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**ADDITIONAL CONSTRUCTION SERVICES FOR  
DONALD COUSENS PARKWAY EXTENSION NORTH OF MAJOR MACKENZIE DRIVE  
CITY OF MARKHAM**

**The Transportation Services Committee recommends the adoption of the recommendation contained in the following report dated December 12, 2012, from the Commissioner of Transportation and Community Planning.**

**1. RECOMMENDATION**

It is recommended that:

1. Council authorize an increase in Blanket Purchase Order Number B00013516, issued to KAPP Contracting Inc., from \$1,736,655 to \$2,374,351.54, excluding taxes, for additional construction services related to the future extension of Donald Cousens Parkway (Y.R. 48) from Major Mackenzie Drive (Y.R. 25) to Highway 48.

**2. PURPOSE**

This report seeks Council authorization to increase Blanket Purchase Order B00013516 for additional construction services required to address changed groundwater conditions, increased settlement monitoring and additional erosion and sediment control measures for the Donald Cousens Parkway extension north of Major Mackenzie Drive, in the City of Markham. The recommended purchase order increase is in excess of the scope change and contingency allowances in the Purchasing By-law.

**3. BACKGROUND**

**Construction of the Donald Cousens Parkway from Highway 407 to Highway 48 is being completed in three phases**

The City of Markham completed a Schedule “C” Class Environmental Assessment Study for the Donald Cousens Parkway (formerly Markham By-pass) from Highway 407 to Highway 48 in 1996. This north-south corridor is required to address the need for additional transportation capacity in developing areas of eastern Markham. A location plan showing the project area is appended to this report (*see Attachment 1*).

Phases one and two of the Donald Cousens Parkway, from Highway 407 to Major Mackenzie Drive, were completed in 2008 with the build-out of the adjacent development lands in the Cornell community.

### **The final phase of the Donald Cousens Parkway, including a new bridge over the GO Rail corridor, is planned for construction in 2015**

The third (final) phase of the Donald Cousens Parkway, from north of Major Mackenzie Drive to Highway 48, is planned for a construction start in 2015. The detailed design of this section is well underway and nearing the 90 per cent design milestone. The final section of the Donald Cousens Parkway includes a new grade separation where the road crosses over the GO Rail (Stouffville line) corridor.

### **Soft ground conditions and weak subsurface soils require a staged construction of the new bridge approach embankments**

The geotechnical investigation identified soft ground conditions in the area of the proposed overpass structure. As a result, the required nine metre high approach embankments need to be constructed in stages to allow consolidation of the underlying soils. Constructing the embankments in this manner reduces the risk of damage to the existing GO Rail corridor, as well as the future overpass.

## **4. ANALYSIS AND OPTIONS**

### **Pre-loading of the approach embankments began in 2012 for a scheduled completion in 2014**

The 10-year Roads Construction Program identified construction of the Donald Cousens Parkway extension to begin in 2015. To meet the construction schedule, an advance construction contract was awarded to complete the three phases of pre-loading for the approach embankments.

The advance contract was awarded to KAPP Contracting Inc. in 2012. Construction of the first phase of pre-loading construction began in July 2012. Subsequent preloading activities are scheduled for 2013 and 2014.

### **An enhanced drainage system will accelerate completion of the roadway embankments from seven years to three years**

Based on the soft soil conditions, constructing the roadway embankments with conventional pre-loading methods would take seven years. In order to accelerate soil consolidation, an enhanced drainage system was planned. The enhanced drainage system provides pathways to allow for accelerated drainage of groundwater in the soft clay soils. The accelerated removal of the groundwater will complete the consolidation of the clay soils in three years.

The enhanced drainage design was developed based on geotechnical investigations and analysis completed during the detailed design of the pre-loading contract.

**Despite preliminary investigations, actual conditions have revealed a higher groundwater elevation requiring a more extensive drainage system**

During construction the actual conditions encountered revealed more groundwater than the preliminary investigations identified. This necessitated an increase in the extent and quantity of the drainage system. The expanded drainage system will result in additional costs of \$515,414. Increasing the extent of the enhanced drainage system will reduce the risk of schedule delays.

