

# Coverage Enhancement for Public Safety Radio Systems

## P25 Fiber-Optic Distributed Antenna System (DAS)

Under contract by a major radio OEM manufacturer, Cartel was contracted to supply engineering design services, technology supply and commissioning of a comprehensive 800 megahertz (MHz) Public Safety Radio System. The area covered consist of more than twenty-five (25) buildings including a vast array of tunnels to support the House of Commons' radio systems. This Public Safety band was to cover all public grounds of the Parliament buildings. Parliament Hill is an area of Crown land on the southern banks of the Ottawa River in downtown Ottawa, Ontario. Most of the buildings are built in its gothic revival period and known for many architectural elements of national symbolic importance and it is the home of the Parliament of Canada.

### Site Survey

As a first step, Cartel proceeded to do an overall site survey for each of the buildings or facilities specified under the scope of work. From the results, an analysis of each site survey was put into a report. From this report, a proposal for a signal reinforcement system was presented. A preliminary in-building design was proposed with the objective of providing the House of Commons (HoC) a detailed report showing areas where the 800 MHz signal strength is weak or non-existent, and where the signal strength is strong. This report also shown where an in-building enhancement systems was required and in the case of existing in-building systems, where were their current locations. To ensure proper radio coverage in those areas where signal strength was weak and where amplification was required. Steps where necessary

to evaluate existing equipment replacement and/or expansion of signal reinforcement solution provided.

### In-Building Design for coverage and capacity

In the next phase after recommendations for the preliminary in-building design was presented, the project moved forward with the major radio OEM manufacturer, main contractor and agreement from all stakeholders, a final in-building design was presented.

### Wireless Indoor and Outdoor

The proposed design consist of a system that brought in two separate four (4) channel trunking radio site back to a master head-end for fibre distribution to thirty-two (32) remote amplifiers and six (6) off-air repeaters. Once the proposal was accepted and the implementation started in early 2014. Cartel was responsible to complete the final drawings, create a statement of work (SOW) in conjunction with the project consultant and lastly, advising a team of contractors of the work required. Once the equipment was installed, Cartel was responsible to configure and commission each of the remote fibre feed amplifier. These equipment was tested to verify if it functioned according to its design specifications. Commissioning services are conducted once the equipment was installed.

# Public Safety Radio System is safe and secure



The P25 Fiber-Optic Distributed Antenna System (DAS) delivered, provide 95% coverage for both uplink and downlink from both of the P25 radio sites. The system is comprised of a head-end feeding over fiber optic cable to a total of thirty-five (35) remote amplifiers that each feed a DAS.

In conclusion, a final commissioning survey was conducted and a close-out package is compiled and presented for each building, facility and tunnels within Parliament Hill area.

## Public Safety definitions

Public safety agencies rely all the time on the ability to communicate with each other by radio or to be interoperable with each other, in planned and unplanned situations or when emergencies occurs. There is a critical need for radio interoperability that have been identified in the public safety community. The term public safety is defined as services or applications related to the preservation of life and protection of property.

## Primary offerings

- In-Building wireless coverage and capacity
- Intelligent infrastructure for Band 14 LTE networks
- Voice and Data Radio Networks
- Digital Voice Recording Systems
- Centralised Operations and Dispatch Systems
- IoT and Remote Site Monitoring

## About Cartel Communication Systems Inc.

Founded in 1981, Cartel provides a wide range of products and services for government, industry and enterprise-driven telecommunications applications across Canada, including advanced 4G wireless coverage enhancement, mission-critical voice logging and dispatch solutions, TETRA and Digital Mobile Radio systems, as well as integrated site monitoring command and control systems. Our Langley, BC head office houses a large warehousing and engineering facility for systems design and manufacturing and our branch offices span Canada to better serve our customer base.