PART 1 – GENERAL

A. DESCRIPTION

1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TRANSPORTATION AS REQUIRED TO PROPERLY INSTALL A COMPLETE AND OPERABLE ELECTRICAL SYSTEM.

B. RULES AND REGULATIONS

1. ALL WORK AND MATERIALS SHALL BE INSTALLED AS SHOWN AND HEREIN SPECIFIED.
2. THE LATEST EDITIONS OF THE FOLLOWING SPECIFICATIONS, STANDARDS, AND AMENDMENTS, AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION, SHALL FORM A PART OF THIS SPECIFICATION THE SAME AS IF HEREIN WRITTEN OUT IN FULL (ALL MATERIALS AND INSTALLATIONS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS THEREOF:
   - A.) NFPA (NATIONAL FIRE PROTECTION ASSOCIATION), PUBLICATION NUMBER 70, "NATIONAL ELECTRICAL CODE"; PUB. NO. 72E, "AUTOMATIC FIRE DETECTORS".
   - B.) UL (UNDERWRITERS LABORATORIES, INC.).
   - C.) NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION).
   - D.) UBC (UNIFORM BUILDING CODE) AND STANDARD BUILDING CODE.
   - E.) IBC (INTERNATIONAL BUILDING CODE).
   - F.) IFC (INTERNATIONAL FIRE CODE).
   - G.) IECC (INTERNATIONAL ENERGY CONSERVATION CODE).
   - H.) IEC (INTERNATIONAL ELECTRICAL CODE).
   - I.) STATE AND LOCAL BUILDING AUTHORITY AND CODES.

C. PERMITS AND INSPECTIONS UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL APPLY, PAY FOR AND SCHEDULE ALL APPLICABLE PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY AND ALL PUBLIC AUTHORITIES HAVING JURISDICTION AND REQUIRING INSPECTION.

1. EC SHALL INCLUDE ALL UTILITY COMPANY CHARGES IN THE BASE BID.

D. WORKMANSHIP AND MATERIAL

1. WORKMANSHIP SHALL BE OF THE BEST QUALITY AND NONE BUT COMPETENT PERSONNEL SKILLED IN THEIR TRADE SHALL BE EMPLOYED. THE CONTRACTOR SHALL FURNISH THE SERVICES OF AN EXPERIENCED SUPERINTENDENT, WHO WILL BE IN CHARGE OF THE EXECUTION OF WORK, UNTIL COMPLETED AND ACCEPTED.
2. UNLESS OTHERWISE HEREIN AFTER SPECIFIED, ALL MATERIALS AND EQUIPMENT UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE NEW, OF BEST GRADE AND AS LISTED IN PRINTED CATALOGS OF THE MANUFACTURER. EACH ARTICLE OF ITS KIND SHALL BE THE STANDARD PRODUCT OF A SINGLE MANUFACTURER.
3. THE OWNER'S REPRESENTATIVE SHALL HAVE THE RIGHT TO ACCEPT OR REJECT MATERIAL EQUIPMENT AND/OR WORKMANSHIP AND DETERMINE WHEN THEY HAVE COMPLIED WITH THE REQUIREMENTS HEREIN SPECIFIED.
4. ALL MANUFACTURED MATERIALS SHALL BE CLEARLY MARKED OR STAMPED WITH THE MANUFACTURER'S NAME AND RATING.
5. REFERENCE TO STANDARDS ARE INTENDED TO BE THE LATEST REVISION OF THE STANDARD SPECIFIED, OR THAT ACCEPTED BY THE AUTHORITY HAVING JURISDICTION.

E. MANUFACTURER'S RECOMMENDATIONS

1. EQUIPMENT INSTALLED UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR HEREIN SPECIFIED.

F. GUARANTEE

1. ALL MATERIALS AND EQUIPMENT PROVIDED AND INSTALLED UNDER THIS SECTION SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR. SHOULD ANY TROUBLE OR MALFUNCTIONS DEVELOP DURING THIS PERIOD DUE TO DEFECTIVE MATERIALS OR FAULTY WORKMANSHIP, THE CONTRACTOR WILL BE HELD LIABLE AND SHALL FURNISH LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CORRECT THE TROUBLE OR MALFUNCTION WITHOUT ADDITIONAL COST TO THE OWNER. ALL DEFECTIVE MATERIAL OR INFERIOR WORKMANSHIP NOTICED DURING THE TIME OF INSTALLATION SHALL BE CORRECTED IMMEDIATELY TO THE ENTIRE SATISFACTION OF THE ARCHITECT AND OWNER, AT NO ADDITIONAL COST.

