

A long-exposure photograph of a city street at night, showing light trails from cars and illuminated buildings in the background. The image is overlaid with a semi-transparent red gradient.

City of Toronto Transportation Operations Centre Display Wall and Renovation Projects

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City of Toronto
Traffic Management Centre





1. Background

2. Project Planning

3. Project Implementation and Contract Administration

4. Lessons Learned

5. Conclusions

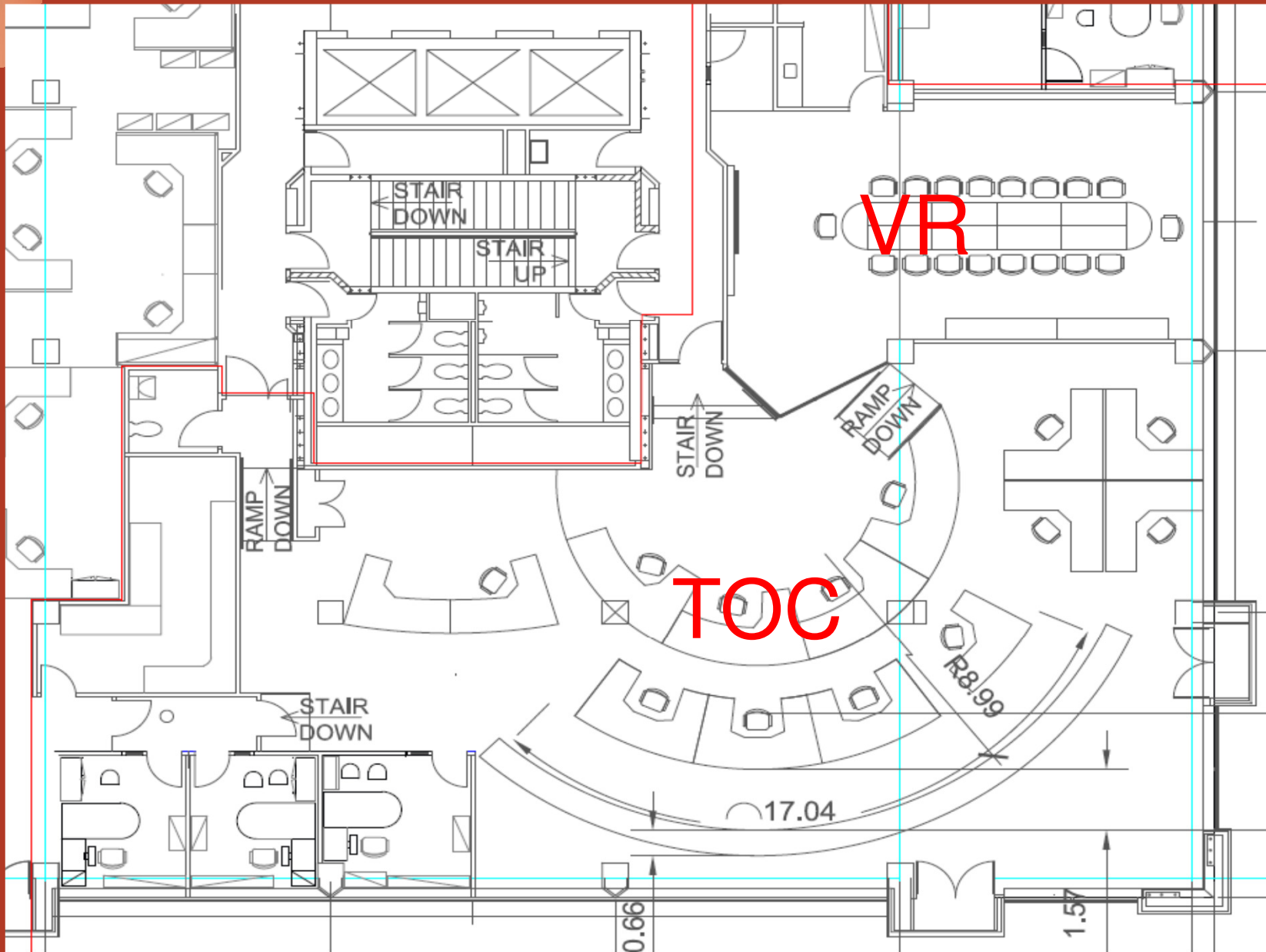
6. Questions



Previous Layout



Before-Reno Site Plan





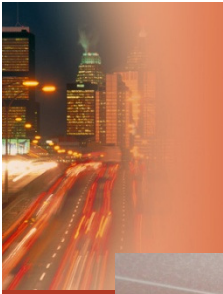
Why upgrade the Traffic Operation Centre?

- Cannot accommodate additional cameras
 - 76 RESCU cameras but only 57 CRT displays & 3 rear projection monitors
- Lighting, electrical and HVAC needed upgrading
- Furniture (e.g., consoles) needed upgrading to match 24/7 operation and current ergonomic standards
- Replacement components to video wall no longer available
- Outdated camera systems

Before – Reno

v.s. After – Reno





Before – Reno

v.s. After – Reno (cont')





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Operational Needs Analysis

- Display Wall
 - GIS Map Display Wall v.s. Video Wall
- Layout
 - TOC Operational Capacity
- Redundancy Design
 - Power supply backup
 - Hot-swap Systems

