**General Contract Specifications**

**General Contract Specifications – Items**

Item G1 Maintenance of Traffic [Renewal / New Construction]

This item is for the extra work involved to maintain traffic throughout the Site as specified in this Specification and in the Supplementary Conditions. All traffic control operations and activities shall be governed by the guidelines as set out in the Ontario Traffic Manual – Book 7 (latest edition), as well as Ontario Traffic Manual – Book 18 (latest edition). ***[Delete the following sentence if there are no temporary electrical works in the contract]*** For temporary signals, periodic maintenance and modifications to existing detection zones shall also be covered under this item.

Traffic Control Plan

Prior to the commencement of construction, the Owner requires a detailed written Traffic Control Plan for the control of through traffic for the duration of the Contract and, where applicable, details for the safe passage of pedestrians and cyclists through the construction area. A Traffic Protection Plan for worker safety is also required as indicated in the Ontario *Occupational Health and Safety Act*. Copies of these plans shall be provided to the Owner a minimum of five (5) Working Days prior to the commencement of construction. Failure of the Contractor to provide these plans may delay the commencement of construction and may result in the assessment of liquidated damages in the event that the Work is not completed within the Contract Time.

Lane Restrictions

All roads shall be kept open to through traffic at all times and maintained with the existing number of lanes, unless indicated otherwise in the Contract Documents. A reduction in through lanes may be permitted in accordance with the Supplementary Conditions. When each Day’s work is completed, normal traffic flow in each direction shall be resumed unless the Owner approves otherwise in writing.

For multi-lane roadways, single lane closures in the direction opposite the major commuter traffic flow direction may be considered when controlled by methods indicated in the Ontario Traffic Manual – Book 7 (latest edition) and authorized, in advance, by the Owner.

Access

Access shall be maintained at all times, regardless of weather or construction staging, to all business and residences having access to the roads and safe and adequate passage for pedestrians shall be maintained. If the Contractor fails to maintain access, the Owner may take whatever action it deems necessary and charge all related costs back to the Contractor.

The Contractor shall notify local emergency services such as police, fire and ambulance at least seven (7) Days prior to any lane closures. A copy of the notification to these parties shall be submitted to the Owner for verification.

Traffic Control

Proper traffic control shall be maintained at all times during construction, including the removal and application of pavement markings as necessary to maintain vehicular traffic in their designated lanes. The Contractor shall provide, maintain and relocate, where necessary, sufficient signs, delineators, barricades, lights, flashers, etc., and provide Traffic Control Persons (TCPs) and/or paid duty police officers as required, so that motorists, pedestrians and cyclists are properly directed to ensure their safety. In accordance with the temporary conditions provisions of Ontario Traffic Manual – Book 7 (latest edition), police officers shall provide traffic control at all signalized intersections. Paid duty officer(s) with marked cruiser(s) may also be required to control traffic in between intersections, if deemed necessary by the Owner for the safety and effectiveness of traffic conveyance.

The Contractor shall adjust and/or relocate, as applicable, temporary traffic control signals to accommodate all construction stages. Items to be adjusted/relocated shall include, but not be limited to, traffic signal heads, pedestrian signal heads and detection zones. The Contractor shall notify the Owner of any adjustments and/or relocations required and obtain the Owner’s approval prior to proceeding with the adjustments and/or relocations.

When traffic signal heads are to be de-energized to accommodate construction staging, the Contractor shall cover the traffic signal heads with "traffic jacket" signal covers.

***[Select the paragraph below for renewal projects]***

All costs associated with the provision of police officers for traffic control shall be included in the lump sum price for this item.

***[Select the paragraph below for new construction projects]***

All costs associated with the provision of police officers for traffic control will be made under Item G7 – Paid Duty Police (Cash Allowance).

Flagging procedures shall conform to the standards adopted by the Construction Safety Association of Ontario.

Pilot vehicles shall be used to lead traffic through the construction zone when a two-lane road is reduced to one-lane of operation.

If, in the opinion of the Owner, proper traffic control is not maintained, the Contractor shall immediately modify its operation to the satisfaction of the Owner. If the Contractor fails to take immediate action, the Owner may take such action as it considers necessary and deduct the cost from monies owed to the Contractor. The performance of such traffic control work or other work under the direction of the Owner shall in no way relieve the Contractor from any of its responsibilities under the Contract, or from any damages which may occur during the performance of this work or after such precautions have been carried out by the Owner.

Emergencies and Repair

The Contractor shall respond to calls from the Owner and/or police for emergencies and/or repair of problem areas within one (1) hour of the first call to the Contractor being logged. Failure of the Contractor to do so will result in liquidated damages being assessed in the amount of $500.00 per incident, plus $100.00 per minute beyond the allowable response time.

The Contractor shall be on Site within two (2) hours of the first call to the Contractor being logged, fully prepared with the materials and equipment necessary to properly correct the problem, and shall contact the Owner upon arriving on Site. Failure of the Contractor to do so will result in liquidated damages being assessed in the amount of $500.00 per incident, plus $100.00 per minute beyond the allowable response time.

