



## STAFF REPORT ACTION REQUIRED

### Managing Construction Disruption

<b>Date:</b>	March 5, 2013
<b>To:</b>	Public Works and Infrastructure Committee
<b>From:</b>	Acting Executive Director, Engineering and Construction Services
<b>Wards:</b>	All
<b>Reference Number:</b>	p:\2013\Cluster B\TEC\PW13019 (AFS #15092)

#### SUMMARY

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The construction of sewers, watermains and roads is by nature noisy, dusty and disruptive work. When this work is overlaid onto City streets with high volumes of vehicular traffic, cyclists, pedestrians, narrow rights-of-way, and varied commercial operations, the resulting disruption can be significant. For the purposes of this report, disruption is defined as any negative impact to adjacent property owners or any motorist, pedestrian or other roadway user affected by the construction activities.

Engineering and Construction Services staff currently employ twelve strategies to minimize construction duration and manage disruption in the delivery of projects. The construction industry associations have recently been engaged to seek concurrence on the potential use of these strategies to mitigate construction disruption. The strategies outlined in this report are not applicable in all situations. Staff must carefully consider each particular situation and consult with the public to determine whether the benefits of the strategies being considered outweigh the impacts to select the best strategies to control construction duration and / or public disruption. The most appropriate strategies will be employed in any given situation in consultation with Toronto Water, Transportation Services, and other clients as appropriate.

The twelve strategies contained in this report provide a framework through which the City can continue to seek improvements in overall performance and manage disruption to the public. All key strategies are considered during the design stages and they can be sub-divided into '*Process and Procurement Strategies*' (associated with enhanced contract planning, design and procurement delivery techniques) and '*Construction Strategies*' (associated with physical construction or construction management). Engineering and Construction Services has also initiated improved contract management,

planning / coordination, and customer service and third party claims handling processes. The General Managers of Toronto Water and Transportation Services and the Director of Purchasing and Materials Management have been consulted on and concur with the strategies outlined in this report.

## **RECOMMENDATIONS**

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**The Acting Executive Director, Engineering and Construction Services recommends that:**

The Public Works and Infrastructure Committee receive this report for information.

### **Financial Impact**

There are no direct financial implications resulting from receipt of this report. Potential cost increases or cost savings may materialize on some capital projects through the implementation of some of the strategies identified herein which at this time are not easily quantifiable.

## **DECISION HISTORY**

At its meeting on September 14, 2009, the Public Works and Infrastructure Committee considered item PW26.8 pertaining to Councillor Carroll's letter (August 22, 2009) requesting staff to conduct a thorough review of the execution of the culvert rehabilitation and slope stabilization project upon its completion and that the investigation include a review of all aspects of the project including the design, tender, execution plan, community communication plan and the plan for contract performance review.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2009.PW26.8>

## **ISSUE BACKGROUND**

On August 22, 2009, Councillor Shelley Carroll made a written request to the Committee Chair of the Public Works and Infrastructure Committee to have staff conduct a thorough review of all aspects related to the Culvert Rehabilitation and Slope Stabilization Project on Glentworth Road and to identify recommendations to improve the execution of future projects in order to minimize construction disruption to area residents. The main concerns from residents in the Glentworth Road area included the adequacy of the contractor's actions, claims handling, traffic matters, working hours, debris on roadways, damage due to basement flooding and project duration.

On the Roncesvalles project, staff was requested to conduct a review for the purpose of minimizing construction disruption on future projects. The main concerns included storefront disruption with resultant business loss and demand for compensation, delays by

the contractor in responding to claims for damages, schedule delays and overall contractor performance.

## **COMMENTS**

In 2013 Engineering and Construction Services plans to deliver approximately \$525 million in Capital Construction, of which \$300 million is related to linear infrastructure consisting of roads, sewers, and watermains, thereby improving vital infrastructure throughout the City. The public will realize significant benefits in terms of improvements to our roads, bridges, sidewalks, drinking water distribution systems, sewers and other infrastructure. However, construction by nature is disruptive. City staff is constantly aiming to manage disruption to the public, and use experiences gained on projects such as Roncesvalles and Glentworth to improve these efforts. For the purposes of this report, disruption is defined as any negative impact to adjacent property owners or any motorist, pedestrian or other roadway user affected by the construction activities.

