TABLE OF CONTENTS

NETWORK AND VOICE INFRASTRUCTURE PLANNING .............................................. 1
VERSION CONTROL ............................................................................................. 1
PRE-BID REQUIREMENTS ..................................................................................... 2
MAIN TERMINAL ROOM SPECIFICATIONS (MDF) ............................................. 2
RISER AND DISTRIBUTION CABLING, CONDUIT AND CABLE TRAY ................. 3
FLOOR TERMINAL SPECIFICATIONS (IDF) ....................................................... 5
WORKSTATION CONDUITS, WIREMOLD AND OUTLETS ............................... 6
WIRELESS SPECIFICATIONS .............................................................................. 7
ONE CARD SPECIFICATIONS (LAUNDRY / VENDING MACHINES) .................... 8
VOICE SPECIFICATIONS AND DETERMINATION (VOIP / TDM) .................... 8
SWITCH VENDOR ............................................................................................... 9
CERTIFICATION REQUIREMENTS ...................................................................... 10
DOCUMENTATION REQUIREMENTS ................................................................ 10

APPENDIX
APPENDIX A – NETWORK SERVICES APPROVED PARTS LIST .........................
APPENDIX B – NETWORKING FACEPLATE DIAGRAM/SYMBOLS .....................
APPENDIX C – MARGINAL WAY SPECIFIC SPECIFICATIONS ...........................
Network and Voice Infrastructure Planning:
The following specification may be used by campus planners, architects and consultants when preparing design proposals and cost estimates for infrastructure in new and renovated buildings. The campus Facilities Department bears the primary responsibility for campus construction and renovation projects.

These specifications are intended to give general assistance to those planners, contractors, architects and consultants who are responding to requests for proposals and for bids issued by the University through the Facilities department.

What this document does NOT cover:
This document does not include any specifications for security devices (IP camera’s, emergency phones, access control devices), cable TV or audio / video needs. Those requirements are determined by University Police, Access Services, Comcast, and Instructional Services departments. Contacts will be provided upon request.

Questions about this document:
Any technical questions or clarification should be directed to Information Technology; Network Architecture Department or specifically Stephen Drescher (Stephen_Dresher@uml.edu). Any general questions pertaining to this document should be directed to Information Technology; Network Project Management Department or specifically Marcie Byrd (Marcie_Byrd@uml.edu).

There will be a main terminal room (MDF) in each building that all floor terminals (IDFs) will connect to. There may need to be multiple floor terminals (IDFs) per floor due to the length of cable runs. No cable runs are to exceed 295 feet from IDF to station location.

Version Control
The history of changes made to this document is listed below:

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>3/23/11</td>
<td>Marcie Byrd</td>
<td>Updated from the 2/1/11 version to include:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• rack layout diagrams</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• CCTV cabling on page</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Updated Wireless Specification on page</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Expanded VoIP / TDM sections</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• and reformatting to new layout</td>
</tr>
<tr>
<td>2.0</td>
<td>6/15/11</td>
<td>Marcie Byrd</td>
<td>• Changed the wireless spec</td>
</tr>
<tr>
<td>3.0</td>
<td>6/20/11</td>
<td>Marcie Byrd</td>
<td>• Added Marginal St Residence Hall Addendum</td>
</tr>
<tr>
<td>4.0</td>
<td>9/6/11</td>
<td>Marcie Byrd</td>
<td>• Added Pre-Bid section</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Added to Wireless Section – have the</td>
</tr>
</tbody>
</table>

* See Appendix A for Network Services Approved Parts List
Pre-Bid Requirements
Prior to the bid going out the Network Project Management team needs the following to be completed:

**Meetings:** The University Network Services department requires at a minimum, one meeting with the project managers during the design cycle to review plans and another meeting once the final specifications are ready to be submitted for bids.

