GENERAL:

The scope of this document is to provide requirements for low voltage (1000 volts and below) electrical power raceway and boxes.

DESIGN GUIDELINES:

1. General
   1.1. All conductors shall be installed in a raceway system.
   1.2. All raceway installations shall meet or exceed the requirements of all applicable codes (NEC, NESC, …)
   1.3. All conduit sizes and conductor, numbers and sizes will be shown on the drawings.
   1.4. Conduit or raceway shall not be used as the grounding conductor. All metallic raceway shall be electrical continuous and bonded to the grounding conductor.
   1.5. Branch Circuits:
      1.5.1. For Branch circuits, the minimum conduit size will be ¾” except for switch legs, lighting whips (supplying a single fixture circuit), and control wiring which may be ½”.
      1.5.1.1. All metallic fittings will be compression type rated for ground connection.
   1.6. All empty conduits shall contain a pull string.
   1.7. Any exception to these guidelines must be approved by project manager.

2. Indoor Raceways:
   2.1. Raceways shall be EMT, Rigid Metal Conduit, cable tray or approved surface raceway. Non-metallic conduit or boxes will not be used.
   2.2. Exposed EMT is not allowed below 7 feet AFF in areas where raceway may receive physical abuse (such as hallways, mechanical rooms, storage rooms, and janitor closets), unless the conduit is 2” or larger in diameter.
   2.3. EMT shall not be used in wet/damp locations, or in floor crawl spaces.
   2.4. Garages and similar areas shall be considered a wet location. Electrical rooms in a garage shall be considered a wet location. All wall mounted panels and electrical devices shall be installed on unistrut in electrical rooms in parking garages.
   2.5. Conduit will be supported from the building structure. Attachment to other pipes, conduits, ductwork, etc. will not be allowed.
   2.6. All exposed conduit installed in a finished space will be painted to match the background.
   2.7. Conductors carrying more than 150V to ground will not be installed in conduits with conductors carrying less than 150V to ground.

3. Outdoor Above Ground Raceways:
   3.1. Rigid metal conduit shall be used for exterior locations.
   3.2. Rigid metal conduit shall be used anywhere underground conduit emerges from soil or concrete.
   3.3. Expansion shall be considered for all exterior conduit.
   3.4. Corrosive environments shall be considered in selection of conduit materials.
4. **Underground Raceways:**
   4.1. Typical design is Schedule 80 PVC conduit for smaller than 2” and Schedule 40 PVC conduit for 2” and larger. PVC conduit shall be designed for electric application with all connections solvent welded.
   4.2. Rigid metal conduit shall be used through walls and a minimum of the first 5 feet from the wall to allow for settling.
   4.3. Elbows 3” and larger shall be rigid metal or fiberglass conduit to prevent damage from pulling ropes.
   4.4. All buried steel conduit shall be either plastic coated or tape coated for corrosion control. Tape or coating shall be designed for the purpose of corrosion protection. Tape or coating shall extend a minimum of 4” above grade.
   4.5. EMT shall not be used underground.
   4.6. No conduit will be allowed to be embedded in a concrete slab. All conduits below a slab shall be a minimum of 12” below the concrete slab.
   4.7. A plastic warning tape is to be buried 12” above the conduit. Warning tape shall be fabricated from polyethylene film, shall contain no metal, and shall be 6 inches wide and not less than 3.5 mils thick. Warning tape shall be high visibility red in color and imprinted at frequent intervals with black letters having the following wording: CAUTION BURIED ELECTRICAL LINE BELOW