The Contractor shall be available by telephone at all times and shall ensure that its 24 hour emergency contacts are provided to the Owner prior to the commencement of construction.

Dust

This item includes the control of dust in order to provide safe passage for traffic. Dust control shall be carried out by the use of water or calcium chloride, or both, at the discretion of the Owner.

Pavement Markings

The Contractor shall provide temporary pavement markings at the end of each shift in order to define the traveled lanes on the roadway. When the Contractor paves an area with base asphalt or removes the asphalt surface to a partial depth (cold milling) and does not intend, or is not permitted under the Contract, to cover it with the surface course immediately, the Contractor shall provide temporary centerline pavement markings on two-lane roadways. These markings shall be in place prior to the Contractor closing down operations each Day. On roads having more than two (2) lanes, the Contractor shall also provide lane line markings. These markings shall be a minimum of 0.3 metres in length and spaced a maximum of 15.0 metres apart.

All temporary pavement markings shall be Owner-approved tape and/or paint placed in accordance with the manufacturer’s recommendations. Placement of these markings and the type selected shall be appropriate under the circumstances, taking into account the road surface and weather at the time of placement. If the surface course is not placed within fifteen (15) Working Days of the paving of base asphalt or the removal of the asphalt surface to a partial depth, the roadway surface shall be marked in accordance with the Ontario Traffic Manual – Book 7 and Book 11 (latest editions). Should the markings be ineffective or fail to adhere to the road surface, an Owner-approved alternative shall be selected. Markings must be reflective; non-reflective spray paint is not acceptable. In cases where existing cycling facilities such as bike lanes or cycle tracks are removed, a temporary cycling facility shall be provided and proper pavement markings shall be placed in accordance with the Ontario Traffic Manual – Book 18 (latest edition).

The requirements for temporary markings will apply regardless of the number of lifts of asphalt being placed. ***[Delete the following sentence if there is a separate payment item(s) for interim pavement markings]*** All costs associated with the temporary pavement markings shall be included in the lump sum price for this item.

Maintenance of Site

From the date stipulated in the Owner’s notice to commence the Work, the Contractor shall be responsible for maintenance of the Site at all times until the Work is completed. This includes maintaining the existing roadways within the Contract limits, even if the Contractor has not yet commenced work in a particular area. If the Work is not completed prior to the winter shutdown (if applicable), the Contractor shall maintain and repair, as required, all construction signing, delineation devices and traffic surfaces for the safe passage of vehicles, cyclists and pedestrians during the shutdown period. Routine snow ploughing and sanding will be provided by the Owner.

All trenches shall be restored to match the existing pre-construction conditions or to match the new construction cross-section. Restoration shall be completed within 24 hours of the completion of the trench. Where a trench is constructed in stages and there is a delay between the stages, restoration shall be completed in stages and not more than 24 hours after the completion of each trench construction stage. Ramping shall be provided for vehicular traffic if the elevation difference is more than 20 mm.

In areas where the final lift of asphalt is not placed before the winter shutdown (if applicable), all catch basins, maintenance holes, valve chambers and any other structures in the roadway shall be adjusted to be flush with the base asphalt in order to provide snow plough protection. Temporary asphalt curb shall be installed at catch basins and maintenance holes in the curb line to contain roadway drainage. Subsequent removals and adjustments to final elevation shall be made immediately prior to the placement of the surface course asphalt. All costs associated with the above-noted work shall be included in the lump sum price for this item.

Pedestrian Traffic

Pedestrian passage through the Site shall be maintained at all times. Proper pedestrian signs shall be erected and maintained during construction to advise of sidewalk closures, detours and construction. If, in the opinion of the Owner, proper pedestrian signs have not been erected, the Contractor shall immediately erect proper pedestrian signs upon being notified by the Owner, either verbally in writing. Failure of the Contractor to do so will result in liquidated damages being assessed in the amount of $100.00 per minute beyond the response time indicated by the Owner. Before an existing sidewalk is removed, a temporary asphalt path or the new concrete sidewalk shall be available for pedestrians, including those using wheelchairs and strollers. Asphalt ramping shall be provided where the elevation difference is more than 15 mm.

Cycling Traffic

Cyclist passage through the Site shall be maintained at all times. Before an existing cycling facility is removed, a temporary designated cycling facility shall be available for cyclists. Ramping shall be provided, as determined by the Owner. In cases where cycling facilities do not exist, potential cycling traffic may be mixed with pedestrian traffic. In such cases, “Cyclists Dismount” signs shall be installed as determined by the Owner.

Liquidated Damages for Early Closing

On each occasion that the Contractor closes a lane to traffic earlier than the specified time, the Owner will assess liquidated damages in the amount of $500.00. Thereafter, a further $100.00 in liquidated damages will be assessed for each and every minute outside of the permitted closure window that the traffic lane is not open to traffic. The Owner will be the sole judge of the length of time of the delay.

