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QUICK START PROJECT FINAL PROGRAM

The Rapid Transit Public/Private Partnership Steering Committee recommends the adoption of the recommendation contained in the following report, March 11, 2004, from the Executive Co-ordinator, York Rapid Transit Plan and that staff provide additional information to a special meeting of the Committee to be held following Regional Council on March 25, 2004, regarding shelter designs, as discussed:

1. RECOMMENDATION

It is recommended that this report be received for information.

2. PURPOSE

The purpose of this report is to update the Rapid Transit Steering Committee with an overview of the final scope of work for the *Quick Start* Project.

3. BACKGROUND

The iterative, detailed design process for *Quick Start* is underway, and ridership projections have been further confirmed. Ongoing meetings with local municipalities and other transit agencies (i.e. Toronto Transit Commission, GO Transit) are in progress, and the procurement process for the required rapid transit vehicles is nearing completion. The initial cost estimate and program for the *Quick Start* phase of the York Region Rapid Transit project has been refined through a cost confidence, cost optimization and expert panel process to ensure that the total project costs not exceed the committed \$150 million.

4. ANALYSIS AND OPTIONS

The implementation of *Quick Start* based on the Design/Build contract scope of work, is subject to the execution of the funding agreements with the Provincial and Federal governments.

4.1 Service Routes

Six *Quick Start* service routes will run along the four rapid transit corridors as shown in Figure 1 (see *Attachment 1*). The routes pass through 165 major and minor intersections in York Region. Some form of construction or modification, ranging from signal modifications to shelters and bus bays, will be required at each intersection.

4.1.1 Highway 7

Along Highway 7 from Martin Grove to Interchange Way and Jane to York University; then via Keele, Highway 7, Centre, Bathurst, Highway 7 to the new Langstaff intermodal stop; then via Highway 7 to Town Centre to Enterprise Drive to Unionville GO Station; then to Kennedy to Highway 7 to 9th Line to Markham-Stouffville Hospital.

Table 1
Quick Start Service Level

Route	Span of Service	Peak Headway (minutes)	Off-Peak Headway (minutes) preliminary
Yonge – Finch-Richmond Hill	All Day	5	15
Yonge – Richmond Hill-Newmarket	All Day	10	30
Yonge – Richmond Hill-Markham	Peak	10	--
Highway 7	All Day	10	15
Vaughan North-South Link	All Day	10	15
Markham North-South Link	All Day	10	15

4.1.2 Vaughan North-South Link

Along Highway 7 from Martin Grove to Interchange Way and Jane to York University; then via Keele, St. Regis, Tuscan and Sheppard to TTC Downsview Station. (The western segment of this route overlaps part of the Highway 7 route to provide a higher service frequency to built-up areas as well as direct no-transfer connections from the Woodbridge area to York University and the TTC station.).

4.1.3 Markham North-South Link

From Markham-Stouffville Hospital south on 9th Line to Highway 7, Warden, Denison, Esna Park Road, Pharmacy and Gordon Baker to Seneca College, then via Finch and Don Mills to the TTC Don Mills subway station. (The eastern segment of this route overlaps part of the Highway 7 route to provide a higher service frequency to built-up areas, as well as direct no-transfer connections from eastern Markham to Seneca College and the Don Mills station.).

4.1.4 Finch-Richmond Hill

From the TTC Finch subway station on Yonge Street north to the new Langstaff intermodal stop in Richmond Hill; then north via Yonge Street to Bernard. (This service follows the Yonge corridor to provide a short-turn capability for increased capacity along the southern, more populated segment of the corridor.)

4.1.5 Yonge-Richmond Hill-Newmarket

From the TTC Finch subway station, north on Yonge Street to the new Langstaff intermodal stop in Richmond Hill; then north via Yonge Street to a terminus stop at Eagle in Newmarket.