G. DEFINITIONS

1. FURNISH: TO SUPPLY AND DELIVER, UNLOAD, INSPECT FOR DAMAGE.
2. INSTALL: TO UNPACK, ASSEMBLE, ERECT, APPLY, PLACE, FINISH, CURE, PROTECT, CLEAN, AND MAKE READY FOR USE.
3. PROVIDE: TO FURNISH AND INSTALL.

H. SUBMITTALS

1. PROVIDE SHOP DRAWINGS AND MANUFACTURER'S LITERATURE OF MATERIALS AND EQUIPMENT AS REQUIRED IN THE GENERAL CONDITIONS, AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND AS LISTED BELOW:
2. CATALOG CUTS
   - A.) CONDUIT AND FITTINGS.
     - 1.) RIGID METAL
     - 2.) INTERMEDIATE METAL
     - 3.) ELECTRICAL METALLIC TUBING
     - 4.) FLEXIBLE METALLIC
     - 5.) LIQUID TIGHT FLEXIBLE METALLIC
     - 6.) FITTINGS (EACH TYPE)
   - B.) WIRE AND CABLE
   - C.) SWITCHES
     - 1.) SNAP
     - 2.) LOCATOR
     - 3.) PILOT
     - 4.) DIMMER
   - D.) RECEPTACLE OUTLETS
     - 1.) GENERAL PURPOSE
     - 2.) GROUND FAULT CIRCUIT INTERRUPTION
   - E.) TRIM AND COVER PLATES (EACH TYPE AND STYLE)
   - F.) PANEL BOARDS
   - G.) CIRCUIT BREAKERS (EACH SIZE AND TYPE)
   - H.) SAFETY SWITCHES
   - I.) FUSES (EACH SIZE AND TYPE)
   - J.) LIGHTING FIXTURES
   - K.) NAMEPLATES
   - L.) PHOTOELECTRIC SWITCHES
3. SHOP DRAWINGS
   - A.) PANEL BOARDS
   - B.) LIGHTING FIXTURES

THE ABOVE IS A STANDARD SUBMITTAL REQUIREMENT LIST. ELECTRICAL CONTRACTOR SHALL SUBMIT ALL APPLICABLE ITEMS FOR REVIEW. MATERIAL NOT SUBMITTED AND APPROVED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTORS COST IF DIRECTED BY THE ARCHITECT OR THE OWNER'S REPRESENTATIVE.

PART 2 – MATERIALS

A. GENERAL

1. MATERIALS AND EQUIPMENT SHALL BE STANDARD CATALOGED PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF THE PRODUCT. UL LISTED, AND SHALL BE THE LATEST STANDARD DESIGN THAT CONFORMS TO SPECIFIED MATERIALS AND EQUIPMENT.

B. RACEWAY

1. ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED IN INTERIOR DRY LOCATIONS.
2. GALVANIZED FLEXIBLE STEEL OR LIQUID TIGHT STEEL CONDUIT SHALL BE USED FOR CONNECTIONS TO MECHANICAL EQUIPMENT AND TRANSFORMERS OR AS INDICATED. LIQUID TIGHT CONDUIT SHALL BE USED IN EXTERIOR OR DAMP LOCATIONS.
3. SCHEDULE 40 PVC (WITH PVC COATED OR VINYL TAPE DOUBLE WRAPPED RIGID STEEL ELBOWS AND RISES) SHALL BE USED FOR RUNS THAT ARE IN CONTACT WITH THE EARTH.
4. 3/4" CONDUIT SHALL BE THE MINIMUM SIZE CONDUIT.
5. OUTDOOR AND WET OR DAMP LOCATIONS: PROVIDE RIGID STEEL CONDUIT. PROVIDE CAST METAL OR PVC OUTLET, JUNCTION, AND PULL BOXES.
6. PROVIDE SEAL-OFFS IN ALL CONDUITS THAT ENTER THE FREEZERS AND COOLERS.

