PART 1 - GENERAL

1.1 SUMMARY:
A. This section details general requirements for conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes
B. Related Sections:
1. Section 01701 - Building Systems Identification and Labeling
2. Section 26 00 10 – Electrical Design Criteria

1.2 QUALITY ASSURANCE:
A. The Engineer of Record is responsible for designing the raceway system in accordance with applicable portions of NFPA 70 Codes and per good engineering practices.
B. Electrical components, devices, and accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
C. Install raceways per NECA Standard of Installation.

1.3 RACEWAY APPLICATIONS:
A. Following is a summary of where various common types of raceways are allowed.
B. Rigid Galvanized Steel Conduit (RGS) and PVC-coated RGS:
1. Power circuits above 600 volts run above ground or exposed in building.
2. Elevator machine rooms, pits and shafts.
3. Fire Pump and jockey pump feeders and control circuits.
4. Smoke exhaust fan feeders when required by Code.
5. Exposed exterior and outdoor locations and building roofs for power feeders, controls and low-voltage wiring systems.
6. Underground conduit penetrations up through concrete floor slabs for power feeders, controls and low-voltage wiring systems.
7. Exposed areas subject to impact damage.
8. PVC-coated within lab areas where exposed to chemicals.
9. PVC-coated conduit color shall be consistent throughout the project.
C. Aluminum Conduit: Not allowed.
D. Intermediate Metal Conduit (IMC): Not Allowed.
E. Fiberglass-Reinforced Epoxy (FRE):
1. In lab areas where exposed to chemicals.
2. Exposed exterior and outdoor locations and building roofs for power feeders, controls and low-voltage wiring systems.
F. Electrical Metallic Conduit (EMT):
1. Interior dry locations, for power feeders, branch circuit feeders and control circuits.
2. Homers for MC cable branch circuit wiring back to panelboards.
3. Interior dry locations, for fire alarm, telecommunications, AudioVisual, building automation and security systems.

G. Flexible Metallic Conduit (FMT):
1. Interior dry locations, for final connections (36 inches or less) to vibrating equipment, light fixtures and other equipment.
2. Within plenums or other spaces used for environmental air. Provide grounding conductor.

H. Flexible Non-Metallic Conduit (Liquid-tight):
1. Exterior and interior damp and wet locations, for final connections (36 inches or less) to vibrating equipment, light fixtures and other equipment. Provide grounding conductor.
2. Do not use in plenums or other spaces used for environmental air.

I. Metal Clad Cable (Type MC): See section 26 05 10 – Conductors and Cable.

J. Non-metallic Conduit (PVC Schedule 40 and Schedule 80):
1. Schedule 40: In-slab locations, underground locations, concrete encased, for low and medium-voltage power feeders, branch circuit feeders, control circuits, telecommunications and fire alarm circuits.
2. Schedule 80: underground locations, direct-buried, for irrigation and low voltage control and security system wiring.

K. Surface Raceway:
1. Interior dry locations, for branch circuit feeders, control circuits, fire alarm, telecommunications, AudioVisual, building automation and security systems run exposed on walls and ceilings.

1.4 OUTLET and JUNCTION BOXES:

A. Underground circuits:
1. Cast metal boxes or nonmetallic handhole.

B. In or Under Slab on Grade, and Outdoor Locations, above Grade:
1. Cast metal or nonmetallic outlet, pull, and junction boxes.

C. Wet and Damp Locations:
1. Cast metal or nonmetallic outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.

D. Concealed Dry Locations:

E. Exposed Dry Locations:
1. Provide smooth-sided, welded seam sheet-metal boxes where surface-mounted.
2. Provide flush mounting sheet metal outlet box in finished areas.
3. Provide hinged enclosure for large pull boxes.
1.5 GENERAL REQUIREMENTS:
   A. Minimum Conduit Size: 3/4 inch.
   B. Although Historic building interiors require special consideration and project-specific direction, exceptions to this Section require exception waivers.
   C. Die-cast fittings are not allowed for conduit.
   D. Aluminum fittings are not acceptable with rigid steel conduit.
   E. Use compression connectors for EMT conduit run in wet, dirty and dusty environments.
   F. Wiring for lighting circuits shall be run separate from receptacle circuits and power feeders.
   G. Surface Raceway: When used in shared use with communication and power, the systems shall be separated by a barrier and shall have separate covers.
   H. Surface Raceway: Minimum size is WireMold 700-series. All surface raceway material and color shall be specified. Where not otherwise specified, use white, which is preferred color.
   I. Plastic boxes for outlets are not allowed.
   J. Floor boxes:
      1. Floor boxes to be gasketed type, UL listed to meet scrub water exclusion requirements. Provide with ADA covers
      2. Poke through fittings to be UL listed with fire rating to match floor rating.

PART 2 - PRODUCTS

2.1 SURFACE METAL RACEWAY:
   A. Manufacturers:
      1. WireMold
      2. Hubbell

2.2 FLOOR BOXES AND FIRE RATED POKE-THROUGHS:
   A. Manufacturers:
      1. Hubbell

PART 3 – EXECUTION:

3.1 INSTALLATION:
   A. Install raceways and boxes per NECA Standard of Installation.
   B. All conduits shall be run concealed where possible.
   C. Provide expansion fittings where raceways cross expansion joints or cross from building structure to platforms and supplementary mounting steel.
   D. Provide sealing bushings in the ends of all unused conduits.
E. Raceways shall be neatly arranged and grouped together on dedicated hangers and supports, with fittings designed for the purpose. Raceways shall be installed parallel to and perpendicular to walls, floors, ceilings and structural members in a neat and workmanlike manner.

F. Raceways installed in close proximity to other trades equipment shall be arranged to allow for proper servicing, access to equipment and headroom. Maintain minimum 6” space form all heating pipes and flues.

G. Conduits passing through roofing shall be flashed watertight.

H. Locate pull boxes, fittings, etc. to comply with Code and cable manufacturer requirements for pulling tensions and sidewall pressure during installation.

I. Ground and bond raceway and boxes.

J. Do not install outlet boxes back to back in walls.

3.2 IDENTIFICATION:

A. Identify raceway and boxes in accordance with Section 01701.

B. All lighting fixture outlet boxes shall be tagged with their panelboard, circuit number, and voltage.

C. All junction box covers shall be marked with the circuit types contained within (i.e.: lighting, receptacles, Telecommunications, etc.).

END OF SECTION