This report contains three main sections:

1. Experiences on the Glentworth and Roncesvalles Projects
2. Strategies to Manage Construction Duration and Disruption
3. Contract Management, Planning/Coordination and Customer Service Improvements

The strategies and process improvements contained in this report seek to improve the way the City and its contractors do business. To ensure contractors are liable for both the damage they cause and for the Health and Safety of their workers, it is necessary for them to have control of their construction work zones and direct the work of their forces. However, the key strategies identified in this report provide the framework through which the City can continue to seek improvements in overall performance and manage disruption to the public.

### **1. Experiences on the Glentworth and Roncesvalles Projects**

#### **1.1. Background on Glentworth Road Project**

The Glentworth Road project was undertaken in 2009 to replace a culvert damaged and dislocated by a storm event along with upgrading the sanitary and storm sewers. This particular project was located within the Toronto and Region Conservation Authority's (TRCA) regulated area and a condition of the contract involved the preparation and submission of a dewatering plan by the Contractor to the TRCA. The construction commenced in January 2009 and was completed at the end of September 2009, approximately four months beyond the original completion date of June 2009.

The schedule delays were due to the delayed submission of the dewatering plan by the contractor along with construction-related difficulties associated with the sheet piling installation. These delays caused the construction to occur during the higher flow spring

season, and resulted in a number of homeowners claiming damages due to sewer back-ups. Residents became very frustrated with the claims handling process and felt their complaints were not being addressed in a satisfactory manner. The ward Councillor had to arrange several public meetings to address concerns regarding the project.

In addition, there were complaints regarding traffic disruption, construction work outside the normal working hours permitted under the City By-law and debris tracked on the roadways by the contractor's equipment. The lack of a single-point of contact on the construction site that could address these concerns along with the overall project delays added to the frustration of the residents.

## **1.2. Background on Roncesvalles Avenue Project**

The Roncesvalles Avenue project was undertaken in two major phases between 2009 and 2011. The first phase involved the underground portion of the work which included the replacement of the watermain and combined sewers and associated service connections within the right-of-way. This phase was accomplished through the award of two separate construction contracts with construction commencing in July 2009 and completion in May 2010. The second phase of the project involved the surface works which included the reconstruction of the TTC tracks, road and sidewalks; construction of new transit platforms and installation of various streetscaping elements including continuous soil trenches. This phase was accomplished through the award of a separate construction contract with construction commencing in July 2010 and completion in May 2011.

Both phases of the work resulted in significant traffic and transit restrictions due to the magnitude of construction activity involved. The size of the required work zone and the narrow right-of-way resulted in only a single northbound lane open to traffic, and southbound TTC service was diverted to alternate routes. Disruption to the public intensified with schedule delays that extended the construction duration of the underground works by 5 months beyond the original completion date of mid-December 2009 and the surface contract by 5 months beyond the original completion date of December 2010. One of the primary causes for the schedule delays was the unanticipated location of utility plant infrastructure including a gas main that ultimately required relocation. These delays intensified the disruption to both residents and business owners and the complaints regarding storefront disruption and the resultant business loss and demand for compensation. There were several instances under both phases of the work where the contractor was very slow in responding to claims for damages, which in some cases resulted in complaints to the Ward Councillor.

## **1.3. Actions Taken In Response to Experiences on Glentworth and Roncesvalles**

As a result of the issues associated with disruption and construction duration experienced on the Glentworth Road and Roncesvalles Avenue projects, Engineering and Construction Services has taken action to employ certain strategies and make specific improvements in four key areas: Planning and Coordination, Contractor Performance, Claims Handling, and Communication/Customer Service. The strategies and

improvements outlined below are described in greater detail in Sections II and III of the report. The tools/approaches categorized as '*Strategies*' are considered and employed on a case-by-case basis depending on the unique nature of a given project, whereas, the '*Improvements*' are enhancements that are incorporated on all contracts/projects.

#### 1.3.1. Improved Planning and Coordination (i.e. Enhanced Utility Plant Identification Process and Improved Utility Coordination Procedure)

As a result of delays on Roncesvalles related to unforeseen location of utility plant infrastructure and utility coordination, specific steps have been taken to improve the level of investigative work performed during the planning and design phases of the process as well as the overall coordination and communication process with utility companies.