C. FITTINGS

1. ALL FITTINGS SHALL BE STEEL/MALLEABLE IRON WITH INSULATING BUSHINGS.

D. OUTLET AND JUNCTION BOXES

1. BOXES IN INTERIOR DRY LOCATION SHALL BE GALVANIZED ONE-PIECE PRESSED STEEL, KNOCKOUT TYPE, NOT LESS THAN 4 INCHES SQUARE AND 2 1/8" DEEP; APPLETON, RACO, OR EQUAL.
2. BOXES SHALL BE EQUIPPED WITH PLASTER RINGS, EXTENSION RINGS, AND FIXTURE STUDS AS REQUIRED.
3. BOXES FOR FLOOR OUTLETS SHALL BE OF THE CAST-METAL THREADED-CONDUIT-ENTRANCE, WATERPROOF TYPE WITH MEANS FOR ADJUSTING COVER PLATE TO FINISHED FLOOR LEVEL. BOXES SHALL BE SUCH AS HUBBELL B2503 OR EQUAL. THE COVER SHALL BE HUBBELL S3925, S3082 OR EQUAL TO MATCH THE FLOOR TYPE OR AS SHOWN ON THE PLANS.
4. PROVIDE FLUSH MOUNTING OUTLET BOX IN FINISHED AREAS.
5. BOXES FOR STRUCTURED CABLING (DATA & PHONE) IN INTERIOR DRY LOCATIONS SHALL BE GALVANIZED ONE-PIECE PRESSED STEEL, KNOCKOUT TYPE 4 11/16" x 2 1/8"; RAYCO OR EQUAL.
6. ALL BOXES IN FINISHED SPACES SHALL BE PROVIDED WITH MUD RINGS AS REQUIRED FOR THE DEVICE AND WALL MATERIAL.

E. CONDUCTORS

1. ALL CONDUCTORS SHALL BE SOFT DRAWN, ANNEALED COPPER IN RACEWAY SIZED AS SHOWN ON THE PLANS. ALL CONDUCTORS TO BE MINIMUM #12 AWG U.N.O. #8 AWG AND LARGER SHALL BE STRANDED OR AS INDICATED ON THE DRAWINGS.
2. CONDUCTORS SHALL BE COPPER, THHN OR THWN-2 COLOR CODED IN ACCORDANCE WITH PART 3, SECTION C. 1. OF THESE SPECIFICATIONS.

F. WIRING CONNECTIONS

1. MAKE ALL ELECTRICAL CONNECTIONS.
2. MAKE CONNECTION TO DEVICES USING "PIG-TAILS". DO NOT USE A DEVICE AS A CONNECTION OR A SPLICE UNIT.
3. DO NOT PLACE STRANDED CONDUCTORS DIRECTLY UNDER SCREWS. INSTALL CRIMP-ON, INSULATED, FORK TERMINALS FOR CONDUCTOR TERMINATIONS, OR INSTALL SOLID CONDUCTORS.

G. NAMEPLATES

1. PROVIDE EACH PANEL BOARD, DISCONNECT SWITCH, AND BREAKER IN SWITCHBOARD WITH A MICARTA PLASTIC NAMEPLATE MADE OF WHITE-FACED BLACKCORE PLASTIC LAMINATE. NAMEPLATE SHALL BE MINIMUM 3" WIDE BY 3/4" HIGH FOR PANEL BOARD IDENTIFICATION INCLUDE DESIGNATION, PHASE, AND VOLTAGE. FASTEN WITH EPOXY GLUE. DOUBLE STICK TAPE IS NOT ACCEPTABLE.

H. TELEPHONE SYSTEM

1. PROVIDE COMPLETE SYSTEM AS INDICATED ON THE DRAWINGS.

I. WIRING DEVICES

1. PLATES – COLOR OF PLATE SHALL MATCH ADJACENT WALL FINISHES. VERIFY COLOR WITH ARCHITECT.
2. TELEPHONE OUTLETS SHALL BE PROVIDED WITH OUTLET BOX AND PLATE AS INDICATED ON THE DRAWINGS.
3. SWITCHES – SHALL BE AS SHOWN ON THE PLANS OR EQUAL OF P&S, LEVITON OR COOPER 20 AMP, SILENT TYPE. COLOR SHALL MATCH ADJACENT WALL FINISHES, VERIFY COLOR WITH ARCHITECT.
4. RECEPTACLES – SHALL BE AS SHOWN ON PLANS OR EQUAL OF P&S, LEVITON OR COOPER 20AMP. COLOR SHALL MATCH ADJACENT WALL FINISHES, VERIFY COLORS WITH ARCHITECT.
5. SPECIAL PURPOSE OUTLETS SHALL BE AS INDICATED ON THE DRAWINGS.

