–175, AND ALL APPLICABLE LOCAL CODES AND REGULATIONS. THE SYSTEM TO BE FURNISHED SHALL BE UL LISTED BY AN APPROVED AND FULLY CERTIFIED MANUFACTURER IN GOOD STANDING OF THE LIGHTNING PROTECTION INSTITUTE. ALL COMPONENTS OF THE LIGHTNING PROTECTION SYSTEM SHALL BE UL INSPECTED, APPROVED, AND LABELED.

ALL MATERIALS SHALL BE COPPER OR BRONZE. ALL HORIZONTAL AND VERTICAL CONDUCTORS SHALL BE COPPER. COPPER EQUIPMENT SHALL NOT BE CONNECTED TO ALUMINUM SURFACES EXCEPT BY MEANS OF AN LPI APPROVED BIMETAL TRANSITION FITTING. LEAD COATING IS NOT ACCEPTABLE AS A BIMETAL TRANSITION. BENDING RADIUS OF LIGHTNING PROTECTION CONDUCTORS SHALL NOT BE LESS THAN 8 INCHES, NOR SHALL ANY BEND FORM AN ANGLE LESS THAN 90 DEGREES.

METAL EQUIPMENT, PIPING OR OTHER OBJECTS WITHIN 6 FEET OF A LIGHTNING CONDUCTOR SHALL BE CONNECTED TO THE LIGHTNING PROTECTION SYSTEM.

RESISTANCE TO EARTH OF THE COMBINED GROUND ELECTRODE SYSTEM SHALL NOT EXCEED 5 OHMS.

THIRD PARTY INSPECTION AND CERTIFICATION OF THE COMPLETED LIGHTNING PROTECTION SYSTEM IS REQUIRED. ONE OF THE FOLLOWING AGENCIES MAY BE USED FOR THIRD PARTY CERTIFICATION:
1. UNDERWRITERS LABORATORIES
2. LIGHTNING PROTECTION INSTITUTE
3. ETL TESTING LABORATORIES

PROVIDE UL MASTER LABEL.

REVISIONS: NO.	DATE	DESCRIPTION

RETAIL DEVELOPMENT
POP'S WINE & SPIRITS
2–1 764 TR A–B MCFARLAND 400 IND PARK
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