The Corporation of the City of Oshawa

Request for Tender

Contract No:	**C2018-050**
For	**Mausoleum Targeted Repairs, Union Cemetery**
Closing Date:	**June 4, 2018**
Closing Time:	**2:00:00 p.m. Local Time**

Tenders Received By:

Electronic Bid Submission Only

Inquiries:

Buyer	**Deb Allen**
Phone	**905-436-5645**
Email	**dallen@oshawa.ca**

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Attachments and Appendices:

- Specifications
- Drawings
- Agreement to Bond, if required
- Letter of Undertaking, if required

Information for Bidders – Summary Sheet

The following is a summary of some of the key requirements included in the attached document. The details of each requirement are provided in the attached document. This information summary is provided for the convenience of the bidders only. It is not necessary to return this summary sheet with your submission.

Bidders must consult Part "A", Instructions to Bidders, Part "B", Standard Terms and Conditions, and Part "C", Specifications to ensure that they have included all information required for this **Request for Tender (R.F.T.**).

Electronic Bid Submission Only. Bids must be submitted through the City's Bidding System located at **oshawa.bidsandtenders.ca** prior to the closing date and time.

Project Description: Mausoleum targeted Repairs, Union Cemetery

Reference Number: C2018-050

Term of Agreement: n/a

Closing Date: 2:00:00 p.m. local time, June 4, 2018 Posted

Opening Location: Online at **oshawa.bidsandtenders.ca**

Submission Requirements:

Description	Yes/No	Requirement
Bid Deposit	No	n/a
Agreement to Bond	Yes	Yes
Performance Bond	Yes	50%
Labour/Materials Payment Bond	Yes	50%
Holdback Applicable	Yes	n/10%
Fidelity Bond	No	n/a
Commercial General Liability Insurance (C.G.L.)	Yes	Upon Award - Not less than $5 million per occurrence
Automobile Insurance	Yes	Upon Award - Not less than $2 million per occurrence
Other	No	n/a
WSIB Clearance Certificate	Yes	Upon Award

Description	Yes/No	Requirements
Schedule of prices to be completed in whole	Yes	n/a
Sample products	No	n/a
Other certifications	No	n/a
Fair Wage Policy applies	No	n/a
Accessible Deliverables	No	http://oshawa.ca/city-hall/resources/vendoraccessiblestandardsmarch2014.pdf
Accessibility for Ontarians with Disabilities Act (A.O.D.A.) applies	Yes	http://www.oshawa.ca/residents/resources/accessible_customer_service.pdf
Site Meeting	Yes	Non-mandatory
Date & Time		May 15, 2018 @ 10:00 a.m.
Location		Union Cemetery, 760 King Street West

Definitions and Interpretations

1.0 Definitions

Wherever a term set out below appears in the text of this Request for Tender (R.F.T.) capitalized and in bold font, the term shall have the meaning set out for it in this Section 1. Wherever a term below appears in the text of this R.F.T. in lower case, it shall be deemed to have the meaning ordinarily attributed to it in the English language.

a) **Alternative** means a choice of things, each being fully compliant.

b) **Bidder(s)** means all persons, partnerships or corporations who respond to this R.F.T., and includes their heirs, successors, and permitted assigns.

c) **Bid Submission** means a **Bidder**'s response to a Request for Tender, Proposal or Quotation.

d) **Bidding System** means the **City**'s bid opportunities website, https://oshawa.bidsandtenders.ca.

e) **City** means The Corporation of the **City** of Oshawa and includes its successors and assigns.

f) **Contract** means the agreement to be entered into between the Contractor and the **City** with respect to the supply of the Equipment and Services. It shall be based upon this R.F.T., with any agreed upon amendments, and shall also include any plans and specifications and will be held to cover the supply of any and all work, labour, implements and materials that could be reasonably required to properly and satisfactorily supply the Equipment or Services.

g) **Contractor** means the **Bidder**(s) whose Tender(s) is/are accepted and who has/have agreed to supply the Equipment and Services as described in the Contract. In either case, the term extends to its legal representatives, successors and permitted assigns, agents, employees, sub-contractors and suppliers.

h) **Electronic Bidding** or **Electronic Bid Submission** means a method of issuing Solicitations and/or receiving written Bids where the process of using and/or receiving Bids by internet is considered appropriate.

i) **Equipment** means all goods, materials, articles, equipment, software, intellectual property (or any part of them) and vehicles as described in the Specifications attached to this R.F.T. as Part C and acquired through the inclusion of such equipment in a schedule to the Contract from time to time throughout the term of the Contract.

j) **Improper** means a Tender that is not in conformity in some manner with the requirements of this R.F.T. but will be reviewed by the **City** to determine whether it may be considered in the evaluation process, in the sole and unfettered discretion of the **City**.

k) **Tender(s)** means the **Bidder**'s submission in response to this R.F.T., including the specifications, directions, schedules and requirements, together with all documents

of any description and agreements made or to be made pertaining to the method of supplying the Equipment or Services or to the quantities as shown of acceptable materials to be furnished under the Contract.

l) **R.F.T.** means this Request for Tender document, including all schedules, parts and attachments, as issued by the **City**, including any addenda or amendments made to it after initial issue.

m) **Services** means the services as required and described in Part C, Specifications of this R.F.T. and Equipment is as described in the Specifications attached to this R.F.T. as Part C and the **Electronic Bidding** Submission.

n) **Total Acquisition Cost** means the sum of all costs, including purchase price, all taxes, warranty, life cycle cost, operating and disposal costs.

2.0 Interpretation

The following rules of interpretation apply:

a) The term 'best value' means the most cost efficient and effective manner of supplying the Equipment or Services in the sole and unfettered opinion of the **City**.

b) Where any mention is made to the masculine gender in any part of this R.F.T. or the Contract, it shall be interpreted as, and deemed to mean, the masculine or feminine gender. Words in the singular can be interpreted in the plural, and vice versa, as the context allows.

c) Each reference to Provincial legislation in this R.F.T., unless otherwise specified, is a reference to the Current Consolidated Statutes of Ontario, and, in every case, includes all applicable amendments to the legislation, including successor legislation.

d) The words "shall", "will", and "must" used in this R.F.T. denote imperative.

e) The word "may" used in this R.F.T. denotes permissive.

f) The word "and" is an inclusive conjunction, the use of which indicates that all items or phrases in the subsection, article, or list in which it appears are permitted or required, as the case may be. The word "or" is an alternate conjunction, the use of which indicates that alternate or optional items or phrases in the subsection, article or list in which it appears are permitted or required, as the case may be; however, notwithstanding the foregoing, where the context permits, the word "or" may also be an inclusive conjunction having the same meaning as the word "and".

Part A - Instruction to Bidders

The Corporation of the **City** of Oshawa (the **City**) shall only accept **Electronic Bid Submission**s submitted through the **City**'s **Bidding System** Website. Bid Submissions submitted and/or received by any other method shall be rejected, unless the **City** has instructed otherwise by published Addendum.

Bidders are cautioned that the timing of their Bid Submission is based on when the Bid is received by the **Bidding System**, not when a Bid is submitted by a **Bidder**, as Bid transmission can be delayed due to technological problems such as file transfer size, transmission speed, etc.

For the above reasons, the **City** recommends that **Bidders** allow sufficient time to up-load their Bid Submission and attachment(s) (if applicable) and to resolve any issues that may arise. The responsibility associated with submitting a bid on time is unequivocally the **Bidder**'s. The closing time and date shall be determined by the **City**'**s Bidding System** web clock.

Bidders should contact the Buyer listed on the cover page, at least twenty-four (24) hours prior to the closing time and date, if they encounter any problems. The **Bidding System** will send a confirmation email to the **Bidder** advising that their bid was submitted successfully. If the **Bidder** does not receive a confirmation email, contact Purchasing immediately.

Late Bids will not be accepted by the **City**'s **Bidding System**.

The **City** will only accept and receive **Electronic Bid Submission**s through the **City**'s **Bidding System**.

To ensure receipt of the latest information and updates via email regarding this bid or if a **Bidder** has obtained this document from a third party, the onus is on the **Bidder** to create a **Bidding System** Vendor account and register as a Plan Taker for the bid opportunity at https://oshawa.bidsandtenders.ca.

1.0 Contract / Intent

a) The intent of the **Contract** is to secure one **Contractor** for all **Equipment** and/or **Services** complete and suitable for the **City's** intended use but the **City** reserves the right to choose more than one **Contractor**.

b) The intent of this **R.F.T**. is to secure the equipment or services outlined herein in accordance with the terms, conditions, specifications and appendices and attachments of this **R.F.T**. The **City** may or may not enter into a **Contract** as a result of the issuance of this **R.F.T**. The **City** may accept any **Tender** in whole or in part, whether the price or prices be the lowest or not, and may reject any and all **Tenders.**

2.0 Tender Delivery & Opening

a) The **City** will only accept **Electronic Bid Submission**s. **Electronic Bid Submission**s must be received by the **Bidding System**, no later than 2:00:00 p.m. (14:00:00 hours) local time, on the date shown on the front of the **R.F.T.** and throughout the document (the "deadline for submission").

b) **Bidders** are cautioned that the timing of their Bid Submission is based on when the Bid is received by the **Bidding System**, not when a Bid is submitted by a **Bidder**, as Bid transmission can be delayed in a technological problems such as, file transfer size, transmission speed, etc.

c) For the above reasons, the **City** recommends that **Bidders** allow sufficient time to upload their Tender submission and attachment(s) (if applicable) and to resolve any issues that may arise. The responsibility associated with submitting a bid on time is unequivocally the **Bidder**'s. The closing time and date shall be determined by the **City**'s **Bidding System** web clock.

d) **Bidders** should contact the Buyer listed, at least twenty-four (24) hours prior to the closing time and date, if they encounter any problems. The **Bidding System** will send a confirmation email to the **Bidder** advising that their bid was submitted successfully. If the **Bidders** does not receive a confirmation email, contact Purchasing immediately.

e) Late **Tenders** will not be accepted by the **City**'s **Bidding System**.

f) To ensure receipt of the latest information and updates via email regarding this bid or if a **Bidder** has obtained this Tender Document from a third party, the onus is on the **Bidder** to create a **Bidding System** vendor account and register as a Plan Taker for the bid opportunity at oshawa.bidsandtenders.ca.

g) **Bidders** may edit or withdraw their **Electronic Bid Submission** prior to the closing time and date. However the **Bidder** is solely responsible to:

- Ensure the re-submitted bid is **received** by the **Bidding System** no later than 2:00:00 p.m. (14:00:00 hours) local time, on the Bid Closing Date.

2.1 Bid Closing Time and Date

All **Bidders** shall have a **Bidding System** Vendor account and be registered as a Plan Taker for this Bid opportunity, which will enable the **Bidder** to download the Bid Call Document, to receive Addenda/Addendum email notifications, download Addenda and to submit their bid electronically through the **Bidding System**.

Bid Submissions must be received by the **City**'s **Bidding System** no later than 2:00:00 p.m. (14:00:00 hours) local time, on the specified closing date.

The closing time shall be determined by the **Bidding System** web clock.

Bidders are cautioned that the timing of a Bid Submission is based on when the Bid is received by the **Bidding System**, not when a Bid is submitted by a **Bidder**, as Bid

transmission can be delayed due to technological problems such as file transfer size, transmission speed, etc.

3.0 Tender Submission

The **City** will only accept and receive **Electronic Bid Submission**s through the **City**'s **Bidding System**.

Hard-copy Tender Submissions shall not be accepted and will be rejected.

a) Submission of a **Tender** will constitute acceptance of all provisions contained in this **R.F.T**. on the part of all **Bidders**.

b) When submitting a **Tender, Bidders** must ensure that all areas of this **R.F.T**. that require information are completed and submitted in accordance with the instructions, including but not limited to: Deposits, Agreement to Bond or Letter of Undertaking forms if applicable, and Schedule of Prices, submitted through the **Bidding System**. Failure to do so may result in the incomplete **Tender** being rejected.

c) All **Tenders** must be submitted through the **Bidding System** or the **Tender** will be rejected.

d) None of the conditions contained on the **Bidder's** standard or general conditions of sale shall be of any effect unless explicitly agreed to by the **City** and specifically referred to on the purchase order.

4.0 Inquiry

a) All inquiries regarding this **R.F.T**. shall be made in writing and sent through the **Bidding System**.

b) Details of the site visit, if applicable, are provided in the Information for **Bidders** – Summary Sheet provided at the front of this **R.F.T**. **Bidders** not attending site meetings that have been deemed to be mandatory site meetings will be disqualified from the bidding process.

c) Any inquiries will be responded to in writing through the **Bidding System**. Any clarification shall not alter the **Tender**. Oral arrangements or discussions are not binding and cannot be relied upon.

d) If during the period prior to submission of Tenders, the **City** determines, in its sole and unfettered discretion, that part of the **Tender** requires formal amendment or clarification, written addenda to this **Tender** will be produced and posted on the **City**'s **Bidding System** website.

e) **Bidders** attempting to contact **City** staff or elected officials other than the contact indicated in this **R.F.T**., for whatever reason, during the **Tender** or evaluation process are advised that such action may result in their disqualification from the process. If consultation is deemed to be necessary by the **City**, a pre-tender meeting of all **Bidders** and **City** staff will be arranged at a location of the **City's**

choosing. The **City** reserves the right to change the deadline for submission, if necessary, to accommodate such a meeting.

f) No officer, agent or employee of the **City** is authorized to verbally alter any portion of this **R.F.T**. During the period prior to submission of **Tenders**, any clarification will be issued in the form of written addenda.

g) All references to **Bidder** include all staff from the proposing organization as well as all contractors and subcontractors that the proposing organization may hire to supply the **Equipmen**t or **Services**.

h) Any questions about the interpretation of Specifications or the bid process shall be made in writing and addressed to Purchasing Services through the **Bidding System** in ample time before the deadline for submissions. No inquiries, if received within four (4) business days of the deadline for submissions, will be given any consideration.

4.1 Addendum/Addenda

Bidders shall acknowledge receipt of any addenda when submitting their Bid through the **Bidding System**. **Bidders** shall check a box for each addendum/addenda and any applicable attachments that has been issued before a **Bidder** can submit their Bid Submission online.

Addendum/Addenda will typically be issued through the **Bidding System**, forty-eight (48) hours prior to Closing Time and Date.

In the event an addendum is issued within forty-eight (48) hours prior to Closing Time and Date, it may include an extension of the Closing Time and Date. It is the responsibility of the **Bidder** to have received, reviewed and read all Addendum/Addenda that have been issued. **Bidders** should check online at https://oshawa.bidsandtenders.ca prior to submitting their Bid and up until Bid closing time and date in the event additional addenda are issued.