**Bid Package to include:** The final design specifications must include the University Approved Room numbers and the University Approved wireless access point locations. The approved room numbers are provided by the facilities department. The approved wireless access point locations are determined by submitting the design specification in pdf format to the Information Technology – Network Engineering / Planning team. This team needs at a minimum, two weeks to review the plan and provide the physical termination locations for the access points. Finally, the latest version of this document needs to be requested and followed prior to the bid being released to ensure that the latest requirements are met.

**Master Schedule to include:** A key milestone for the IT department is the IT ready date. The IT Ready Date, defined below, is the date when IT can start installing equipment into the renovated space and needs to be at least 5 business days before services to the end users are required.

IT Ready Date:
- All copper cabling is terminated, labeled and tested
- All fiber cabling is terminated, labeled and tested
- Electrical needs in the closet are in place
- Lighting needs in the closet is in place
- The closet is a dust free environment AND
- All other work inside the closet is completed (ie. Painting, flooring, etc).

**Main Terminal Room Specifications (MDF)**
The MDF will be the central point of distribution for voice and data services to multiple IDF’s and also connect into the university core location for each campus. There are to be

---

* See Appendix A for Network Services Approved Parts List
two distinct entrance routes from each building to the campus backbone. The core locations are located in Fox Hall, Dugan and Cumnock.

- Construction of this MDF needs to be a minimum of 10’ x 10’. Door must swing out and the opening must be a minimum of 36” to get equipment racks in and out of the area.
- At least two 4’ x 8’ raised ¾” fire-rated plywood or plywood which is painted with at least two coats of fire resistant white paint shall be in each closet and the location will be determined by Network Services staff member.
- A standard University Network Services master key is needed to secure these closets and Card access is required.
- Floors in telecommunications closets shall be static resistant tiles. *Carpeted floors are unacceptable.*
- All electrical penetrations into the MDF are to be fire stopped and meet local building and fire codes.
- Electrical in each MDF is to include:
  - Four 120V 20AMP circuits with duplex receptacles
  - One 250V 30AMP twist lock receptacle
- If there is a generator for the building, then a dedicated circuit is to be provided to the MDF and each IDF.
- Cabling needs to be dressed in the MDF via ladder racks or basket trays.
- The MDF is to be cooled. Exhaust fans as the only cooling method are not acceptable.
- Fire suppressant system is required.
- Grounding: All metal components (racks, ladder tray, etc) are to be properly grounded and bolted to the floor per local code and industry standards.
- Work lights shall be provided with adequate lighting and be independently switched.
- All racks are to have doors on the horizontal and vertical wire management*
- Any cabling terminated in the MDF must follow the IDF specification (see Floor Terminal Specifications (IDF) below)

**Riser and Distribution Cabling, Conduit and Cable Tray**

The main terminal room (MDF) is attached to each floor terminal room (IDF) by a minimum of two but up to four cable systems.

Data Network – Copper twisted pair cables, Category 6

Data Network – Fiber multi-mode and single mode cable

Telephone Network – TDM: Copper House Pairs; VoIP: Both Data Network Fiber and Copper House Pairs

Cable TV (CATV) – Not addressed in this document

* See Appendix A for Network Services Approved Parts List
The Data Network **copper** twisted pair cable, Category 6, provides inter-terminal allocation of data services supporting both individual station, wireless access point and other such attachments. Cable is to be Category 6 or higher*, plenum rated if required by local code or local fire standards. Spools are to be 1000 feet per spool, all left over cabling is to be turned over to UML Network Services at completion of project. All contractors doing copper cabling must have proof of Ortronics certified class completion and must be in good standing for the current year. No cable runs are to exceed 295 feet from IDF to station location.

- All cables are to be terminated according to EIA/TIA 568-A Cat 6 standards.
- All cabling to follow industry standards and meet local codes (i.e. No cable ties to electrical or water pipes, no cabling exposed in the hallway)
- All cabling run within the hallway above suspended ceiling needs to be run in parallel and properly supported by J hooks.
- All cabling run below a ceiling needs to be concealed inside wiremold*.
- For new constructions, cabling for speaker wires and fire alarms need to be properly support and separated from other cabling. For renovated buildings, new secondary raceways will be required for speaker wires and fire alarms.
- Hook & Loop fasteners are required to be used in the closets and hallways. Tie wraps are not acceptable. Hook & Loop fasteners should be of sufficient length to wrap around cable bundle twice to accommodate future expansion.

