



THIS DIGITAL DOCUMENT IS FOR VIEWING ONLY

BIDDERS MUST PICK UP THE ORIGINAL DOCUMENTS, DRAWINGS
AND SUBMISSION ENVELOPE FROM THE CITY OF CAMBRIDGE,
50 DICKSON STREET
4TH FLOOR
PURCHASING DIVISION.

DO NOT ADD YOUR COMPANY NAME AS A PLAN TAKER.
PURCHASING STAFF WILL DO THAT ON YOUR BEHALF
WHEN QUOTATION DOCUMENTS ARE PURCHASED.

**QUOTATIONS WILL NOT BE ACCEPTED UNLESS THEY ARE
SUBMITTED ON OUR ORIGINAL FORMS**

QUOTATION 10-930-04

**BITUMINOUS ROOF UPGRADE
GALT ARENA GARDENS, 98 SHADE STREET**



**QUOTATION #10-930-04
BITUMINOUS ROOF UPGRADE
GALT ARENA GARDENS, 98 SHADE STREET**

SEALED QUOTATIONS marked clearly as to their contents in the envelope provided, will be received by the City of Cambridge until:

2:00 p.m., Thursday, June 24, 2010

The Work Includes: Supply all labour and materials for the replacement of a portion of the flat roof areas at the existing Galt Arena Gardens, 98 Shade Street, Cambridge.

Plans and specifications may be obtained from the City of Cambridge Purchasing Department, 50 Dickson Street, 4th Floor, for the non-refundable cost of \$40.00, includes G.S.T.

Note: there will be a **Site Visit on Thursday, June 17, 2010 at 10:00 a.m.** at Galt Arena Gardens, 98 Shade Street, Cambridge. We strongly encourage bidders to attend.

For further technical information regarding this quotation, please contact, Paul Nicholson, Project Manager, Vanbots Construction Inc., 519.620.0869. Questions must be submitted in writing by Monday, June 21, 2010 at 5:00 p.m. For questions on submitting bids contact Denise Hellyer, Senior Buyer, at 519.740.4637 ext. 4515.

LOWEST OR ANY QUOTATION NOT NECESSARILY ACCEPTED

Tenders, Quotations and Proposals are to be dropped off at the Purchasing Services Counter, 50 Dickson Street, 4th Floor. Submissions received at Purchasing after the closing time will NOT be accepted. The onus is on the bidder to ensure that the bid is received in the proper location and before the closing time.

Tenders, Quotations and Proposals can now be viewed and/or downloaded from our website. Bid results will be posted, when applicable, on the website after opening.
http://www.cambridge.ca/cs_corporate/purchasing_tenders_list.php?

John Avery, CPPB
Manager of Purchasing and Inventory

GALT ARENA GARDENS IMPROVEMENTS

FOR

THE CORPORATION OF THE CITY OF CAMBRIDGE



REQUEST FOR QUOTATION 10-930-04:

CONTRACT NO. 07510A – BUILT-UP BITUMINOUS ROOFING REPLACEMENT

CONSTRUCTION MANAGER:

**VANBOTS,
a division of Carillion Construction Inc.
7077 Keele Street
Concord, Ontario
L4K 0B6**

Vanbots Project No. 2599

**Project No. 2599 – Quotation 10-930-04
Galt Arena Gardens Improvements for
The Corporation of the City of Cambridge**

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	
00100	Instructions to Bidders and Scope of Work	9 pages
00200	Contract Bid Documents	3 pages
00300	Stipulated Price Bid Form and Appendices	13 pages
01100	General Requirements and Project Safety	7 pages
01200	Project Meetings	2 pages
01311	Progress Schedule	2 pages
01710	Cleaning	2 pages

GALT ARENA GARDENS IMPROVEMENTS

FOR

***THE CORPORATION OF THE CITY OF
CAMBRIDGE***

**VANBOTS,
a division of Carillion Construction Inc.**

Construction Manager

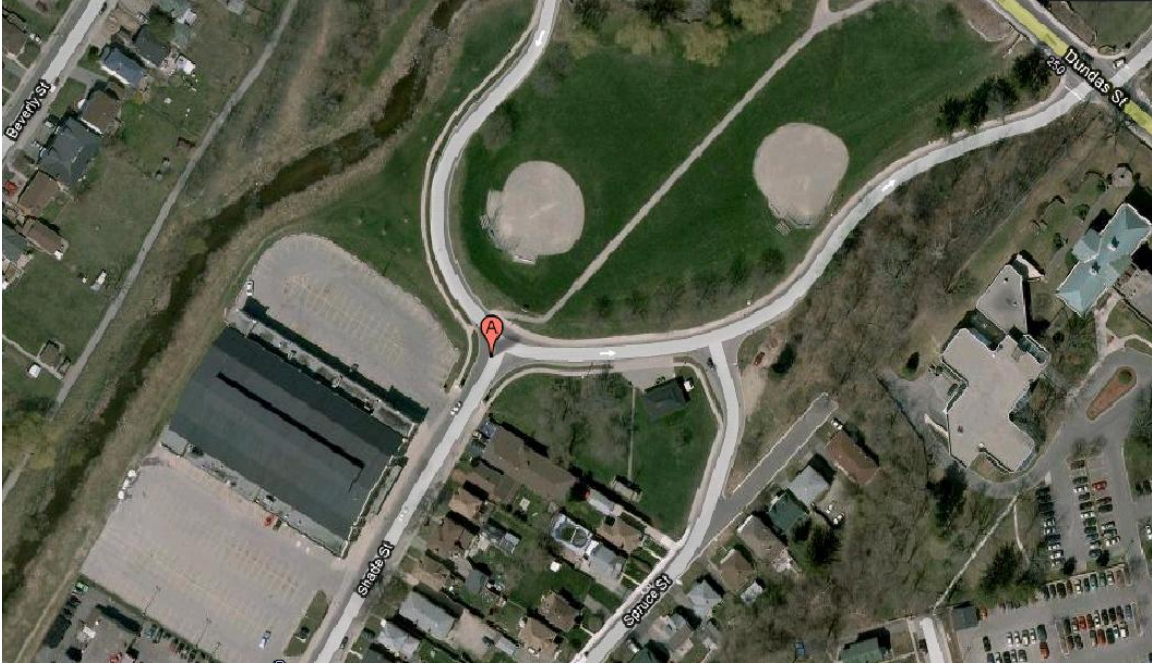
**QUOTATION 10-930-04
SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK**

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

4.0 EXAMINATION OF SITE:

4.1 The work is located at:

**City of Cambridge – Galt Arena Gardens
98 Shade Street
Cambridge, Ontario**



4.2 Bidders shall visit and examine the site and the existing premises and satisfy themselves as to the conditions of the site, the means of access to same and the nature and quantity of work required. No allowance will be made by reason of any error or neglect in complying with these requirements.

4.3 **An optional site visit is scheduled for Thursday, June 17, 2010 at 10:00 AM. Bidders are to meet and record their attendance at the public entrance area of the 98 Shade Street facility. A tour of the facility will follow.**

5.0 BID DOCUMENTS:

5.1 Drawings, Specifications and Instruction to Bidders are available from the Manager and may be viewed in the Manager's office, during normal business hours (Monday to Friday inclusive from 7:00 a.m. to 3:30 p.m.).

5.2 One (1) set of Bid Documents will be issued to each bidder.

5.3 It is the responsibility of the Bidder to check all drawings, specifications, schedules and addenda prior to the submission of the Bid.

5.4 The bidder agrees that all work shall be supplied and/or installed, as applicable, complete to the full intent of the drawings, specifications and project schedule regardless of where such work shall appear in the said documentation and in accordance with the terms and conditions of the Contract and project schedule.

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

- 5.5 The Bidder submits that he has carefully examined the Drawings and Specifications and the site of the proposed Work and has satisfied himself as to his ability and the ability of his subcontractors and suppliers to meet the requirements for timely progress and completion and to execute the work in full accordance with the Contract Bid Documents.
- 5.6 Bidders will be responsible for obtaining all of the necessary and required information to carry out and complete the work of the Contract.
- 5.7 Drawings and Specifications are the property of The Owner and shall be returned in good condition to the Manager not later than seven (7) days after date of closing of Bid, or the Drawing Deposit, if any, shall be forfeited.
- 6.0 AWARD OF CONTRACT:**
- 6.1 The right to reject any or all Bids or to accept any Bid as most satisfactory in the opinion of The Owner is expressly reserved by The Owner without liability on the part of themselves, the Consultants or the Manager.
- 6.2 It shall be understood by the Bidders that the Bid shall be valid and irrevocable and subject to acceptance by The Owner and that no adjustment shall be made to the Bid amount for a period up to and including thirty (30) calendar days after the date of closing of Bids.
- 6.3 The Owner reserves the right to reject Bids received from parties who cannot show a reasonable acquaintance with or preparation for the class of work specified. Evidence of competence must be furnished by the Bidder if requested.
- 6.4 The Owner will not necessarily award a contract to the lowest or any bidder.
- 6.5 The Owner may not award a contract if all bids are over the project budget amount.
- 7.0 TAXES:**
- 7.1 Bidders shall include for all taxes, duties, levies and imposts in their Stipulated Price Bid **but shall EXCLUDE the Goods and Services Tax (GST) and/or the Harmonized Sales Tax (HST)**, provided always that such taxes, duties, levies and imposts have been promulgated prior to the date of the Bid.
- 8.0 SCHEDULING OF THE WORK:**
- 8.1 The successful Bidder will be required to start work immediately upon notification of an award of a Contract or upon notification of intent to award a Contract and proceed with dispatch until completion of the Contract Work.
- 8.2 It shall be understood and agreed that the LUMP SUM BID includes all costs on account of premium time or overtime required and all costs on account of premium prices required in order to obtain plant, materials or equipment or other critical items including waiting time, double handling, out of hours delivery and installation, off site storage space, street and/or lane closures, barriers and barricades, police services, protection of new and existing services at this site in order to meet the completion dates of the Contract Work and the Project completion date and tie-ins to the existing services. It may be necessary to work six days per week at ten hours per day or two shifts per day in order to maintain the schedule of the completion date established for the project. The trade contractors will not be permitted claims as a consequence of this requirement.
- 8.3 It shall be understood and agreed that the LUMP SUM BID includes all costs on account of schedule interfacing, coordination and cooperation with other Trade Contractors who will be carrying out work during the progress of this Contract in order to meet the completion date for the

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

Contract Work and for the overall completion date of the Project.

- 8.4 In the event of apparent or actual conflicts arising out of the operation of clause 8.3 above the Manager shall decide which Trade Contractor takes precedence.
- 8.5 It is imperative that the Trade Contractor appreciates that a schedule for completion has been established by The Owner and the Manager and must be met, both for the Contract Work and for the overall Project Completion Date.
- 8.6 The Owner will not entertain hardship claims, nor tolerate delays or interruptions to the work.
- 8.7 The Owner reserves the right to have the Manager modify the scheduled progress of the Work of any or of all Contractors, as the project proceeds, if such modification should prove to be in the best overall interest of meeting the Owner's construction targets and objectives.
- 8.8 All costs related to waste disposal are the responsibility of the Bidder.
- 8.9 The successful trade contractors will be required to comply with the Manager's Corporate Health & Safety Policy & Procedures Manual and the site specific Health & Safety Plan. The Corporate Manual is available for viewing at the offices of VANBOTS. The site specific plan will be available before work on site commences.

9.0 TRADE CONTRACT AGREEMENT:

- 9.1 The successful Bidder will be required to:
- 9.1.1 Execute VANBOTS Standard Subcontract Agreement. A copy of this subcontract agreement is available for viewing at the offices of VANBOTS.
- 9.1.2 Furnish to the Manager before commencement of work on site copies of:
- (i) Current Workplace Safety & Insurance Board certificate of clearance
 - (ii) Certificate of Commercial General Insurance for a minimum limit of \$5,000,000 liability
 - (iii) Current CAD-7 rating sheet
 - (iv) Bidder's own safety policy/procedures that complies with VANBOTS' program
 - (v) A completed Ministry of Labour - Registration of Constructors and Employers Engaged in Construction Form
 - (vi) Staffing - Submit a list naming Project Manager, Foreman and crew sizes for the project
- 9.1.3 Furnish to the Manager within five (5) working days after notification of Award of Contract or upon notification of intent to award a Contract an outline bar chart schedule of the Work.
- 9.1.4 Furnish to the Manager a schedule of values for progress payments in a manner and format acceptable to the Manager.
- 9.1.5 The above requirements, together with the provision of any required bonds, must be provided by the successful bidder and accepted by the Manager, prior to the initial payment for completed work.

