

ELECTRICAL SPECIFICATIONS

GROUNDING AND BONDING

GROUNDING SYSTEM, PERMANENTLY AND EFFECTIVELY GROUND ALL METALLIC CONDUITS, SUPPORTS, CABINETS, PANELBOARDS AND SYSTEM GROUNDING NEUTRAL. MAINTAIN CONTINUITY OF EQUIPMENT GROUND THROUGHOUT THE SYSTEM. GROUND CLAMPS SHALL BE APPROVED TYPE, SPECIFICALLY DESIGNED FOR GROUNDING. WHERE GROUNDING CONDUCTOR IS ENCLOSED IN CONDUIT, GROUND CLAMP SHALL BE OF A TYPE WHICH GOUNDS BOTH CONDUCTOR AND CONDUIT. ALL CIRCUITS IN FLEXIBLE CONDUIT OR PLASTIC CONDUIT SHALL INCLUDE A GROUND WIRE SIZED IN ACCORDANCE WITH "NEC" 250. NO CONDUIT SHALL BE ALLOWED AS A GROUNDING MEANS.

PART 1 – PRODUCTS

- 1.01 ROD ELECTRODES
 - A. MATERIAL: COPPER-CADMIUM STEEL.
 - B. DIAMETER: 3/4" INCH.
 - C. LENGTH: 10 FEET.
- 1.02 MECHANICAL CONNECTORS
 - A. MATERIAL: BRONZE.
- 1.03 WIRE
 - A. MATERIAL: STRANDED COPPER.
 - B. FOUNDATION ELECTRODES: 3/0 AWG.
 - C. GROUNDING ELECTRODE CONDUCTOR: SIZE TO MEET NFPA 70 ARTICLE 250 REQUIREMENTS.

PART 2 – EXECUTION

- 2.01 INSTALLATION
 - A. INSTALL ROD ELECTRODES AT LOCATIONS INDICATED. INSTALL ADDITIONAL ROD ELECTRODES AS REQUIRED TO ACHIEVE RESISTANCE TO GROUND OF LESS THAN 25 OHMS.
 - B. PROVIDE GROUNDING ELECTRODE CONDUCTOR AND CONNECT TO REINFORCING STEEL IN FOUNDATION FOOTING.
 - C. PROVIDE BONDING TO MEET REGULATORY REQUIREMENTS.
 - D. BOND TOGETHER EACH METALLIC RACEWAY, PIPE, DUCT AND OTHER METAL OBJECTS.
- E. PROVIDE ISOLATED GROUNDING CONDUCTOR FOR CIRCUITS SUPPLYING ALL ISOLATED GROUND OUTLETS. INSULATION SHALL BE GREEN WITH YELLOW STRIPE. SIZE PER NEC 250. THIS ISOLATED GROUNDING CONDUCTOR SHALL RUN IN ADDITION TO EQUIPMENT GROUNDING CONDUCTOR AND ALONG WITH THE BRANCH CIRCUIT CONDUCTORS.
- 2.02 GROUNDING
 - A. GROUND ELECTRICAL SYSTEM IN ACCORDANCE WITH ARTICLE 250, NATIONAL ELECTRICAL CODE, AND LOCAL AUTHORITIES HAVING JURISDICTION.
 - B. INSTALL A #3/0 BARE COPPER WIRE BOND ACROSS THE WATER METER, SAME TO BE ATTACHED TO GROUND CLAMPS ON WATER LINE ON EACH SIDE OF METER. ARRANGEMENTS SHALL BE MADE TO DO THIS WORK AT THE TIME THE WATER METER IS INSTALLED.
 - C. FROM THE POINT OF ENTRANCE OF THE WATER MAIN INTO THE BUILDING AND ON THE METER SIDE OF THE MAIN INSIDE WATER VALVE AND UNION INSTALL A STRANDED COPPER CABLE #3/0 IN 1-1/4" CONDUIT TO THE MAIN DISTRIBUTION PANEL. CONNECT THE CABLE TO THE EQUIPMENT GROUND BUS.
 - D. INSTALL A GREEN EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY, SIZED PER N.E.C. 250. TERMINATE ON EQUIPMENT GROUND BUS WITHIN PANELBOARD SERVING LOAD.
 - E. INSTALL #6 AWG COPPER GROUNDING CONDUCTOR FROM GROUND BAR IN MAIN TELEPHONE BOX TO EQUIPMENT GROUND BUS IN MAIN DISTRIBUTION PANEL.
 - F. ALL SEPARATE GROUNDING ELECTRODES SHALL BE BONDED TOGETHER TO LIMIT POTENTIAL DIFFERENCES BETWEEN THEM AND BETWEEN THEM ASSOCIATED WIRING SYSTEMS. THIS INCLUDES THE POWER SYSTEM, TELEPHONE SYSTEM, ETC.