3D Analysis to determine the size of the wall

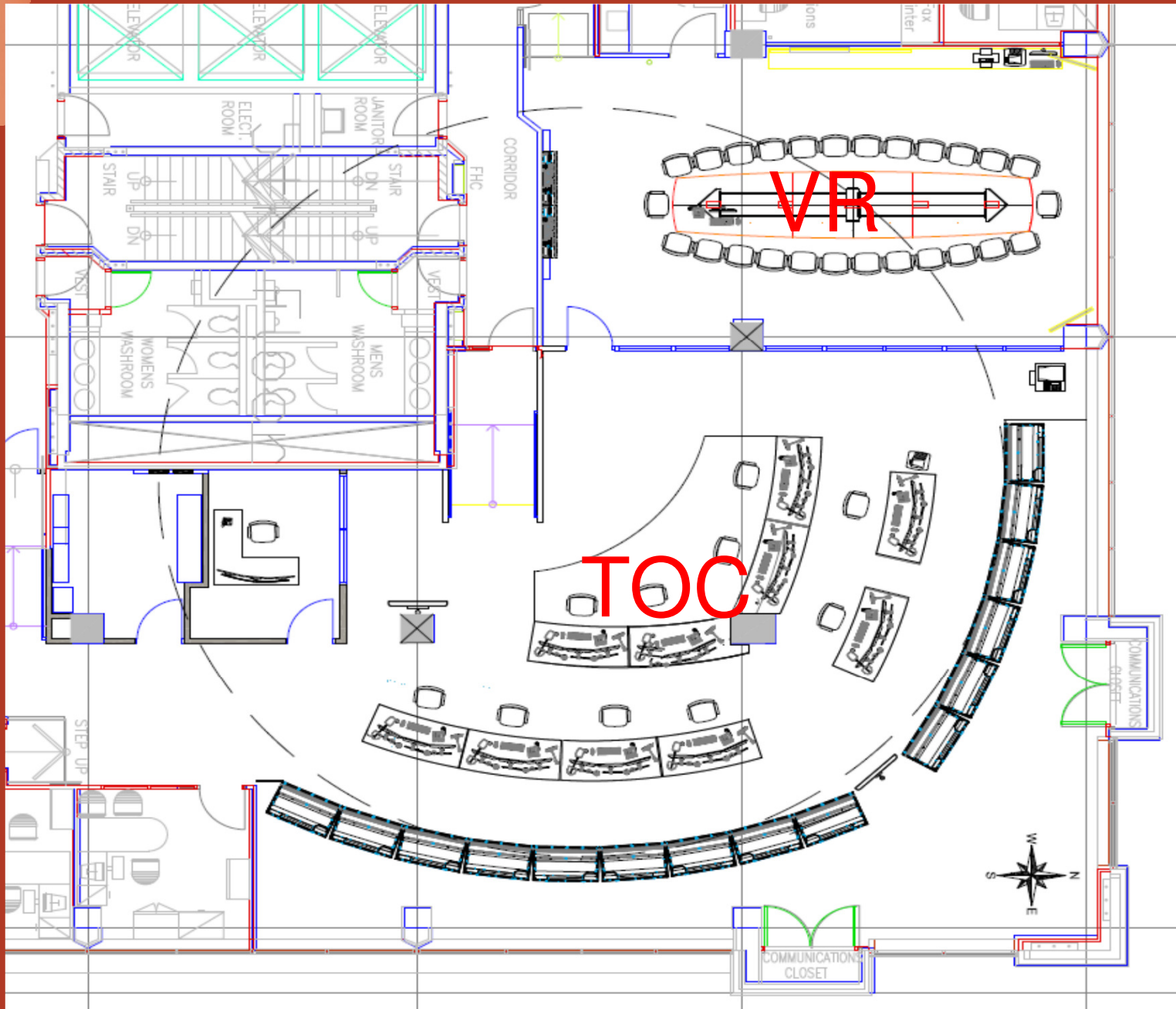




New Layout

- Developed to suit both the current and projected functional needs of the City for the next 15 years
- 120 arterial traffic road cameras will be added in the next 3 years
- TOC's current monitoring role will expand from Corridor Management to City-Wide traffic monitoring and management
- 10 workstations to accommodate expansion