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

10.0 BID SECURITY:

10.1 Each Bid in excess of One Hundred Thousand (\$100,000.00) Dollars shall be accompanied by the following, in favour of VANBOTS, a division of Carillion Construction Inc.:

10.1.1 An Agreement to Bond for a Fifty (50%) percent Performance Bond and a Fifty (50%) percent Labour and Material Payment Bond, with such bond to include for a term covering the warranty period and any extended warranty period specified for the work of this trade.

10.2 **The cost of such contract security shall be included in the base bid.**

11.0 TIME:

11.1 This bid is based upon work start dates and task durations set out in the construction schedule. It is understood and agreed by submitting a quotation for the work that all necessary overtime, shift work and premium time has been included in order to meet these start and completion dates.

11.2 If these completion dates cannot be met, indicate your revised dates on the Bid Form Appendix "A".

12.0 BASE BID, ALTERNATE, SEPARATE, ITEMIZED AND UNIT PRICES:

12.1 The bid is based upon the materials and products specified and is to be a base bid. Any alternative materials, products and construction details are to be identified separately as an addition/credit to the base bid submitted. There will be no exceptions.

13.0 UNION COMPATIBILITY:

13.1 The successful Bidder, in the performance of its obligations under the Subcontract Agreement, agrees to employ either union, or non-union labour.

13.2 If the Trade Contractor is unionized, the Trade Contractor's union is to be satisfactory to the Manager. In the event of an actual or threatened objection or grievance by, to, or on behalf of labour employed on the site or by any union, the Subcontractor shall make such arrangements and take such action as may be necessary, in the opinion of the Manager, to prevent any strikes, lockouts, slowdowns, or other delays and to prevent any damages or expenses to the Contract. The cost of such arrangements or actions and the cost of any damages or expenses to the Owner and/or Manager, or the cost of any expenses for which the Owner and/or Manager may become liable, shall be paid by the Subcontractor.

14.0 WORK INCLUDED IN THE SCOPE OF WORK:

The Work included in this Quotation Package comprises the provision of all necessary labour, supervision, materials, tools and equipment required for the proper execution of the Work in accordance with and to the full intent of the drawings and specifications, including the scope of work, and shall include, but not necessarily be limited to, the following:

14.1 Work covered by this Quotation Package will only commence on site after an agreed sequence of operations has been approved by the Manager.

14.2 Mobilize and demobilize to suit the Project construction schedule.

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

- 14.3 Be responsible for receiving, off-loading and storing materials, equipment or other components where directed by the Manager and be responsible for the movement and hoisting of materials, equipment or other components around the site, for the provision of all hoisting equipment, flagmen and signal men properly trained to direct hoisting operations, complete with all necessary communication devices and for the provision of all slings and rigging required.
- 14.4 Notify the Manager two (2) weeks in advance of the date when the first item of work will be ready for testing and inspection by others.
- 14.5 Site trailers and company vehicles will only be permitted on site where directed by the Manager. The Trade Contractor is responsible for the cost of all temporary services and power consumption associated with its site trailer.
- 14.6 Provide, maintain and remove on completion of the work, suitable lunch room facilities for the use of the Trade Contractor's own workers where directed by the Manager.
- 14.7 Provide all layout from principal reference lines and main elevations, namely a benchmark and two intersecting base lines provided by others, to the correct lines and levels for all work of this Quotation Package.
- 14.8 Layout will be governed by the Architectural drawings.
- 14.9 Whenever excavated material is removed and dumped off site, the Trade Contractor shall provide to The Manager, written confirmation of the location (s) at which the material has been dumped.
- 14.10 Provide and comply with all necessary and required dust control, noise abatement and safety policies and procedures, provide all necessary and required dust screens.
- 14.11 Demolished materials shall be removed on a continuous basis from the work area. Floor slabs must not be overloaded or damaged.
- 14.12 Provide all necessary and required means for both the removal and disposal of all rubbish, debris, demolished fixtures and fittings and all other items not scheduled to remain on the Owner's property resulting from the operations of this Quotation Package. Provide all necessary garbage bins and garbage chutes.
- 14.13 Demolished materials shall become the property of the Trade Contractor unless designated otherwise.
- 14.14 Provide for all overtime necessary to meet the requirements of the schedule, site restrictions and as specified so as not to delay other trades.
- 14.15 Protect own work, the work of others and new, existing and adjacent structures and properties from damage by work of this section.
- 14.16 Provide all daily and final clean up, including the clean up and disposal, by approved means, of all liquids used in the removal process.
- 14.17 Provide, maintain and remove on completion, fire protection equipment for the work of this Quotation Package.
- 14.18 All items to be removed shall be done so in their entirety, leaving no projections and finishing flush with adjacent surfaces. There must be no overcutting or over break at corners or intersections. A clean square edge and face must be left for the full depth and/or width and length, and all returns must be square at all removals.

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

- 14.19 All removals shall be the minimum required to allow for the installation of all new work, including adequate clearances.
- 14.20 Comply with all insurance requirements.
- 14.21 Comply with all bonding requirements.
- 14.22 Comply with all health, welfare, safety provisions and procedures.
- 14.23 Comply with all dust and noise abatement provisions and procedures.
- 14.24 All work of this Quotation Package is to be carried out in conjunction and in coordination with the work of other Trade Contractors.

15.0 WORK NOT INCLUDED IN THE SCOPE OF WORK:

- 15.1 The appointment and payment of any independent testing and inspection service.
- 15.2 Temporary power to meet the Occupational Health and Safety Act requirements, (temporary power to a maximum of 110/208 volt single phase complete with power consumption will be provided free of charge).

NOTE: The Trade Contractor shall be responsible for the supply, installation, maintenance and removal of all additional task lighting required to properly carry out the work of this trade.
- 15.3 Parking is available on-site in a designated area and will be provided free of charge.
- 15.4 Sanitary facilities, as designated by the City, are available for use by Trade Contractors.
- 15.5 Removal of existing asphalt shingles and installation of an upgraded insulated metal roofing system and associated sloped roof metal flashings and trims.
- 15.6 Structural modifications to patch old roof openings and to accommodate new rooftop evaporative condenser equipment, new evaporative condenser support frame, and new roof-edge guardrail.

16.0 SCOPE OF WORK SPECIFIC TO THIS QUOTATION PACKAGE:

- 16.1 The work of this quotation package is to provide all engineering, labour, supervision, plant, tools, equipment and materials necessary to complete the flat roofing replacement work to the full extent and intent of the Contract Bid Documents including, but not limited to:
 - 16.1.1 Specification Section 01010 – General Requirements;
Specification Section 07550 – SBS Modified Bitumen Membrane Roofing;
Specification Section 07620 – Metal Flashing & Trim;
Specification Section 07900 – Sealants;
 - 16.1.2 The work is to begin on-site starting around 1-Aug-10, beginning on the south side of the building followed by work on the north side of the building. All work is to be substantially complete by 31-Aug-10;
 - 16.1.3 The two areas of flat roof replacement work are generally defined as illustrated on the drawings as being bound by grid lines A through B and 2 through 9 on the north side and J through K and 2 through 5 on the south side. The remaining flat roof areas are in satisfactory condition and are not being replaced at this time;
 - 16.1.4 Remove and dispose of existing roofing, insulation and cant strips to fully expose the existing steel roof decking;

SECTION 00100 – INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK

- 16.1.5 Provide one new wood curb for mechanical and electrical pipes and conduits servicing the new evaporative condenser. Roof-in new curb and provide pre-finished metal cap flashing to seal mechanical and electrical penetrations. Overall curb dimensions to be no larger than 36" x 36";
- 16.1.6 Provide new wood cant strips to perimeter and around curbs and penetrations of roof areas being replaced;
- 16.1.7 Remove, dispose of, and replace with new all existing pre-finished metal perimeter flashings and trims associated with all flat roofing areas;
- 16.1.8 Provide pre-cast concrete pavers paths to rooftop mechanical equipment for all flat roofing areas c/w glued rigid insulation bearing pads;
- 16.1.9 Remove, store and re-install existing pre-cast concrete splash pads at down-spouts;
- 16.1.10 Only remove areas of existing roofing that can be covered with new work and be made water-tight on the same day. If any roof decking is exposed at the end of a work day, or at the onset of inclement weather, provide and maintain temporary protection to keep the exposed roof deck dry;
- 16.1.11 Provide and maintain temporary security fencing around lay-down area. Provide and maintain temporary safety barricades during operations. Protect the general public and facility staff from falling demolition debris and construction materials at all times. Maintain access to all facility entrances and exits at all times;
- 16.1.12 Protect existing masonry walls and rooftop equipment from damage during roof replacement operations;
- 16.1.13 All pre-finished metal flashings and trims to be Vicwest colour: Charcoal QC 6072;
- 16.1.14 If applicable, provide Schedule Modifications as requested in Appendix "A" of the Bid Form;
- 16.1.15 If applicable, provide List of Subcontractors as requested in Appendix "B" of the Bid Form;
- 16.1.16 If applicable, provide List of Equipment and Material Manufacturers as requested in Appendix "C" of the Bid Form;
- 16.1.17 If applicable, provide Alternatives and Alternative Methods as requested in Appendix "D" of the Bid Form;
- 16.1.18 If applicable, provide Separate Prices as requested in Appendix "E" of the Bid Form;
- 16.1.19 If applicable, provide Itemized Prices as requested in Appendix "F" of the Bid Form;
- 16.1.20 If applicable, provide List of Unit Prices as requested in Appendix "G" of the Bid Form;
- 16.1.21 Provide Hourly Labour Rates as requested in Appendix "H" of the Bid Form; and
- 16.1.22 Provide Supervisory Staff as requested in Appendix "I" of the Bid Form;
- 16.2 Contract Bid Documents listed in Section 00200 but not issued with this Quotation Package are available for review at VANBOTS' project site office and must be taken into account in the preparation of the Bid Price.

GALT ARENA GARDENS IMPROVEMENTS
FOR
THE CORPORATION OF THE CITY OF CAMBRIDGE

VANBOTS,
a division of Carillion Construction Inc.

Construction Manager

QUOTATION 10-930-04
SECTION 00200 – CONTRACT BID DOCUMENTS

SECTION 00200 – CONTRACT BID DOCUMENTS

1.0 CONTRACT BID DOCUMENTS:

- 1.1 1.1.1 Section 00100 – Instructions to Bidders and Scope of Work
- 1.1.2 Section 00200 – Contract Bid Documents
- 1.1.3 Section 00300 – Bid Form
- 1.1.4 Section 01100 – General Requirements and Project Safety
- 1.1.5 Section 01200 – Project Meetings
- 1.1.6 Section 01311 – Progress Schedule
- 1.1.7 Section 01710 – Cleaning
- 1.1.8 Any Addenda issued prior to the closing date
- 1.1.9 Bid documents prepared by Stantec Consulting Ltd. as follows:

Specification Section 01010 – General Requirements, 21 pages, dated 16-Nov-09

Specification Section 07550 – SBS Modified Bitumen Membrane Roofing, 8 pages, dated 30-Mar-10

Specification Section 07620 – Metal Flashing & Trim, 3 pages, dated 24-Dec-09

Specification Section 07900 – Sealants, 3 pages, dated 24-Dec-09

Drawing S103, Evaporative Condenser Support – Plans & Sections, Revision 2, Revised Handrail Frame, dated 21-May-10

Drawing M105, Low Roof Service Walkways, Revision - , Issued for CCO No. 2, dated 7-Jun-10

Sketch SSK1, Rooftop Guardrail, dated April 2010

- 1.1.10 Reference documents of existing building as prepared by PBK Engineering Ltd. as follows:

Drawing A04, Roof Plan, Issued for Quotation, Revision 0, dated 27-Feb-96

Drawing A05, Elevations, Issued for Quotation, Revision 0, dated 20-Feb-96

Drawing A06, Elevations, Issued for Quotation, Revision 0, dated 27-Feb-96

Drawing A10, Wall Sections, Issued for Quotation, Revision 0, dated 20-Feb-96

Drawing A11, Wall Sections, Issued for Quotation, Revision 0, dated 20-Feb-96

Drawing A12, Wall Sections, Issued for Quotation, Revision 0, dated 27-Feb-96

Drawing A13, Wall Sections, Issued for Quotation, Revision 0, dated 27-Feb-96

GALT ARENA GARDENS IMPROVEMENTS

FOR

***THE CORPORATION OF THE CITY OF
CAMBRIDGE***

**VANBOTS,
a division of Carillion Construction Inc.**

Construction Manager

**QUOTATION 10-930-04
SECTION 00300 – STIPULATED PRICE BID FORM**

SECTION 00300 – STIPULATED PRICE BID FORM

Schedule:

Refer to Section 01311 – Progress Schedule.

Include an organization chart for the project together with resumes for the individuals identified.