- 2.03 FIELD QUALITY CONTROL
 - A. INSPECT GROUNDING AND BONDING SYSTEM CONDUCTORS AND CONNECTIONS FOR TIGHTNESS AND PROPER INSTALLATION.
- 2.04 SUPPORTING DEVICES AND HANGERS
 - A. INSPECT GROUNDING AND BONDING SYSTEM CONDUCTORS AND CONNECTIONS FOR TIGHTNESS AND PROPER INSTALLATION.
- 2.05 FIELD QUALITY CONTROL
 - A. INSPECT GROUNDING AND BONDING SYSTEM CONDUCTORS AND CONNECTIONS FOR TIGHTNESS AND PROPER INSTALLATION.

PART 1 – PRODUCTS

- 1.01 ACCEPTABLE MANUFACTURERS
 - A. SUPPORTING DEVICES AND HANGERS SHALL BE MANUFACTURED BY RAYCO FASTENERS.

PART 2 – EXECUTION

- 2.01 INSTALLATION
 - A. SECURE CONDUITS TO WITHIN 3' OF EACH OUTLET BOX, JUNCTION BOX, CABINET, FITTING, ETC., AND AT INTERVALS NOT TO EXCEED TEN FEET (10') AND IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. IN SEISMIC ZONES, SUPPORT CONDUITS 1" AND UNDER AT 6' INTERVALS.
 - B. INSTALL CLAMPS SECURED TO STRUCTURE FOR FEEDER AND OTHER CONDUITS ROUTED AGAINST THE STRUCTURE. USE DROP ROOFS AND HANGERS OR RACKS TO SUPPORT CONDUITS RUN APART FROM THE STRUCTURE.
 - C. PROVIDE AND INSTALL SUITABLE ANGLE IRON, CHANNEL IRON OR STEEL METAL FRAMING WITH ACCESSORIES TO SUPPORT OR BRACE ELECTRICAL EQUIPMENT INCLUDING SAFETY SWITCHES, FUSES, PANELBOARDS, ETC.
 - D. USE OF CHAINS, PERFORATED IRON, BALING WIRE, OR THE WIRE FOR SUPPORTING CONDUIT RUNS IS NOT PERMITTED.
 - E. FOR SUPPORT OF LOW VOLTAGE WIRING NOT REQUIRED TO BE IN CONDUIT, BRACKET CLAMPS COGNATE WITH THE MANUFACTURER'S INSTRUCTIONS SHALL BE USED. BRACKETS SHALL BE SHIPPED WITH 1" HOOKS OR END OF THE BRACKET SHALL BE 6 FEET ON CENTERS. CLEARLY IDENTIFY ALL DIFFERING TYPES OF CABLES, BEING RUN AND TAG WITH TAPE TAPS. REPAIRING TELEPHONE, PAR. MUSIC/COMMUNICATION, SECURITY, ETC. FOR VARIOUS SYSTEM UTILIZING SMD CABLE IDENTIFICATION TAPE SHALL BE PROVIDED AT MINIMUM INTERVALS OF 25 FEET ON CENTER AND WITHIN EACH BUILDING SPACE.
 - F. PROVIDE A SYSTEM OF SUPPORTING DEVICES AND HANGERS TO INSURE SECURE SUPPORT OR BRACING FOR CONDUIT, ELECTRICAL EQUIPMENT, INCLUDING SAFETY SWITCHES, FIXTURES, PANELBOARDS, OUTLET BOXES, JUNCTION BOXES, CABINETS, ETC.