**GO Transit has increased its settlement monitoring and analysis requirements from what was anticipated at the time of tender**

In order to protect the GO rail corridor, it was necessary to include a railway monitoring plan as part of the embankment preloading. A railway monitoring plan was developed during the detailed design phase to address GO Transit's requirements. Given the more challenging soil conditions, GO Transit has increased its monitoring requirements. This resulted in the identification and implementation of additional monitoring locations not anticipated as part of the original tender. The expanded monitoring program will result in additional costs to York Region of \$25,131.54.

**Additional investment to control erosion during all phases of the work is required to reduce the potential for sediment to be released to the adjacent watercourse**

As part of the detailed design a sediment and erosion control plan was developed and included in the construction contract. This plan included works for seeding, sediment barriers, placement of erosion control blankets and other construction sequencing measures.

The more challenging soil conditions require seeding and erosion blanket quantities in excess of those estimated and included in the original contract. The failure to invest in additional erosion control measures could result in inadequate environmental protection. An increase in the contract quantities is required to ensure adequate controls are in place. The additional erosion and sediment control measures will result in an increased cost of \$97,151.

**Link to Key Council-approved Plans**

**2011-2015 Strategic Plan**

This project relates to Strategic Priority Area Number 1: Continue to deliver and sustain critical infrastructure.

## 5. FINANCIAL IMPLICATIONS

### **The identified additional construction costs will increase the project cost by \$637,696.54**

The additional construction costs required to deliver this project and maintain the project schedule are summarized in Table 1.

**Table 1**  
Additional Construction Costs

| <b>Item Description</b>                   | <b>Additional Cost</b> |
|-------------------------------------------|------------------------|
| Drainage System                           | \$515,414.00           |
| • Wicks (\$90,016)                        |                        |
| • Excavation (\$51,674)                   |                        |
| • Granular Material (\$373,724)           |                        |
| Railway Monitoring                        | 25,131.54              |
| Seeding/Erosion Blanket for exposed areas | 97,151.00              |
| <b>Total Costs</b>                        | <b>\$637,696.54</b>    |

This increased investment on this project will:

- Mitigate the potential schedule impacts resulting from the changed groundwater conditions
- Address GO Transit's requirements for enhanced settlement monitoring, and
- Increase the level of environmental protection through increased erosion and sediment control

These additional costs have been reviewed by staff and determined to be fair and reasonable and represents good value for the work. This conclusion is based on competitively bid unit rates from existing contract items being used to determine the value of the additional work.

There are sufficient monies in the proposed 2013 Capital Spending Authority for the 10-Year Roads Construction Program to fund this increase in construction costs. This project is funded with 90% from development charges and 10% for the tax levy.

From 2006 to 2012, 998 purchase orders with a total value of \$437M have been issued to secure engineering, consulting and construction services on Roads capital projects. Of these, 57 or 6% of the purchase orders have required increases beyond the increases allowed in the Region's Purchasing By-law. The total value of such increases is \$13M or 3% of the total original value of the purchase orders.

## **6. LOCAL MUNICIPAL IMPACT**

This project is the last section of the Donald Cousens Parkway that is planned to extend from Highway 407 to Highway 48. In addition to providing new north-south capacity, Donald Cousens Parkway also provides an alternate route to bypass historical Main Street in the City of Markham. As such, the City of Markham supports the completion of the final section of the Donald Cousens Parkway extension.

