

SECTION 26 0519**LINE-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. Quality of conductors used on Project except as excluded below.
- B. Related Requirements:
 - 1. Section 23 0933: Conductors and cables for temperature control system.
 - 2. Section 26 0501: Common Electrical Requirements.

1.2 REFERENCES

- A. Definitions:
 - 1. Line Voltage: Over 70 Volts.

PART 2 - PRODUCTS**2.1 SYSTEMS**

- A. Line Voltage Conductors:
 - 1. Copper with AWG sizes as shown:
 - a. Minimum size shall be No. 12 except where specified otherwise.
 - b. Conductor size No. 8 and larger shall be stranded.
 - 2. Insulation:
 - a. Standard Conductor Size No. 10 And Smaller: 600V type THWN or XHHW (75 deg C).
 - b. Standard Conductor Size No. 8 And Larger: 600V Type THW, THWN, or XHHW (75 deg C).
 - c. Higher temperature insulation as required by NEC or local codes.
 - 3. Colors:
 - a. 208Y / 120 V System:
 - 1) Black: Phase A.
 - 2) Red: Phase B.
 - 3) Blue: Phase C.
 - 4) Green: Ground.
 - 5) White: Neutral.
 - b. 480Y / 277 Volt System:
 - 1) Brown: Phase A.
 - 2) Orange: Phase B.
 - 3) Yellow: Phase C.
 - 4) Gray: Neutral.
 - 5) Green: Ground.
 - c. Conductors size No. 10 and smaller shall be colored full length. Tagging or other methods for coding of conductors size No. 10 and smaller not allowed.
 - d. For feeder conductors larger than No. 10 at pull boxes, gutters, and panels, use painted or taped band or color tag color-coded as specified above.
- B. Line Voltage Cables:
 - 1. Non-Metallic Sheathed Cable (NM) and Metal Clad Cable (MC) may be used as restricted below:
 - a. Copper conductors
 - b. Sizes #12 through #8

- c. Use only in indoor dry locations where:
 - 1) Not subject to damage.
 - 2) Not in contact with earth.
 - d. Not in concrete
- C. Cord Sets For Ranges: Three pole, 4 wire grounding, 125/250V, NEMA 14-50P plug, 48 inch 1 200 mm cord length minimum.
- D. Standard Connectors:
- 1. Conductors No. 8 And Smaller: Steel spring wire connectors.
 - 2. Conductors Larger Than No. 8: Pressure type terminal lugs.
 - 3. Connections Outside Building: Watertight steel spring wire connections with waterproof, non-hardening sealant.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
- 1. Conductors and cables shall be continuous from outlet to outlet.
 - 2. Do not use direct burial cable.
- B. Line Voltage Conductors:
- 1. Install conductors in raceway where indicated on Drawings. Run conductors of different voltage systems in separate conduits.
 - 2. Route circuits at own discretion, however, circuiting shall be as shown in Panel Schedules. Group circuit homeruns to panels as shown on Drawings.
 - 3. Neutrals:
 - a. On three-phase, 4-wire systems, do not use common neutral for more than three circuits.
 - b. On single-phase, 3-wire systems, do not use common neutral for more than two circuits.
 - c. Run separate neutrals for each circuit where specifically noted on Drawings.
 - d. Where common neutral is run for two or three home run circuits, connect phase conductors to breakers in panel which are attached to separate phase legs so neutral conductors will carry only unbalanced current. Neutral conductors shall be of same size as phase conductors unless specifically noted otherwise.
 - 4. Pulling Conductors:
 - a. Do not pull conductors into conduit until raceway system is complete and cabinets and outlet boxes are free of foreign matter and moisture.
 - b. Do not use heavy mechanical means for pulling conductors.
 - c. Use only listed wire pulling lubricants.
- C. Line Voltage Cables:
- 1. Route circuits at own discretion, however, circuiting and numbering shall be as shown in Panel Schedules.
 - 2. Support cables using approved staples, cable ties, straps, hangers, or similar fittings, spaced as required.
 - 3. Where installing in framing, do not bore holes in joists or beams outside center 1/3 of member depth or within 24 inches of bearing points. Do not bore holes in vertical framing members outside center 1/3 of member width. Holes shall be one inch diameter maximum.
 - 4. Conceal cables within ceilings and walls of finished areas. Cables may be exposed in unfinished areas but not run on floors of mechanical equipment spaces or in such a way that they obstruct access to, operation of, or servicing of equipment.
 - 5. Install exposed cables parallel to or at right angles to building structure lines.
 - 6. Keep cables 6 inches 150 mm minimum from hot water pipes.
 - 7. Do not support cables from mechanical ducts or duct supports without Architect's written approval.
 - 8. Prohibited procedures:

