

MIDWESTERN STATE UNIVERSITY

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RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1: GENERAL

1.01 Scope of Standard

- A. This standard provides general guidance concerning the specific preferences of Midwestern State University for Raceway and Boxes for Electrical Systems.
- B. Midwestern State University recognizes that project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification, it is expected that these guidelines will govern the design and specifications for Midwestern State University projects.

1.02 Scope of Work

- A. This section of the standard includes minimum design requirements for raceways, boxes, and floor boxes used for electrical power.
- B. This is a design standard and is not intended to be used as a construction specification.

PART 2: PRODUCTS

- A. All electrical raceway design shall conform to the minimum requirements of the latest edition of the National Electric Code (NEC).
- B. New Buildings and Building renovations may use UL approved fire rated poke-thrus.
- C. All electrical penetrations through fire rated walls or floor, must have fire rated box and fire rated seals between box and conduit and opening.

PART 3: EXECUTION

3.01 Design/Drawing Requirements

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- A. In addition to the minimum NEC requirements all design shall conform to the following strict guidelines:
1. Installed conduit shall be Rigid Galvanized Conduit (RGC), Intermediate Conduit (IMC), or Electric Metallic Tubing (EMT).
 2. In exposed exterior areas, use only RGC or IMC. No MC cable or Greenfield in walls.
 3. In wet or corrosive areas use SCH 40 PVC raceway.
 4. Liquid tight flexible conduit installed in sizes ½” and larger shall not exceed 3’ in length. (Special applications may exceed this length if approved by Owner’s project representative).
 5. Flexible metal conduit is permissible in sizes ½” and larger with one exception. Applications with fixture tails may be 3/8”. Flexible metal conduit shall not be used as an equipment grounding conductor.
 6. Surface metal raceway:
 - a. Classrooms/Offices: extruded aluminum with brushed natural finish.
 - b. Laboratories: painted steel.
 7. Liquid tight flexible conduit or EMT shall be used under raised computer floors in the length and size necessary to serve the load. The conduit must originate and terminate in the same room. Do not use rubber cord for this application.
 8. All direct buried conduit shall be SCH 40 PVC. **And shall have buried electrical warning tape installed 6” above grade the full length of the buried raceway.**
 9. **Exterior conduit above grade level shall be RMC, IMC or EMT and shall be wrapped with corrosion inhibiting tape when in contact with the earth.**
 10. All floor boxes shall be shown on floor plans and clearly denoted as such by symbology.
 11. Drawing shall clearly indicate electrical conduit, with sizes, feeding the floor box.

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- B. Conduit shall not be mounted in or on the floor. In place of floor boxes, conduit shall be roughed in below the floor and installed by core drilling the floor after final placement is approved.
- C. All electrical box design shall conform to the minimum requirements of the latest edition of the NEC and the following strict clarifications:
 - 1. In dry locations, provide only galvanized-coated flat rolled sheet steel outlet wiring boxes.
 - 2. In wet or corrosive areas **above grade level**, use only PVC boxes and fittings.
 - 3. In exposed areas, used cast aluminum boxes with galvanized conduit.
 - 4. **In ground use, shall be handhole enclosures only. Handhole enclosures shall be designed and installed per the standards of the latest version of NFPA 70 NEC and constructed of concrete or concrete/fiber only. The cover shall be rated for traffic and or loads imposed on them and have a logo or identifying mark such as “Electrical”.**
- D. A minimum of ¾” conduit shall be used for all home runs. All home runs shall be in EMT or IMC. No Greenfield or MC cable shall be used for home runs.
- E. All conduit shall be standard trade sizes.
- F. All exposed conduit to be used for conductors over 600 VAC shall be rigid steel.
- G. Flexible conduits of any trade sizes shall be no longer than 3’. (Exception: Can be longer, up to 12 feet, when installed in walls in applications such as added receptacles in remodeling). Flexible metal conduits shall not be used as an equipment grounding conductor. MC Cable shall only be used for fixture whips and control devices above accessible ceilings.
- H. All metal, flexible conduit, such as Greenfield, shall be steel.
- I. Metal conduit fittings shall be steel or cast iron.
- J. Conduit fittings shall not be crimp tool or snap-in type.
- K. There shall be no **ENT** or similar product installed on Campus as the main or primary conduit. **ENT** or similar products shall be used only as an ‘inner duct’ or where it is accessible for it’s entire length and shall be labeled as **LS** (limited-smoke-producing characteristics).

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- L. There shall be no factory assembled metal clad or non-metallic-sheathed armored cable used as building wiring on Campus unless it is accessible for its entire length, such as on fixture whips, or used as exposed surface wiring and equipment leads.
- M. All conduit bends shall be made with appropriate trade benders or be factory made.
- N. Junction and device boxes shall be minimum 4" x 4" x 2 1/8" combination.
- O. All rough-in and above ground boxes are to be zinc plated.
- P. All handy 4" and 4 11/16" surface mount boxes are to be drawn type, not welded.
- Q. All exterior J-boxes used in earth, concrete or asphalt shall be traffic rated. These boxes shall be installed so that the top surface is at, or above grade with grade sloped up to them. Boxes should be installed so that they are not in a drain channel or "low spot".
- R. All electrical J-boxes, receptacles shall be "Accessible" as applied to wiring methods stated in NEC Article 100, I - General.
- S. All electrical J-boxes shall be labeled with panel and circuit number(s).

END OF SECTION 26 05 33