

4

YORK-PEEL WATER SUPPLY PROJECT UPDATE PROJECT 77300

The Transportation and Works Committee recommends:

- 1. The presentation by Bala Araniyasundaran, Manager, Engineering Water and Wastewater, Infrastructure Design and Construction, be received; and**
- 2. The recommendations contained in the following report, August 25, 2004, from the Commissioner of Transportation and Works be adopted:**

1. RECOMMENDATIONS

It is recommended that:

1. The following report be received for information by Committee and Regional Council.
2. The Regional Clerk forward copies of this report to the Clerks of the City of Vaughan, and the Towns of Markham, Richmond Hill, Aurora, and Newmarket.

2. PURPOSE

The purpose of this report is to update Committee and Regional Council on the progress achieved to date as well as forecast activities over the next few months on the York-Peel Water Partnership (YPWP) project.

3. BACKGROUND

3.1 York-Peel Water Partnership (YPWP) Project

The primary objective of the YPWP project is to design, construct, and put into service a major east-west supply system to convey up to 388 ML/d (85 MIGD) of treated water from The Regional Municipality of Peel (Peel Region) to York Region's Maple Reservoir. The project consists of 30 km of large-diameter feeder mains through the Cities of Brampton and Vaughan, as well as a new reservoir and pumping station facility located in Brampton. The project is a major component of the Region's preferred strategy for long-term water supply, and is being implemented in co-operation with Peel Region.

The various contract packages constituting the YPWP project are shown in the key plan provided (*see Attachment 1*).

3.2 York and Peel Contracts

A single design-build contract, valued at about \$72 million, encompasses all works to be constructed as part of the YPWP within the boundaries of York Region. The primary component of the project is an 1800 mm diameter feedermain that will begin at the east side of Highway 50 (the Peel-York Boundary), extend eastward along Rutherford Road to connect with the previously constructed feedermain segment, and then continue northward from Rutherford Road along Weston Road to the proposed Block 33 residential subdivision north of Major Mackenzie Drive. After traversing the subdivision lands, the feedermain will be extended eastward across Highway 400 along Teston Road and will ultimately connect to the existing Maple Reservoir in the City of Vaughan.

York Region has assumed primary management responsibility for the above-noted works, while Peel Region has retained primary management responsibility for project components within its geographical boundaries.

On June 26, 2003, York Region Council authorized the award of design-build Contract No. 03-04 in the amount of \$72,310,643.87 including GST for feedermain installation and road reconstruction to Dufferin Construction.

The Peel portion of the work, which has been sub-divided into several design-build and conventional contracts, includes a 2100 mm diameter feedermain that will begin at the existing Beckett-Sproule Reservoir, Brampton, and will run northward and eastward to the intersection of West Drive and Queen Street, extend eastward along Queen Street to Airport Road, and then continue northward to enter an easement along the Canadian National Railway (CNR), below Castlemore Road, terminating at a new 35 ML reservoir and associated pumping station (the "Airport Road Reservoir and Pumping Station" -- ARRPS). An outgoing 1800 mm feedermain will be installed along the future Humber West Parkway and will continue eastward along Castlemore Road, connecting the ARRPS with the York feedermain at the York-Peel Regional boundary.

On July 10, 2003, Peel Region's Regional Council authorized the award of design-build Contract #2004-109P for the Airport Road/Castlemore Road feedermain to Dufferin Construction.

4. ANALYSIS AND OPTIONS

4.1 Progress Summary

Since the last report to Council, the project team has focussed on the following activities:

- completing the necessary property acquisition within both York and Peel, except for two outstanding properties (one in each Region).
- conducting regular construction meetings with the design-builder.
- reviewing required submittals from the design-builder.
- monitoring material procurement status and reviewing expediting options.
- administering construction of the following:

- feedermain installation through Highway #400 tunnel crossing (now complete), along Weston Road, and through Block 33
- road reconstruction works on Rutherford Road, Weston Road and Teston Road.
- girders and deck for the southern half of the new Elder Mills Bridge. (Stage I of the bridge construction is now complete).
- Robinson Creek Bridge substructure (now complete) and deck.