PART 1 – GENERAL

- 1.01 SYSTEM DESCRIPTION
 - A. THE ELECTRICAL SYSTEM SERVICE SHALL BE EXTEND FROM THE EXISTING MAIN PANEL OR AVAILABLE DISTRIBUTION PER UL AND AHJ. NEW SERVICE SHALL BE 120/208V, THREE PHASE, FOUR WIRE.
 - B. COORDINATE ELECTRICAL METERING WITH UTILITY CO.
 - C. DISTRIBUTION SYSTEM ORIGINATES AT THE MAIN PANEL, INCLUDES FEEDER CONDUIT CONDUCTORS, DISTRIBUTION EQUIPMENT, PANELBOARD, UTILIZATION EQUIPMENT, OVERCURRENT DEVICES, DISCONNECTING MEANS, CONTROLS, BRANCH CIRCUIT CONDUCTORS AND CONDUITS, ETC.

PART 2 – PRODUCTS

- 2.01 MATERIALS
 - A. FINISH AND INSTALL CONDUITS, CABLES, AND MISCELLANEOUS HARDWARE AS REQUIRED BY PLANS AND SPECIFICATIONS FOR ELECTRICAL SERVICE AND GROUNDING AS REQUIRED.

PART 3 – EXECUTION

- 3.01 EXAMINATION AND PREPARATION
 - A. COORDINATE EXISTING LOCATIONS OF EXISTING ELECTRICAL MAIN PANEL AND DOWNSTREAM EQUIPMENT. REMOVE EXISTING EQUIPMENT PRIOR TO COMMENCEMENT OF INSTALLATION. CONTACT ARCHITECT/OWNER WITH CONFLICTS PRIOR TO BID.
 - B. PAY FOR ALL FEES ASSOCIATED WITH ESTABLISHMENT OF ELECTRICAL SERVICE AND METERING.
 - C. CONTRACTOR SHALL FURNISH & INSTALL OVERCURRENT PROTECTION DEVICES AS REQUIRED AT EXISTING MAIN PANEL, PER UL AND AHJ TO FEED NEW PANELS.
 - D. ENSURE PROPER ACCESS TO UTILITY EQUIPMENT IS MAINTAINED.
- SECTION 16441 – ENCLOSED SWITCHES
- PART 1 – PRODUCTS
- 1.01 MANUFACTURERS
 - A. SQUARE D.
 - C. SIEMENS.
 - D. CUTLER-HAMMER.
- 1.02 ENCLOSED SWITCHES
 - A. NONFUSIBLE SWITCH ASSEMBLIES: NEMA KS 1, TYPE GENERAL DUTY FOR 208 VOLT LOAD. INTERUPTER ENCLOSED KNIFE SWITCH WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED TO PREVENT OPENING FRONT COVER WITH SWITCH IN ON POSITION.
 - B. SWITCH ENCLOSURES: NEMA KS 1.
 - 1. INTERIOR DRY LOCATIONS: TYPE 1.
 - 2. EXTERIOR LOCATIONS: TYPE 3R.

PANELBOARDS

- PART 1 – PRODUCTS
- 1.01 MANUFACTURERS
 - A. SQUARE D.
 - C. SIEMENS.
 - D. CUTLER-HAMMER.