The undersigned submits that immediately upon notification of an award of a Contract, the trade contractor shall proceed with diligence, place all orders for materials and products in such time that delays will not occur and agrees to complete all the work of this contract in accordance with the overall project schedule and agrees to obtain substantial performance as required by the Project Construction Schedule.

The undersigned attach hereto copies of:

1. An Agreement to Bond for a 50% Performance Bond and 50% Labour and Material Payment Bond providing the Bid Price is in excess of One Hundred Thousand (\$100,000.00) Dollars. The cost of such Bonds has been included in the Bid Price and includes for a term covering the warranty period and any extended warranty period specified for the work of this trade.

The undersigned agrees that this Bid shall remain open for acceptance by The Owner and irrevocable for a period of thirty (30) calendar days from the time set for receipt of Bids.

Bonding Rates:

Fifty percent performance bond	\$/ _____	\$1,000.00
Fifty percent labour & material payment bond	\$/ _____	\$1,000.00

SECTION 00300 – STIPULATED PRICE BID FORM

Signed, Sealed and Submitted on behalf of:

Company:

(Name)

(Street Address or P.O. Box No.)

(City, Province, Postal Code)

(Telephone No.)

(Fax No.)

(Email)

Signature:

(Name)

(Title) (Seal)

Witness:

Dated at:

This _____ day of _____ 2010

APPENDIX "A"
SCHEDULE MODIFICATIONS

Herewith are the schedule modifications to the preliminary construction schedule contained in Section 01311 (if not used bar and initial space below):

We are unable to meet the completion date specified in the project schedule and have identified below the completion date we can meet stating the reasons for the revisions.

Revised Completion Date

Reason for Revision

Being unable to meet the completion date specified in the project schedule, and having so indicated a revised completion date above, we identify below the alternatives we are proposing in order to meet the original completion date together with the associated costs, if any. Such associated costs reflect the full cost of the change including the cost of changes to or of additional work to the other trades involved.

Proposed Alternative

Cost (Addition to or Deduction from the Bid Price)

APPENDIX 'B'
LIST OF SUBCONTRACTORS

Herewith is the list of Subcontractors that we propose to use for the Divisions or Sections of Work listed herein and that we have carried in our Stipulated Price Bid (if not used bar and initial the space below):

Division or Section of work	Name of Subcontractor	Name of Supervisor
--------------------------------	--------------------------	-----------------------

B.1.

B.2.

APPENDIX 'C'
LIST OF EQUIPMENT AND MATERIAL MANUFACTURERS

Herewith is the list of equipment and material manufacturers we propose to use for the Divisions or Sections of Work listed herein and that we have carried in our Stipulated Price Bid (if not used bar and initial the space below):

C.1.

C.2.

APPENDIX 'D'
ALTERNATIVES AND ALTERNATIVE METHODS

Herewith are our prices for the Alternative Price Work or Methods listed hereunder, shown as additions to or deductions from the work included in our Stipulated Price Bid. **Such Alternative Work, Methods and Amounts are not included in our Stipulated Price Bid** (if not used bar and initial the space below):

Description of Alternative Price Work And/or Alternative Methods	Additions to or Deductions from the Stipulated Price Bid
---	---

D.1.

D.2.

APPENDIX 'E'
SEPARATE PRICES

Herewith are our Separate Prices for the work listed herein, shown as additions to, or deductions from the work included in our Stipulated Price Bid. **Such work and amounts are NOT included in our Stipulated Price Bid** (if not used bar and initial the space below):

Description of Separate Price Work	Additions to or Deductions from the Stipulated Price Bid
------------------------------------	---

E.1.

E.2.

APPENDIX 'F'
ITEMIZED PRICES

Herewith are our Itemized Prices (including overhead and profit) for the work listed hereunder. **Such work and Amounts are included in our Stipulated Price Bid.**

Description of Itemized Price Work	Qty.	Itemized Price Amount \$
------------------------------------	------	-----------------------------

F.1.

F.2.

APPENDIX 'G'
LIST OF UNIT PRICES

The following unit rates shall be used for the purpose of valuing changes in the Work. The unit rates shall include all costs for labour, supervision, materials, plant, equipment, taxes and services for the execution of the unit price work and shall be applied to the net difference between additions and deletions for each change. Provide one unit price only which shall be applied to both additions and deletions. Additions shall be subject to a mark-up for overhead and fee in the amounts as follows:

1. 5% for work carried out by own forces.
2. 10% for work carried out by sub-contractors.

Where the cost of the proposed change is a deletion from the Contract Sum, such deletion shall be exclusive of the Trade Contractor's overhead and fee.

Item of Work	Unit	Price In-place	Deletion Price
--------------	------	----------------	----------------

G.1.

G.2.

APPENDIX 'H'
HOURLY LABOUR RATES

The labour rates quoted include the cost of wages, insurances, statutory labour charges, union agreement benefits, overhead and profit and are all-inclusive.

Trade Description	As Applicable - Union Local and Agreement Expiry Date	Hourly Rate for Regular Time
H.1. Foreman	Local _____ Date_____	\$ _____
H.2. Roofer	Local _____ Date_____	\$ _____

APPENDIX 'I'
SUPERVISORY STAFF

The Trade Contractor shall provide full time supervision throughout the duration of the project to the satisfaction of the Manager for which purpose the Contractor proposes the following individuals:

_____ shall be responsible for supervision of the Work under this Contract
(Resume of qualifications and experience attached)

_____ shall be responsible for administration of the Work under this Contract
(Resume of qualifications and experience attached)

GALT ARENA GARDENS IMPROVEMENTS

FOR

***THE CORPORATION OF THE CITY OF
CAMBRIDGE***

**VANBOTS,
a division of Carillion Construction Inc.**

Construction Manager

**QUOTATION 10-930-04
SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY**

SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY

1.0 GENERAL REQUIREMENTS:

- 1.1 The work specified and shown on the drawings or referred to in the Contract Documents is governed by VANBOTS' Standard Subcontract Agreement.
- 1.2 All sections of Specifications Division 1 - GENERAL REQUIREMENTS, as applicable, shall form part of these General Requirements and the Subcontract Agreement.
- 1.3 The Trade Contractor shall examine and become familiar with the work, specifications and drawings of all other contractors which may affect the Work of this trade contractor.
- 1.4 The Trade Contractor shall examine the work of all other contractors which may affect the work of this Contract and shall immediately inform the Manager of any and all defects and deficiencies in such other work. Failure to inform the Manager of such defects and deficiencies shall be deemed to be acceptance of the said work and constitute a waiver of all claims.
- 1.5 By submitting a quotation and/or by entering into a Trade Contract Agreement, this Trade Contractor acknowledges that it has carefully examined the site of the proposed work, fully informed itself of the existing conditions and limitations and included in its quotation and/or Contract price a sum to cover the cost of all items contemplated by the drawings, specifications, and Contract documents. No allowance will be subsequently made for any error or negligence on behalf of this Trade Contractor in this regard.

2.0 SUMMARY OF WORK:

- 2.1 The work described in this section shall be carried out in accordance with the drawings, specifications and addenda and shall be the responsibility of the Trade Contractor. Portion(s) of the work may only be subcontracted upon conditions and to firms acceptable to the Owner and Manager. Applications to subcontract portion(s) of the work shall be in writing. A list of proposed subcontractors shall be provided.
- 2.2 Provide labour, materials, equipment, tools, appliances and services as necessary or required for the proper construction and completion of the work and for temporary services and maintenance of the work site during construction.
- 2.3 It shall be the direct responsibility of the Trade Contractor to direct and implement all the work shown and specified including construction facilities and requirements specified herein. The Trade Contractor shall have complete responsibility for the proper completion of all work so as to comply to the full intent of all of the Contract documents.
- 2.4 No alternate materials shall be used without the written permission of the Manager.
- 2.5 Samples of work of this section shall be provided for approval in sufficient time before commencement of work.
- 2.6 The site shall be inspected by the Trade Contractor before commencement of work and any unacceptable conditions must be reported to the Manager.
- 2.7 Reasonable notice of material and equipment deliveries shall be given to the Manager.
- 2.8 All equipment and materials must conform to all drawings, specifications and the contract documents.
- 2.9 All work of this section must conform to the specified tolerances.
- 2.10 No damaged, chipped, or marked equipment or materials will be accepted and must not be installed.

SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY

- 2.11 All work of this section must be of the best workmanship and by workers skilled in this work.
- 2.12 Shop drawings as required must be submitted for review and be returned "reviewed", or "reviewed as noted" by the Consultant before commencement of fabrication or installation.
- 2.13 All activities shall be fully coordinated with the Manager and related Trade Contractors.

3.0 PROTECTION:

- 3.1 Work of this Contractor shall be protected during erection against disfigurement, contamination or damage by mechanical abuse or harmful materials. Protective covers shall be installed where exposure to potential damage is likely. All work areas shall be made secure and left in a weathertight condition at the end of a shift and before leaving at the end of the day. The Trade Contractor shall ensure that no eating, drinking or smoking is carried out in finished areas. Damages resulting from a breach of this policy shall be repaired at the cost of the Trade Contractor.
- 3.2 Work of other Trade Contractors shall be protected from damage resulting from work of this Trade Contractor.
- 3.3 Existing and adjacent finishes, work and structures shall be protected from damage resulting from work of this Trade Contractor.
- 3.4 Remove all corrosive waste and deleterious matter or materials which may set or become difficult to remove at the time of final cleaning as work progresses and on a daily basis.

4.0 CLEAN UP / HOUSEKEEPING:

- 4.1 Refer to Section – 01710 CLEANING.

5.0 WARRANTY:

- 5.1 Provide such warranties as are indicated in the Specifications.

6.0 SITE MEETINGS:

- 6.1 Refer to Section – 01200 PROJECT MEETINGS.

7.0 LIST OF DRAWINGS, SCHEDULES AND SPECIFICATIONS:

- 7.1 Refer to Section 00200 – Contract Bid Documents.

8.0 SCHEDULE:

- 8.1 Refer to Section 01311 – Progress Schedule.

9.0 SETTING OUT OF THE WORK:

- 9.1 The Manager will set up and maintain permanent reference points and elevations on the site.
- 9.2 A benchmark and two intersecting grid lines will be provided by the Manager for layout by this Contractor.
- 9.3 The Trade Contractor will be responsible for the layout of it's own work from the permanent reference points and elevations and it shall verify all lines and levels of previous work upon which the work of this Trade Contract will be erected. Employ a competent field engineer to lay out the work from those points.

SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY

- 9.4 Report in writing any discrepancies to the Manager.
- 9.5 Commencement of the work will constitute acceptance of the existing conditions
- 9.6 Protect and preserve bench marks and reference points. Inform the Manager immediately if bench marks or reference points are disturbed or damaged by any work and pay for their repair and/or replacement.
- 9.7 Locate and fix grid lines and location of walls, partitions, shafts and all parts of the construction, as work proceeds, including exposed work.
- 9.8 Verify grades, lines, levels, and dimensions indicated and report any errors or inconsistencies to the Manager before commencing work. Confirm site dimensions at once to allow prompt checking of shop and other drawings.
- 9.9 As work progresses, provide and maintain bench marks at each floor, giving the exact elevation of the finished floor.
- 9.10 New construction must align exactly with existing buildings where indicated on the drawings. Any difficulties with achieving this alignment shall be reported to the Manager immediately.

10.0 CHANGES IN THE WORK:

10.1 Changes

- 10.1.1 The *Owner* without invalidating the *Contract*, may make changes in the *Work* consisting of additions, deletions, or other revisions to the *Work* by *Change Order* or *Change Directive*.
- 10.1.2 The *Trade Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

10.2 Change Order

- 10.2.1 When a change in the *Work* is proposed or required, the *Manager* shall provide a notice describing the proposed change in the *Work* to the *Contractor*. The *Trade Contractor* shall present, in a form acceptable to the *Manager*, a method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change in the *Work*.
- 10.2.2 When the *Owner* and *Trade Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*, signed by *Owner* and *Trade Contractor*. The value of the work performed as the result of a *Change Order* shall be included in applications for progress payment.

10.3 Change Directive

- 10.3.1 If the *Owner* requires the *Trade Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents*, prior to the *Owner* and the *Contractor* agreeing upon the adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Construction Manager*, shall issue a *Change Directive*.
- 10.3.2 Upon receipt of a *Change Directive*, the *Trade Contractor* shall proceed promptly with the change in the *Work*. The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined on the basis of the cost of expenditures and savings to perform the work attributable to the change. If a change in the *Work* results in a net increase in the *Contract Price*, an allowance for overhead and profit shall be included.

SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY

- 10.3.3 If a change in the *Work* results in a net decrease in the *Contract Price*, the amount of the credit shall be the net cost, without deduction for overhead or profit. When both additions and deletions covering related work or substitutions are involved in a change in the *Work*, the allowance for overhead and profit shall be calculated on the basis of the net increase, if any, with respect to that change in the *Work*.
- 10.3.4 The *Trade Contractor* shall keep and present, in such form as the *Manager* may require, an itemized accounting of the cost of expenditures and savings referred to in paragraph 10.3.2 together with supporting data. The cost of performing the work attributable to the *Change Directive* shall be limited to the actual cost of all of the following:
- .1 wages and benefits paid for labour in the direct employ of the *Trade Contractor* under applicable collective bargaining agreements, or under a salary or wage schedule agreed upon by the *Manager* and *Trade Contractor*;
 - .2 salaries, wages and benefits of the *Trade Contractor's* office personnel engaged in a technical capacity and other personnel at shops or on the road, engaged in expediting the production or transportation of materials or equipment;
 - .3 contributions, assessments, or taxes incurred for such items as unemployment insurance, provincial health insurance, workers' compensation, and Canada or Quebec Pension Plan, insofar as such cost is based on wages, salaries, or other remuneration paid to employees of the *Trade Contractor* and included in the cost of the work as provided in paragraphs 10.3.4.1 and 10.3.4.2;
 - .4 travel and subsistence expenses of the *Trade Contractor's* personnel described in paragraphs 10.3.4.1 and 10.3.4.2;
 - .5 the cost of all products including cost of transportation thereof;
 - .6 the cost of materials, supplies, equipment, temporary services and facilities, and hand tools not owned by the workers, including transportation and maintenance thereof, which are consumed; and cost less salvage value on such items used but not consumed, which remain the property of the *Trade Contractor*;
 - .7 rental cost of all tools, machinery, and equipment, exclusive of hand tools, whether rented from or provided by the *Trade Contractor* or others, including installation, minor repairs and replacements, dismantling, removal, transportation and delivery cost thereof;
 - .8 deposits lost;
 - .9 the amounts of all subcontracts;
 - .10 the cost of quality assurance such as independent inspection and testing services;
 - .11 charges levied by authorities having jurisdiction at the *Place of the Project*;
 - .12 royalties, patent license fees, and damages for infringement of patents and cost of defending suits therefore subject always to the *Trade Contractor's* obligations to indemnify the *Owner* as required by the *Contract Documents*;
 - .13 any adjustment in premiums for all bonds and insurance which the *Trade Contractor* is required, by the *Contract Documents*, to purchase and maintain;
 - .14 any adjustment in taxes and duties for which the *Trade Contractor* is liable;
 - .15 charges for long distance telephone and facsimile communications, courier services, expressage, and petty cash items incurred;
 - .16 the cost of removal and disposal of waste products and debris;
 - .17 cost incurred due to emergencies affecting the safety of persons or property.
- 10.3.5 Pending determination of the final amount of a *Change Directive*, the undisputed value of the work performed as the result of a *Change Directive* is eligible to be included in progress payments.
- 10.3.6 If the *Owner* and *Trade Contractor* do not agree on the proposed adjustment in the *Contract Time* or the method of determining it, the adjustment shall be referred to the *Consultant* for determination.
- 10.3.7 If at any time after the start of the work directed by a *Change Directive*, the *Owner* and the *Trade Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*,

SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY

this agreement shall be recorded in a *Change Order* signed by *Owner* and *Trade Contractor*.

11.0 PROJECT SAFETY:

- 11.1 It is the Manager's policy to perform work consistent with good construction practice in the safest manner possible. The health and safety of all members of the construction team and the general public is the responsibility of all supervisory personnel. To ensure that the safest possible conditions exist on this project, all personnel must adhere strictly to the current requirements of the Occupational Health and Safety Act and Regulations for Construction Projects; the Manager's Corporate Health & Safety Programme; the Manager's Site Safety Plan and all applicable codes.
- 11.2 Provide to the Manager's project supervisor, a signed copy of the contractor's own safety policy, for review, prior to commencing work on site. Failure to comply with this requirement in a timely manner will result in the contractor not being permitted to commence work on site when required. Any resultant project delay and any associated costs will be the responsibility of the trade contractor.
- 11.3 Provide and maintain in a safe condition and remove upon completion all necessary temporary works, supports, guy wiring, bracing and other means required. Submit to the Manager drawings and details of such temporary works, supports, etc., duly prepared and stamped by a Professional Engineer Licensed to practice in the Province of Ontario and experienced in this type of work.
- 11.4 Provide and maintain in a safe condition all necessary temporary shoring and protection required to transfer loads and to protect new and existing structures where, either supporting structures have been removed, or where material and equipment is being moved. Submit to the Manager drawings and details of such temporary shoring and protection, duly prepared and stamped by a Professional Engineer licensed to practice in the Province of Ontario and experienced in this type of work. Such temporary shoring and supports are to remain in place until completion of this Contract or until directed by the Manager, whichever is sooner.
- 11.5 Provide all temporary scaffolding, platforms, safety devices, safety barriers, safety rails, and weather-tight or protective covers necessary for the trade contractor's own work. Maintain same in a safe condition until total completion of this Contract or until directed by the Manager, whichever is sooner.
- 11.6 Provide and maintain in a safe condition all covered walkways leading to the outside, either where operational fire exits are to remain and are adjacent to work of this trade contractor, or where access from one area to another, or from one area to the outside, can only be gained through the work area of this trade contractor, and such access is adjacent to work of this trade contractor. Such walkways are to remain in place until completion of this Contract or until directed by the Manager, whichever is sooner.
- 11.7 Ensure that all employees, their activities, and job practices conform to the requirements of the Occupational Health and Safety Act Regulations for Construction Projects and ensure that they are properly trained to comply with the Manager's Safety Policy.
- 11.8 Employ a competent supervisor who is capable of implementing a safety plan or implementing a safety policy outlined by others. The supervisor shall instruct his/her workers to comply with Ontario Ministry of Labour directions and to comply with the Manager's, Project Superintendent's and/or Project Safety Representative's directions to correct specific safety violations.
- 11.9 The Trade Contractor's supervisor shall actively participate on the project Safety Committee as requested by the Manager's Project Superintendent.
- 11.10 The Trade Contractor's supervisor shall report all accidents to the proper authority and the Manager's Project Superintendent and shall provide the Manager with copies of all related reports.

SECTION 01100 – GENERAL REQUIREMENTS AND PROJECT SAFETY

- 11.11 The Trade Contractor shall be responsible for the daily clean up of the Contractor's work areas.
- 11.12 The Trade Contractor shall maintain its on-site material in neat stockpiles conforming to the Manager's requirements.
- 11.13 All Trade Contractor's employees must have and wear the requisite personal protective equipment to perform work in a safe manner and prevent injury from all hazards likely to be encountered, including falls.
- 11.14 Trade Contractors who remove protective barricades to work in certain areas shall ensure that all workers are adequately protected and shall replace same prior to leaving the area or immediately after work is completed, whichever situation arises first.
- 11.15 Each Trade Contractor shall supply and maintain a First Aid Kit of a recommended size and capacity for the number of it's employees on the project and shall designate a competent worker to administer first-aid.
- 11.16 The Trade Contractor shall be responsible for ensuring that any trenching and/or excavation work that the Trade Contractor is doing is properly sloped or shored.
- 11.17 The Trade Contractor shall appoint at least one competent and properly trained person responsible for securing and hooking up material for hoisting by crane.
- 11.18 Copies of Material Safety Data Sheets must be submitted by the Trade Contractor to the Manager's Project Superintendent prior to date of the first shipment to jobsite.
- 11.19 The Trade Contractor is to ensure that log book reports are kept updated and available for inspection where required.
- 11.20 Copies of all safety inspection reports carried out by the Trade Contractor are to be submitted to the Manager's Project Superintendent.
- 11.21 Workers shall be competent in the operation of all equipment, machinery, tools and devices to be used on the project.
- 11.22 The Trade Contractor shall appoint a competent Safety Representative and ensure that he/she is performing that function well.

GALT ARENA GARDENS IMPROVEMENTS

FOR

***THE CORPORATION OF THE CITY OF
CAMBRIDGE***

**VANBOTS,
a division of Carillion Construction Inc.**

Construction Manager

**QUOTATION 10-930-04
SECTION 01200 – PROJECT MEETINGS**

SECTION 01200 – PROJECT MEETINGS

1.0 PROJECT MEETINGS:

- 1.1 Project and site coordination meetings will be held on site on a regular basis organized by the Manager who will send out notices stating time and place to the Owner's Representative, Consultants, Sub-Consultants, Trade Contractors, Subcontractors and/or other persons whose presence is required. Attendance by the Trade Contractor and its Subcontractors is mandatory.
- 1.2 Minutes of meetings will be taken by the Manager and will indicate, amongst other things:
 - 1.2.1 List of persons attending.
 - 1.2.2 Decisions made.
 - 1.2.3 Instructions required or issued.
 - 1.2.4 **All** matters discussed.
- 1.3 Copies of the minutes will be distributed to all present at the meeting and to any other person, company, or organization as necessary.
- 1.4 Copies of the minutes will be distributed on the understanding that if no objection to the contents of the said minutes are received by the Manager within two (2) working days of such distribution then they will be deemed to be a true and accurate record of the meeting.

GALT ARENA GARDENS IMPROVEMENTS

FOR

***THE CORPORATION OF THE CITY OF
CAMBRIDGE***

**VANBOTS,
a division of Carillion Construction Inc.**

Construction Manager

**QUOTATION 10-930-04
SECTION 01311 – PROGRESS SCHEDULE**

SECTION 01311 – PROGRESS SCHEDULE

1.0 SCHEDULE:

- 1.1 The work shall be carried out in accordance with the construction schedule as issued by the Manager, and as amended from time to time.
- 1.2 Sufficient workers, materials, equipment, appliances and services are to be kept on site at all times to maintain the scheduled completion of this work.
- 1.3 All proposed activities are to be fully coordinated with the Manager and with all other Trade Contractors.
- 1.4 Within five (5) working days following the award of the Contract and prior to the start of construction, submit a Construction Schedule to the Manager based on the Bar Chart method.
- 1.5 Modify the schedule if required by the Manager and resubmit.
- 1.6 The Schedule shall show:
 - 1.6.1 Commencement and completion dates of the Contract.
 - 1.6.2 Commencement and completion dates of stipulated phases.
 - 1.6.3 Commencement and completion dates of contractors.
 - 1.6.4 Where possible the order and delivery times for materials and equipment.
 - 1.6.5 Dates when large pieces of equipment, which require installation ahead of construction, will be delivered.
 - 1.6.6 Dates for submission of Shop Drawings, material lists and samples.
 - 1.6.7 How the established Contract completion date is to be achieved.
 - 1.6.8 Estimated productivity rates and labour histogram for each activity.
 - 1.6.9 The planned personnel resource allocation by activity crews.
 - 1.6.10 How it is intended to meet the Contract Work Completion Date and the overall Project Completion Date.
 - 1.6.11 Any other information relating to the orderly progress of the Contract, considered by the Contractor to be pertinent, and as requested by the Manager.

2.0 UPDATING AND MONITORING:

- 2.1 Set up the format of the Construction Schedule to allow for the plotting of actual progress against scheduled progress.
- 2.2 Allow sufficient space for modifications and revisions to the Schedule as work progresses.
- 2.3 The schedule to be presented in Primavera SureTrak or in a form acceptable to the Manager.
- 2.4 Display a copy of the schedule in the site office during the complete construction period, showing actual progress plotted weekly.

3.0 UPDATING AND PROGRESS REPORTING:

- 3.1 Arrange participation, on site and off site, with Subcontractors and Suppliers, as and when necessary for the purpose of updating the schedule and monitoring progress.
- 3.2 Reviews of progress by inspections and meetings will be conducted at least once a month or as directed by the Manager.

GALT ARENA GARDENS IMPROVEMENTS

FOR

***THE CORPORATION OF THE CITY OF
CAMBRIDGE***

**VANBOTS,
a division of Carillion Construction Inc.**

Construction Manager

**QUOTATION 10-930-04
SECTION 01710 – CLEANING**

SECTION 01710 – CLEANING

1.0 GENERAL:

- 1.1 Conduct cleaning and disposal operations to comply with all local ordinances and anti-pollution laws.
- 1.2 Store volatile wastes in approved covered containers, and remove from premises daily.
- 1.3 Prevent accumulation of wastes which create hazardous conditions.
- 1.4 Provide adequate ventilation during use of volatile or noxious substances.
- 1.5 Cleaning for specific products or work are described in the specification section for that work.
- 1.6 At completion of work, remove waste materials, rubbish, tools, equipment, machinery, surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for occupancy.