- a. Boring holes for installation of cables in vertical truss members.
- b. Notching of structural members for installation of cables.

END OF SECTION

SECTION 26 0523**CONTROL-VOLTAGE ELECTRICAL CABLES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. Furnish and install control-voltage electrical cables as described in Contract Documents.
 - 2. Furnish and install building telephone / data system cables as described in Contract Documents.

- B. Related Requirements:
 - 1. Section 01 1100: Owner will terminate building telephone cables at terminal board.
 - 2. Section 23 0933: Cables for Temperature Control System.
 - 3. Section 26 0501: Common Electrical Requirements.
 - 4. Section 28 3101: Cables for Fire Detection System.

1.2 REFERENCES

- A. Definitions:
 - 1. Control Voltage: 70 Volts and under.

PART 2 - PRODUCTS**2.1 SYSTEM**

- A. Manufacturers:
 - 1. Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories.
 - a. Alpha Wire Co, Elizabeth, NJ www.alphawire.com.
 - b. Belden Wire & Cable Co, Richmond, IN www.belden.com.
 - c. Liberty Wire & Cable, Colorado Springs, CO www.libertycable.com.
 - d. West Penn Wire Corp, Washington, PA www.westpenn-cdt.com.

- B. Components:
 - 1. Building Telephone / Data System Cables.
 - a. CAT 6, 24 AWG, solid bare copper, four pair, UTP.
 - b. Sheath Colors:
 - 1) Telephone: White.
 - 2) Data: Blue.
 - c. Meet requirements of EIA / TIA 568 Standard.

PART 3 - EXECUTION**3.1 INSTALLATION**

- A. General:
 - 1. Cables shall be continuous and without splices from source to outlet.

2. Conceal cables within ceilings and walls of finished areas. Cables may be exposed in unfinished areas but not run on floors of mechanical equipment spaces or in such a way that they obstruct access to, operation of, or servicing of equipment.
 3. Run exposed cables parallel to or at right angles to building structure lines.
 4. Keep cables 6 inches 150 mm minimum from hot water pipes.
 5. Support cables using approved staples, cable ties, straps, hangers, or similar fittings spaced every 3 feet.
 6. Where installing in framing, do not bore holes in joists or beams outside center 1/3 of member depth or within 24 inches of bearing points. Do not bore holes in vertical framing members outside center 1/3 of member width. Holes shall be one half inch diameter maximum.
 7. Bundle only cables of same systems together.
 8. Pulling cables into conduit:
 - a. Do not pull cables until raceway system is complete and cabinets and outlet boxes are free of foreign matter and moisture.
 - b. Do not use heavy mechanical means for pulling cables.
 - c. Use only listed wire pulling lubricants.
 9. Prohibited procedures:
 - a. Boring holes for installation of cables in vertical truss members.
 - b. Notching of structural members for installation of cables.
- B. Telephone / Data System Cables:
1. Unless indicated otherwise on drawings, install cable from terminal board to telephone outlets and make connections to telephone jacks. Leave six feet of slack cable at telephone terminal board and label cables to identify location served.
 2. Unless indicated otherwise on drawings, install data cables from patch panel to data outlets and make connections to data jacks. Make connections at patch panel and install label on patch panel for each termination to identify location served.
- C. Sound And Video Systems Cables:
1. Label cables at each end with cable markers for use of sound system and video system installers.
 2. Run separate insulated No. 6 grounding conductor from each equipment cabinet to electrical panel. Do not use intermediate connections or splices.
 3. Extend cables 18 inches 450 mm from wall or ceiling at all outlets and speaker locations. Extend cables and grounding conductors to twice vertical length of cabinet at each cabinet location.
 4. For cables not installed in raceway, do not run cables within 10 inches of line voltage conductors / raceways. Also, maintain 10 inches minimum between following exposed cable groups:
 - a. Microphone cables.
 - b. CAT-5, CAT-6, sound system control, telephone, video, or ATC cables.
 - c. Loudspeaker cables.