1.02 PANELBOARD FEATURES

- A. PANELBOARDS SHALL BE FULLY RATED & SHALL HAVE A MINIMUM SYMMETRICAL INTERRUPTING RATING TO MEET OR EXCEED THE AVAILABLE SYMMETRICAL INTERRUPTING FAULT CURRENT INDICATED ON PANELBOARD SCHEDULE.
- B. BUS BARS SHALL BE COPPER.
- C. PROVIDE FACTORY-INSTALLED COPPER GROUND BUS IN EACH PANELBOARD WITH LUGS OR CONNECTORS ON BAR.
- D. PROVIDE ELECTRICALLY ISOLATED, FACTORY INSTALLED COPPER, NEUTRAL BUS IN EACH 1 OR 3 PHASE, 4 WIRE PANELBOARD.
- E. IN ADDITION TO THE GROUND BUS REQUIRED BY PARAGRAPH 1.02D, PROVIDE FACTORY INSTALLED, ELECTRICALLY ISOLATED, COPPER GROUND BUS IN EACH PANELBOARD SERVING ISOLATED GROUND RECEPTACLES.
- F. MAIN LUGS AND MAIN CIRCUIT BREAKER LUGS SHALL BE UL LISTED FOR USE WITH BOTH ALUMINUM AND COPPER WIRES.
- G. PROVIDE PANELBOARD DOORS WITH CHROME-PLATED LOCKS AND CATCHES. ALL LOCKS SHALL BE KEYS TO MEET TWO KEYS FOR EACH LOCK. PANELBOARD FRONTS SHALL HAVE ADJUSTABLE, INDICATING TWIN CLAMPS.
- H. PROVIDE THERMAL-MAGNETIC CIRCUIT BREAKERS WHICH ARE RATED FOR 40 DEGREES C. AMBIENT TEMPERATURE. BREAKERS SHALL BE COLOR-MARKED. COLOR-BREAK TYPE BREAKERS SHALL BE USED TO IDENTIFY THE BREAKERS. COLOR-BREAK TYPE CIRCUIT BREAKERS SHALL HAVE A COMMON TRIP HANDLE. HANDLE TYPE CIRCUIT BREAKERS SHALL NOT BE PERMITTED.
- I. PROVIDE TYPED DIRECTORY CARD WITH CLEAR HOLDER FOR EACH LIGHTING TYPE PANELBOARD.

PART 2 – EXECUTION

- 2.01 INSTALLATION
 - A. PANELBOARDS SHALL BE MOUNTED AT HEIGHT ABOVE FINISHED FLOOR SUCH THAT THE HEIGHT OF THE TOP-MOST BREAKER IN THE PANEL IS NOT MORE THAN 6'-1/2' FEET ABOVE FINISHED FLOOR IN ITS HIGHEST POSITION.
 - B. WHERE MULTIPLE PANELBOARDS ARE INSTALLED IN WALLS IN COMMON AREAS OF BUILDINGS, THE PANELBOARDS SHALL BE INSTALLED WITH THE TOP OF ALL PANELBOARDS AT THE SAME HEIGHT.
 - C. PROVIDE BLANK FILLER PLATES OVER ALL UNUSED SPACES IN PANELBOARDS.
 - D. A TYPED DIRECTORY CARD SHALL INDICATE DEVICES BEING SERVED AND THE SPACE NAME WHERE THE DEVICE IS LOCATED.
 - E. PROVIDE MINIMUM OF (1) 3/4" EMPTY CONDUIT FOR EVERY 3 POLES OF SPARE BREAKER OR SPACE IN THE PANELBOARD. STUB CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. LABEL CONDUIT AS SPARE AT PANELBOARD AND TERMINATION POINT.
 - F. NON-ISOLATED GROUND BARS SHALL BE GROUND TO PANELBOARD CAN AND MAIN SERVICE ENTRANCE GROUND BUS WITH A CODE SIZED GROUNDING CONDUCTOR INSTALLED IN THE SAME CONDUIT AS THE PHASE AND NEUTRAL CONDUCTORS.
 - G. CIRCUITS USING A COMMON NEUTRAL SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
 - H. INSPECT EACH PANELBOARD FOR PROPER INSTALLATION, PHYSICAL DAMAGE, TIGHTNESS AND INSTALLATION OVERCURRENT DEVICES, IDENTIFY PROPER COLOR CODING OF CONDUCTORS, CORRECT OR REPAIR ALL ITEMS FOUND IN INSPECTION.
 - I. NEUTRAL WIRES, GROUND WIRES, AND ISOLATED GROUND WIRES SHALL BE CONNECTED TO THE APPROPRIATE PANEL BUS BAR. DO NOT MIX BUS WIRE CONNECTIONS.

