

271525-TC

Tenant and Airline Extended DEMARC

Related Documents

The following related sections of the OT standards shall also be applicable to this section.

OT Engineer shall approve all product cut sheets prior to purchasing and installation by contractor. Reference S9 Approved Products.

- S1 Approved Product Request
- S1 Change Request
- S1 Request for Variance
- S1 Resource Allocation Permit
- S2 Introduction
- S3 SOP and Policy
- S4 275116-TC CORE Passenger Communications Paging System
- S4 275118-TC Emergency Communications and Evacuation Paging System
- S5 270000X Telecommunications Systems (Boiler Plate)
- S5 MAA Radio System
- S7 270000-TC Common Work
- S7 270100-TC Systems Cabling
- S7 270101-TC COMCAST Standard
- S7 270526-TC Grounding and Bonding
- S7 270528-TC Hangers and Support
- S7 270553-TC Identification
- S7 270555-TC OT Facility Warning Standard
- S7 271116-TC Cabinets Racks Frame Enclosures
- S7 271119-TC Termination Blocks and Patch Panels
- S7 271313-TC Cable Splicing and Termination
- S7 271323-TC Optical Fiber Splicing and Terminations
- S7 271519-TC Horizontal Cabling
- S7 271543-TC Faceplates and Connectors
- S7 271600-TC Telecommunications Station Equipment
- S8 E911 PS ALI Standard
- S9 Approved Products

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Design Intent of this standard

The intent of this standard is to

1. Reduction of abandoning communications facilities, and establishing a more permanent, and reusable facility
2. Provide a cost effective means and method for tenants and airlines to access both MAA provided, Leased, or outside providers of communications services

Part 2 - General

2.1 Work Included

- A. Provide all labor, materials, tools and equipment required for the complete installation of work called for in the Construction Documents

2.2 Scope of Work

- A. This document describes the products and execution requirements relating to furnishing and installing specialized cabling from a MAA Communications Room to a common point in tenant or airline leased space for access to MAA and external communications services. These specialized cables shall be referred to as an Extended DEMARC.
- B. The Extended DEMARC shall support back to the MAA Communications room shall support a minimum of

1. Option 1. For Tenant Areas (Airlines, TSA etc)

Conduit size shall be a minimum of 4 inch with inter-duct

- a. (1) 50-pair Unshielded Twisted Pair (UTP) CAT 3 Copper
- b. (1) 12 strand Single Mode Fiber cable
- c. (1) 12 strand Multi Mode Fiber cable
- d. (1) RG 11 coaxial cable (refer to S7 270101)
- e. (1) E-page speaker facility (*refer to S4 275118*)

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2. Option 2. For Concessions Area

Conduit size shall be two inch

- a. (2) 4-pair Unshielded Twisted Pair (UTP) CAT 6 Copper Cable (1 for Voice and 1 for Data)
 - b. (1) 2 strand Single Mode Fiber cable
 - c. (1) 2 strand Multi Mode Fiber cable
 - d. (1) RG 11 coaxial cable (*refer to S7 270101*)
 - e. (1) E-page speaker facility (*refer to S4 275118*)
 - f. (1) E-page shunt trip facility (*refer to S4 275118*)
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- i. All cables and related terminations, support and grounding hardware shall be furnished, installed, wired, tested, labeled, and documented by the telecommunications contractor as detailed in this document.
 - ii. Product specifications, general design considerations, and installation guidelines are provided in related documents. If the bid documents are in conflict, this specification shall take precedence. The successful vendor shall meet or exceed all requirements for the cable system described in this document.

b. Regulatory References

- i. The following industry standards are the basis for the structured cabling system described in this document.

TIA/EIA

TIA/EIA-568-B Cabling	Commercial Building Telecommunications Standard
TIA/EIA-569-A	Commercial Building Standard for Telecom Pathways and Spaces
TIA/EIA-606	Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
TIA/EIA-607	Commercial Building Grounding/Bonding Requirements

NFPA

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NFPA-70

National Electric Code (NEC) latest edition

ISO/IEC

ISO/IEC 11801

Generic Cabling for Customer Premises

- ii. The most recent versions of all documents shall apply to this project. If there is a conflict between applicable documents, the order above shall dictate the order of precedence in resolving the issue unless an enforceable local or national code is in effect.

g. Execution

a. Extended DEMARC Cable Installation

Cable shall be installed in accordance with manufacturer's recommendations and best industry practices.

A pull cord (nylon; 1/8" minimum) shall be co-installed with all cable installed in any conduit.

Cable raceways shall not be filled greater than the TIA/EIA-569-A maximum fill for the particular raceway type or 40%.

Cables shall be installed in continuous lengths from origin to destination (no splices) except for transition points, or consolidation points.

Where transition points or consolidation points are allowed, they shall be located in accessible locations and housed in an enclosure intended and suitable for the purpose.

The cable system minimum bend radius and maximum pulling tension shall not be exceeded that of the most stringent of all facilities installed at one time

Cable shall be installed above fire-sprinkler systems and shall not be attached to the system or any ancillary equipment or hardware.

The cable system and support hardware shall be installed so that it does not obscure any valves, fire alarm conduit, boxes, or other control devices.

