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 Sections
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.

1.2 SYSTEM DESCRIPTION

A. Design Requirements: 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.

PART 2 - PRODUCTS

2.1 COMPONENTS

A. Raceway And Conduit:
1. Sizes:
   a. 3/4 inch 19 mm for exterior underground use.
   b. 1/2 inch 13 mm minimum elsewhere, unless indicated otherwise.
2. Types: Usage of each type is restricted as specified below by product.
   a. 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.
   b. Galvanized Electrical Metallic Tubing (EMT), Flexible Steel Conduit, And Metal-Clad Cable (Type MC):
      1) Allowed for use only in indoor dry locations where it is:
         a) Not subject to damage.
         b) Not in contact with earth.
         c) Not in concrete.
      2) Flexible steel conduit or metal-clad cable required for final connections to indoor mechanical equipment.
c. Schedule 40 Polyvinyl Chloride (PVC) Conduit:
   1) Allowed for use only underground or below concrete with galvanized rigid steel or IMC elbows and risers.
d. Listed, Liquid-Tight Flexible Metal Conduit:
   1) Use in outdoor final connections to mechanical equipment, length not to exceed 36 inches 900 mm.
e. 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.
f. Electrical Non-Metallic Tubing (ENT): Allowed for use only as a raceway for control voltage cables in concealed or inaccessible, indoor, dry locations.

3. Prohibited Raceway Materials:
   a. Aluminum conduit.
   b. Armored cable type AC (BX) cable.

B. Raceway And Conduit Fittings:
   1. Rigid Steel Conduit And IMC: Threaded and designed for conduit use.
   2. EMT:
      a. Compression type.
      b. Steel set screw housing type.
   3. PVC Conduit:
      a. PVC type. Use PVC adapters at all boxes.
      b. PVC components, (conduit, fittings, cement) shall be from same Manufacturer.
   5. Liquid-tight Flexible Metal Conduit: Sealtilte type.
   6. Expansion fittings shall be equal to OZ Type AX sized to raceway and including bonding jumper.
   7. Prohibited Fitting Materials:
      a. Crimp-on, tap-on, indenter type fittings.
      b. Cast set-screw fittings for EMT.
      c. Spray (aerosol) PVC cement.

C. Outlet Boxes:
   1. Galvanized steel of proper size and shape are acceptable for all systems. Where metal boxes are used, provide following:
      a. Provide metal supports and other accessories for installation of each box.
      b. Equip ceiling and bracket fixture boxes with fixture studs where required.
      c. Equip outlets in plastered, paneled, and furred finishes with plaster rings and extensions to bring box flush with finish surface.
   2. Plastic boxes may be used only in low voltage systems where conductors are not installed in conduit.
   3. Telephone / data outlet boxes shall be single device outlet boxes.
   4. HVAC Instrumentation And Control:
      a. Junction boxes in mechanical equipment areas shall be 4 inches 100 mm square.
      b. Boxes for remote temperature sensor devices shall be recessed single device.
      c. Boxes for thermostats shall be 4 inches 100 mm square with raised single device cover.

D. Floor Boxes:
   1. Type Two Acceptable Products:
      a. 887 cast iron box 885 brass duplex cover plate for carpet by Walker Systems.
      b. B-2537 cast iron box with SF3925 brass duplex cover plate for carpet by Hubbell.
      c. Equal as approved by Architect before installation. See Section 01 6000.

E. Combination Power / Audio Signal Floor Boxes:
   1. Type Two Acceptable Products:
      a. 3SFBS2 steel box with 3SFBC flush cover and carpet flange and two 3BSBDS rectangular opening service plates for duplex receptacle and audio signal input by Hubbell.
      b. 664 steel box with 664-CST carpet plate and two 664-GP rectangular plates for duplex receptacle and audio signal input by Steel City.
      c. Equal as approved by Architect before installation. See Section 01 6000.
F. Air / Vapor Barrier Back Boxes: Pre-molded polyethylene fitting between framing members and inhibiting air / vapor infiltration and exfiltration around recessed outlet boxes.

2.2 MANUFACTURERS

A. Contact Information:

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. Conceal raceways within ceilings, walls, and floors, except at Contractor's option, conduit may be exposed on walls or ceilings of mechanical equipment areas and above acoustical panel suspension ceiling systems. Install exposed raceway runs parallel to or at right angles to building structure lines.
2. Keep raceway runs 6 inches 150 mm minimum from hot water pipes.
3. 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.
4. 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.
5. Install insulated bushings on each end of raceway 1-1/4 inches 32 mm in diameter and larger, and on all raceways where low voltage cables emerge. Install expansion fittings where raceways cross building expansion joints.
6. Run two spare conduits from each new panelboard to ceiling access area or other acceptable accessible area and cap for future use.
7. 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.

8. 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.
9. 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.
10. 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.
11. 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 unless indicated otherwise 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 switch boxes from jamb shall be within 6 inches 150 mm of door jamb.
b. Arrange boxes for ceiling light fixtures symmetrically with respect to room dimensions and structural features.

c. 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.

d. Center ceramic tile boxes in tile.

F. Support factory-fabricated speaker enclosures from structure or ceiling suspension system.

END OF SECTION