END OF SECTION

SECTION 26 0533**RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Quality of material and installation procedures for raceway, boxes, and fittings used on Project but furnished under other Divisions.
 2. Furnish and install raceway, conduit, and boxes used on Project not specified to be installed under other Divisions.
 3. Furnish and install air / vapor barrier back boxes as described in Contract Documents.
 4. Furnish and install main telephone service raceway as described in Contract Documents and to comply with telephone company requirements.
 5. Furnish and install main electrical service raceway to comply with electrical utility company requirements.
- B. Related Requirements:
1. Section 26 0501: General Electrical Requirements.
 2. Section 26 0503: Local electrical utility company shall furnish and install primary underground service.
 3. Section 27 4117: Furnishing and installing of satellite dish and TV distribution systems by Church approved installer and not to be included as part of work of this Section.
 4. Section 27 5117: Furnishing and installing of sound system by Church approved installer and not to be included as part of work of this Section.
 5. Section 28 3100: Furnishing and installing of raceway and conduit for fire detection and alarm system.

PART 2 - PRODUCTS**2.1 SYSTEM**

- A. Manufacturers:
1. Manufacturer Contact List:
 - a. Cooper B-Line, Highland, IL www.b-line.com.
 - b. Hubbell Incorporated, Milford, CT www.hubbell-wiring.com or Hubbell Canada Inc, Pickering, ON (905) 839-4332.
 - c. Square D, Palatine, IL www.squared.com.
 - d. Steel City, Div Thomas & Betts, Memphis, TN www.tnb.com or Thomas & Betts Ltd, Iberville, PQ (450) 347-5318.
 - e. Thomas & Betts, Memphis, TN www.tnb.com.
 - f. Walker Systems Inc, Williamstown, WV (800) 240-2601 or Walker Systems Inc / Wiremold Canada Inc, Fergus, ON (519) 843-4332.
 - g. Wiremold Co, West Hartford, CT www.wiremold.com.
- B. Performance:
1. Design Criteria: All aspects of design of sound system have been included as requirements of Owner. Do not make changes to any aspects of installation, design, or equipment pertaining to sound system without Owner's approval through Architect and Sound Consultant.
- C. Materials:
1. Raceway And Conduit:
 - a. Sizes:

- 1) **3/4 inch 19 mm** for exterior use, unless indicated otherwise.
 - 2) **1/2 inch 13 mm** for interior use, unless indicated otherwise.
 - b. Types: Usage of each type is restricted as specified below by product.
 - 1) Galvanized rigid steel or galvanized intermediate metal conduit (IMC) is allowed for use in all areas. Where in contact with earth or concrete, wrap buried galvanized rigid steel and galvanized IMC conduit and fittings completely with vinyl tape.
 - 2) Galvanized Electrical Metallic Tubing (EMT), Flexible Steel Conduit, and Electrical Non-Metallic Tubing (ENT):
 - a) Allowed for use only in indoor dry locations where it is:
 - (1) Not subject to damage.
 - (2) Not in contact with earth.
 - (3) Not in concrete.
 - b) For metal conduit systems, flexible steel conduit is required for final connections to indoor mechanical equipment.
 - 3) Schedule 40 Polyvinyl Chloride (PVC) Conduit:
 - a) Allowed for use only underground or below concrete with galvanized rigid steel or IMC elbows and risers.
 - 4) Listed, Liquid-Tight Flexible Metal Conduit:
 - a) Use in outdoor final connections to mechanical equipment, length not to exceed **36 inches 900 mm**.
 - 5) Pre-wired **3/8 Inch 10 mm** Flexible Fixture Whips: Allowed only for connection to recessed lighting fixtures, lengths not to exceed **72 inches 1 800 mm**.
 - c. Prohibited Raceway Materials:
 - 1) Aluminum conduit.
 - 2) Armored cable type AC (BX) cable.
2. Raceway And Conduit Fittings:
 - a. Rigid Steel Conduit And IMC: Threaded and designed for conduit use.
 - b. EMT:
 - 1) Compression type.
 - 2) Steel set screw housing type.
 - c. PVC Conduit:
 - 1) PVC type. Use PVC adapters at all boxes.
 - 2) PVC components, (conduit, fittings, cement) shall be from same Manufacturer.
 - d. Flexible Steel Conduit: Screw-in type.
 - e. Liquid-tight Flexible Metal Conduit: Sealrite type.
 - f. Expansion fittings shall be equal to OZ Type AX sized to raceway and including bonding jumper.
 - g. Prohibited Fitting Materials:
 - 1) Crimp-on, tap-on, indenter type fittings.
 - 2) Cast set-screw fittings for EMT.
 - 3) Spray (aerosol) PVC cement.
 3. Outlet Boxes:
 - a. Galvanized steel of proper size and shape are acceptable for all systems. Where metal boxes are used, provide following:
 - 1) Provide metal supports and other accessories for installation of each box.
 - 2) Equip ceiling and bracket fixture boxes with fixture studs where required.
 - 3) Equip outlets in plastered, paneled, and furred finishes with plaster rings and extensions to bring box flush with finish surface.
 - b. Non-metallic boxes may be used only for low voltage line voltage wiring systems.
 - c. Telephone / data outlet boxes shall be single device outlet boxes.
 - d. HVAC Instrumentation And Control:
 - 1) Junction boxes in mechanical equipment areas shall be **4 inches 100 mm** square.
 - 2) Boxes for remote temperature sensor devices shall be recessed single device.
 - 3) Boxes for thermostats shall be **4 inches 100 mm** square with raised single device cover.
 4. Floor Boxes:
 - a. Type Two Acceptable Products:
 - 1) 887 cast iron box 885 brass duplex cover plate for carpet by Walker Systems.
 - 2) B-2537 cast iron box with SF3925 brass duplex cover plate for carpet by Hubbell.
 - 3) Equal as approved by Architect before installation. See Section 01 6200.

5. Air / Vapor Barrier Back Boxes: Pre-molded polyethylene fitting between framing members and inhibiting air / vapor infiltration and exfiltration around recessed outlet boxes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Confirm dimensions, ratings, and specifications of materials to be installed and coordinate these with site dimensions and with other Sections.

3.2 INSTALLATION

- A. Interface With Other Work:
 1. Coordinate with Divisions 22 and 23 for installation of raceway for control of plumbing and HVAC equipment.
 2. Before rough-in, verify locations of boxes with work of other trades to insure that they are properly located for purpose intended.
 - a. Coordinate location of outlet for water cooler with Division 22.
 - b. Coordinate location of outlets adjacent to or in millwork with Division 06 before rough-in. Refer conflicts to Architect and locate outlet under his direction.
 3. Coordinate installation of floor boxes in carpeted areas with carpet installer to obtain carpet for box doors.
 4. Install pull wires in raceways installed under this Section where conductors or cables are to be installed under other Divisions.
- B. General:
 1. Sound and video system electrical components furnished and installed under this Section include following items:
 - a. Metal equipment cabinet and control cabinets.
 - b. Factory-fabricated speaker enclosures.
 - c. Fittings.
- C. Conduit And Raceway:
 1. Keep raceway runs **6 inches 150 mm** minimum from hot water pipes.
 2. Make no more than four quarter bends, 360 degrees total, in any conduit run between outlet and outlet, fitting and fitting, or outlet and fitting.
 - a. Make bends and offsets so conduit is not injured and internal diameter of conduit is not effectively reduced.
 - b. Radius of curve shall be at least minimum indicated by NEC.
 3. Cut conduit smooth and square with run and ream to remove rough edges. Cap raceway ends during construction. Clean or replace raceway in which water or foreign matter have accumulated.
 4. Install insulated bushings on each end of raceway **1-1/4 inches 32 mm** in diameter and larger, and on all raceways where cables emerge. Install expansion fittings where raceways cross building expansion joints.
 5. Run two spare conduits from each new panelboard to ceiling access area or other acceptable accessible area and cap for future use.
 6. Bend PVC conduit by hot box bender and, for PVC **2 inches 50 mm** in diameter and larger, expanding plugs. Apply PVC adhesive only by brush.
 7. Installation In Framing:
 - a. Do not bore holes in joists or beams outside center **1/3** of member depth or within **24 inches 600 mm** of bearing points. Do not bore holes in vertical framing members outside center **1/3** of member width.
 - b. Holes shall be **one inch 25 mm** diameter maximum.
 8. Underground Raceway And Conduit:
 - a. Bury underground raceway installed outside building **24 inches 600 mm** deep minimum.