Construction of the Airport Road Reservoir and Pumping Station in Peel is currently on schedule to meet the required completion date -- November 30, 2004. The reservoir portion is complete and ready for testing. This facility will feed water into the York Water System.

Two of the three conventional feedermain contracts being undertaken in the Peel Region have been completed. A third is underway, and only a few hundred metres of feedermain remain to be installed. Some quality issues have arisen with regard to the completed installations; these are currently being addressed by the project team.

Some of the feedermain installation scheduled to start during the past quarter has been delayed, owing to material procurement difficulties. Availability of Concrete Pressure Pipe (CPP) for installation by Dufferin Construction under both York Region Contract 03-04 and Peel Region Contract #2003-110P has for some time been the primary factor driving the scheduled completion dates. The project team has been continuously monitoring pipe deliveries and comparing the quantities delivered to those required to maintain scheduled completion dates. The pipe supply issue is discussed in further detail in Section 4.3 of this report.

The latest schedule updates submitted by Dufferin Construction forecast substantial completion of the feedermain work in York Region and in the Peel Region by March 10, 2005 and February 2, 2005, respectively. Unless additional mitigating measures can be successfully implemented, the agreed in-service date of December 31, 2004 will be in jeopardy.

4.2 Property Acquisition Status

All property required to permit feedermain installation to proceed has been in place for some time now. In some instances, additional property is required to accommodate road improvements. Property acquisition status for the major subdivisions of the project is as follows:

- Rutherford Road and Weston Road: all property has been acquired for both feedermain installation and road reconstruction.
- Block 33: Property agreements have been executed with the developers; feedermain installation has since commenced.
- Teston Road: There are no outstanding properties required for feedermain installation. Property acquisition status for the road reconstruction is as follows:
 - Property on the south side of Teston Road is owned either by York Region or the City of Vaughan. Although the necessary permissions are in place for feedermain and road construction to proceed, the Region must still execute formal agreements

with the City of Vaughan to provide easements or transfer property to the York Region.

- The Region is in the process of acquiring one final property on the north side of Teston Road via expropriation.
- The owners of the Teston United Church chose to demolish rather than relocate their existing facility. Both property acquisition and demolition are now complete, clearing the way to eliminate the jog in Teston Road at its intersection with Jane Street.

Most property within Peel Region required for the feedermain has been acquired with the exception of one property along Castlemore Road; agreement to transfer this property is imminent.

4.3 Material Procurement and Source Quality Control

The design-build Request for Proposal (RFP) incorporated a performance based specification for the concrete pressure pipe (CPP) that set out specific Quality Assurance/Quality Control (QA/QC) requirements, including compliance with American Water Works Association (AWWA) Standard C301.

The design-builder (Dufferin) contracted with Munro Concrete Products (Munro), an existing concrete pipe manufacturer located in Barrie, Ontario, to supply CPP to the entire York-Peel Feedermain project. This includes approximately 2.7 km of 2100 mm diameter pipe and approximately 7.5 km of 1800 mm diameter pipe within the Peel Region. YorkRegion's portion of the pipe delivery from Munro consists of approximately 13 km of 1800 mm diameter pipe. These quantities equate to over 3,650 individual pieces of large-diameter pipe – approximately 2,200 pieces to be delivered to York Region, with the remainder earmarked for the Peel contract.

While Munro was an established supplier of other types of concrete pipe, it needed to develop an entirely new automated CPP production facility at its Barrie premises to have the capability to fill Dufferin's order. Construction of the new facilities to house CPP production was completed in early 2004, very close to the scheduled dates. Completion of a mandatory certification process was an essential prerequisite to the shipment of any CPP produced at the Munro plant to either York or Peel Region's sites. Start-up problems delayed initial certification of the plant and set back the first delivery of CPP from the originally planned date of February 16, 2004 to May 3, 2004 – a delay of some 11 weeks. Dufferin's schedule for feedermain installation was based on the assumption that over 40% of the required pipe production would be accomplished during that 11-week period.