J. FRACTIONAL HORSEPOWER MANUAL STARTER

1. PROVIDE FRACTIONAL HORSEPOWER MANUAL STARTER WITH THE FOLLOWING FEATURES.
   - A.) MELTING ALLOY TYPE THERMAL OVERLOAD RELAY
   - B.) RED NEON PILOT LIGHT
   - C.) THERMAL ELEMENT SIZED FOR MOTOR LOAD
2. PROVIDE A NAMEPLATE ON EACH COMPONENT OF MOTOR CONTROL EQUIPMENT AS SPECIFIED IN "NAMEPLATES".

K. SAFETY SWITCHES

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL SAFETY SWITCHES AS INDICATED ON THE DRAWINGS OR AS REQUIRED. ALL SAFETY SWITCHES SHALL BE UL LISTED. THE SWITCHES SHALL BE FUSED SAFETY SWITCHES OR NON-FUSED SAFETY SWITCHES AS SHOWN ON THE DRAWINGS OR REQUIRED AND SHALL BE MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, SIEMENS OR CUTLER HAMMER.
2. SWITCHES SHALL HAVE A QUICK-MAKE AND QUICK-BREAK OPERATING HANDLE AND MECHANISM WHICH SHALL BE AN INTEGRAL PART OF THE BOX. PADLOCKING PROVISIONS SHALL BE PROVIDED FOR PADLOCKING IN THE OFF POSITION WITH AT LEAST THREE PADLOCKS. SWITCHES SHALL BE HORSEPOWER RATED FOR 250 VOLTS AC OR DC OR 600 VOLTS AC AS REQUIRED. LUGS SHALL BE UL LISTED FOR COPPER AND ALUMINUM CABLE AND SHALL HAVE A TEMPERATURE RATING OF AT LEAST 75 DEGREES C.
3. SWITCHES SHALL BE FURNISHED IN NEMA 1 GENERAL PURPOSE ENCLOSURES WITH KNOCKOUTS UNLESS OTHERWISE NOTED OR REQUIRED. SWITCHES LOCATED ON THE EXTERIOR OF THE BUILDING OR IN "WET" LOCATIONS SHALL HAVE NEMA 3R ENCLOSURES (WP).
4. THE SAFETY SWITCHES SHALL BE SECURELY MOUNTED IN ACCORDANCE WITH THE NEC. THE CONTRACTOR SHALL PROVIDE ALL MOUNTING MATERIALS AND INSTALL FUSES IN THE FUSED SAFETY SWITCHES. THE FUSES SHALL BE DUAL ELEMENT ON MOTOR CIRCUITS.
5. PROVIDE FUSES AS SPECIFIED BELOW. FUSES SHALL BE INSTALLED SO THAT THE RATING IS CLEARLY VISIBLE WITHOUT REMOVING FUSE. PROVIDE A SPARE FUSE FOR EACH FUSE INSTALLED.
6. PROVIDE A NAMEPLATE ON EACH DISCONNECT SWITCH AS SPECIFIED IN "NAMEPLATES".

L. FUSES

1. FUSES SHALL BE CLASS "RK-1" REJECTION TYPE. FUSES SERVING MOTOR LOADS SHALL BE DUAL ELEMENT WITH A MINIMUM TIME DELAY OF 10 SECONDS AT 500% RATING. FUSES SHALL BE CURRENT LIMITING TIME DELAY TYPE WITH INTERRUPTING CAPACITY OF 200,000 AMP RMS SYMMETRICAL.
2. FUSES SERVING SWITCH OR CIRCUIT BREAKER DISTRIBUTION PANELS, LIGHTING PANEL BOARDS AND OTHER NON – MOTOR LOADS NEED NOT BE TIME DELAY TYPE, BUT SHALL BE CURRENT LIMITING WITH THE INTERRUPTING CAPACITY OF 200,000AMP RMS SYMMETRICAL MINIMUM. FUSES SHALL BE BUSSMAN, GOULD OR LITTELFUSE.
3. PROVIDE FUSES SIZED FOR THE CONNECTED EQUIPMENT.