The Data Network **fiber** cable risers consist of a composite of both multi-mode and single mode fiber cables terminated to EIA/TIA standards using rack-mounted nineteen inch (19.00”) patch panels. The number of fiber pairs from the MDF to each IDF will be a minimum of 48 single mode and 12 multimode strands. The number of fiber pairs from the MDF to the University Core will be a minimum of 72 single-mode and 24 multimode strands.

- All connectors will be SC style unless determined otherwise by UML Network Services Department.
- All fiber is to be labeled with P-Touch or similar electronic device. Handwritten labeling is not acceptable
- Electronic and hard copy test results are to be provided to UML Network Services Department. Any fiber that does not pass testing is to be repaired/replaced by installer.
- Contractor is to be certified in fiber termination.
- Fiber is to be 62.5 micron.
- Fiber is to be terminated in a rack complete with vertical and horizontal wire management*.
- Fiber is to be terminated at the top of the rack unless otherwise specified by UML Network Services.
- A service loop of 30 feet is to left inside the MDF and be properly secured and dressed.
- All fiber is to be in a ladder tray selected by UML Network services.
The Telephone Network requirement is different for a traditional TDM solution versus a VoIP solution. All newly renovated locations are encouraged to implement the VoIP solution and utilize the Data Network fiber. There are circumstances that in renovated spaces, using the existing traditional TDM solution is the most cost effective. Please see Voice Services section for more details.

Floor Terminal Specifications (IDF)
These closet specifications are for all closets including the IDF’s and the MDF. The MDF has additional requirements (see next section).

- Construction is to be no smaller than 8’ x 8’
- Door must swing out and not into the closet and width of door must meet industry standards.
- Network closets are to be accessible from hallway areas and not located inside other rooms.
- At least one 4’ x 8’ raised ¾” fire-rated plywood or plywood which is painted with at least two coats of fire resistant white paint shall be in each closet and the location will be determined by Network Services staff member.
- Closets are not to be shared with other building services, such as electrical and custodial. Reasoning is due to potential EMF interference and possible threat of damage to the equipment and wiring.
- Telecommunications closets shall not contain any type of sink, be used as custodial supplies storage or be used general storage areas (books, furniture, etc.).
- A standard University Network Services master key is needed to secure these closets.
- Floors in telecommunications closets shall be concrete or tile. Carpeted floors are unacceptable due to the potential for static electricity and the subsequent threat of damage to network distribution equipment.
- Where possible, telecommunication closets will be stacked on each floor.
- Each telecommunications closet will have a minimum of three (3) four inch sleeved core holes between floors. Empty core holes will be properly fire-stopped according to local code.
- All cables shall have a minimum of 30 foot service loops inside the MDF and shall have a minimum of 4 inch service loop at the workstation outlet.
- Adequate lighting is required throughout the closet space.
- All metal components (racks, ladder tray, etc) are to be properly grounded per local code and industry standards.
- All racks need to be bolted to the floor.
- Electrical in each IDF is to include:
  - 120V 20AMP circuits with duplex receptacles
  - 30 AMP 120V twist lock receptacle
  - Location of these outlets will be determined by UML Network Services Department.
- All closets need ventilation, exhaust fans are acceptable. If possible, HVAC would be good but is not a requirement.

* See Appendix A for Network Services Approved Parts List
All copper terminations for data in the closet are to be punched down on an high density 24 port category 6 or higher patch panel per university standards*

- All patch panels are to be located in a rack per UML Network Services determination.
- Cable terminations on the patch panels must be in numerical order by room number starting on the top of the rack. Even in a VoIP installation, all cables in each location will be patched together. For example, in room 101, in location 1, all 4 cables will be punched down next to each other (ie 101-1a, 101-1b, 101-1c and 101-1d) regardless of voice or data usage.
- There is to be two university standard* patch cords purchased for every network cable location included in installation. One must be white (voice style) and the other green (data style).

