

Murano at Three Oaks

Low Voltage Specifications

January 14, 2019

General Requirements

- Items that are not specified by the Scope of Work or the accompanying Drawings, but are required by local, state and federal authorities, or normally used and required for the system design to perform to specifications and system design intent, will be considered part of the Voice-Video-Data (VVD) Scope of Work & Layouts.
- Definitions:
 - Low Voltage Contractor means the party who is contracted by the General Contractor to install detailed in the VVD Scope of Work & Layouts.
 - Facilities that are part of the wire, cable, and equipment on the premises that connects and delivers low voltage from each provider's off premises network to the Point of Entry, usually at the Central Communications Room.
 - Point of Entry (POE) for the purposes of providing services to the premises is the single point where each provider's Facilities Interconnect with the Distribution Plant (DP) usually at the Central Communications Room.
 - Central Communications Room (CCR) is the main distribution point for the site. The Facilities connect to the Distribution Plant in the CCR. The CCR is also commonly referred to as a Main Distribution Frame (MDF).
 - Distribution Plant (DP) is that part of the wire, cable, and equipment on the premises that is usually home-runned and delivers low voltage services from CCR to each Building Communications Room.
 - Building Communications Room (BCR) is an intermediate distribution point located throughout a multifamily building. The DP connects to the Home-Run Wiring in the BCR. The BCR is also commonly referred to as an Intermediate Distribution Frame (IDF).
 - Home-Run Wiring (HRW) is that part of the wire, cable, and equipment in each building that is home-runned and delivers low voltage services from the corresponding BCR to the Apartment Distribution Panel in each unit.
 - Apartment Distribution Panel (ADP) is a centralized distribution point in each unit. The HRW connects to the Inside Wiring in the ADP. The ADP is also commonly referred to as a junction box.
 - Inside Wiring (IW) is that part of the wire, cable, and equipment in each unit that is home-runned and delivers low voltage services from the ADP to each faceplate.

Codes, Regulations, and Standards

- All work will meet or exceed the requirements of all applicable statutes, ordinances, rules, codes, regulations, decisions, and orders of all local, state and federal authorities having jurisdiction over the construction of the telecommunications cable systems, including, but not limited to, applicable building codes, fire codes, and regulations of the Occupational Safety and Health Administration and Federal Communications Commission.
- All work will meet or exceed the requirements of the 2011 National Electrical Code. Other NFPA codes, and any then-current amendments or addenda thereto, including but not limited to:
 - NFPA 70 National Electrical Code 2011 Edition, Article 800
 - "Communications Systems"

- NFPA 70 National Electrical Code 2011 Edition, Article 200
- “Wiring and Protection”
- Except as otherwise specified in the Scope of Work, all work will meet or exceed the requirements of the ANS/TIA/EIA telecommunications cabling standards and any then-current amendments or addenda thereto:
 - ANS/TIA/EIA-570-B
 - “Residential Telecommunications infrastructure Standard”
 - ANS/TIA/EIA-568-B.1 and addenda
 - “Commercial Building Telecommunications Cabling Standard – Part 1: General Requirements”
 - ANS/TIA/EIA-568-B.2 and addenda
 - “Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted-Pair”
 - ANS/TIA/EIA-568-B.3 and addenda
 - “Optical Fiber Cabling Components Standard”
 - ANS/TIA/EIA-569-A and addenda
 - “Commercial Building Standard for Telecommunications Pathways and Spaces”
 - ANS/TIA/EIA-606-A and addenda
 - “Administration Standard for Commercial Telecommunications infrastructure”
 - ANS/TIA/EIA-607-A and addenda
 - “Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications”
- All work will meet or exceed the safety requirements and certifications of Underwriters Laboratories Inc. (UL).
- Except as otherwise specified in the Scope of Work, all video cabling will be installed and terminated in accordance with the Society of Cable Telecommunications Engineers standards.

Cable, Components and Practices

- All wiring will be riser-rated at a minimum and plenum-rated in such spaces as required it by local, state or national code.
- All voice wiring will:
 - Utilize 4-pair TIA Category 5e unshielded twisted copper cable.
 - Not exceed 300 feet in total length.
 - Be terminated at all BCR and CCR locations on 110 modular jack panels.
 - Be terminated at each faceplate on RJ-25c jacks wired to the USOC configuration.
- All video wiring will:
 - Will utilize quad-shield 60% minimum braid Series 6 or Series 11 coaxial cable with a minimum manufacturer’s specification of 2 GHz.
 - Will not exceed 125 feet if Series 6 cable or 175 feet if Series 11 cable is used.
 - Be connected at all locations with a radial 360-degree crimp “F” connector using a radial taper compression tool. Hex crimp tools are prohibited.
 - Be terminated in the ADP directly on a 1x6, two-way, 1 GHz, passive video splitter. “Pigtails” are prohibited.
 - Be terminated at each faceplate on F-81 barrel connectors.
- All data wiring will:
 - Utilize 4-pair TIA Category 5 unshielded twisted copper cable.
 - Not exceed 300 feet in total length.
 - Be terminated at all BCR and CCR locations on 110 modular jack panels mounted to floor or wall equipment racks.
 - Be terminated at each ADP on an 8-port Category 5 Network Module with (1) 12” patch cable.

