**Cabling**

Our plan is to install a demarcation point extension from the first floor to our entrance facility via plenum rated multi-mode fiber cable directly into our firewall. From here, the same plenum fiber connects to our core switch in our equipment room where 2 fiber trunks span to our distribution switches separately located in telecommunication rooms TR2A and TR2B. These distribution switches connect with fiber to each of our access switches vertically through our TRs and horizontally to the appropriate switch according to how our network bandwidth is load balanced.

Horizontal cabling is organized with cable trays attached to existing building infrastructure with threaded rods, allowing plenty of room within plenum space for cable expansion and providing easy cable management. Our access switches use Category 6 plenum rated cables to reach client work areas and access jacks within each office, all of which comply with TIA/EIA 568 standards. These jacks connect to Category 6 work area cables for each office, providing all employees with a reliable, fast network connection. Additionally, plenum rated fiber cables provide network redundancy between telecommunication rooms on each floor, and patch panels within network device racks allow fast accessibility to every port on every switch.

**Total Cable Lengths**

|  |  |  |  |
| --- | --- | --- | --- |
| Placement | Type | Total Length | Cost Estimate |
| Work Area | Category 6 | 1691 meters | ~$4,633.34 |
| Horizontal | Category 6 | 11792 meters | ~$124,363.35 |
| Backbone | Multi-mode Fiber | 345 meters | ~$3,057.60 |
| TR Patch Cables | Cat6/Fiber | 163 meters | ~$1,040.45 |

**Work Area Cable**

|  |  |  |  |
| --- | --- | --- | --- |
| Cable | Description | Amount | Image |
| RJ45 Cat6 UTP Ultra-Thin Patch Cable - Premium Fluke® Patch Cable Certified - CMR Riser Rated | Category 6 cables of various lengths per office provide client node access within each office | 311 cables between 1-13 meters:  ~$2.74/meter |  |

* Measurements are in **METERS**, disregard the table headers showing feet

**Floor 1**

A calculator with numbers and text

Description automatically generated

**Floor 2**

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**Floor 3**

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**Floor 4**

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**Floor 5**

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**Horizontal Cabling**

|  |  |  |  |
| --- | --- | --- | --- |
| Cable | Description | Amount | Image |
| 304.8 meters 4 Pair CAT6 Solid U/UTP 550Mhz 23AWG CMP Plenum Bulk Cable | Plenum rated Category 6 cabling is bought in bulk to cover the 11697 meters required for the entire company | 39 boxes @ $362.50/each |  |
| Middle Atlantic 6’ Long 5/8” Threaded Rod | Threaded rods connect our cable trays to our ceiling cable runs within hallways to our work areas | ~400 @ $48.99/each |  |
| Tripp Lite Rack Enclosure Cabinet 10ft Roof Cable Manager Ladder 10' - rack roof mount cable manager ladder | Cable trays provide cable organization and easy management within the office’s hallways and infrastructure | ~400 @ $225/each |  |
| OM4 Multimode 50 Micron Indoor (Corning ClearCurve) - OFNP Plenum Fiber Bulk Cable - 12-Strand | Plenum rated fiber cable connects between TR rooms on each floor providing redundant connections between both distribution trunks | 95 meters @ $6.63/meter |  |

**Floor 1**

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**Floor 2**

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**Floor 3**

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**Floor 3/4**

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**Floor 4/5**

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* **An additional 95 meters of multi-mode fiber can connect between TR1-5A and TR1-5B on their respective floors providing redundancy between distribution branches**

**Backbone Cabling**

|  |  |  |  |
| --- | --- | --- | --- |
| Cable | Description | Amount | Image |
| OM4 Multimode 50 Micron Indoor (Corning ClearCurve) - OFNP Plenum Fiber Bulk Cable - 24-Strand | Plenum rated fiber cable bought in bulk to connect from Demarcation to F1 to C1 with D1 and D2 | 74 meters @ $12.73/meter |  |
| OM4 Multimode 50 Micron Indoor (Corning ClearCurve) - OFNP Plenum Fiber Bulk Cable - 12-Strand | Plenum rated fiber cable bought in bulk to connect each access switch with its distribution switch | 271 meters @ $6.63/meter |  |
| 3m LC/PC 12-Fiber OM4 Multimode Simplex 50 micron - 900um Pigtail - Color Coded | Spliced pigtails allow our fiber cable to connect with our fiber patch panels and backbone switches | 7 @ $45.55/each |  |

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* **Distribution switches located in TR2A and TR2B to save on fibre cabling costs and increase security**

**Telecommunication Rooms Patch Cabling**

|  |  |  |  |
| --- | --- | --- | --- |
| Cable | Description | Amount | Image |
| RJ45 Cat6 UTP Ultra-Thin Patch Cable - Premium Fluke® Patch Cable Certified - CMR Riser Rated | Category 6 cables for connecting switches with patch panels within our racks – 6 inches | 156 @ $2.10/each |  |
| RJ45 Cat6 UTP Ultra-Thin Patch Cable - Premium Fluke® Patch Cable Certified - CMR Riser Rated | Category 6 cables for connecting switches with patch panels within our racks – 1 foot | 155 @ $2.21/each |  |
| OM4 Multimode Duplex LC/LC 50 Micron - Fiber Optic Patch Cable - 2mm Jacket - LSZH/OFNR - 0.5m | Fiber cables for SFP+ connects between switches | 46 @ $8.05/each |  |