



COMPASS 5 PARTNERS, LLC

## Addendum Number Two

**Date of Issue:** 03/11/15

**Project:** USC South Tower Bathroom Renovations

**Project Number:** H27-6108-MJ

### **TO: ALL BIDDERS OF RECORD**

This addendum modifies the Contract documents only in the manner and to the extent stated herein and shown on any accompanying drawings and will become part of the Contract Documents. Except as specified or otherwise indicated by this Addendum, all work shall be in accordance with the basic requirements of the Contract Documents.

BIDDERS SHALL ACKNOWLEDGE RECEIPT OF ADDENDUM IN THE SPACE PROVIDED ON THE BID FORM. FAILURE TO DO SO MAY CONSTITUTE A REASON TO REJECT THE BID.

This Addendum consists of twenty-five (25) pages including this document and the following:

#### **I. Enclosures:**

1. Specification Section 271343 – Communications Services Cabling with attached General Guidelines, Communications Infrastructure, University of South Carolina, Revised 8/2014. (20 pages)
2. Vanity Millwork Sketch SK-A-001 dated 03/09/2015 (1 page)
3. Toilet Partition Plan SK-A-002 dated 03/09/2015 (1 page)

#### **II. General Information: Questions and Answers**

The pre-bid discussion items and subsequent questions were reviewed. The following points for clarification are as follows:

1. **HOLLOW METAL FRAME GROUTING:** Newly installed hollow metal frames shall be grouted as noted in the drawings and specifications.
2. **LINEAR SHOWER DRAIN:** See specification Section 093050 paragraph 2.1.C for manufacturing requirements.

3. **POLYETHYLENE SHEETING FOR ABATEMENT SCOPE OF WORK:**  
Sheeting must meet all DHEC regulations as written and comply with mil thickness requirements.

### III. Changes to the Specifications:

1. **SECTION 064116 – INTERIOR ARCHITECTURAL WOODWORK** Delete paragraph 2.03.D.1 and replace with the following: ‘1. ‘3cm (1 ¼”).’
2. **SECTION 101550 – TOILET PARTITIONS**  
In Paragraph 2.3.A delete item 4 and replace with the following: ‘4. Thickness: Doors ½ inch (12mm), and Pilasters, ¾ inch (19mm).’
3. **SECTION 101550 – TOILET PARTITIONS**  
In Paragraph 2.3.A delete item 6.
4. **SECTION 101550 – TOILET PARTITIONS**  
In Paragraph 2.3.D add the following: ‘9. Provide additional pedestals as shown on Sketch SK-A-002.’
5. **SECTION 102800 – TOILET AND BATH ACCESSORIES**  
Delete paragraph 1.8.A and replace with the following: ‘A. Mirrors F1 and F2 on Sheets A101 and A102 Basis of Design: Bradley Model 747F-018300P.’
6. **SECTION 271343 – COMMUNICATIONS SERVICES CABLING:**  
Add the attached specification section to Project Manual.

### IV. Changes to the Drawings:

1. **SHEET A102** See attached Sketch SK-A-002 for additional toilet detailing corresponding to drawing A1 2<sup>nd</sup> -18<sup>th</sup> Floor Renovation Plan.
2. **SHEET A101 and A102** On the Toilet Room Accessories table for tagged items F1 and F2, delete ‘B-290 18 x 30 STAINLESS STEEL WELDED MIRROR’ and ‘B-290 18 x 36 STAINLESS STEEL WELDED MIRROR’ and replace both with ‘BRADLEY 747F-018300P MIRROR.’
3. **SHEET A502.1 / A3 Enlarged Plan Detail** Add the following note: ‘PROVIDE BACK TO BACK AND CONTINUOUS STUD FRAMING IN STUD WALLS (NEW AND EXISTING) TO ATTACH AND SUPPORT VANITY TUBE STEEL (BOTH ENDS)’.

4. **SHEET A502.2 / A1** Delete the words 'AS REQUIRED' on line item A1 and add the following: 'TYPICAL FOR ALL SHOWER/TOILET PANELS, COORDINATE LOCATION WITH SHOWER CURB'.
5. **SHEET A503.1** Delete DETAIL B3 and replace with the attached SK-A-001 dated 3/9/2015.
6. **SHEET A701 and A702 Material Legend SS2:** 'Solid Surface shall be selected from Toilet Partition Manufacturer Standard Colors.'
7. **SHEET A702 / A1** In Bathroom 200, adjust the shower pan width dimension from 2'-6" to 3' -0".
8. **SHEET E202:** Include the following:
  - A. Change CATV outlet to be a combination Voice/Data/CATV outlet.
  - B. Delete standalone Voice/Data Outlet.
  - C. Replace Note 5 with the following: 'RELOCATE EXISTING VOICE/DATA OUTLET TO THE LOCATION SHOWN FOR COMBINATION VOICE/DATA/CATV OUTLET. MODIFY/EXTEND EXISTING CONDUIT FROM NEAREST SOURCE IN STACKED ELECTRICAL ROOMS (NEAREST TELCOM RACK MAY NOT BE LOCATED ON ASSOCIATED FLOOR). EXISTING CABLING SHALL BE DEMOLISHED. PROVIDE CABLING AND TERMINATIONS FOR TWO JACKS AT OUTLET LOCATION AND TEST PER SPECIFICATION SECTION 271343. COORDINATE EXACT LOCATION OF OUTLET AND ADJACENT RECEPTACLE WITH USC HOUSING PRIOR TO INSTALL.'
  - D. Replace Note 7 with the following: 'RELOCATE EXISTING CATV OUTLET TO LOCATION SHOWN FOR COMBINATION VOICE/DATA/CATV OUTLET. MODIFY/EXTEND EXISTING CONDUIT FROM NEAREST SOURCE IN STACKED ELECTRICAL ROOMS (NEAREST CATV BACKBOARDS MAY NOT BE LOCATED ON ASSOCIATED FLOOR). EXISTING CABLING SHALL BE DEMOLISHED. PROVIDE CABLING AND TERMINATIONS FOR CATV JACK AT OUTLET LOCATION AND TEST PER SPECIFICATION SECTION 271343. COORDINATE EXACT LOCATION OF OUTLET AND ADJACENT RECEPTACLE WITH USC HOUSING.'

