

SENSITIVE SECURITY INFORMATION

WSP Project #188443B

SECTION 26 05 33 - RACEWAYS AND BOXES IFB 19-07-0325 IPTC CCTV Camera Replacement

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
 - 1. Metal conduits and fittings.
 - 2. Boxes, enclosures, and cabinets.
- B. Related Sections include the following:
 - 1. Section "Basic Electrical Materials and Methods" for supports, anchors, and identification products.

1.3 SUBMITTALS

- A. Product Data: For raceways.

1.4 QUALITY ASSURANCE

- A. 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,
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

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2.2 METAL CONDUITS AND FITTINGS

A. Manufacturers:

1. American International.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco.
4. Cantex.
5. Certainteed.
6. Condux International.
7. ElecSYS
8. Electri-Flex.
9. Heritage Plastics Central, Inc.
10. Lamson & Sessions; Carlon Electrical Products.
11. Manhattan/CDT/Cole-Flex.
12. Queen City Plastics.
13. RACO.
14. Southern Pipe, Inc.
15. Spiralduct, Inc./AFC Cable Systems, Inc.
16. Thomas & Betts.

B. Metal Conduit:

1. EMT: Comply with ANSI C80.3 and UL 797.
- 1.2. IMC: Comply with ANSI C80.6 and UL 1242.
- 2.3. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- 3.4. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Metal Fittings:

1. Comply with NEMA FB 1 and UL 514B.
2. EMT: Steel, compression type.
3. Rigid and IMC: Use threaded rigid steel conduit fittings. Comply with NEMA FB 2.10.
- 1.4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- 2.5. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- 3.6. Fittings, General: Listed and labeled for type of conduit, location, and use.
- 4.7. Joint Compound for IMC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.3 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers:

1. B-Line.
2. Cooper Crouse-Hinds.
3. Emerson/General Signal; Appleton Electric Company.

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4. Erickson.
5. Hammond.
6. Hoffman.
7. Hubbell.
8. Milbank.
9. O-Z/Gedney.
10. RACO.
11. Robroy Industries.
12. Rose + Bopla
13. Scott Fretzer Co.; Adalet-PLM Division.
14. Spring City Electrical.
15. Thomas & Betts.
16. Vynckier.
17. Walker Systems.
18. Woodhead Industries.

B. Hinged-Cover Enclosures:

1. Outdoors: NEMA 250, Type 4X stainless steel, with continuous hinge cover and 3-point latch.

2.4 FACTORY FINISHES

- A. Finish: For raceway, enclosure or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors:

1. Exposed up to 10 feet AFF: Rigid conduit or IMC.
- ~~2. Exposed 10 feet AFF and above: EMT~~
- ~~3.2. Concealed: Rigid conduit or IMC, or EMT.~~
- ~~4.3. Underground: PVC Schedule 40.~~
- ~~5.4. Boxes and Enclosures: NEMA 250, Type 1 galvanized steel (indoors), Type 3R galvanized steel (outdoors).~~

B. Indoors:

1. Exposed, not subject to physical damage: EMT.
2. Exposed and subject to physical damage: Rigid conduit or IMC, locations considered subject to physical damage include:
 - a. Bus maintenance and storage areas below 12 feet.
 - b. Space used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
3. Connection to Vibrating Equipment: LFMC.
4. Concealed in ceilings and walls: EMT.
5. Damp or Wet Locations: Rigid conduit or IMC.

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C. Minimum Raceway Size: 3.4-inch trade size.

B-D. Raceway Fittings: Compatible with raceways and suitable for use and location.

3.2 INSTALLATION

- A. Complete raceway installation before starting cable installation.
- B. Support raceways as specified in Section “Basic Electrical Materials and Methods.”
- C. Install temporary closures to prevent foreign matter from entering raceways.
- D. Protect stub-ups from damage where conduits rise through grade. Arrange so curved portions of bends are not visible above the finished grade.
- E. Make bends and offsets so ID is not reduced. Keep leg of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.
- F. Install exposed raceway parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
- G. Join raceways with fittings designed and approved for that purpose and make joints tight.
 - 1. Use insulating bushings to protect conductors.
- H. Terminations:
 - 1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
 - 2. Where raceways are terminated with thread hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
- I. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

3.3 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Final Acceptance.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

3.4 CLEANING

- A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

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3.5 GRADING AND PLANTING

- A. Restore surface features, including vegetation, at areas disturbed by Work of this Section for the installation of underground circuitry. Reestablish original grades, unless otherwise indicated. If sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include application of topsoil, fertilizer, lime, seed, sod, sprig, and mulch. Maintain restored surfaces. Restore disturbed paving as indicated.

END OF SECTION 26 05 33