Request for Information (RFI)
For Rail Milling Services
RFI No. R31CA15135

REQUIREMENTS OF THE RFI

This Request for Information (RFI) is being issued by The Toronto Transit Commission (TTC) to identify potential organizations with expertise in rail milling services that are able to supply the labour, material and equipment for continuous milling of running rails on the TTC’s Subway, Scarborough Rapid Transit (SRT) and Streetcar tracks in accordance with the attached document entitled Scope of Services.

Interested organizations are requested to submit an expression of interest by completing and submitting the attached Appendix A to the TTC contact person named below along with providing information regarding the organization’s history, capabilities and other information as set out in this RFI.

Although it is not a mandatory requirement, the submitting organization may, at its option, submit any additional information as they see fit. The organization shall not include any pricing information with their submission for this RFI.

Expressions of interest should be submitted no later than Tuesday, April 28, 2015 at 4:00 p.m.

TTC CONTACT PERSON

Submissions and any inquiries must be directed to:
Mrs. Monica Tudoran
Buyer
PH: (416) 393-4721
FAX: (416) 537-0385
e-mail: monica.tudoran@ttc.ca
COMPANIES TO RESPOND TO THE FOLLOWING:

Interested organizations are requested to submit the following information:

1. General Company Profile:

   - brief history and description of the business
   - year the business was established
   - year of offering rail milling services
   - how your services differentiate your organization in the marketplace.

2. Equipment and Services

   a) Proposed work flowchart with all key parameters of the operation: milling machine (equipment) dimensions, weight, milling speed, travel speed, stopping distance, metal particles (debris) removal method, possibility of milling moving forward and backwards, fuel type, fuel consumption, anticipated maintenance schedule, consumables replacement frequency, speed of replacement of milling wheels at the track level, speed of replacement of necessary filters and other consumables, etc.

   b) Documentation showing the rail milling methods used in previous projects, type of rail that was milled, photo documentation, progress charts, etc.

   c) Information regarding any emissions created by the milling machine, exhaust, noise and vibration, sparks, smoke, possible fluid leaks.

   d) Specify type of proposed milling machine (hi rail or rail bound) and include high level drawings with main dimensions, axle load, etc.

   e) Specify if modifications to the machine are acceptable to make it compatible with the TTC safety system by installing trip valve. Trip valve will cut off the propulsion and apply full brakes in case it violates the track signalling due to operator error.

   f) Information on the level of education i.e. certificates / diplomas / degrees necessary to provide milling services and operate required equipment.

   g) Approximate amount of time required to begin milling services on TTC property once TTC requests the service.

   h) Current availability of resources / services.
3. Clients and References
   a) Client history, including locations and identifying those currently served.
   
b) Provide at least 3 client references or short testimonials including company name, contact, title, address, phone number, email address.

4. Interest in Bidding

Please indicate whether the organization will have an interest to submit a bid for procurement of milling services for TTC in the future.
## APPENDIX A
RFI No. R31CA15135

**CORPORATE INFORMATION FORM**

<table>
<thead>
<tr>
<th>NAME OF ORGANIZATION:</th>
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<tbody>
<tr>
<td>ADDRESS:</td>
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</tbody>
</table>

| KEY CONTACT:          | ____________________________________ |
| (Name, Title Tel, E-Mail) | ____________________________________ |
|                       | ____________________________________ |
|                       | ____________________________________ |

| WEBSITE:              | ____________________________________ |
|                       | ____________________________________ |
|                       | ____________________________________ |

| MAIN BUSINESS ACTIVITY: | ____________________________________ |
| (BRIEF DESCRIPTION AND YEAR ESTABLISHED) | ____________________________________ |
|                       | ____________________________________ |
|                       | ____________________________________ |

| ADDITIONAL INFORMATION: | ____________________________________ |
|                        | ____________________________________ |
|                        | ____________________________________ |

The organization is requested to submit their answers to the questions included in this RFI and attach this Appendix A with their submission.
SCOPE OF SERVICES

FOR

RAIL MILLING SERVICES

RFI NO. R31CA15135
1.0 BACKGROUND

SUBWAY

Toronto Transit Commission (TTC) operates a Subway System on a 7-day per week basis generally from 6:00 a.m. to 1:30 a.m. This system consists of approximately 80 single-track miles of wide gauge (4’-10 7/8”), with unidirectional traffic. The construction is a combination of open sections, and tunnels comprised of box section and circular tunnels with a concrete slab, timber and concrete ties on ballast and bridge track work. Power is drawn from a 600 VDC positioned about 22 inches from the gauge line of either of the running rails.