- b. Bury underground conduit in planting areas **18 inches 450 mm** deep minimum. It is permissible to install conduit directly below concrete sidewalks, however, conduit must be buried **18 inches 450 mm** deep at point of exit from planting areas.
 9. Conduit And Raceway Support:
 - a. Securely support raceway with approved straps, clamps, or hangers, spaced as required.
 - b. Do not support from mechanical ducts or duct supports without Architect's written approval. Securely mount raceway supports, boxes, and cabinets in an approved manner by:
 - 1) Expansion shields in concrete or solid masonry.
 - 2) Toggle bolts on hollow masonry units.
 - 3) Wood screws on wood.
 - 4) Metal screws on metal.
 10. Prohibited Procedures:
 - a. Use of wooden plugs inserted in concrete or masonry units for mounting raceway, supports, boxes, cabinets, or other equipment.
 - b. Installation of raceway that has been crushed or deformed.
 - c. Use of torches for bending PVC.
 - d. Spray applied PVC cement.
 - e. Boring holes in truss members.
 - f. Notching of structural members.
 - g. Supporting raceway from ceiling system support wires.
 - h. Nail drive straps or tie wire for supporting raceway.
- D. Telephone / Data Systems:
1. Install main service raceway as directed by Telephone Company. Leave pull wire in raceway.
 2. Install raceway from terminal board to each telephone and data outlet as indicated on Drawings.
- E. Boxes:
1. Boxes shall be accessible and installed with approved cover.
 2. Do not locate device boxes that are on opposite sides of framed walls in the same stud space. In other wall construction, do not install boxes back to back.
 3. Locate boxes so pipes, ducts, or other items do not obstruct outlets.
 4. Install outlets flush with finished surface and level and plumb.
 5. Support switch boxes larger than two-gang with side brackets and steel bar hangers in framed walls.
 6. At time of substantial completion, install blank plates on uncovered outlet boxes that are for future use.
 7. Install air / vapor barrier back boxes behind outlet boxes that penetrate vapor barrier.
 8. Location:
 - a. Install boxes at door locations on latch side of door, unless explicitly shown otherwise on Drawings. Verify door swings shown on electrical drawings with architectural drawings, and report discrepancies to Architect before rough-in. Distance of box from jamb shall be within **6 inches 150 mm** of door jamb.
 - b. Properly center boxes located in walls with respect to doors, panels, furring, trim and consistent with architectural details. Where two or more outlets occur, space them uniformly and in straight lines with each other, if possible.
 - c. Center ceramic tile boxes in tile.
- F. Support factory-fabricated speaker enclosures from structure or ceiling suspension system.