Reno Site Plan

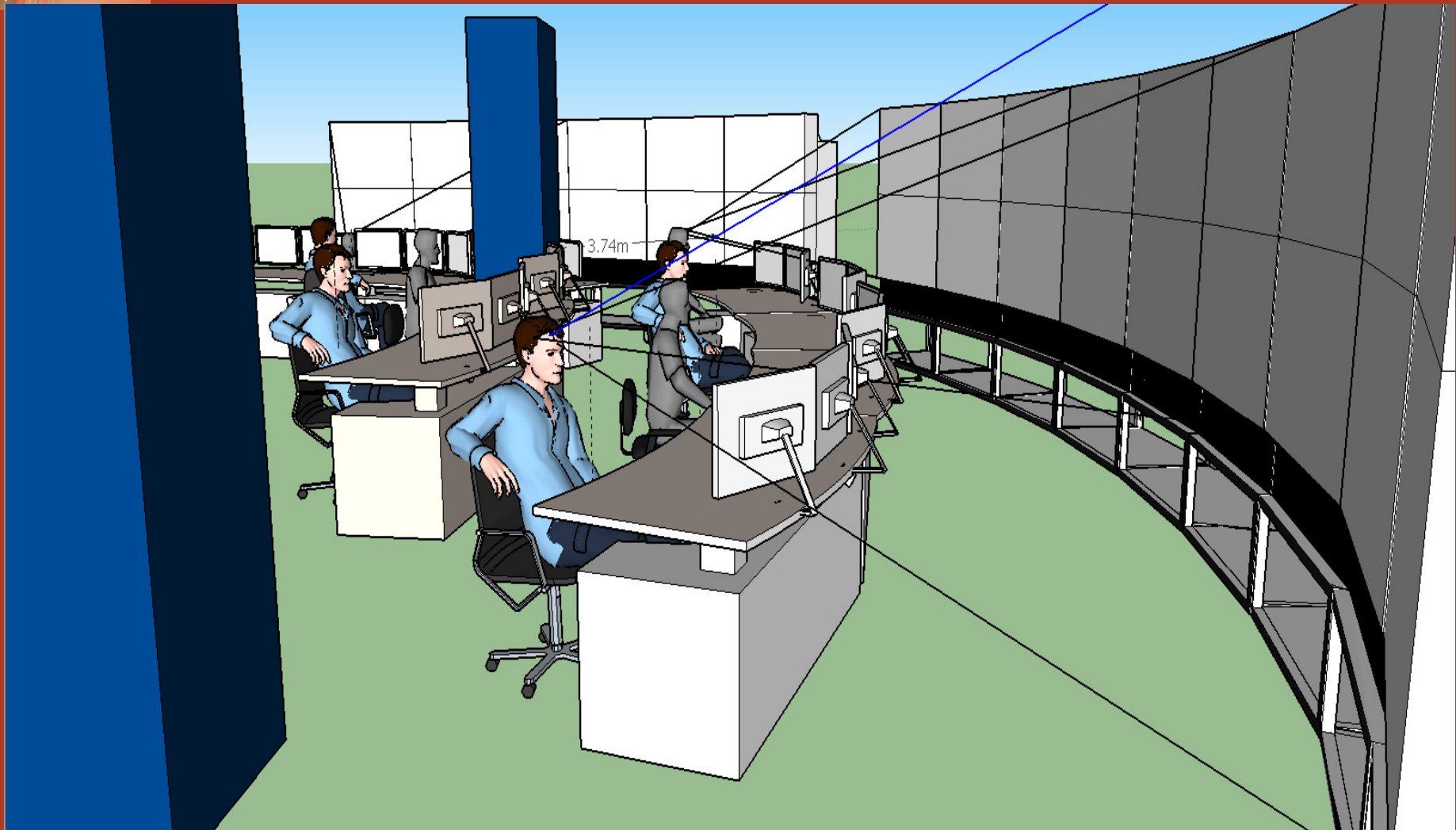




Ergonomic Requirements

- View Distance and Angle
- Lighting
- HVAC system upgrade
- Height-adjustable console
- Viewing Room upgrade
- Workstation design