**Workstation Conduits, Wiremold and Outlet:**
All cable drops must have a minimum of 2 voice (category 6) and 2 data (category 6) unless specified differently by Network Services.
- Each resident in a resident hall or office space is provided, at a minimum, one cable drop consisting of four copper cables (2 voice and 2 data).
- Any office space greater than 8’ x 8’ should have a minimum of 2 cable drops with four copper cables (2 voice and 2 data).
- Any non-office space greater than 8’x8’ will need to have at least one cable drop consisting of four copper cables (2 voice and 2 data). Any exceptions need to be run by the Network Services department.
- Locations of the cable drops are to be on opposite sides of the room, enclosed within the walls and conduit provided to each location. Metal conduit is to be one inch (1”). Any unused conduits are to have a pull string left in place.
- Any unused gang openings will be filled with a blank module filler*.
- In the event that the cabling can not be run behind the walls, wire mold is required*, i.e. existing buildings with concrete walls.
- The height of the network location is to meet industry cable standards.
- Each cable drop will be labeled as (room#-drop#). The drop # is determined by walking into the room and numbering the cable drops from left to right working in a clockwise direction. All labels are to be electronically labeled with a P-touch or similar device, no handwritten labeling is accepted.
- **Wireless access point (AP)** pulls are to be university standard (See Wireless Specification for more details)
- **Timeclock** pulls (if required) are to be done with Pink category 6 cabling.*
- Any **One Card** (Vending / Laundry) pulls are required to be done with Orange category 6 cabling*.
- All **CCTV / IP based security camera** pulls are required to be done with Pink category 6 cabling*.
- University standard faceplates* are to be used and university standard icons are required on all cable drops. Color codes of wiring:
  | Cable Position Letter | Color |

* See Appendix A for Network Services Approved Parts List
Wireless Specifications:
As part of the overall university wireless initiative, all renovations must include wireless cabling. As noted in the Pre-Bid section, the final design specifications must include the University Approved Room numbers and the University Approved wireless access point locations. The approved wireless access point locations are determined by submitting the design specification in pdf format to the Information Technology – Network Engineering / Planning team. This team needs at a minimum, two weeks to review the plan and provide the physical termination locations for the access points.

Each access point (AP) location will consist of two standard green category 6 cables terminated in a faceplate either on the ceiling or on the wall (10” below the finished ceiling) but not higher than 10 feet off the floor. The location of these data drops will NOT be above the ceiling. The other end of the cable will be in the closet punched down in a patch panel and labeled per Network Services standard.

In addition to running and terminated the wireless locations, the cabling vendor is responsible for mounting the access points. The access points will be purchased and configured by the university but the cabling vendor is responsible for providing the 1’ patch cord, patching in the AP and mounting it with the provided mounting hardware in the appropriate locations (again specified by the university).
One Card Specifications (Laundry / Vending Machines):
Due to the nature of One Card machines (laundry / vending etc) being in unsecured areas, the university is requiring a special more secure jack for these locations. The jack (Ortronics Part # OR-403TJUSG), also noted in the Appendix A of this document, allows for a secure data drop in these unsecured locations. Note also, that there may be height requirements for these applications as well. For example, vending locations must have this jack located 75 inches off of the floor. All cabling, TracJack Modules and Faceplate icons for these applications must be orange.*

Voice Network:
As noted in the Riser and Distribution Cabling, Conduit and Cable Tray section, the voice network could be either traditional TDM or VoIP. All newly renovated locations are encouraged to implement the VoIP solution and utilize the Data Network fiber. There are circumstances that in renovated spaces, using the existing traditional TDM solution is the most cost effective. The cabling from the workstation for the VoIP solution is punched down exactly like the data network connections on a patch panel. The cabling from the workstation for the TDM solution is punched on 110 Blocks. (See diagrams below)

VoIP:

This solution is the recommended voice solution for new renovations on campus.
Although this solution utilizes the Data Network Fiber, it will still require a small amount
of riser pairs for emergency and elevator phones. The VoIP solution requires VoIP ready phones. It also requires a UPS and an Audio Codes Box (IP to analog converter appliance) for fax machines and other analog dependent equipment.