The Cable system shall be installed as not to impede with future construction

The Cable System shall not be attached to ceiling grid or lighting fixture wires. Where support for horizontal cable is required, the contractor shall install appropriate carriers to support the cabling.

Any cable damaged or exceeding recommended installation parameters during installation shall be replaced by the contractor prior to final acceptance at no cost to the Owner.

Cables shall be identified by a self-adhesive label in accordance with the System Documentation Section of this specification and ANSI/TIA/EIA-606. The cable label shall be applied to the cable behind the faceplate on a section of cable that can be accessed by removing the cover plate.

Pulling tension on 4-pair UTP cables shall not exceed 25-lbf for a four-pair UTP cable.

b. Horizontal Cross Connect Installation

Cables shall be dressed and terminated in accordance with the recommendations made in the TIA/EIA-568-B standard, manufacturer's recommendations and best industry practices.

Pair untwist at the termination shall not exceed 0.5 inch.

Bend radius of the cable in the termination area shall not exceed 4 times the outside diameter of the cable.

Cables shall be neatly bundled not more than 48 cables per and dressed to their respective panels or blocks. Each panel or block shall be fed by an individual bundle separated and dressed back to the point of cable entrance into the rack or frame.

The cable jacket shall be maintained as close as possible to the termination point.

Each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be viewed without removing the bundle support ties. Cables labeled within the bundle, where the label is obscured from view shall not be acceptable.

c. Optical Fiber Termination Hardware

Fiber slack shall be neatly coiled within the fiber splice tray or enclosure. No slack loops shall be allowed external to the fiber panel.

Each cable shall be individually attached to the respective fiber enclosure by mechanical means. The cables strength member shall be securely attached the cable strain relief bracket in the enclosure.

Each fiber cable shall be stripped upon entering the splice tray and the individual fibers routed in the splice tray.

Each cable shall be clearly labeled at the entrance to the splice enclosure. Cables labeled within the bundle shall not be acceptable.

A maximum of 12 strands of fiber shall be spliced in each tray

All spare strands shall be installed into spare splice trays.

d. Copper Termination Hardware

Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA/EIA-568-B standard, manufacturer's recommendations and best industry practice where applicable.

Pair untwist at the termination shall not exceed 3.18mm 0.5 inch.

Bend radius of the cable in the termination area shall not exceed 4 times the outside diameter of the cable.

Cables shall be neatly bundled and dressed to their respective panels or blocks. Each panel or block shall be fed by an individual bundle separated and dressed back to the point of cable entrance into the rack or frame.

The cable jacket shall be maintained to within 25 mm (one inch) of the termination point.

Each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be viewed without removing the bundle support Velcro ties. Cables labeled within the bundle, where the label is obscured from view shall not be acceptable.

e. Testing and Acceptance

i. General

1. All cables and termination hardware shall be 100% tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA/EIA-568-B, TSB-67 and TSB-155. All pairs of each installed cable shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed.
2. All cables shall be tested in accordance with this document, the ANSI/TIA/EIA standards.

f. System Documentation

- i. Upon completion of the installation, the telecommunications contractor shall provide three (3) full documentation sets to the Engineer for approval. Documentation shall include the items detailed in the sub-sections below.
- ii. Documentation shall be submitted within ten (10) working days of the completion of each testing phase. This is inclusive of all test results and draft as-built drawings. Draft drawings may include annotations done by hand. Machine generated (final) copies of all drawings shall be submitted within 30 working days of the completion of each testing phase. At the request of the Engineer, the telecommunications contractor shall provide copies of the original test results.
- iii. MAA/OT may do a 10% random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the telecommunications contractor, additional testing can be requested to the extent determined necessary by the Engineer, including a 100% re-test. This re-test shall be at no additional cost to the Owner.
- iv. Test Results documentation shall be provided on disk within three weeks after the completion of the project. The disk shall be clearly

marked on the outside front cover with the words "Project Test Documentation", the project name, and the date of completion (month and year). The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment.

- v. The field test equipment shall meet the requirements of ANSI/TIA/EIA-568-B including applicable TSB's and amendments. The appropriate level IV tester shall be used to verify Category 6 cabling systems.

- vi. Printouts generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package. Alternately, the telecommunications contractor may furnish this information in electronic form (compact disc). These discs shall contain the electronic equivalent of the test results as defined by the bid specification and be of a format readable from Microsoft Word or Microsoft Excel.

- vii. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented.

- viii. The **As-Built** drawings are to include cable routes and outlet locations. Their sequential number as defined elsewhere in this document shall identify outlet locations. Numbering, icons, and drawing conventions used shall be consistent throughout all documentation provided. The Owner will provide floor plans in paper and electronic (DWG, AutoCAD) formats on which as-built construction information can be added. These documents will be modified accordingly by the telecommunications contractor to denote as-built information as defined above and returned to the Owner. Numbering, icons, pathways and other drawing conventions are to be assigned their own individual AutoCAD layer.

- ix. The Contractors shall annotate the base drawings and return a hard copy (same plot size as originals) and electronic (AutoCAD) form. In addition, for all cable runs that pass in or thru a manhole or hand hole, the contractor will provide digital photos of the attached label and entrance in and out of the duct system.