3D Analysis to determine the view ability

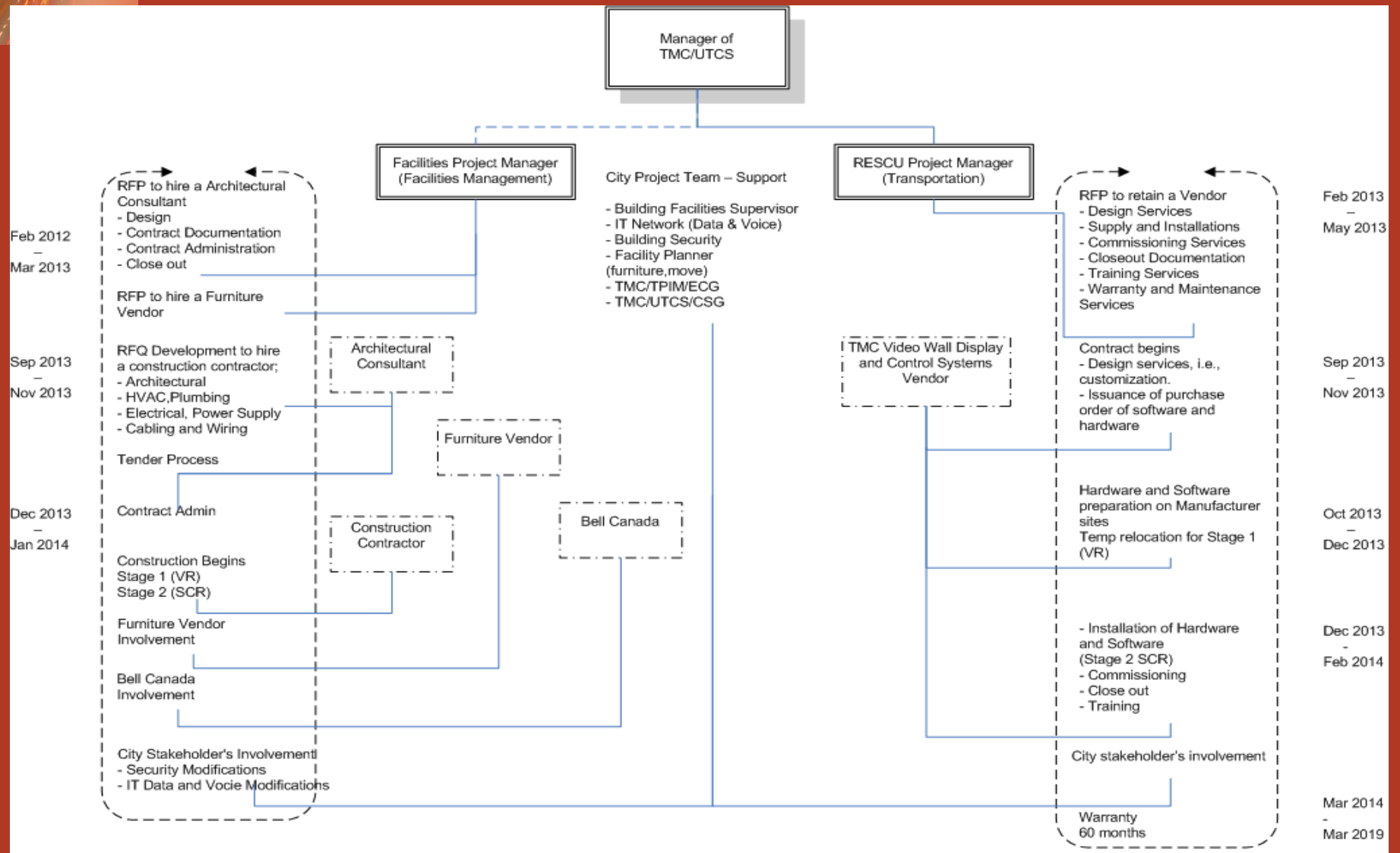




Project Coordination Structure

- Two contracts:
 - Video wall
 - Renovations
- Traffic Management Centre – project manager for video wall contract
- Facilities Management – project manager for renovations contract

Project Coordination Structure





Project Scope Determination

- Video Wall Project
 - a 15-year of design life
 - Video Display System
 - IP based Video Control System
- Renovation Project
 - HVAC
 - Glass Wall
 - Power Supply Revision
 - Console
 - Lighting
 - Access Control



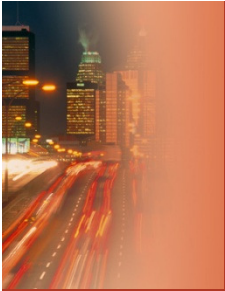
Video Wall Contract – Equipment

- Video display wall in the TOC
 - 30 Mitsubishi 62" DLP cubes
- Video display wall in the meeting room
 - 4 Mitsubishi 55" LCD panels
- Two LCD panels in the TOC to provide Performance Dash Boards
- Video Control Systems (VCS)
 - Video management and camera control



Video Wall Contract – Software

- Activu software – capability to show displays from different sources on the video wall
 - e.g. camera feeds, TV feeds, maps, dashboards, internet, etc.
- Genetec software – manages and operates cameras:
 - Admin/config, viewer, archiving
 - Manage subscriber feeds
 - Video recording & blocking
 - Camera presets



Renovations Contract

- HVAC revitalization
- Glass wall installation between TOC and VR
- Reorganized power supplies to reduce power consumption by 30%
- Dimmable energy efficiency lighting in 5 zones
- Raised floor provide functionality in viewing video wall while maintaining accessibility requirements
- 24 ft x 5 ft conference table in the VR
- Conform to building code and accessibility guidelines