LIGHTING FIXTURES

PART 1 – GENERAL

1.01 ACCEPTABLE MANUFACTURERS

- A. AS INDICATED ON LIGHTING FIXTURE SCHEDULE.
- B. BALLASTS
 - 1. ADVANCE ELECTRONIC BALLASTS OR APPROVED EQUAL.
- C. LAMPS
 - 1. OSRAM-STYLVANIA
 - 2. NORTH AMERICAN PHILIPS
 - 3. GENERAL ELECTRIC

1.02 FIXTURE REQUIREMENTS

- A. PROVIDE REGULATING, IPE BALLASTS IN ALL HD LIGHTING FIXTURES. HD LAMP TYPES SHALL BE AS SHOWN IN PHOTOMETRIC TEST DATA.
- B. PROVIDE CLASS "P" UL LABELED, IPE ENERGY SAVING BALLASTS IN ALL FLUORESCENT LIGHTING FIXTURES. RECESSED FLUORESCENT LIGHTING FIXTURE BALLASTS SHALL BE PROVIDED WITH INTEGRAL THERMAL PROTECTION.
- C. PROVIDE RAPID START LAMPS FOR ALL FLUORESCENT FIXTURES.
- D. ALL LAMPS AND BALLASTS SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NATIONAL ENERGY POLICY ACT OF 1992 AND INTERNATIONAL ENERGY COMPLIANCE CODE ADOPTED.
- E. ALL COMPONENTS OF RECESSED FIXTURES SHALL BE ACCESSIBLE WITHOUT DISTURBING FIXTURE IN OR ON CEILING.
- F. HIGH FREQUENCY ELECTRONIC BALLASTS AND ENERGY SAVING LAMPS PROVIDED SHALL BE PROVIDED AND SHALL BE COMPATIBLE FOR OPERATION TOGETHER.
- G. EXTERIOR FIXTURES AND POLES SHALL BE SUITABLE FOR EXTERIOR USE. SHALL BE U. L. LISTED, AND SHALL BE A STANDARD DESIGN FOR EXTERIOR APPLICATION.
- H. EXTERIOR POLES FOR FIXTURES WITH LUMINAIRES INSTALLED SHALL BE DESIGNED FOR MAXIMUM CONSTANT VELOCITY WIND LOAD WITH LUMINAIRES INSTALLED, APPLICABLE TO THE GEOGRAPHIC AREA.
- 1.03 CONTROLS
 - A. LIGHTING CONTACTORS SHALL BE ASSO WITH TYPES AND QUANTITY SHOWN ON DRAWINGS.
 - 1.04 EMERGENCY LIGHTING UNITS
 - A. BATTERIES SHALL SUPPLY EMERGENCY POWER FOR LIGHTING WITH MINIMUM OPERATING TIME OF 1-1/2 HOURS.
 - B. EMERGENCY LIGHTING SHALL BE AUTOMATICALLY OPERATIONAL UPON NORMAL UTILITY POWER FAILURE.

