York Region

Southeast Collector Trunk Sewer Project

Corrosion Control Facility – Site Plan
Noise Management & Mitigation Plan

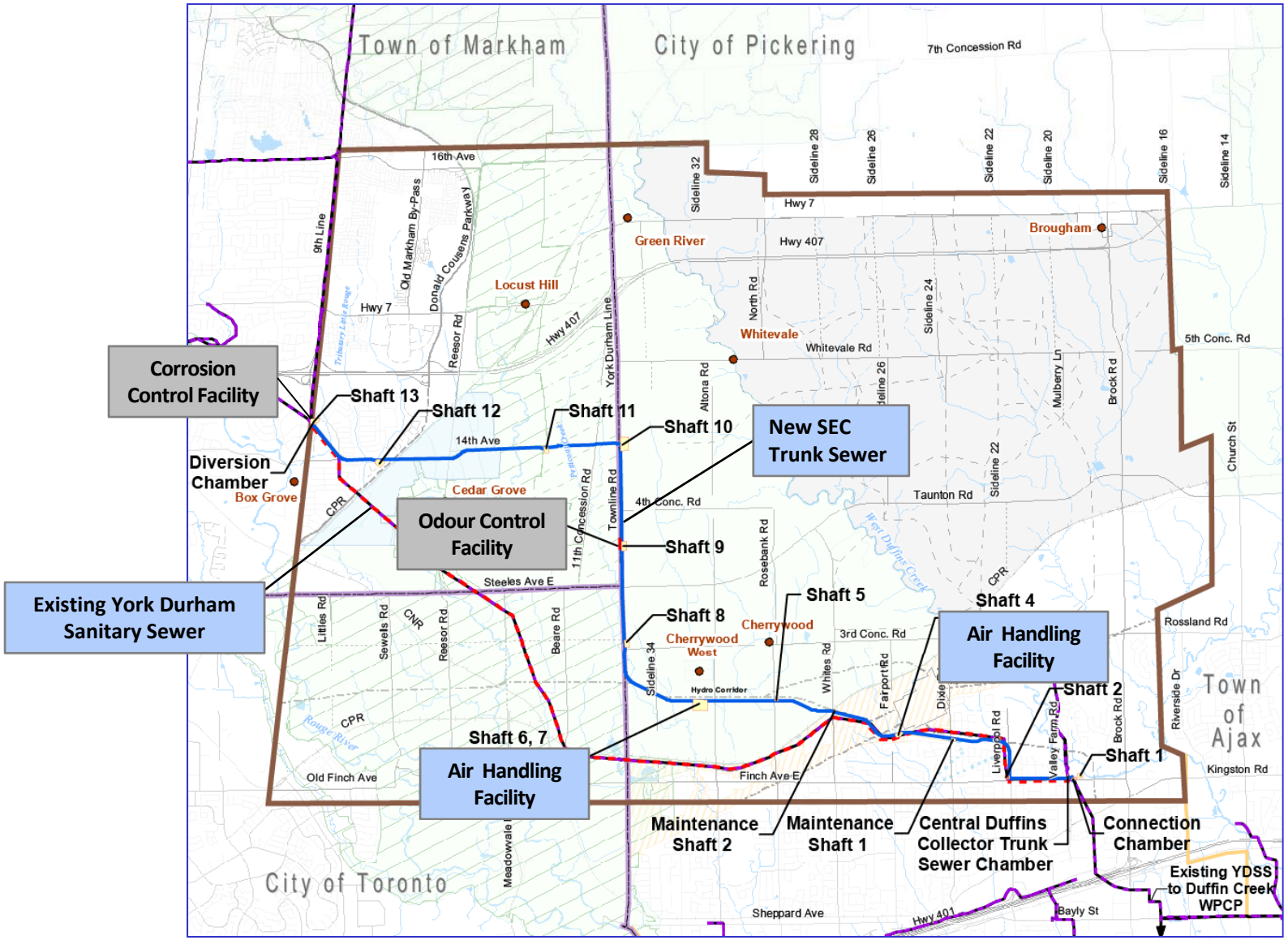
Town of Markham

June 26, 2012

Hatch Mott MacDonald AECOM

York Region
Southeast Collector Trunk Sewer Project

New Southeast Collector – Project Overview



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Corrosion Control Facility - Site Plan

- Northeast quadrant of 9th Line and Rouge Bank Drive.
- Site area ~ 0.8 ha.
- Adds corrosion controlling solution (diluted hydrogen peroxide) to sewer wastewater.