## **V. Prior Approvals**

NOT USED.

END OF ADDENDUM TWO

## SECTION 27 13 43 - COMMUNICATIONS SERVICES CABLING

### PART 1 GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Attached please find a 15 page document, "General Guidelines, Communications Infrastructure, University of South Carolina, Revised 8/2014". This document is a reference authored by the University of South Carolina UTS Department. It is periodically updated as a guideline for communications construction work.

#### 1.2 SUMMARY

- A. Section includes backboards, racks, patch panels, termination devices, outlets, and premises wiring.

#### 1.3 REFERENCES

- A. International Electrical Testing Association:
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. National Fire Protection Association:
  - 1. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
- C. Telecommunications Industry Association/Electronic Industries Alliance:
  - 1. TIA/EIA 568 - Commercial Building Telecommunications Cabling Standard.
  - 2. TIA/EIA 569 - Commercial Building Standard for Telecommunications Pathways and Spaces.
- D. Underwriters Laboratories, Inc.:
  - 1. UL 2043 - Fire Test for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air-Handling Spaces.

#### 1.4 SYSTEM DESCRIPTION

- A. Service entrance to the telecom (data) closet in each building is existing and shall remain as is.
- B. Horizontal Pathway: Conform to TIA/EIA 569, using raceway and backboard as indicated on Drawings.

- C. Horizontal Wiring: By contractor as scope of work of this section complete from telecommunications closet to each outlet using unshielded and coaxial horizontal cables.
- D. Horizontal wiring: By contractor as scope of work of this section complete from telecommunications closet to each POE device using shielded horizontal cables.
- E. Definition: A pull-point shall be a cable pulling location such as a junction box, cabinet or raceway end.

#### 1.5 SUBMITTALS

- A. Product Data: Submit catalog data for each cable.
- B. Test Reports: Indicate procedures and results for specified field testing and inspection.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Provide as built drawings indicating actual locations and sizes of pathways and outlets including jack label information.

#### 1.7 QUALITY ASSURANCE

- A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.
- B. Provide combustible electrical equipment exposed within plenums with peak rate of heat release not greater than 100 kW, peak optical density not greater than 0.5, and average optical density not greater than 0.15 when tested in accordance with UL 2043.
- C. Refer to the USC General Guidelines for Communications Infrastructure as revised 8/20/14.
- D. Maintain one copy of each document on site.

#### 1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in installing products specified in this section with minimum three years experience, and with the ability to respond to site within 4-hours of an owner work request.
- C. Testing Agency: Company specializing in testing products specified in this section with minimum three years documented experience.

## 1.9 COORDINATION

- A. Prior to bid, field verify which floors have existing rack and panel locations in the electrical rooms.

## PART 2 PRODUCTS

### 2.1 FACEPLATES

- A. Faceplates shall be owner furnished contractor installed. Coordinate with owner on when to deliver faceplates to site.

### 2.2 OUTLET JACKS

- A. Voice/Data: Outlet Jacks shall be owner furnished contractor installed. Coordinate with owner on when to deliver faceplates to site.

- B. Coax Station Jacks: Coax Station Jacks shall be owner furnished contractor installed. Coordinate with owner on when to deliver faceplates to site.

### 2.3 UNSHIELDED HORIZONTAL CABLE

- A. Manufacturers:
  - 1. Berk-Tek LANmark 2000
  - 2. Superior Essex DataGain
  - 3. General Genspeed 6500
  - 4. Mohawk AdvanceNet Cat 6e
  - 5. Panduit TX6500
- B. Product Description: TIA/EIA 568-B.2-1 compliant , Green 100-ohm, unshielded twisted pair plenum rated noncombustible Category 6 cable with 4 pairs, copper conductor.
- C. Each voice outlet and each data outlet shall be the same configuration. Each voice outlet shall be VOIP.

### 2.4 COAXIAL HORIZONTAL CABLE

- A. Manufacturers:
  - 1. Belden 1189AP RG6 Quad Shield coax cable.
  - 2. Commscope 227V RG6 Quad Shield Coax cable.
  - 3. Mohawk M71003 RG6 Quad Shield Coax cable.
  - 4. Prior approved equal.