The rail is comprised of 100 lb. ARA-A and 115 RE sections with a variety of chemistries ranging from original 1950’s manufacture, up to modern head hardened rail. The rail has flash butt welds, thermite welds, insulated joints and a small quantity of old standard bolted joints.

SCARBOROUGH RAPID TRANSIT (SRT)

The TTC operates the SRT line 7-day per week from 6:00 a.m. until 1:30 a.m. This system consists of approximately 8 miles of standard gauge (4’-8½”), single track (one direction) mainline. The line is made up of at-grade construction on a continuous concrete slab and an elevated guide way with one short underground section. Track is the 5 rail system on direct fixation and car is powered by an induction or “reaction rail” situated between the running rails at the same top of rail elevation. There are two side contacting power rails +300V and −300V respectively situated a distance of about 14 in. from the closest gauge line of one running rail.

The rail is 115 RE standard carbon which is original (1985 installation), and is subjected to relatively light loading and limited wear. The vehicles on the system are (34,000 lbs.) with a small diameter wheel (18 in.), which makes them sensitive to surface rail conditions. There is short pitch, generally low amplitude corrugations, which occur typically on curves and the areas in and near the crossovers.
STREETCAR WAY

The system consists of approximately 304 single-track kilometres of wide gauge (4’- 10 7/8”) main line. The construction is predominantly concrete embedded track with a 4.8 km section of ballast & timber tie track. Power is derived from an Overhead Contact Line (OCL), installed on OCL masts.

The rail is mostly comprised of 115 RE and HH sections with NP4aMOD girder guard rail used on curves and switch closures. In some limited areas there is also 100 lb. ARA-A on tangent track, and 118 lb. and IC girder guard rails on curves. The rail has flash butt welds, thermit welds, a small quantity of old standard bolted joints, mainly within special track work areas.

2.0 PURPOSE

The purpose of this Request for Information (RFI) is to solicit input and identify organizations with expertise in rail milling able to supply labour, material and equipment for Continuous milling of running rails on the TTC’s Subway, SRT and Streetcar tracks. All Designated parts of the transit system are to be milled on frequency between once to twice per year, depending of TTC’s needs.

Organizations shall note, the information supplied in this documents by the TTC will be undertaken on the basis that it is the best information currently available.

GENERAL SCOPE:

The organizations shall provide:

2.1. Mobilization and demobilization of the rail milling machine which consists of the transport of organization’s vehicle from external location to one of TTC’s yards accessible to the Subway track system including labour and supervision for offloading and setup for rail milling process.

2.2. Gauge conversion of the Rail milling machine which means the conversion of existing gauge and all other parts and assemblies to the TTC gauge (4’10-7/8”) applied in TTC’s Subway.

2.3. Rail milling as follows:

2.3.1. Subway

TTC’s Subway System as shown on W8RT-981-1 is non-standard, wide gauge, 4’ 10 7/8, with a minimum curvature radius of 230 feet in the yard and 380 feet on mainline. On the TTC’s Subway System the rail to be milled will be 115 lb. RE and 100 lb. ARA-A sections (varying from 1970 standard carbon chemistry on tangent to newer 3HB and head hardened chemistry on curves). There is a 600-volt power
rail adjacent, a horizontally mounted restraining rail on tight curves (below 2,600’ radius or 2°) and various cables, etc. as shown on the enclosed drawings. TTC’s Subway system uses various wayside equipment such as: signal boxes, trip arms, paper catchers, heaters, hot air blowers and lubricators. Strict adherence to the dynamic clearance envelope is observed. Grade of track is maximum 3%.

2.3.2. SRT

Rail milling is required on the SRT System as shown on drawing W2SRT-1070. The SRT is a standard gauge system, 4’ 8 1/2”, with a minimum curvature radius of 70 feet in the yard loop, with clearance restrictions imposed by the two power rails, the reaction rail and other associated cables, etc. as shown on the drawings enclosed. The type of rail is 115 lb. RE 1985 rolled, standard carbon chemistry but there is a small quantity of fully heat treated Bethlehem steel rail in one curve. Rail surface rail milling and re-profiling may be required on any of 18 curves which vary in radius from 85 ft. to 1,800 ft. and in length from 200 ft. to 900 ft. The total length of curved track is about 1.6 miles. In addition, there is a double crossover and a single turnout/tail track at the terminals to be milled to the greatest extent possible. Minor surface roughness rail milling and re-profiling of tangent tracks and stations may also be required. Grade of track is maximum 5.33%.

