

**3**  
**ENGINEERING SERVICES**  
**LANGSTAFF ROAD FROM HIGHWAY 50 TO HIGHWAY 27**  
**CONSULTANT FEE INCREASE**  
**CITY OF VAUGHAN**

**The Transportation and Works Committee recommends the adoption of the recommendation contained in the following report, August 22, 2008, from the Commissioner of Transportation Services:**

**1. RECOMMENDATION**

It is recommended that:

1. Approval be given to increase the expenditure limit of the Purchase Order issued to Earth Tech for the detailed design consultant assignment for the reconstruction and widening of Langstaff Road (Y.R. 72) from Highway 50 (Y.R. 24) to Highway 27 (Y.R. 27) by the amount of \$102,340 from \$309,420 to \$411,760, excluding G.S.T.

**2. PURPOSE**

This report is to obtain Regional Council approval to increase the purchase order amount for the previously retained engineering consulting firm and to advise Regional Council that Langstaff Road from Highway 50 to Highway 27 will be temporarily closed to through traffic during the construction period.

**3. BACKGROUND**

**Langstaff Road project is nearing construction**

Langstaff Road between Highway 50 and Highway 27 is a two lane rural cross-section with substandard shoulders and open ditches. It is proposed that Langstaff Road be improved to four lanes and to comply with Regional road standards. Traffic volumes along this section of Langstaff Road are forecasted to increase with the area land development and development of new road infrastructure.

The Langstaff Road project is programmed for construction in the 2008 10-Year Roads Construction Program in 2009. An Environmental Study Report (ESR) for the project was completed in May 2003 and Environmental Assessment (EA) clearance is in place for the project to proceed to construction. All property needed for the widening of Langstaff Road has been acquired and utility relocations are complete.

The project involves the reconstruction and widening of 3.8 kilometres of Langstaff Road in the City of Vaughan from 2 lanes to 4 lanes and includes the realignment of Langstaff Road at Huntington Road for elimination of a jog at the intersection and construction of a new bridge structure over the Rainbow Creek east of Highway 27. The estimated construction cost is \$10.5 million and detailed design is well underway. Funds are included in the approved 2008 10-Year Roads Construction Program for construction of this work in 2009.

### **What are the engineering costs?**

Regional Council, on June 23, 2005, authorized award of the detailed design assignment for Langstaff Road, to the engineering consultant firm Earth Tech, in the amount of \$229,200, plus GST.

Detailed design work commenced in February 2006 and several significant changes were required to amend the original scope of work to include issues which emerged to address changing Toronto Region Conservation Authority (TRCA) requirements. The TRCA requirements for a bridge replacement over the Rainbow Creek, were not available prior to completion of the EA and are now required to be incorporated into the final design. These design changes, which amounted to approximately \$80,220, were reviewed and approved by staff pursuant to the authority under the Region's Purchasing By-law. This action effectively increased the approved expenditure limit of the Purchase Order for Earth Tech to complete the detailed design at a cost of \$309,420, plus GST.

Under the Purchasing By-law, provisions are in place to increase a Purchase Order due to a Change of Scope (20%) and provides for a Contingency Allowance (15%) with the approval of the Department Head and/or CAO. Approval by Regional Council is required for any increases in budget exceeding these 20% and 15% values.

On July 4, 2008, following discussions with Regional staff, Earth Tech submitted a further request for an additional estimated \$102,340, plus GST in fees, to accommodate additional scope changes required to complete the work.

## **4. ANALYSIS AND OPTIONS**

The Region retained Earth Tech to provide professional engineering services for the detailed design of Langstaff Road from Highway 50 to Highway 27. In response to new project requirements, which were not anticipated at the time of the proposal, additional scope is required.

### **4.1 REQUEST FOR ADDITIONAL DESIGN FEES**

The need for additional fees in the amount of \$102,340, plus GST as confirmed by Regional staff, is summarized as follows:

## **City of Vaughan Roadway Improvements**

Previous widening of Langstaff Road east of Highway 27 by the City of Vaughan requires minor modifications to suit the Region's widening work west of Highway 27.

Also, due to recent completion of road works on Huntington Road south of Langstaff Road, in which Huntington Road has been widened to 4 lanes, there is a need to re-survey the area and to redesign the Langstaff Road/Huntington Road intersection to accommodate the widening and transition to the north and the wider Huntington Road to the south. Collectively, these changes amount to as estimated \$32,100 of design work.

