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## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 18 July 2006

Latest change indicated by CHG tags

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#### DIVISION 27 - COMMUNICATIONS

#### SECTION 27 05 14.00 10

#### CABLE TELEVISION PREMISES DISTRIBUTION SYSTEM

04/06

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specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70

(2005) National Electrical Code

## 1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed

item for Army projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.] [information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

Cable Television Premises Distribution System[; G][; G, [\_\_\_\_\_]]

Detail drawings including a complete list of equipment and material. Detail drawings shall contain complete wiring and schematic diagrams and other details required to demonstrate that the system has been coordinated and will function properly as a system. Drawings shall include vertical riser diagrams, equipment rack and panel details, elevation drawings of telecommunications closet walls, outlet face plate details for each outlet configuration, and descriptions and types of cables, conduits, and cable trays, if used. Drawings shall show proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of the work including clearance for maintenance and operation.

Installation[; G][; G, [\_\_\_\_\_]]

Record drawings for the installed cable system. The drawings shall show the locations of cable terminations, including outlets, and location and routing of cables. The identifier for each termination and cable shall appear on the drawings.

#### SD-03 Product Data

Spare Parts.

Lists of spare parts, tools, and test equipment, as specified.

Manufacturer's Recommendations[; G][; G, [\_\_\_\_\_]]

Where installation procedures, or any part thereof, are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be provided prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received and approved.

Test Plan[; G][; G, [\_\_\_\_\_]]

Test plan defining the tests required to ensure that the system meets technical, operational and performance specifications, [60] [\_\_\_\_\_] days prior to the proposed test date. The test plan must be approved before testing begins. The test plan shall identify the capabilities and functions to be tested, and include detailed instructions for the setup and execution of each test and procedures for evaluation and documentation of the results.

Qualifications[; G][; G, [\_\_\_\_\_]]

Proof of the qualifications of the Contractor, Installers, and Manufacturers that will perform the work, and provide the specified products.

#### SD-06 Test Reports

##### Testing

Test reports in booklet form with witness signatures verifying execution of tests shall be provided. The cable system testing documentation shall include the physical routing and a test report for each cable (end-to-end) from the installed outlet to the main termination point. Test reports shall be submitted within [7] [14] [\_\_\_\_\_] days after completion of testing.

#### SD-07 Certificates

##### Materials and Equipment

Where materials or equipment are specified to conform, be constructed or tested to meet specific requirements, certification that the items provided conform to such requirements. Certification by a nationally recognized testing laboratory that a representative sample has been tested to meet the requirements, or a published catalog specification statement to the effect that the item meets the referenced standard, is acceptable as evidence that the item conforms. Compliance with these requirements does not relieve the Contractor from compliance with other requirements of the specifications.

#### SD-10 Operation and Maintenance Data

##### Operation and Maintenance Manuals

Commercial, off-the-shelf manuals for operation, installation, configuration, and maintenance of products provided as a part of the cable television premises distribution system. Specification sheets for cable, connectors, and other equipment shall be provided.

### 1.3 SYSTEM DESCRIPTION

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NOTE: Ensure that the design provides for adequate communications pathways and spaces using EIA ANSI/TIA/EIA-569 as a requirement. Coordinate electrical, grounding, and HVAC requirements with the associated disciplines. Cable distribution configuration must be coordinated with the user's representative, if known. For barracks applications, there will normally be one cable outlet provided in each sleeping area. The same cable pathways and spaces normally used for both telephone and data networks are acceptable for CATV distribution systems, provided that sufficient additional space allowance is provided.

NOTE: Hardware for protecting or connecting the main cable television distribution system to sources of outside services entering the facility should be furnished and installed by the local CATV provider. The designer will allow for adequate space, power, and cooling to accommodate the CATV provider's equipment.

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The cable television premises distribution system shall consist of coaxial cables and connecting hardware to transport television signals throughout the building to user locations as indicated.

#### 1.4 ENVIRONMENTAL REQUIREMENTS

Connecting hardware shall be rated for operation under ambient conditions of 0 to 60 degrees C 32 to 140 degrees F and in the range of 0 to 95 percent relative humidity, non-condensing.

#### 1.5 QUALIFICATIONS

##### 1.5.1 Minimum Contractor Qualifications

Work under this section shall be performed, and equipment shall be furnished and installed, by a qualified Contractor as defined herein. The Contractor shall have a minimum of two years of experience in the installation and testing of coaxial cable-based TV distribution systems and equipment. Installers assigned to the installation of this system or its components shall have a minimum of two years of experience in the installation of the specified coaxial cable and components.

##### 1.5.2 Minimum Manufacturer Qualifications

The equipment and hardware provided under this contract shall be products of manufacturers that have a minimum of two years of experience in producing the types of systems and equipment specified.

#### 1.6 DELIVERY AND STORAGE

Equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust or other contaminants.

#### 1.7 SPARE PARTS

The Contractor shall submit spare parts data for each different item of material and equipment specified, after approval of detail drawings, not later than [2] [\_\_\_\_\_] months prior to the date of beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, and a list of spare parts recommended for stocking.

### PART 2 PRODUCTS

#### 2.1 MATERIALS AND EQUIPMENT

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NOTE: Ensure that the NEC requirement for 40 percent maximum fill of conduit and other raceways

is met when sizing raceways.

For cables which require special jackets, such as those subject to corrosive environments, provide a description of the environmental requirements.

Select the appropriate cable jacket rating based on NEC or local code requirements. If there is a potential for mixed rating of the same cables, use the highest rating only.

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Materials and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products and shall be the manufacturer's latest standard design that has been in satisfactory use for at least one year prior to installation. Materials and equipment shall conform to the respective publications and other requirements specified below and to the applicable requirements of NFPA 70.

