



Table with 2 columns and 5 rows containing metadata: Subject (Building Fibre Redundancy), Date (05-13-2026), Author (Ben Taylor, Grant Ng, and Adrienne Chow), Bulletin Number (2026-01), Bulletin Type (Requirement), Audience (Ministry Managers, Electrical Services; all holders of the Electrical and Traffic Engineering Manual; all Project Managers; and all Design Consultants), Effective Date (05-13-2026), and Standards Affected (Electrical & Traffic Engineering Manual).

Background:

The use of fibre optic cable is increasing due to the growing demand of data transmission. The Ministry of Transportation and Transit’s network includes Ring Aggregation Points (RAPs), which are defined as any building that houses physical infrastructure such as server racks, switches, and patch panels. To have disaster protections the entrance of fibre pathways even in the same ring must be separate.

The Ministry of Transportation and Transit’s (MoTT) goal of operational excellence is supported by:

- a) Strengthening risk assessments to inform the planning and development of a more resilient transportation network.
b) Enhancing climate resilience by applying best-practice design standards to infrastructure, enabling it to better withstand natural hazards and adapt to future climate conditions.

The approach for improving MoTT’s transportation network resilience is to maximize the planning and implementing of physical fibre path diversity. Path diversity in fibre refers to the ideal goal of ensuring that fibre circuits take physically different routes (different conduits, poles, streets, bridges, etc.) Fibre diversity will prevent a single point of failure causing a total outage. This will result in maximizing the probability of maintaining operational business continuity through high availability network fibre diversity design.

Diverse fibre paths will address real-world risks such as:

- Accidental cutting of fibre conduit during construction events
• Road widening projects
• Flooding of a shared manhole
• Fires or vehicle strikes
• Bridge damage
• Rodent damage in fibre vaults

Diversity examples:

- Paths on opposite sides of roadway
• Interweaving separated rings along a roadway
• Different bridges
• Separate central offices (CO). A telecom CO is a secure, hardened facility where local customer lines terminate and connect to the broader network.
• Different telecom carriers (in addition to Ministry owned fibre)
• No shared manholes, vaults or bridges

Policy:

This technical circular gives guidance directly aligned with the Telecommunications Industry Association (TIA). The TIA is accredited by the American National Standards Institute to develop industry standards for a wide variety of information and communication technology products. The primary TIA standards which address diversity of pathways are ANSI/TIA-569-E *-Telecommunications Pathways and Spaces*, ANSI/TIA942-B *Telecommunications Infrastructure Standard for Data Centres* and ANSI/TIA606-C *Standard Requirements for Cable-plant Administration*.

These standards explicitly include “telecommunications facility diversification recommendations” to ensure continuity of operation under catastrophic or fault conditions. TIA-569-E recommends that diverse fibre routes be placed in **separate physical pathways** to minimize common points of failure. This typically means:

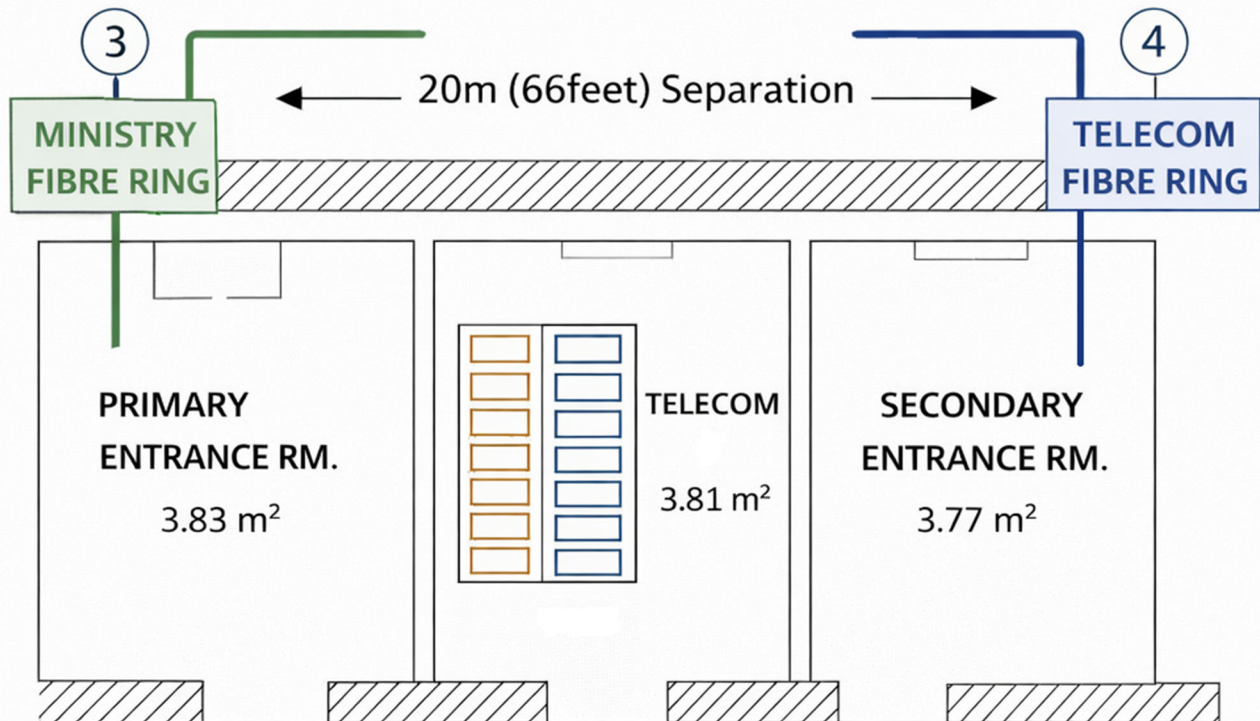
- Separate conduits
- Separate risers
- Distinct cable trays
- Paths that do not share structural spaces or penetrate the same fire barriers
- Securely isolate and segregate physical access points for MoTT managed verses **Telecommunications (Telco) Internet Service provider (ISP) fibre.**

These standards are to be applied to the design or updates to any buildings that house MoTT infrastructure and are summarized below:

1. One separate Telco ISP (backup) in addition to MoTT owned fibre.
2. Separate fibre conduits for the Telco ISP and MoTT fibre with a minimum of 20m (66 ft.) separation between entrance points to the RAP.
3. Separate lateral routes for the conduit to the roadway for the Telco ISP and MoTT fibre maintaining the minimum separation.
4. No shared vaults for the Telco ISP and MoTT fibre.

The following diagram shows an example of the minimally acceptable RAP site diversity design.

Ring Aggregation Point (RAP)



Compliant Diverse Fibre Pathways (TIA-569-E)

- ✓ Separate entrances
- ✓ Distinct routes
- ✓ Dual fire barriers
- ✓ Redundant support systems



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