PART 3 – EXECUTION

- 3.01 INSTALLATION
 - A. LIGHTING FIXTURES SHALL BE STRUCTURALLY SUPPORTED. FLUORESCENT FIXTURES MOUNTED IN DROPPED CEILINGS SHALL BE SUPPORTED BY AND ATTACHED TO CEILING SYSTEM AS REQUIRED BY NEC. IN ADDITION FLUORESCENT TROFFERS SHALL BE SUPPORTED AT TWO OPPOSITE CORNERS TO BUILDING STRUCTURE.
 - B. RECESSED FIXTURES IN DROPPED CEILING AREAS SHALL BE CONNECTED TO POWER SOURCE USING FLEXIBLE CONDUIT. FLEXIBLE CONDUIT SHALL CONTAIN A SEPARATE INSULATED GREEN NO. 12 COPPER GROUND WIRE. SHALL PROVIDE GROUND CONTINUITY BETWEEN CONDUIT FLEXIBLE AND FLEXIBLE GROUNDING WIRE. SHALL BE SECURELY FASTENED TO BUILDING STRUCTURE AND FLEXIBLE GROUNDING WIRE SHALL BE TECHNICALLY CONNECTED TO GROUND BUS.
 - C. FIXTURES SURFACE MOUNTED ON EXPOSED IEE BAR CEILINGS SHALL USE GRIP CLAMPS ON THE BARS TO SUPPORT FIXTURES.
 - D. MAINTAIN THE INTEGRITY OF ENCLOSURES ON ENCLOSED AND GASKETED FIXTURES. MINIMIZE THE NUMBER OF ENCLOSURE PENETRATIONS AND MAKE SUCH PENETRATIONS WATER AND DUST TIGHT WITH APPROPRIATE GASKETS AND FITTINGS.
 - E. INSTALL ACCESSORIES FURNISHED WITH EACH FIXTURE.
 - F. SURFACE AND RECESSED FIXTURES ON OR IN PLASTERED OR DRYWALL CEILINGS SHALL BE SUPPORTED BY SUPPORT CHANNELS. SUPPORT CHANNELS SHALL SPAN ACROSS MAIN SUPPORT CHANNELS AND SHALL NOT DEPEND UPON CEILINGS FOR SUPPORT.
 - G. CONTRACTOR SHALL PROVIDE FIXTURES BY MANUFACTURERS AS LISTED ON THE LIGHTING FIXTURE SCHEDULE. ANY OTHER FIXTURE TYPE SUBSTITUTED FOR THOSE SPECIFIED SHALL BE PRE-APPROVED IN WRITING BY THE ARCHITECT/OWNER WITH PRIOR TO BID AWARD. REQUEST FOR APPROVAL SHALL BE IN ACCORDANCE WITH GENERAL CONDITIONS OF THESE SPECIFICATIONS. SHALL BE ACCOMPANIED WITH CUT SHEETS OF THE SPECIFIED AND SUBSTITUTE FIXTURES, AS WELL AS A TOTAL COST CREDIT FOR THE SUBSTITUTE. WRITTEN REQUESTS FOR APPROVAL SHALL BE SUBMITTED TO THE ARCHITECT/ NOT OWNER WITH NO LESS THAN 2 WEEKS PRIOR TO THE BID AWARD.
- 3.02 FIELD QUALITY CONTROL
 - A. RELAMP FIXTURES THAT HAVE FAILED LAMPS AT SUBSTANTIAL COMPLETION.

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. FURNISH AND INSTALL TELEPHONE SYSTEM CONSISTING OF EMPTY CONDUITS, JUNCTION BOXES, OUTLET BOXES, DEVICE PLATES, ETC., AS SPECIFIED AND SHOWN ON OWNER SELECTED VENDOR WIRING SCHEDULES. CABLE EQUIPMENT AND INSTALLATION OF THE INTERIOR SYSTEM WILL BE PROVIDED BY THE OWNER'S SYSTEM VENDOR.
- C. INTERIOR TELEPHONE SYSTEM WILL BE FURNISHED BY OWNER'S VENDOR.
- D. SPECIAL BACKBOXES WILL BE FURNISHED BY THE OWNER'S VENDOR.