These include:

- *Subsurface Utility Engineering Strategy*: Broader application of more extensive subsurface utility engineering (SUE) investigations, wherein the location of underground infrastructure is confirmed at the design stage, to minimize utility conflicts during construction.
- *Utility Coordination Process Improvement*: Established circulation procedure to improve the planning, coordination and communication with all utilities prior to construction. This includes soliciting comments from all impacted utility companies at specific design milestones on every project.
- *Planning/Coordination Process Improvement*: New process led by the Major Capital Infrastructure Coordination (MCIC) office that coordinates the 5 year Capital Plan for all City and Third Party work within the right-of-way and formalizes a process to manage changes in coordinated programs.

#### 1.3.2. Contractor Performance

The Glentworth project emphasized the need to ensure alignment between the performance requirements of the project with the capabilities, capacity and experience of the contractor bidding the job. Both the Glentworth and Roncesvalles projects pointed to the need to ensure that contractor performance is being appropriately evaluated and that the City be appropriately compensated for any damages suffered due to contractor delays or performance. As a result, the following specific actions have been taken:

- *Prequalification Strategy*: Expanded use of contractor pre-qualification on a project-specific basis stipulating mandatory experience and/or qualification requirements to secure established contractors.
- *Contractor Evaluation Improvement*: In addition to the expanded use of contractor pre-qualification, the Purchasing and Materials Management Division (PMMD) is leading a process to develop a more effective Corporate Contractor

Evaluation tool along with input from City divisions that use contracted services for construction. The intent is that this new process be used on 2013 contracts and going forward.

- *Contract Management Improvement (i.e. Liquidated Damages)*: Engineering and Construction Services has required that all projects have a calculated amount for Liquidated Damages that reflects a genuine pre-estimate of the damages that the City may suffer for delays caused by the Contractor, and therefore provides incentive to meet schedules. Liquidated Damages will not include business losses, however, claims for business loss can be made and would be addressed through the City's Insurance and Risk Management unit.

### 1.3.3. Third Party Claims Handling Process Improvement

One of the principal complaints associated with both the Glentworth and Roncesvalles projects revolved around the manner in which third party claims were handled. As a result, an improved process has been developed which includes the following:

- Designation of the City Clerk's office as a single point of contact for all claim submissions.
- Prescribed time frames for City Staff and the City's Insurance Adjustor to respond to claims.
- Improved communication procedures between City Project Managers and City's Claims Adjustor.
- Development of service standards for contractors' response to third party claims for inclusion in the General Conditions of contracts which will provide the City the right to hold back monies payable to the Contractor until such time as the City receives proof that the Contractor has responded to a claim.

### 1.3.4. Communication and Customer Service Improvement

Both the Glentworth and Roncesvalles projects revealed the need for improved communication with the public during the construction phase of our projects. The Roncesvalles project emphasized the impact construction can have to local businesses during construction. As a result, the following actions have been taken:

- *Field Ambassador Strategy*: The application of a field ambassador on a project-specific basis has been positively received by the public and has resulted in improved communication with the public and more direct action to mitigate issues on the front line. This strategy involves having a single-point of contact on-site full time to deal with issues when they arise. Other improvements include specific communications strategies and protocols such as notification signs advertising 'Open for Business

During Construction'. This communication protocol is being implemented as required on a project-specific basis.

## **2. Strategies to Manage Construction Duration and Disruption**

Engineering and Construction Services currently employs a variety of strategies to address construction duration and disruption. The usage of these strategies can be considered on a case-by-case basis, and enhancements can be made that balance public disruption against increased construction costs and other impacts that may result from the application of mitigating measures. Public consultation is a key component in evaluating any strategies being considered. Staff seek to receive and consider the public's feedback on major projects during the design stage so that the trade-offs between the benefits and drawbacks of employing any particular strategy are fully considered prior to tendering of a contract.

A comprehensive review of which strategies to employ in a given situation is conducted by staff on each and every project. In addition to the strategies listed below, staff seek optimal construction techniques to mitigate disruption as much as possible. An assessment of construction methodology, such as directional drilling to avoid excavating the roadway, and traffic planning to ensure parallel routes are not impacted during construction, are conducted by staff during the detailed design phase of each and every project.