Other Work

- 10 height-adjustable consoles, each equipped with three 24" monitors
- Enhanced access management and building security
- Radio system relocation – police and road ops
- TOC private network, including network switches, cabling and joysticks
- Cisco UCCE voice over IP (VoIP) – call centre management
- Versadial Phone and Radio recording system – recording and archiving phone calls
- Power supply for racks
- Desktop computers
- Performance dashboard



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Project Phasing

- **Stage 1** – Construction in the VR; system integration in the VR and 4th floor equipment room. Once completed, the existing TOC operations were temporarily located into the VR





Project Phasing

- **Stage 2** – Construction in TOC, and system integration in TOC included new furniture, new AC unit, dimmable sectionalized lighting



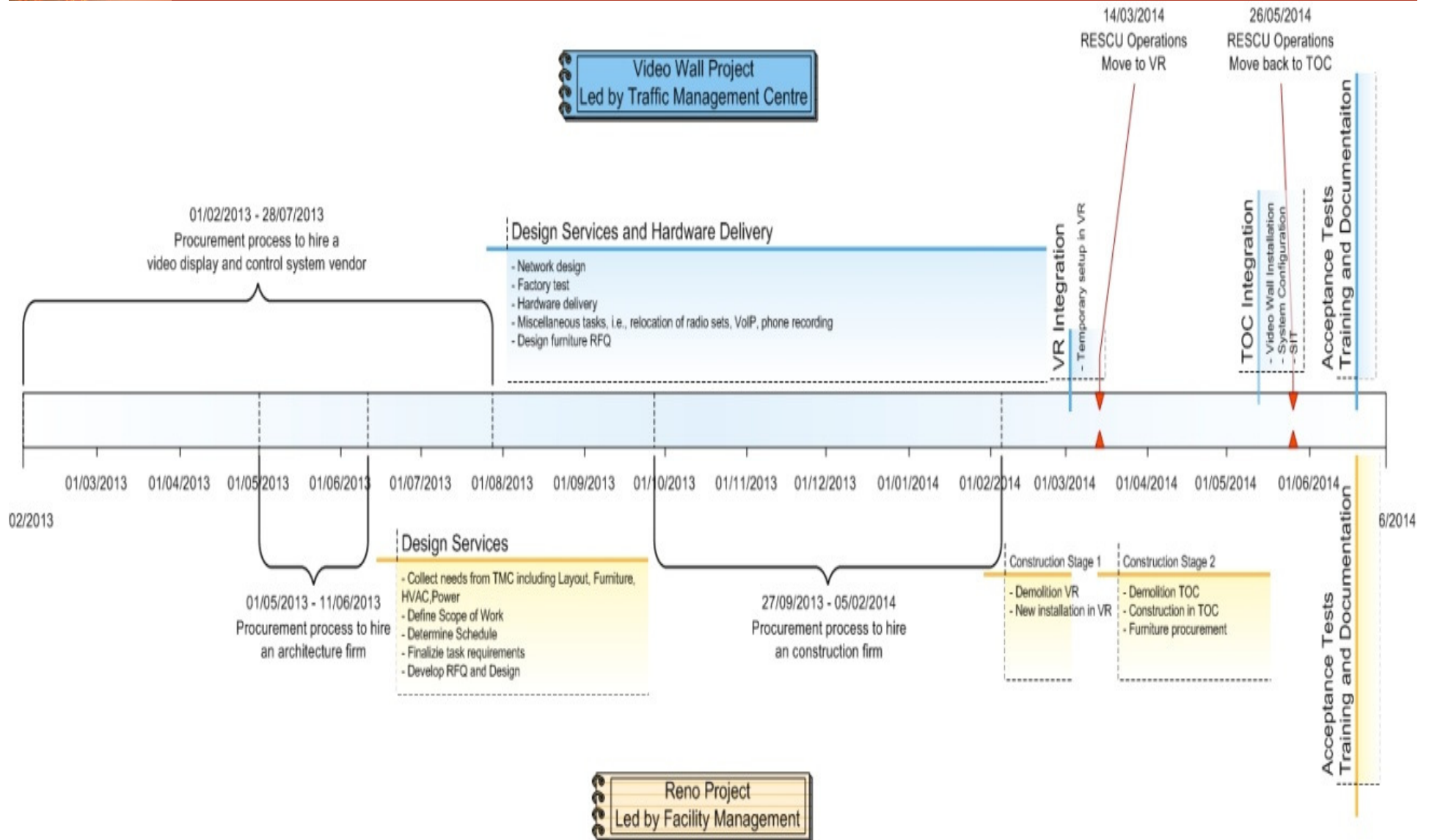


Project Phasing