2.0 MATERIALS:

- 2.1 Use only cleaning materials recommended by the manufacturer of the surface to be cleaned, and as recommended by the cleaning material manufacturer.

3.0 CLEANING DURING CONSTRUCTION:

- 3.1 On a daily basis maintain premises free from debris and waste material. The Trade Contractor will be responsible to maintain clean work areas.
- 3.2 Maintain the work site, project grounds and public properties free from litter and accumulations of waste materials and rubbish. All materials must be stacked neatly and safely. Do not allow rubbish to accumulate in work under construction or on low roofs. Upon completion of each Section of Work all debris must be removed from site.
- 3.3 Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- 3.4 Schedule cleaning operations so that dust or other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces.
- 3.5 Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.
- 3.6 Take precautions to prevent the disposing of mud or debris on roadways. Any and all such mud or debris shall be cleaned up immediately. Neglect of this requirement will cause the Manager to have the necessary clean-up work carried out and charge all costs to the Trade Contractor.
- 3.7 Cleaning operations shall include those areas used for temporary site access or used on a temporary basis to facilitate the work.
- 3.8 The Trade Contractor will deposit all garbage on a daily basis in garbage containers provided by the Trade Contractor. Such garbage containers to be located on site in a location to be selected by the Manager.
- 3.9 The Trade Contractor will remove waste materials and rubbish from site and dispose of it in accordance with the requirements of the local governing authorities. The Trade Contractor will pay for the cost of providing on-site steel containers for the collection of waste materials and for the cost of removing and disposing of the said waste materials. Failure to maintain housekeeping satisfactory to the Manager will result in the Manager arranging for such cleanup as may be required with all related costs being charged to the Trade Contractor.
- 3.10 Failure to provide housekeeping and/or to maintain a clean work area to the satisfaction of the Manager will result in the Manager providing the necessary housekeeping, and/or maintenance service with all related costs, including mark-up's, being charged to the responsible Trade Contractor(s).

1 GENERAL

1.1 WORK BY OTHERS

- .1 Work to be done by others will proceed while the Work under this Contractor is in progress. The Contractor shall cooperate fully with the Owner, and with other Contractors in the area working on separate Contracts, in all matters and areas common to the Contractor. Refer matters arising with other parties to the Owner. The Owner's decision shall be final.

1.2 WORK AREAS

- .1 The Contractor shall confine the construction operations within the limits of the site or designated work areas. Access to and egress from the working areas shall be from existing public streets. Storage of equipment, materials and supplied within the working areas shall be subject to the Owner's approval. Relocate equipment, materials and supplies as directed and without cost to the Owner.
- .2 At the completion of this Contract, all working areas and storage areas used by the Contractor shall be restored as determined by the owner. All surplus excavated and stockpiled materials shall be removed from the site and disposed of by the Contractor at no additional expense to the Owner.

1.3 OWNER SUPPLIED PRODUCTS

- .1 Owner's Responsibilities:
 - .1 Arrange for and deliver Owner reviewed Shop Drawings, Product Data, and Samples, to Contractor.
 - .2 Arrange and pay for Product delivery to site.
 - .3 On delivery, inspect Products jointly with Contractor.
 - .4 Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - .5 Arrange for manufacturers' warranties, inspections, and service.
- .2 Contractor's Responsibilities:
 - .1 Review Owner reviewed Shop Drawings, Product Data, and Samples.
 - .2 Receive and unload Products at site; inspect for completeness or damage jointly with Owner.
 - .3 Handle, store, install and finish Products.
 - .4 Repair or replace items damaged after receipt.
- .3 Products supplied to site and installed by Owner:
 - .1 Items noted NIC (not in contract), furnishings, minor equipment etc. will be supplied and installed by Owner during the construction phase but co-ordinated with Contractor on timing.
- .4 Items supplied by Owner for installation by Contractor:
 - .1 All furnishings, equipment etc. specified on the drawings or in the specifications.

1.4 REGULATORY REQUIREMENTS

- .1 General:
 - .1 The Contractor shall comply with all provisions of the rules, regulations and orders of the local Governmental agencies applicable to the Work under the Contract. The Contractor shall cooperate with the Owner in promptly furnishing any information that may be required by such governmental agencies. It shall be the obligation of the Contractor to keep himself informed of these governmental rules, regulations and orders and the Contractor shall make the requirements of this article a part of any subcontract he may enter into.
 - .2 Applicable Codes:
 - .1 Without limiting the generality of the foregoing, construction of this project shall meet the requirements of the Ontario Building Code latest edition and Occupational Safety and Health Act. Where conflicts between the Building Code and referenced codes and specifications occur, the more stringent requirement shall govern.
 - .3 Permits:
 - .1 The Owner will obtain the building permit required. The Contractor shall apply for, obtain and pay for all other permits that are required for the project. The Owner will provide a clean set of Contract Drawings and specifications for each such application.
 - .2 Arrange inspections required under the building permit.
 - .3 Arrange for regular inspections and a final inspection with the local Electrical Inspector.

1.5 ABBREVIATIONS

- .1 The following abbreviations may be used in these specifications:
 - I.E.E.E. Institute of Electrical and Electronic Engineers
 - A.S.T.M. American Society for Testing and Materials
 - S.S.P.C. Steel Structures Painting Council
 - E.E.M.A.C. Electrical and Electronic Manufacturer's Association
 - I.S.A. Instrument Society of America
 - NFPA National Fire Protection Association
 - P.C.I. Prestressed Concrete Institute
 - P.C.A. Portland Cement Association
 - SJI Steel Joist Institute
 - ULC Underwriters Laboratories of Canada

1.6 CASH ALLOWANCES

- .1 Costs Included in Cash Allowances: Cost of Product to Contractor or Subcontractor, less applicable trade discounts; delivery to site and applicable taxes.
- .2 Costs Not Included in Cash Allowances But Included in the Contract Sum/Price: Product handling at the site, including unloading, uncrating, and storage; protection of Products from elements and from damage; and labour for installation and finishing .
- .3 Consultant Responsibilities:
 - .1 Consult with Contractor for consideration and selection of Products, suppliers, and installers.

-
- .2 Select Products in consultation with Owner and transmit decision to Contractor.
 - .3 Prepare Change Order.

 - .4 Contractor Responsibilities:
 - .1 Assist Consultant in selection of Products, suppliers and installers.
 - .2 Obtain proposals from suppliers and installers and offer recommendations.
 - .3 On notification of selection by Consultant, or Owner, execute purchase agreement with designated supplier and installer.
 - .4 Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - .5 Promptly inspect Products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

 - .5 Differences in costs will be adjusted by Change Order.
- 1.7 SCHEDULE OF VALUES
- .1 Submit a printed schedule on Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered.
 - .2 Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
 - .3 Format: Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds and insurance.
 - .4 Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
 - .5 Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
 - .6 Revise schedule to list approved Change Orders, with each Application For Payment.
- 1.8 APPLICATIONS FOR PAYMENT
- .1 Submit three copies of Application and Certificate for Payment.
 - .2 Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
 - .3 Payment Period: Monthly.
 - .4 Include forms required by Owner.
 - .5 Include an updated construction progress schedule.
- 1.9 CHANGE PROCEDURES
- .1 The Consultant will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized.

-
- .2 The Consultant may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required. Contractor will prepare and submit an estimate within 7 days.
 - .3 The Contractor may propose changes by submitting a request for change to the Consultant, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other Contractors. Document any requested substitutions in accordance with this Section.
 - .4 Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Consultant.
 - .5 Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
 - .6 Construction Change Directive: Consultant may issue a directive, on Construction Change Directive signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.
 - .7 Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Consultant will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
 - .8 Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
 - .9 Execution of Change Orders: Consultant will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- 1.10 DEFECT ASSESSMENT
- .1 Replace the Work, or portions of the Work, not conforming to specified requirements.
 - .2 If, in the opinion of the Consultant it is not practical to remove and replace the Work, the Consultant will direct an appropriate remedy or adjust payment.
- 1.11 MEASUREMENT AND PAYMENT - UNIT PRICES
- .1 Authority: Measurement methods are delineated in the individual specification sections.
 - .2 Take measurements and compute quantities. The Consultant will verify measurements and quantities.
 - .3 Unit Quantities: Quantities and measurements indicated in the Bid Form are for contract purposes only. Actual quantities provided shall determine payment.

-
- .4 Payment Includes: Full compensation for required labour, Products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.
 - .5 Unit Price Schedule:
 - .1 None at this time.
- 1.12 ALTERNATIVES
- .1 Accepted Alternatives will be identified in Owner-Contractor Agreement.
 - .2 Co-ordinate related work and modify surrounding work as required.
 - .3 Schedule of Alternatives:
 - .1 Separate prices are requested for each of the following areas:
 - .1
 - .2
 - .2 The details of the required modifications to the building submitted as the base price are indicated on drawings.
- 1.13 CO-ORDINATION AND PROJECT CONDITIONS
- .1 Co-ordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements , with provisions for accommodating items installed later.
 - .2 Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Co-ordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
 - .3 Co-ordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - .4 In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Co-ordinate locations of fixtures and outlets with finish elements.
 - .5 Co-ordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
 - .6 After Owner occupancy of premises, co-ordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- 1.14 FIELD ENGINEERING
- .1 Employ a Land Surveyor registered in the Province of Ontario and acceptable to Consultant for new building additions and outside road work.
 - .2 Contractor shall locate and protect survey control and reference points.
 - .3 Control datum for survey is that established by Owner provided survey or shown on Drawings.

- .4 Verify set-backs and easements; confirm drawing dimensions and elevations.
 - .5 Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
 - .6 Submit a copy of site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.
- 1.15 PRECONSTRUCTION MEETING
- .1 Consultant may schedule a meeting after Owner gives notice to commence work.
 - .2 Attendance Required: Owner, Consultant, and Contractor.
 - .3 Agenda:
 - .1 Execution of Owner-Contractor Agreement.
 - .2 Submission of executed bonds and insurance certificates if requested.
 - .3 Distribution of Contract Documents.
 - .4 Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - .5 Designation of personnel representing the parties in Contract, and the Consultant.
 - .6 Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - .7 Scheduling.
 - .8 Scheduling activities of a Geotechnical Engineer.
 - .4 Record minutes and distribute copies within two days after meeting to participants, with one copy to Consultant, Owner, participants, and those affected by decisions made.
- 1.16 SITE MOBILIZATION MEETING
- .1 Consultant may schedule a meeting at the Project site prior to Contractor occupancy.
 - .2 Attendance Required: Owner, Consultant, Special Consultants, Contractor, Contractor's Superintendent, and major Subcontractors.
 - .3 Agenda:
 - .1 Use of premises by Owner and Contractor.
 - .2 Owner's requirements and partial occupancy.
 - .3 Construction facilities and controls provided by Owner.
 - .4 Temporary utilities provided by Owner.
 - .5 Survey and building layout.
 - .6 Security and housekeeping procedures.
 - .7 Schedules.
 - .8 Application for payment procedures.
 - .9 Procedures for testing.
 - .10 Procedures for maintaining record documents.
 - .11 Requirements for start-up of equipment.
 - .12 Inspection and acceptance of equipment put into service during construction period.
 - .4 Record minutes and distribute copies within two days after meeting to participants, with one copy to Consultant, Owner, participants, and those affected by decisions made.

1.17 PROGRESS MEETINGS

- .1 Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- .2 Consultant will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- .3 Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Consultant, as appropriate to agenda topics for each meeting.
- .4 Agenda:
 - .1 Review minutes of previous meetings.
 - .2 Review of Work progress.
 - .3 Field observations, problems, and decisions.
 - .4 Identification of problems which impede planned progress.
 - .5 Review of submittals schedule and status of submittals.
 - .6 Review of off-site fabrication and delivery schedules.
 - .7 Maintenance of progress schedule.
 - .8 Corrective measures to regain projected schedules.
 - .9 Planned progress during succeeding work period.
 - .10 Co-ordination of projected progress.
 - .11 Maintenance of quality and work standards.
 - .12 Effect of proposed changes on progress schedule and co-ordination.
 - .13 Other business relating to Work.
- .5 Record minutes and distribute copies within two days after meeting to participants, with one copy to Consultant, Owner, participants, and those affected by decisions made.

1.18 CUTTING AND PATCHING

- .1 Employ skilled and experienced installer to perform cutting and patching.
- .2 Submit written request in advance of cutting or altering elements which affect:
 - .1 Structural integrity of element.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of element.
 - .4 Visual qualities of sight exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - .1 Fit the several parts together, to integrate with other Work.
 - .2 Uncover Work to install or correct ill-timed Work.
 - .3 Remove and replace defective and non-conforming Work.
 - .4 Remove samples of installed Work for testing.
 - .5 Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- .4 Execute work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .5 Cut masonry and concrete materials using masonry saw or core drill.