## PART 3 EXECUTION

### 3.1 EXISTING WORK

- A. Remove exposed abandoned telecommunications cables and pathways, including abandoned cables and pathways above accessible ceiling finishes. Cut flush with

walls and floors, and patch surfaces.

- B. Maintain access to existing telecommunications equipment, cabling, and terminations and other installations remaining active and requiring access. Modify installation or provide access panel.
- C. Extend existing telecommunications installations using materials and methods compatible with existing installations.
- D. Coordinate existing location of headend equipment with owner prior to installation. Voice/Data/CATV headend equipment is not located on every floor. Assume existing equipment may be as much as 5 floors up or down from each floor.

### 3.2 INSTALLATION

- A. Install pathways in accordance with TIA/EIA 569.
- B. Install wire and cable in accordance with TIA/EIA 568.
  - 1. 4 pair UTP jacks shall be terminated using T568-B pin-out configuration.
  - 2. Coax cable termination, both ends, with Universal compression connector furnished by owner. Termination of the telcom room end of the coax cable shall be coordinated with UTS. The cables shall be cut to length to match the locations of the taps.
  - 3. Install cables with 10' loops in telcom rooms. Do not make circular coils.
  - 4. Provide Velcro cable ties in the telcom room. Cables shall be bundled loosely to minimize crosstalk.
  - 5. Provide a pull string in each cabled raceway so that string is available if an additional cable is required in the future.
  - 6. Surface Raceways shall only be used where an individual horizontal pathway is prior approved by the Engineer in writing. When used provide a minimum of three anchoring screws for each 10' length of surface raceway and a minimum of two anchoring screws for each surface raceway section 5' or less in length.
- C. Select raceways sized to limit pull tension to less than 25 lb. 1" minimum.
- D. Station Boxes:
  - 1. Minimum 4" square 2" deep.
  - 2. Single gang plaster ring.
- E. Labeling:
  - 1. All labels shall be produced by a labeling machine. Hand written labels shall not be acceptable.
  - 2. Coordinate labeling scheme with existing system and UTS.
  - 3. Label jacks indicating the patch panel and port number. Example: If a jack is connected to patch panel "B" port 22 the jack shall be labeled "B22".
  - 4. Label each end of each coax cable with the room number of the

jack/connector. If there is more than one coax cable in a room add a dash and a sequence number after the room number. Example: For a room 301A with three coax outlets the cables shall be labeled 301A-1, 301A-2, 301A-3.

- F. Raceways:
  - 1. Install polyethylene pulling string in each empty telcom raceway or conduit stub over 10 feet (3 m) in length.
  - 2. Not more than 180 degrees of bends between pull points. Locate pull points in accessible locations.
  - 3. Not more than 100' of raceway between pull points.
  - 4. Sleeve and firestop all wall, floor and ceiling penetrations. Use intumescent materials where future additions are probable.
  - 5. Provide a non-metallic bushing on the end of each conduit stub.
  - 6. Each conduit stub above an accessible ceiling shall have a 90 degree bend.
  
- G. Ground and bond pathways, cable shields, and equipment.
  - 1. Provide a grounding bushing on each metal raceway entering the telcom rooms.
  
- H. Bend Radius:
  - 1. Minimum 6 times the raceway diameter for raceways up to 2" trade size.
  - 2. Condulets, also known as "LBs" shall not be used.

### 3.3 FIELD QUALITY CONTROL

- A. Inspect and test copper cables and terminations in accordance with TIA/EIA 568.
- B. Clean up and dispose of all trash.
- C. Testing:
  - 1. Category 6 horizontal cables shall pass Category 6 permanent link field test per ANSI/TIA/EIAA 568-B.2-1.
  - 2. Coax cables shall be tested using a TDR testing each cable at 54.4 MHz, 350 MHz and 875 MHz. Test results shall show a db loss per meter equal to or less than as specified by the cable manufacturer.
- D. Test Documentation:
  - 1. Provide electronic and printed copies of test results.
  - 2. Provide as-built drawings showing jack numbers and room numbers.

END OF SECTION



**General Guidelines  
Communications Infrastructure  
University of South Carolina  
Revised 8/2014**

For installation and test procedures not covered in this document use applicable ANSI/TIA/EIA and industry standards.

# Table of Contents

## **HORIZONTAL (STATION) CABLING**

There is no distinction between voice and data for Category 6 **horizontal/station** cabling. Jacks and cable are the same as well as termination and testing. The intent is to accommodate the industry trend to have all communications services (data, voice, video, etc.) run on the data network.

### **Cable slack**

- Telecommunications Room – 10-foot loop minimum for copper cables (do not make a circular coil with cables).
- Station outlets – 10 inches of slack. The slack is to be in the ceiling above the outlet not in the outlet box. Do not tie wrap the slack above the ceiling, it needs to pull easy if the cable requires re-terminating.

### **Cable ties**

- Use Velcro style cable ties in the communication room. Cables runs are to be bundled loosely to minimize cross-talk.

### **Cleanup/un-used parts**

- clean up and dispose of all trash.