Liquidated Damages for Late Opening

On each occasion that the Contractor fails to reopen a traffic lane by the specified time, the Owner will assess liquidated damages in the amount of $500.00.

If the traffic lane is not open within 15 minutes of the specified time, further liquidated damages in the amount of $500.00 will be assessed.

Thereafter, further liquidated damages in the amount of $100.00 per minute will be assessed for every minute that the traffic lane is not open to traffic. The Owner will be the sole judge of the length of time of the delay.

Basis of Payment

The cost of all labour, granular and asphalt materials, equipment, TCPs, signs, lights, police officers, etc., required to maintain traffic (i.e., vehicles, cyclists and pedestrians) throughout the Site shall be included in the lump sum price for this item. No payment shall be made under this item for work or materials covered under other items in the Contract.

***[Select the paragraph below for renewal projects]***

Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price, or based on the Owner’s estimate of the percentage of Work completed to date at a location, as applicable. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

***[Select the paragraph below for new construction projects]***

Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G2 Construction Layout [Renewal / New Construction]

This Specification shall be read in conjunction with GC 74 of the General Conditions of the Contract.

This item is for the setting out of all construction work and undertakings for the Contract. ***[Delete the following sentence if there are no electrical works in the contract]*** This item is also for the layout of all proposed plant (i.e., poles, handwells, loops, etc.) included in the Work.

***[Delete this paragraph for new construction projects]*** The Contract limits will be established by the Owner. Offset stakes shall be placed at a maximum spacing of 50 metres with the chainage running from [location]. These stakes will enable the Owner to check asphalt distribution during paving operations. These stakes are necessary to ensure that the new asphalt is being placed on the same alignment as the existing road and therefore shall be marked with offset distances to the centre line. The chainage on these stakes will also aid in the quantity calculations of various other items.

The Contractor shall use qualified personnel to complete the layout work. The personnel shall be thoroughly experienced in surveying and have extensive previous experience in construction layout. ***[Delete the following sentence for renewal projects]*** The Region will supply the Contractor with the alignment drawings, available property plans and bench mark elevations.

The Contractor shall be responsible for the true and proper setting out of the Work, for the correctness of the positions, levels, dimensions and alignment of all parts of the Work, and for the provision of all necessary instruments and labour for the construction layout. If, at any time during the progress of the Work, an error appears or arises in the positions, levels, dimensions or alignment of any part of the Work, the Contractor shall, at its own expense, rectify such error to the satisfaction of the Owner, unless such error is based on incorrect data supplied in writing by the Owner. The checking of the setting out of any line or level by the Owner shall not in any way relieve the Contractor of its responsibility for the correctness of the Work.

The Contractor shall supply the Owner with a copy of all necessary information to enable the Owner to use the Contractor’s field layout. All information, both on work sheets and on stakes, shall be neat and legible.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and materials necessary to completely lay out the Work.

***[Select the paragraph below for renewal projects]***

Payment shall be made on each payment certificate based on the Owner’s estimate of the amount of layout completed. The layout required due to alterations in Contract items shall be considered incidental to the work of those items; therefore, no change will be made to the lump sum price for this item. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

***[Select the paragraph below for new construction projects]***

Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G2 Construction Layout [Electrical only]

This Specification shall be read in conjunction with GC 74 of the General Conditions of the Contract.

This item is for the layout of all proposed plant (i.e. poles, handwells, loops, etc.) included in the Work.

The Contractor shall use qualified personnel to complete the layout work. The personnel shall be thoroughly experienced in surveying and have extensive previous experience in construction layout; both chainage and offset and coordinate layout.

The Contractor shall be responsible for the true and proper setting out of the Work, for the correctness of the positions, levels, dimensions and alignment of all parts of the Work, and for the provision of all necessary instruments and labour for the construction layout. Construction layout must be reviewed and approved by the Owner prior to the commencement of construction.

If, at any time during the progress of the Work, an error appears or arise in the positions, levels, dimensions or alignment of any part of the Work, the Contractor shall, at its own expense, rectify such error to the satisfaction of the Owner, unless such error is based on incorrect data supplied in writing by the Owner. The checking of the setting out of any line or level by the Owner shall not in any way relieve the Contractor of its responsibility for the correctness of the Work.

The Contractor shall supply the Owner with a copy of all necessary information to enable the Owner to use the Contractor’s field layout. All information, both on work sheets and on stakes, shall be neat and legible.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and materials necessary to completely lay out the Work. Payment shall be made on each payment certificate based on the Owner’s estimate of the amount of layout completed. The layout required due to alterations in Contract items shall be considered incidental to the work of those items; therefore, no change will be made to the lump sum price for this item. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G3 Provision of On-Site Facilities [Renewal]

Under this item, the Contractor shall provide two (2) flush type portable toilets meeting the requirements of the Ontario *Occupational Health and Safety Act* for the exclusive use of Owner/Consultant staff: one (1) for male staff and one (1) for female staff (clearly marked as such). The portable toilets shall be equipped with hasps and padlocks. The Contractor shall maintain and service the portable toilets on a weekly basis, or more frequently if required, for the duration of the Contract. The Contractor shall provide two (2) keys for each portable toilet.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and material necessary to supply and service weekly the portable toilets. Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price, or based on the Owner’s estimate of the percentage of Work completed to date at a location, as applicable. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G3 Provision of Two Field Offices and Two Washroom Trailers [New Construction]

The Contractor shall supply two (2) field offices for the exclusive use of Owner/Consultant staff. Sharing a larger trailer with the Contractor is not acceptable.