M. PANEL BOARDS

1. DEAD FRONT TYPE, EQUIPPED WITH BOLT – ON CIRCUIT BREAKERS AND PROVISIONS FOR FUTURE BREAKERS, AS INDICATED. SQUARE D, GENERAL ELECTRIC, SIEMENS, OR CUTLER HAMMER. THE NUMBER OF POLES, TYPE, VOLTAGE, AND AMP RATING SHALL BE AS INDICATED ON THE PLANS. BUS BARS SHALL BE COPPER. PROVIDE FULL SIZE GROUND BUS. NEUTRAL WIRES SHALL BE CONNECTED TO A COMMON NEUTRAL BUS WITH BINDING SCREWS OR LUGS, THE NEUTRAL BUS SHALL BE INSULATED FROM THE CABINET.
2. FURNISH COMPLETE WITH DOOR, KEYED LOCK AND TYPE WRITTEN, LAMINATED DIRECTORY. CABINETS SHALL BE RIGIDLY SUPPORTED INDEPENDENT OF CONDUITS. KEYING SHALL MATCH EXISTING PANEL BOARDS, IF ANY.
3. PROVIDE FULLY RATED PANEL BOARDS WITH A MINIMUM AIC RATING AS INDICATED ON THE DRAWINGS.

N. INTERIOR AND EXTERIOR LUMINARIES

1. PROVIDE LIGHTING SYSTEM COMPLETE WITH LAMPS AND ACCESSORIES, AS INDICATED IN THE CONTRACT DOCUMENTS.
2. LUMINARIES
   - A.) PROVIDE COMPLETE LUMINAIRE ASSEMBLIES OF TYPE INDICATED ON THE DRAWINGS WITH FEATURES, OPTIONS AND ACCESSORIES AS SCHEDULED AND AS NEEDED FOR A COMPLETE ASSEMBLY AND INSTALLATION.
   - B.) HID AND FLUORESCENT BALLASTS SHALL BE AS INDICATED ON THE DRAWINGS WITH APPROVED MANUFACTURERS OF ADVANCE, OSRAM SYLVANIA, MAGNETEC OR COLUMBIA.
   - C.) HID, FLUORESCENT AND INCANDESCENT LAMPS SHALL BE AS INDICATED ON THE DRAWINGS WITH APPROVED MANUFACTURERS OSRAM SYLVANIA, GENERAL ELECTRIC CO., OR PHILLIPS ELECTRONICS NORTH AMERICA.
   - D.) PHILLIPS AUTO ENERGY ADVANTAGE ECON-O-WATT LAMPS SHALL NOT BE USED.

O. SMOKE DETECTION SYSTEM

1. SMOKE DETECTORS SHALL BE AS SHOWN ON THE PLANS AND OF THE PHOTOELECTRIC TYPE LISTED TO UL-217. EACH DETECTOR SHALL HAVE A SOLID STATE PIEZO ALARM SIGNAL. SMOKE DETECTORS USED IF DIFFERENT FROM ABOVE. SHALL BE FOR 120VOLT AC OPERATION LAMP WITH A POWER-ON INDICATOR. THE BUILT-IN AUDIBLE SIGNAL SHALL PRODUCE SOUND OUTPUTS FOR NOT LESS THAN 85DB AT 10 FEET. THE BUILDING REQUIRED STANDARD SMOKE DETECTOR SHALL BE USED IF DIFFERENT FROM ABOVE.

PART 3 – EXECUTION

A. DESCRIPTION

1. ALL MATERIALS SHALL BE INSTALLED IN A PROFESSIONAL MANNER INDICATIVE OF THE TRADE. ALL PENETRATIONS OF THE OUTSIDE WALLS OR ROOF SHALL BE SEALED WITH APPROPRIATE SEALANT OR CAULK FOR THE PARTICULAR SURFACE INVOLVED.