END OF SECTION

SECTION 26 2726**WIRING DEVICES****PART 1 - GENERAL****1.1 SUMMARY**

A. Includes But Not Limited To:

1. Furnish and install wiring devices complete with plates as described in Contract Documents.

B. Related Requirements:

1. Section 26 0501: Common Electrical Requirements.

PART 2 - PRODUCTS**2.1 COMPONENTS**

A. Manufacturers:

1. Manufacturer Contact List:

- a. Cooper Wiring Devices, Peachtree City, GA www.cooperwiringdevices.com.
- b. General Electric Industrial Systems, Charlotte, NC www.geindustrial.com.
- c. Hubbell Building Automation, Austin, TX www.hubbell-automation.com.
- d. Hubbell Inc, Milford, CT www.hubbell-wiring.com or Hubbell Canada Inc, Pickering, ON (800) 263-4622 or (905) 839-4332.
- e. Hunt Control Systems Inc, Fort Collins, CO www.huntdimming.com.
- f. Intermatic Inc, Spring Grove, IL www.intermatic.com.
- g. Leviton Manufacturing Co, Little Neck, NY www.leviton.com or Leviton Manufacturing of Canada Ltd, Pointe-Claire, QB (800) 461-2002 or (514) 954-1840.
- h. Lightolier Controls, Dallas, TX www.lolcontrols.com or Lightolier CFI, Lachine, QB (800) 565-5486 or (514) 636-0670.
- i. Lutron Electronics Co Inc, Coopersburg, PA www.lutron.com.
- j. Novitas Inc, Peachtree City, GA www.novitas.com.
- k. Ortronics, New London, CT www.ortronics.com.
- l. Paragon Electric Co Inc, Carol Stream, IL www.icca.invensys.com/paragon or Paragon Electric, Mississauga, ON (800) 951-5526 or (905) 890-5956.
- m. Pass & Seymour, Syracuse, NY www.passandseymour.com or Pass & Seymour Canada Inc, Concord, ON (905) 738-9195.
- n. Red Dot div of Thomas & Betts, Memphis, TN www.tnbcom.
- o. Siemon Company, Watertown, CT www.siemon.com.
- p. Square D Co, Palatine, IL www.squared.com.
- q. Suttle, Hector, MN www.suttleonline.com.
- r. Tork Inc, Mount Vernon, NY www.tork.com.
- s. Watt Stopper Inc, Santa Clara, CA www.wattstopper.com.

2. Product Options:

- a. Faces shall be nylon where available.
- b. Devices of single type shall be from same Manufacturer.
- c. Devices are listed as white. Use white devices on light colored walls and brown on dark walls.

B. Switches:

1. Rectangular Face Designer Style:

- a. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) 20 AMP, single pole:
 - a) Cooper: DECB120W.

- b) Hubbell: HBL2121WA.
 - c) Leviton: 5621-2W.
 - d) Pass & Seymour: 2621-W.
 - 2) Two Pole:
 - a) Cooper: DECB220W.
 - b) Hubbell: HBL2122WA.
 - c) Leviton: 5622-2W.
 - d) Pass & Seymour: 2622-W.
 - 3) Three Way:
 - a) Cooper: DECB320W.
 - b) Hubbell: HBL2123WA.
 - c) Leviton: 5623-2W.
 - d) Pass & Seymour: 2623-W.
 - 4) Four Way:
 - a) Cooper: DECB420W.
 - b) Hubbell: HBL2124WA.
 - c) Leviton: 5624-2W.
 - d) Pass & Seymour: 2624-W.
 - 5) Pilot Switch:
 - a) Single Pole:
 - (1) Cooper: 2221PL.
 - (2) Hubbell: HBL1221PL.
 - (3) Pass & Seymour: PS20AC1-RPL.
 - (4) Leviton: 1221-PLR.
 - b) Double Pole:
 - (1) Cooper: 2222PL.
 - (2) Hubbell: HBL1222PL.
 - (3) Pass & Seymour: PS20AC2-RPL.
 - (4) Leviton: 1222-PL.
 - 6) Lighted Toggle Switch:
 - a) Single Pole:
 - (1) Cooper: DECB120LW.
 - (2) Hubbell: HBL2121ILWA.
 - (3) Leviton: 5631-2W.
 - (4) Pass & Seymour: 2625-W.
 - b) Three Way:
 - (1) Cooper: DECB320LW.
 - (2) Hubbell: HBL2123IWA.
 - (3) Leviton: 5633-2W.
 - (4) Pass & Seymour: 26266-W.
2. Standard Style:
- a. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) 20 AMP, single pole for furnace disconnect
 - a) Cooper: 2221V
 - b) Hubbell: HBL1221-I
 - c) Pass & Seymour: 20AC1-I
 - d) Leviton: 1221-2
3. Exhaust Fan Timer Switches:
- a. Serving Area:
 - 1) 0-60 minute, no hold position.
 - 2) Approved Products:
 - a) Intermatic: FD60MWC.
 - b) Paragon: SWPD60M-W.
 - c) Tork: A560MW.
 - b. Font:
 - 1) 0-4 Hour, no hold position.
 - 2) Approved Products:
 - a) Intermatic: FDHW.
 - b) Tork: A504HW.
 - c. Custodian Room:

- 1) 24 hour, in-wall, multiple automatic ON-OFF settings.
 - 2) Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - a) Intermatic: E1020.
 - b) Tork: 701A.
 4. Dimmer Switches:
 - a. Vertical slide control with faceplate.
 - b. Preset, ON-OFF switch, 1000VA.
 - c. Approved Products:
 - 1) Hubbell: AS101/AS1I.
 - 2) Hunt: DAP-10-IV.
 - 3) Leviton: IPI10-I
 - 4) Lightolier: MP1000-I.
 - 5) Lutron: N-1003P-IV.
 - 6) Pass & Seymour: 91180-I.
- C. Receptacles:
1. Rectangular Face Designer Style:
 - a. 15 AMP, specification grade, back and side wired, self grounding.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Cooper: 6262W.
 - 2) Hubbell: HBL2152WA.
 - 3) Leviton: 16252-W.
 - 4) Pass & Seymour: 26252-W.
 2. Ground Fault Circuit Interrupter (GFCI):
 - a. 15 AMP, specification grade.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Cooper: GF15W.
 - 2) Hubbell: GF5252WA.
 - 3) Leviton: 8599-W.
 - 4) Pass & Seymour: 1594-W.
 3. Basketball Standard Receptacle:
 - a. Three pole, four wire grounding, 125 / 250V, locking type, NEMA L14-20R, 20 AMP, complete with plate.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Cooper: CWL1420R
 - 2) Hubbell: HBL2410
 - 3) Leviton: 2410
 - 4) Pass & Seymour: L1420-R
- D. Telephone Jacks:
1. Desk Type:
 - a. 4 conductor, screw terminals, voice grade.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Cooper: 3532-4W.
 - 2) Leviton: 40249-W.
 - 3) Pass & Seymour: TPTE1-W.
 - 4) Suttle: 625B4-4-85.
 2. Wall Type:
 - a. 4 conductor, screw terminals, voice grade.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Cooper: 3521-4W.
 - 2) Leviton: 40257-W.
 - 3) Pass & Seymour: WMTE14-W.
 - 4) Suttle: 630AC4-85.
 3. Module Type:
 - a. For use in data faceplates.
 - b. 8 conductor, punch-down, voice grade.
 - c. Type Two Acceptable Products:
 - 1) Siemon: MX3-F-U3-02
 - 2) Equal as approved by Architect before use. See Section 01 6200.

E. Data Jacks:

1. For use in data faceplates.
2. 8 conductor, punch-down T568B wiring configuration, CAT 6.
3. Type Two Acceptable Products:
 - a. Flat Jack: Siemon MX6-F02
 - b. Angled Jack: Siemon MX6-02
 - c. Equal as approved by Architect before use. See Section 01 6200.

F. Plates:

1. Standard Cover Plates:
 - a. Office / Occupied Areas:
 - 1) Nylon or high impact resistant thermoplastic.
 - 2) Color shall match wiring device.
 - b. All Other: Stainless Steel.
 - c. Ganged switches shall have gang plates.
 - d. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Cooper.
 - 2) Hubbell.
 - 3) Leviton.
 - 4) Pass & Seymour.
2. Data Faceplates:
 - a. Type Two Acceptable Products:
 - 1) Single Module: Siemon MX-FP-S-01-02.
 - 2) Two Modules: Siemon MX-FP-S-02-02.
 - 3) Equal as approved by Architect before use. See Section 01 6200.
3. Weatherproof In-Use Receptacle Covers:
 - a. NEMA 3R rated.
 - b. Cast aluminum.
 - c. Compatible with GFCI receptacles.
 - d. Complete with weather resistant gaskets and stainless steel screws.
 - e. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Hubbell: WP26MH, horizontal; WP26M, vertical.
 - 2) Intermatic: WP1010HMC, horizontal; WP1010MC, vertical.
 - 3) Red Dot: CKMG, horizontal; CKMGV, vertical.