The Engineering and Construction Services Division has consulted with construction industry associations, including the Toronto and Area Road Builders Association (TARBA) and the Greater Toronto Sewer and Watermain Contractors Association (GTSWCA), to receive contractor association feedback on the effectiveness of various strategies as potential tools to manage construction disruption. The industry was generally supportive of the strategies outlined in this report.

When applied in the appropriate circumstances, these strategies are effective tools to mitigate construction disruption and delays and help avoid the types of issues experienced on the Glentworth and Roncesvalles projects. Although all key strategies are considered during the design stages, they can be sub-divided into '*Process and Procurement Strategies*' (associated with enhanced contract planning, design and procurement delivery techniques) and '*Construction Strategies*' (associated with physical construction or construction management) and include the following:

### **Process and Procurement Strategies:**

- 2.1. Subsurface Utility Engineering (SUE)
- 2.2. Area Traffic Management Plan
- 2.3. Contractor Prequalification
- 2.4. Contractor Performance Evaluation
- 2.5. Task Order Contracting

## 2.6. Milestone Payments

### **Construction Strategies:**

- 2.7. Field Ambassador Program / Construction Liaison Committee
- 2.8. Extended Work Hours
- 2.9. Increased Traffic Restrictions
- 2.10. Optimized Construction Sequencing
- 2.11. Use of Native Backfill
- 2.12. Permanent Pavement Restorations

### **Process and Procurement Strategies**

The above noted strategies are explained in more detail in the order presented:

#### **2.1. Subsurface Utility Engineering (SUE)**

Subsurface Utility Engineering (SUE) is an investigative technique used to identify the location of underground utilities in an effort to avoid any potential conflicts with proposed construction. There are 4 levels of service ranging from A to D:

- SUE Level A – information obtained through precise confirmation of both horizontal and vertical locations of utility plant by actual exposure and measurement of subsurface utilities.
- SUE Level B – information obtained through application of appropriate surface geophysical methods to determine the existence of approximate horizontal position of subsurface utilities.
- SUE Level C – information obtained by surveying and plotting visible above-ground utility features.
- SUE Level D – information derived from existing utility records.

Due to experiences such as on the Roncesvalles project, SUE Level B is now standard practice for all projects delivered by Engineering and Construction Services that contain an underground construction component. The higher SUE Level A analysis is considered on a case-by-case basis depending on the complexity of the situation.

#### **Impacts and Considerations:**

- Higher costs associated with levels A and B SUE investigations.

#### **Recent Example:**

- Adelaide Street Watermain and Combined Sewer Reconstruction project.



## **2.2. Area Traffic Management Plan**

Traffic conditions prior to construction and anticipated during construction are fully considered and analyzed in order to develop an Area Traffic Management Plan to mitigate traffic impacts caused by the planned construction.

Area Traffic Management Plans are utilized on major projects where the construction will lead to significant traffic disruption.

### *Impacts and Considerations:*

- Analysis of traffic conditions so that measures such as changes in signal timing and lane closures can be evaluated in terms of their effect on traffic within the larger area encompassing the planned construction.
- Mitigates traffic disruption.

### *Recent Example:*

- Gardiner Expressway Rehabilitation (York Street to Jarvis Avenue) – ramp closures – signal timing changes on Lakeshore Boulevard, as well as both static and variable message signs providing advance warning of closures

## **2.3. Contractor Prequalification**

Contractor Prequalification is an evaluation process through which contractors must demonstrate they have the necessary capacity and expertise to perform work before they can submit a bid. It minimizes risk of under-performing contractors by screening out unqualified contractors.

Pre-qualifying criteria are job-specific to ensure an alignment between the performance requirements of the project with the capabilities, capacity and experience of the contractors bidding the job. Additional criteria can be considered on a project-specific basis. For example, the pre-qualification process for the Hoggs Hollow Phase II Storm Sewer, Watermain and Roadway Reconstruction project included a review of any regulatory violations, such as charges by the Ministry of Labour or the Technical Standards and Safety Authority.

### *Impacts and Considerations:*

- Can reduce the number of bids and potentially increase costs.

### *Recent Example:*

- Hoggs Hollow Phase II Storm Sewer, Watermain and Roadway Reconstruction project in Ward 25.

#### **2.4. Contractor Performance Evaluation**

PMMD is leading the process for the development of a Contractor Performance Evaluation tool for all divisions that use contracted services for construction. The intent is that this new process be used on 2013 contracts and going forward.

