

Contractor shall use grommets/bushings to protect the cable when passing through metal studs or any openings that can possibly cause damage to the cable. This includes grommets on ends of hard conduit where used.

Do not deform the jacket of the cable. The jacket shall be continuous, free from pinholes, splits, blisters, burn holes or other imperfections.

Install proper cable supports, spaced less than 5 feet apart, and within manufacturer's requirements for fill ratio

Leave a pull string to the end of each conduit run. Replace pull string if it was used for a cable pull.

Note service loops may not touch the drop-ceiling assembly. Any portion of the communications cabling contacting ceiling structures must be remedied at the Contractor expense.

Label every cable within 12 in. of the ends with self-laminating wire wrap cable appropriate to that cable size. Use a unique number for each cable segment as required by the project documentation and the labeling section of this document.

Dress the cables neatly with hook and loop fire retardant cable ties. Plastic ties are NOT approved. Contractors installing cabling systems in Williamson County facilities shall install plenum rated cable in all instances. Non-plenum cable is not allowed and shall be removed at Contractor's expense.

No pathway, including conduits shall have greater than a 35% fill per manufacturer fill charts. Contractor is responsible for bringing to the attention of Williamson County project manager any insufficiently sized conduit or cable pathways discovered on site or in project documentation

#### Metal Conduit

b. Contractor shall size conduit large enough to accommodate at least 50% growth. I.e. conduit for 4 cables shall be sized to accommodate 6 cables at less than 40% calculated fill based on cable OD.

For in telecom patch fields, Wilco projects use color coded small diameter patch cords to indicate various circuits. These colors and circuits they represent are as follows:

<p>Blue = Common Data Drops Black = Utility (AC/Building Maint.) Yellow = Security (Cameras/Door Access) White = Wireless AP Red = Public Safety</p>
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#### 1. Cable Ties

a. Cable bundles on racks and in pathways shall be bundled with re-enterable hook and loop cable ties that come in continuous rolls. NYLON CABLE TIES ARE NOT PERMITTED UNDER ANY CIRCUMSTANCES.

b. Contractor is responsible for using plenum hook and loop ties in air-return spaces.

#### Rack and Equipment Grounding

- a. Contractor is responsible for properly grounding all network equipment, racks and cabinets and bonding them to the wall mounted busbars as described in the TIA 607-C standard.
- b. All newly installed racks and cabinets shall have installed a vertical busbar mounted along one equipment rail to serve as a clean, low-resistance bonding place for any equipment not equipped with a designated grounding pad.

Smaller equipment without an integrated grounding pad shall be bonded to the vertical busbar using a thread-forming grounding screw that is anodized green and includes serrations under the head to cut through oxidation or paint on the equipment flange.

Larger equipment (chassis switches) with a designated grounding terminal shall be bonded to the vertical busbar with an EBC (equipment bonding conductor) kit built to that purpose.

Contractor shall take care to clean (wire brush, scotch brite pads) any metallic surface to be bonded down to bare metal and apply a film of anti-oxidation paste to the surfaces prior to effecting the bond. All bonding lugs on racks and busbars shall be of two-hole irreversible compression type. Mechanical lugs and single-hole lugs will not be accepted and shall be removed and replaced at Contractor's expense.

Every rack or cabinet shall have an individual bonding conductor into the grounding network, serially connecting (daisy-chaining) of racks is expressly forbidden and will not be accepted.

Labeling will identify the Floor and Port Number. Ex: 1st floor = 1-201, 2nd floor = 2-201, If there is multiple IDF's on a floor they will be separated as A,B. Example: 1st floor A1-201, B1-201, 2nd Floor A2-201, B2-201.

All label printing will be machine generated by either hand-held labeling systems or computer-generated using programs and materials built specifically for communications labeling.

Handwritten labels will not be accepted and must be remedied at Contractor's expense.

All labels will be permanently affixed to installed cables, patch panels, racks, cabinets, and enclosures.

Conduit shall be marked indicating the identification of the cable within.