The field offices shall be an office trailer with a minimum floor area of 3.3 meters x 12.0 meters and shall be one (1) open room with a partitioned office. The field offices shall be supplied with electricity, electric heating capable of maintaining a uniform temperature of 21°C, an air conditioner of 8,000 B.T.U. minimum and a lighting level equivalent to normal office lighting.

The following fixtures shall be included in the field offices:

* Two (2) office trailer entry doors (one (1) to the large open area and one (1) to the partitioned office)
* One (1) internal entry door to the partitioned office
* Two (2) office desks with drawers and desk chairs
* One (1) drawing table or counter top equivalent
* One (1) conference table
* Minimum of eight (8) chairs
* One (1) ‘TouchTone’ telephone (private line), complete with the ‘Call Answer’ feature, for the use of Owner staff only
* Two (2) wastepaper baskets
* One (1) wireless printer/scanner with 11”X17” printing
* High speed internet (minimum 100MB/sec) service with wireless local area networking, suitable for networking multiple computers, and unlimited usage.
* One (1) paper shredder
* One (1) push broom
* One (1) water cooler with hot and cold outlets, including the supply of water and paper cups all as supplied by Crystal Springs Water Supply Limited, 7151 Fir Tree Drive, Malton, Ontario or Laurentian Spring Water Ltd., 15 Crockford Blvd., Scarborough, Ontario, or Equivalent.
* Waterless (alcohol-based) hand sanitizer

The Contractor shall also supply two (2), two-unit washroom trailers, complete with hasps and padlocks, in the area of the field offices for the exclusive use of Owner/Consultant staff. In each washroom trailer, one (1) unit shall be clearly marked “Men Only” and the other unit shall be clearly marked “Women Only”.

Each unit of each washroom trailer shall contain the following features:

* Hot and cold running water
* One (1) sink
* One (1) porcelain toilet
* One (1) vanity and light
* Heating and air conditioning
* Waterless (alcohol-based) hand sanitizer
* Soap
* Paper supplies
* Outside porch light
* 200 gallon capacity
* 110 volt/15amp power supply for warm months
* 220 volt/20amp power supply for cooler months

The Contractor shall provide four (4) keys for each field office and four (4) keys for each washroom trailer.

The Contractor shall maintain and service the washroom trailers daily and clean and sweep the field offices and remove and dispose of all garbage at least once a week.

The Contractor shall maintain vehicle access to the field offices at all times. The Contractor shall provide a parking area for the exclusive use of Owner/Consultant staff for a minimum of four (4) cars adjacent to the field offices. The parking area and a walkway from the parking area to the offices shall be graveled with Granular ‘A’ in order to provide a mud free area, to the satisfaction of the Owner. After the Work is completed, the Contractor shall remove the field offices and washroom trailers, clean up all debris and restore the Site to its original pre-construction condition.

The locations of the field offices and washroom trailers are subject to the approval of the Owner.

The field offices and washroom trailers shall be on Site and fully functional, complete with all fixtures and services, prior to the start of construction. If utility hook-ups are delayed, the Contractor shall provide alternate temporary facilities (i.e. generator, cellular phone, etc.). When requested, the Contractor shall provide proof of service requests to the utilities.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and material necessary to provide, install, service for the duration of the Contract and remove the two (2) field offices and two (2), two-unit washroom trailers, as specified. The lump sum price shall also include the cost of any long distance telephone calls, which may be frequent if the local telephone exchange has calling charges to the Toronto area.

Payment shall be made on each payment certificate based on the value of Work completed to date as a percentage of the Contract Price. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

If the field offices and washroom trailers are not supplied and completely equipped by the Commencement Date or are not properly serviced for the full duration of the Contract, the Owner may reduce the amount paid under this item; the amount of the reduction will be decided by the Owner at its sole discretion.

Item G4 Environmental Protection [Renewal / New Construction]

General

This item is for the additional work required to maintain an environmentally safe workplace that is not specifically covered under any other item.

***[Delete this paragraph for renewal projects]*** The Contractor shall prepare a detailed Erosion and Sediment Control Plan (ESCP) and submit to the Owner for review a minimum of five (5) Working Days prior to the commencement of construction. The Contractor’s ESCP is considered to be supplemental to the erosion and sediment control measures shown on the Drawings. The ESCP shall cover all phases of the Work including, but not limited to, installation, maintenance, transition between phases of structural and grading work, any winter shutdown periods, removal of the environmental protection system, and stabilization of stockpiled earth materials and disturbed areas.