**Conventional TDM:**

This solution can be used in renovations that do not require additional house pairs. Once the cost of running additional house pairs to the terminated location is factored in, the TDM solution no longer makes financial or strategic sense for the university. For those situations the following specifications need to be used:

- Two pair crosswire is used to provide dial tone. All cross wiring is performed with B/Wh Or/Wh two pair cat 6 24 awg.
- Copper for voice services is to be terminated on category 6 or higher with appropriate 110 blocks on a raised backboard. All cables are to be terminated according to EIA/TIA 568-A Cat 6 standards.
- Station locations are to be terminated to the right of the riser pair terminations.
- All riser and station terminations are to be electronically labeled with a P-touch or similar device, no handwritten labeling is accepted.
- Riser cables will be terminated on 110 style punch down blocks.
- Punch-down order should follow traditional USOC color code order for multi-pair telephone cables punched on 110 Blocks.
- The amount of riser cable to IDF will be dependent upon the amount of stations needed to be fed.

**Switch Vendor:**

Due to compatibility and maintenance requirements, UML has chosen a single switch provider throughout campus. All switch gear must be Extreme Networks equipment and quotes must be provided through the Network Services department to ensure all components necessary are ordered.

* See Appendix A for Network Services Approved Parts List
Certification Requirements:
The Telecommunications contractor must be an approved Ortronics Certified Installer (CI) or an approved Ortronics Certified Installer Plus (CIP) member. A copy of certification documents must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with the Ortronics CI/CIP Program. Ortronics will extend a 15 Year Extended Product Warranty (for CI members) or a NetClear 25-year Warranty (for CIP members) to the end user (UML) once the Telecommunications contractor fulfills all requirements under Ortronics CI/CIP Program. For any project over 10 network drops, UML shall require a numbered certificate, from Ortronics, registering the installation for an extended warranty.

Documentation Requirements:
All cabling, both fiber and copper are to have test results submitted to UMass Lowell Network Services Department. Test results are to be submitted on a CD or another form of appropriate media acceptable to UMass Lowell. The disk shall be clearly marked on the outside front cover with the words “Project Test Documentation”, the project name, and the date of completion (month and year). The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document.

An electronic CAD drawing accurately reflecting all cable drop locations and corresponding labeling must be submitted to UMass Lowell Network Services on a CD or another form of appropriate media acceptable to UMass Lowell. Three printed copies of the CAD drawings must be submitted to UMass Lowell Network Services.

Digital photos of MDF’s and IDF’s are to be submitted at the completion of the project.
APPENDIX A – NETWORK SERVICES APPROVED PARTS LIST

**Faceplates:** Ortronics Category 6 TracJack Modules

<table>
<thead>
<tr>
<th>Part Numbers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-40300158</td>
<td>Series II Single Gang Faceplates**</td>
</tr>
<tr>
<td>OR-40300656</td>
<td>Series II TracJack Angled Bezel</td>
</tr>
<tr>
<td>OR-S21600</td>
<td>Series II, 1 unit, Category 6, 1 Port – for wall phones</td>
</tr>
<tr>
<td>OR-403TJUSG</td>
<td>Secured TracJack Wall Plate – for vending / laundry</td>
</tr>
<tr>
<td>OR-42100002</td>
<td>TracJack Blank Modules *</td>
</tr>
</tbody>
</table>

Faceplates Icons: Ortronics

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-TJ600</td>
<td>Fog White</td>
</tr>
<tr>
<td>OR-TJ600-26</td>
<td>Light Blue</td>
</tr>
<tr>
<td>OR-TJ600-24</td>
<td>Light Yellow</td>
</tr>
<tr>
<td>OR-TJ600-68</td>
<td>Gray</td>
</tr>
<tr>
<td>OR-TJ600-25</td>
<td>Light Green</td>
</tr>
<tr>
<td>OR-TJ600-22</td>
<td>Pink</td>
</tr>
<tr>
<td>OR-TJ600-23</td>
<td>Orange</td>
</tr>
</tbody>
</table>