2.3.3. Streetcar Way

Streetcar milling would take place during night shift on the public right of way under protection of the traffic control and pay-duty police officers. The entire streetcar track is embedded girder rail or special track work castings. Minimum curvature 40’ and maximum expected grade is 7%.

2.3.4. Milling of rail sticks to desired profile

TTC would be also interested to explore the possibility of milling individual rails (maximum length 39 feet). Rails would be either brand new section (115 lb. RE and 100 lb. ARA-A), or used. TTC would be supplying the desired rail profiles. This type of work would be done in the yard on a specially designed track location where individual rail sticks would be inserted and replaced after milling.

2.3.5. General Requirements

The organization will be required to provide:

a. Self-propelled rail milling machine, capable of efficient corrugation removal and rail re-profiling in a timely and cost effective manner and to the highest industry standards for surface finish and profile accuracy. The machine must be capable of rail milling within the specified clearance envelopes and on the different track gauge systems with minimum changeover and setup time.
b. Technical expertise, management of the operation and the means of measuring and verifying the results during the rail milling operations. The requirements include familiarization with the TTC’s desired rail profiles and finish levels, determining the appropriate method of rail milling, developing a plan for rail milling and monitoring the rail on an on-going basis to achieve the highest level of finish and most efficient operation.

c. Proposed work flowchart with all key parameters of the operation: milling machine (equipment) dimensions, weight, milling speed, travel speed, stopping distance, metal particles (debris) removal process, possibility of milling moving forward and backwards, fuel type, fuel consumption, anticipated maintenance schedule, consumables replacement frequency etc.

d. Crew of minimum two (2) full time employees (in case of weekend closure, 2 crews would be required), with sufficient technical proficiency and experience.

e. Daily reporting of rail milling activities for TTC’s direction and monitoring of the program.

f. All additional quantities of consumables required for the rail milling including fuel, cutting tools and spare parts, as well as labour and supervision necessary for the operation of the rail milling machine and maintenance of the machine, including replacement of cutting tools, fuelling and removal of all debris (metal chips & dust).

g. Workers who are fully trained in the operation and maintenance of the rail milling machine and are qualified and competent in the safe operation of all equipment.

h. Time for training of all organization’s workers who must be at TTC track level.

i. Labour and supervision associated with breakdown, on loading, securing, transportation, delivery and offloading of the rail milling machine within TTC’s Subway system including the TTC’s McCowan Yard (SRT system) as required.
# 3.0 Reference Drawings and Specifications

## 3.1 Reference Drawings and Specifications - Subway

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Drawing No.</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Subway/SRT System Mileage Chart</td>
<td>W8RT-981-1</td>
</tr>
<tr>
<td>2</td>
<td>New Structure Track Equipment Gauge line</td>
<td>FIG.1.2.3</td>
</tr>
<tr>
<td>3</td>
<td>Car Clearance Diagram</td>
<td>W8RT-529</td>
</tr>
<tr>
<td>4</td>
<td>Track Clearance Diagram</td>
<td>W8RT-529/1</td>
</tr>
<tr>
<td>5</td>
<td>Curved Track 85 lb. Restraining Rail – 100 lb. Running Rail</td>
<td>W2RT-1008</td>
</tr>
<tr>
<td>6</td>
<td>Restraining Rail Brace 100 lb. – 115 RE Running Rail</td>
<td>W8RT-1185</td>
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</tbody>
</table>