-
- .6 Restore Work with new Products in accordance with requirements of Contract Documents.
 - .7 Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 - .8 Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- 1.19 SUBMITTAL PROCEDURES
- .1 Transmit each submittal with Consultant accepted form.
 - .2 Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
 - .3 Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
 - .4 Apply Contractor's stamp, signed or initialled certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and co-ordination of information is in accordance with the requirements of the Work and Contract Documents.
 - .5 Schedule submittals to expedite the Project, and deliver to Consultant at business address. Co-ordinate submission of related items.
 - .6 For each submittal for review, allow 15 days excluding delivery time to and from the contractor.
 - .7 Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
 - .8 Provide space for Contractor and Consultant review stamps.
 - .9 When revised for resubmission, identify all changes made since previous submission.
 - .10 Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
 - .11 Submittals not requested will not be recognized or processed.
- 1.20 CONSTRUCTION PROGRESS SCHEDULES
- .1 Submit initial schedule in duplicate within 15 days after date of Owner-Contractor Agreement.
 - .2 Revise and resubmit as required.
 - .3 Submit revised schedules with each Application for Payment, identifying changes since previous version.
 - .4 Submit a computer generated horizontal bar chart with separate line for each major portion of Work or operation section of Work, identifying first work day of each week.
 - .5 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
 - .6 Indicate estimated percentage of completion for each item of Work at each submission.

- .7 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
- 1.21 PROPOSED PRODUCTS LIST
 - .1 Within 15 days after date of Owner-Contractor Agreement submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - .2 For products specified only by reference standards, give manufacturer, trade name, model or catalogue designation, and reference standards.
- 1.22 PRODUCT DATA
 - .1 Product Data For Review:
 - .1 Submitted to Consultant for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - .2 After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described under CONTRACT CLOSEOUT.
 - .2 Product Data For Information:
 - Submitted for the Consultant's knowledge as contract administrator or for the Owner.
 - .3 Product Data For Project Close-out:
 - Submitted for the Owner's benefit during and after project completion.
 - .4 Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Consultant.
 - .5 Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
 - .6 Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
 - .7 After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described under CONTRACT CLOSEOUT.
- 1.23 SHOP DRAWINGS
 - .1 Shop Drawings For Review:
 - .1 Submitted to Consultant for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - .2 After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described under CONTRACT CLOSEOUT.
 - .2 Shop Drawings For Information:
 - .1 Submitted for the Consultant's knowledge as contract administrator or for the Owner.
 - .3 Shop Drawings For Project Close-out:

-
- .1 Submitted for the Owner's benefit during and after project completion.
 - .4 Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
 - .5 Electronic submission of shop drawings (use Adobe PDF format).
- 1.24 SAMPLES
- .1 Samples For Review:
 - .1 Submitted to Consultant for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - .2 After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described under CONTRACT CLOSEOUT.
 - .2 Samples For Information:
 - .1 Submitted for the Consultant's knowledge as contract administrator or for the Owner.
 - .3 Samples For Selection:
 - .1 Submitted to Consultant for aesthetic, colour, or finish selection.
 - .2 Submit samples of finishes from the full range of manufacturers' standard colours, in custom colours selected, textures, and patterns for Consultant selection.
 - .3 After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described under CONTRACT CLOSEOUT.
 - .4 Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Co-ordinate sample submittals for interfacing work.
 - .5 Include identification on each sample, with full Project information.
 - .6 Submit the number of samples specified in individual specification sections; one of which will be retained by Consultant.
 - .7 Reviewed samples which may be used in the Work are indicated in individual specification sections.
 - .8 Samples will not be used for testing purposes unless specifically stated in the specification section.
- 1.25 DESIGN DATA
- .1 Submit for the Consultant's knowledge as contract administrator or for the Owner.
 - .2 Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- 1.26 TEST REPORTS
- .1 Submit for the Consultant's knowledge as contract administrator or for the Owner.

-
- .2 Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- 1.27 CERTIFICATES
- .1 When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Consultant, in quantities specified for Product Data.
- .2 Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- .3 Certificates may be recent or previous test results on material or Product, but must be acceptable to Consultant.
- 1.28 MANUFACTURER'S INSTRUCTIONS
- .1 When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Consultant for delivery to owner in quantities specified for Product Data.
- .2 Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- .3 Refer to Quality Control, Manufacturers' Field Services article.
- 1.29 MANUFACTURER'S FIELD REPORTS
- .1 Submit reports for the Consultant's benefit as contract administrator or for the Owner.
- .2 Submit report in duplicate within 30 days of observation to Consultant for information.
- .3 Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- 1.30 ERECTION DRAWINGS
- .1 Submit drawings for the Consultant's benefit as contract administrator or for the Owner.
- .2 Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- .3 Data indicating inappropriate or unacceptable Work may be subject to action by the Consultant or Owner.
- 1.31 QUALITY ASSURANCE - CONTROL OF INSTALLATION
- .1 Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- .2 Comply with manufacturers' instructions, including each step in sequence.
- .3 Should manufacturers' instructions conflict with Contract Documents, request clarification from Consultant before proceeding.

- .4 Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- .5 Perform Work by persons qualified to produce required and specified quality.
- .6 Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- .7 Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.32 TOLERANCES

- .1 Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- .2 Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Consultant before proceeding.
- .3 Adjust Products to appropriate dimensions; position before securing Products in place.

1.33 REFERENCES AND STANDARDS

- .1 For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- .2 Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- .3 Obtain copies of standards where required by product specification sections.
- .4 Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Consultant shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.34 MOCK-UP

- .1 Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- .2 Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- .3 Accepted mock-ups shall be a comparison standard for the remaining Work.
- .4 Where mock-up has been accepted by Consultant and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.35 TESTING SERVICES

- .1 Owner will appoint, employ, and pay for specified services of an independent firm to perform testing.

- .2 The independent firm will perform tests and other services specified in individual specification sections and as required by the Consultant. and Owner.
- .3 Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Consultant or the Owner.
- .4 Reports will be submitted by the independent firm to the Consultant in duplicate indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- .5 Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labour as requested.
 - .1 Notify Consultant and independent firm 24 hours prior to expected time for operations requiring services.
 - .2 Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- .6 Testing does not relieve Contractor to perform Work to contract requirements.
- .7 Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Consultant. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

1.36 INSPECTION SERVICES

- .1 Owner will appoint, employ, and pay for specified services of an independent firm to perform inspection.
- .2 The independent firm will perform inspections and other services specified in individual specification sections and as required by the Consultant and Owner.
- .3 Inspecting may occur on or off the project site. Perform off-site inspecting as required by the Consultant or the Owner.
- .4 Reports will be submitted by the independent firm to the Consultant in duplicate indicating inspection observations and indicating compliance or non-compliance with Contract Documents.
- .5 Cooperate with independent firm; furnish safe access and assistance by incidental labour as requested.
 - .1 Notify Consultant and independent firm 24 hours prior to expected time for operations requiring services.
- .6 Inspecting does not relieve Contractor to perform Work to contract requirements.

1.37 MANUFACTURERS' FIELD SERVICES

- .1 When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- .2 Submit qualifications of observer to Consultant 30 days in advance of required observations. Observer subject to approval of Consultant and Owner.

- .3 Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
 - .4 Refer to SUBMITTALS, MANUFACTURERS' FIELD REPORTS article.
- 1.38 EXAMINATION OF EXISTING CONDITIONS
- .1 Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
 - .2 Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
 - .3 Examine and verify specific conditions described in individual specification sections.
 - .4 Verify that utility services are available, of the correct characteristics, and in the correct locations.
- 1.39 TEMPORARY ELECTRICITY
- .1 Access to building electrical system and consumption provided by Owner.
 - .2 Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
 - .3 Permanent convenience receptacles may not be utilized during construction.
- 1.40 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES
- .1 Provide and maintain incandescent lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft .
 - .2 Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
 - .3 Provide and maintain 0.25 watt/sq ft H.I.D. lighting to interior work areas after dark for security purposes.
 - .4 Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
 - .5 Maintain lighting and provide routine repairs.
 - .6 Permanent building lighting may not be utilized during construction.
- 1.41 TEMPORARY HEATING
- .1 Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
 - .2 Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in product sections.
- 1.42 TEMPORARY COOLING

-
- .1 Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.
 - .2 Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- 1.43 TEMPORARY VENTILATION
- .1 Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapours, or gases.
 - .2 Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.
- 1.44 TEMPORARY SANITARY FACILITIES
- .1 Designated Owner sanitary facilities available for use by Contractor.
- 1.45 BARRIERS
- .1 Provide barriers to prevent unauthorized entry to construction areas and to protect adjacent properties from damage from construction operations.
- 1.46 DEWATERING AND SURFACE WATER CONTROL
- .1 Provide positive controlled drainage of the site at all times. Maintain excavations free of water. Provide, operate, and maintain all drainage, pumping and other measures necessary to control water.
 - .2 Protect site from puddling or running water. Provide erosion and sediment controls to protect site from soil erosion in accordance with the Erosion Control Plan.
 - .3 Discharge all water from dewatering operations to sediment basins prior to discharge from the site.
- 1.47 EXTERIOR ENCLOSURES
- .1 Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- 1.48 PROTECTION OF INSTALLED WORK
- .1 Protect installed Work and provide special protection where specified in individual specification sections.
 - .2 Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
 - .3 Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
 - .4 Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

-
- .5 Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
 - .6 Prohibit traffic from landscaped areas.
- 1.49 SECURITY
- .1 Provide security and facilities to protect Work from unauthorized entry, vandalism, or theft.
- 1.50 PROGRESS CLEANING AND WASTE REMOVAL
- .1 Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
 - .2 Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
 - .3 Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
 - .4 Collect and remove waste materials, debris, and rubbish from site at least weekly and dispose off-site.
 - .5 Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- 1.51 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS
- .1 Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
 - .2 Clean and repair damage caused by installation or use of temporary work.
- 1.52 TRANSPORTATION AND HANDLING
- .1 Transport and handle Products in accordance with manufacturer's instructions.
 - .2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
 - .3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.
- 1.53 STORAGE AND PROTECTION
- .1 Store and protect Products in accordance with manufacturers' instructions.
 - .2 Store with seals and labels intact and legible.
 - .3 Store sensitive Products in weather tight, climate controlled, enclosures in an environment favourable to Product.
 - .4 For exterior storage of fabricated Products, place on sloped supports above ground.

- .5 Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- .6 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- .7 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- .8 Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- .9 Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.54 PRODUCT OPTIONS

- .1 Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- .2 Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- .3 Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.55 SUBSTITUTIONS

- .1 Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- .2 Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- .3 Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- .4 A request constitutes a representation that the Contractor:
 - .1 Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - .2 Will provide the same warranty for the Substitution as for the specified Product.
 - .3 Will co-ordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - .4 Waives claims for additional costs or time extension which may subsequently become apparent.
 - .5 Will reimburse Owner and Consultant for review or redesign services associated with re-approval by authorities.
- .5 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- .6 Substitution Submittal Procedure:
 - .1 Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

- .2 Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
- .3 The Consultant will notify Contractor in writing of decision to accept or reject request.

1.56 DEMONSTRATION AND INSTRUCTIONS

- .1 Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- .2 Demonstrate Project equipment and instruct by a qualified manufacturers' representative who is knowledgeable about the Project.
- .3 For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- .4 Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- .5 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.
- .6 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- .7 The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

1.57 TESTING, ADJUSTING, AND BALANCING

- .1 Owner will appoint, employ, and pay for services of an independent firm to perform testing, adjusting, and balancing.
- .2 The independent firm will perform services specified in Division 15.
- .3 Reports will be submitted by the independent firm to the Consultant indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.

1.58 CLOSEOUT PROCEDURES

- .1 Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Consultant's review.
- .2 Provide submittals to Consultant that are required by governing or other authorities.
- .3 Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.59 FINAL CLEANING

- .1 Execute final cleaning prior to final project assessment.