4.1.6 Yonge-Richmond Hill-Markham

From the TTC Finch subway station, north on Yonge Street to the Langstaff intermodal stop; then via Highway 7 to Cedarland/South Town Centre Blvd. to the Unionville GO Station. (This route operates during weekday peak periods only and overlaps segments of the Yonge-Richmond Hill and Highway 7 routes to provide a higher frequency of service with direct no-transfer service between the TTC Finch Station and the busy employment areas near Highways 7 and 404.)

4.2 Project Elements

An integrated package of elements has been designed to meet the projected ridership demands along each of the *Quick Start* service routes and support proposed service policies. The major elements of the *Quick Start* Project include:

- Bus Rapid Transit Vehicles.
- Stops and Intermodal Stops
- Intersection Improvements
- Intelligent Transportation Systems (ITS).

4.2.1 Bus Rapid Transit Vehicles

Bus Rapid Transit (BRT) vehicles are being selected to meet specific *Quick Start* requirements, with subsequent phases of the YRTP also taken into account:

- a) *Seating and total capacity to meet market requirements at proposed service frequencies and anticipated trip lengths* – Internal configurations are being customized to minimize standing times and optimize seating, while providing sufficient capacity to meet expected ridership demands in a cost-effective manner. By 2006, ridership along the Yonge corridor is expected to reach over 1,300 riders in the peak hour, peak direction – more than triple the amount of any of the other corridors. 22 18-metre articulated vehicles will therefore be purchased for the Yonge corridor; 55 12-metre single unit vehicles will be purchased for the other three corridors.
- b) *Low floor, extra-wide doors for efficient boarding and alighting and passenger movement* – Multiple, extra-wide doors and a low floor enable fast passenger boarding and alighting, and when combined with an off-board fare collection system, significantly reduce dwell times at transit stops. Three sets of extra-wide doors will also minimize crowding and address full-access requirements.
- c) *Distinctive exterior design to build awareness of service and attract new riders* – The selected vehicles will have a distinctive appearance that is consistent with the high-quality, high-performance image required to attract and sustain ridership.
- d) *Propulsion system for energy efficient performance, and reduced air emissions and noise.*

- e) *Passenger information features* – *Quick Start* vehicles will feature on-board variable message screens and an audio system for automated stop and other announcements.
- f) *Delivery in time to support initiation of services in 2005* – Since *Quick Start* services are scheduled to begin in 2005 and vehicles are going to be delivered and commissioned in time to meet this requirement.

4.2.2 Stops and Intermodal Stops

Spacing between *Quick Start* stops will be approximately one kilometre in the denser, built-up portions of the corridors and two kilometres in the lower density, less built-up areas. This spacing is typical for rapid transit services and is intended to optimize travel times by limiting the number of stops along the routes.

Detailed stop locations consider several factors, including:

- Major cross streets with existing or potential connecting bus routes
- Commercial and institutional uses
- Employment concentrations
- Higher-density residential developments
- Any physical constraints/opportunities.

Figures 2, 3, and 4 (see *Attachment 1*) show the 64 *Quick Start* stop locations. It is proposed that *Quick Start* vehicles will stop at each location to provide an attractive frequency of service. The projected near-term demands are such that peak frequencies on the busiest segment of the Yonge Street corridor (where ridership demand is highest) will approach five minutes or less.

YRTP station design is intended to support a comfortable, high-quality systemwide image, while simultaneously respecting the character of different neighbourhoods that are served by the new transit service. Station and signage design is being coordinated with the "branded" systemwide identity currently under development.

Subsequent to the last presentation to the Rapid Transit Steering Committee and York Region Council, the typical shelter design has been modified as shown in Figure 5 (see *Attachment 1*) to reflect a bolder and more colourful image for the rapid transit service. Along the *Quick Start* routes, 60 shelters are planned.

At the request of Steering Committee in October, shelters were redesigned. Shelters will now feature sloped roofs and bold geometries. Shelters will be illuminated at night, with glazed walls and roofs for maximum visibility around the clock. Seating, ticket vending and passenger information equipment will be located inside the shelter under cover. As shown in Figure 6 (see *Attachment 1*), shelters will use various colours to clearly identify stop locations and to reflect the identity of various neighbourhoods and transit corridors.