B. RACEWAYS

1. RACEWAYS SHALL RUN CONCEALED UNLESS OTHERWISE INDICATED. EXPOSED RACEWAY RUNS SHALL BE PARALLEL WITH SUPPORTING WALLS, BEAMS, AND CEILINGS AND WITH EACH OTHER AND SHALL NOT RUN CLOSER THAN 6 INCHES TO ANY WATER PIPE OR HEATER FLUME.
2. RACEWAY ENDS SHALL BE REAMED AFTER THREADING AND AFTER CUTTING AND BE MADE TO BUTT IN THE CENTER OF THE COUPLING. THE USE OF RUNNING THREADS IS PROHIBITED.
3. RACEWAYS SHALL BE INSTALLED AS A COMPLETE SYSTEM, CONTINUOUS FROM OUTLET TO OUTLET, CABINET, BOX OR FITTINGS, AND SHALL BE MECHANICALLY CONNECTED SO THAT ADEQUATE ELECTRICAL CONTINUITY FROM ONE TO ANOTHER IS OBTAINED. CONDUITS SHALL BE SUPPORTED WITH ONE OR TWO HOLE STAMPED STEEL OR MALLEABLE IRON STRAPS (SUCH AS MANUFACTURED BY RACO) DESIGNED FOR SUPPORTING CONDUIT. THE SIZE OF STRAP SHALL MATCH THE SIZE OF THE CONDUIT. NAILS, PERFORATED STRAP, OR PLUMBERS TAPE SHALL NOT BE USED FOR SUPPORT OF RACEWAY.
4. PROVIDE 1/8" POLY PULL CORD IN RACEWAYS WITHOUT CONDUCTORS.
5. FOUR 90 DEGREE BENDS MAXIMUM BETWEEN TERMINATIONS OR BOXES.
6. FIRE ALARM CONDUITS INSTALLED ABOVE DROP CEILING AND OTHER CONCEALED SPACES SHALL BE PROVIDED WITH 2-INCH RED BANDS EVERY 10 FEET.

C. CONDUCTORS

1. ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT AND COLOR CODED AS FOLLOWS:

PHASE 240/120		PHASE 208/120		PHASE 480/277	
PHASE A	BLACK	PHASE A	BLACK	PHASE A	BROWN
PHASE B	RED	PHASE B	RED	PHASE B	ORANGE
NEUTRAL	WHITE	PHASE C	BLUE	PHASE C	YELLOW
GROUND	GREEN	NEUTRAL	WHITE	NEUTRAL	GREY
		GROUND	GREEN	GROUND	GREEN

2. MAKE JOINTS, SPLICES, TAPS AND CONNECTORS IN CONDUCTORS WITH SOLDERLESS CONNECTORS.
3. WIRING FOR FIRE ALARM SHALL BE TWISTED AND/OR SHIELDED SIZE AS RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT AND TO ENSURE PROPER VOLTAGE AT THE DEVICE (AVOID VOLTAGE DROP OF MORE THAN 3%).

D. JUNCTION AND PULL BOXES

1. PULL BOXES SHALL BE PROVIDED WHERE INDICATED OR WHERE NECESSARY TO FACILITATE THE PULLING OF CONDUCTORS. TELEPHONE RACEWAYS SHALL HAVE A MAXIMUM OF TWO 90 DEGREE BENDS BETWEEN TERMINATIONS OR BOXES.

E. GROUNDING

1. INSTALL A CODE SIZED GROUNDING CONDUCTOR IN ALL RACEWAYS. DO NOT USE THE RACEWAY FOR GROUNDING. MAKE GOOD CONTACT AT ALL PANEL BOARDS, OUTLET BOXES, AND JUNCTION OR PULL BOXES TO THE RACEWAY SYSTEM. USE APPROVED BONDING MATERIALS.

F. LUMINAIRE INSTALLATION

1. ALL FIXTURES RECESSED AND SURFACE SHALL BE SUPPORTED FROM THE STRUCTURE AND NOT FROM THE CEILING FRAMING OR GRID CEILING.
2. INSTALL RECESSED LUMINAIRES TO PERMIT REMOVAL FROM BELOW.
3. LOCATE LUMINAIRES AS INDICATED ON THE DRAWINGS.
4. INSTALL ACCESSORIES FURNISHED WITH AND REQUIRED FOR EACH LUMINAIRE.
5. INSTALL GRID CEILING CLIPS ON RECESSED LUMINAIRES.