The **City** encourages **Bidders** not to submit their Bid prior to forty-eight (48) hours before the Bid Closing Time and Date, in the event that an addendum is issued. If a **Bidder** submits their bid prior to this or at any time prior to the bid closing and an addendum/addenda is issued by the **City**, the **Bidding System** shall withdraw their Bid Submission and change their Bid Submission to an incomplete status (not accepted by the **City**) and the Withdrawn Bid can be viewed by the **Bidder** in the “My Bids” section of the **Bidding System**. The **Bidder** is solely responsible to:

i) make any required adjustments to their Bid; and

ii) acknowledge the addendum/addenda; and

iii) ensure the re-submitted Bid is received by the **Bidding System** no later than 2:00:00 p.m. (14:00:00 hours) local time, on the Bid Closing Date.

NOTE: Additional company contacts are recommended for the reasons outlined below:

- Do not invite any additional contacts within company that the company's does not want the contact to have access to view, edit, submit and/or Withdraw Bid Submissions or who may be in direct competition (for example, a company may have two divisions that could compete for the same Bid Opportunity).
- **Bidders** are strongly urged when creating or updating a **Bidding System** Vendor account to add additional company contacts to create their own login to the **Bidding System**. This will permit the Company's invited contacts that have created their own login to manage (register, submit, edit and withdraw) Bids for which the **Bidder** is a Registered Plan Taker. In the event the Company contracts are on vacation or unavailable due to illness etc., these additional contacts may act on the company's behalf and have the authority to receive addendum notifications from the **Bidding System** and, where permitted by the terms and conditions of the Bid Call Document, to submit Bids electronically through the **Bidding System** and/or withdraw, edit and/or acknowledge addendum/addenda, on the company's behalf.
- If you are an invited company contact it is imperative that you create your login from the link contained in the email invitation. Do not go directly to City of Oshawa's website and create a separate vendor account.

5.0 Tender Content

Tenders will be deemed complete if they include all of the following submitted through the **Bidding System**:

a) A completed and executed Bid through the **Bidding System**.

b) A completed List of Subcontractors.

c) Reference list: **Bidders** must provide three appropriate references listing completed projects of a similar size and nature, including contact names, telephone numbers and email addresses.

d) A Bid Deposit (where applicable) as detailed in the Information for **Bidders** – Summary Sheet found at the front of this **R.F.T.**

e) An Agreement to Bond (where applicable) or approved equivalent as detailed in the Information for **Bidders** – Summary Sheet found at the front of this **R.F.T.**

f) If any of the above information, items (a) through (e) inclusively, is missing or deficient, the **City** reserves the right, in its sole and unfettered discretion, to request written clarification or to reject the **Tender** in its entirety.

5.1 **Bidders** shall up-load both their Bid Deposit and Agreement to Bond, as instructed in 5.2, to the **City**'s **Bidding System**, in the bid submission file labelled "Bid Deposit and Agreement to Bond".

5.2 **Bidders** shall create a **single zip file** (see **Bidding System** instructions on how to create a zip file) containing both their Bid Deposit and Agreement to Bond and up-load the zipped file to the file labelled "Bid Deposit and Agreement to Bond".

6.0 Acceptance of Terms

Each **Bidder**, by submitting a **Tender**, represents that the **Bidder** has read, completely understands, and accepts the terms, conditions, and specifications of the **R.F.T.** in full.

7.0 Non-Exclusive

Bidders should note that any **Contract(s)** awarded as a result of this **R.F.T.** will be non-exclusive. The **City** may, at its sole and unfettered discretion, purchase the same or similar **Equipment** or **Services** from other sources, including but not limited to other **Bidders**, during the term of the **Contract(s)**.

8.0 Bid Deposit

a) The amount of the Bid Deposit, if required, is provided in the Information for **Bidders** - Summary Sheet provided at the front of this **R.F.T**. A bid deposit, if required, must be submitted in one of the following forms:

- Certified Cheque, Bank Draft, or Money Order, drawn on a Canadian Chartered Bank, made payable to the order of the Corporation of the **City** of Oshawa in the amount of ten (10%) percent of the total bid submitted (including all charges, taxes contingencies and allowances) scanned into the **Bidding System**; or
- A bid bond from a Surety Company authorized by law to carry on business in the Province of Ontario, in favour of the Corporation of the **City** of Oshawa, equal to, or greater than, ten (10%) percent of the total bid submitted (including all charges, taxes, contingencies and allowances) scanned into the **Bidding System**.

b) The three (3) low bids will provide to the **City** the original scanned bid bond, certified cheque, bank draft, or money order that were scanned into the **Bidding System** within seventy-two (72) hours of bid closing. Failure to provide the original documents or to enter into a contract may result in **Bidder** being barred from future bid opportunities for up to two (2) years.

c) The Bid Deposit may also be requested for a specific dollar amount as indicated on the Information for **Bidders** – Summary Sheet. In such cases all of the forms of Bid Deposit outlined above are acceptable providing they are equivalent in value to the dollar amount specified (including all charges, taxes, contingencies and allowances) on the Information for **Bidders** – Summary Sheet.

d) The bid deposit must remain valid for the period of irrevocability detailed in Part B of this **R.F.T.** If a bid deposit is submitted in a form other than as specified above, the **Tender** may be rejected. If a bid deposit is not submitted through the **Bidding System** the **Tender** will be rejected.

e) Once the **Contractor** has complied with the submission requirements outlined in the **R.F.T.** and a **Contract** is executed with the successful bidder by a duly authorized official of the **City**, the retained deposits will be null and void.

f) Failure to furnish the required bonds or approved equivalents, insurance certificate, Workplace Safety Insurance Board (W.S.I.B.) certificate or other required documents within ten (10) days of a written request by the **City** shall make the award of the **Contract** by the **City** subject to cancellation. If the **Contract** is cancelled in this manner, the proceeds of the **Contractor's** bid security accompanying its **Tender** will be forfeited as compensation to the **City** for its losses. This action does not limit the **City's** right to recover any loss, damages or expense it incurs including, but not limited to, the additional costs associated with selecting another **Bidder**.

g) Any Bid Bond, Agreement to Bond, Performance Bond or Labour and Materials Payment Bond must name the "Principal" as the firm carrying out the work and not a sub-contractor or manufacturer supplying commodities to the firm carrying out the work.

9.0 Agreement to Bond (alternative to Section 10, Surety Requirement)

The details of an Agreement to Bond or approved equivalent, if required, are provided in the Information for **Bidders** – Summary Sheet provided at the front of this **R.F.T**. In the event that Surety Bonds are required for this project, the following details apply:

a) The Contractor, together with a Surety Company approved by the **City** and authorized to carry on business in the Province of Ontario, shall furnish to the **City** a Performance Bond in the format of CCDC 221 and/or a Labour and Materials Payment Bond in the format of CCDC 222 as a percentage of the total bid price shown on the Information for Bidders – Summary Sheet. The Surety Bonds may also be requested for a specific dollar amount as indicated on the Information for Bidders – Summary Sheet. These bonds must cover the faithful performance of the **Contract** and/or the payment of all obligations under the **Contract** and shall be issued by a Surety Company licensed to do business in the Province of Ontario. Unless otherwise indicated, the warranty period on the Performance Bond must be one (1) year following completion of the project. The Performance Bond and/or Labour and Materials Payment Bond must be provided to the **City** within ten (10) days' notice to the bidder of contract award. Failure to provide said bonds to the **City** within ten (10) days will result in the **City** redeeming any Bid Deposit that has been provided.

b) An "Agreement to Bond" form ensuring that a Performance Bond and/or Labour and Materials Payment Bond can be supplied, scanned into the **Bidding System** and constitutes part of the **R.F.T.** and must be completed, duly signed and executed, and returned with the **Tender** in a sealed envelope or sealed carton clearly identifying the **R.F.T.** contract number, description and contents as identified within the **R.F.T.** A sample Agreement to Bond Form is included with this **R.F.T.** but **Bidders** are advised that an Agreement to Bond as supplied by the **Bidders** Surety Company or financial institution indicating that the **Bidder** is capable of providing Surety will be sufficient, provided it includes all terms indicated on the **City's** form.

c) Failure to provide, where required, a Bid Deposit noted in Section 8 above, an Agreement to Bond noted in Section 9 above , or the alternate Surety noted in Section 10 below, will result in the bid being rejected.

10.0 Surety (alternative to Section 9, Agreement to Bond, if required)

a) The **Contractor** shall submit a surety through the **Bidding System** in the form of a Certified Cheque, Bank Draft, Irrevocable Letter of Credit or Money Order in the amount of one hundred (100%) percent of the total of the Bonds indicated on the Information for **Bidders** – Summary Sheet. In order for the alternative of the Letter of Credit to be acceptable to the **City**, the enclosed Letter of Undertaking must be completed and signed by the **Bidder** and a signing officer of the **Bidder's** Financial Insitution. Failure to provide an Agreement to Bond noted in Section 10 above, or the alternate Surety noted in Section 11 herein, will result in the bid being rejected.

b) This Surety may be held by the **City** until sixty (60) days after the day on which all work covered by the **Contract** has been completed and accepted or the warranty has expired, whichever is longest. The Surety may be returned before the sixty (60) days has elapsed providing satisfactory evidence is provided that all liabilities incurred by the **Contractor** in carrying out the work have been satisfied and that all liens have expired or have been satisfied, discharged or provided for, and a Clearance Certificate from the Workplace Safety Insurance Board (W.S.I.B.) is provided.

c) The **City's** standard Letter of Undertaking is attached to this **R.F.T**. **Bidders** shall have the supplied sample executed by their Financial Institution if this Surety option is exercised (in lieu of Bonding).

11.0 Fidelity Bond

The details of a Fidelity Bond, if required, are provided in the Information for Bidders **–** Summary Sheet provided at the front of the **R.F.T**.

a) Where the **Contract** involves working on **City** property without supervision, the **Contractor** will provide evidence that all personnel employed on, upon or about the premises of the **City**, are covered by a Fidelity Bond in an amount not less than $10,000 for each individual, or a Certificate of Insurance indicating proof of Employee Dishonesty Coverage.

b) The **Bidder** shall provide proof from their Surety or Insurance Company of ability to obtain fidelity bonding with their **Tender** through the **Bidding System,** or their **Tender** may be rejected.

Part B – Standard Terms and Conditions

1.0 Acceptance

a) As soon as practicable after opening the **Tenders**, the **City** will endeavour to act upon them. The acceptance of a **Tender** will be notice in writing signed by a duly authorized representative of the **City** and no other act of the **City** shall constitute the acceptance of a **Tender**. The placing of a notice of award to a **Bidder** by the **City** in regular mail or courier to the address given in a **Tender** shall constitute formation of the **Contract** and no other form of notice shall be required. Acceptance of a **Tender** by the **City** shall bind the **Contractor** to execute any additional documents as required by the **City** to further evidence or define the **Contract** as may be required in accordance with paragraph (h) below.

b) The Contract shall consist of and have priority in the following order:

   i. the purchase order;

   ii. the **R.F.T.**;

   iii. and the **Contractor's Tender**.

c) The above mentioned documents will be interpreted in precedential order as they are named above regardless of the chronological order in which they are issued or executed. This means that if there is a discrepancy between a term in the **City's** purchase order and a term in the chosen **Tender**, the term in the purchase order will prevail to the extent of the discrepancy.

d) The **City** may accept any **Tender** in whole or in part, whether the **Total Acquisition Cost** is the lowest or not, and may reject any or all **Tenders**. There shall be no requirement of the **R.F.T.**, implied or otherwise, that the **Tender** representing the lowest **Total Acquisition Cost** will be selected or preferred.

e) The **City** reserves the right to award by items, groups of items, parts of items or parts of groups of items, or all items of the **Tender**, and to award **Contracts** to one or more **Bidders**, to accept or reject any **Tender** in whole or in part, to waive irregularities and omissions in the **City's** sole and unfettered discretion, if in so doing, the best interests of the **City** will be served. No liability shall accrue to the **City** for its decision in this regard.

f) In addition to the preceding paragraph, the **Bidder**, by submitting a **Tender**, agrees that it will not claim damages in excess of an amount equivalent to the reasonable costs incurred by the **Bidder** in preparing its **Tender** for matters relating to the **Contract** or in respect of the competitive process, and the **Bidder**, by submitting a **Tender**, waives any claim for loss of profits if no contract is made with the **Bidder**.

g) Should the **City** receive only one (1) **Tender** on commodities/services that have a known multiple sources potential, the **City** reserves the right to recall or cancel the competition or to negotiate the prices and/or terms offered by the **Bidder**.

h) All **Tenders** shall be irrevocable for ninety (90) days following the deadline for submission to allow sufficient time for evaluation of the **Tenders** and for the investigation of the **Bidders**.

i) Upon acceptance of a **Tender**, or any part of it, by the **City**, the successful **Bidder** shall, if requested by the **City** so to do, execute and enter into an additional formal contract that is satisfactory to the Solicitor of the **City**, to properly secure the Contract resulting from the acceptance of a **Tender,** or any part of it, and to include indemnity and related provisions that in the opinion of the Solicitor are required to protect the **City**.

j) Any notice that the **City** may be required to or desire to give to the **Bidder** shall for all purposes be deemed to have been sufficiently and properly given if forwarded by regular mail or courier and addressed to the **Bidder** at the address shown for the **Bidder** on its **Tender**. It shall be presumed to have been received by the **Bidder** on the third day following the mailing or the day following registration with the courier.

k) No **Tender** shall be accepted from any person or **Bidder** who has a claim or has instituted a legal proceeding against the **City,** or against whom the **City** has a claim or has instituted a legal proceeding, without the prior approval of **City** Council. This applies whether the legal proceeding is related or unrelated to the subject matter of this **R.F.T**.

2.0 Purchasing By-Law

a) **Tenders** will be called, received, evaluated, accepted, and processed in accordance with the **City's** Purchasing By-law and Procedures posted on the **City**'s website. By submitting a **Tender,** each **Bidder** agrees to be bound by the terms and conditions of that By-law and those Procedures, including any amendments to them, as fully as if it were reproduced and attached to this **R.F.T**.

b) No verbal arrangement or agreement relating to the **Equipment** or **Services** specified or called for under this **R.F.T**. will be considered binding and every notice, advice or other communication pertaining to it must be in writing and signed by a duly authorized person.

