

**CI-0703****TAB 7: TECHNICAL DISCIPLINES**

Electrical

POWER DISTRIBUTION**SERVICE DUCT BANKS**

Service ductbanks shall conform to the local Utility's, including Bell Canada, requirements.

Spare duct cells and conduits with pull-cords shall be provided in ductbanks as deemed necessary for future use, if requested by GO Transit.

WIRING METHODS**Raceways**

Raceways and branch circuitry shall be implemented to minimize failure of a complete system due to failure or malfunctioning of any single electrical component. Distribution minimizing conductors of different circuits sharing common raceways and pull-boxes, etc., shall be implemented. Raceways selected shall suitably resist mechanical damage and environmental deterioration effects. In particular, special attention shall be applied to corrosion inhibitors and protective coatings or treatments on surface mounted conduit in underground areas (e.g., tunnels, below grade electrical rooms, Bridges and parking structures etc.).

Conduits

Rigid galvanized steel conduit, or other GO Transit approved cabling methods shall be used for all exposed work in normally dry areas not likely to present corrosion problems. Rigid steel or rigid PVC conduit may be used embedded in slabs where high impact protection is required. Rigid non-metallic conduit shall be used below ground, either direct buried or concrete encased.

PVC or epoxy coated rigid galvanized steel conduit shall be used in corrosion problem areas. Conduit, having a minimum of 50mm shall be used in parking lots where deemed necessary; concrete encasement shall be provided for bus loops, road crossings, and railway Right-of-Ways.

In finished areas, all conduits shall be concealed.

Cable Trays

Where required, hot dip galvanized cable trays shall be ladder type; steel or aluminium or non-metallic as required for the application, complete with vertical barriers to separate systems or cables as required. Class shall be selected based on conductor weight plus 50% spare capacity as a minimum. Cable trays to be cantilever supported for ease in installation of cables. Fire barriers of multi-transit type shall be provided at fire walls and fire separations, and shall be in accordance with the O.B.C. and CAN4-S115-M.



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Types of Cable trays to be used:

- Wire Cable Trays: Used under raised floors
- Ladder Cable Trays: Used in Electrical/Communication Rooms
- Enclosed Cable Trays-Cable bus from transformers to main substation switch gear, outdoors.

Wire and Cable

All conductors shall be stranded copper.

Conductors smaller than No. 12 AWG shall not be permitted for lighting or motor branch circuit wiring, except that No. 14 AWG multi-strand type conductors may be used for control circuits only. Provide appropriate connection for terminating and standard wire.

Conductors shall have a minimum insulation temperature rating of 90°C. All conductor insulation shall be colour coded.

Responsibility

The Consultant shall specify responsibility for wiring and equipment connections. Examples: For voice-activated intercoms the type of wiring is to be as recommended by the equipment supplier, and is to be installed by the electrical contractor, but connected by the equipment supplier. For the P/A, CCTV and security systems, the electrical contractor shall provide conduit with pull-strings, and the equipment supplier shall install wiring and the equipment, making all connections, testing and commissioning.

...Enclosures

Enclosures shall be selected for the environment in which they are intended to be installed. In general, enclosures for indoor, dry application shall be EEMAC sprinkler proof type 1 or type 12 where applicable. Enclosure for damp and wet areas (e.g., tunnels and escalators or elevator pits) shall be EEMAC type 4.

Where installed in public areas, all enclosures, cover-plates, outlets plates, access panels, and handwells shall be provided with method of securing doors and covers. All enclosures and panels shall have a common key.and in an enclosed, protected area where possible.

Manholes and handholes shall be located remotely from doors and main road and pedestrian traffic areas.

No splices are permitted below grade!

Underground conduits entering Mechanical, Electrical and Communications Rooms from the exterior shall be sloped to ensure positive drainage away from room.