G. BONDING

1. BOND ALL PIPING (GAS WATER, ETC) AS REQUIRED BY THE NEC. CONFIRM SYSTEMS TO BE USED WITH MC.

H. SEISMIC REQUIREMENTS

1. IF REQUIRED, RECESSED TYPE LIGHTING FIXTURES, IN ADDITION TO THE STANDARD SEISMIC CLIPS AND SUPPORT ON T-BAR GRID SYSTEM, SHALL HAVE 2#12 STEEL SAFETY WIRES PER FIXTURE. ONE END OF EACH SAFETY WIRE SHALL BE SECURELY FASTENED TO THE BUILDING STRUCTURE. THE OTHER END (6 INCHES LONGER THAN THE T-BAR GRID SUPPORT WIRES) SHALL BE FASTENED TO DIAGONAL CORNERS OF EACH LIGHTING FIXTURE.

I. CUTTING AND PATCHING

1. PERFORM DRILLING, CUTTING, AND PATCHING OF THE GENERAL CONSTRUCTION WORK WHETHER EXISTING OR NEW, AS REQUIRED FOR THE INSTALLATION OF ELECTRICAL WORK. PATCH WITH THE SAME MATERIALS, WORKMANSHIP, AND FINISH AS THE ORIGINAL WORK AND ACCURATELY MATCH ALL SURROUNDING WORK. SUCH WORK WILL BE DONE BY A CRAFTSMAN ACCREDITED IN THE APPLICABLE TRADE UNDER THE CONTRACTOR'S SUPERVISION AND BE ACCEPTABLE TO THE OWNER'S REPRESENTATIVE. COORDINATE WITH OTHER TRADES AND GENERAL CONTRACTOR PRIOR TO CUTTING, DRILLING, OR CORING.

J. WIRING DEVICES

1. MOUNTING HEIGHTS TO THE CENTER OF THE DEVICE AND ORIENTATION SHALL BE AS FOLLOWS:

THERMOSTATS/MECHANICAL SWITCHES – – – – – – – – – – – – – – –60" AFF
LIGHT SWITCHES –48" AFF
CONVENIENCE AND TELEPHONE OUTLETS
ABOVE COUNTER –44" AFF
DATA, TELEPHONE, TV AND CONVENIENCE OUTLETS (TYPICAL) – – – – – -18" AFF

ALL MOUNTING HEIGHTS ARE TYPICAL UNLESS NOTED OTHERWISE ON THE PLANS. ALL SWITCHES AND THERMOSTATS TO BE MOUNTED AS CLOSE TO DOOR JAMB AS POSSIBLE. COORDINATE ALL DEVICES WITH ARCHITECTURAL PLANS AND DETAILS. RECEPTACLES SHALL BE ORIENTED WITH THE GROUND TERMINAL UP WHEN INSTALLED VERTICAL AND WITH THE NEUTRAL TERMINAL(S) UP WHEN INSTALLED HORIZONTAL.

K. TESTING

1. DEMONSTRATE THAT ALL COMPONENTS OF THE WORK OF THIS DIVISION HAVE BEEN PROVIDED AND THAT THEY OPERATE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. TEST WIRING AND CONNECTORS FOR CONTINUITY, SHORT CIRCUITS AND IMPROPER GROUNDS. TEST EACH LIGHTING AND APPLIANCE PANEL WITH MAINS DISCONNECTED FROM FEEDERS, BRANCHES CONNECTED, WALL SWITCHES CLOSED AND FIXTURES PERMANENTLY CONNECTED AND COMPLETE WITH LAMPS. TEST EACH INDIVIDUAL POWER CIRCUIT WITH THE POWER EQUIPMENT CONNECTED FOR PROPER OPERATION.
3. PROVIDE DETAILED DOCUMENTATION OF EACH TEST PERFORMED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE, WITH THE NAMES AND THE SIGNATURES OF QUALIFIED INDIVIDUALS WHO CONDUCTED AND WITNESSED EACH TEST.

– END –

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JIM PAINTER

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SHEET TITLE
ELECTRICAL SPECIFICATIONS

E0.1
SHEET OF