-
- .2 Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
 - .3 Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - .4 Replace filters of operating equipment.
 - .5 Clean debris from roofs, gutters, downspouts, and drainage systems.
 - .6 Clean site; sweep paved areas, rake clean landscaped surfaces.
 - .7 Remove waste and surplus materials, rubbish, and construction facilities from the site.
- 1.60 ADJUSTING
- .1 Adjust operating Products and equipment to ensure smooth and unhindered operation.
- 1.61 PROJECT RECORD DOCUMENTS
- .1 Maintain on site one set of the following record documents; record actual revisions to the Work:
 - .1 Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed Shop Drawings, Product Data, and Samples.
 - .6 Manufacturer's instruction for assembly, installation, and adjusting.
 - .2 Ensure entries are complete and accurate, enabling future reference by Owner.
 - .3 Store record documents separate from documents used for construction.
 - .4 Record information concurrent with construction progress.
 - .5 Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - .1 Manufacturer's name and product model and number.
 - .2 Product substitutions or alternates utilized.
 - .3 Changes made by Addenda and modifications.
 - .6 Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - .1 Measured depths of foundations in relation to finish ground floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - .4 Field changes of dimension and detail.
 - .5 Details not on original Contract drawings.
 - .7 Submit documents to Consultant with claim for final Application for Payment.
- 1.62 OPERATION AND MAINTENANCE DATA

-
- .1 Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
 - .2 Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project , and subject matter of binder when multiple binders are required.
 - .3 Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
 - .4 Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on 24 pound white paper, in three parts as follows:
 - .1 Part 1: Directory, listing names, addresses, and telephone numbers of Consultant, Contractor, Subcontractors, and major equipment suppliers.
 - .2 Part 2: Operation and maintenance instructions, arranged by system process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - .1 Significant design criteria.
 - .2 List of equipment.
 - .3 Parts list for each component.
 - .4 Operating instructions.
 - .5 Maintenance instructions for equipment and systems.
 - .6 Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - .3 Part 3: Project documents and certificates, including the following:
 - .1 Shop drawings and product data.
 - .2 Air and water balance reports.
 - .3 Certificates.
 - .4 Photocopies of warranties and bonds.
 - .5 Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Consultant comments. Revise content of all document sets as required prior to final submission.
 - .6 Submit two sets of revised final volumes, within 10 days after final inspection.
- 1.63 SPARE PARTS AND MAINTENANCE PRODUCTS
- .1 Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
 - .2 Deliver to Project site and place in location as directed obtain receipt prior to final payment.
- 1.64 WARRANTIES AND BONDS
- .1 Provide duplicate notarized copies.
 - .2 Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

- .3 Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- .4 Submit prior to final Application for Payment.
- .5 For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.65 MAINTENANCE SERVICE

- .1 Furnish service and maintenance of components indicated in specification sections for one year from Substantial Completion or during the warranty period, whichever is longer.
- .2 Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- .3 Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- .4 Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

2 PRODUCTS

Not Used.

3 EXECUTION

Not Used.

END OF SECTION

1 GENERAL

1.1 INSTRUCTIONS

- .1 Information for Bidders, Supplementary General Conditions and Division 1 shall apply to and form part of this section.

1.2 WORK INCLUDED

- .1 This Contractor shall provide all labour, materials, equipment, transportation and incidentals noted, specified or required, to complete the work of this Section to the full extent of the contract drawings and specifications.
- .2 Without limiting the generality of the foregoing, this work includes but is not limited to the following:
 - SBS modified Bitumen Membrane Roof System.
 - Paving stones on rigid insulation placed to/from and around roof-top mechanical equipment.

1.3 RELATED WORK

- .1 Section 07620 Metal Flashing and Trim
Section 06100 Rough Carpentry

1.4 REFERENCE STANDARD(S)

- .1 Roofing and sheet metal work will be performed in conformance with the roofing manufacturer's written recommendations as well as the requirements of the Canadian Roof Contractors Association and/or the local roofing association.
- .2 CSA A123.4-[M1979], Bitumen for Use in the Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems.
- .3 CAN CSA A82.27-(M1977), Gypsum Board Products.
- .4 CSA O151-[M1978], Canadian Softwood Plywood.
- .5 CGSB 37-GP-56M-[80], Membrane Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .6 CAN/CGSB-51-20[M87] Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .7 CAN/CGSB-51-26-[M86], Thermal Insulation, Isocyanurate, Board, Faced.
- .8 Factory Mutual Engineering and Research Corporation (FM Approval Guide Building Materials),

1.5 COMPATIBILITY

- .1 All waterproofing materials will be provided by the same manufacturer or a written declaration must be made that all roofing materials and components are compatible.

1.6 TECHNICAL DOCUMENTS

- .1 Submit two (2) copies of the most current technical data sheets. These documents must describe the materials' physical properties and explanations about product installation, including installation techniques, restrictions, limitations and other manufacturer recommendations.

1.7 QUALITY ASSURANCE AND ENVIRONMENTAL MANAGEMENT

- .1 The manufacturer of elastomeric bitumen products will provide proof of ISO 9001 and ISO 14001 Certifications.

1.8 CONTRACTOR QUALIFICATIONS

- .1 The roofing contractor and his subcontractors, throughout the bid and installation periods, must be officially recognised as an approved contractor by the roofing product manufacturer.
- .2 Only skilled trade persons, officially employed by a roofing contractor operating adequate and necessary equipment, will be authorised to perform all roofing work.

1.9 MANUFACTURER'S REPRESENTATIVE

- .1 The roofing product manufacturer can delegate a representative to visit the work site at the start of roofing installation.
- .2 The contractor must at all times enable and facilitate access to the work site by said representative.

1.10 INSPECTION

- .1 Roofing installation inspection will be done by Stantec Consulting Ltd. and/or a third party inspection company.
- .2 All inspection fees will be paid by the owner.

1.11 PRE-INSTALLATION MEETING

- .1 Hold a pre-installation meeting prior to start of waterproofing works, with the roofing contractor's representative, the engineer and the owner. The purpose of this meeting is to review particular installation conditions to each project. Establish a report for this meeting.

1.12 STORAGE AND DELIVERY

- .1 All materials will be delivered and stored in conformance with the requirements described in the Manufacturers Manual; they must remain in their original packaging, displaying the manufacturer's name, product name, weight, and reference standards, as well as all other indications or references considered standard.
- .2 At all times, materials will be adequately protected and stored in a dry and properly ventilated area, away from any welding flame or spark and sheltered from the elements or any harmful substance. Only materials destined for same-day use can be removed from this storage area. In cold weather, these materials should be stored in a heated area at a minimum temperature of +10°C and removed prior to application. If rolls cannot be stored in a heated environment, they may be pre-conditioned before installation. For precise description, please consult the Manufacturers "Material Installation Guide" on membrane application procedures.
- .3 Store adhesives and emulsion-based waterproofing mastics at a minimum +5°C. Store adhesives and solvent-based mastics at sufficiently high temperatures to ensure ease of application.
- .4 Materials delivered in rolls will be carefully stored upright; flashing will be stored to avoid creasing, buckling, scratches or any other possible damage.

- .5 Avoid material overloads which may affect the structural integrity of specific roof areas.

1.13 FIRE PROTECTION

- .1 Respect safety measures described in the Manufacturers Manual recommendations.
- .2 Never apply the torch directly to old and dry wood surfaces. Please read the fire safety recommendations of the manufacturer and the CRCA.
- .3 Throughout roofing installation, maintain a clean site and have one approved ABC fire extinguisher within 6 meters of each roofing torch. Respect all safety measures described in technical data sheets. Torches must never be placed near combustible or flammable products.

1.14 GUARANTEES

- .1 The product manufacturer will issue a written and signed document in the owner's name, certifying all product performance properties for a period of ten (10) years, starting from the date of acceptance. The warranty required for bituminous elastomeric membranes must wholly and completely cover the specified warranty period.
- .2 The contractor will issue a written and signed document in the owner's name, certifying that the work executed will remain in place and free of any workmanship defect for a period of 2 years, starting from the date of acceptance.

2 PRODUCTS

2.1 PRIMER

- .1 Description: ÉLASTOCOL 500: A blend of elastomeric bitumen, volatile solvents and adhesive enhancing additives used to prime concrete or metal substrates to enhance the adhesion of torch-applied waterproofing membranes.
 - .1 Specified product[s]: ÉLASTOCOL 500 by SOPREMA or Approved Equal.

2.2 ADHESIVES

- .1 Description: Solvent based polyurethane bitumen used to adhere one or more layers of foam type insulation boards (expanded or extruded polystyrene, polyurethane, etc.) or insulation with kraft or fiberglass mat facers (polyisocyanurate) to bitumen vapour barriers, wood, concrete, or sanded surface bitumen membranes .
 - . 1 Specified product COLTACK by SOPREMA.

2.3 VAPOUR RETARDER

- .1 Vapour retarder membrane - self adhesive to existing roof membrane .
 - . 1 Description: vapour retarder membrane composed of bitumen modified with thermoplastic polymers. The top surface is a high density polyethylene grid laminated between two layers of high density polyethylene film. The self adhesive underface is covered with a silicone plastic release film .
 - . 2 Specified product SOPRAVAP'R by SOPREMA.

2.4 INSULATION

- .1 Extruded polystyrene insulation. Insulation to be tapered whwer indicated on the drawings .

- . 2 Standard of Acceptance: DOW Deckmate

2.5 FIRE PROTECTION TAPE

- .1 Fire protection tape:

- .1 Description: a self adhesive fire stop membrane composed of a glass fleece reinforcement and SBS modified bitumen. Fireguard tape is a safety precaution and must be installed prior to the installation of any torch applied vapour barriers, membrane base sheets or torch applied stripping membranes. It is installed over substrate cracks, voids, angle changes at curbs, parapets, penetrations or any locations subject to back drafts or entrance of flame from the torch, protecting combustible materials in the system

- .2 Specified product(s): FIREGUARD TAPE by SOPREMA.

2.6 ROOFING MEMBRANES

- .1 Base sheet panel: SOPRABASE FR 180 DG by SOPREMA.
- .2 Base sheet flashing: SOPRAFLASH FLAM STICK by SOPREMA
- .3 Cap sheet: SOPRAFIX CAP 650 by SOPREMA
- .4 Cap sheet flashing: SOPRAFIX TRAFFIC CAP 660 by SOPREMA

2.7 WATERPROOFING MASTICS

- .1 Waterproofing products: Mastic made of synthetic rubbers, plasticized with bitumen and solvents. Aluminium pigments are added to SOPRAMASTIC ALU to provide greater resistance to U.-V .

- . 1 Specified product: SOPRAMASTIC AND SOPRAMASTIC ALU by SOPREMA.

2.8 CANT STRIPS

- .1 Cant strips cut from pressure-treated wood; sloped side must measure 140 mm in width. Wood must be perfectly dry and true before use.
- .2 Cant strips of wood fibre; made from 38 mm-thick wood fibre; sloped side must measure 140 mm in width.

3 EXECUTION

3.1 SURFACE EXAMINATION AND PREPARATION

- .1 Surface examination and preparation must be completed in conformance with recommendations in the Manufacturers Manual, particularly for fire safety precautions.
- .2 Before roofing work begins, the owner's representative and roofing foreman will inspect and approve deck conditions (including slopes and wood blocking) as well as upstands and parapets, construction joints, roof drains, plumbing vents, ventilation outlets and others.

If necessary, a non-conformity notice will be issued to the contractor so that required corrections can be made. The start of roofing work will mean roofing conditions are acceptable for work completion.

.3 Be sure plumbing , carpentry and all other work has been duly completed.

.4 No materials will be installed during rain.

3.2 METHOD OF INSTALLATION

.1 Prepare surfaces and complete waterproofing work in conformance with the Manufacturers requirements, and the "Material Installation Guide"

.2 Install roofing elements on clean and dry surfaces, in conformance with manufacturer's instructions and recommendations.

.3 Roofing work must be completed in a continuous fashion as surfaces are readied and weather conditions permit.

.4 Preferably seal all seams which are not covered by a cap sheet membrane in the same day. The cap sheet cannot be installed if any moisture is present at/in the base sheet seams.

.5 Whenever membranes are torch applied, a continuous and even bead of molten bitumen must be visible as the membrane is unrolled and torched.

.6 Ensure waterproofing conditions for roofs at all times, including protection during installation work by other trades and progressive protection as work is completed (e.g. vents, drains, etc.).

.7 Complete all work (temporary supports for equipment and bases, disconnection and connection of equipment as needed, moving and lifting of bases, etc.) required for waterproofing beneath equipment and bases; use qualified trade persons as required. Temporary supports for waterproofing beneath air-conditioning units must be designed to hold supported loads and distribute these loads to avoid structural damage.

3.3 SITE PROTECTION

.1 Protect finished work to avoid damage during roof installation and material transportation. Install protective boardwalks over installed roofing materials to enable passage of people and products. Assume full responsibility for any damage.

3.4 CLEANING

.1 The work site must be routinely cleared of rubbish and other materials which may hinder roof installation, performance, or present a fire hazard.

3.5 EQUIPMENT FOR WORK EXECUTION

.1 Maintain all roofing equipment and tools in good working order.

.2 Use torches recommended by the Manufacturer.

3.6 APPLICATION OF ASPHALT PRIMER

.1 Roofing substrates of wood, metal, concrete, masonry or gypsum board surfaces will receive a coat of asphalt primer at a rate of 0.15 to 0.25 l/m² (none required for factory-painted metals). All surfaces to be primed must be free of rust, dust or any residue that may hinder adherence. Cover primed surfaces with roofing membrane as soon as possible (ideally same day coverage for self-adhesive membranes).