At some stops, property or other constraints make the site unsuitable for a full-size shelter. A smaller fare vending/information module, or mini-stop as shown in Figure 7 (see *Attachment 1*), will be used in locations where a shelter structure would not fit, or be visually obtrusive. 46 mini-stops are planned along the *Quick Start* routes: 26 will be

used in conjunction with existing York Region Transit (YRT) stops; 12 will be used in conjunction with heritage shelters as illustrated in Figure 8 (see *Attachment 1*); 8 will be constructed in locations without shelters. Because 8 stops located in the City of Toronto are drop-off stops only, only a sign post is planned at these locations.

Figure 9 (see *Attachment 1*) illustrates a stop with a platform and bus bay (see *Intersection Improvements* below) with distinctive paving colours to clearly identify the stop locations. Most platforms will extend the full vehicle(s) length to permit passengers to use all doors for boarding. 75 platforms are planned along the *Quick Start* corridors.

At certain high-visibility stops, planting may be integrated into the shelter and the platform to enhance the corridor (although the cost has not been included in the scope of work) as illustrated in Figure 10 (see *Attachment 1*). This reinforces the project's role in improving the environment, and make the YRTP system serve as a catalyst for high-quality streetscape design.

Six stops will function as intermodal stops to facilitate convenient connections between rapid transit and local buses, commuter rail, express buses and subway lines. These include intermodal stops at the Don Mills subway station, Finch subway station, Downsview subway station, York University and Langstaff. The intermodal stops have been redesigned at the request of the Steering Committee in October 2004.

4.2.3 Intersection Improvements

Quick Start running ways for all routes will be along existing roads in mixed traffic. In general, intersection improvements will be required to service two platforms at each stop location (i.e., to service passengers travelling in both directions). It should be noted that the *Quick Start* scope of work includes improvements only to those intersections located within York Region.

Figure 11 (see *Attachment 1*) shows queue jumper and bus bay/receiving lane modifications at an intersection where rapid transit stops are located. The exact location and final design of each stop will vary somewhat depending on site specific conditions (e.g., intersection geometry, location of driveways to adjacent properties, utility constraints).

- a) *Queue Jumpers* – Most major intersections along the Yonge and Highway 7 corridors incorporate right-turn lanes. For far-side stops, buses will share use of these lanes as “queue jumpers” to bypass traffic congestion and proceed through the intersection to the bus bay or receiving lane at the transit stop. Queue jumpers will be required at 55 major intersections along the *Quick Start* routes within York Region. At 48 intersections, the existing right turn lanes can be used. At 4 intersections, the right turn lanes will need to be extended. Two new queue jumpers will be required at intersections where there are no right turn lanes. The overall paving required for the modification or construction of queue jumpers is approximately 1.1 km.

- b) *Bus Bays/Receiving Lanes* – A fully separated bus bay/ receiving lane will provide a dedicated facility for BRT vehicles and local buses at far-side stops. In general, the length of the bus bay/receiving lane will accommodate two buses with an exit taper to facilitate the merging of transit vehicles into general traffic. *Quick Start* plans include 5 bus bays and 26 receiving lanes. Dedicated bus lanes will use a distinctive paving colour to prevent use by individual motorists.
- c) *Near-Side Stops* – In locations where far-side stops are not feasible because of property or other restrictions, near-side stops will use existing right-turn lanes or transit stops to pick up or discharge passengers. The *Quick Start* scope of work includes 54 near-side stops.

4.2.4 Intelligent Transportation Systems

Intelligent transportation systems (ITS) will facilitate the efficient movement of rapid transit vehicles, and centralized operations and control.

