

**RIVERSIDE COUNTY INFORMATION TECHNOLOGY  
CABLING INFRASTRUCTURE  
SUPPLEMENTAL INSTALLATION INSTRUCTIONS**



GENERAL CONDITIONS

HORIZONTAL STATION CABLING

PAGING CABLING

HORIZONTAL WIRELESS CABLING

SPECIAL SERVICES CABLING

ANALOG SERVICES

COPPER BACKBONE

FIBER BACKBONE

TELECOM ROOM

GROUNDING

## **GENERAL CONDITIONS:**

1. All cable distances are approximate, contractor is responsible for determining actual length during the mandatory bid walk or by scaling the floor plan.

## **1. Horizontal Station Cabling**

### **1.1. Materials: (See Document A for specific part numbers)**

- 1.1.1. All locations shall use Berk-Tek LANmark-1000 white cable.
- 1.1.2. All station cables shall use Leviton eXtreme high density patch panels.
- 1.1.3. All station cables shall use Leviton eXtreme, Cat6, RJ-45 modular jacks.
- 1.1.4. All wall phone locations shall use Leviton QuickPort configurable patch panels.
- 1.1.5. All wall phone locations shall use Leviton eXtreme, Cat6, RJ-45 modular jacks.

### **1.2. Installation Methods:**

- 1.2.1. General: Provide and install J-hooks, Pencil-rod (P-rod), and stringers (wire hangers) to support cabling. Cable bundles will be limited to 50 cables per J-hook and no more than 4-5' spacing between J-hooks.
- 1.2.2. Use stringer for a maximum of 25 cables per stringer and P-rod for 26 or more cables. A maximum of three J-hooks of 50 cables are allowed per P-rod. Cables will be bundled using Velcro straps in the Telecom Rooms in groups of 24 from the point the cable enters the room to the point of termination.
- 1.2.3. A minimum of 12" slack will be provided in the ceiling at each WAO location. Store cable slack in an extended loop and fasten to the conduit stub or J-hook using the properly rated Velcro strap. In the Telecommunications Room, all cables terminated will have a minimum 3' service loop installed in the vertical wire manger prior to the point of termination.
- 1.2.4. All installed cable will maintain a minimum 12" clearance from florescent light fixtures, HVAC motorized controls, and all other electrical interference generating devices.

### **1.3. County Standard (Dual) Work Area Outlet Termination:**

- 1.3.1. In the telecommunications room, all Standard work area outlet cables shall terminate on a Leviton eXtreme Category 6, 110 style high density patch panels, wired in accordance with the T568B pin configuration standard in their respective "A" & "B" Rows. Standard WAO cables shall not be combined into the termination of Data only or Special LAN cables on patch panels.
- 1.3.2. At the work area outlet, each WAO shall carry one location number; i.e. 1A-001 A&B use white Leviton 2-port faceplates for hard wall office locations and black 2-port faceplates for systems furniture locations.
- 1.3.3. The first cable shall terminate on a Leviton orange T568B jack (1A-001A).
- 1.3.4. The second cable shall terminate on a Leviton green T568B jack (1A-001B).
- 1.3.5. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.

- 1.3.6. Testing shall be performed in compliance with the test criteria in Document E.

### **1.4. Quad Work Area Outlet Termination:**

- 1.4.1. In the telecommunications room, all Standard work area outlet cables shall terminate on a Leviton eXtreme Category 6, 110 style high density patch panels, wired in accordance with the T568B pin configuration standard in their respective "A" & "B" Rows. Standard WAO cables shall not be combined into the termination of Data only or Special LAN cables on patch panels.
- 1.4.2. At the work area outlet, each quad WAO will carry two location numbers; i.e. 1A-001 A&B and 1A-002 A&B use white Leviton 4-port faceplates for hard wall office locations and black 4-port faceplates for systems furniture locations.
- 1.4.3. The first cable shall terminate on a Leviton orange T568B jack (1A-001A).
- 1.4.4. The second cable shall terminate on a Leviton green T568B jack (1A-001B).
- 1.4.5. The third cable shall terminate on a Leviton orange T568B jack (1A-002A).
- 1.4.6. The fourth cable shall terminate on a Leviton green T568B jack (1A-002B).
- 1.4.7. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.
- 1.4.8. Testing shall be performed in compliance with the test criteria in Document E.