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Corrosion Control Facility - Site Plan

- Single building 13 m wide x 16 m long. Height of the facility is 8.4 m.
- 3 shafts to allow connection with existing YDSS sewer.
- Vehicles enter from Rouge Bank Drive (right turn), and exit via 9th Line, and then must turn onto Rouge Bank Drive.
- Deliveries made once per month.
- Fully automated site that will be monitored on a 24 hour – 7 day basis.
- Site inspections & maintenance on a regular basis.

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Corrosion Control Facility – Public Space Areas

9th Line & Rouge Bank Drive

Box Grove Bypass & Rouge Bank Drive

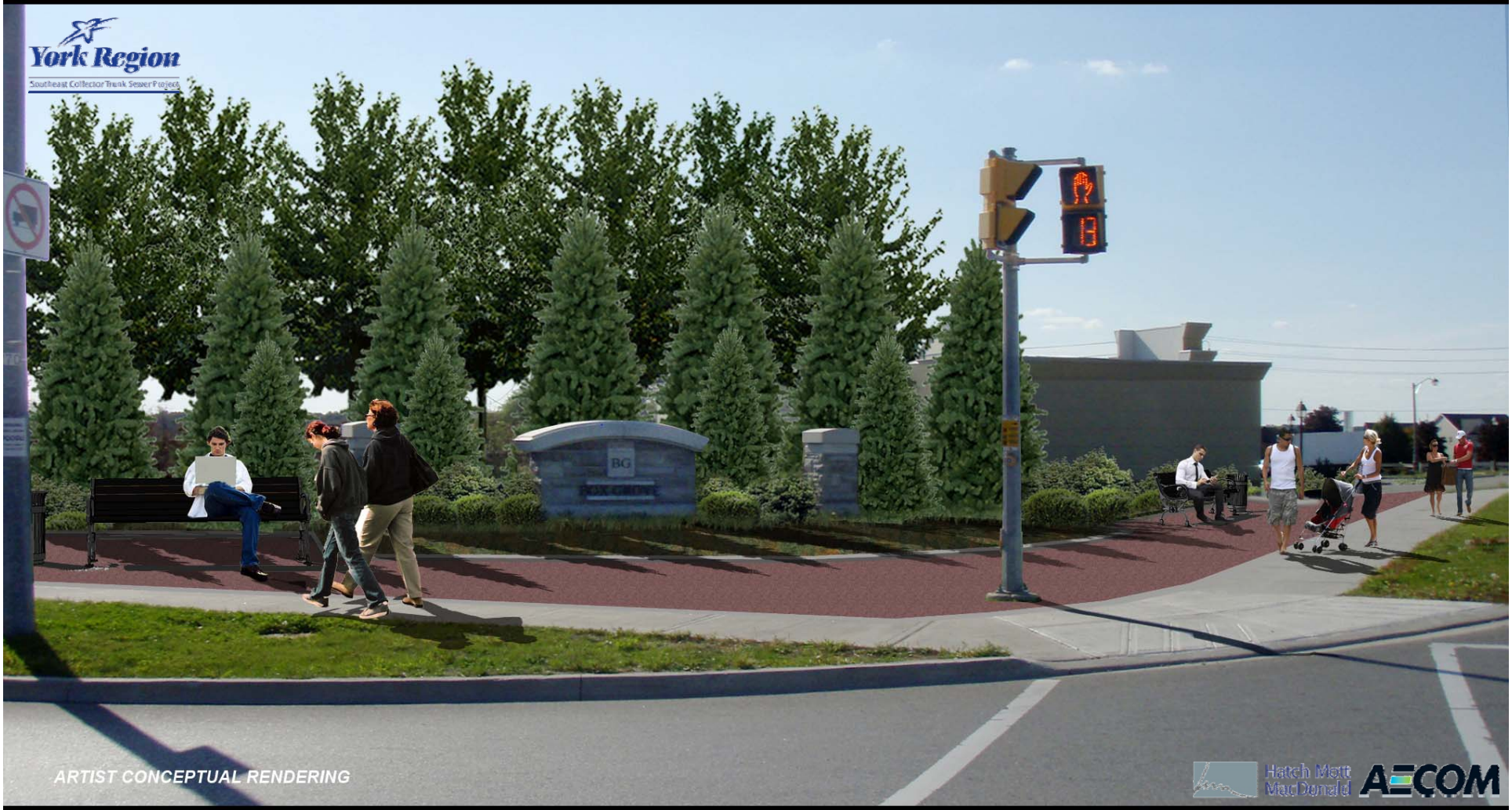
9th Line and Rouge Bank Drive

9th Line and Rouge Bank Drive – Mature Site

Northwest View Across Rouge Bank Drive

Northwest View Across Rouge Bank Drive

Box Grove Bypass & Rouge Bank Drive



Box Grove Bypass & Rouge Bank Drive

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Construction Environmental Noise & Vibration Management Plan

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Construction Environmental Noise & Vibration Management Plan

- **A comprehensive plan has been developed for the project that embodies York Region's commitment to avoid/minimize potential noise and vibration concerns during construction.**

- **The key components include:**
  - **Noise Monitoring Program**
  - **Vibration Monitoring Program**
  - **Working Hours**
  - **Hoarding Installation**
  - **Operational Constraints & Mitigation**
  - **Noise and Vibration Complaints Process**
  - **Construction Specifications**

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Construction Environmental Noise & Vibration Management Plan

Management / Mitigation Measure	Southeast Collector Trunk Sewer Project	16th Avenue & Ninth Line Tunnel Projects
Construction Environmental Noise & Vibration Management Plan	A comprehensive plan has been developed for the project that embodies York Region's commitment to avoid/minimize potential noise and vibration concerns during construction of the SeC Trunk Sewer. Key components of the plan include: • A noise and vibration monitoring program to collect real time data along the tunnel alignment and at numerous stationary locations along the sewer alignment. • Operational requirements on the part of the Contractor to minimize and respond to noise and vibration concerns that may arise. • A noise and vibration complaints process to deal with concerns raised by local residents and other stakeholders. • General and site specific mitigation measures to be implemented at all construction compounds.	