- a) *Transit Signal Priority* – Signal priority (TSP) for *Quick Start* vehicles will be achieved through the interaction of the Transit Management and Traffic Signal Control subsystems. TSP will enable modifications to the operation of traffic signals to provide more “green time” for buses as they travel through the general traffic stream.
- b) 141 intersections will have roadside detectors that react to 77 on-board vehicle emitters when rapid transit vehicles are behind schedule, and request TSP (clearing of general traffic from the right turn lane, followed by an advance signal for the rapid transit vehicle) from the traffic signal controllers. By assisting the movement of the rapid transit vehicles through intersections, TSP will help to achieve schedule adherence. TSP parameters can be monitored for effectiveness, and further altered as required to optimize *Quick Start* travel times. The proposed TSP is being discussed in detail with York Region staff to facilitate planning and design efforts.
- c) *On-Board Systems* – All *Quick Start* vehicles will be equipped with a mobile data terminal, vehicle diagnostic system and GPS (Global Positioning System) equipment. 77 automatic passenger counters will also be acquired to monitor ridership along the six service routes. The project also includes variable message signs on buses.
- d) *Passenger Information* – Passengers will be able to access real-time information on 121 variable message signs at stops and intermodal stops. The YRTP website and an interactive telephone voice response system will further support *Quick Start* passenger services.
- e) *Fare Collection* – ITS will support off-board fare collection and a “proof-of-payment” fare policy to further reduce vehicle dwell times at stops. 109 ticket vending machines will be installed at 109 stops and intermodal stops. An additional 16 machines with enhanced payment options will also be installed at the intermodal

stops. 116 ticket validation machines will also be installed at stop and intermodal stop locations.

- f) *Control Centre Software* – Software will be acquired to support scheduling, dispatch, revenue management, traveller information, maintenance tracking and traffic signal monitoring through an interim transit control centre (ITCC). Secure, standards based, non-proprietary and upgradeable voice and data communications will facilitate overall management of the *Quick Start* network, and the collection, processing, storage and dissemination of information to system operators and the public.
- g) *Communications* – ITS hardware will facilitate communications with vehicles, transit stops and terminals and sub-contracted operations depots. A Land-Mobile radio system with 4 base stations is required to support 102 mobile transceivers (for buses, supervisory/maintenance vehicles) and 25 hand-held transceivers (for inspectors). Wireless communications, as well as fixed point-to-point communications to the ITCC, are planned to support 120 *Quick Start* stops and intermodal stops.

4.3 Quick Start Project Implementation

The tentative Quick Start program schedule is illustrated in *Attachment 2*. It is important to note that the time frames are estimates and may be subject to change.

5. FINANCIAL IMPLICATIONS

On October 17, 2002, York Region committed \$50 million to fund its portion of the *Quick Start* Project costs, contingent on the commitment of matching funds from each of the Government of Canada and Province of Ontario. No additional costs beyond this commitment (see Table 2) are anticipated at this time.

Table 2
Final Quick Start Costs

Item	Final Cost
Final Design Build Cost	\$69,001,298
Vehicle Cost	\$48,070,000
GST (3% Net)	\$3,512,139
Contingency	\$7,014,000
Insurance	\$3,000,000
Project Oversight	\$4,500,000
Bonding	\$1,178,000
Financing on Warranty Holdback	\$221,000
Year 2 Costs	\$8,800,000
Preliminary Engineering	\$3,100,000
Total	\$148,396,437

6. LOCAL MUNICIPAL IMPACT

Ongoing consultation and communication with local municipal Councils and staff are part of the *Quick Start* Project, and will continue to address the problem of traffic congestion while supporting the local land use planning initiatives now underway.

7. CONCLUSION

Over the past year considerable effort has been expended towards refining the *Quick Start* program. This report defines the final scope of work for *Quick Start*, which serves as the basis for the Design-Build Agreement with Kiewit/EllisDon.

(A copy of the attachments referred to in the foregoing has been forwarded to each Member of Council with the March 11, 2004 Rapid Transit Public/Private Partnership Committee agenda and a copy thereof is on file in the Office of the Regional Clerk.)