### **1.5. Wall Phone Cable Termination:**

- 1.5.1. In the telecommunications room, all Wall Phone cables shall terminate onto white Leviton eXtreme Cat6 T568B modular jacks. Install the jacks into a QuickPort field configurable patch panel.
- 1.5.2. At the work area outlet, terminate the cable onto a white Leviton eXtreme Cat6 modular jack. Install the jack into a stainless steel Leviton wall phone plate.
- 1.5.3. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.
- 1.5.4. Testing shall be performed in compliance with the test criteria in Document E.

## **2. Paging Cabling**

### **2.1. Materials: (See Document A for specific part numbers)**

- 2.1.1. All paging locations shall use General 1-pair 18 AWG speaker cable.
- 2.1.2. All paging cables shall terminate using a Paging distribution strip and terminal blocks.
- 2.1.3. All indoor speakers shall be Bogen surface mount speakers.
- 2.1.4. All indoor speakers shall be mounted using a Bogen tile bridge.

### **2.2. Paging Cable Termination:**

- 2.2.1. In the telecommunications room, all paging cables shall terminate onto an Allen Bradley steel mini din mounting rail using mini terminal blocks and side jumpers.
- 2.2.2. At the speaker location, terminate the cable onto a SM4T surface mount speaker using the provided wiring nuts. Set all taps to .5 watts and volume adjustment knobs to half (5 of 10).
- 2.2.3. One individual leg shall not have more than (10) speakers connected.
- 2.2.4. Test all paging speakers and zones for proper operation and sound levels; adjust as needed.

- 2.2.5. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.

### 3. Horizontal Wireless Cabling

#### **3.1. Materials: (See Document A for specific part numbers)**

- 3.1.1. All locations shall use Berk-Tek LANmark-10G2 white cable.
- 3.1.2. All wireless horizontal cables shall use Leviton QuickPort configurable patch panels.
- 3.1.3. All wireless horizontal locations shall use blue Leviton eXtreme, Cat 6A, RJ-45 modular jacks.
- 3.1.4. All wireless horizontal locations shall use a Leviton 2-port surface mount box with a QuickPort in ceiling bracket with clip.

#### **3.2. Wireless Work Area Outlet Termination:**

- 3.2.1. In the telecommunications room, all wireless horizontal cables shall terminate onto blue Leviton eXtreme Cat6A T568B modular jacks. Install the jacks into a QuickPort field configurable patch panel
- 3.2.2. At the work area outlet, terminate both cables onto blue Leviton eXtreme Cat 6A modular jacks. Install the jacks into a Leviton 2-port surface mount box. Attach the surface box to a ceiling stringer using a QuickPort in ceiling bracket with clip.
- 3.2.3. Each work area outlet shall carry two location numbers; i.e. 1A-701 and 1A-702.
- 3.2.4. Each cable shall terminate on a Leviton blue T568B jack.
- 3.2.5. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.
- 3.2.6. Testing shall be performed in compliance with the test criteria in Document E.

### 4. Special Services Cabling

#### **4.1. Materials: (See Document A for specific part numbers)**

- 4.1.1. All locations shall use Berk-Tek LANmark-1000 series white cable.
- 4.1.2. All special services cables shall use Leviton eXtreme, Cat6, RJ-45 modular jacks.
- 4.1.3. All special services cables shall use Leviton QuickPort configurable patch panels.

#### **4.2. Special Services Termination:**

- 4.2.1. In the telecommunications room, all special services cables shall terminate onto specific designated colors using Leviton eXtreme Cat6 T568B modular jacks. Install the jacks into a QuickPort field configurable patch panel.
- 4.2.2. The special services cables shall terminate onto the following designated colors:
  - Entrance Facility/MPOE modular jacks shall be orange in color
  - LAN Extension modular jacks shall be green in color
  - T1 Extension modular jacks shall be purple in color
  - Security modular jacks shall be yellow in color
  - AV, TV and projector modular jacks shall be ivory in color
  - Special purpose, i.e. modular jacks shall be crimson in color
- 4.2.3. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.

4.2.4. Testing shall be performed in compliance with the test criteria in Document E.

### 5. Analog Services

#### 5.1. Materials: (See Document A for specific part numbers)

- 5.1.1. All locations shall use 25-pair Amphenol cables.
- 5.1.2. All analog services cables shall use Leviton 24-port voice grade patch panels with Amphenol connector.
- 5.1.3. All analog services cables shall use Leviton 300-pair 110 blocks.

