1 General

1.1 Scope of work

1.1.1 Work covered by this Section shall consist of furnishing labor, equipment, supplies, materials, and testing unless otherwise specified, and in performing the following operations recognized as necessary for the installation, termination, and labeling of horizontal coax infrastructure as described on the Drawings and/or required by these specifications.

2 Products

Note: It is Purdue’s expectation that the A/E of Record will work jointly with Purdue’s Telecommunication representatives to address specific technical issues and Owner requirements. All questions, deviations, comments concerning guideline(s) interpretation, content, and/or use must be submitted in writing to the Project Manager for approval. No deviations from these guidelines shall be incorporated into the project without written approval from the Project Manager and Purdue Telecommunications representative.

2.1 Coax Cabling

2.1.1 Horizontal Cables (CATV) - Provide CATV cables from PIC outlets in rooms through conduits to skeletal then through skeletal to IDF or BDF.

2.1.1.1 Each CATV cable shall be Type RG-6, 18 gauge, solid copper center conductor, with overall Black PVC jacket, CMR rated.

2.1.1.2 Manufacturer shall be Belden #9116R.

2.1.1.3 Where plenum CATV cable is required use Belden #9116P with overall natural Flamarrest jacket, CMP rated.

2.1.1.4 New buildings shall utilize plenum cabling in the entire building.

3 Execution

3.1 Telecommunications Installation

3.1.1 General:

3.1.1.1 This Section describes the installation locations for the products and materials, as well as methods and Owner’s Standards associated with the Telecommunications Installation portions of the Project. These Specifications, along with the drawings and other Owner supplied specifications shall be followed during the course of the installation.

3.1.1.2 The Contractor is instructed to coordinate his efforts with the other tradesmen who may be working within the same vicinity to avoid conflict and lost time.

3.1.1.3 The Contractor is required to supply all necessary tools, equipment, accessories, safety equipment, protective clothing, etc., as customary for the craft and necessary for the installation.

3.1.1.4 The Contractor shall verify space requirements and locations with the Purdue IT Infrastructure Services Department before starting cable installations and terminations.

3.1.1.5 The Contractor shall verify the cable type and jacket rating required with the Purdue IT Infrastructure Services Department before starting coax installation.

3.1.1.6 The Contractor shall verify existing cable fill in skeletal conduit, raceway or cable tray system before installation of additional cables so as not to exceed 40% cable fill. Contractor will be responsible for installation of additional skeletal conduit, raceway or cable tray where additional cables to be added will exceed the 40% cable fill. See cable fill attachment, 3.01 Attachment #1.

3.2 Skeletal and Empty Station Conduits

3.2.1 Provide a nylon pull cord in each empty conduit to facilitate future installation of cables.

3.2.2 Provide a nylon pull cord in each empty conduit and extended in raceway to openings for PIC faceplates to facilitate future installation of cables.

3.3 Horizontal Coax Cabling

3.3.1 The horizontal coax cabling will be terminated at the telecom room on a wall designated by a Purdue IT Infrastructure Services Representative.
3.3.2 Contractor is responsible to obtain and follow installation instructions for Belden products for correct termination and coax management of cables on respective products.

3.3.3 Owner to provide future taps, splitters, and amplifiers.

3.3.4 All coax terminations shall be done with compression style coax connectors.

3.4 General Coax Installation

3.4.1 Cable lengths within boxes shall be adequate to permit installation and removal of device for inspection without damage to cable or connections (minimum of 6”).

3.4.2 Cable bends shall not be greater than that recommended by the manufacturer of the cable.

3.4.3 Care shall be taken so as not to damage cable during the installation process and that manufacturer’s pull tension specification is not exceeded.

3.4.4 Route cables so that no horizontal cable exceeds 90 meters between TR termination and device jack termination. Contact the Purdue IT Infrastructure Services Department if this is not probable with TR location.

3.4.5 Provide a minimum 8’-0” and maximum 10’-0” of slack. Loop at the TRs to be contained in the cable tray.

3.4.6 Within TRs, cables shall be snugly wrapped using Velcro reusable cable ties, a minimum of every 3’-0” for cable organization. Wire ties shall be tightened so as not to deform cable jackets and thus affect cable performance.

3.4.7 Cable fill in station conduits, skeletal conduits, raceway, and cable tray shall not exceed 40% cable fill.

3.4.8 Telecom rooms must be free from dust, dirt, and other foreign materials before the installation of any termination hardware or the termination of copper or fiber optic cables. The door to the telecommunication rooms must be installed and closed during termination.

3.5 Cable Testing

3.5.1 The CATV horizontal station cabling consisting of RG-6 shall be tested for length utilizing a Fluke DTX or Fluke DSX tester. Test unit shall be set up using RG-6 cable selected. All tests shall be conducted at the opposite end from the BDF\IDF. Contractor shall provide electronic test results and summary report in Fluke Linkware (.flw) format for each CATV outlet. Testing required is 100%. Contractor shall provide the test results on a CD at the end of the project. Purdue IT Infrastructure Services Department will expedite activation of service before substantial completion if test results are submitted electronically via email. Purdue IT Infrastructure Services Department will perform random verification testing as part of acceptance of all CATV cable testing. Summary report shall have additional information on the sheet to indicate building and the telecom room.

3.6 Equipment Installation and Cable Terminations

3.6.1 All equipment shall be installed in a neat and workmanlike manner, arranged for convenient operation, testing and future maintenance.

3.6.2 All coax cables shall be installed and terminated by technicians experienced in the installation and termination of coax cables.

3.6.3 The Contractor shall employ certified system installation technicians and have at least 5 years experience in the installation of similar and equivalent systems.

3.6.4 The Contractor shall supply verification of experience, for this type of work, to the Architect for approval before performing any work.

3.7 As Built Information

3.7.1 Contractor shall provide as-built information along with all test result information to the Purdue IT Infrastructure Services Department.

3.7.2 As-built information shall be in red-lined format on a copy of construction drawings. Indicate location of all PICs, skeletal and riser conduit routes, distribution cable trays, junction boxes, and all additions and deletions pertaining to telecommunications. Include correct PIC labeling next to all telecom symbols.

3.7.3 If construction drawings are not utilized, Contractor shall provide all telecommunications location information on an accurate scaled floor plan.

3.7.4 Contractor shall perform all labeling requirements and provide testing documentation for verification as described herein.

3.7.5 Contractor shall submit cable records to reflect all moves, adds, and changes.

3.7.6 Contractor shall provide floor plans showing locations of all telecommunication outlets and spaces.
### Table 1

<table>
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<th>Conduit size</th>
<th>¾ EMT</th>
<th>1&quot; EMT</th>
<th>1 ¼ EMT</th>
<th>1 ½&quot; EMT</th>
<th>2&quot; EMT</th>
<th>3&quot; EMT</th>
<th>4&quot; EMT</th>
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<tr>
<td>AREA (sq.in)</td>
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<td>7.38</td>
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<td>.81</td>
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<td>6</td>
<td>10</td>
<td>14</td>
<td>23</td>
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<td>103</td>
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<tr>
<td>9116P**</td>
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<td>7</td>
<td>13</td>
<td>18</td>
<td>30</td>
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Please note 20% fill for Wiremold.

*RG-6 = Belden #9116R (riser rated) \( .270" = \text{O.D.} \)

**RG-6 = Belden #9116P (plenum rated) \( .235" = \text{O.D.} \)

Contact Owner’s Representative for riser cable or entrance cable fill information