3.0 Bidder Eligibility

a) **Bidders** must meet the **City's** requirements for experience. The **City** reserves the right to contact the references provided in a Bid Submission to confirm the **Bidder's** experience, ability and performance. The **City** will not be responsible for following up with references that do not respond in a timely manner. The **City** will disqualify any **Bidder** who cannot provide the following, when requested by the **City**:

- proof that they have previously held and satisfactorily completed a contract of the size and type being proposed or proof of employment in the type of service being proposed and written references as to their satisfactory performance; or adequately demonstrate that they have the ability to

provide the necessary expertise and resources, including sub-contractors, to satisfactorily complete the **Contract**. The **City** reserves the right to require a **Bidder** to replace any of the sub-contractors provided in its bid if the sub-contractor is deemed unsatisfactory by the **City**.

b) The **City** reserves the right to investigate and evaluate the experience, capability, safety, quality, registration and financial position of any **Bidder** prior to an award of a **Contract**.

c) The **City** reserves the right to reject any **Bidder** or **Tender** in its sole discretion, at any stage of the bid process, on the basis of:

- The bid contains false or misleading information or misrepresentation;
- The **Bidder** fails to cooperate with the **City's** attempt to seek clarification or verification of information contained in a bid;
- The **Bidder** reveals a conflict of interest in its bid or a conflict of interest is brought to the attention of the **City**;
- Information provided by references or lack of response; or
- If any of the references contacted confirm that the reference information provided by the **Bidder** is substantially inaccurate or confirm that the **Bidder** was terminated from a contract due to default or failed to meet the performance requirements for similar Work, Goods or Service, the **City** reserves the right to reject the Bid. The **City's** decision in this regard is final.

d) This **Tender** is made by the **Bidder** without any connection, knowledge, comparison of figures or arrangement with any other person or persons making a **Tender** for the same **Equipment** or **Services**, and is in all respects fair and without collusion or fraud.

4.0 Assignment

a) The **Contractor** shall not assign the **Contract**, or any portion of it, without the prior written consent of the **City**.

b) It is understood and agreed that the **Bidder** will be an independent contractor and that all services will be performed by the employees or agents of the **Contractor**. Sub-contracting agreements made by the **Contractor** will not release the **Contractor** from any obligation to the **City** with respect to the performance of the **Contract**. Joint or consortium **Tenders** must have one prime **Contractor** who will be responsible for overall project success, and provide one point of contact and a single billing point. The **City** shall not be responsible for payment to the **Contractor's** partners, subcontractors or suppliers in the event the prime **Contractor** defaults on its responsibilities. The prime **Contractor** must communicate such to its partners, sub-contractors and suppliers. The prime **Contractor** must also provide the **City** with a written statement outlining function components that the sub-contractor(s) will be offering.

The **City** must grant prior written approval, in its sole and unfettered discretion, for any assignment and all sub-contractors.

5.0 Indemnification

a) The **Contractor** agrees that it shall continuously save, keep harmless and fully indemnify the **City**, its elected officials, employees and agents and its successors and assigns, from and against all actions, claims, suits, demands, proceedings, losses, liabilities, damages, costs and expenses, which may be brought against or made upon the **City** resulting from or arising out of the **Contractor's** performance of or rendering of any **Services** pursuant to the **Contract**.

b) The **Contractor** also agrees that it shall continuously save, keep harmless and fully indemnify the **City**, its elected officials, employees and agents and its successors and assigns, against all actions, claims, suits, demands, proceedings, losses, liabilities, damages, costs and expenses, which may be incurred by the **City** resulting from or arising out of the **Contractor's** performance of or rendering of any **Services** pursuant to the **Contract.**

c) The **Contractor** shall indemnify the **City** from all claims arising out of unpaid accounts relating to the **Contract**. The **City** shall have the right at any time to require satisfactory evidence that the **Equipment**, or any part of it, in respect of which any payment has been made or is to be made by the **City**, is free of and clear of construction or other liens, attachments, claims, and demands, charges or other encumbrances.

6.0 Insurance

a) Liability Coverage

Upon award the **Contractor** shall obtain, provide and maintain a Commercial General Liability (C.G.L.) Insurance Policy for the duration of the **Contract**.

i. The Policy shall be written on an occurrence basis and have a liability limit of not less than the amount shown on the information for **Bidders** - Summary Sheet in respect of any one accident or occurrence.

ii. The **City of Oshawa** shall be named on the Policy as an **additional insured** without subrogation.

iii. Policy coverage shall include third party bodily injury including death, property damage and personal injury and wording in the Policy shall not be less than the insurance wording shown in I.B.C. Forms 2100 and 2320, or their equivalent replacement.

iv. The Policy shall be taken out with an insurance company licensed to carry on the business of insurance in the Province of Ontario.

v. The Policy shall contain a cross liability and/or severability clause which protect each insured to the same extent as if they were separately insured.

vi. Prior to commencement of the **Contract,** the **Contractor** shall verify that valid insurance coverage is in place by submitting a certificate of insurance to the **City** which must be acceptable in all respects to the Manager, Purchasing Services. The certificate of insurance will identify the City of Oshawa as an additional insured with respect to the services provided by the **Contractor**, under this **Contract**. No review or approval of any such insurance certificate by the City shall derogate from or diminish the **City's** rights or the **Contractor's** obligation contained in the **Contract**.

vii. If liability limits are extended by an umbrella or excess liability policy, the certificate of insurance must clearly identify which underlying liability policy if affected by the umbrella or excess limit.

viii. The Policy shall be endorsed to provide that the **City** is to receive not less than thirty (30) days' notice in writing in advance of any cancellation, material amendment, or change restricting coverage. Written notice shall be personally delivered or sent by registered mail to the Manager, Purchasing Services. Should any claim(s) arise, the **Contractor** shall be financially responsible to pay for any amount(s) up to and including the deductible amount under the Policy.

ix. The **Contractor** shall ensure that any and all subcontractors also have valid Commercial General Liability Insurance coverage with the same limits and wording as outlined in this section, if the **City** grants assignment pursuant to the **Contract**.

b) Automobile Coverage

Upon award the **Contractor** shall obtain, provide and maintain an Automobile Insurance Policy to cover all vehicles and commercial trailers owned or leased by the **Contractor** on forms meeting statutory requirements covering all vehicles and commercial trailers used in any manner in connection with the performance of the terms of this **Contract.**

i. The Policy shall have a liability limit of not less than two million dollars ($2,000,000) in respect of any one accident or occurrence.

ii. Policy coverage shall include third party bodily injury including death, property damage and basic accident benefits and coverage shall not be less than the insurance wording shown in the Standard Ontario Automobile Policy Form OAP 1.

iii. The Policy shall be taken out with an insurance company licensed to carry on the business of insurance in the Province of Ontario.

iv. Prior to commencement of the **Contract,** the **Contractor** shall verify that valid insurance coverage is in place by submitting a certificate of insurance to the **City** which must be acceptable in all respects to the Manager, Purchasing Services.

v. The Policy shall be endorsed to provide that the **City** is to receive not less than thirty (30) days' notice in writing in advance of any cancellation, material amendment, or change restricting coverage. Written notice shall be personally delivered or sent by registered mail to the Manager, Purchasing Services.

vi. Should any claim(s) arise, the **Contractor** shall be financially responsible to pay for any amount(s) up to and including the deductible amount under the Policy.

vii. The **Contractor** will ensure that any and all sub-contractors also have valid Automobile Insurance coverage with the same limits and wording as outlined in this section, for all licensed vehicles owned and/or leased by them, if the **City** grants assignment pursuant to the **Contract.**

c) General Insurance Guidelines

The limits and types of coverage requested herein are minimum requirements and may not reflect potential insurable risks or exposures for all circumstances. It is the responsibility of the **Contractor** relying on the advice of their insurance and/or legal representative to purchase higher limits and/or any additional coverage appropriate for all claim circumstances.

7.0 Workplace Safety Insurance Board (W.S.I.B.) Certificate

a) A W.S.I.B. account number and clearance certificate from the Workplace Safety Insurance Board shall be provided prior to the commencement of work indicating all payments by the company to the W.S.I.B. in conjunction with the **Contract** have been made, and that the **City** will not be liable to the W.S.I.B. for future payments in connection with the **Contractor's** fulfillment of the **Contract**.

b) Clearance certificates should be renewed prior to expiry every ninety (90) days, at a minimum, during the term of the **Contract**.

c) The **City** shall have the right to retain, out of any monies payable by the **City** to the **Contractor** under this **Contract**, the total amount from time to time outstanding of all damage claims by third parties arising out of this **Contract** which have not been settled by the **Contractor** or its insurers. For the purposes of this paragraph, a claim has been settled if a payment has been made to and accepted by the claimant and a complete release obtained once the claim has been fully investigated by the W.S.I.B.

d) Independent operators (for example, single owner/operators) will be subject to the requirements under this Section. As such these operators will be required to provide a W.S.I.B. Certificate of Clearance.

e) Independent operators must provide a certificate from W.S.I.B. confirming they have purchased the Optional W.S.I.B. Coverage.

8.0 Occupational Health & Safety Act/Environmental Protection Act

a) Should the provisions of the Occupational Health and Safety Act, apply to the work to be completed under a **Contract** resulting from this **R.F.T.**, a contravention of the Occupational Health and Safety Act, as amended from time to time, by the **Contractor**, subcontractor or supplier may be considered a breach of this **Contract**.

b) The **Contractor** shall “take every precaution reasonable in the circumstances” for the protection from injury of **City** employees, occupants of the site, the general public and workers.

c) The **Contractor** shall provide, erect, and maintain required barricades, warning signs, guard-rails, and light guards in accordance with applicable regulations.

d) Except as specified in the **Contract**, the **Contractor** will ensure that no additional signs are erected unless approved by the **City**.

e) The **Contractor** shall remove debris, packaging and waste materials frequently and as directed by the **City**. The **Contractor** shall remove from the site and legally dispose of rubbish, waste materials, and any form of hazardous waste (as defined in regulations to the Environmental Protection Act, as amended from time to time).

f) Dust and dirt shall be kept to an acceptable level and as directed by the **City**. The **Contractor** shall cover or wet down dry materials and rubbish to prevent blowing dust and debris.

g) While on the premises, all hazardous chemical waste shall be properly identified and stored so as not to pose a safety or health hazard to **City** employees, occupants of the site and the general public.

9.0 Storage and Dispensing Equipment

Where storage and/or dispensing equipment is required for proper handling and storage of delivered **Equipment**, such **Equipment** is provided and owned by the **City**.

10.0 Character of Workers

a) The reference to "workers" refers to workers of the **Contractor** and its sub-contractors, if any, and includes Corporate Officers.

b) The **Contractor** agrees to employ only orderly, competent, and skillful workers. When the **Contract** calls for a worker to be certified in their discipline, or the discipline requires certification, the **Contractor** shall ensure every worker shall be current and up to date in their certification. Whenever the **City** informs the **Contractor** in writing that any worker is, in its sole and unfettered opinion, incompetent, unfaithful or disorderly, the **Contractor** will ensure that the worker in question is removed from the work site and shall not be further employed on the **Contract** without the **City's** written consent.

11.0 Project Site Working Conditions

It is the **Bidder’s** responsibility to investigate the project site and the nature of the work and inform itself, before bidding, of all the physical and working conditions and applicable administrative practices.

Details of the site visit, if applicable, are provided in the Information **for Bidders –** Summary Sheet provided at the front of the **R.F.T. Bidders** not attending mandatory site meetings will be disqualified from the bidding process. **Tenders** received from disqualified **Bidders** will be returned unopened at the **Bidder’s** expense.

12.0 Care and Handling

a) The **Contractor** will assume full responsibility for the safe handling and delivery of materials, in accordance with the Transportation of Dangerous Goods Act and the Occupational Health and Safety Act, as amended from time to time, the Workplace Hazardous Materials Information System (W.H.M.I.S.), and any other municipal, provincial or federal legislation applicable during the term of this **Contract**.

b) Prior to commencement of the work the **Contractor** shall provide a list of products controlled under W.H.M.I.S. which he expects to supply on this **Contract**. The **Contractor** will provide Material Safety Data Sheets (M.S.D.S.) to the **City** prior to contract commencement.

c) The **Contractor(s)** shall be aware of and conform to all governing regulations, including those established by the **City**, related to worker health and safety. The **Contractor** shall keep employees and sub-contractors informed of such regulations. The **Contractor** will be responsible for obtaining the **City's** Workplace Safety and Health Policy and adhere to the policy, including the dress code for on-the-job safety.

13.0 Patents and Copyrights

a) The **Contractor** shall, at its sole expense, defend all claims, actions or proceedings brought against the **City** based on any allegations that the **Equipment**, or any part of it, constitutes an infringement of any patent, copyright or other proprietary right, and shall pay to the **City** all costs, damages, charges and expenses, including its lawyers' fees on a solicitor and his own client basis, occasioned to the **City** in this regard.

b) The **Contractor** shall pay all royalties and patent license fees required for the **Equipment**.

c) If the **Equipment**, or any part of it, is in any action or proceeding held to constitute an infringement of any patent, copyright or other proprietary right, the **Contractor** shall either secure for the **City** the right to continue using the **Equipment** or shall, at the **Contractor's** sole expense, replace the infringing **Equipment** with non-infringing **Equipment** or modify it so that the **Equipment** no longer infringes any such rights.

14.0 Errors and Omissions of the Contractor

Errors, mistakes, or omissions made by the **Contractor**, its agents, employees, or workmen shall be rectified by the **Contractor** at its sole expense.

15.0 Equivalencies

a) Wherever possible, the **Equipment** or **Services** specified or called for in or under this **R.F.T.** shall be of Canadian origin and manufacture.

b) If patented or proprietary goods, material, articles, or equipment are mentioned in this **R.F.T.**, **Tenders** submitted on approved equivalents will be considered, but the mark or brand of them must be specified in the **Tender**.

c) The **City** will be the sole and final judge as to whether an alternate product is equivalent or not and the **City**'s decision shall be final and not reviewable by any court or tribunal.

16.0 Quantities

a) Unless otherwise specified in this **R.F.T.**, quantities shown are approximate and furnished without liability on behalf of the **City**. Quantities are supplied for the guidance of the **Bidders** only and are not to be considered as minimum or maximum quantities.

b) Unless otherwise stated, payment will be by the unit complete at the **Tender** price on the actual quantities deemed acceptable by the **City**.