**Patch Panels:** Ortronics - Category 6

<table>
<thead>
<tr>
<th>Part Numbers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-PHD66U24</td>
<td>24 Port, High Density, 568A/B Wired Patch Panel</td>
</tr>
</tbody>
</table>

**Patch Cords:** Ortronics - Category 6

*Standard Patch Cord Colors for Category 6 are Green

<table>
<thead>
<tr>
<th>Part Numbers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MC607-05</td>
<td>4 pair, 7ft, Green, Patch Cable</td>
</tr>
</tbody>
</table>

**Cable:** Berk-tek: LanMark 1000 Category 6.

Note: LanMark 2000 Category 6 may be required per Network Services.

<table>
<thead>
<tr>
<th>PVC</th>
<th>Plenum</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>10032459</td>
</tr>
<tr>
<td>Blue</td>
<td>10032455</td>
</tr>
<tr>
<td>Gray</td>
<td>10032452</td>
</tr>
<tr>
<td>Yellow</td>
<td>10032461</td>
</tr>
<tr>
<td>Pink</td>
<td>10042063</td>
</tr>
<tr>
<td>Green</td>
<td>10032479</td>
</tr>
</tbody>
</table>
# Equipment Racks: Ortronics Mighty Mo 6

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MM6706</td>
<td>7 ft Mighty Mo 6 Cable Mgmt 2 post Rack (6.5 inch channel depth)</td>
</tr>
<tr>
<td>OR-MM67SVR</td>
<td>7 ft Mighty Mo 6 Cable Mgmt 4 post Rack (6.5 inch channel depth)</td>
</tr>
</tbody>
</table>

## Wire Management: Ortronics Mighty Mo 6

### Cage with latches:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MM6VML704</td>
<td>7 ft Mighty Mo 6 Cable Management Rack (4” wide)</td>
</tr>
</tbody>
</table>

### Door:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MM6VMD706</td>
<td>7 ft Mighty Mo 6 Cable Management Rack (4” wide)</td>
</tr>
<tr>
<td>OR-MM6HM62RU</td>
<td>Mighty Mo 6 Horizontal Cable Management Panel, six-port finger spacing, cover, 2 rack units (3.5” x 19”), black</td>
</tr>
</tbody>
</table>

## Fiber Cable: Berk-tek (all multimode fiber is 62.5 micron)

### 72 Single Mode / 48 MultiMode Composite Fiber:

- Premise Style Plenum – PDP12B120-048CB3510/25-072AB0707
- Riser Rated – PDR12B120-048CB3510/25-072AB0707
- Armored Plenum - PDPK12B120-048CB3510/25-072AB0707
- Riser Rated - PDRK12B120-048CB3510/25-072AB0707

### Outside Plant Plenum – LTP12B120-048CB3510/25-072AB0403

- Riser Rated-LTR12B120-048CB3510/25-072AB0403
- Armored Plenum – LTPK12B120-048CB3510/25-072AB0403
- Riser Rated- LTRK12B120-048CB3510/25-072AB0403

### 48 Single Mode/ 24 Multi Mode Composite Fiber

- Premise Style Plenum – PDP12B072-024CB3510/25-048AB0707
- Riser Rated – PDR12B072-024CB3510/25-048AB0707
- Armored Plenum - PDPK12B072-024CB3510/25-048AB0707
- Riser Rated - PDRK12B072-024CB3510/25-048AB0707

### Outside Plant Plenum – LTP12B072-024CB3510/25-024AB0403

- Riser Rated- LTP12B072-024CB3510/25-024AB0403
- Armored Plenum – LTPK12B072-024CB3510/25-024AB0403
- Riser Rated- LTRK12B072-024CB3510/25-024AB0403