## **Area Land Development**

Since the EA completion, the area along Langstaff Road has continued to develop and emerging land development south of Langstaff Road and servicing requirements to these areas requires design co-ordination to ensure that development infrastructure constructed along the Langstaff Road corridor fits with the Region's design plans for the reconstruction and widening of Langstaff Road.

Area land development plans east of Highway 27 propose a future extension of Innovation Drive from its present terminus south of Langstaff Road to Langstaff Road. Included within this road extension will be the construction of a trunk storm sewer system which will, in part, benefit the drainage of Langstaff Road and reduce the cost of the Region's storm sewer construction cost. Therefore certain engineering works (geotechnical investigations, surveys and design) are required to be undertaken by the consultant in connection with the Innovation Drive extension to Langstaff Road and storm sewer construction. To incorporate area land development infrastructure requires design changes in the estimated amount of \$26,820.

## **Toronto Region Conservation Authority**

Initial roadway planning was based on the principle that external drainage flows would be picked up by the Langstaff Road project and conveyed through a storm sewer system and treatment devices before discharging to the Rainbow Creek. The storm sewer system was designed accordingly and produced a large diameter pipe at a significant depth to suit this planning criteria.

Following a review of TRCA's requirement to convey external flows, as opposed to conveying roadway drainage only, a redesign of the storm sewer is necessary. The design change will cost \$22,400, but will reduce the cost of the storm sewer construction since a smaller diameter pipe will be needed with less excavation to install.

## **York Region**

The Langstaff Road preliminary geometric design realignment for the jog elimination at the Huntington Road intersection contained elements which produced a super elevation of the pavement through the realigned road curve. Although an acceptable design principle, it is more appropriate to modify the road design to be compatible with the rapid area land development and resulting changing traffic needs.

Subsequent to the Region's agreement with the consultant, the Region identified Langstaff Road as a bike lane route within the Regional Road system; thus the consultant's scope of work requires modification in this regard to incorporate the change. To incorporate these refinements requires design changes in the estimated amount of \$21,020.

Regional staff have reviewed the scope and fees for above noted extra work and consider the request for additional fees of \$102,340 to be fair and reasonable. The amount of increase exceeds what can be approved by staff through the provisions of the Purchasing By-law. If the request for additional fees is authorized by Regional Council, the revised purchase order amount would be \$411,760.

## **Project Schedule**

As required by the Purchasing Bylaw, endorsement is being sought before further design work that is subject to additional fees, is undertaken. Once approved the tender package can be completed by fall of 2008.

Region of York property acquisition is complete along with the relocation of utilities. As such, the Region intends to commence construction of Langstaff Road in the spring of 2009.

### **4.2 TEMPORARY ROAD CLOSURE**

During construction, Langstaff Road cannot be safely open to traffic because of the existing narrow road platform and by virtue of the actual construction that is required within the sections of Langstaff Road between Highway 50 and Highway 27.

Under Regional Council's delegated authority to the Commissioner of Transportation Services it is proposed to close Langstaff Road in two separate stages between Highway 50 and Highway 27, with Huntington Road as the divider between each construction phase.

### **Highway 50 to Huntington Road Closure**

The actual closing time will be co-ordinated with construction activity and progress on the balance of the Langstaff project between Huntington Road and Highway 27 and the

need to complete the watercourse crossing within the regulated fish timing window. Carried out separately, the work time at the watercourse crossing west of Highway 50 is about 5 days and therefore the closure in this section of Langstaff Road will be scheduled for early September 2009 to overlap the fish timing window of July 1 to September 15.

### **Huntington Road to Highway 27 Closure**

Similar to the Highway 50 to Huntington Road section, this section of Langstaff Road also has an existing narrow pavement width which presents a complex challenge to maintaining Langstaff Road safely open to traffic with the required construction needs in the section.

It is proposed to close this section of Langstaff Road following the start of construction in the spring until early September 2009.

### **Traffic Management**

Depending on the section of Langstaff Road being temporarily closed to through traffic there are other complementary roads to provide suitable alternates to road users.