#### 2.1.1 COAXIAL CABLE

Coaxial cable shall be RG-6/U, quad shield. Cable shall be label-verified. Cable jacket shall be factory marked at regular intervals identifying cable type. Cable shall be rated [CMP] [CMR] [CMG] per NFPA 70. Interconnecting cables shall be cable assemblies consisting of RG-6/U coaxial cable with male connectors at each end, provided in lengths determined by equipment locations as shown.

#### 2.1.2 Outlets

Cable television outlets, including wall outlet plates, shall be equipped with a female connector to accept the connecting coaxial cable from the user's television set. Faceplates provided shall be [ivory] [\_\_\_\_\_] impact resistant plastic.

#### 2.1.3 OUTLET BOXES

Electrical boxes for cable television outlets shall be 117 mm 4-11/16 inch square by 53 mm 2-1/8 inches deep with minimum 9 mm 3/8 inch deep single or two gang plaster ring as shown. Conduits shall be minimum 25 mm 1 inch.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

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**NOTE:** Secure and classified areas should meet requirements of NACSIM 5203 and DIAM 50-3 for cable distribution and wiring.

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System components and appurtenances shall be installed in accordance with NFPA 70, manufacturer's instructions and as shown. Necessary interconnections, services, and adjustments required for a complete cable television distribution system, ready to connect to external television signal sources, shall be provided. Penetrations in fire-rated construction shall be firestopped in accordance with Section 07 84 00 FIRESTOPPING. Conduits, outlets, raceways, and wiring shall be installed in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Cables and outlets

shall be individually labeled and marked. Cables shall not be installed in the same cable tray, utility pole compartment, or floor trench compartment with ac power cables. Cables not installed in conduit or wireways shall be properly secured and neat in appearance and, if installed in plenums or other spaces used for environmental air, shall comply with NFPA 70 requirements for this type of installation.

### 3.1.1 Horizontal Cable Installation

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**NOTE: Decrease suspension distance for bundled cable. One or two cables can be suspended at 1.5 meter (5 foot) intervals. Delete last two sentences if there are no raised floors.**  
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The rated cable pulling tension shall not be exceeded. Cable shall not be stressed such that twisting, stretching or kinking occurs. Cable shall not be spliced. Cable not in a wireway shall be suspended a minimum of [200] [ ] mm [8] [ ] inches above ceilings by cable supports no greater than [1.5] [ ] m [60] [ ] inches apart. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items. Placement of cable parallel to power conductors shall be avoided, if possible; a minimum separation of 300 mm 12 inches shall be maintained when such placement cannot be avoided. Cables shall be terminated unless shown otherwise. Minimum bending radius shall not be exceeded during installation or once installed. Cable ties shall not be excessively tightened such that the transmission characteristics of the cable are altered. In raised floor areas, cable shall be installed after the flooring system has been installed. Cable [1.8] [ ] m [6] [ ] feet long shall be neatly coiled not less than [300] [ ] mm [12] [ ] inches in diameter below each feed point in raised floor areas.

### 3.1.2 Riser Cable Installation

The rated cable pulling tension shall not be exceeded. Riser cable support intervals shall be in accordance with manufacturer's recommendations. Cable bend radius shall not be less than ten times the outside diameter of the cable during installation and once installed. Maximum tensile strength rating of the cable shall not be exceeded. Cable shall not be spliced.

### 3.1.3 Outlets

#### 3.1.3.1 Faceplates

Each faceplate shall be labeled with its function and a unique number to identify the cable run.

#### 3.1.3.2 Cables

Cables shall have a minimum of 150 mm 6 inches of slack cable loosely coiled into the cable television outlet boxes. Minimum manufacturer's bend radius shall not be exceeded.

#### 3.1.3.3 Pull Cords

Pull cords shall be installed in conduits serving the cable television premises distribution system which do not initially have cable installed.

### 3.2 TERMINATIONS

Cables and conductors shall sweep into termination areas; cables and conductors shall not bend at right angles. Manufacturer's minimum bending radius shall not be exceeded. Coaxial cables shall be terminated with appropriate connectors as required. Cable shield conductor shall be grounded to communications ground at only one point and shall not make electrical contact with ground anywhere else.

### 3.3 GROUNDING

The cable television distribution system ground shall be installed in the cable television entrance facility and in any auxiliary closet identified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM or otherwise indicated. Equipment racks shall be connected to the electrical safety ground.

### 3.4 ADDITIONAL MATERIALS

The Contractor shall provide the following additional materials required for facility startup:

- a. 10 of each type of connector used.
- b. 10 of each type of cover plate, with connector.

### 3.5 LABELING

Cables shall be labeled on both ends with circuit number, room number, or other appropriate marking allowing for correct identification of the cable and its destination.

### 3.6 TESTING

Materials and documentation to be furnished under this specification are subject to inspections and tests.

- a. The Contractor shall submit a Test Plan as specified in the Submittals paragraph.
- b. Components shall be terminated prior to testing.
- c. Equipment and systems will not be accepted until the required inspections and tests have been made, demonstrating that the cable television premises distribution system conforms to the specified requirements, and that the required equipment, systems, and documentation have been provided.
- d. After installation of the cable and before connecting system components, each cable section shall be end-to-end tested using a time domain reflectometer (TDR) to determine shorts, opens, kinks, and other impedance discontinuities and their locations. Cable sections showing adverse impedance discontinuities (greater than 6 dB loss) shall be replaced at the Contractor's expense.
- e. There shall be no cable splices between system components unless approved by the Government.

### 3.7 OPERATION AND MAINTENANCE MANUALS

The Contractor shall submit Operation and Maintenance manuals as specified in the Submittals paragraph.

-- End of Section --