17.0 Terms of Payment

Unless alternate payment terms are specified in the Specifications attached to this **R.F.T.** as Part C, the **City** will accept billing for one hundred (100%) percent of the actual value of each element of the **Equipment** provided or **Services** performed in each month and accepted by the **City**. Invoices will be payable by the **City** thirty (30) days after they are received. Where required by the Construction Lien Act, appropriate monies may be held back until forty-five (45) days after successful provision of the **Equipment** or completion of the **Services**, as the case may be. Holdback releases are dependent upon the **Contractor** completing the Statutory Declaration and placing of an advertisement as required under the Construction Lien Act.

a) Payments made by the **City**, including final payment, shall not relieve the **Contractor** from its obligations or liabilities under the **Contract**.

b) Vendors must note that payments will be made in accordance with the authorized prices and upset limit (estimate) outlined on the purchase order. No other payments will be made without prior express written justification to and authorization by Purchasing Services.

c) Acceptance by the **Contractor** of the final payment shall constitute a waiver of claims by the **Contractor** against the **City**, except those previously made in writing in accordance with the **Contract** and still unsettled. The **City** shall have the right to withhold from any sum otherwise payable to the **Contractor** any amount sufficient to remedy any defect or deficiency in the **Equipment and Services**, pending correction of the deficiencies or any amount sufficient to satisfy any claim the **City** has against the **Contractor** resulting from a previous contract, a legal proceeding or unpaid accounts, including property or business taxes.

d) **Bidders** are advised that the **City** has implemented a Procurement/Purchasing Card (P.card) system for its small dollar acquisitions. Although this **Contract** will be implemented as a systems **Contract**, users (i.e. **City** staff) may require the ability to

pick up goods needed immediately from the closest available location and would "release" off the **City Contract** by means of the P.card. The **Contractor** must ensure that any **City** acquisitions made with a P.card are charged at the quoted prices.

e) The **City** of Oshawa also accepts electronic invoicing from vendors. Invoices must be provided in Portable Document Format (P.D.F.) format and sent directly to Accounts Payable at **AccountsPayable@oshawa.ca**. Invoices received at this e-mail address will be treated as an "original copy".

f) The **City** of Oshawa provides vendors with the option to receive direct deposit through an electronic payment program by contacting Accounts Payable at **AccountsPayable@oshawa.ca**

18.0 Discounts for Prompt Payment

a) Upon receipt of invoice(s) that are in accordance with the price(s) and terms and conditions shown on the purchase order, where discounts for prompt payment have been offered, cheques can be issued within twenty (20) days of receipt of the invoice in Finance Services - Accounts Payable section (address as shown on the purchase order).

b) **Bidders** are to state the percentage discount for prompt payment offered in the appropriate area of the electronic submission. All discounts for prompt payment offered will not be calculated to form part of the total bid price and therefore will not be factored into the award. Where no discount for prompt payment has been offered on the bid form, the terms of payment for the invoices will be "Net 30 Days" and invoices processed accordingly.

c) Cheques covering payment of invoices offering discounts for prompt payment will be forwarded by regular mail to suppliers to arrive on or before the twentieth (20^{th}) day following receipt of the invoice in Accounts Payable. However, the **City** cannot be held responsible for delays beyond its control such as, but not limited to, services provided by Canada Post, lost mail, disruption of postal services, weekends and statutory holidays, etc. It is not possible to make cheques available for pick up by vendors that offer a discount for prompt payment.

d) Suppliers are required to clearly indicate/highlight on their invoice the rate of the discount for prompt payment offered, number of days after receipt of the invoice in Accounts Payable that the discount applies and the dollar value of the discount. The rate of discount for prompt payment must be in accordance with that offered at the time of bidding and may not be altered at any time during the contract period.

e) In the event that payment cannot be mailed to arrive at the supplier's office by the twentieth (20^{th}) day following receipt of the invoice by Accounts Payable (subject to section 18 (b) above) the invoice will be paid without deducting the discount offered. There will be no penalty or damages applied against the **City** for discounts not taken.

f) Invoices forwarded by the supplier that are not accurate when received by Accounts Payable or require adjustment/revision to comply with the prices, terms and

conditions of the purchase order will be considered as complete and received by Accounts Payable only when all required adjustments/revisions have been made.

19.0 Unpaid Accounts

The **Contractor** must indemnify the **City** from all claims arising out of unpaid accounts relating to the **Equipment** and/or **Services**. The **City** shall have the right at any time to require satisfactory evidence that the **Equipment** in respect of which any payment has been made or is to be made by the **City** is free of and clear of construction or other liens, attachments, claims, and demands, charges or other encumbrances.

20.0 Changes in the Equipment or Services

The **City** may, without invalidating the **Contract**, direct the **Contractor** to make changes to the **Equipment** or **Services**. When a change causes an increase or decrease in the **Equipment** or **Services**, the **Contract** price shall be increased or decreased by the applicable unit price, or in the absence of applicable unit prices, by an amount to be agreed upon in writing between the **City** and **Contractor**. All changes must be in writing.

21.0 Non-Performance

a) The **City** reserves the right to determine, in its sole and unfettered discretion, non-performance of the **Contract**, including the level of quality of **Equipment** or **Services** provided and further reserves the right to cancel any or all of the **Contract** if the **Contractor** fails to correct deficiencies upon thirty (30) days' written notice. The **City's** evaluation and determination in this regard shall be final and not reviewable by any court or tribunal.

b) In the event that the **Contractor** fails or neglects to comply with any condition set out in the **Contrac**t, the **Contract** may be unconditionally cancelled by the **City** without notice and without penalty to the **City**.

c) In the event the **Contractor** fails to perform work in a safe manner, the **Contract** may be unconditionally cancelled by the **City** without notice and without penalty to the **City**.

d) The **City** reserves the right to disqualify for an indeterminate period (minimum two (2) years) the name of any **Bidder** for breach of the terms and conditions of this **R.F.T.** or for unsatisfactory performance of the **Contract**. This disqualification will apply to the terminated **Contractor** as the **Bidder** on future quotations, tenders or requests for proposal or as a sub-trade to a **Bidder** on future competitions (quotations, tenders, or proposals) issued by the **City**. The **City** also reserves the right to publish the names of all disqualified **Contractors** in any future quotation, tender or requests for proposal.

22.0 Pricing (Term of Agreement)

a) The **Contrac**t term shall be as shown in the Information for **Bidders** – Summary Sheet provided at the front of this **R.F.T**.

b) The **City** shall have the sole and absolute right to extend the term of the **Contract** for any or all optional extension terms identified in the **Contract**. Pricing for such extensions shall be in accordance with Part B, Section 22 (c). There is no automatic renewal option under the **Contract**.

c) **Bidders** must state a maximum percentage increase for any subsequent years specified for this **Contract** on the Schedule of Prices, submitted through the **Bidding System**. Ninety (90) days prior to the anniversary date of the **Contract**, the **Contractor(s**) must provide a written submission of any proposed price increases for the following year of the **Tender** (not to exceed the maximum percentage increase bid on the **Tender** submission). A basis for the proposed price increase must be provided. The **City** will assume that all prices or annual renewal periods will remain unchanged if not advised by the **Contractor** within the timeframe indicated above. Renewal will be subject to **Contractors** providing revised Certificates of Insurance and W.S.I.B. Certificates of Clearance.

d) If applicable, the **City** will issue a blanket purchase order to cover its requirements, against which releases will be made directly by various departments or agencies of the **City**.

e) It will be the responsibility of the **Contractor** to maintain a suitable stock of materials for prompt delivery when required and to satisfy themselves that individuals releasing and/or picking up material are in fact City employees. Prices bid must include all incidental costs and the **Bidder** must be satisfied as to the full requirements of the **R.F.T**. No claims for extra work or **Equipment** or **Services** will be entertained and any additional **Equipment** or **Services** must be authorized in writing prior to commencement. Should the **Bidder** require more information or clarification on any point, it must be obtained prior to the submission of the **Tender**.

f) The **Contractor** shall be responsible for the collection and remittance of all applicable taxes and agrees to hold the **City** harmless in this regard.

g) All prices bid must be in Canadian funds and shall include currently applicable customs duty, excise tax, freight, insurance and all other charges of every kind attributable to the **Equipment** or **Services** save and except the Harmonized Sales Tax (H.S.T.), which is extra where applicable.

h) The unit price prevails in cases of discrepancies between unit prices and extensions. The **City** will make all necessary corrections to any **Tender** that is in error through addition or extension with the corrected value prevailing, and all **Bidders** shall be bound by such corrections. Where there are obvious errors such as incorrect extensions or misplaced decimals, these will be corrected and all **Bidders** shall be bound by such corrections.

23.0 Unit Prices

Bid prices shall be Free on Board (F.O.B.) delivered. Unit prices shall be firm and shall include all federal excise tax, duty, freight and shall be subject to Harmonized Sales Tax when applicable. Applicable taxes shall be shown in the space provided on the Tender form.

24.0 Disclosure/Retention of Records

a) Total bid prices will be made available on the **City**'s website. The bid prices will be the amount read out at the bid opening and subject to arithmetical validation.

b) Submissions of **Tenders** as a result of this **R.F.T.** are in accordance with the Municipal Freedom of Information and Protection of Privacy Act (M.F.I.P.P.A.).

c) Release of information contained in the **Tenders** may be requested by anyone under the M.F.I.P.P.A. Consideration will be given to **Tenders** that contain either a trade secret or information that if disclosed would result in harm to the **Bidder.** This would include scientific, technical, financial or labour relations information.

d) All requests for information must be made in writing and submitted, along with the applicable fee to the **City**'s Freedom of Information Officer, **City** Clerk Services.

e) To prevent the release of information the **Bidder** must state that the **Tender** is submitted in confidence and indicate the nature of the confidential information and what harm would result from the release.

f) The successful **Bidder(s)** shall maintain and retain all records and other documents in any form related to the contract and/or purchase order for a period of three (3) years from the date of final payment. Upon request, the successful **Bidder(s)** shall make available to the **City** any such records and/or documents.

g) For the purposes of this Section 24, a record means any record of information, however recorded, whether in printed form, on film, by electronic means or otherwise and includes, but is not limited to, correspondence, emails, photographs, field notes, reports, arithmetical tabulations and analysis.

h) The successful **Bidder(s)** agrees that in the event that it receives a request for disclosure of information, confidential or otherwise, it shall, prior to any disclosure, notify the **City** Clerk immediately in writing of such a request and shall not agree to such disclosure without the **City's** written consent.

i) Records produced as a result of engagement by the **City** shall not be disclosed or distributed to individuals, including elected officials within the **City**, other than the Project Manager (**City** staff lead on project), the **City**'s Manager, Purchasing Services, Legal Services or the **City** Clerk without prior written consent.

25.0 Contract Cancellation

a) The **City** shall have the right to cancel any uncompleted or unperformed portion of the **Equipment** or **Services** or part of them. In the event of such cancellation, the **City** and the **Contractor** shall negotiate a settlement.

b) The **City** shall not be liable to the **Contractor** for loss of anticipated profit on the cancelled portion or portions of the **Contract**. In the event that the **Contractor** fails or neglects to comply with any condition outlined in the **Contract**, the **Contract** may be unconditionally cancelled by the **City** without notice.

26.0 Laws and Regulations

The **Contractor** shall comply with relevant federal, provincial and municipal statutes, regulations, **City** policies and by-laws pertaining to the **Contract** and its performance. The **Contractor** shall be responsible for ensuring similar compliance by its suppliers and sub-contractors. The **Contract** shall be governed and interpreted in accordance with the laws of the Province of Ontario.

27.0 Environmental Concerns

In order to contribute to waste reduction and to increase the development and awareness of environmentally sound purchasing, the **Contractor** will ensure that, wherever possible, specifications are amended to provide for expanded use of durable products, reusable products and products (including those used in services) that contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the products or services. It is recognized that cost analysis is required in order to ensure that the products are made available at competitive prices.

28.0 Default by Contractor

a) If the **Contractor** commits any act of bankruptcy, or if a receiver is appointed on account of its insolvency or in respect of any of its property, or if the **Contractor** makes a general assignment for the benefit of its creditors, then, in any such case, the **City** may, without notice, terminate the **Contract**.

b) If the **Contractor** fails to comply with any request, instruction or order of the **City**, or fails to pay its account, or fails to comply with or persistently disregard statutes, regulations, by-laws or directives of relevant authorities related to the **Equipment** or **Services**, or fails to prosecute the **Equipment** or **Services** with skill and diligence, or purports to assign or sublet the **Contract** or a portion of it without the **City's** written consent, or refuses to correct defective **Equipment** or **Services**, or is otherwise in default in carrying out its part of any of the terms, conditions and obligations of the **Contract**, then, in any such case, the **City** may, upon expiration of ten (10) days from the date of written notice to the **Contractor**, terminate the **Contract.**

c) Any termination of the **Contract** by the **City**, as mentioned in 28.0(b) above, shall be without prejudice to any other rights or remedies the **City** may have.

d) If the **City** terminates the **Contract**, it is entitled to:

   i. Withhold any further payment to the **Contractor** until the completion of the **Equipment** or **Services** and the expiry of all obligations under the **Contract**; and

ii. Recover from the **Contracto**r any loss, damage and expense incurred by the **City** by reason of the **Contractor's** default, which may be deducted from any monies due or becoming due to the **Contractor**.

29.0 Samples

Samples, when required, must be submitted strictly in accordance with the instructions. If samples are requested after opening of **Tenders**, they shall be delivered within three (3) working days following request, unless additional time is granted. Samples must be submitted free of charge and will be returned at the **Bidder's** expense, if so requested, provided they have not been destroyed by tests and provided they are not required for comparison purposes. The acceptance of samples by the **City** shall be at its sole discretion and any such acceptance shall in no way be construed to imply relief of the **Contractor** from its obligations under the **Contract**.

30.0 Electrical Safety Authority

In accordance with the Electrical Safety Authority (E.S.A.) regulations on the Continuous Safety Services (C.S.S.) Program, all **Contractors** providing services at any **City** of Oshawa location involving any degree of electrical connections(s) must:

a) Enter all electrical work into a log book (for "routine" work at facilities on the C.S.S. program); and/or

b) Apply for and receive a Certificate of Inspection prior to energizing any electrical work (for "substantial" work at facilities on the C.S.S. program or any work performed at any **City** location **not** on the CSS program).

31.0 Declarations

a) I/We declare that no person, firm or corporation, other than the one whose signature or the signature of whose proper officers is or are attached to this **R.F.T.**, has any interest in this **Tender** or in the **Contract**.

b) I/We further declare that this **Tender** is made independently and without any connection, knowledge, comparison of figures or arrangement with any other contractor, firm or person making a similar **Tender** and is in all respects fair and without collusion or fraud.

c) I/We further declare that no **City** employee or member of Council (or their families) is, or will become, interested directly or indirectly as a contracting party or otherwise in or in the performance of the **Contract** or in the supplies, work or business to which it relates or in any portion of the profits of it, or of any such supplies to be used therein or any of the monies to be derived from it.

d) I/We further declare that the statements contained in the **Tender** are in all respects true.

e) I/We further declare that I/We have examined the locality and site(s) of the proposed **Equipment**, as well as all the specifications relating to them, prepared, submitted and rendered available on behalf of the **City** and are hereby

acknowledged to be an integral part of the **Contract**. I/We hereby propose and offer to enter into the **Contract** on the terms and conditions and under the provisions set forth in the **Tender**, and to accept in full payment for it the sums calculated in accordance with the actual measured quantities and unit prices attached to this **Tender**.

f) I/We agree that this **Tender** is an offer which is to continue open for acceptance until the placing in the mail or delivery to the address given in this **Tender** of a notice of award, which shall constitute formation of the **Contract**, or for ninety (90) days following the **Tender** closing date, whichever occurs first, and that the **City** may at any time within that period, and without notice, accept this **Tender** whether any other **Tender** had been previously accepted or not.