PART 2 – PRODUCTS

2.01 MATERIALS

PART 3 – EXECUTION

- 3.01 INSTALLATION
 - A. LEAVE ONE #10 EQUIVALENT NYLON PULL WIRE IN EACH TELEPHONE CONDUIT.
 - C. COORDINATE WITH THE LOCAL UTILITY COMPANY FOR TELEPHONE SERVICE. CONTRACTOR SHALL PAY FOR ALL RELATED CHARGES AND FEES FOR ESTABLISHMENT OF TELEPHONE SERVICE.
 - D. PROVIDE A COMPLETE RACEWAY SYSTEM IN ACCORDANCE WITH UTILITY COMPANY AND VARYING ALL REQUIREMENTS.
 - E. TERMINATE EACH CONDUIT SUB-UP OR TERMINATION WITH NYLON INSULATED BUSINGS. CONTRACTOR SHALL CONTACT THE OWNER AND VENDOR AND SCHEDULE THE WORK.

MECHANICAL EQUIPMENT CONTROLS

PART 1 – PRODUCTS

1.01 CONTROL WIRING

- A. ALL CONTROL WIRING FOR MECHANICAL EQUIPMENT SHALL BE PROVIDED IN CONDUIT WITH J-BOXES UNDER CONTROL COMMENTS FOR MECHANICAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY DIVISION 15.

PART 2 – EXECUTION

- 2.01 INSTALLATION
 - A. WHERE VOLTAGE CHARACTERISTICS DIFFER, PROVIDE TRANSFORMERS, BREAKERS OR SWITCHING IN ORDER TO CONNECT ALL EQUIPMENT TO ITS RATED VOLTAGE.
 - B. REVIEW MECHANICAL SPECIFICATIONS AND DRAWINGS PRIOR TO BIDS TO PICK UP ALL CONDUIT AND WIRING FOR MECHANICAL CONTROLS, STARTERS, ETC.

SPECIAL NOTES:

ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED AND TESTED FOR PROPER OPERATION. AFTER WIRES ARE IN PLACE AND CONNECTED TO DEVICES AND EQUIPMENT, THE SYSTEM SHALL BE TESTED FOR SHORTS AND GROUND. ALL HOT AND NEUTRAL CONDUCTORS, IF SHORTED OR GROUNDED SHALL BE REMOVED AND REPLACED. ALL METERS, INSTRUMENTS, CABLE CONNECTIONS, EQUIPMENT OR APPARATUS NECESSARY FOR MAKING ALL TESTS, SHALL BE FURNISHED BY THIS CONTRACTOR AT HIS OWN EXPENSE.

TOUCH-UP OR RETINISH DAMAGED SURFACES OF FIXTURES AND EQUIPMENT. CONCEAL WIRING SYSTEM ABOVE SUSPENDED CEILINGS OR IN WALL OR FLOOR CONSTRUCTION WHERE POSSIBLE. INSTALL CONDUIT PARALLEL TO BUILDING LINES AND TO CLEAR ALL OPENINGS, DEPRESSIONS, PIPES, DUCTS, STRUCTURE, ETC.

INSTALL CONDUIT CONTINUOUS BETWEEN BOXES AND CABINETS WITH NO MORE THAN FOUR (4) 90 DEGREE BENDS. SECURELY FASTENED IN PLACE WITH STRIPS, HANGERS AND STEEL SUPPORTS AS REQUIRED. DO NOT SUPPORT CONDUIT FROM SUSPENDED CEILING GRID OR SUSPENSION WIRES. BEAM CONDUIT ENDS BEFORE INSTALLATION AND THOROUGHLY CLEAN BEFORE INSTALLATION. OPENINGS SHALL BE PLUGGED OR COVERED TO KEEP CONDUIT CLEAN. TERMINUS ON SWITCHES AND RECEPTACLES SHALL NOT BE USED TO "TIE-OFF" TO THE NEXT SWITCH OR RECEPTACLE. THE DISCONNECTING OR REMOVAL OF A DEVICE FROM A BOX SHALL NOT INTERFERE WITH OR INTERRUPT THE CONDUCTOR CONTINUITY.