Labels shall be legible and placed in a position that insures ease of visibility.

**The following general rules apply to all vendors, contractors and subcontractors:**

1. **ALL Facilities are Smoke Free.** No smoking in any area of the buildings, roof or loading docks.
2. All workers are expected to behave professionally. Please remember the importance of your appearance and professionalism in and around our buildings.
3. All contractors must wear proper attire while on the premises. Shirts or hats with profanity are not permitted on the property. All contractor employees must have identification with their company's name on it.
4. All combustible and flammable materials or liquids must be stored properly, and the Facilities Department must be notified of the presence of such materials.
5. Please check in at the Construction site or Facilities department for building access and/or prior to starting any work, unless otherwise specified.

**General Requirements:**

- 1) All construction and construction related activities will conform to all State, Local, Federal & OSHA laws
- 2) Contractor shall ensure that the construction site and adjoining areas including hallways and access ways are always kept clean. Areas not under construction but affected by or used during construction are to be protected from damage. Floors and carpets are to be covered with protective materials.

- 3) Contractor shall be responsible for the repair of all damages caused by them or their subcontractors.
- 4) Construction signs and/or barriers visible to tenants and guests of the building must be approved by Facilities prior to installation.
- 5) Physical or verbal abuse or harassment of any individual is prohibited.
- 6) Workers will be allowed in area where construction is taking place. All work which requires entering other tenant areas or common areas will be coordinated with Facilities.
- 7) Work being done outside of the hours of 8:00 am – 5:00 pm must be coordinated with Facilities or Technology Services departments.

## **Cleaning**

- 1) It is expected that all areas outside of the work area will be kept clean to include but not limited to:
  - a) Common areas
  - b) Elevator/Loading dock routes
  - c) Exterior areas
- 2) Work areas must always be kept clean. Each contractor is responsible for removing any trash or debris associated with their work activities. It is the contractor's responsibility to vacuum and dust common areas if work activities create excessive dust and trash
- 3) It is expected that walk off mats will be used at all areas of entry and exit of the space. The mats should be changed frequently to keep a tidy appearance and upon request of Facilities or Technology Services.
- 4) It is expected that if construction deliveries coming from the loading docks cause excessive dirt and damage to the existing finish of the common area floors as deemed by Facilities, the contractor will be expected to reimburse the facility for stripping and waxing or cleaning of the carpet. If this policy is not adhered to, the building will take appropriate action and charge back the contractor all costs associated with the activity.
- 5) If damage does not clean or is unable to be repaired the contractor will be responsible for the replacement of the goods.
- 6) Utility sinks are to be cleaned if used. No construction waste, paint thinner or other obstructing or hazardous materials are to be poured down the drain or left to clog the sinks
- 7) Carpets and flooring within the work area as well as the common areas must always be maintained in a clean and undamaged condition. Contractor shall be responsible for any damage and should report any preexisting conditions prior to the commencement of work.
- 8) Fire Exit doors and/or evacuation pathways must be open at all time and free of debris or clutter
- 9) There will be a mandatory post work inspection completed. This will consist of a representative from Facilities, along with a representative from the company completing the work. This will be to inspect the work completed, as well as the cleanliness of the area at the finish of the project. The associated post inspection form must be completed and signed by both representatives. Any requests made from the facilities department during this time must be met prior to receiving payment for work. If contractor does not comply with post work inspection, they will be back charged for any costs associated with the issues.

## **Construction**

- 1) All Air Handling Returns must be sealed during construction. Contractors must notify Facilities prior to using any products that could generate dust or odors that may migrate into the buildings HVAC system or other tenant spaces. Off hour restrictions may be required.
- 2) All construction related trash must be properly disposed of in a construction dumpster by contractor. Facilities will approve location.