It is intended that the Work proposed be executed in such a manner that, to the fullest possible extent, minimizes any adverse effect on the natural environment of the project area. The environmental conditions of the Contract stated herein must be complied with in all respects. The Contractor shall ensure that all of its personnel are sufficiently instructed so that the Work is carried out in a manner consistent with minimizing environmental harm.

During the course of construction, the work area may consist of a milled roadway. The Contractor shall employ sufficient measures, such as lowering the catch basins to accommodate storm drainage as well as ensuring that the drainage flowing into the catch basins is filtered through appropriate devices, to ensure that sediment off the pulverized roadway does not enter the storm sewers.

The Contractor shall take all required precautions to avoid affecting the quality of water as it passes through the area and to prevent eroded material resulting from construction operations from entering streams, watercourses or private property. Appropriate sediment retention measures shall be incorporated into the Work to ensure that sediment discharge to watercourses adjacent to the working area is minimized. These measures may include sedimentation ponds to which pumped water or run-off is directed prior to discharge to the adjacent watercourse.

The Contractor shall not permit any excavated materials or other material to be deposited in any watercourses except those indicated in the Contract Documents, such as rip rap or gabions.

General Restoration

Restoration shall not be undertaken as a final project task but shall be initiated as soon as backfilling, compaction and any other specified work activities have been completed, except as otherwise approved by the Owner.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and materials necessary to complete the work as specified.

***[Select the paragraph below for renewal projects]***

Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price, or based on the Owner’s estimate of the percentage of Work completed to date at a location, as applicable. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

***[Select the paragraph below for new construction projects]***

Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G5 Full Matrix Portable Variable Message Signs (PVMS) [Renewal / New Construction]

The Contractor shall supply, deploy, maintain, operate and remove full matrix PVMS on all Regional road approaches to the work area, commencing seven (7) Days in advance of the road construction, unless indicated otherwise by the Owner.

The Contractor is advised that up to [number] signs may be required at the same time for this Contract.

The PVMS shall be a minimum of 1.2 m by 1.8 m in size, powered by solar energy and equipped with a functional, secure battery back-up system.

The PVMS shall remain in place and functional until completion of the Work, unless indicated otherwise by the Owner.

General

All PVMS shall comply with the Ontario Traffic Manual – Book 7 (latest edition), section 6.3.7 – Portable Variable Message Signs.

The specifications below supersede any conflicting specifications in the Ontario Traffic Manual referred to above:

All PVMS must be compliant with the National Transportation Communications for ITS Protocol (NTCIP) and support the following reporting functions:

* Monitor current displayed message;
* View message library (if applicable);
* Global Positioning System (GPS) coordinates; and
* Direction of the sign face.

PVMS controllers shall be less than five (5) years old at the time of deployment.

Logging shall be enabled on the sign controller and be capable of providing the following information:

* Sign message changes;
* Sign message change method (local access or remote access);
* Identifying information for remote access (username, source Internet Protocol (IP)); and
* Any hardware errors or warning messages.

Remote Access and Security Controls

The Contractor shall provide the Owner with remote access to each PVMS, through a web application, which gives the Owner the following capabilities:

* Update/change sign message;
* Blank the message so that no message appears on the sign;
* Monitor sign status;
* Current sign message
* Battery voltage
* Sign location
* Sign direction
* Error and warning messages such as low battery voltage
* Change user password;
* Historical message change details; and
* Message
* User
* Date
* Configurable email or Simple Messaging Service (SMS) alert messages for message changes, errors and warnings.

The remote access web application shall be secure and use communications protocols, including Transport Layer Security (TLS) v1.2 deployed with secure certificates such as Organization Validation (OV) and Domain Validation (DV). Encryption strength shall be at a minimum of AES-256B or higher.

The Contractor shall provide cellular modem(s) with private static IP addresses purchased or leased through the PVMS vendor. Modems shall be accessible only through a Virtual Private Network (VPN) supplied by the PVMS vendor and shall be compatible with cellular services available at the Site. Cellular modems shall include a data plan to provide a minimum of one (1) Gigabyte of data service per billing month to each PVMS for the length of the deployment of the PVMS.

The Contractor shall coordinate with the PVMS vendor to have static IP addresses, VPN credentials and PVMS vendor contact information provided directly to the Owner for all PVMS deployed under the Contract a minimum of five (5) Working Days prior to deployment.

Local Access and Security Controls

The Contractor shall ensure that the following requirements are met and shall coordinate with the PVMS vendor, if and as applicable:

* All Wi-Fi and/or Bluetooth capabilities shall be deactivated;
* All default login passwords must be changed or disabled;
* All PVMS software and firmware must be up to date prior to deployment;
* Passwords must not be written on the PVMS devices;
* All local keyboard access must be password protected and secured physically within a locked box;
* Cellular modems default access and login passwords must be changed, or disabled;
* All local data connections such as serial or networks ports must be secured physically; and
* All other local access shall be disabled.

The PVMS shall be configured to only allow for local access to, and messages to be entered by, the Owner or their authorized designate.