3.7 INSULATION INSTALLATION

- .1 Attach insulation mechanically in conformance with manufacturer's recommendations.
- .2 All vertical joints between multiple layers of insulation boards will be staggered.
- .3 Install only as much insulation as can be covered in the same day.

3.8 INSTALLATION OF SOPRABASE FR BOARDS

- .1 Fasten SOPRABASE FR 180 boards with specified adhesive in conformance with adhesive manufacturer's written recommendations.
- .2 All vertical joints between substrate and SOPRABASE FR boards will be staggered vertically and horizontally.

3.9 INSTALLATION OF MEMBRANES

- .1 Install membrane in strict conformance with Manufacturers installation instructions.
- .2 During installation, avoid overheating the membrane and creating excessive bitumen bleed-out at joints.

3.10 INSTALLATION OF TORCH-APPLIED BASE SHEET

- .1 Unroll base sheet and allow to relax set first sheet on roof surface perpendicular to the barrel running from eaves to centre of roof.
- .2 Torch base sheet entirely onto prepared substrate. Overlap side laps by 75 mm along lines provided to this end, and overlap end laps by 150 mm. Stagger end joints by a minimum of 300 mm.
- .3 Torch sufficiently and continuously to avoid wrinkles, air pockets or fishmouths. In cold weather, adjust welding time to obtain homogenous seam (it may be necessary to slow down in certain cases.)

3.11 BASE-SHEET FLASHING INSTALLATION

- .1 Apply base sheet flashing only once primer coat is dry.
- .2 Install base sheet flashing in one-(1) metre widths to cover roofing substrate over 100 mm up to 40 mm beyond roof base sheet fasteners overlap side laps by 75 mm. Stagger side laps by at least 100 mm from base sheet overlaps on roof to avoid excessive layering.
- .3 Torch base sheet flashing from top to bottom directly onto previously prepared substrate. This will soften base-sheet underside without overheating to ensure an entire and homogenous surface adherence. When possible, nail base sheet 300 mm o/c onto substrate at about 25mm from edge.

3.12 ROOFING CAP SHEET INSTALLATION (TORCH APPLIED MEMBRANE)

- .1 Once base sheet is applied and no defects are apparent, proceed with cap sheet installation.
- .2 Weld cap sheet onto base sheet with torch recommended by membrane manufacturer. During application, simultaneously melt both designated contact surfaces so a bead of bitumen is apparent as cap sheet unrolls.

- .3 Avoid overheating.
- .4 Unless overlap widths differ between cap and base sheets, make sure joints between the two layers are staggered by at least 300 mm.
- .5 Overlap cap sheet side laps by 75 mm and end laps by 150 mm. Cut off corners at end laps to be covered by next roll. All overlap surfaces must be granule-free or degranulated.
- .6 Complete perfect welds between two membranes. Leave no zone unwelded. In cold weather, adjust welding time to obtain homogenous seam (it may be necessary to slow down in certain cases.)
- .7 Once cap sheet is installed, carefully check all overlapped joints.
- .8 During installation, care should be taken to avoid excessive bitumen bleed-out at joints.

3.13 CAP SHEET FLASHING INSTALLATION (TORCH APPLIED MEMBRANES)

- .1 Install cap sheet in one (1) -metre widths. Overlap side laps by 75 mm. Stagger base and cap sheet overlaps on roof by at least 100 mm to avoid excessive layering. Roof overlaps will have 50 mm more than those of base sheet flashing.
- .2 Draw parallel chalk line at 50 mm beyond the base sheet flashing.
- .3 Sink surface granules into bed of hot bitumen with torch and round-nosed trowel from chalk line on roof to upstand or parapet base as well as over granulated vertical parts to be overlapped.
- .4 Torch weld cap sheet directly onto base sheet from top to bottom to soften both membranes and obtain homogenous seal.
- .5 During installation, avoid overheating membrane and excessive bitumen bleed-out at joints.

3.14 SHEET METAL FLASHING AND TRIM

- .1 Complete flashing work using specified materials described on plans and details. See Section 07620.
- .2 Unless otherwise specified, nails, staples, screws, bolts, washers and all other metal fasteners, will be made of compatible and rust-proof metals, of same colour as surfaces with which they are in contact.
- .3 Shaping:
 - .1 Take special care when shaping sheet metal with a permanent finish.
 - .2 Bend sheet metal using sheet metal break. When possible, use bench and appropriate tools for all shaping, bending and welding work.
 - .3 Fold back all exposed edges by 12 mm to hide and strengthen edges.
 - .4 All corners, fasteners, angles and joint covers must be of same metal, gauge and finish as metal being shaped.
- .4 Installation:
 - .1 All sheet metal work must conform to details, with plumb profiles exempt of all deformities or defects which may hinder appearance.
 - .2 Space angles and fasteners (seams) to allow for normal expansion and contraction.
 - .3 No nail or screw can be apparent. All metalwork must be fastened and all corners and angles must be perfectly aligned.
 - .4 Caulk all sheet metal joints and all junctions with other materials.

- .5 At junctions between roof and masonry surfaces, scrape out joints to a 25-mm depth, insert flashing, fasten and seal with specified sealer.
- .6 Install appropriate flashing, cap sheet, counterflashing, casings and other accessories to vents, pipes and other ducts to ensure perfect sealing.

3.15 Installation of Wood Blocking

- .1 Install pressure treated wood blocking along the perimeter as required prior to installing insulation.

END OF SECTION

1 GENERAL

1.1 INSTRUCTIONS

- .1 Information for Bidders, Supplementary General Conditions and Division 1 shall apply to and form part of this Section.

1.2 WORK INCLUDED

- .1 This Contractor shall provide all labour, materials, equipment, transportation and incidentals noted, specified or required, to complete the work of this Section to the full extent of the contract drawings and specifications.
- .2 Without limiting the generality of the foregoing, this work includes but is not limited to the following:
- Miscellaneous metal flashings on roof
 - Caulking
 - Sheet metal flashing at roof to wall/parapet joint
 - Flashing around roof openings

1.3 RELATED WORK

Section 07630 Insulated Metal Roof Systems

1.4 REFERENCE STANDARDS

- .1 The latest editions of the following codes and standards shall apply unless otherwise indicated:

ASTM A526M - Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.

CAN/CGSB-51.32 - Sheathing, Membrane, Breather Type.

CGSB 93.1 - Sheet, Aluminum alloy, Prefinished, Residential.

Aluminum Association Designation System for Aluminum Finishes.

Aluminum Association Aluminum Sheet Metal Work in Building Construction.

1.5 SAMPLES

- .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, colour and finish.

1.6 WARRANTY

- .1 This Contractor shall warrant the application of the flashings against any actual leakage for a period of 1 year from the date of Substantial Performance of the work, and agrees to make good promptly any defects which occur or become apparent within the warranty period. Warranty shall be on the Canadian Roofing Contractors Association standard form of guarantee.

2 PRODUCTS

2.1 SHEET METAL MATERIALS

- .1 Zinc coated steel sheet: 24 gauge, commercial quality to ASTM A526, with Z275 designation zinc coating.

2.2 PREFINISHED STEEL SHEET

- .1 Finish: factory applied coating to CGSB 93-GP-3M supplemented and amended as follows:
 - .1 Stelcolour and Colorite HMP coating or Dofasco 8000 Series.
 - .2 Thickness specified for prefinished steel sheet applies to base metal.

2.3 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CGSB 37-GP-5Ma.
- .3 Sealants: See Section - 07900 - Sealants
- .4 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Double the thickness of sheet metal being secured.
- .5 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .6 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .7 Touch-up paint: as recommended by metal flashing and trim manufacture.

2.4 FABRICATION

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series specifications or otherwise indicated on drawings.
- .2 Breakform supplied prepainted sheet material to form copings shown on drawings.
- .3 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.
- .4 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.
- .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 METAL FLASHINGS

- .1 Form flashings, copings and fascias to profiles indicated of 24 gauge prefinished steel.

3 EXECUTION

3.1 INSTALLATION

- .1 Install sheet metal work in accordance with Aluminum Sheet Metal Work in Building Construction and CRCA FL series.
- .2 Use concealed fastenings except where approved before installation.
- .3 Install continuous starter strips where indicated or required to provide a true, non waving, leading edge. Anchor to back up with 4mm screws to provide rigid secure installation. Screw to be long enough to penetrate metal and spaced at 600 mm on centre.
- .4 End joints where adjacent lengths of metal flashing meet shall be made using an S-lock joint. Execute by inserting end of 1 coping length in a 25mm deep S-lock formed in the end of the adjacent length. Extend concealed portion of the S-lock 25mm outwards and nail to substrate. Face nailing of joints will not be permitted.
- .5 Caulk where required to form a weathertight seal between flashing and adjoining surfaces.

END OF SECTION

1 GENERAL

1.1 INSTRUCTIONS

- .1 Information for Bidders, Supplementary General Conditions and Division 1 shall apply to and form part of this Section.

1.2 WORK INCLUDED

- .1 This Contractor shall provide all labour, materials, equipment, transportation and incidentals noted, specified or required, to complete the work of this Section to the full extent of the contract drawings and specifications.
- .2 This Section specifies caulking and sealants not specified in other Sections.
- .3 Refer to other sections for other caulking and sealants.

1.3 REFERENCE STANDARDS

- .1 The latest editions of the following codes and standards shall apply unless otherwise indicated:

CAN/CGSB-19.13	Sealing Compound, One-component, Elastomeric, Chemical Curing.
CGSB 19-GP-17M	Sealing Compound, One Component, Acrylic Emulsion Base.
CAN/CGSB-19.18	Sealing Compound, One Component, Silicone Base, Solvent Curing.
CGSB 19-GP-22M	Sealing Compound Mildew Resistant, for Tubs and Tile.
CAN/CGSB-19.24	Sealing Compound, Multi-component, Chemical Curing.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture and water.

1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

2 PRODUCTS

2.1 SEALANT MATERIALS

- .1 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers. Sealants used on interior surfaces must be Agriculture Canada approved.

2.2 SEALANT COMPOUND

- .1 Multi-Part Polyurethane Sealant: Non-sag type, per CAN2-19.24M, Type II, Class A. Furnish in standard colours as selected.
 - Products Research and Chemical Corp. "PRC Rubber Calk 210 Sealant and 270 Sealant"
 - Mameco International "Vulkem 227"
 - Tremco "Dymeric"
 - W.R. Meadows "Dualthane 7900-232" (12.5%)
- .2 One-Part Polyurethane Sealant: Non-sag type per CAN2-19.13-M82, Type II, Class 25, Class A. Furnish in standard colours as selected.
 - Mameco International "Vulkem 116" or "Vulkem 118"
 - Products Research and Chemical Corp. "PRC Rubber Calk 6000 Sealant"
 - Sika Canada Inc. "Sikaflex-la"
- .3 Silicone Sealant: Non-sag type, per CAN2-19.13-M82, Type II, Class A. Furnish in standard colours as selected.
 - Dow Corning Corp. '790 Building Sealant"
 - General Electric Silicone Products Department "1200 Series Sealant"
 - Pecora Corp. "862 Architectural Silicone Sealant"

2.3 CAULKING COMPOUND

- .1 Caulk: Non-sag, one-part polyurethane base caulk. Furnish in standard colours as selected.
 - Tremco "Dymeric"

2.4 BACK-UP MATERIALS

- .1 Polyethylene, Urethane, Neoprene or Vinyl Foam
Extruded closed cell foam backer rod.
- .2 Bond Breaker Tape
Polyethylene bond breaker tape which will not bond to sealant.

2.5 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

3 EXECUTION

3.1 PREPARATION OF JOINT SURFACES

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair work.

- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
 - .4 Ensure joint surfaces are dry and frost free.
 - .5 Prepare surfaces in accordance with manufacturer's directions.
- 3.2 PRIMING
- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
 - .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.
- 3.3 BACKUP MATERIAL
- .1 Apply bond breaker tape where required to manufacturer's instructions.
 - .2 Install joint filler to achieve correct joint depth and shape.
- 3.4 MIXING
- .1 Mix materials in strict accordance with sealant manufacturer's instructions.
- 3.5 APPLICATION
- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's instructions.
 - .2 Apply sealant in continuous beads.
 - .3 Apply sealant using gun with proper size nozzle.
 - .4 Use sufficient pressure to fill voids and joints solid.
 - .5 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .6 Tool exposed surfaces to give slightly concave shape.
 - .7 Remove excess compound promptly as work progresses and upon completion.
 - .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
 - .3 Cleanup.
 - .1 Clean adjacent surfaces immediately and leave work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.
- END OF SECTION