## 3.2 Reference Drawings and Specifications – Streetcar Way

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
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<tbody>
<tr>
<td>1</td>
<td>STREET CAR WAY TRACK DIAGRAM</td>
<td>W2M-1649</td>
</tr>
<tr>
<td>2</td>
<td>STANDARD 115 lb. RE RAIL</td>
<td>TM-0085-X</td>
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<tr>
<td>3</td>
<td>NP4aMOD (SGERAIL) GIRDER GUARD RAIL</td>
<td>TM-0144-X</td>
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<td>4</td>
<td>TYPE 115 RE RAIL ENCLOSURE</td>
<td>W2T-654-F</td>
</tr>
<tr>
<td>5</td>
<td>TYPE NP4aMOD (SGERAIL) GIRDER GUARD RAIL ENCLOSURE</td>
<td>W2T-705-C</td>
</tr>
<tr>
<td>6</td>
<td>RESILIENT EMBEDDED STREETCAR TRACK - TYPICAL DESIGN</td>
<td>W2T-872-1</td>
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<td>7</td>
<td>PAVING / CONCRETE CONTOUR FOR SURFACE TRACK INSTALLATION</td>
<td>W2T - 903</td>
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<td>8</td>
<td>LF LRV INTERFACE TO PLATFORM SPECIFICATION</td>
<td>26444</td>
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<td>9</td>
<td>EXPANSION JOINT INSTALLATION DETAILS FOR DUNDAS ST. BRIDGE AND PETER SLIP BRIDGE</td>
<td>W8T - 902</td>
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<tr>
<td></td>
<td>&quot;TYPE 1S&quot; NP4aM GGR EXPANSION JOINT ASSEMBLY</td>
<td>TM - 0349 - X</td>
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<td>&quot;TYPE 1S&quot; NP4aM GGR EXPANSION JOINT ASSEMBLY</td>
<td>TM - 0349 - X</td>
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<tr>
<td>11</td>
<td>DUPONT ST. TO 132 + 20</td>
<td>W6P - 656</td>
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<tr>
<td>12</td>
<td>132 + 20 TO AUSTIN TERRACE</td>
<td>W6P - 656</td>
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<tr>
<td>13</td>
<td>CLEARANCE COVER - LRT DYNAMIC PROFILE</td>
<td>0205-03.01</td>
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<tr>
<td>14</td>
<td>STATIC AND DYNAMIC DIMENSIONS</td>
<td>0205-03.02</td>
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<td>15</td>
<td>SURFACE CUT SECTION</td>
<td>0205-03.03</td>
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<td>16</td>
<td>BOX STRUCTURE</td>
<td>0205-03.04</td>
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<td>17</td>
<td>RIGHT OF WAY REQUIREMENTS FOR CLRV TRACK LOCATED ON STREET</td>
<td>0205-03.07</td>
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<tr>
<td>18</td>
<td>RIGHT OF WAY REQUIREMENTS FOR CLRV TRACK LOCATED ON STREET</td>
<td>0205-03.08</td>
</tr>
</tbody>
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NOTE:

ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.

DESIGN VEHICLE - NEW STRUCTURE
TRACK EQUIPMENT GAUGE LINE
NOTE:
ENCLOSED DIMENSIONS INCREASE AT CURVES TO MAINTAIN PROPER CLEARANCE, FOR SUBWAY CAR 10'-4" WIDE, 74'-0" LONG, WITH 34'-0" TRACK CENTRES.

HORIZONTAL MOVEMENT AT TOP OF CAR
RESULT OF:
- OSCILLATION + 2.825''
- BOLSTER SIDE MOVEMENT + 1.000''
- JOURNAL SIDE MOVEMENT + 0.725''
- RAIL CLEARANCE + 0.438''
- RAIL WEAR + 0.500''
- CENTER WEAR WEAR + 0.500''
TOTAL ACTUAL MOVEMENT + 4.875'' - 4.500''
DESIGN FIGURE MOVEMENT + 5.000''

HORIZONTAL MOVEMENT AT BUTTON OF CAR
RESULT OF MOVEMENT AT TOP OF CAR + 1.6875'' + 1/16''
DESIGN FIGURE MOVEMENT + 1/16''

VERTICAL MOVEMENT AT SIDE OF CAR
RESULT OF:
- OSCILLATION + 1.250''
- RAIL WEAR + 0.750''
- WHEEL WEAR + 0.750''
- BODY SAG + 0.250''
- JOURNAL SPRING DEFLECTION + 0.500''
+ 3.5'' + 1/2''

VERTICAL MOVEMENT AT E OF CAR
RESULT OF:
- RAIL WEAR + 0.750''
- WHEEL WEAR + 0.750''
- JOURNAL SPRING DEFLECTION + 0.500''
+ 2.000'' + 1/2''