### **Conduit - Inside**

- Bends – No more than two 90-degree bends (or combination of bends equaling 180 degrees) between \*pull-points.
- Bend radius:  
  
Minimum of 6 times the conduit diameter for conduit up to 2 inch trade size.  
  
Minimum of 10 times the conduit diameter for larger diameters
- Condulets – Do Not use 90-degree condulets (also known as LB's) because they over bend the cable.
- Length – Maximum, 100 ft between pull-points.
- Pull string:  
  
Install pull strings in all new conduits.  
  
Install a pull string when pulling in cables so that a string is available for additional cables later
- Penetrations – Sleeve and Firestop all wall and floor or ceiling penetrations.

- Grounding – Ground all metal conduits entering the telecommunications room.
- Grounding – Ground all metal equipment (racks, cable trays, ladder racking, etc.) in the telecommunications room.
- Install a grommet at the end of the conduit to protect the cable from damage.
- Use the following chart to determine conduit size:

| Conduit Trade Size<br>Inches | Maximum Number<br>of Cat 6 Cables<br>(.27-in dia.) | Maximum Number<br>of Cat 6 Cables<br>(.35-in dia.) |
|------------------------------|--|--|
| 3/4                          | 0  | 0  |
| 1                            | 6  | 3  |
| 1-1/4                        | 10   | 6  |
| 1-1/2                        | 13   | 8  |
| 2                            | 22   | 13   |
| 2-1/2                        | 31   | 19   |
| 3                            | 49   | 29   |
| 3-1/2                        | 65   | 39   |
| 4                            | 83   | 50   |

**Note:** The table above is a guideline for horizontal cables; the number of cables that can be installed is actually limited by the allowed maximum pulling tensions - the maximum pull-force guideline is 25 lb.

**Note:** A pull-point is a junction box or conduit end.

### **Copper Horizontal Cables**

- Cables must be supported off the ceiling grid with supports/pathways/conduit

### **Documentation from Contractor**

- Provide electronic and printed copy of test results to USC Planner.
- Provide as-built drawings showing jack numbers and room numbers.

### **Firestopping**

- Sleeve and Firestop all fire walls (to the same hour rating as the wall) and any floor or ceiling penetrations.
- Use reusable firestop bags, bricks or removable putty where possible

## Labeling

- All labels must be produced by a labeling machine - hand written labels are not acceptable.

### Patch Panels

label each patch panel with an alpha character - label alphabetically from top to bottom.

### Communications Jacks

Label with the identification letter for the patch panel the cable is connected to and the patch panel port number.

**Example:** If the jack is connected to patch panel "B" port 22 the jack will be labeled B22

### 110 Wiring blocks Riser/entrance Cables

The beginning and ending pair count for each row will be printed on the 110 label.

**Example:** The 110 block labels for the second 100 pair riser cable would look like:

|     |  |  |  |     |
|-----|--|--|--|-----|
| 101 |  |  |  | 125 |
| 126 |  |  |  | 150 |
| 151 |  |  |  | 175 |
| 176 |  |  |  | 200 |

### COAX Cables

Terminate both ends of the COAX and label the cables with the room number. If there are more than one COAX cable in the room add a dash and a sequence number after the room number. To create the sequence number, look into the room from the doorway and start with the jack to the left of the door and number the jacks clockwise around the room.

**Example:** For room 301A with three COAX outlets; the first jack/cable would be 301A-1, the second 301A-2 and 301A-3.

### As-built Drawings

Provide as-built drawing at end of project with each jack ID and locations.

## Parts

For the parts listed below use the following part numbers.

### Cable

#### 4-Pair UTP:

Green, UTP, Plenum rated, 4-pair, Cat 6 cable that meets ANSI/TIA/EIA 568-B.2-1 performance specifications.

#### COAX

Belden 1189AP RG6 Quad Shield coax cable

CommScope 227V RG6 Quad Shield coax cable

### OSP Fiber

All OSP (Outside Plant) fiber Manufactures use; Corning glass 28e, loose tube, non armor, dry, water blocking.

1. Fiber will be tested by manufacturer and a copy of test results will be given to USC.
2. OSP will be marked each meter, with cable length to that point, in meters.
3. All OSP fiber will be pulled with a 12 AWG green copper trace wire.

USC will provide pre-terminated fiber jumpers for all fiber projects. The communications contractor will cut the jumpers in half and spliced them to the ends of the fiber cable.

### Faceplates

- Hubbell IFP1xOW, Office white faceplate. The “x” indicates the number of ports 1 through 6

### Jacks

#### 4-Pair UTP

Hubbell, Green, HXJ6GN, Xceleraor, Category 6 jack

Terminate using T568-B pin-out configuration

#### COAX

Station Jacks – Hubbell, SFFGOW, office white, “F” connectors

Cable Termination (both ends) - PPC, EX6XLPLUS - Universal compression connector, extended body series 6.

Note – Termination of the communications room end of the coax cable must be coordinated with UTS - the cables need to be cut to length to match the location of the taps.