Dufferin had earlier provided assurances to the Region that it would purchase CPP from alternate certified suppliers, should Munro be unable to produce sufficient quantities of pipe to support the required installation schedule. Dufferin's assurances were tied to a series of milestone dates on which progress with construction and commissioning of the new plant would be assessed by the project management team. Despite Dufferin's assurances, it has so far been unsuccessful in securing an alternate supplier for large-diameter (1800 mm) pipe. Dufferin has however, secured delivery of smaller diameter pipe from an alternative supplier. This will allow Munro to concentrate on manufacturing the larger diameter pipe. The smaller diameter pipe will be used for the City of Vaughan's PD #7 watermain and some yard piping at the two reservoir sites.

Also, despite repeated assurances that the Munro plant was in the process of ramping up production and would be imminently capable of producing approximately 150 pipes per week, this plateau has never been reached and actual weekly production levels remain quite variable. The data gathered to date by the project team suggest that the production rate projections around which Dufferin's last few revised schedules have been developed have tended to be overly optimistic.

Dufferin's original plans -- for the combined York and Peel Region contracts -- called for the large-diameter pipe to be 95% installed by August 30, 2004. However, as of that cut-off date, only about 25% of the scheduled pipe installation had been completed.

Staff have not been able to ascertain whether the failure to achieve theoretical production capacity is due to technological factors, availability of appropriate human resources, or some combination of the two, as this would be considered sensitive commercial information. Now that we have some independent data to compare against, the team has adopted a more conservative approach to forecasting revised completion dates, based strictly on historical pipe delivery figures.

Based on on-going deliveries at the average rate achieved over the seven weeks ending on August 13, 2004, pipe delivery will continue until the week beginning March 28, 2005. Dufferin's schedules allow four weeks subsequent to final pipe installation for pipe cleaning, disinfection, and commissioning, although it is likely that this activity can be compressed somewhat by testing and disinfecting sections of pipe where construction is complete and not waiting to test pipe until the pipeline is completely installed. A current estimate of the in-service date for the full combined York and Peel feedermain works is therefore end of April 2005. Even this date would be unattainable if Munro runs into additional difficulties with the manufacturing of either 2100 mm diameter pipe or special pipe configurations.

In contrast to the Regional staff's projection, Dufferin's latest schedule forecasts substantial completion of the feedermain work in York Region and the Peel Region by March 10, 2005 and February 2, 2005, respectively.

Delays to the completion dates would result in additional costs to the Region. The contract with Dufferin stipulates that liquidated damages would be imposed if the project is not complete in accordance with the contract schedule. The liquidated damages on this project amount to \$17,000 per day and are intended to cover costs and damages that the Region would incur in the event of delays to contract completion.

In order to lessen the impact of delays, the project team continues to explore means to both expedite the project and mitigate additional costs that would be incurred.

The primary option is to expedite key components of the work to enable commissioning of part of the system by the December 31, 2004. Under this option pipe installation for the Peel section and the pipe installation on Rutherford Road up to Napa Valley Drive would be completed as early as possible to initiate water deliveries into York Region. This will satisfy the primary objective of initiating water deliveries into York Region. This will allow water to be pumped into York Region through local connections while subsequent section of the the pipeline on Teston Road is completed. Staff are actively pursuing this option with Dufferin Construction, and working out the details to facilitate the implementation of this option.

Notwithstanding the above options being discussed with the contractor, staff and the project team remain concerned about the overall schedule. Staff will continue to work closely with Dufferin Construction in an attempt to minimize scheduling impacts and will continue to report back to Committee and Council.

4.4 Construction Schedule Overview

Table 1 provides milestone dates for key activities, as set out in the latest updates submitted by the respective design-build contractors.