The goal of the Contractor Performance Evaluation tool is to have a comprehensive assessment and evaluation of how well a particular contractor performed on a particular project. It will provide an official evaluative record, both positive and negative, of a given contract or project and will:

- Establish clear expectations and benchmarks that encourage contractor responsibility and accountability thereby improving quality of projects and services provided to the City;
- Implement processes and documentation that will outline the required changes that Contractors must achieve in order to continue to provide services to the City;
- Encourage Contractors' continuous improvement through appropriate corrective action;
- Strengthen working relationships within project teams; and
- Justify non award of future Contracts to poor performing Contractors.

The Contractor Performance Evaluation tool will allow the City to conduct interim evaluations as well as a final evaluation, if the project is long enough. Interim Evaluations will give contractors the opportunity to understand how the City sees the work progressing and to correct any deficiencies as the project continues.

The Contractor Performance Evaluation tool will not replace the need for project managers to monitor and oversee their contracts properly and to maintain proper documentation. The tool will be a useful resource in the future in summarizing and determining whether a contractor has demonstrated the necessary workmanship, performance, expertise and capabilities on City of Toronto projects to bid future work.

#### **Impacts and Considerations:**

- Evaluation must be standardized across City in order to yield consistency, objectivity, fairness and accountability.
- Project managers must maintain proper records of the performance of the contractor and utilize the tool in order for the tool to be effective.
- Administrative effort will be required to effectively maintain the performance evaluation system.
- Suspension of a Contractor for poor performance will require Council approval in accordance with City policy set out in Administration Committee Report No.6,

Clause No.11 entitled "Contractors, Consultants and Supplier Performance Evaluations".

## **2.5. Task Order Contracting**

Task Order Contracting allows for multiple awards under a single solicitation. This approach streamlines capital delivery by reducing time between the design phase and the start of construction.

Task Order Contracting is used when implementing a bundle of projects where there is a large volume of similar, straightforward work that needs to be delivered within a relatively short period of time. This approach towards the procurement of services allows for multiple awards under a single solicitation and provides for the issuance of multiple task or work orders for the delivery of services during the period of the master contract under competitively confirmed prices. This streamlines the procurement and overall project delivery process by allowing design details to be finalized much closer to construction commencement for each task order as the tendering and awarding to multiple proponents has already been performed.

One of the innovations of Task Order Contracting is that it also encourages a contractor to maintain a high quality performance and availability of resources as succeeding assignments of task orders are based on previous task order performance and resource availability to undertake the next task order.

### *Impacts and Considerations:*

- Slight cost premium because contractors must submit unit prices for a type of work, rather than project-specific unit prices.

### *Recent Examples:*

- Stand alone watermain program.
- Basement flooding program.

## **2.6. Milestone Payments**

The use of Milestone payments refers to arrangements where no payment is made to a contractor until achievement of defined milestones and/or substantial performance. This approach encourages faster project delivery by contractors so payment can be received and ensures full completion prior to payment.

Milestone payments are typically used on larger, multi-phased projects and can be used to encourage contractors to complete tasks and the overall construction in a more timely and efficient manner. This option involves creating a tender with payment terms similar to those applied by some large project delivery organizations, such as Infrastructure

Ontario, whereby no payment is made to a contractor until achievement of defined delivery milestones and/or substantial performance. To further enhance this approach a financial security in the form of a declining Letter of Credit can be applied. The initial value of the Letter of Credit is normally 10% of the tendered value of the contract, and reductions in value are linked to pre-defined delivery milestones.

*Impacts and Considerations:*

- Potentially higher costs associated with additional financing requirements for the constructors which can lead to a limited number of companies interested in performing the work.

*Recent Example:*

- Site Remediation Contract for the Pan Am Aquatic Centre.

**Construction Strategies**

**2.7. Field Ambassador Program / Construction Liaison Committee**

This strategy leverages the use of a dedicated resource in the role of public liaison available on-site during construction. The utilization of a field ambassador and/or construction liaison committee is an approach that can facilitate communication and responsiveness to public concerns during construction, thereby, mitigating construction disruption impacts to residents and businesses.

The role of a field ambassador ensures a single point of contact is readily available on the construction site that business owners, residents and councillors can approach to have their issues addressed in a quick and efficient manner.

