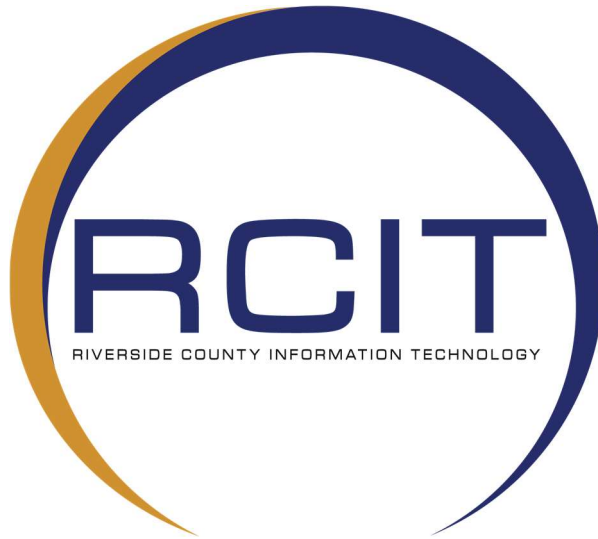


**RIVERSIDE COUNTY INFORMATION TECHNOLOGY  
CABLING INFRASTRUCTURE  
SUPPLEMENTAL INSTALLATION INSTRUCTIONS**



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

# Document F

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.