No formal plan was developed to minimize noise and vibration on the 16th Avenue or Ninth Line tunnel contracts. • There was no noise and vibration monitoring plan. • The only operational restrictions were related to the municipal noise bylaw exemption. • No formal complaint management system was in place. Complaints were dealt with on a one on one basis.
Noise Monitoring Program	• Program includes both sample noise monitoring and long-term noise monitoring at each construction compound. • A status report will include all findings from the sample monitoring, which will be undertaken during construction start-up. • Long-term monitoring will be undertaken at each construction compound for the duration of construction, with continuous noise measurements and regular summary reports. • Noise and vibration equipment were installed at 14 locations along the sewer alignment including near Shaft 13 (CCF)	• There was no noise monitoring program on the 16th Avenue and Ninth Line tunnel contracts.
Vibration Monitoring Program	• Program includes pre-construction building condition survey, sample vibration monitoring and continuous vibration monitoring. Specific receptors are identified for the selection of stationary monitor locations. • Vibration monitors are located on public right-of-way in locations representative of the closest sensitive receptors to each compound, and monitoring will also be conducted along the path of the tunnelling boring machine. • Both sample and continuous monitoring of vibration levels will be undertaken and reports prepared documenting the results.	• Pre-construction building condition surveys were completed as part of the 16th Avenue and Ninth Line tunnel contracts. • There was no vibration monitoring program on the 16th Avenue and Ninth Line tunnel contracts.
Working Hours	• Shaft 13 (CCF) is not a mining shaft, and accordingly the construction activity will be limited to the shaft construction and the connection of the new SeC trunk sewer to the existing system. • Shaft 13 (CCF) – construction activity will generally conform to the Town of Markham noise control by-law. Potentially, a one week period of continuous operation during connection of the new SeC to the existing sewer system may be required in 2014.	• The noise bylaw exemption permitted night work Monday – Friday at working shafts.