### **Wall Mount 110 block Kit, (use for riser/backbone cables)**

- Hubbell 110BLK100FTK5 (100 pair)
- Hubbell 110BLK300FTK5 (300 pair)

### **Rack Mount 110 block Kit, Category 5e, (use for riser/backbone cables only)**

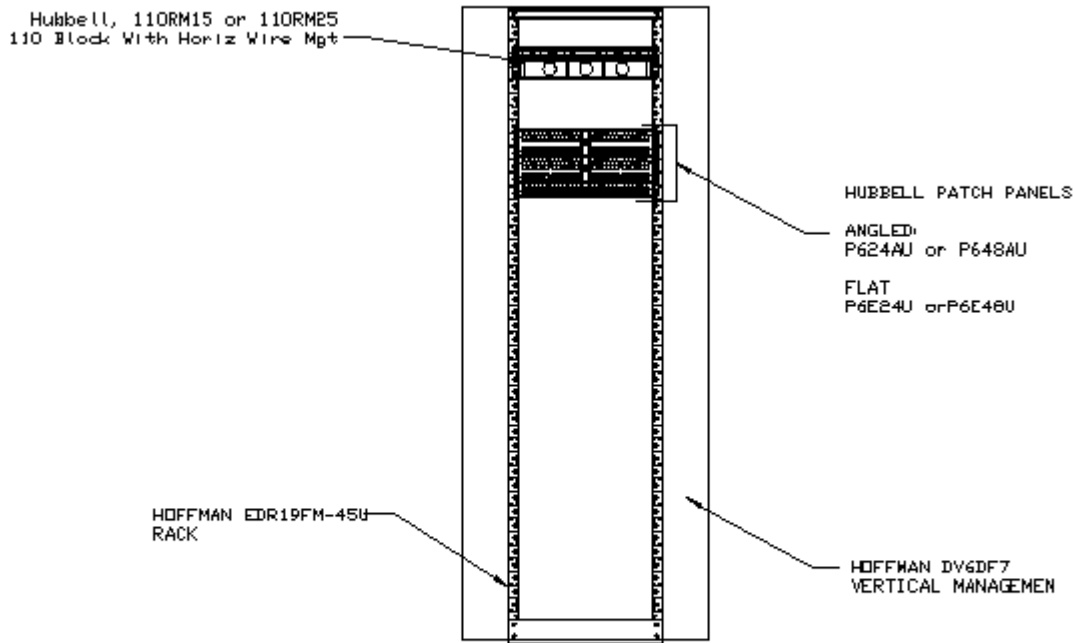
- Hubbell 110RM15 (100 pair)
- Hubbell 110RM25 (200 pair)

### **Patch Panel – RJ45**

- Angled (for racks with vertical cable management on both sides of the rack)
  - Hubbell P624AU, Category 6, 24-port angled patch panel
  - Hubbell P648AU, Category 6, 48-port angled patch panel
- Flat (for racks with no vertical cable management or management on only one side)
  - Hubbell P6E24U, Category 6, 24-port Flat patch panel
  - Hubbell P6E48U, Category 6, 48-port Flat patch panel

### **Rack and Cable Management (see Figure 1)**

- **Rack:**  
Hoffman 7 foot by 19 inch rack – EDR19FM45U,
- **Vertical cable management:**  
Hoffman vertical cable management install on both side of rack.  
  
Double Sided DV6DF7     6” wide X 10” deep double sided



Typical Cat 6  
Rack Layout

Figure 1

### Station (Horizontal) Cable Runs

- Cables must be supported off the ceiling grid with supports/pathways/conduit made for communications cabling.
- Bat wing/bridle ring type supports can be attached to ceiling grid wires as long as they are spaced no more than 4 to 5 feet apart and not filled beyond the designed capacity.
- Do not attach cables to pipes.
- Loosely bind cable bundles with Velcro style cable ties.

### Station Jacks, Standard Installation

- New Construction or Renovation where wall studs are exposed the following will be installed at each location:
  - 4 inch square outlet box
  - Single-gang plaster ring cover



- Minimum 1-inch diameter conduit from the outlet box, stubbed out above the ceiling.

### **Wire Mold**

Install cable inside wall where possible; use wiremold only where wall cannot be fished.

Use adhesive backed wire mold anchored with screws.

- Full stick – anchor with minimum of three screws (one at each end and one in the middle).
- Half stick or less – anchor with minimum of two screws.

### **Testing**

#### **Category 6 Horizontal Cables**

- Horizontal cables must pass Category 6 permanent link field test per ANSI/TIA/EIA 568-B.2-1.
- Provide the University Technology Services, Infrastructure Planner with a copy of the test results.

#### **COAX**

- Use TDR tester to test each cable at 54.4 MHz, 350 MHz and 875 MHz
- The test results for each cable must be equal to or less than the db loss per meter as specified by the cable manufacturer.
- Provide the University Technology Services, Infrastructure Planner with a copy of the test results.

#### **Fiber cable**

##### **OSP Fiber**

All OSP fiber Manufactures use, Corning glass 28e, loose tube, non armor, dry, water blocking.

1. Fiber will be tested by manufacturer and a copy of test results will be giver to USC.
2. OSP will be marked each meter, with cable length to that point, in meters.
3. All OSP fiber will be pulled with a 12 AWG green copper trace wire.