## **7. CONCLUSION**

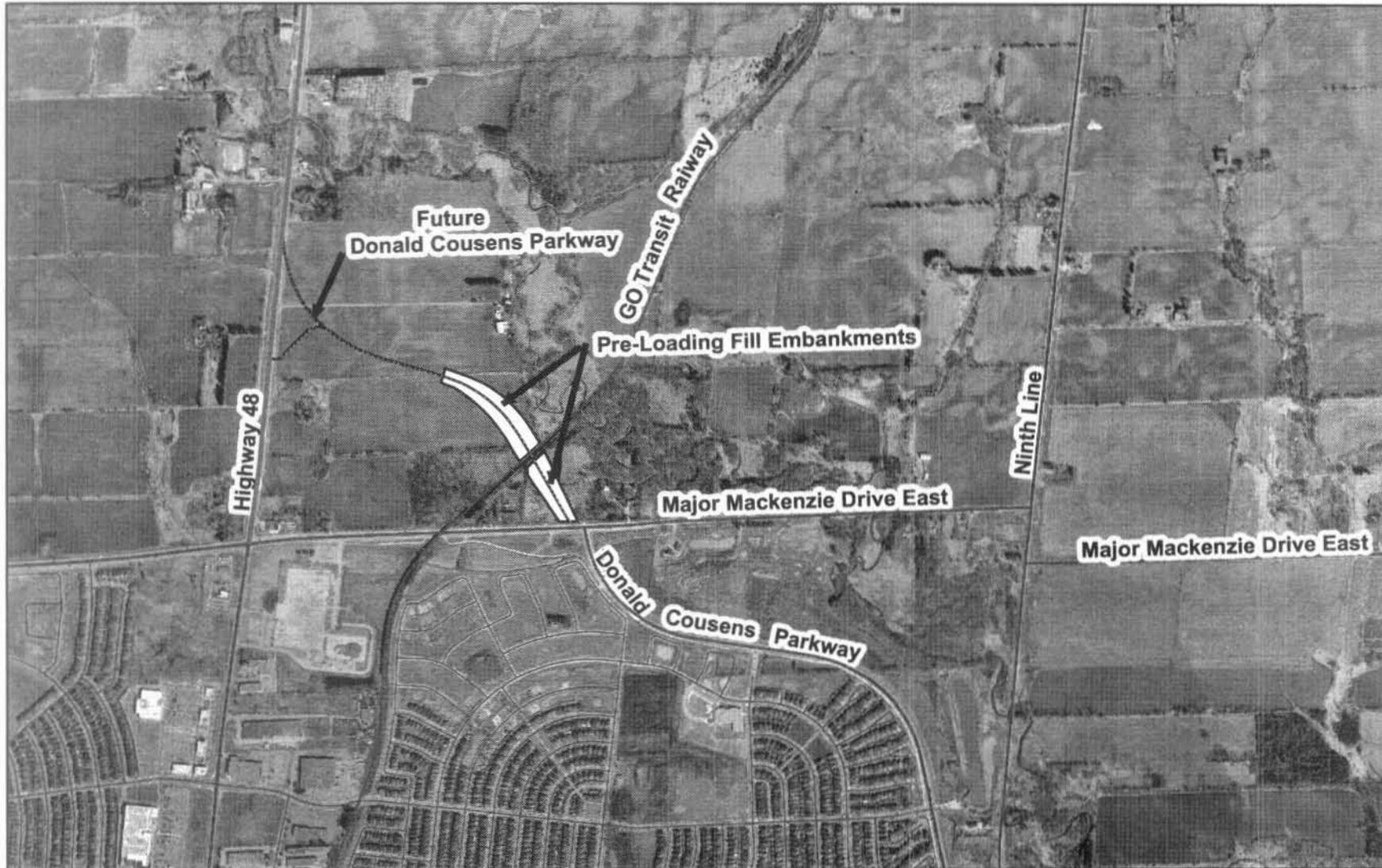
The additional construction costs of \$637,696.54 are necessary to complete the pre-loading of the approach embankment construction within the required three year time frame.

It is recommended Council authorize the increase to the existing purchase order for the pre-loading construction of the approach embankments under Contract 11-103 from \$1,736,658 to \$2,347,354 that is currently issued to KAPP Contracting Inc.

For more information on this report, please contact Brian Titherington, Director, Roads at Ext. 5901.

The Senior Management Group has reviewed this report.

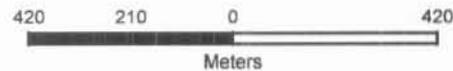
*(The attachment referred to in this clause is attached to this report.)*



## LOCATION PLAN

DONALD COUSENS PARKWAY EXTENSION  
 PRE-LOADING FOR APPROACH EMBANKMENTS  
 City of Markham

Produced By: Roads Branch - Capital Delivery  
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