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Construction Environmental Noise & Vibration Management Plan

Management / Mitigation Measure	Southeast Collector Trunk Sewer Project	16th Avenue & Ninth Line Tunnel Projects
Acoustic Hoarding Installation	• Along the perimeter of all compounds including Shaft 13 (CCF) – 3.6 m high acoustic barrier hoarding (a minimum surface density of 20 kg/m^2 or sound insulation of STC 32) with a consistent facade with no holes or openings.	• On the 16th Avenue Tunnel contract 3.6 metre high 12mm thick plywood without sound insulation was used but not on every shaft compound.
Operational Constraints and Mitigation	Operational constraints and mitigation aimed at avoiding and/or controlling noise generation will include the following measures at all shaft compounds: • Absolute noise limits for both daytime and night time operation that must be achieved at all receptor locations. • Specific vibration limits that must not be exceeded. • Impact and vibration pile driving is prohibited. • Electrical power is to be supplied directly to all shafts to avoid continuous use of generators. • Noise attenuation shall be used for all areas where repetitive metal to metal contact may generate excessive noise, such as muck cars, tipping chains, dump trucks, excavators, etc • Use of vehicles and equipment with efficient muffling devices that and which conforms to MOE's NPC-115 equipment noise limits. • All vehicles to be employed continuously on any site for extended periods of time shall be fitted with sound reducing, broadband, multi-frequency back-up (reversing) alarms.	• No operational constraints were implemented on the 16th Avenue or Ninth Line tunnel contracts.
Noise and Vibration Complaints Process	A systematic process has been established to record and respond to complaints from the public in regard to noise and vibration concerns, which includes the following: • Letters will be issued to the public in the vicinity of the shaft compounds and TBM path to advise on construction activities. • An advisory will also be provided to describe the process for noise and vibration complaints, and will include a 1-800 number that residents can use to record any complaints. • A record of all noise and vibration complaints will be provided to the construction team within 24 hours of receiving the complaint.	• General notifications were issued. • Complaints were responded to as they were received.
Construction Specifications	The above measures and requirements have been embedded in the contract documents for the project to clearly outline the Contractor's responsibilities in regard to controlling construction noise and vibration.	• Not done on the 16th Avenue or Ninth Line tunnel contracts.

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Construction Environmental Noise & Vibration Management Plan

A few highlights of the measures included in the plan are as follows:

- ***Noise Monitoring Program*** **- both sample noise monitoring and long-term noise monitoring at each construction compound.**

- ***Vibration Monitoring Program*** **- pre-construction building condition survey, sample vibration monitoring and continuous vibration monitoring. Specific receptors are identified for the selection of stationary monitor locations.**

- ***Working Hours - CCF*** **(Shaft 13) is not a mining shaft, and therefore construction activity will only involve shaft construction, construction of the CCF building and the connection of the new SeC trunk to the existing system. Construction activity will generally conform to the Town of Markham noise control by-law.**

- ***Acoustic Hoarding Installation*** **- Along the perimeter of all compounds including Shaft 13 (CCF) – 3.6 m high acoustic barrier hoarding with a consistent facade with no holes or openings.**

Construction Environmental Noise & Vibration Management Plan

- ***Operational Constraints and Mitigation*** – Measures aimed at avoiding and/or controlling noise generation, including: absolute noise limits for operations, specific vibration limits, no impact or vibration pile driving, direct electrical power to all shafts to avoid continuous use of generators.

- ***Noise and Vibration Complaints Process*** - A systematic process to record and respond to complaints from the public: including advance construction notices, a 1-800 project number, and response to complaints within 24 hours.

- ***Construction Specifications*** - The above measures and requirements have been embedded in the contract documents for the project to clearly outline the Contractor's responsibilities in regard to controlling construction noise and vibration.

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Project Status – Schedule

• Tender Close	May 6, 2011
• Project Award	June 2011
• Construction Start	August 2011
• Odour Control Facility	May 2012
• Corrosion Control Facility	September 2012
• Project Completion	September 2015

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