32.0 Errors, Omissions in the City Documents

The **City** shall not be held liable for any errors or omissions in any part of this **R.F.T.** While the **City** has used considerable effort to ensure an accurate representation of information in this **R.F.T.**, the information contained in the **R.F.T.** is supplied solely as a guideline for **Bidders.** The information is not guaranteed or warranted to be accurate by the **City**, nor is it necessarily comprehensive or exhaustive.

33.0 Fair Wage Policy

The **City** of Oshawa has a Fair Wage Policy which is posted at our website.

To learn more visit the Oshawa Purchasing Information Page.

Please visit our website for the complete policy. **Bidders** are requested to refer to the "Information for **Bidders** – Summary Sheet" page of this document to determine if Fair Wage is applicable to this project.

34.0 Ontarians with Disabilities Act, 2001

The Corporation of the City of Oshawa is committed to proactively addressing accessibility issues and the development of strategic actions to remove, where possible, and prevent barriers to access for people with disabilities.

On September 29, 2003 the **City** implemented a Corporate Accessibility Plan pursuant to the Ontarians with Disabilities Act, 2001 requiring, in part, that the **City** when deciding to purchase goods or services shall have regard to the accessibility for persons with disabilities to the goods or services. The **City** is committed to accessibility principles and to complying with all relevant provincial statutes and regulations enacted thereunder, with particular regard to, but not limited to, the Ontarians with Disabilities Act, 2001 and the Accessibility for Ontarians with Disabilities Act, 2005, as amended from time to time, as well as all successor and other accessibility-related legislation.

35.0 Accessibility Standards for Customer Service for Contracted Services

Ontario's first accessibility standard, Ontario Regulation 429/07, "Accessibility Standards for Customer Service", came into effect on January 1, 2008. The standard states what businesses and other organizations in Ontario, including the **City**, must do to make the provision of their goods and services more accessible to people with disabilities. **Accessibility standards for Customer Serivce for Contracted Services is outlined at http://www.e-laws.gov.on.ca**

Pursuant to the requirements of Ontario Regulation 429/07, all employees, agents, volunteers and others who deal with members of the public or other third parties on the **City's** behalf or who participate in developing the **City's** policies, practices and procedures governing the provision of goods and services to members of the public or other third parties must receive training about the provision of goods and services to persons with disabilities.

This training must include a review of the purposes of the Act and the requirements of Ontario Regulation 429/07 as well as instruction about the following:

1. How to interact and communicate with persons with various types of disability;
2. How to interact with persons with disabilities who use an assistive device or require the assistance of a guide dog or other service animal or the assistance of a support person;
3. How to use equipment or devices available on the **City's** premises or otherwise provided by the **City** that may help with the provision of goods or services to a person with a disability; and
4. What to do if a person with a particular type of disability is having difficulty accessing the **City's** goods or services.

All successful **Bidders** must ensure compliance with Ontario Regulation 429/07. This means that, as a person or business that deals with the public or other third parties on behalf of the **City**, the Contractor must train all of its employees, agents and volunteers who work on **City** property or at **City** facilities. Training must also be provided by the Contractor to other employees, e.g. consultants, who participate in developing the **City's** policies, practices and procedures governing the provision of goods or services to members of the public or other third parties.

This training must be provided by the Contractor to each employee, agent or volunteer as soon as possible after he or she is assigned to work on **City** property or at a **City** facility. As well, training must be provided on an ongoing basis to ensure compliance with amendments to the legislation.

The **City** reserves the right to inspect the successful **Bidder's** records of training, which must describe its training policy and summarize the training, including to whom the training has been given and when the training was given. The **City** also reserves the right to require the **Contractor** to amend its training policies, practices and procedures if

the **City** deems the training not to be in compliance with the requirements of Ontario Regulation 429/07.

The **City** has developed an accessibility training guide.
http://www.oshawa.ca/residents/resources/accessible_customer_service.pdf

Alternative formats may be available upon request: contact 905-436-5637.

36. Deliverables in Accessible Format

Suppliers will ensure all print material identified as deliverables will be created using an Arial or Verdana font in a minimum point size of 12. There will be a statement at the beginning or end of the document which reads “If this information is required in an accessible format please contact, (name, phone number and email of proponent). Suppliers will be responsible to supply all accessible formats if requested at no additional cost to the City of Oshawa and/or requestor.

Suppliers will ensure all digital products identified as deliverables will be in an accessible format as outlined in the Accessibility for Ontarians with Disabilities Act, 2005 Integrated Accessibility Standards Regulation – Ontario Regulation 191/11 conforming to the World Wide Web Consortium’s web Content Accessibility Guidelines (WCAG) 2.0 Level AA.

Accessible Document and Website Standards may be viewed at http://oshawa.ca/city-hall/resources/vendoraccessiblestandardsmarch2014.pdf

Should public meeting accessibility accommodations be requested, they will be supplied by the Supplier at no additional cost to the City of Oshawa and/or requestor. Suppliers will ensure all PowerPoint presentations used in public meetings or presentations will conform to the **City** of Oshawa Formatting Tips for Accessible PowerPoint Presentations.

37.0 Design and Development Prohibitions

Suppliers, potential suppliers and consulting firms shall not be requested to expend time, money, or effort, for the design or development of specifications or otherwise help define a requirement beyond the normal level of service expected. Should such extraordinary services be required, the Manager, Purchasing Services must be advised. If there is no alternative but to request such extraordinary services, the firm providing same shall be compensated at a pre-determined fee. The resulting specifications shall become the property of the **City** for use in obtaining competitive bids. Suppliers or consultants who provide design services and/or specifications for work to be tendered or quoted shall not be permitted to submit a bid for said work.

38.0 Tax Arrears

Firms/individuals having tax arrears exceeding ten thousand dollars ($10,000.00) will not be contracted by the **City** for any new business. Payments owing to firms/individuals with existing contracts, having tax arrears exceeding ten thousand dollars ($10,000.00), will be applied to the outstanding taxes and not forwarded to the firm/individual until all outstanding taxes have been fully paid.

Supplementary Conditions to CCDC 4 - Unit Price Contract, 2011

The Standard Construction Document CCDC 4 Unit Price Contract, English version, is hereby made part of these Contract Documents with amendments and additions as follows:

The City of Oshawa Request for Tender (R.F.T.) and the Purchase Order is the agreement between the City of Oshawa (Owner) and the Contractor. The parties shall not sign the CCDC 4 document.

1. Agreement Between the Owner and the Contractor

1.1 Article A-1

1.1 Perform the Work required by the Contractor for concrete, waterproofing, drain and other miscellaneous repairs located at 760 King Street West (Union Cemtery), Oshawa, Ontario

1.3 Commence the work as outlined in the Specifications provided in this Request for Tender.

1.2 Article A-3

The Contract Documents are:

- The Purchase Order
- The City of Oshawa Request for Tender, including all associated documents through the City of Oshawa Electronic Bidding System.
- Standard Construction Document CCDC 4, 2011 Unit Price Contract.

1.3 Article A-4

The Schedule of prices will be listed in the City of Oshawa Request for Tender

2. Article A-5

2.1 5.3 Interest

Delete subsections .1 (1) and (2) in their entirety and replace with the following:

(1) At prime rate per annum.

(2) The prime rate shall be the rate of interest quoted by “RBC Royal Bank”

2.2 Article A-6

2.3 6.1 Replace “Five Calendar Days” with “Three Calendar Days”

2.4 **Owner:** The Corporation of the City of Oshawa, 50 Centre Street South, Oshawa, Ontario, L1H 3Z7

2.5 **Contractor:** The Company Name, address and associated contact information on the Purchase Order, including the receiving email address of the Purchase Order.

2.6 **Consultant:** Read Jone Christofferson Ltd., 144 Front Street West, Suite 500 Toronto, ON M5J 2L7

2.7 **Article A-8**

Delete Article A-8 in its entirety.

3. Definitions

3.1 **Contract:** Add " and includes the definition of Contract as defined elsewhere in this Request for Tender (R.F.T.)"

3.2 **Contract Documents:** Add "and includes the definition of Contract Documents as defined elsewhere in this Request for Tender (R.F.T.)"

3.3 **Contractor's Fee:**

3.4 **Estimated Quantity:** The quantity of a unit price item initially assumed in calculating the Contract Prices.

3.5 **Owner:** means The Corporation of the City of Oshawa

3.6 **Schedule of Prices:** The Schedule of Prices is the schedule provided in the Request for Tender

3.7 **Pay Quantity:** The actual quantity of the unit price item that was required to be completed as part of the work.

3.8 **Unit Price Measurement:** The units or dimensions necessary to calculate the pay quantity.

4. GC 1.1 Contract Documents

4.1 1.1.7.1 Replace the order of priority of documents from highest to lowest with:

- The Purchase Order
- -The City of Oshawa Request for Tender including the definitions therein
- The Definitions of the CCDC 4
- The General Conditions
- Division 1 of the Specifications
- The Technical Specifications
- Material and Finishing Schedule
- The Drawings

5. GC 2.3 Review and Inspection of Work

5.1 Add 2.3.8: "The Contractor shall only proceed with unit price work with Consultant approval."

5.2 Add 2.3.9: "The final Contract Price shall not exceed the initial estimated Contract Price without Owner approval by way of Change Order."

5.3 Add 2.3.10: “The methods of measurement for determining Unit Price Item pay quantities shall be agreed to by the Consultant.”

5.4 Add 2.3.11: “The Contractor shall keep accurate records of Unit Price Item measurements, pay quantities and their locations.”

5.5 Add 2.3.12: “For Unit Price Items involving repair, measurements and pay quantities shall be determined and agreed to after removal/preparation is complete, but prior to placement of repair materials.”

5.6 Add 2.3.13: “If the Owner and Consultant agree, the Consultant may designate one or more project representatives to assist the Consultant in the timely recording of the data necessary to confirm agreement with the pay quantities. The duties, responsibilities and limitations of authority of a project representative shall be set forth in writing to the Contractor and Owner.”

6. GC 3.2 Construction by Owner or Other Contractors

6.1 Delete 3.2.2.2 and replace with “assume responsibility for compliance with the applicable health and safety legislation to the extent outlined in the Ontario Occupational Health and Safety Act.”

7. GC 3.5 - Construction Schedule

7.1 In 3.5.1.1, replace: "prior to the first application for payment" with "before the Work commences."

7.2 Add 3.5.1.4: "Once approved this schedule shall not be altered without approval from the Owner and Consultant.”

8. GC 3.6 – Supervision

8.1 Add 3.6.3: “The Contractor shall provide 24-hour emergency service throughout the duration of this Contract”

9. GC 3.7 - Subcontractors and Suppliers

9.1 Add the following sentences to the end of paragraph 3.7.2: "In the event that the Contractor wishes to change any of such Subcontractors or Suppliers, the Contractor shall advise the Consultant in writing giving the reasons for the change. No change may be made without prior written approval of the Owner. Any change made by the Contractor without such approval will be considered a breach of the Contract."

10. GC 3.10 - Shop Drawings

10.1 Add to 3.10.12: “Unless otherwise agreed to, the schedule for the Consultant to review and return Shop Drawings shall not be less than 10 working days.”

11. GC 3.11 - Use of the Work

11.1 Add 3.11.3: "The Owner or Consultant may direct the Contractor to suspend work that causes excessive disruption pending development and implementation of acceptable solutions that allow the work to proceed.”

12. GC 4.2 - Contingency Allowance

12.1 Delete 4.2.3 and replace with the following:

"Expenditures made under the contingency allowance shall be authorized by the Consultant. Work shall be valued in accordance with GC 6.2.1 Change Order or GC 6.3 Change Directive, and shall not exceed the contingency allowance".

13. GC 5.1 Financial Information Required of the Owner

Delete 5.1.1 and 5.1.2 in their entirety.

14. GC 5.2 - Applications for Progress Payment

14.1 In 5.2.3.1, change: " the value of Products delivered to the Place of the Work" to "the value of Products incorporated into the Work"

14.2 Delete 5.2.7 and add new 5.2.7: "The Contractor shall submit, with each application for payment after the first, including application for release of holdback:

i. a statutory declaration by the Contractor on a copyright sealed form CCDC Document 9A-2001, to the effect that all payments for wages and salaries, all payments due to subcontractors, all payments for materials furnished, and all other accounts have been paid in full as required by the contract up to and including the latest progress payment received;

ii. an updated schedule, and;

iii. a current Workplace Safety & Insurance Board Clearance Certificate."

14.3 Add 5.2.8: "Before final inspection is completed and before applying for release of holdback, the Contractor shall submit to the Owner/Consultant:

i. all specified written guarantees, bonds, records, certificates and maintenance and operation manuals (including instructions to the Owner's staff in the operation of any plant or equipment);

ii. the name, address, telephone number, and contact person of the general Contractor, subcontractors, material manufacturers and material suppliers.

15. GC 5.3 Progress Payment

15.1 Change 5.3.1.3 to: "the Owner shall make payment to the Contractor as provided in Article A-5 of the Agreement - Payment,

- after receipt of the Consultant certificate for payment by the Owner.
- and as described in the City of Oshawa Request for Tender – Part B, Terms of Payment GC 5.5 – Payment of Holdback Upon Substantial Performance of the Work

15.2 Delete 5.5.3 in its entirety.

16. GC 5.7 Final Payment

16.1 In 5.7.4, change: “no later than 5 calendar days after issuance of final certificate for payment” to “as described in the City of Oshawa Request for Tender – Part B, Terms of Payment and…”

17. GC 6.2 - Change Order

17.1 In 6.2.2.4, replace: “as agreed by the parties” with: “fixed at 15%”.

18. GC 6.3 - Change Directive

18.1 Add 6.3.6.4: “The Contractor’s fee shall be 15 percent.”

18.2 In 6.3.7.5 and 6.3.7.6, “tools”, “Construction Equipment” and “hand tools” shall only include those that have a new purchase value that is greater than $500.

19. GC 6.7 – Quantity Variations

19.1 In 6.7.2, 6.7.3, and 6.7.4 replace: “15%” with: “30%”

19.2 In 6.7.3. replace: “115%” with: “130%”

19.3 In 6.7.4. replace: “The adjusted Unit Price shall not exceed a Unit Price that would cause the payment amount to exceed that derived from the original Unit price and estimated quantity”; with: “The adjusted Unit Price shall not exceed a Unit Price that would cause the payment amount to exceed 70% of the value derived from the original Unit Price and estimated quantity.

19.4 In 6.7.7 add: “The Contractor shall proceed with the work while the matter is subject to final determination Part 8 – Dispute Resolution. Pending such settlement, payment for the work performed shall be made as determined by the Consultant and included within certificates for payment.