A construction liaison committee is a method through which representatives of both the business and residential community can be kept apprised of progress and issues during the course of the project through regular meetings with City staff. Construction liaison committees can also help facilitate modification and/or changes during construction.

Employment of measures such as a field ambassador and/or a construction liaison committee are determined by staff on a project-specific basis where it is deemed that there is a significant impact to residents or businesses. Specific measures can include notification signs advertising 'Open for Business During Construction'. Communication protocols such as this are implemented as required on a case-by-case basis.

*Impacts and Considerations:*

- The costs of administering such measures typically amount to approximately 1% of the overall construction value.

Recent Examples:

- Basement flooding program ( Field Ambassador)
- Bloor St West Village project (Construction Liaison Committee)

**2.8. Extended Work Hours**

Extended work hours refer to increased construction hours beyond typical 7 a.m. to 7 p.m., Monday to Friday (i.e. night time and/or weekend work) when contractors work on the construction site with the objective of minimizing construction duration by maximizing the hours worked each day and/or weekend.

Extended work hours are typically used on projects where short construction duration is of the essence (e.g. TTC track replacement projects, intersection work) and where necessary work must be performed at times that minimize lane closures or lane reductions. This approach can be employed in situations where there is a significant pressure to achieve an accelerated schedule and where the impacts to the public are acceptable from a noise perspective and do not have any adverse safety implications.

Impacts and Considerations:

- Increased cost of construction for longer shifts and availability of construction supplies and dump sites during extended hours.
- Potential increases to both Capital costs and Operating costs.
- Increased duration of noise impacts.

Recent Example:

- Adelaide Street (Spadina Avenue to University Avenue) Watermain and Combined Sewer Reconstruction project – 24 hour work days.

**2.9. Increased Traffic Restrictions**

This strategy refers to additional traffic restrictions, such as additional lane closures, used to provide contractors with the ability to reduce construction duration by maximizing work zone operations.

Increased traffic restrictions are typically employed on projects where the construction methodology/schedule requires larger work zones or where the project cannot be feasibly completed in multiple stages. It is only used for active construction requirements (i.e. not for material storage).

Impacts and Considerations:

- Often results in additional and/or longer lane closures and can significantly impact traffic in immediate area.

- Potentially disruptive to commercial areas.

Recent Examples:

- Spadina Avenue TTC Track, Road and Sidewalk Reconstruction Project – Spadina Avenue / Queen Street intersection work – complete shut-down of intersection.
- Gardiner Expressway Rehabilitation (York Street to Jarvis Avenue) – ramp closures.

## **2.10. Optimized Construction Sequencing**

Optimizing construction sequencing involves making trade-offs between the duration of construction and the level of disruption caused during construction. In cases where minimizing construction duration is the most important consideration, construction activities are sequenced in such a manner that will maximize the contractor's efficiency and promote opportunity for schedule acceleration. This can lead to a higher degree of traffic and construction disruption in the short term. Typical situations where this approach could be used would include projects where it is determined by the community that shorter overall construction duration would be less disruptive than a more phased approach.

In cases where minimizing individual storefront disruption is more important than overall construction duration, a more phased approach is implemented. This may result in increased costs. For example, work phased in such a way as to limit construction to one or two blocks at a time – resulting in significantly minimized disruption to individual storefronts, and maximized availability of on-street parking during construction.

Impacts and Considerations:

- i. Increased traffic disruption in cases where construction extends across project limits in order to accelerate schedule.
- ii. Increased costs and longer overall project duration in cases where construction is staged in more phases in order to minimize store-front disruption. Also allows for more on-street parking.

Recent Examples:

- Adelaide Street Watermain and Combined Sewer Reconstruction project. Duration shortened by 30%.
- Bloor Street West (Jane Street to Clendenan Avenue) Sidewalk Reconstruction limited to two blocks at a time to maximize on-street parking.

## **2.11. Use of Native Backfill**

The use of Native Backfill constitutes the reutilization of existing native material, excavated during construction, as backfill instead of trucking native material away and trucking in aggregates. It is an environmentally responsible option and minimizes disruption due to reduction in construction truck traffic.