The Contractor shall coordinate the placement of the PVMS with the Owner.

Measurement for Payment

Measurement for payment shall be per sign, per Day that the sign is utilized at the work location and is in operation.

Basis of Payment

Payment shall be made at the unit price and shall be full compensation for all labour, equipment and materials necessary to supply, place, operate, maintain and remove the PVMS as specified.

Item G6 Lane Rental [Renewal – under 500m length]

General

The objective of this item is to decrease the impact of construction on road users. Lane rental charges will be assessed for the time, in hours, that the Contractor closes lanes to traffic (“Lane Hours”). For the purpose of this item, a lane closure means the closure of a traffic lane, or part thereof, and, for greater clarity, means that through the installation of a traffic control setup, in accordance with Book 7, traffic needs to move to another lane. This does not include short term closures for 30 minutes or less for delivery of materials and Very Short Duration Work for 30 minutes or less as per Book 7, unless these exceptions are used inappropriately by the Contractor as determined by the Owner at its sole discretion. The Contractor shall only close traffic lanes during the hours specified in the Supplementary Conditions.

Lane Hours will be measured for each hour, or part thereof, that a lane, or part thereof, is closed to traffic, and will be rounded up to the nearest hour. For example, two (2) traffic lanes closed for 10 hours will total 20 Lane Hours (10 Lane Hours per lane).

Lane Rental Charges

The following lane rental rate will apply per lane, or part thereof, closed per hour, or part thereof:

|  |  |
| --- | --- |
| WORK AREA | LANE RENTAL RATE |
| xxx | $200.00/hour |
| xxx | $200.00/hour |

The assessed lane rental charges will be deducted from progress payments. The Owner will be the sole authority in determining when lane rental charges are applicable.

Basis of Payment

The Owner will track the Lane Hours that the Contractor uses. When the number of Lane Hours used exceeds the number of Lane Hours in the Contractor’s Bid, lane rental charges will apply.

When the total assessed lane rental charges exceed the total price for the item, the extra charges will be deducted from the Contractor’s progress payments.

If the total of the assessed lane rental charges is less than the total price for the item, the Contractor will be paid the balance of the item, up to a maximum of 100 hours or $20,000.00.

Example 1:

Number of Lane Hours bid = 1,000 hours

Actual number of Lane Hours used = 950 hours

Lane rental rate = $200.00/hour

Final lane rental value = (1,000 hours – 950 hours) x $200.00/hour = $10,000.00

Contractor receives payment in the amount of $10,000.00.

Note: Positive final lane rental values will be paid to the Contractor up to a maximum of $20,000.00.

Example 2:

Number of Lane Hours bid = 1,000 hours

Actual number of Lane Hours used = 1150 hours

Lane rental rate = $200.00/hour

Final lane rental value = (1,000 hours – 1,150 hours) x $200.00/hour = -$30,000.00

$30,000.00 will be deducted from the Contractor’s payment certificate.

Note: Negative final lane rental values will be charged to the Contractor with no maximum limit.

Item G6 Lane Rental [Renewal / New Construction]

General

The objective of this item is to encourage the Contractor to decrease the impact of construction on road users. Lane rental charges will be assessed for the time, in hours, that the Contractor closes lanes to traffic (“Lane Hours”). For the purpose of this item, a lane closure means the closure of a traffic lane, or part thereof, and for greater clarity, means that through the installation of a traffic control setup, in accordance with Book 7, traffic needs to move to another lane. This does not include short term closures for 30 minutes or less for delivery of materials and Very Short Duration Work for 30 minutes or less as per Book 7, unless these exceptions are used inappropriately by the Contractor as determined by the Owner at its sole discretion. The Contractor shall only close traffic lanes during the hours specified in the Supplementary Conditions.

Lane Hours will be measured for each hour, or part thereof, that a lane, or part thereof, is closed to traffic, and will be rounded up to the nearest hour. For example, two (2) traffic lanes closed for 10 hours will total 20 Lane Hours (10 Lane Hours per lane).

Lane Rental Charges

The following lane rental rate will apply per lane, or part thereof, closed per hour, or part thereof:

|  |  |  |
| --- | --- | --- |
| WORK AREA | TOTAL LENGTH OF CONSTRUCTION | LANE RENTAL RATE |
| xxx |  xxx |  $200.00/hour |
| xxx |  xxx |  $200.00/hour |

The lane rental rate(s) will be adjusted by a factor of impact that will be the ratio of the length of the temporary closure divided by the total length of construction specified above.

The assessed lane rental charges will be deducted from progress payments. The Owner will be the sole authority in determining when lane rental changes are applicable.

Basis of Payment

The Owner will track the number of Lane Hours that the Contractor uses and the length of the lane closure(s).

When the total assessed lane rental charges exceed the total price for the item, the extra charges will be deducted from the Contractor’s progress payments.

If the total of the assessed lane rental charges is less than the total price for the item, the Contractor will be paid the balance of the item, up to a maximum of 100 hours or $20,000.00.

