COMMITTEE OF THE WHOLE - OCTOBER 22, 2001

PRE-ENGINEERING WORK FOR 2002 CAPITAL PROJECTS

Recommendation

The Commissioner of Development Services and Public Works in consultation with the Director of Reserves and Investments recommends:

That, Council gives pre-budget approval in the amount of $200,000 for the purpose of undertaking Pre-Engineering as part of the 2001 Capital Budget work program associated with projects anticipated for design and construction in the 2002 Capital Budget work program.

Purpose

To obtain funding approval to initiate Pre-Engineering works for Capital Projects anticipated to be included in the 2002 Capital Budget so that Pre-Engineering can be done in 2001 in order to facilitate design and construction in 2002.

Background - Analysis and Options

Pre-Engineering is the first phase of the capital project design and construction process. Pre-Engineering provides the designer with the necessary background information required before design commences. The four components that comprise the Pre-Engineering phase of a Capital Project are:

1) Surveying / Mapping

   This task involves the surveying of the project site. All surface features are accurately identified and their position both horizontal and vertical are calculated. A set of base plans, which includes the plan and profile and cross-sections plans, are created. Legal information, such as street and lot lines are verified and added to the base plan. This work can take 3 to 10 weeks depending on the scope of the project, and cannot be carried out when snow is covering the ground.

2) Utility Circulation

   After the base plan is completed, a set of plans is circulated to the private and public utilities for the addition of their infrastructure information. The utility circulation process can take any where from 3 to 10 weeks to complete. Above ground and under ground information is provided to the City. The base plan is revised as required.

3) Geo-Technical

   The Geo-Technical investigation is undertaken to determine the type, quality and structure of the soils, pavements or material under the surface of the project site. This information is used to identify specific construction methods and what safety precautions are necessary. In road reconstruction or resurfacing projects this information is used to evaluate the sub-surface of the road to determine if a complete reconstruction is necessary or if a resurfacing will suffice.

4) Sewer and Water System Evaluation

   Video inspection, pressure testing and flow monitoring are just a few of the techniques that are used to evaluate the condition of the sewer and water networks. The information provided by these activities helps to determine if sewer or water pipes require

replacement or maintenance. If replacement or maintenance is required, the activity can be incorporated into the existing capital project. This reduces the number of times a location has to be accessed, in turn reducing cost and the disruption to the public.

The tasks which comprise the Pre-Engineering phase of a capital project can take anywhere from several weeks to several months to complete. The amount of time required is dependent on the availability of the appropriate resources, the complexity and size of the project in question, and the time of year. The Engineering Department contracts out for Pre-Engineering services on a project-by-project basis.

In order to facilitate the design of capital projects over the coming winter for tender or construction in 2002 – Pre-Engineering tasks must be completed this fall. The benefits include:

1) Tender 2002 construction projects earlier in 2002, resulting in better competition amongst contractors and better prices.

2) Enable more construction work to be completed during the normal construction season in 2002 and avoid construction extending into late fall and winter (adverse winter conditions)

In the 2002 Capital budget and forecast staff will include funds for Pre-Engineering in 2002 and future years. To ensure optimal efficiency and cost effectiveness in the delivery of the annual capital construction program – future Pre-Engineering and design activities should always be carried out in the year prior to construction.

Funding for the Pre-Engineering work is proposed from the sewer and water reserves in the amounts of $50,000 each and from City Wide Development Charge – Engineering Services in the amount of $100,000. The total amount would be $200,000.

Conclusion

Pre-Engineering is the first phase of work for all construction related capital projects. The advancement of Pre-engineering work has a positive impact on the timing of the design and construction process that follows.

Attachments

None.

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Respectfully submitted,

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