- 3) A representative of the Facilities department will attend all weekly job meetings.
- 4) The owner reserves the right of first refusal on all demo'd materials
- 5) All Wilco buildings are smoke free
- 6) Any unused materials such as conduit, wiring, building materials must be disposed of by the contractor
- 7) Prevailing wage rates must be posted at the worksite in accordance with M.G.L. ch.149 sec.27. It is the responsibility of the contractor to maintain all state and local postings
- 8) Hot Works- will be coordinated and permitted through the Facilities Department. Prior to any welding, soldering or metal cutting, contractors must present the Facilities Department with a fire plan and proof of fire watch and permit.

#### **Noise coordination**

- 1) All noise will be contained. Please keep all doors closed to help to contain sound as well as dust. No radio music will be allowed
- 2) County occupied space will be handled with the utmost respect.
- 3) Complaints of excess noise will be handled immediately. Management reserves the right to stop all work if the work causes complaints from other tenants. Any charges, fees and/or other costs associated with scheduled or non-scheduled work stoppage is the responsibility of the contractor doing the work.
- 4) All floor and wall penetrations must be fire stopped.

#### **Core Drilling**

- 1) Core Drilling or any other work causing noise disruption must be coordinated with the Facilities Department. Absolutely no work will be permitted that in any way disrupts daily activities during class times or normal working hours unless prior authorization from Facilities is granted

#### **Elevator Use**

- 1) The elevators will be used according to their proper designation and weight capacity. Freight Elevator will be used for all construction related materials and or utility carts
- 2) Priority use must be given to staff use. Please do not enter an elevator with construction equipment with staff.
- 3) Floor and wall protection must always be used

#### **Loading dock**

- 1) Use must be coordinated with Facilities.
- 2) Deliveries must be coordinated with Facilities.
- 3) Loading docks will be kept clean and free of construction materials. Storage is not allowed on or around the loading dock
- 4) Floor protection must be used when entering the common areas from the loading dock
- 5) No Smoking on or around the loading dock area

#### **Security**

- 1) A contact lists must be provided to the Facilities department of all Trades, to include emergency contact information
- 2) The list will be given to the Project Manager
- 3) Absolutely no smoking in project area or within any building on site.
- 4) No alcohol is allowed in any project areas.
- 5) Entry to other non-project related spaces or unauthorized areas are strictly prohibited.

#### **Parking**

- 1) Vehicles will be allowed access on site for unloading and loading purposes only identification. Any Vehicle parked in unauthorized areas will be towed at the owners' expense.
- 2) Overnight parking is not permitted
- 3) Parking of Trailers must have prior authorization from the Facilities department

- A. Permits for all wiring will be required. NO EXCEPTIONS
- B. Telecom or electrical wiring will be run in conduit, independently of all other conduit unless the conduit is specifically designated for that particular wiring. Wiring is never to be hung from or connected to HVAC piping or ducts or fire suppression equipment and piping.
- C. All telecommunication and electrical closets are designated areas for Telecom and network equipment. Closets will be organized and free of clutter. Wiring closets are not to be used for storage and will be readily accessible at all times.
- D. All telecom and electrical wiring will be marked with project name and location name and demarcation points. Ends will be clearly marked with destination location.
- E. All work will be completed with the approval of the Facilities Project Manager or Technology Services Systems Engineer.
- F. All holes drilled through walls, ceilings and floors etc. will be fire stopped and labeled. Temporary use or construction means, and methods still must be approved by Facilities and Technology Services
- G. All contractors must sign in at the Construction office daily. Appropriate permits must be posted at the work area. Contractors must submit all hot works permits to Facilities at least 72 hours prior to work. Hot works permits are approved by the Facilities Department. Work may not be done without approval. Contract must arrange with the Facilities Department to be able to take the fire alarm offline with prior to any work being performed
- H. Hours for drilling or any other work that will create noise/vibrations during the academic year will only be allowed between 11 p.m. to 7 a.m. unless exceptions are made by the Facilities Project Manager. Any work creating noise done outside those hours will be shut down by the Facilities department.
- I. Intervals of labeling of conduits and wiring will be left to the discretion of the Technology services Systems Engineer or designee and wiring code, however a minimum of every 8-10' is required. Labels should be clearly placed and the beginning and end of each run.