Example 1:

Number of Lane Hours bid = 100 hours

Actual number of Lane Hours used = 60 hours

Total length of construction = 2,000 m

Length of temporary closure = 1,000 m

Factor of impact = 1,000 m/2,000 m = 0.5

Lane rental rate = $200.00/hour

Adjusted lane rental rate = $200.00 x 0.5 = $100.00

Lane rental bid amount = 100 hours x $200.00/hour = $20,000.00

Final lane rental value = 60 hours x $100.00/hour = $6,000.00

Amount owed to the Contractor = $20,000.00 - $6,000.00 = $14,000.00

Note: Positive amounts owed to the Contractor will be paid up to a maximum of $20,000.00.

Example 2:

Number of Lane Hours bid = 100 hours

Actual number of Lane Hours used = 300 hours

Total length of construction = 2,000 m

Length of temporary closure = 1,000 m

Factor of impact = 1,000 m/2000 m = 0.5

Lane rental rate = $200.00/hour

Adjusted lane rental rate = $200.00 x 0.5 = $100.00

Lane rental bid amount = 100 hours x $200.00/hour = $20,000.00

Final lane rental value = 300 hours x $100.00/hour = $30,000.00

Amount owed to Contractor = $20,000.00 - $30,000.00 = -$10,000.00

Note: Negative amounts owed to the Contractor will be deducted from payments to be made to the Contractor with no maximum limit.

Item G7 Paid Duty Police (Cash Allowance) [New Construction]

Under this item, the Contractor shall provide and pay for paid duty police officers with a police cruiser(s) when required during construction.

Paid duty police officers shall be utilized at signalized intersections or other traffic restriction locations during the set-up of the traffic control for construction stages, as required by the Contractor’s construction operations, the Ontario Traffic Manual – Book 7 (latest edition) and when indicated by the Owner.

The actual hours of required paid duty police will be determined by actual traffic and construction staging conditions and through discussions between the Owner, the Contractor and the police, in response to Site-specific problems and the requirements of the Ontario Traffic Manual – Book 7 (latest edition).

Basis of Payment

Payment from the cash allowance will be made based on paid invoices from York Regional Police for the paid duty police services provided, without any markup or additional fees. Under no circumstances shall the Contractor be entitled to payment in excess of payments actually made to York Regional Police, as substantiated by paid invoices.

Item G8 Critical Path Schedule [New Construction]

The Contractor shall comply with the schedule requirements stipulated under SC 12 (Critical Path Schedule) of the Supplementary Conditions.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and materials necessary to complete the work as specified, including but not limited to preparing the initial and updated construction schedules.

Payment shall be made on each payment certificate based on the value of the Work completed to date as a percentage of the Contract Price. The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G9 Vibration Monitoring (Provisional) [New Construction]

The Contractor shall conduct vibration and settlement monitoring of all Work activities that may impact existing buildings and structures. The Contractor shall establish vibration limits required to avoid damage to buildings and structures and monitor vibrations to ensure these limits are not exceeded during execution of the Work.

All vibration monitoring shall be performed by a recognized vibration monitoring company acceptable to the Owner with personnel trained and certified in the industry. Acceptance of the vibration monitoring company must be confirmed by the Owner prior to the commencement of construction.

Measurement for Payment

Measurement for payment shall be per Day of vibration monitoring.

Basis of Payment

Payment shall be made at the unit price and shall be full compensation for all labour, equipment and materials necessary to complete the work as specified.

Item G10 Photographic Documentation for Construction (Cash Allowance) [New Construction]

The Contractor shall provide comprehensive photographic documentation of the construction from start to finish with the ability to compile daily imagery to illustrate the progress of the Work. Image capture shall be at least four (4) times an hour in up to four (4) perspectives to capture the progress of the entire Site. The imagery shall be available to view online.

Internet-based online service shall be employed to allow online access and download of the imagery. The service shall be available for the duration of the Contract and shall allow the viewing of high-definition digital still images of the Work via a secure password protected website.

The Contractor shall ensure that images are maintained on an internet-based server for the Owner’s access at all times for the duration of the Contract and for no less than 30 Days after Total Performance of the Contract. All images shall be protected on servers and stored securely. The Contractor shall ensure that all images and related data are made available to the Owner upon completion of the Work.

The camera shall be at minimum a 16MP PTZ (pan/tilt/zoom) cellular camera with time lapse movie production capabilities, including necessary mounting hardware for pole, wall or pedestal mount, power supply and solar supply, if applicable. The camera itself and the online storage service may be provided through Oxblue Corporation or Equivalent.

The hardware shall be situated in a location, mutually agreed upon with the Owner, to record imagery from multiple perspectives and capture progress across the Site. The Contractor shall locate the camera on a temporary pole or alike in a location which is safe and secure from tamper and vandalism. Physical maintenance including power and clarity of imagery capture shall be the responsibility of the Contractor. Should there be a need for the camera location to be adjusted to maximize the capture of imagery across the Site, the Contractor shall work with the Owner to find an agreed upon location.