## Fiber Boxes: Rack Mounted

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-FC02U-P</td>
<td>Rack Mount Fiber Cabinet- Holds 6 adapter panels</td>
</tr>
<tr>
<td>OR-OFP-SCD06LC</td>
<td>Multimode Adapter panels</td>
</tr>
<tr>
<td>OR-OFP-SCD06AC</td>
<td>Singlemode Adapter panels</td>
</tr>
<tr>
<td>OR-OFP-BLANK</td>
<td>Blank Adapter Panel</td>
</tr>
</tbody>
</table>

Note: Adapter Panels have 3 duplex SC per panel = 6 fibers terminated per panel
APPENDIX B – NETWORKING FACEPLATE DIAGRAM/SYMBOLS

NOTE: VOICE & DATA ICONS ARE TO BE USED AND MATCH MODULE COLOR.

PART NUMBERS:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-40339900</td>
<td>VOICE FOG WHITE</td>
</tr>
<tr>
<td>OR-40328100</td>
<td>VOICE GRAY</td>
</tr>
<tr>
<td>OR-403329200</td>
<td>DATA BLUE</td>
</tr>
<tr>
<td>OR-40324200</td>
<td>DATA YELLOW</td>
</tr>
</tbody>
</table>

OR-TJ600 (x1) TRACJACK MODULE CAT 6, FOG WHITE

OR-TJ600-26 (x1) TRACJACK MODULE CAT 6, LIGHT BLUE

OR-TJ600-XX? (x1) TRACJACK MODULE CAT 6, GRAY

OR-TJ600-XX? (x1) TRACJACK MODULE CAT 6, YELLOW

---

TELEPHONE OUTLET DETAIL

VOICE ONLY OUTLET DETAIL

DATA (Wireless AP) OUTLET DETAIL

CCTV OUTLET DETAIL

DATA ONLY OUTLET DETAIL

---

FOG WHITE  TEL  TEL  DATA  DATA  YELLOW

GRAY  LIGHT BLUE  DATA  DATA  YELLOW

FOG WHITE

CABLE

DATA

DATA

DATA
APPENDIX C – MARGINAL WAY SPECIFIC SPECIFICATIONS

Due to the leaseback nature of the Marginal Way Residence Hall, the following specification changes have been made in addition to the standard UML Networking Specs.

Access:
The Network Services department will be required to have 24x7 access to the building and all their closets.

Cable Drop Specifications:
All cable drops must have a minimum of 2 data (category 6) unless specified differently by Network Services.

- A Double room there would be 2 drops with 2 category 6 cables; the left side will have 1 voice, 1 data and the right side will have 2 data.
- All suite or apartment common rooms are required to have a minimum of 1 cable drops with two copper cables (2 data), adjacent to the coax TV cable.
- Any unused ganged openings will be filled with blank module fillers*.
- Locations of the cable drops are to be on opposite sides of the room, enclosed within the walls and conduit provided to each location. Metal conduit is to be one inch (1”). Any unused conduits are to have a pull string left in place.
- In the event that the cabling cannot be run behind the walls, wire mold is required*, i.e. existing buildings with concrete walls.
- The height of the network location is to meet industry cable standards.

Each cable drop will be labeled as (room#-drop#). The drop # is determined by walking into the room and numbering the cable drops from left to right working in a clockwise rotation.

Paging System
Provide new multizone one-way paging system manufactured by Valcom. Speakers shall be 8 inch white Valcom P/N V1020, include ceiling bridge and backbox. Page control shall be Valcom 6 zone one-way page P/N V-2006A and V-9970. Power supply shall be Valcom P/N VP4124. Valcom paging system cabling shall be category 6 Berk-Tek P/N 10032094. See riser diagram below.
Wireless System:

This building will have a high density and wireless N capable wireless system using Aruba AP135. Each access point (AP) location will consist of two standard green category 6 cables terminated in a faceplate either on the ceiling or on the wall (10” below the finished ceiling or 10’ off the floor) with the other end in the closet punched down in a patch panel and labeled per Network Services standard. The location of these data drops will not be above the ceiling.