- Be terminated at each faceplate on TIA RJ-45 jacks utilizing the TIA 568a standard configuration.
- All wiring for wireless access points will:
 - Utilize 4-pair TIA Category 5 unshielded twisted copper cable.
 - Be terminated at all BCR and CCR locations on 110 modular jack panels mounted to floor or wall equipment racks.
 - Be terminated on a standard RJ-45 modular plug utilizing the TIA 568a standard configuration with a 24" tail for the future installation of equipment.
 - At interior location, RJ-45 shall be placed behind a low voltage pass through or blank plate.
 - At exterior locations the cable shall be the connector inside an exterior rated box with a blank cover. The exterior rated box shall be flush to the exterior wall and large enough to avoid damaging the cable.
- All microduct will
 - 12 MM microduct with drawstring.
- Apartment Distribution Panel will be:
 - RF Transparent and 30" high x 14" wide x 3.5 deep.
 - Located so that it is not on a fire-rated wall and does not interfere with planned closet poles or shelving.
 - Mounted firmly between two studs so that it is flush with the outer finished surface of the surrounding wall with 1.5" minimum clearance all around the door.
 - Bundled, webbed or jacketed hybrid cable assemblies may be used as long as the component cables and any outer jackets or sheaths of the assembly meet the referenced requirements.
- A single-gang low voltage mounting ring will be installed during rough-in for each faceplate. Electrical boxes will not be used unless the faceplate is in a fire-rated wall.
- All low voltage wiring and faceplates will be installed at least one stud bay apart from high voltage wiring. Unless there is supplemental shielding, the distance between low voltage and high voltage cables should exceed 4" except where they cross. Low voltage wiring will cross high voltage wiring at right angles with a 2' minimum separation.
- Protecting cabling from damage is the responsibility of the Low Voltage Contractor. The Low Voltage Contractor shall install nail plates where cabling passes through wall studs. Where steel framing is used, plastic bushings will be installed wherever cables pass through metal structural members. The cables will not touch any edges of metal framing.
- The Low Voltage Contractor shall secure and support all cabling at maximum 48" intervals using industry standard fastening methods that will not compress or deform the cables.
- Cable pulling and bend radius will not exceed the manufacturer's maximum pulling tension recommendations for the cable being installed.
- All microduct and equivalent flexible pathways will be less than 200', supported at the beginning and end of each bend or turn, maintain a minimum of 12" bend radius, and have less than 10 bends or turns.
- Splicing or repair of cabling is not permitted. Any defective wiring, damaged cabling, or any cable or cable installation that does not meet these specifications will be replaced.
- During rough-in, sufficient extra cable tails will be left for termination. The ends of all rough-in cable in either the CCR or BCRs will be placed in a plastic bag after labeling to prevent damage. In the unit, the cable will be coiled inside the ADP and the panel opening covered with the included cardboard paint shield until the permanent locking cover is installed during trim-out.
- The Low Voltage Contractor is responsible for all fire-stopping smoke seals, and/or assemblies. No flammable materials will be used to line a chase or hole. All fire-stopping materials will meet applicable guidelines, standards, codes, rules, and regulations.
- The Low Voltage Contractor is responsible for measuring the distance of all cable runs. The distances indicated by the accompanying Drawings or the Scope of Work are estimates.

- Labeling: Unless otherwise specified, all wiring will be labeled and documented per ANSI/TIA/EIA-606, “Administration Standard for the Telecommunications infrastructure for Commercial Buildings”.

Cable and Fiber Testing

- Voice Cable Testing
 - All voice wiring will be tested after installation by the Low Voltage Contractor. All cables will be tested for proper wire mapping, opens, shorts, crossed and split pairs and maximum cable length, as well as proper location and identification. Simple continuity testing is not an acceptable alternative, except during rough-in.
- Video Cable Testing
 - All video wiring will be tested after installation by the Low Voltage Contractor. All cables will be tested for continuity, maximum cable length, as well as proper location and identification. Simple continuity testing is not an acceptable alternative, except during rough-in.
- Data Cable Testing
 - All data wiring will be tested after installation by the Low Voltage Contractor. All cables will be tested for proper wire-mapping, opens, shorts, crossed and split pairs, and maximum cable length, as well as proper location and identification. Simple continuity testing is not an acceptable alternative, except during rough-in.
- Test Documentation Requirements
 - The Low Voltage Contractor shall provide 3 sets of written and signed documentation certifying acceptable test results to the General Contractor. If the signed documentation is not provided, the Low Voltage Contractor shall re-test at no charge.

Closets: CCR/MDF and BCR/IDF

- Construction
 - All communications rooms will be constructed per the construction documents.
 - The walls of the communications rooms will be covered with 3/4” plywood over any building materials required by code. The plywood will be 8’ high, start at 6” AFF and will meet all national, state and local codes.
- Secure Access/Lock Boxes
 - All doors will have a deadbolt style lock. Access will be restricted to authorized personnel.
- Grounding
 - The Electrical Contractor shall install a solid copper grounding busbar with insulated standoffs in each room. The busbar will be bonded to the building’s electrical service ground.
 - The Low Voltage Contractor shall attach all telecommunications equipment, frames, cabinets and voltage protectors that they install to the busbar. However, the providers will attach their own equipment to the busbar.