G. Occupancy Sensors:

1. Ceiling, ultrasonic type.
 - a. Complete with sensor and combined relay / control transformer.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Leviton:
 - a) Sensor: OSC10-U
 - b) Relay / Transformer: OSP20-OD)
 - 2) Hubbell:
 - a) Sensor: OMNI-US500.
 - b) Relay / Transformer: 120 V: MP 120 A.
 - 3) Novitas:
 - a) Sensor: 01-083.
 - b) Relay / Transformer: 120 / 277 V, 13-0511.
 - 4) Pass & Seymour: 120 V.
 - a) Sensor: US1001.
 - b) Relay / Transformer: PWP120.
 - 5) Tork:
 - a) Sensor: SC20.
 - b) Relay / Transformer: 120 V: TRP1.
 - 6) Watt Stopper:
 - a) Sensor: W-500A.
 - b) Relay / Transformer: 120 V: B120E-P.
2. Ceiling, passive infrared type.
 - a. Complete with sensor and combined relay / control transformer.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.

- 1) Leviton:
 - a) Sensor: OSC15-IOW
 - b) Relay / Transformer: OSP20-0D0.
 - 2) Hubbell:
 - a) Sensor: OMNI-IRL.
 - b) Relay / Transformer: 120 V: MP 120 A.
 - 3) Pass & Seymour: 120 V.
 - a) Sensor: CSU1100.
 - b) Relay / Transformer: PWP2120.
 - 4) Tork:
 - a) Sensor: OSCW15P.
 - b) Relay / Transformer: 120 V: TRP-D.
 - 5) Watt Stopper:
 - a) Sensor: CI-205.
 - b) Relay / Transformer: 120 V: B120E-P.
3. Wall switch, passive infrared type.
- a. Features include sensitivity and time delay adjustments.
 - b. Manual ON / auto OFF capability.
 - c. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Leviton: ODS10-IDW.
 - 2) Hubbell: LHIRS1W.
 - 3) Sensor Switch: WDS-SA-V-W.
 - 4) Square D: SLSPWS1277UW.
 - 5) Watt Stopper: PW-100-W.

H. Data Patch Panel:

1. Panel:
 - a. Meet requirements of TIA / EIA 568 Standard.
 - b. CAT 6, 48 ports groups in eight 6-port modules, T568B wiring configuration, 19 inch 475 mm width.
 - c. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Leviton: 69586-U48.
 - 2) Ortronics: OR-PHD66U48.
 - 3) Suttle: STAR19110C6-48.
2. Mounting Bracket:
 - a. Hinged, wall mounted, 19 inches wide by 5 inches deep.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Leviton: 49251-W62.
 - 2) Ortronics: OR-604004068.
 - 3) Suttle: 103B1.

I. Secondary Surge (Lightning) Arresters:

1. Protection from Category C level transient surges as defined in IEE / ANSI C62.11 and C62.41. UL approved for exterior application.
2. Parallel metal oxide varistors, MOV, from each line to ground. 120 / 240 VAC. UV resistant construction with epoxy encapsulation of electrical connections.
3. Include 1/2 inch mounting nipple and locknut.
4. Category Four approved Products. See Section 01 6200 for definitions of Categories.
 - a. ASZ175B2 by Cooper Power Systems.
 - b. 9L15FCB001 by General Electric.
 - c. AG2401C by Intermatic.
 - d. 54175-SSA by Leviton.
 - e. SDSA1175 by Square D.

PART 3 - EXECUTION**3.1 INSTALLATION**

- A. Install devices flush with walls, straight, and solid to box.
- B. Label dimmer switch groupings with **1/16 inch 1.5 mm** thick laminated plastic composition material with contrasting color core. Engraved letter shall be **1/4 inch 6 mm** high.
- C. Install secondary surge arrestor in knock-out of junction box installed on bottom of automatic sprinkler controller.

END OF SECTION