SECTION 16120 – CONDUCTORS (LOW VOLTAGE, 600 VOLTS)

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK:

A. Furnishing, installing and testing 600 volt conductors for lighting, power, and auxiliary systems.

B. Furnishing, installing and testing 600 volt conductors for 2 hour fire rating.

PART 2 – PRODUCTS

2.1 CONDUCTORS:

A. 98% conductivity copper; #12 AWG minimum; #8 AWG and smaller solid, #6 and larger stranded.

B. Conductors furnished with NEC, 600 volt, insulation as follows:

Dry locations:
#6 AWG and smaller – type THW, THWN or XHHW
(do not intermix in circuits)

#4 AWG and larger - type RHH, RHW, THW, THWN, THHN
(cross linked polyethylene)

Wet locations: type RHH, THWN

2 Hour Fire Rating - type RHH UL 2196, UL 44 and F417 #25

C. Luminaire Wire: Incandescent – Use type SF-2, #16 for luminaires up to 300 watts, and #14 over 300 watts, except for luminaires in concrete pour use #12 of larger or as shown. Conductors in channels of, and flex to fluorescent luminaires type THHN or XHHW.

D. Color Code as follows and/or per local ordinances. Conductors #10 and smaller with colored insulation. Conductors #8 and larger not available in colors, color coded with colored pressure sensitive tape. Apply minimum 2” of tape to each individual phase or neutral conductor in half lapped pattern. The equipment ground conductor shall be taped green for its entire exposed length. Color-code as follows:

Phase	120/240 Volts	120/208 Volts
A	Black	Black
B	Red	Red
C	Orange	Blue
Neutral	White	White
Eq Grd	Green	Green

E. Manufacturers of copper conductors: Pirelli, Phelps Dodge, Capital Cable, Rome Southwire, Senator, Essex, American, or approved equal.

F. Manufacturers of 2 Hour rated conductors "LIFELINE" 2 Hour fire rated RHH.

PART 3 – EXECUTION

A. Install wiring complete with connections to equipment.

B. No wiring installed until after plastering and similar work is complete and dry.

C. Install wiring so conductors are not in tension in completed system.

D. Form wiring neatly and group in circuits. Tie grouped conductors with nylon ties, T&B "Tyrap" or approved equal.

E. Use pulling compound of Ideal "Yellow 77", Minerallac No. 100, or approved equal.

F. Join and terminate copper conductors individually.

1. Lugs connected to copper bus: 98% conductivity copper or bronze Thomas & Betts "Locktite", Burndy "QA" or approved equivalent.

2. Lugs connected to copper bus: Solid 98% conductivity long copper barrel, tin plated, compression type connectors, Thomas & Betts color keyed, Burndy "Hydent" or approved equal; applied with appropriate hydraulic tool.

3. Lugs in dry locations and lugs connected to aluminum bus – heavy casting aluminum, CU/AL rated, listed under UL Standard 486B, rated 90 degrees C; plated to prevent electrolysis, Thomas & Betts, Blackburn, Ilsco or approved equivalent.

G. Provide lugs where not furnished as part of equipment – furnish as specified above, to connect all conductors.

H. Furnish lugs for conductors #2/0 and larger with minimum two bolt tongue or approved equivalent.

I. Make conductor taps #8 and larger from a second conductor with 98% conductivity bolted insulated connector, T&B “IDT”, Ilsco “KUP-L-TAP” or approved equivalent. Insulate splices with 600 volt “heat shrink” covers T&B or equal.

J. Splice conductors #8 and larger with solid copper barrel, type fittings applied with an appropriate hydraulic tool. Splices used only where approved. Splice fittings: Burndy “Hydent”. Insulate splices with 600 volt “heat shrink” covers T&B or equal.

K. Joints #10 and smaller: T&B Sta-Kon wire joints EPT66M, with insulating caps, installed with WT161 Tool or C nest of WT11M Tool; Ideal Super/Nuts; Ideal Wing Nuts; 3M “Scotchlock” or Buchanan Electric Products B Cap or Series 2000 Pressure connectors complete with nylon snap on insulators installed with C24 pressure tool. Where conductors are connected to screw terminals, use nylon insulated, locking fork, T&B Sta-Kon or approved equal. Where joints are made in damp or wet locations insulate splices with 600 volt “heat shrink” covers T&B or equal.

L. Install 2 Hour fire rated conductors in conduit when shown on drawing terminations same as other cables.

M. Provide cable supports: As required by NEC. Supports with malleable screwed conduit fitting and non-conductive wedges drilled for the conductors; O.Z. Manufacturing Company or approved equal. Furnish pullbox, sized per NEC for each cable support.

N. Bond circuit ground wires where installed to all devices, equipment, outlet and junction boxes, and grounding bushings (where provided) with a full size conductor and screw type connection.

O. Securely fasten non-ferrous identifying tapes, pressure sensitive labels or engraved nameplates to all cables, feeders and circuits at terminations of cables, etc.

P. Mark all branch circuit conductors at panel terminations including neutrals with pressure sensitive numbers to correspond to circuit numbers connected.

Q. Connect circuits and feeders as shown on drawings. Drawings are diagrammatic and do not show every detail required in the wiring system. Detail wiring accomplished per NEC.

R. All conductors making up parallel feeders to be same size, same type, and same insulation, all cut same length. Bond each group of conductors making up a phase or neutral at both ends in an approved manner.

S. DO NOT COMBINE CIRCUITS unless specifically approved by the Engineer. No more than 3 phase or current carrying conductors in a circuit.

END OF SECTION 16120