SECTION 260533

CONDUIT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Metal conduit.

B. Flexible metal conduit.

C. Liquidtight flexible metal conduit.

D. Electrical metallic tubing.

E. Nonmetal conduit.

F. Fittings and conduit bodies.

1.2 RELATED SECTIONS

A. Division 07 - Fire Stopping.

B. Division 07 - Roofing Penetrations.

C. Section 26 05 26 - Grounding and Bonding.

D. Section 26 05 29 - Supporting Devices.

E. Section 26 05 34 - Boxes.

F. Section 26 05 53 - Electrical Identification.

1.3 REFERENCES

A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.

C. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

D. ANSI/NFPA 70 - National Electrical Code.

E. NECA "Standard of Installation”.

F. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

G. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.4 DESIGN REQUIREMENTS

A. Conduit Size: ANSI/NFPA 70.

1.5 PROJECT RECORD DOCUMENTS

A. Submit under the provisions of Division 01.

B. Accurately record actual routing of conduits larger than 2 inches and all panelboard and transformer feeders.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle Products to site under provisions of Division 01.

B. Accept conduit on site. Inspect for damage.

C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

1.7 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Verify routing and termination locations of conduit prior to rough-in.

C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system. Unless noted otherwise, all conduit shall be concealed. Where shown exposed, conceal in walls at maximum height possible for runs to flush device boxes.

PART 2 PRODUCTS

2.1 CONDUIT REQUIREMENTS

A. Minimum Size: ½ inch unless otherwise specified.

B. Underground Installations:
1. More than Five Feet from Foundation Wall: Use rigid steel conduit, intermediate metal conduit or plastic-coated conduit, nonmetallic conduit.
2. Within Five Feet from Foundation Wall: Use rigid steel conduit or intermediate metal conduit.
3. In or Under Slab on Grade: Use rigid steel conduit, intermediate metal conduit or nonmetallic.
4. Emerging from slab: Use rigid steel or intermediate metal conduit.

C. Outdoor Locations, Above Grade: Use rigid steel.

D. In Slab Above Grade:
1. Use rigid steel conduit, intermediate metal conduit, electrical metallic tubing, or nonmetallic conduit.

E. Wet and Damp Locations: Use rigid steel, intermediate metal conduit or electrical metallic tubing.

F. Dry Locations:
1. Concealed (including block walls above slab): Use rigid steel conduit, intermediate metal conduit and electrical metallic tubing.

2. Exposed: Use rigid steel conduit, intermediate metal conduit and electrical metallic tubing.

G. Nonmetallic conduit is not permitted on normal or emergency system feeders or branch circuits serving patient care areas.

2.2 METAL CONDUIT

A. Manufacturers:
1. American Electric.
2. Youngstown.
3. Allied Tube.

B. Rigid Steel Conduit: ANSI C80.1.

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit.

2.3 FLEXIBLE METAL CONDUIT

A. Manufacturers:
1. Anamet.
2. Electriflex.
3. Arnco.

B. Description: Interlocked steel construction.

C. Fittings: ANSI/NEMA FB 1.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Manufacturers:
1. Anamet.
2. Electriflex.
3. Hubbell.

B. Description: Interlocked steel construction with PVC jacket.

C. Fittings: ANSI/NEMA FB 1.

2.5 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
1. Allied Tube.
2. Anixter.
3. Wheatland.

B. Description: ANSI C80.3; galvanized tubing.

C. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel compression or set screw type.

2.6 NONMETALLIC CONDUIT

A. Manufacturers:
1. Carlon.

2. Arnco.
3. Electriflex.

B. Description: NEMA TC 2; Schedule 80 PVC.

C. Fittings and Conduit Bodies: NEMA TC 3.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install conduit in accordance with NECA "Standard of Installation".

B. Install nonmetallic conduit in accordance with the manufacturer's instructions.

C. Arrange supports to prevent misalignment during wiring installation.

D. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

E. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.

F. Fasten conduit supports to the building structure and surfaces under provisions of Section 26 05 29.

G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.

H. Do not attach conduit to ceiling support wires or ceiling grids.

I. Arrange conduit to maintain headroom and present neat appearance.

J. Route overhead exposed conduit parallel and perpendicular to walls.

K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.

L. Route conduit in and under slab from point-to-point.

M. Do not cross conduits in slab.

N. Maintain a minimum of a 6-inch clearance between conduit and piping.

O. Maintain 12-inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

P. Cut conduit square using saw or pipe cutter; de-burr cut ends.

Q. Bring conduit to shoulder of fittings; fasten securely.

R. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply a full even coat of cement to the entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

S. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

T. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch (50 mm) size.

U. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

V. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints.

W. Provide suitable pull string in each empty conduit except sleeves and nipples.

X. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

Y. Ground and bond conduit under the provisions of Section 26 05 26.

Z. Identify conduit under the provisions of Section 26 05 53.

3.2 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements. Where multiple penetrations occur, provide a 2-inch separation between sides of conduit. Use approved methods outlined in Division 07.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified.

C. Do not route conduit within corrugations of metal floor deck or metal roof deck.

END OF SECTION