ABOVE DATA FROM SUBWAY DESIGN STANDARDS

NOTES:
1. SHADOW AREA DUE TO 1/2 LATERAL, RAIL OR WIDE GAUGE AND 3/5 VERTICAL RAIL WEAR TO BE APPLIED TO ALL REVENUE VEHICLES EXCEPT AS NOTED IN 4. RAIL GRINDING CARD

2. THE FLANGEWAY ACCOMMODATES THE WHEEL FLANGE AND ITS WIDTH CAN NOT BE DECREASED IT IS INTENDED THAT THE BACK OF THE WHEEL FLANGE CONTACT THE HANGING STEEL GUARD BAR OR THE GUARD/RESTRAINING RAIL TO PROTECT THE OPPOSITE SIDE RAIL/SWITCH POINT.

3. SEE WRT-472 FOR WHEEL/RAIL/GUARD/SWITCH POINT RELATIONSHIP.

4. SEE WRT-178 FOR RAIL/ADJOINING COMPONENT RELATIONSHIP DUE TO RAIL HEAD WEAR.

5. PLANNING AND CONTACT RAIL COMPONENTS MAY NOT BE EXACTLY AS SHOWN.
NOTE
FOR PLATE SPACING SEE DWG.
RAIL DRILLING

NOTES:
1. ALL "(1)" DIMENSIONS ARE REFERENCE DIMENSIONS EXPRESSED IN MILLIMETRES AS PER SGERAIL DRAWING DATED 20.03.97.
2. ALL IMPERIAL DIMENSIONS ARE EXPRESSED TO THE NEAREST 1/1000TH OF AN INCH.
3. RAIL ENDS SHALL BE DRILLED IN ACCORDANCE WITH THIS DRAWING; ONLY IF SPECIFIED.
4. MATERIAL: GRADE 900 OR HSH TO VDV OR 8.1/13.1, AS SPECIFIED.
1. MATERIAL IN ACCORDANCE WITH REQUIREMENTS OF PART 3.8 OF ATTACHED SPECIFICATIONS.

2. DIMENSIONS TO FIT NP4a MOD GOR RAIL SECTION, EXCEPTING DETAILS AS REQUIRED IN NOTE 3. PROFILE MUST RETAIN SHAPE AND FIT RAIL SECTION WITHOUT FORCING, STRETCHING OR BULGING. FAILURE TO DO SO WILL CAUSE FOR REJECTION OF THE MANUFACTURED PART.

3. SECTION TO BE DESIGNED FOR A "PRESS FIT" IN THE AREA UNDERNEATH THE GOR RAIL HEAD AND GUARD CORNER RAIL SUPPLIERS TO PROVIDE FIXTURE DETAILS IN THIS AREA ONLY.

4. ALL DIMENSIONS ARE IN INCHES AND UNLESS OTHERWISE NOTED ARE SYMMETRICAL ABOUT CENTERLINE.

5. REMOVE FINishes & FLASH TO WITHIN 0.040 OF SURFACE.

6. ALL TOOLING AND MANUFACTURE TO BE FROM APPROVED DRAWINGS AND SPECIFICATIONS ONLY.

7. PROFILE SHOULD HAVE A UNIFORM THICKNESS OF X 0.160 ± 0.010 INCHES. INTERNAL RIBS TO BE MINIMUM THICKNESS OF X 0.150 INCHES.

8. PART TO BE HANDLED, STORED, AND SHIPPED WITH CARE TO PREVENT DAMAGE OR PERMANENT DEFORMATION.
ENCLOSED RAIL

NON-ENCLOSED RAIL
(SPECIAL TRACKWORK ONLY)

PAVING / CONCRETE CONTOUR AT TEE RAIL HEAD

PAVING / CONCRETE CONTOUR AT GIRDER RAIL HEAD

NOTE:
ALL DIMENSION TOLERANCES ARE ± 1.00 mm UNLESS OTHERWISE NOTED.

FOR SHARED RIGHT OF WAY

PAVING / CONCRETE CONTOUR
for
SURFACE TRACK INSTALLATIONS
NOTES:

1. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.

2. REFERENCE DRAWING: EQUIPMENT DEPARTMENT 11186-1 (DYNAMIC PROFILE)
NOTES:
1. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.

2. REFERENCE DRAWINGS: EQUIPMENT DEPARTMENT
1186-2 REV.B AS 201

DWG. # 0205-03.02  Static and Dynamic Dimensions  Fig.
NOTE:
1. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
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