This item includes the supply, installation and maintenance of the hardware by the Contractor or others and the service contract with a company to provide services to record and store the imagery on behalf of the Owner and the online capture, storage, access and compilation of digital imagery.

Basis of Payment

Payment from the cash allowance will be made based on paid invoices from the camera service provider for the services provided, without any markup or additional fees. Under no circumstances shall the Contractor be entitled to payment in excess of payments actually made to the camera service provider, as substantiated by paid invoices.

Item G11 Red-Line Drawings [New Construction]

The Contractor shall prepare red-line drawings (“**Red-Line Drawings**”) and shall demonstrate, in red ink, on-Site changes to the original Contract to show as-built conditions.

The Owner will provide one (1) set of Drawings to the Contractor at the beginning of the Contract to use to produce Red-Line Drawings. The Contractor shall mark, on the Drawing set, all changes as the Work progresses and as changes occur, including Change Orders.

On a weekly basis, the Contractor shall transfer all “As-Built” information to the Drawings, revising the Drawings to show all Work as it is actually installed and any on-Site changes from the original Contract Documents.

Production of Red-Line Drawings Requirements:

* Use red ink when showing information added, modified or deleted from the Drawings.
* Call attention to entries by drawing a “cloud” around the area(s) affected.
* Legibly mark to record actual changes made during construction, including but not limited to:
	+ Storm and sanitary sewers: material, type and class of pipe, location, size, slope, elevations
	+ Watermains/forcemains: pipe size, type and class of pipe, bedding type, fittings (bends, reducers, blocking, restraining joints), type of valves, chamber size, elevations
	+ Bridges and culverts: elevations, dimensions, reinforcing, pile locations
	+ Creek/stream works: dimensions, alignments, elevations
	+ Retaining walls: material, location, elevations
	+ Location of utilities and appurtenances concealed in a structure
	+ Irrigation system, soil cells, tree pits, low impact development
	+ Electrical: traffic poles, handwells, traffic signal controller, illumination poles
	+ Fibre optic conduit: vaults, conduit, bends, turns, tie-ins
	+ Streetscape: dimensions, materials, finishes, products
	+ Abandoned infrastructure
	+ Unexpected obstructions or difficulties found on Site
	+ Changes made by addenda and field orders, work change directives, Change Orders, including their references

**Format:** hard copy and PDF.

Quality Assurance

The Contractor shall assign the responsibility for maintenance of the Red-Line Drawings to one member of the Contractor's staff.

The Contractor shall make the Site records available for reference purposes and inspection at all times. The Owner may withhold monthly payment from the Contractor until satisfactory evidence is provided that Site records are being properly maintained.

The Contractor’s staff shall meet with Owner’s Site staff weekly to review and demonstrate completeness of Red-Line Drawings.

Basis of Payment

Payment shall be made at the lump sum price and shall be full compensation for all labour, equipment and materials necessary to produce, maintain and submit the Red-Line Drawings. Payment will be made as follows:

* 50% of the lump sum price for updating the Red-Line Drawings during construction, prorated over the Contract term based on the number of Working Days that have elapsed
* 50% of the lump sum price upon the satisfactory submission of the completed Red-Line Drawings

The total amount paid under this item shall not exceed 100% of the lump sum price for this item.

Item G12 Railway Flagging (Cash Allowance) [New Construction]

The Owner will cover the cost of flagging services provided by [CN / CP Rail], except under the following circumstances:

* The Contractor requests flagging services for a period of construction activity for which railway protection is not required.
* The Contractor requests flagging services for a period of construction activity that is less than four (4) hours in duration, unless the activity cannot be combined or scheduled with other activities within the railway corridor.
* The Contactor requests flagging services for a period when it has limited staff and equipment available to perform work within the railway corridor. A minimum of four (4) construction staff, including labourers, carpenters, foremen, equipment operators, and/or truck drivers, shall be working when flagging services are being provided, unless fewer than four (4) construction staff are required to perform the construction activity and the activity cannot be combined or scheduled with other activities within the railway corridor.
* The Contractor cancels the scheduled flagging services.

Basis of Payment

Payment from the cash allowance will be made based on paid invoices from [CN / CP Rail] for the flagging services provided, without any markup or additional fees. Under no circumstances shall the Contractor be entitled to payment in excess of payments actually made to [CN / CP Rail], as substantiated by paid invoices.

Item G13 Maintain 911 Address Tabs [New Construction]

The Contractor shall maintain existing green and white reflective “911 address tabs” for the duration of the Contract in a position that is visible to emergency services. The tabs shall be reinstalled in the permanent position on the original fixture upon completion of the shoulder work.

Measurement for Payment

Measurement for payment shall be a count of each 911 address tab maintained and relocated.

Basis of Payment

Payment shall be made at the unit price and shall be full compensation for all labour, equipment and materials necessary to maintain, temporarily relocate and reinstall the 911 address tabs. Payment will be made as follows:

* 50% of the unit price upon temporary relocation of the 911 address tabs
* 50% of the unit price upon reinstatement of the 911 address tabs to their final location