##### **Riser Fiber (Corning SMF 28e+ Glass)**

24 Count Riser Fiber, TLC part S09MD24CNPY

### **Termination**

USC will provide pre-terminated fiber jumpers for all fiber projects. The communications contractor will cut the jumpers in half and spliced them to the ends of the fiber cable.

### **Fiber cable Test Procedure**

#### **Splice Equipment**

Core Alignment fusion splicers are to be used for all splices, no V groove alignment splices will be accepted.

#### **OTDR Setup:**

Test in both directions

|               |        |
|---------------|--------|
| Pulse Width:  | 30ns   |
| Wave length:  | 1310nm |
| Launch Cable: | 500m   |
| Connectors:   | LC/APC |

#### **Test Leads / Launch Cable**

The test leads / launch cable 500meters minimum and connectors will match the cable and connectors under test. Example: if the cable to be tested is single mode with LC APC connectors the test leads / launch cable will be single mode with LC APC connectors.

The test leads / launch cable connectors will have a loss of 0.3 dB or less.

#### **Minimum Acceptable Test Results**

|                            |              |
|----------------------------|--------------|
| Cable Attenuation Rate     | 0.35 dB/km   |
| Insertion (Connector) Loss | 0.30 dB/pair |
| Splice Loss                | 0.02 dB      |
| Back Reflection            | -70 dB       |

#### **Outside/Tunnel Splicing**

All outside splicing must always be done in a protective environment example: tent, Van, trailer etc.

Tunnel Splicing, fiber must always be moved out of the tunnel to the closest opening to be splice in a protective environment example: tent, Van, trailer etc.

## **Telecommunication Rooms (TR)**

### **Building Entrance:**

- There will be two separate conduit entrances for the communications feed into a building. The conduit runs will have minimum 90-degrees of physical separation.
- There will be a minimum of two four inch diameter conduits for each of the entrance conduit runs.

### **Backboards:**

- A minimum of two 3/4-inch, AC grade with C side to wall, plywood panels shall be securely fastened to the wall of each TR. Use fire retardant plywood or paint the plywood with a light colored, fire retardant paint, two coats on all sides (front, back and edges).

### **Ceiling**

- The ceiling in the TR will be open (No false/suspended ceilings) so that there is easy access to the conduit, raceways, cables, etc. entering the TR.

### **Doors:**

- The door to the TRs will be 3 feet wide, opening fully (180 degrees), be lockable and without sills. The door will open outward.

### **Environmental Service:**

- Each TR will have ventilation, and air conditioning [HVAC]. Temperature control will be maintained continuously 24 hours per day, 365 days per year.

### **Equipment (data) Racks**

- Floor Mount racks will be 19-inch by 7-foot racks. Three feet of clearance is required to the front and rear of the rack to access the communications equipment mounted on the racks. Three feet of clearance is required for passageways along one side of the rack (National Electrical Code, Section 110-26).

### **Grounding**

- Grounding - Ground all metal conduit entering the telecommunications room to the building electrical ground.
- A grounding bussbar, bonded to the building ground, will be installed in each communications room where network equipment will be located

### **Lighting**

- Lighting will be fluorescent providing a minimum equivalent of 500 lux (50 foot-candles) measured 1 m (3-feet) above the finished floor.
- Light switches will be located for easy access upon entry
- Light fixtures shall be a minimum of 8.5-feet above the finished floor.
- Do not connect power for lighting to the power panel inside the TR. At least one light will be on emergency power, if available.

#### **Linked**

- Telecommunications rooms will be linked to the main telecommunications room by a minimum of one 4-inch conduit.

#### **Location**

- Centrally located so that the horizontal cables will not exceed 295 feet in length from the patch panel in the telecommunications room (TR) to the wall outlet.
- The TRs will be accessible from a hallway or other common area.
- In multi-floor buildings the TRs will be stacked vertically.

#### **Power:**

- TRs will be equipped with a minimum of two dedicated, protected, non-switched 3-wire 120 volt, 20 amp, alternating current Quad electrical outlets, each on separate branch circuits.
- Do not run conduit for electrical circuits on top of plywood backboards, route around or behind the backboard.
- Communications electrical outlets need to be on the building emergency power grid if possible.
- A grounding bussbar, bonded to the building ground, will be installed in each communications room where network equipment will be located.

**Size:**

- Use the following guidelines to size the telecommunications room. If the area served is:

| <b>Building Size</b>      | <b>TR Size</b>             |
|---------------------------|----------------------------|
| 5,000 square feet or less | At least 10-feet x 8-feet  |
| 5,000 to 8,000 sq. ft     | At least 10-feet x 9-feet  |
| 8,000 to 10,000 sq. ft    | At least 10-feet x 11-feet |

**Shared use of TR:**

Shared use of TR space with other building facilities will be avoided.