Table 1
Key Project Milestones

Task	Original Schedule Date	Latest Schedule Date
Construction start on Rutherford Road – CPR to Napa Valley Avenue	September 2003	September 2003
Start of Elder Mills and Robinson Creek – Bridge reconstruction	December 2003	December 2003
Construction start on Weston Road – Rutherford Road to Major Mackenzie Drive	September 2003	September 2003
Construction start on Teston Road – Keele Street to Jane Street.	September 2003	September 2003
Commence highway and water crossings	February 2004	February 2004
Commence concrete pressure pipe (CPP) delivery in York and Peel Regions	February 2004	May 2004
Commence CPP installation along Weston Road	February 2004	May 2004
Complete CPP installation along Weston Road	August 2004	September 2004
Commence CPP installation through Block 33	April 2004	August 2004
Complete CPP installation through Block 33	May 2004	October 2004
Commence CPP installation along Rutherford Road	March 2004	August 2004
Complete CPP installation along Rutherford Road	September 2004	January 2005
Commence CPP installation along Teston Road	March 2004	September 2004
Complete CPP installation along Teston Road	September 2004	February 2005
Complete Airport Road Reservoir and Pumping Station	November 2004	November 2004
Complete Feedermain Work in Peel Region	October 2004	March 2005
Complete overall water supply system commissioning	October 2004	April 2005
Construction (inclusive of road works) substantially performed	April 2006	April 2006

4.5 Forecast Activities for the Next Quarter

The following are key events scheduled over the next few months:

- Finalize outstanding property acquisition and permits.
- Complete feedermain installation along Weston Road and through Block 33.
- Start feedermain installation on Rutherford Road, under the Humber River and eastward to Napa Valley Avenue.
- Start feedermain installation along Teston Road.

- Complete tunnel under the CPR crossing on Rutherford Road.
- Continue roadwork on Rutherford Road (between Highway #50 and Napa Valley Avenue), Weston Road (between Rutherford Road and Major Mackenzie Drive), and Teston Road (between Block 33 and Keele Street).
- Demolish the existing Elder Mills Bridge and begin Stage II (north side) construction.
- Continue the Robinson Creek Bridge widening..
- Replace concrete culverts on Rutherford Road and Teston Road
- Continue feedermain construction in Peel along both Airport Road and Castlemore Road.
- Continue work on the pumping station portion of the Airport Road Reservoir and Pumping Station.

5. FINANCIAL IMPLICATIONS

All major contracts relating to this project, including those being managed on the Region's behalf by Peel Region, have been tendered and awarded. Several are now complete or nearing completion. York Region's 10 year Capital Plan includes sufficient funds to cover committed engineering, construction, project management, land acquisition, and miscellaneous costs associated with the feedermain and road works and to provide a modest reserve for any unforeseen circumstances that may still crop up.

Where Regional Council has approved advancing road improvement expenditures, the relevant line items in the 10 year Roads Capital Plan have been adjusted in the 2004 Business Plan and Budget.

Financial responsibility for the pipeline works in Peel Region is subject to the terms of the York-Peel Water Supply Agreement. Each municipality is arranging its own funding for ancillary road and other infrastructure work.

York may reduce the financial impact of construction delays by assessing liquated damages for delays beyond the scheduled completion date of October 31, 2004 for the feedermain portion of the project. Regional staff are working with the design-build team to mitigate the financial impact to both the Region and the design-build consortium.

6. LOCAL MUNICIPAL IMPACT

The York-Peel Feedermain project is required to accommodate future growth within York Region including the City of Vaughan and to supplement the existing water supply from the City of Toronto.

There is no reason to expect adverse impacts on local municipalities other than impacts normally associated with large projects of this nature.

7. CONCLUSION

The York-Peel Feedermain installation and road reconstruction project being undertaken in York Region is progressing, however the completion schedule is delayed by about five months. The feedermain portion of the work is scheduled for commissioning by early March 2005, subject to the design-build team maintaining its current schedule.

The project team is actively exploring options to expedite key components of the work to enable commissioning part of the system. This would enable initiation of water deliveries to York Region from Peel Region and mitigate impacts of delays associated with the project.

The Senior Management Group has reviewed this report.

(A copy of the attachment referred to in the foregoing is included with this report and is also on file in the Regional Clerk's office.)