The completion of the arterial extension of Highway 427 to Zenway Boulevard and completion of Fogal Road from Huntington Road to Highway 50 in the fall of 2008 will provide additional parallel capacity for traffic that is temporarily displaced from Langstaff Road in 2009.

Huntington Road will be able to serve as a viable alternate route from Zenway Boulevard/Fogal Road to Langstaff Road for continuation to Highway 50, where Langstaff Road is closed between Huntington Road and Highway 27, or for continued travel to Rutherford Road or Highway 27 where Langstaff Road is closed between Highway 50 and Huntington Road.

### **Public Notification and Mitigation**

Notification of the temporary road closures will be placed on arterial and local roads at least two weeks prior to the closure period along with advertisements in the local newspapers. All emergency public service agencies (police, fire and ambulance) and public and school transit authorities will be informed of the respective closures. Temporary road closure notices will also be posted on the York Region website.

A detailed signage plan will be put in place for the closure to clearly identify the detour routes. Measures will also be provided to maintain local access to residents, businesses, schools and other institutions. Property owners that will be directly affected by the closure will be notified of the construction by hand delivered flyers.

## 5. FINANCIAL IMPLICATIONS

The financial impact to the Region with respect to the authorization of additional fees to complete the detailed design and tender documents is \$102,340, as outlined in Table 1.

**Table 1**  
Proposed New Purchase Order

| <b>Cost Detail</b>                                                        | <b>Cost</b>      |
|---------------------------------------------------------------------------|------------------|
| Original P.O. amount                                                      | \$229,200        |
| Additional funds approved through activation of 15% and 20% contingencies | 80,220           |
| Additional funds being requested via Regional Council authorization       | 102,340          |
| <b>Proposed new P.O. amount excluding G.S.T.</b>                          | <b>\$411,760</b> |

Staff has also compared the ratio for the total design fee to the construction tender value on several recent projects. This analysis showed the minimum ratio being 2.6% and the maximum ratio being 8.7%, with an average of 5.4%. For this assignment, the fee to tender value ratio using the total priced design fee, if approved by Regional Council, is 3.9%.

Sufficient funds are available in the current 2008 10-Year Roads Construction Program budget. This project is funded based on 12% Tax Levy and 88% Development Charges.

Regional Council authorization to increase the purchase order would allow Earth Tech to complete the detailed design and contract documents for tender to commence construction in 2009, in accordance with the Region's current 10-Year Capital Program.

## 6. LOCAL MUNICIPAL IMPACT

The reconstruction of Langstaff Road within the project limits will provide substantial community and transportation benefits to the City of Vaughan. The project will eliminate the existing jog at the Huntington Road intersection, improve the overall roadway geometrics, quality of infrastructure, safety and operations for the travelling public.

With the interim arterial extension of Highway 427 to Zenway Boulevard as an arterial road, traffic circulation will be improved within the south-west industrial development area in the City of Vaughan, with the construction of the Langstaff Road project.

Temporary construction impacts will be mainly with respect to the temporary and localized road closure of Langstaff Road. However, Langstaff Road will be closed in two stages (Highway 50 to Huntington Road and Huntington Road to Highway 27) thus

minimizing the construction impacts an enabling suitable detours to be implemented during construction. Local access will be maintained at all times to all properties during the period of temporary road closure and road construction.

Staff of the City of Vaughan are participating as part of the Langstaff Road project team and concur with the proposed temporary closure and the use of Huntington Road and Fogal Road as viable alternate routes, as needed.

All agencies will be advised formerly, a minimum of two weeks prior to the closure. Public, emergency services and school board notification will be undertaken prior to closure in addition to informing local residents through hand delivered notices, ads in newspaper and roadway signage.

Throughout the construction project, the public will be kept informed of the construction progress.

Timely completion of the Langstaff Road detailed design is required to ensure delivery of the Capital project in 2009 for adequate servicing of growth within the City of Vaughan.

## **7. CONCLUSION**

The authorization to pay additional fees to Earth Tech will enable The Region to complete the detailed design and contract documents for tender and commence road construction in 2009 in accordance with the Region's current 10-Year Capital Program.

For more information on this report, please contact Paul Jankowski, General Manager, Roads at Ext. 5901.

The Senior Management Group has reviewed this report.

*(The attachment referred to in this clause was included in the agenda for the September 3, 2008 Committee meeting.)*