20. GC 7.2 Contractor’s Right to Suspend the Work or Terminate The Contract

20.1 Delete paragraph 7.2.3.1 in its entirety.

21. GC 9.1 – Protection of the Work and Property

21.1 In 9.1.2 add “, utilities embedded in the structure” after “the Contractor shall determine the location of all underground utilities”

22. GC 9.4 - Construction Safety

22.1 Add 9.4.2: "No comments, suggestions or instructions from the Owner or Consultant are to be relied upon or assumed to reduce or replace the Contractor's responsibility for construction safety.”

22.2 Add 9.4.3: “The Contractor shall indemnify and hold harmless the Owner and the Consultant, their agents and employees from and against claims, demands, losses, costs, damages, actions suits or proceedings by third parties that arise out of, or are attributed to, the Contractor's safety performance."

23. GC 9.5 - Mould

23.1 In 9.5.2.4 replace: “GC 21.1 – Indemnification” with: “GC 12.1 – Indemnification”

23.2 In 9.5.3.4 replace: “as required by paragraph 12.1” with: "as required by GC 12.1 - Indemnification”

24. Add: GC 9.6 – Designated Substances as Defined by the Occupational Health and Safety Act

24.1 The Work does not include abatement of designated substances unless specifically identified in the Contract Documents.

24.2 The City of Oshawa has conducted Designated Substances Surveys at the Place of Work. A copy of Designated Substances Surveys will be made available to Bidders upon request.

25. GC 10.4 - Workers’ Compensation

25.1 Add 10.4.3: “Evidence of compliance with worker’s compensation legislation shall be provided by way of a Worplace Safety and Insurance (W.S.I.B.) Certificate, as described in the City of Oshawa Request for Tender; Part B; 7.0”

26. GC 11.1 – Insurance

26.1 Add the word “additional” to the first sentence of paragraph 11.1.1.1 as follows: ……the Owner and the Consultant as “additional” insureds……

26.2 Delete 11.1.1.3: “Aircraft or Watercraft Liability Insurance when owned or non-owned aircraft or watercraft are used directly or indirectly in the performance of the work.”

26.3 Delete 11.1.1.4: “Broad form” property insurance” in its entirety.

26.4 Delete 11.1.1.5: “Boiler and Machinery Insurance” in its entirety.

26.5 Delete 11.1.1.6 in its entirety.

26.6 Delete 11.1.6 in its entirety.

26.7 Add new paragraphs as follows: 11.1.9 Insurance policies shall be primary coverage pursuant to which the insurer is acting as first loss insurer against the risk covered and not excess to any other insurance available to the additional named insureds.

27. GC 11.2 Contract Security

27.1 Add: 11.2.3 The bonds shall cover payment of all obligations placed upon the Owner as a result of the Contractor’s default, including:

i. payment of all legal, architectural, mechanical, electrical and structural engineering expenses incurred by the Owner in determining the extent of the work performed and Work yet to be performed, including without limitation, any additional Work required as a result of the interruption of the Work and,payment of any additional expenses reasonably incurred by the Owner in the form or site security services, light, heat, power, etc., payable

over the period between the default of the original Contract and commencement of a new contract.

27.2 Add: 11.2.4 No claims for additional bonding will be considered unless such additional bonding has been approved by the Owner.

28. GC 12.1 – Indemnification

28.1 In 12.1.2.2, replace “$2,000,000" with $5,000,000".

29. GC 12.2 – Waiver of Claims

29.1 In 12.2.2 delete: "of GC 12.1 - Indemnification"

30. GC 12.3 - Warranty

30.1 In 12.3.1, 12.3.3, 12.3.4, and 12.3.6 replace: "one year" with: "two years."

Supplementary Conditions to the City of Oshawa Request for Tender

31. Part B – 3.0 Bidder Eligibility

31.1 In addition to Part B; 3.0 Bidder Eligibilty, Bidders will be required to provide the names and qualifications of the proposed construction team upon request by the City of Oshawa and prior to Contract award.

The proposed team would include all key site personnel including site superintendent, foreman, and skilled trades.

32. Part B – 3.0 Bidder Eligibility

32.1 Add: e) **Experience with Similar Projects (Completed in the reference section through the City's Bidding System)**

i. The successful Bidder must have a minimum of five (5) years proven experience conducting a construction business and performing the work described in this Request for Tender.

ii. Bidders shall provide at least three (3) examples of similar work performed successfully within the past five (5) years.

iii. Similar work Means: Concrete repairs and heritage masonry work on buildings of similar scope and size as that which is described in this Request for Tender.

iv. These examples of work will also serve as references. References of the low qualified bidder will be contacted by the City of Oshawa Purchasing Department during the review process.

32.2 Add: f) **Include the following information information (in the reference section of the City's Bidding System) with the submission of example / reference work:**

i. Organization name, and address of head office

ii. Contact person who was also responsible for executing the project

iii. Year(s) in which contract work was performed

iv. Value and description of work performed

33. Part B – 8.0 Occupational Health and Safety Act / Environmental Protection Act

33.1 Add: h) "The Contractor is required to submit the following with the Ministry of Labour, prior to commencement of work onsite and provide a copy to the City of Oshawa Project Manager, and the Consultant.

i. Form 0175 – Notice of Project

ii. Form 1000 – Registration of Constructors and Employers Engaged in Construction

33.2 Add: i) "The Contractor is the Constructor as described in the Occupational Health and Safety Act and regulations; latest addition.

33.3 Add: j) “Bidders will be required to provide a copy of their Safety Policy upon request by the City of Oshawa and prior to Contract award.”

33.4 Construction will not begin onsite until such time that the Contractor’s safety policy and / or plan of work have been provided to the City of Oshawa Project Manager.”

34. Part B – 17.0 Terms of Payment

35. Add: g) “ Application for Progress PaymentPart B – 22.0 Pricing

35.1 Add: j) “Optional items shall be priced as stand-alone items, including allowances for increases in bonding, access, mobilization and demobilization, supervision and incidental costs associated with the Optional Item Work. Optional items may be included in the awarded Contract or may be included after award, by Change Order, at the discretion of the City and depending on budget.”

1.0 GENERAL

1.1 DESCRIPTION OF WORK

.1 The Work includes, but is not necessarily limited to the following:

Phase 1

.1 Installation and maintenance of hoarding, dust protection and construction signage around each phase of work.

.2 Remove, store, and reinstate limestone slabs at front entrance stairs of the mausoleum to match existing.

.3 Localized repair of all concrete surfaces, soffit and beam edge delaminations below the front steps of the mausoleum.

.4 Supply and install new waterproofing below the limestone at the front entrance stairs of the mausoleum.

.5 Repair all areas damaged by construction activity; specifically, the contractor shall repair all damage resulting from the construction to the satisfaction of the consultant including repainting of surfaces in accordance with these specifications which have been damaged.

.6 Final cleaning of structure, finishes, fixtures, stone, landscaping, etc., and the disposal of all waste products and/or debris generated by construction activity as well as any material present in the work area prior to the commencement of the work. The areas requiring cleaning shall consist of all areas affected by the work. The areas requiring cleaning shall consist of all areas affected by the work.

Phase 2

.1 Installation and maintenance of hoarding, dust protection and construction signage around each phase of work.

.2 Remove and reset limestone around the back door of the mausoleum. Remove, store, and reinstate the back door as required to facilitate the work.

.3 Removal and replacement of deteriorated limestone mortar at the mausoleum as directed by the consultant.

.4 Removal and replacement of bottom marble panels at the mausoleum front door to match existing.

.5 Isolated repointing at the front entrance arch and adjacent areas at the front door of the chapel.

.6 Repair all areas damaged by construction activity; specifically, the contractor shall repair all damage resulting from the construction to the satisfaction of the consultant including repainting of surfaces in accordance with these specifications which have been damaged.

.7 Final cleaning of structure, finishes, fixtures, stone, landscaping, etc., and the disposal of all waste products and/or debris generated by construction activity as well as any material present in the work area prior to the commencement of the work. The areas requiring cleaning shall consist of all areas affected by the work. The areas requiring cleaning shall consist of all areas affected by the work.

1.2 WORK SEQUENCE

.1 The Work areas will be available as of April 1, 2018. Contractor to confirm start date.

.2 Access to areas outside of the designated work areas must be maintained in accordance with phasing requirements.

.3 Time and all time limits stated within the Bid submittal and Contract Documents are of the essence of the Contract. Contractor shall perform work expeditiously with adequate forces to complete the Contract Work within the time specified.

1.3 SCHEDULE

.1 In conjunction with and in a form acceptable to the Consultant and the Owner, provide within five (5) working days after contract award, a schedule indicating the phasing and procedures required to complete the Work within the submitted timeframe.

.2 The construction schedule shall reflect completion of all work under the Contract within the specified time and in accordance with these specifications.

.3 The Contractor shall submit a revised schedule to the Consultant if, after commencing the Work, the schedule fails to reflect actual progress or the Contractor wishes to make a major change to their approach. The revised construction schedule must be submitted in advance of beginning a revised approach.

1.4 CONTRACTOR'S USE OF SITE

.1 The use of all equipment is to be restricted in accordance with noise by-laws. Contractor has access to the work areas with quiet work proceeding around the clock if desired.

.2 Noise or dust generating work is to be performed between 8:00 a.m. and 5:00 p.m., Monday to Friday. Work outside of these hours must be approved by the Owner.

.3 The Contractor has 24-hour access to site; however, the use of the premises will be restricted due to user occupancy and cemetery activities.

.4 The Contractor shall schedule their operation to minimize the interruption of the normal use of the site and building and to comply with laws, ordinances, rules and regulations relating to Work.

.5 The building is to remain open and operational through the Contract. It is the Contractor's responsibility to ensure the building remains operational and that areas outside those designated for closure remain available and safely accessible at all times.

.6 Do not unreasonably encumber the Place of Work with materials or equipment. Construction related debris shall not be permitted to accumulate on site where visible to building users. Remove daily if necessary.

.7 Do not overload the structure.

.8 Do not close or obstruct or store materials in roadways, sidewalks or passageways without prior approval from the Owner. Do not interfere with safe passage to and from the building and adjacent public sidewalks and roads. Move stored products or equipment that interferes with building operations.

.9 Take all precautions and provide all required protection to ensure the safety of the general public.

.10 No storage of materials or equipment is allowed outside the designated work areas without the Owner's approval.

.11 During transportation of materials or equipment through occupied areas, ensure the public, property, and finishes are protected from damage. All damage caused by the Contractor is to be repaired or rectified at the Contractor’s expense.

.12 Propane powered equipment not permitted within interior areas.

.13 Arrange all construction access into occupied areas with the Owner to allow the Owner to provide proper notice, where required.

.14 Maintain work areas and the vicinity clean and tidy to the satisfaction of the Owner and Consultant.

.15 The Contractor is to obtain and pay for all permits required for completion of the Work, excluding the Building Permit. Do not start construction until the Building Permit has been issued. Provide copies of all other permits to the Consultant and post on site where required.

1.5 TEMPORARY LIGHTING

.1 Provide and maintain temporary lighting as required for safe demolition and working conditions per Ontario Occupational Health and Safety Act.

.2 Provide motion-activated lights on swing stage or scaffold as a security measure when the Contractor is not on site. Ensure that no loose debris is left near the motion sensor.

1.6 TEMPORARY FIELD OFFICES AND SHEDS

.1 Provide or construct work sheds for storage of tools, equipment and materials, which may be damaged by weather.

.2 Provide and maintain a field office for the Contractor's personnel that is equipped with lights, power, and tables for drawing examinations.

.3 Maintain sheds in a clean and orderly condition to the Consultant's satisfaction.

.4 Provide suitable hardware and locks on doors to sheds to reasonably secure them and keep locked when unsupervised.

.5 Field sheds shall be weather tight and have floors elevated above grade.

.6 Relocate sheds as required by the progress of the Work. Remove sheds from the Site when directed or when they are no longer required.

1.7 TEMPORARY HEATING AND VENTILATION

.1 Provide and maintain supplementary heating as required to maintain sufficient application and curing temperatures.

.2 Temporary heating used during construction -- including the cost of installation, fuel, operation, maintenance and removal of equipment -- shall be paid for by the Contractor. The use of direct-fired heaters discharging waste products into enclosed work areas will not be permitted.

1.8 ELECTRICAL POWER

.1 Discuss available power with the Owner prior to bidding. Existing 110V power outlets may be used for small hand tools. No other power is available without prior written approval from the Owner. Alternatively, the Contractor may pay for alterations to the electrical system that are required to accommodate the Contractor's equipment. Co-ordinate alterations with the Owner and reinstate the system to the Owner's satisfaction upon completion.

.2 Power consumption will be paid for by the Owner.

1.9 WATER SUPPLY

.1 The Contractor shall pay for the cost of any connections or alterations that they require to perform the Work. Reinstate the system to the Owner's satisfaction upon completion of the Work.

.2 Water consumption will be paid for by the Owner.

1.10 SANITARY FACILITIES

.1 Provide portable washrooms at the time of initial mobilization and maintain throughout the course of work where washroom facilities for the Contractor’s use are not available on site. Locate where agreeable to the Owner.

1.11 TRAFFIC CONTROL AND SIGNAGE

.1 Provide all required signage necessary to protect the public from the construction and work area, control pedestrian and/ or vehicular traffic flow, and to inform users that construction activity is in progress. Signage is to be of a professional quality to the Consultant’s satisfaction.

.2 The Contractor is to provide flagmen and/ or traffic control lights as necessary to maintain safe traffic flow through the work areas.

1.12 PROTECTION OF WORK AND PROPERTY

.1 The Contractor shall take all reasonable precautions necessary to protect the Work and property from damage during performance of the Contract, and shall make good any damage to the Work or property caused by the Contractor or any of its Subcontractors.

.2 Ensure all property is protected from dust and damage. Interior areas that require access outside of working hours are to be cleaned at the end of each work shift to provide a functional environment for the user.

.3 Dust, dirt, construction debris, water and fumes from the Work must be contained so as not to affect areas that are to remain in operation outside of the designated work areas. Resulting damage caused by contamination is the responsibility of the Contractor.

.4 The Contractor is responsible for any damage to all property, mechanical equipment, motors, fixtures, air intakes, etc., resulting from dust contamination from the Work.

.5 Protection shall be provided for all entrance and exit-ways, floors, walls and all standing fixtures, and air intakes.

.6 Areas that are to be protected but still require access will be hoarded using temporary vestibules. Pressurization to be adjusted by Contractor (by providing necessary fans) to prevent dust from entering these areas.

.7 Contractor shall patch and repair all finishes or painted surfaces damaged during the course of the Work. This includes surfaces damaged by tape, fasteners, or similar materials during hoarding and protection.