The use of native material is desirable when the native material meets the minimum performance requirements of the City's standards and specifications. Typical situations where native backfill material is utilized is in areas where the material is of high quality and where stockpiling is less disruptive than trucking new material on site (i.e. areas with open space to stockpile materials).

### *Impacts and Considerations:*

- Minimizes construction truck traffic along with potentially minimizing construction duration and decreasing costs.
- Need to stockpile large amounts of material on-site can be challenging and often requires additional lane closures and/or the elimination of on-street parking.
- Environmentally responsible.

### *Recent Example:*

- Kirkhams Road Watermain replacement project.

## **2.12. Permanent Pavement Restorations**

Historically where stand-alone watermain or sewer contracts were undertaken by Engineering and Construction Services, the Transportation Services Division would undertake the permanent pavement restorations as part of a larger contract including the restoration of pavement cuts by private utility companies over a 12 to 24 month period. By coordinating all utility cut repairs, Transportation Services, could ensure that the permanent repairs were comprehensive and thus maximized the service life of the roadway in a cost effective manner. Through a pilot project related to stand-alone watermain and basement flooding work, Engineering and Construction Services and Transportation Services have concluded there are further benefits to including all permanent pavement restoration work previously completed by Transportation Services in Engineering and Construction Services issued contracts. These benefits include the following: a) lower overall costs; b) elimination of potential warranty period conflicts from two different contractors working in the same area within the two-year warranty period; c) minimize disruption to the neighbourhood with the coordination of construction activities within the same contract.

Staff seek opportunities to perform permanent pavement restorations for City administered construction works where advancing permanent restoration is feasible, recognizing there are certain seasonal and location restrictions/considerations.

Impacts and Considerations:

- Minimizes overall construction disruption in an area by eliminating the need to have a second contractor mobilize into an area under a separate contract.
- Will result in cost savings to the City by having permanent restoration work done as part of original contract.

Recent Example:

- Basement flooding program pilot project showed cost savings of approximately 5.5% by performing permanent pavement restoration and received positive feedback from the public with respect to the City's ability to coordinate construction activities within the right-of-way while minimizing the length of disruption.

**3. Contract Management, Contracted Professional Services, Planning / Coordination and Third Party Claims Handling Improvements**

The following initiatives have been developed to further enhance the ability of Engineering and Construction Services to manage our construction projects and monitor customer service. These management tools along with on-going dialogue with key members of the construction industry will continue to improve efficiency and effectiveness as it relates to Capital Delivery. These tools will also help avoid the types of issues experienced on the Glentworth and Roncesvalles projects including in areas such as contractor performance, planning and coordination, claims handling and overall communication/customer service.

**3.1 Contract Management Improvements**

**3.1.1 New General Conditions**

In conjunction with Legal Services and various other City divisions, Engineering and Construction Services has recently completed a revision to the General Conditions that are included in all Engineering and Construction Services construction contracts. Council approved the changes and authorized the Executive Director of Engineering and Construction Services to make any further changes as required. The most significant advancement was achieved by creating distinct and separate General Conditions for the capital delivery of vertical and linear infrastructure.



The main objectives were to align the General Conditions for the delivery of Vertical infrastructure with those of the Canadian Construction Documents Committee (CCDC) and the General Conditions for the delivery of Linear infrastructure with the Ontario Provincial Standards (OPS). The revised General Conditions now more accurately reflect the work we do and provide a platform that is both reflective of how the two industries work and in a form that they understand.

Other improvements to the General Conditions currently being processed include ensuring that the value of liquidated damages are commensurate with estimated losses and the inclusion of prescribed timeframes within which contractors must respond to third party claims, both of which are described in greater detail below.

### 3.1.2 Liquidated Damages

Liquidated damages will be calculated to reflect a genuine pre-estimate of the costs associated with time delays and this will be reflected in the dollar value applied to a particular project. The value of liquidated damages will be adjusted accordingly on specialized/major projects that have more significant costs for the City to recover in the event of a delay. These damages accrue on a daily basis until the contractor completes the project, thereby encouraging the contractor to minimize delays. Liquidated damages will not include business losses, however, claims for business losses can be made and would be addressed through the City's Insurance and Risk Management unit.