- **Unsatisfactory** Locations:
  - Mechanical rooms.
  - Washrooms.
  - Janitor's closets.
  - Storage rooms.
  - Loading docks.
- Also Any space that contains:
  - Sources of excessive Electromagnetic Interference (electric motors, generators, transformers, etc.).
  - Hydraulic equipment and other heavy machinery that causes vibration.
  - Steam pipes.
  - Plumbing.
  - HVAC ducts

## **Control Panels: (Fire Alarm, Security Alarm, Mechanical Controls, Elevator Phone, Elevator Camera, etc.)**

### **Fire, Security, Mechanical**

#### Secure Locations (non-public access areas, communications room, mechanical room etc.):

If the fire alarm, security alarm or mechanical control panel is in a secure room a Standard Installation outlet (4X4 outlet box with a single gang plaster ring) will be installed adjacent to the control panel. Cat6 jack(s) will be installed in the outlet box; this will be the UTS demarcation point for the voice and or data service. The control panel installer will provide the jumper cable between the control panel and the communications jack(s).

#### Non-Secure Locations (public access areas)

A 6X6 Hoffman style enclosure will be installed adjacent to the control panel, see figure 2. A one inch conduit will run from the Hoffman style enclosure, stubbed above the ceiling or run to the communications room. Cat6 communications cables will run from the communications room and terminate in the Hoffman style box with cat6 communication jack(s), this will be the UTS demarcation point for the voice and or data service.

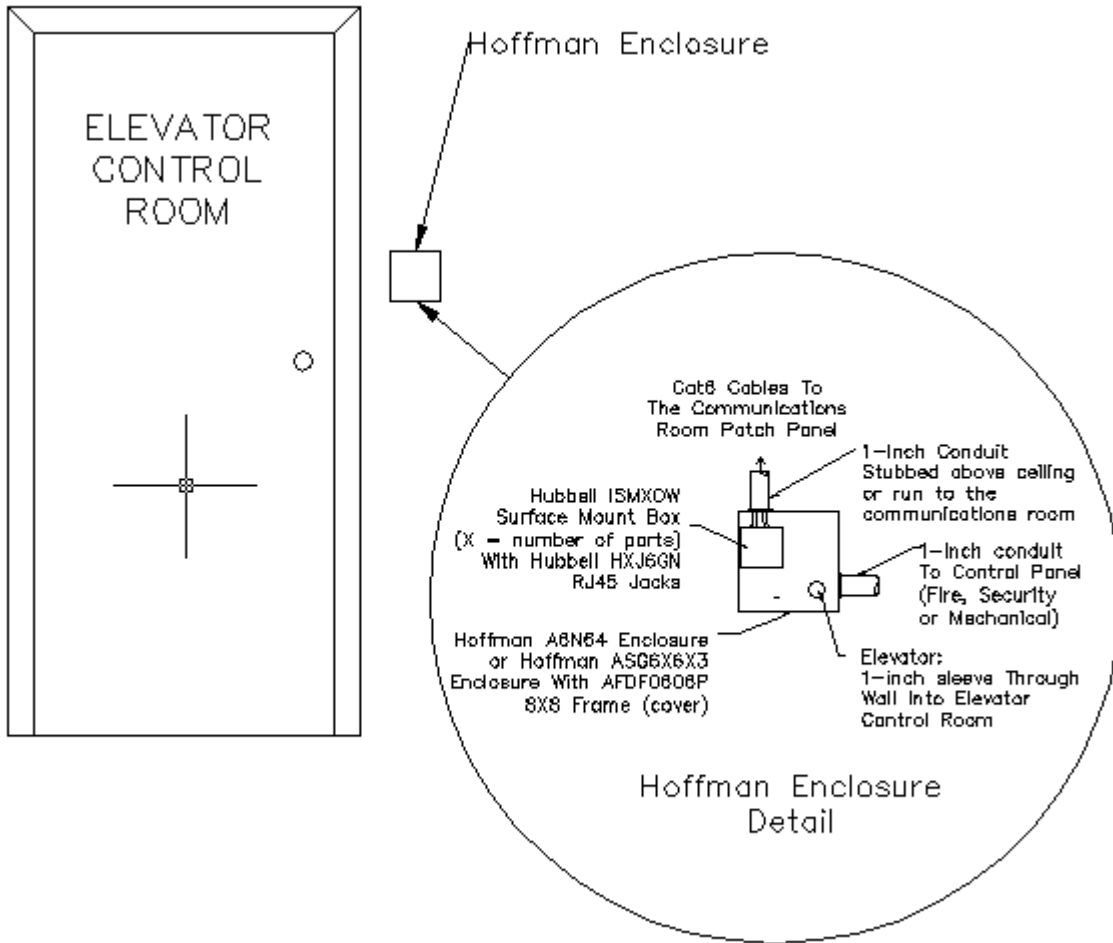
A second one inch conduit will be installed between the Hoffman style enclosure and the control panel. The control panel installers will use this second conduit for their jumper cable(s) between the control panel and the communications jack(s).