.8 Contractor shall not keep secure doors open for extended periods without the Owner's permission. Any resulting damage caused to building finishes or equipment, and any resulting property losses due to compromised building security, shall be the responsibility of the Contractor.

1.13 CONSTRUCTION BARRIERS AND ENCLOSURES

.1 All work areas are to be completely enclosed by hoarding and dust protection and only accessible to the Contractor, the Owner and the Consultant.

.2 Contractor shall supply and construct hoarding, barriers and enclosures as indicated in these specifications, on the drawings, and as directed by the Consultant or Owner as the construction progresses.

.3 No extras shall be entertained for hoarding, barriers and enclosures after bids close unless the scope of work is significantly changed.

.4 The following types of enclosures/ hoarding systems will be required for this construction project:

.1 Overhead Protection

The Contractor shall erect and maintain pedestrian walkways, including roof and side covers complete with electrical lighting, to protect the public and property from injury or damage. Overhead protection shall be capable of supporting any load likely to be applied to it, and capable of supporting a load

of at least 2.4 kN/m^2. All overhead protection and enclosures to be marked with safety signage.

.5 Anchor holes are to be repaired after construction hoarding has been removed. Contractor to repair all finishes and painted surfaces damaged by fastening materials used as part of the hoarding and protection systems.

.6 Restrict access for unauthorized personnel by placing barricades or posting guards around areas of the Work. Unauthorized personnel shall mean the public and anyone not directly concerned with the execution, supervision or inspection.

1.14 PROTECTION OF EXISTING EXPOSED FACILITIES / SERVICES

.1 The Contractor shall make allowance in the price to cover all costs of temporary removal and replacement and/or relocation of existing electrical wiring and hardware required for completion of the Work.

.2 All exposed conduit, fixtures, attached devices, mechanical system components, louvers and ducts are to be protected or Contractor to correct damages at their own expense. Contractor to promptly report any damage to the Owner and the Consultant.

.3 Prior to commencing the Work, contact the Owner to locate all protective or alarm systems and sensors. All services shall be protected against damage or interruption. Provide Owner with 48 hours minimum advance notice of any necessary interruption. All claims resulting from damage shall be the responsibility of the Contractor.

.4 The Contractor shall restore landscaping beds in the area of work to their original plantable state after the work is complete. The Owner will arrange to remove and store for replanting, all landscaping including plants, shrubs, trees, etc. impacted by the work.

1.15 WALK-THROUGH INSPECTION OF SITE

.1 The Contractor is to perform a thorough inspection of the site prior to the start of Work, and provide a written notice to the Consultant detailing all damaged property as well as all items that appear to be of poor working order or appearance (i.e. sign fixtures, dirt, etc.).

.2 Upon receiving this notice, the Consultant and the Owner will verify the validity of the items listed.

.3 If written notice is not given within five (5) days of commencement of Work, it will be assumed that the Contractor has reviewed the site and has accepted the condition of the property as being free of damage.

.4 Any damages not listed as part of the written notice of clause 1.15.1 above, found after the completion of the Work will be the sole responsibility of the Contractor to rectify. These rectifications shall be completed in a timely and satisfactory manner.

1.16 THE WORK, WORK IN PROGRESS, PROPERTY AND PERSONS

.1 Protect the Work during construction from damage by weather.

.2 Provide protection as required to protect work in progress and other property from damage and to provide suitable conditions for the progress of finishing work.

.3 Provide means for protecting occupied areas from water leakage between the removal and reinstallation of waterproofing systems.

.4 Take reasonable and required measures, including those required by authorities having jurisdiction, to protect the public and those employed on the Work from bodily harm.

.5 Comply with requirements of the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.

.6 The Contractor shall be prepared to provide respirators, dust protection, ear protection, hard hats, etc. for those employed by the Consultant and Owner at the Site.

.7 Direct all Subcontractors to protect their own work, existing property, adjacent public and private property and work of other Sections from damage while working.

1.17 LOCATION OF EXISTING UTILITIES

.1 The contractor shall be responsible for arranging for the location of all existing utilities prior to construction and protection of it during construction.

1.18 WORK SITE SAFETY – CONTRACTOR IS "PRIME CONTRACTOR"

.1 The Contractor shall, for the purposes of the Ontario Occupational Health and Safety Act, and for the duration of the Work and Contract:

.1 Be designated as "Prime Contractor" pertaining to safety at the "Work site".

.2 Do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance with the Act and its regulations, as required to ensure the health and safety of all persons at the "Work site".

.2 The Contractor shall direct all subcontractors, workers and any other persons at the "Work site" on safety related matters, to the extent required to fulfill its "Prime Contractor" responsibilities pursuant to the Act.

1.19 MATERIAL AND EQUIPMENT

.1 Unless otherwise specified, Contractor shall provide, maintain and pay for all materials, tools, machinery, equipment, temporary facilities, controls and conveniences necessary for execution of the Work. All materials shall be new, of merchantable quality, and suitable for the intended purpose.

.2 Unless otherwise specified, comply with Manufacturer's latest printed instructions for materials and installation methods. Notify the Consultant in writing of any conflict between the Contract Documents and Manufacturer's instructions. Deliver, store and maintain packaged materials with Manufacturer's seals and labels intact.

1.20 COORDINATION

.1 The Contractor is responsible for coordination of trades. Lines of demarcation between Contractor's work and trades' work are solely the responsibility of the Contractor. The Consultant assumes no responsibility for division of the Work or for any jurisdiction regarding such division.

.2 Contractor is responsible for coordination with the Owner of all on-site activity as it affects the operation of the building.

.3 The Contractor is to notify the Consultant at least 24 hours in advance for site review. No work shall be covered or concealed until the Consultant has reviewed it, unless they have informed the Contractor that a site review will not be performed. Such review does not absolve the Contractor from their responsibility to perform the Work in accordance with the contract documents.

1.21 WASTE REMOVAL AND CLEANING

.1 The Contractor shall maintain the Place of the Work free from unsightly or hazardous accumulations of waste materials and rubbish, and shall perform all required cleaning during the Work.

.2 All wastes, which create hazardous conditions, must be removed from the premises daily.

.3 Disposal of all waste products to be performed in strict accordance with the product Manufacturer's Material Safety Data Sheet, and in accordance with the provincial

Waste Control Regulations. Drainage systems shall not be used to dispose of Project wastes and materials.

.4 Ensure all moisture sensitive equipment (i.e. exposed electrical and mechanical systems, etc.) are removed or protected against moisture infiltration during washing and dust-generating activities.

.5 Remove all construction-related grease, dust, dirt, stains, labels, fingerprints, over-spray and other foreign materials immediately prior to the Consultant's final review. Return all adjacent areas, equipment, duct work, etc. to the Owner in a dust-free condition. Leave site in a neat and tidy condition at completion of the Work.

1.22 SUPERINTENDENCE

.1 The Contractor shall provide a full time on-site Superintendent that is responsible for the quality, control, organization, and coordination of all phases of the Work. The Superintendent shall be in attendance at all site meetings.

.2 Superintendence shall be satisfactory to the Owner and the Consultant.

.3 Superintendence shall be deemed unsatisfactory and changes or additions to superintendence can be demanded by the Owner or Consultant when control, organization, or coordination of the Work is not adequate, the quality of the Work does not meet the Contract Document requirements, directions given in accordance with the Contract Documents are not followed, or progress is behind schedule.

1.23 ADMINISTRATION OF PROJECT MEETINGS

.1 The Consultant shall preside at meetings.

.1 A representative of the Consultant shall record the minutes, include significant proceedings and decisions, and identify "action by" parties.

.2 The Consultant shall reproduce and distribute copies of minutes to meeting participants, to affected parties not in attendance, to the Owner and Consultant.

.2 The Consultant shall schedule and administer project meetings.

.1 Prepare agenda for meetings.

.2 Distribute written notice of each unscheduled meeting three (3) days in advance of meeting date to Contractor, Owner, and relevant Subcontractors.

.3 The Contractor shall provide physical space and make arrangements for meetings on site.

.4 Representatives of Contractor, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the party each represents.

1.24 PRE-CONSTRUCTION MEETING

.1 Within five (5) days after award of Contract, the Consultant, or Contractor shall request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Senior representatives of the Owner, Consultant, Contractor, major Subcontractors, and field inspectors will be in attendance.

.3 The Consultant shall establish a time and location of meeting and notify parties concerned five (5) days before meeting.

.4 The Consultant shall incorporate mutually agreed variations to Contract Documents into Agreement, prior to sending the agreement to the parties for signing.

.5 Agenda to include the following:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work, progress scheduling.

.3 Shop drawings and schedule of shop drawing submissions.

.4 Requirements of temporary facilities, site signage, hoarding, dust protection, offices, storage sheds, utilities, fences.

.5 Delivery schedule of critical equipment.

.6 Site security.

.7 Contemplated change orders, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements (GC).

.8 Take-over procedures, acceptance, warranties.

.9 Monthly progress claims, administrative procedures, holdbacks (GC).

.10 Appointment of inspection and testing agencies or firms.

.11 Insurances, transcript of policies (GC).

1.25 PROGRESS MEETING

.1 During course of Work the Consultant or the Contractor shall schedule progress meetings every two weeks. Further progress meetings may be scheduled by the Consultant, Contractor, or Owner as required to expedite the Work.

.2 The Consultant, Contractor, major Subcontractors involved in the Work, and Owner when required, are to be in attendance.

.3 The **CONSULTANT** shall notify parties minimum three (3) days prior to scheduled meetings of any changes to time or place.

.4 **Agenda to include the following:**

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems which impede construction schedule, conflicts.

.4 Progress, schedule, during succeeding work period.

.5 Corrective measures and procedures to regain projected schedule.

.6 Revisions to construction schedule.

.7 Review of off-site fabrication delivery schedules.

.8 Review submittal schedules; expedite as required.

.9 Maintenance of quality standards.

.10 Pending changes and substitutions, Notices of Proposed Change, Change Orders.

.11 Review proposed changes for effect on construction schedule and on completion date.

.12 Other business.

2.0 PRODUCTS

Not applicable.

3.0 EXECUTION

Not applicable.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Installation of hoarding/dust protection and shoring around the Work as per section 01 10 01 – General Requirements.

.2 Provide all labour, material, equipment and supervision required to remove and dispose of all material and debris resulting from the removal of deteriorated mortar, resetting of limestone blocks, concrete repairs, and waterproofing.

2.0 PRODUCTS

Not applicable.

3.0 EXECUTION

3.1 INSPECTION

.1 Visit and examine the site and note all characteristics and features affecting the Work of this Section.

.2 Ensure all services, whether buried; built-in or exposed are properly identified as to position, type of service, size, direction of flow.

.3 Inspect materials, equipment, components to be re-used or turned over to the Owner. Note their condition and advise the Consultant in writing of any defects or conditions which would affect their removal and re-use.

3.2 PREPARATION

.1 Prevent movement, settlement or damage of elements of the existing building which are to remain. Provide bracing, shoring and supports as required. Protect existing surfaces not to be restored from damage during concrete removal procedures.

.2 Cut and/or cap existing services within the work area, if any, prior to start of Work as required, but do not affect the services of areas not under construction or essential to the ongoing operation of the building.

.3 In all cases, exercise all reasonable care during removal operations to avoid damaging items to be salvaged, re-used, or items that are not part of the Scope of Work.

.4 Seal off all work areas to prevent dust and debris from affecting other areas outside of work area. Prevent public access to areas being repaired.

.5 Tape and/ or seal and provide protection to all mechanical and electrical services and all fire alarm and security devices still functioning adjacent to the work areas to prevent damage resulting from dust, water, or impact.

.6 Cover floor drains as required to prevent concrete, abrasive blasting debris or any other material from entering the drains. Ensure that all drains continue to operate as required during construction.

.7 Remove or protect in place all surface mounted or permanent fixtures not to be demolished from damage during demolition procedure.

.8 Apply filter cloth to all exhaust and ventilation vents within work area to prevent dust generated by the construction activity from escaping.

.1 Contractor shall clean, or replace filter cloth if the filter cloth becomes unsuitably dirty as determined by Consultant.

.9 Provide proposed demolition sequence to the Consultant for review prior to commencing work.

.10 Provide temporary lighting and ventilation as required to work areas. Owner shall provide 110 volt, 220 amp. service to work area for Contractor's use.

.11 Provide temporary lateral bracing for walls, foundation walls and columns as indicated on drawings prior to slab demolition.

.1 This bracing is to be left in place until the completion of each phase of slab replacement.

.12 Submit details of proposed bracing to the Consultant for review prior to commencing work.

.1 Details to be designed and stamped by Registered Professional Engineer in the Province of Ontario.

3.3 WATERPROOFING REMOVAL EQUIPMENT

.1 High pressure waterblast or other approved non-impact equipment is to be used to remove concrete waterproofing system from the suspended slabs and where indicated on drawings or directed by the Consultant.

.2 Equipment should be capable of efficiently removing the waterproofing while ensuring all reasonable precautions are taken to avoid damaging the concrete surface.

.3 Equipment at the cemetery shall meet applicable noise control restrictions. It shall be muffled or surrounded by an acoustic enclosure to produce maximum operating noise levels which are to be in accordance with all local and municipal by-laws and regulations.

3.4 DEMOLITION

.1 Remove and dispose of material and debris resulting from the removal of delaminated and sound concrete from the suspended slab and beam, as well as the removal of deteriorated mortar.

.2 Demolition procedures and equipment shall meet all applicable noise-control by-laws and regulations of the location of the work.

.3 Provide shoring to support the slab when removals reduce its load-carrying capacity, as directed by the Consultant. No payment will be made for such shoring as it is to be included in the cost of repair as outlined in these documents.

.4 The Contractor is to take care not to damage the surface of sound concrete which is to remain through his removal operation. Where any such damage is done to sound material, it is to be repaired by the Contractor at his own expense to the approval of the Consultant.

.5 Where new concrete is to be applied to existing concrete, the surface is to be left clean and sound.

.6 All required re-painting due to damage, overspray, etc. is the Contractor’s responsibility.

.7 At end of each day’s work, leave work in safe condition so that no part is in danger of causing injury or damage.

3.5 WASTE DISPOSAL

.1 Disposal of waste products and material is to be in strict accordance with the product manufacturer's material safety data sheets and in accordance with the governing waste control regulations.

.2 The existing drainage system is not to be used to dispose of project wastes and / or materials

.3 Store volatile wastes or material in covered metal containers. All wastes which create hazardous conditions must be removed from the premises daily.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Provide all labour, materials, equipment and supervision necessary to prepare surface of patch repairs (i.e. slab surfaces, slab soffits, columns, walls and beams) and place new concrete repair material as outlined in this Section.