RECESSED INCANDESCENT FIXTURES SHALL BE THERMALLY PROTECTED OR UL APPROVED FOR INSULATED CEILINGS AS APPLICABLE.

ALL FLUORESCENT LIGHTING FIXTURES INSTALLED IN SUSPENDED CEILING SHALL BE SUPPORTED FROM THE UNDERSIDE OF THE ROOF STRUCTURE, INDEPENDENT OF THE CEILING SYSTEM, DUCTWORK AND PIPING.

EXISTING UTILITIES & PIPING NOTES:

COORDINATE ALL SERVICE REQUIREMENTS WITH UTILITY COMPANIES AND INCLUDE ALL WORK REQUIRED IN BID. EXISTING PIPING & UTILITIES INFORMATION SHOWN ARE APPROXIMATELY SHOWN. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS AND SITE CONDITIONS PRIOR TO BID/CONSTRUCTION. CONTRACTOR SHALL HIRE A STATE OF TEXAS LICENSED SURVEYOR TO SURVEY ALL EXISTING U.G. PIPING AND UTILITIES AT CONTRACTOR'S EXPENSES. CONTRACTOR SHALL PAY FOR ALL EXPENSES TO RELOCATE/REMOVE EXISTING UTILITIES & PIPING PER CODE AND AHJ IN ORDER TO COMPLETE THE INSTALLATION. CONTRACTORS SHALL VERIFY ALL SITE WORK NEEDED TO BE DONE SUCH AS EXCAVATIONS, TRENCHES, CASSONS, WALLS, ETC., AND SHALL FIELD SURVEY THE EXISTING BUILDING & SITE IN ORDER TO GAIN KNOWLEDGE OF THE EXISTING CONDITIONS & LOCATIONS OF ALL U.G. PIPING. THE ENGINEERS & OWNER ASSUME NO RESPONSIBILITY FOR DETERMINING ANY EXISTING U.G. PIPING LOCATION, SIZE, DEPTH OR HAZARD. CONTRACTOR SHALL CONTACT & COORDINATE WITH THE UTILITY COMPANIES AND SHALL CONSULT THE SURVEYOR REGARDING ANY DIGGING.

CONTRACTORS SHALL VERIFY ALL REQUIREMENTS AND POINT OF CONNECTION. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR SERVICE IN THIS PROJECT AND PAY ALL REQUIRED EXPENSES. PROVIDE ALL FEES AND APPURTENANCES AS REQUIRED BY UTILITY COMPANIES FOR PROVIDING SERVICES TO THIS PROJECT. CONTRACTOR SHALL CONTACT THE UTILITIES AND SHALL BE RESPONSIBLE FOR THE COORDINATION OF SERVICES WITH THE UTILITIES.

CONTRACTOR VERIFICATION RESPONSIBILITIES

CONTRACTOR SHALL REPORT ANY DISCREPANCIES, OMISSIONS OR INCONSISTENCIES ON THE DRAWINGS TO THE ARCHITECT FOR VERIFICATION BEFORE STARTING CONSTRUCTION. OWNER AND ARCHITECT ARE NOT RESPONSIBLE FOR ANY ERRORS IN CONSTRUCTION WHERE SUCH DISCREPANCIES, OMISSIONS OR INCONSISTENCIES HAVE NOT BEEN PROPERLY REPORTED IN A TIMELY MANNER.

1 ELECTRICAL SPECIFICATIONS

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ANDREW J. LOK FOR THE PURPOSE OF BIDDING, PREPARING & INSTALLATION TO THE ABOVE DRAWINGS IN AN OFFENSE TO THE TEXAS STATE BOARD RULES.

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