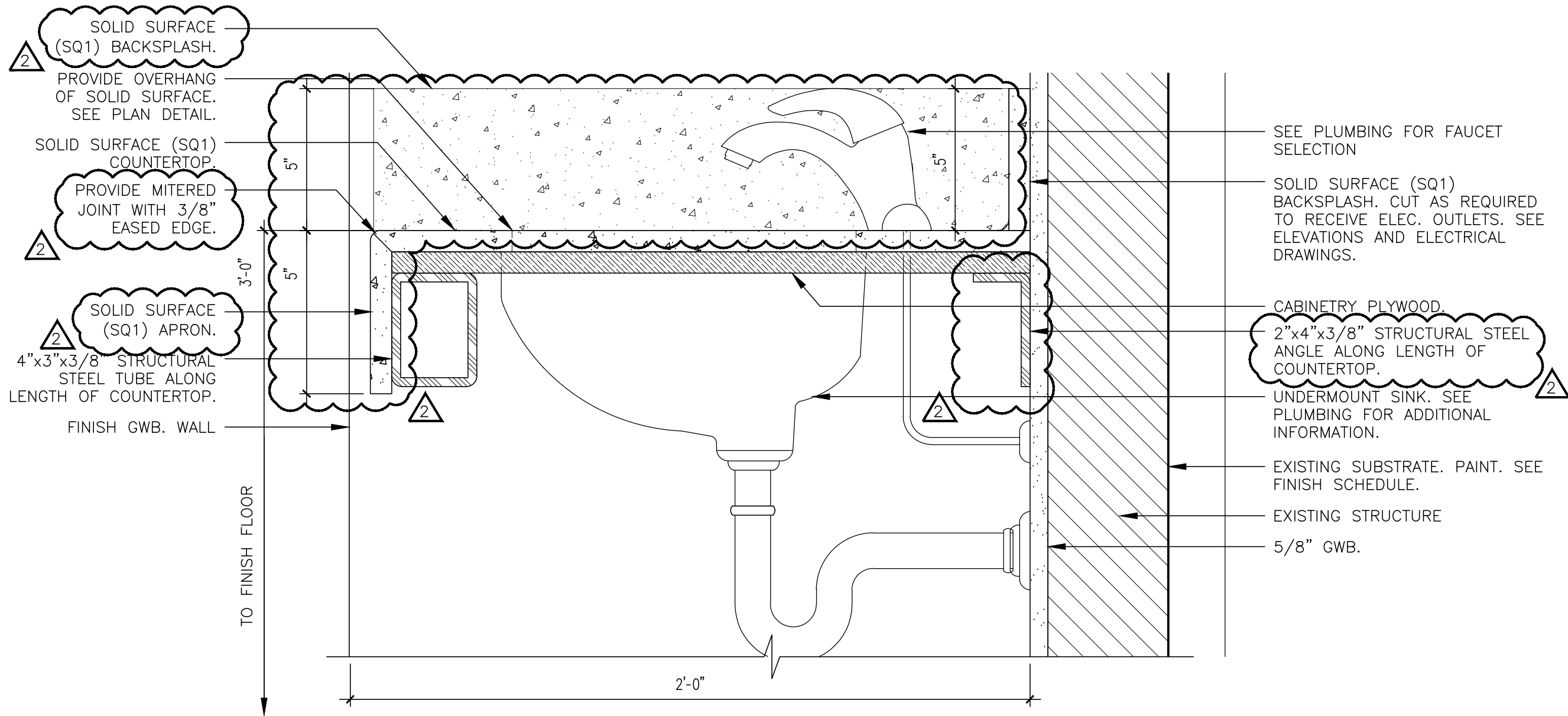
### **Elevator (phone / camera)**

A surface or flush mount 6X6 Hoffman style enclosure will be installed, 4 to 5 feet above the floor, on the outside wall of the elevator control room see figure 2. A one inch conduit will run from the Hoffman style enclosure, stubbed above the ceiling or run to the communications room for the communications cabling. Cat6 communications cables will run from the communications room and terminate in the Hoffman style box with cat6 communication jack(s); this will be the UTS demarcation point for the voice and or data service

A one inch sleeve will be installed from Hoffman style enclosure through the wall into the elevator control room. The elevator contractor will use this sleeve for the phone and camera jumper cable(s) between the elevator control panel and the communications jack(s) in the Hoffman style enclosure mounted outside the elevator room..

Figure 2





**B3 ENLARGED SECTION DETAIL**

SCALE: 3" = 1'-0"



△ CORRECTED DIMENSION SHOWN ON A102

5'-6"

ELEC.  
216

JAN.  
CLOSET  
214

PHENOLIC PH1  
PILASTER (TYP.)

PHENOLIC PH2  
DOOR (TYP.)

SOILD SURFACE  
SS2 PANEL (TYP.)

8'-2"

EQ.

EQ.

EQ.

EQ.

24" CLR.

PEDESTAL

24" CLR.

PEDESTAL

24" CLR.

BATHROOM  
215

CHASE  
218

FULL CHANNEL  
HARDWARE (TYP.)

2" MIN. (BTW. PEDESTAL & CURB)

PEDESTAL

SOILD SURFACE  
SS2 PANEL (TYP.)

9'-0"

EQ.

24" CLR.

PEDESTAL

SOLID SURFACE  
SS2 PILASTER  
(TYP.)

EQ.

24" CLR.

PHENOLIC PH2  
DOOR (TYP.)

PHENOLIC PH1  
PILASTER (TYP.)

EQ.

24" CLR.

3'-6"

2'-4"

6'-0"

A1

# TOILET PARTITION PLAN

SCALE: 1/2" = 1'-0"