#### 5.2. Analog Services Termination:

- 5.2.1. In the telecommunications room, terminate the open end of the analog services cable onto the designated area of the 110 voice frame; install the Amphenol end onto the 24-port voice grade patch panel on the designated rack location.
- 5.2.2. In the telecommunications equipment rack, maintain a minimum of 3' service loop installed in the vertical wire manger prior to the point of termination.

### 6. Copper Backbone

#### 6.1. Materials:

- 6.1.1. Reference Document A for part numbers.

#### 6.2. Copper Backbone Termination:

- 6.2.1. In the telecommunications room and Entrance Facility, all copper backbone cables shall terminate onto the designated area provided in the scope of work, reference Document A for part number of termination hardware.
- 6.2.2. All cables shall include 15' for vertical transition at each end and 20' of routing length in each Telecom Room.
- 6.2.3. All copper backbone cables shall enter the termination blocks from the bottom.
- 6.2.4. Ground each end of all backbone cables by installing a #6 AWG stranded copper ground wire from the TMGB to the shield bond connector..
- 6.2.5. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.
- 6.2.6. Testing shall be performed in compliance with the test criteria in Document E.

### 7. Fiber Backbone

#### 7.1. Materials: (See Document A for specific part numbers)

- 7.1.1. All fiber backbone cables shall use Berk-Tek cable.
- 7.1.2. All fiber backbone cables shall use Leviton connectors.
- 7.1.3. All fiber backbone cables shall use Leviton enclosures.
- 7.1.4. All fiber backbone cables shall use Leviton adapter plates.

#### 7.2. Fiber Backbone Termination:

- 7.2.1. In the telecommunications room and Entrance Facility, terminate all strands of fiber onto the designated area provided in the scope of work, reference Document A for part number of termination hardware.
- 7.2.2. All fiber distances shall include a 30' maintenance loop on both ends.
- 7.2.3. Strict compliance with TIA/EIA 568-B.3 to ensure reverse-pair polarity on all 568SC connectors will be obtained. Terminated fiber pairs shall be crossed at the distant end patch panel so fiber 1 at the near end will be connected to fiber 2 at

the far end, fibers 3/4; 5/6 etc. are placed likewise. Designation of near end/far end in relation to the runs are as follows: Telecom Room 1A is considered the near end on all runs.

7.2.4. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.

7.2.5. Testing shall be performed in compliance with the test criteria in Document E.

## 8. Telecom Room

### 8.1. Materials:

8.1.1. Reference Document A for part numbers.

### 8.2. Telecom Room Installation:

8.2.1. All racks shall be anchored using 1/2" drop-in anchors and washers.

8.2.2. Cable runway shall be attached using 3/8" lag bolts.

## 9. Grounding

### 9.1. Materials:

9.1.1. Reference Document A for part numbers.

### 9.2. Grounding Installation:

9.2.1. In the telecommunications room install (1) Telecommunications Main Ground Bus Bar in the designated location. ***Bonding to building ground shall be performed by the electrical contractor working on this project.***

9.2.2. Install a #2 AWG stranded copper ground wire from the Telecommunications Main Ground Bus Bar down the length of each rack row. Attach the #2 ground wire to the bus bar using a two-hole long barrel compression lug.

9.2.3. Install a #6 AWG stranded copper ground wire from the #2 AWG conductor to each rack; attach the #6 ground wire to the #2 conductor using a compression H Tap and a two-hole long barrel compression lug.

9.2.4. Install a #6 AWG stranded copper ground wire from the Telecommunications Main Ground Bus Bar to the cable runway; attach the wire using two-hole long barrel compression lugs.

9.2.5. Install 1 grounding strap for each piece of cable ladder at every junction point.

9.2.6. Labeling shall be compliant with TIA/EIA 606 labeling specifications and numbering scheme will be provided by RCIT.

9.2.7. All surfaces to be bonded must be sanded or an abrasive tool used to remove paint or any protective coating so that to provide a good bonding surface. Apply an Antioxidant Joint Compound on all bonding connections. All bonding conductor connections shall use a two hole lug with the holes 5/8" (center-to-center) apart and secured with two 1/4" bolts. Lugs can be either a mechanical or compression type connector.