- **Stage 3** – Construction in TOC completed and operations restored in TOC. Continue remaining works in the VR. The VR restored to its normal configurations.



Project Schedule

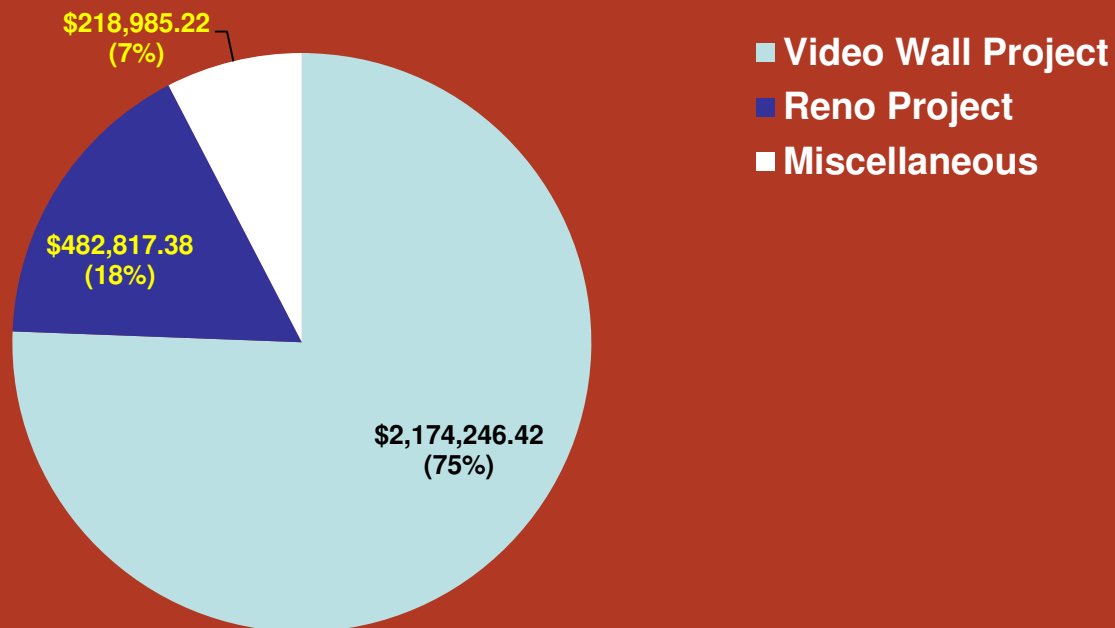




Costs Control

The Summary of Project Costs as of Oct 2014

Total Cost = \$3.1M





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Lessons Learned

- One project manager
- Formal RFP v.s Informal Quote
- Procurement process
- Contractor and Subcontractor management
- Corporate IT engagement



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Accomplishments

- Display Wall and Interior Work Environment Upgrades
- IP video stream establishment
- Facility improvements
- Future expansion capability



Special Thanks Go to

- City of Toronto

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- Contractors

Dennis Nuutinen, Chris Villani, Mark Roy, Sanal Sreedharan, Ken Tanner, Paul Venier, Eugene Kuan, Brian Soltanzadeh, Matt Saberi, etc



Questions?