## 3.2 Contracted Professional Services

The engagement of engineering consulting firms for the provision of contracted professional services is required to assist Engineering and Construction Services in the delivery of capital works projects for all of its client divisions. Contracted professional services provide additional delivery capability when the work load in any given year exceeds the capacity of internal resources. This also permits the retention of specific technical expertise which is not continually required. These externally-delivered services are managed by City staff who are charged with ensuring the engineering firms are delivering quality products in a timely fashion as required under the terms of their contract with the City. At the same time we continue to maintain and develop our in-house technical expertise in the design and contract management of capital projects.

As with the management of construction contractors, City project managers require appropriate tools to enable them to effectively manage consulting engineering firms. A high degree of scrutiny is always applied to the selection of such firms as every firm is required to demonstrate their technical capabilities and qualifications of their staff when submitting proposals to the City, this being the primary basis for the selection of any individual firm. In many cases, as with the recently awarded Integrated Program Management Assignment, a pre-qualification process is used and full proposals are only accepted from the pre-qualified firms.

Once retained, City staff, under the terms of the service agreements, have tools to ensure adequate performance of the engineering firms and rights of recourse for non-performance. This includes the rights to: require the replacement of non-performing personnel, terminate the firm for various contractual defaults including failing to meet prescribed time limits, withhold payment for work not satisfactorily performed, recover costs for any damages incurred by the City, and to terminate the engineering consultant firm simply on notice

To gain a better measure of the performance of engineering firms on City projects, Engineering and Construction Services staff are developing key performance indicators that are to be tracked, updated and reviewed with the engineering firm throughout the course of their assignment. These performance indicators will be consistently applied to all contracted professional services assignments, thereby providing clarity on the City's expectations and a baseline for comparison of relative performance.

### **3.3 Improved Project Planning, Coordination and Scope Management**

A recently developed procedure has been implemented that clearly defines the roles and responsibilities of various units and divisions as it pertains to project planning and coordination. The general framework of this process includes the following:

- 1) Needs Assessment – Client divisions identify the infrastructure requiring design and construction services over a 5 year period and beyond.
- 2) Capital Coordination – The Major Capital Infrastructure Coordination (MCIC) Office ensures all capital projects are cleared for conflicts with other City and third party projects and coordinated through a comprehensive and systematic process. This procedure has been enhanced by the introduction of T.O.INview. This is a web-based mapping system that was developed and is updated by MCIC for use by all City staff, outside agencies, utility companies and the public to review the details of planned capital construction projects by the City, utilities and other agencies including Metrolinx and TTC.
- 3) Project Planning & Scoping – The Portfolio Management and Support unit of Engineering and Construction Services fully scopes each project and initiates preliminary design to ensure all critical issues and elements are identified upfront in the design process.
- 4) Capital Delivery – The Design and Construction Capital Delivery units of Engineering and Construction Services carry out the detailed design and construction.

These improvements ensure clearer and more effective inter-divisional and inter-agency coordination, and include the development of a clear contact list and circulation procedure to improve the planning, coordination and communication with utilities prior to construction, which will be used for all 2013 contracts.

### **3.4 Third Party Claims**

A recently revised procedure with respect to responding and handling Third Party claims originating from the public directly impacted by construction is aimed at improved customer service and minimizing inconvenience to the public. The City Clerk's office has been designated as the single point of contact for all claim submissions. The new process contains specific timeframes with respect to responding to claims for both City Staff and the City's Insurance Adjustor. Improved communication procedure between the City Project Managers and the City's Claims Adjustor will also help facilitate the effective resolution of claims.

Through a collaborative approach between Insurance and Risk Management, City Legal and Engineering and Construction Services, service standards for contractor response to Third Party claims have been developed for inclusion in the General Conditions that will require Contractors and their Insurers to satisfactorily deal with third party claims within prescribed timeframes. This change will ensure that claims are responded to and dealt with in a timely manner and will minimize the frustration experienced by the public under the current procedure. It will provide the City with the right to hold back monies payable to the Contractor until such time as the City receives proof that the Contractor has responded to a particular claim and will require that the contractor provide monthly updates on the status of all third party claims received until the claims are resolved. Engineering and Construction Services has consulted with construction industry representatives on this issue and the industry has responded positively.

The General Managers of Toronto Water and Transportation Services and the Director of Purchasing and Materials Management have been consulted on and concur with the strategies outlined in this report.

## **CONTACT**

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## **SIGNATURE**

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