SECTION 27 01 70 - TESTING, IDENTIFICATIONS, AND ADMINISTRATION

PART 1 GENERAL

1.01 DESCRIPTION

A. All testing and identification is to be complete 100% testing.

B. Documentation is to cover all parts of the cabling system, equipment, and locations.

1.02 QUALITY ASSURANCE

A. All labels are to match from cable to outlet to As-Builts.

B. All labels are to be made by means of a permanent printable label.

C. See Section 27 01 00 for additional requirements.

D. Code Requirements

1. BISCI TDMM, latest edition (Telecommunications Distribution Methods Manual)
2. TIA/EIA-606 Administration Standard for Commercial Telecommunications Infrastructure
3. TIA/EIA 568B.2-1 (all addendums)
4. TSB-72
5. ANIS/TIA/EIA-568-A (all addendums)
6. See Specification 270100 for additional

1.03 SUBMITTALS

A. Submit product data for all equipment to be used for testing and labeling.

B. Submit shop drawings indicating style of label you will be using in which situations and what numbering system you plan on using.

C. As a part of the submittals you need to show a copy of the certification of the tester(s) you will be using to test the cables/fiber at the close of the project. The tester(s) must have been certified within one year of the project. The tester is to be certified for the level of cable that is to be tested.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Any manufacturer of tester that meets the most current test parameters. Electronic copy of tests shall be nonproprietary so they may be viewed on any PC based system with out having to load the test manufacturers' software.

B. Fiber optic testers.

1. Including but not limited to OTDR and Power Meter.

PART 3 TESTING AND ADMINISTRATION

3.01 TESTING

A. Testing will be completed per Industry Standard for cable type to be tested. TIA/EIA-568-B.1 (category 5e) and TIA/EIA-568-B.2-1 (category 6) ISO/IEC 11801:2002 2nd Edition (classes D, E and F).

B. Structured cabling tests to include but not limited to:

1. NEXT, next @ remote
2. Wire map

3. Characteristic impedance
4. Length
5. DC loop resistance
6. Propagation delay
7. Return loss (rl), rl @ remote
8. Delay skew
9. Attenuation
10 Attenuation-to-crosstalk ratio (acr), acr @ remote.
11. Power sum acr, psacr @ remote
12. ELFEXT, elfext @ remote
13. Power sum elfext, pselfext @ remote
14. Power sum next, psnext @ remote

C. Tie Cable Testing

1. Wire-map
2. Length
3. Cable faults

D. Fiber Testing

1. Power Meter One way
2. OTDR Bi-directional
3. Test at 850 & 1300
4. Must meet acceptance values as stated by ANSI/TIA/EIA-568-B.1

E. All Testing

1. All systems to be 100% tested.

3.02 DOCUMENTATION

A. Tests that generate a report

1. Will be printed and submitted in a 3-ring binder with plastic sleeves in numeric or alphabetic order.
2. Electronic copy on disk in a nonproprietary format. Tests can be viewed in Word Pad, Note Pad or some other word processing software.
3. Printed test page information will include but not limited to:
   a. NEXT, next @ remote
   b. Wire map
   c. Characteristic impedance
   d. Length
   e. DC loop resistance
   f. Propagation delay
   g. Return loss (rl), rl @ remote
   h. Delay skew
   i. Attenuation
   j. Attenuation-to-crosstalk ratio (acr), acr @ remote.
   k. Power sum acr, psacr @ remote
   l. ELFEXT, elfext @ remote
   m. Power sum elfext, pselfext @ remote
   n. Power sum next, psnext @ remote

B. Tests that do not generate a report.

1. Give 1 week written notice, to the Owner Representative, of test day so they may witness the tests.
2. Test results are to be documented on a test form generated by the testing company and submitted with the other tests on testing company letterhead. The test results are to be organized and typed in a professional manner that can be clearly understood by the owner with out any interpretation by the testing company.

3.03 ADMINISTRATION

A. Plans

1. Indicate for all systems
   a. Equipment list for all locations
   b. Connections
   c. Cable Routes
   d. Station Identification exactly as show on outlet.

B. Record Documents

1. As-built plans will be completed by the contractor showing the location of all racks with elevation of rack layout.
2. As-built plans completed by contractor will show port number for all installed data outlets (wall, ceiling, WiFi, floor box, etc.)
3. As-built plans completed by contractor will show major cables routes used for low voltage cabling.
4. As-built plans completed by contractor will show cable route for tie cable and backbone cable at all locations (interior, exterior, or overhead).
5. See Specification 270100 for additional requirements.
6. As-built plans will be in CAD format 2007 or later.

C. Documentation

1. Printed documents for each individual jack will be printed and submitted in a 3-ring binder with plastic sleeves in numeric or alphabetic order. Binder cover page will state testing company, date tested, project identification and system test results contained. One cable test per page.
2. Electronic copy on disk in a nonproprietary format. Tests can be viewed in Word Pad, Note Pad or some other word processing software.

D. Labeling

1. Labeling will be done by means of a mechanical device i.e. printer, P-Touch, or other printing device. Hand written labels are not acceptable. If label holder is present on faceplate labels are to be placed into this area, if not they are to be securely attached to the faceplate. Labels will be black on white or as requested by architect, verify prior to labeling.
2. Numbering is to be sequential per faceplate and per room for ease of identification by owner. Verify labeling scheme to be used with owner representative one week prior to starting to, so there will be no delay to project while obtaining an answer.
3. Number between faceplate and patch panel or faceplate and voice equipment is to match.

END OF SECTION

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