.1 The concrete repair materials to be used in targeted repair locations as directed by the Consultant:

1.2 REPAIR QUANTITY DETERMINATION

.1 Length and width shall be measured to the nearest 25 mm (1 inch).

1.3 REFERENCE STANDARDS

.1	Ontario Building Code	
.2	CSA-A23.1-14	Concrete Materials and Methods of Concrete Construction
.3	CSA-A23.2- 14	Test Methods and Standard Practices for Concrete
.4	CSA-A3001	Cementitious Materials for Use in Concrete
.5	ASTM C109-M1999	Test Method for Compressive Strength of Hydraulic Cement Mortars (using 2 inch or 50 mm cube specimens)
.6	ASTM C348-97	Standard Test Method For Flexural Strength Of Hydraulic Cement Mortar
.7	ASTM C882	Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
.8	ASTM C157-99	Standard Test Method for Length Change of Hardened Hydraulic Cement, Mortar and Concrete
.9	CSA–S413-07	Parking Structures

1.4 PERFORMANCE REQUIREMENTS

.1 The surfaces shall not scale or crack excessively.

.2 The concrete repair materials shall not spall or debond from the existing concrete.

.3 The concrete repair materials shall achieve a minimum compressive strength of 20MPa within 24 hours.

1.5 SUBMITTALS

.1 Submit Manufacturer's product specifications and data sheets for the following products:
- .1 Cement slurry bonding agent and Manufacturer's recommendations
- .2 Rapid cure delamination repair concrete material
- .3 Top surface patch material
- .4 Vertical/Overhead patch materials
- .6 Curing compounds

.2 Submittals to be provided to the Consultant to review, a minimum of two weeks prior to placement or use of products.

.3 Do not commence placement of repair products until review is complete and proposed products and procedures are accepted by Consultant.

.4 If requested by Consultant, provide a certificate signed by the Contractor and pre-packaged material manufacturer certifying the following:

- .1 Surfaces to receive pre-packaged materials were acceptable and found to be satisfactory to receive the materials, as per the Manufacturer's requirements and these Specifications. Application of pre-packaged materials shall imply acceptance of surfaces.

- .2 Pre-packaged materials were installed in accordance with Manufacturer's recommendations and these Specifications.

2.0 PRODUCTS

2.1 MATERIALS

.1 Portland Cement to be type GU to CSA-A3001
.2 Aggregate: Natural stone to CAN/CSA-A23.1
.3 Water: Potable and to CAN/ CSA-A23.1
.4 Air entraining agents to CSA –A3001
.5 Chemicals admixtures to CSA-A3001. Calcium chloride is not permitted.
.6 Pozzolanic mineral admixtures to CSA-A3001
.7 Curing materials to CSA-A23.1
.8 Blended hydraulic cementing material to be type 10SF to CAN/CSA-A362.
.9 Supplementary cementing material to be to CAN/CSA A23.5.
.10 Superplasticizing admixture to be to CSA-A3001.

2.1 CEMENT SLURRY BONDING AGENT

.1 Unless otherwise stipulated by the manufacturer, cement slurry grout consisting of a mixture of one part cement to one part fine aggregate conforming to CSA Standard CAN/ CSA A23.1 Clause 5.3.2 and sufficient water to make a "heavy cream" consistency.

.2 Prior to placement of repair material, Contractor to confirm in writing manufacturer's recommended slurry bonding agent.

2.2 RAPID-CURE SURFACE DELAMINATION REPAIR MATERIALS

.1 Proportion patch materials with specially graded aggregate to give the following properties:

- .1 Compressive strength (24 hours) and a 20 MPa minimum requirement
- .2 Compressive strength (7 days) (ASTM C109-86 modified) and a 30 MPa minimum requirement
- .3 Flexural Strength (7 days) (ASTM C348 modified) and a 5 MPa minimum requirement
- .4 Bond Strength (7 days) (ASTM C882) and a 5 MPa minimum requirement
- .5 Linear shrinkage: (ASTM C157) and a 0.08% max. requirement
- .6 Rapid chloride permeability (ASTM C 1202) and less than 1,000 coulombs requirement
- .7 Thermally compatible with concrete substrate under all applicable service conditions

.2 The patch materials listed may conform to the specified properties and linear shrinkage requirements. Manufacturer's latest product data sheets must be submitted for patch materials to be used on this project certifying the patch material conforms to the specified requirements.

.3 Patch materials:

- .1 MasterEmaco T1060 Manufactured by BASF
- .2 MasterEmaco T1061 Manufactured by BASF
- .3 MasterEmaco S 466 CI Manufactured by BASF
- .4 MasterEmaco T415 Manufactured by BASF
- .5 MasterEmaco T430 Manufactured by BASF
- .6 MasterEmaco T240 Manufactured by BASF
- .7 Blue-Line Rapid Repair Grout Manufactured by Con-Spec
- .8 CPD Rapidcrete Manufactured by CPD
- .9 Eurocrete Manufactured by Euclid Chemical
- .10 Versaspeed Manufactured by Euclid Chemical
- .11 HP-S6 Manufactured by King
- .12 HP-S10 Manufactured by King

.13 MS-S6 Manufactured by King
.14 MS-S10 Manufactured by King
.15 Planitop 18 Manufactured by Mapei
.16 SikaTop 111 Plus (with Sikacem Accelerator) Manufactured by Sika
.17 Structuroc H Manufactured by Solhydroc
.18 Traffic Patch (with Silica Fume) Manufactured by Target

2.3 VERTICAL/OVERHEAD DELAMINATION REPAIR MATERIALS:

.1 Overhead patch materials shall be polymer modified cementitious, fast-setting, and formulated especially for repair of overhead and vertical surface concrete patching

.2 Patch materials to have the following properties:
- .1 Compressive strength (28 days) (ASTM C109-13 modified) and a 30 MPa minimum requirement
- .2 Flexural Strength (7 days) (ASTM C348 modified) and a 5 MPa minimum requirement
- .3 Bond Strength (7 days) (ASTM C882) and a 5 MPa minimum requirement
- .4 Linear shrinkage (ASTM C157) and a 0.10% max. requirement
- .5 Rapid chloride permeability (ASTM C 1202) and less than 1,000 coulombs requirement
- .6 Thermally compatible with concrete substrate under all applicable service conditions.

.3 The patch materials listed may conform to the specified properties and linear shrinkage requirements. Manufacturer's latest product data sheets must be submitted for patch materials to be used on this project certifying the patch material conforms to the specified requirements.

.4 Overhead Patch Materials:
- .1 MasterEmaco S 466 CI (form, vertical only) Manufactured by BASF
- .2 MasterEmaco S 477 CI Manufactured by BASF
- .3 MasterEmaco S 488 CI Manufactured by BASF
- .4 MasterEmaco N425 Manufactured by BASF
- .5 MasterEmaco N400 Manufactured by BASF
- .6 MS S6 Concrete Manufactured by King
- .7 MS S6 Self-Consolidating Concrete Manufactured by King
- .8 MS S10 Self-Consolidating Concrete Manufactured by King
- .9 Fibre Patch OV Manufactured by Gemite Group
- .10 Planitop X Manufactured by Mapei
- .11 Planitop 23 Manufactured by Mapei
- .12 Sika Top 122 Plus Manufactured by Sika

.13 Structuroc V Manufactured by Solhydroc

2.4 POLYMER PATCH MATERIAL

.1 Proportion 100% solids methyl methacrylate or epoxy resins with specially grade aggregate to give the following properties.

.1 Minimum compressive strength in 24 hours: 20 MPa
.2 Minimum compressive strength in 7 days: MPa (ASTM C109).
.3 Minimum flexural strength at 7 days: 5 MPa (ASTM C348).
.4 Minimum bond strength at 7 days: 5 MPa (ASTM C882).
.5 Thermally compatible with concrete substrate under all applicable service conditions.
.6 Maximum moisture content at 24 hours: 3%

.2 The patch materials listed below may conform to the specified properties and linear shrinkage requirements. Manufacturer's latest product data sheets must be submitted for patch materials to be used on this project certifying the patch material conforms to the specified requirements.

.1 MasterEmaco S 6000

2.5 ADMIXTURES

.1 Use only compatible admixtures and add to mix in strict accordance with manufacturer's recommendations.

.2 Use of calcium chloride not permitted.

3.0 EXECUTION

3.1 CONCRETE SURFACE PREPARATION

.1 All concrete surfaces to receive new concrete repair material shall be thoroughly abrasive – blast, sandblast or shot blast prior to concrete placement.

.2 Clean all existing concrete surfaces to receive new concrete of foreign material, dust, debris, grease and oil; emulsifiers shall be required for surfaces containing grease or oil as directed by Consultant.

.3 Contractor to notify Consultant to review surfaces prior to concrete placement.

3.2 CONCRETE PLACEMENT – SURFACE REPAIRS

.1 Prepare patch surface, mix patch material, and apply, finish, and cure in strict accordance with the more rigorous requirements of Contract Specifications and manufacturer's recommendations.

.1 The patch area shall be thoroughly wetted and saturated with water to achieve a saturated surface dry (SSD) state.

.2 Allow patch to become surface dry, puddles or free water shall be blown clear of patch, prior to application of cement slurry.

.3 Just prior to placing new concrete, apply a cement slurry bonding agent to the surface of the concrete.

.4 The bond coat slurry shall be broomed into the deck to fully saturate the surface but not to be allowed to puddle.

.5 Use only qualified concrete placers and finishers, with a minimum of two years' experience in similar work.

.6 Prior to placement of concrete, pre wet burlap shall be on site available for immediate placement overtop of new concrete patches.

.7 Prepare pre-packaged concrete mix as per Manufacturer's specifications.

.8 Contractor to confirm the minimum and maximum application lift thickness prior to placement of concrete. If required and permitted by the Manufacturer, the concrete repair material can be extended with aggregate. **Contractor to submit proposed aggregate extension mix design to the Consultant prior to proceeding with Work.**

.9 On slab top surfaces place new dense concrete thoroughly compacted and vibrated into place to ensure good bond.

.1 Ensure reinforcing steel is secured in place and is not disturbed during placement.

.2 Vibrators shall be inserted into concrete perpendicular to concrete surface.

.3 Vibrators shall be inserted such that zones of consolidation always overlap.

.10 Concrete surfaces to be flush with existing surfaces, free of voids and cracks, and have a uniform surface and transition to the existing surface.

.11 Do not overwork concrete surface. Wood float finish is acceptable. **Do not add water to finish.**

.12 Tool crack control joints as indicated on Drawings.

.13 Cure concrete as per manufacturer's written instruction.

.14 Do not cover concrete repair patches with waterproof membrane until curing period of repair patch material is complete and the surface is completely dry. Concrete shall be considered sufficiently dry if no moisture is visible on the underside of 18" x 18" sheet of polyethylene plastic taped to the slab surface for 16 hours.

.15 Areas of concrete repair completely through the thickness of the slab shall be patched with concrete, well consolidated and vibrated into place on to smooth plywood forms with suitable release agents adequately shored from the slab below, to the approval of the Consultant. Once forms have been removed edges of through slab repair are to be grinded, hand patched, etc. as required to produce smooth (form like) transition from new patch material to the existing slab.

.16 Do not allow traffic on newly placed repair patches until 75% of the specified 28 day strength has been reached, unless otherwise directed by the Consultant.

3.3 CONCRETE PLACEMENT – VERTICAL SURFACES (GRAVITY GROUTING)

.1 Supply and install formwork to conform to Section 03 10 00 - Concrete Formwork.

.2 The patch area shall be thoroughly wetted for a period of not less than twenty-four (24) hours prior to placing of concrete.

.3 Place new concrete into forms by gravity method, thoroughly consolidate concrete in forms using vibrators.

.4 Remove all form work, support brackets, to leave a smooth, flush concrete finish. Formwork to remain in place for minimum seven (7) days for cure, or longer until concrete has attained 75% of its specified 28 day strength.

.1 Apply approved curing compound as recommended by grout manufacturer as alternative to seven (7) day cure by formwork if 75% of concrete strength is achieved

.5 Once forms have been removed edges of repair areas are to be grinded, hand patched, etc. as required to produce a smooth (form like) transition from the new patch surface to the existing concrete surfaces, as directed by Consultant.

.6 Grout that has sagged, debonded, is porous, honeycombed, or is cracked shall be replaced.

3.4 CONCRETE MIXING AND PLACING

.1 Concrete shall be machine mixed, unless otherwise stipulated by the Manufacturer. Mixing and placing shall be in accordance with CSA-A23.1.

.2 Concrete shall be conveyed from the mixer to the place of deposit by methods that will ensure the required quality of concrete. Equipment for conveying the concrete shall be of such size and design as shall ensure a practically continuous flow of concrete at the delivery end without separation of materials.

.3 Concrete shall be deposited in the forms as nearly as practicable to its final position to avoid re-handling.

.4 Depositing shall be continuous throughout each division and the concrete shall be so placed and worked that a uniform texture will be produced.

.5 No concrete shall be placed later than one half hour after leaving the mixer. No re-tempered concrete shall be allowed.

.6 Mix concrete in accordance with the Manufacturer’s written instructions.

3.5 COMPACTION AND VIBRATION

.1 Concrete shall be consolidated by means of sufficient vibrators of adequate size operated by competent workmen.

.2 The use of vibrators to transport concrete shall not be allowed.

.3 Concrete shall be thoroughly worked around reinforcement, around embedded items and into corners of forms, eliminating all air or stone pockets that may cause honeycombing, pitting or planes of weakness.

3.6 CONCRETE CURING

.1 Ensure Manufacturer's recommended curing conditions are maintained over the patch area when special patch materials are used. The more stringent curing

conditions between the Manufacturer's recommendations and those outlined in this section will govern.

.1 As soon as possible after the concrete has sufficiently set, and no later than 30 minutes after finishing, wet curing with pre-saturated mats shall be initiated on the concrete surfaces.

.1 Wet curing procedures to be in accordance with manufacturer's written requirement, but no less than one (1) day at a minimum temperature of 10 deg. Celsius. Water shall not be permitted to evaporate from the concrete surfaces at any time within the wet cure period.

.2 Minimum acceptable wet curing method on surfaces is pre-saturated filter fabric, burlap, or cotton mats; covered with soaker hoses and plastic sheeting. Wet-curing mats shall be overlapped 150-mm and held in place without marring the surface of the concrete.

.3 Prevent airflow in the space between the wet-curing mats and the plastic sheeting. Protect wet-curing assembly from freezing during cold weather.

.2 Vertical repair patches are to be wet cured for the duration of the wet-curing period. Continuous water curing of exposed beam and slab soffit repairs is not required; however, exposed concrete soffit surfaces shall be misted with a water spray during the wet-curing period as necessary to prevent surface dusting of the concrete soffits.

.3 Use of chemical curing compounds shall not be permitted.

.4 Concrete shall be protected from harmful effects of heat, cold, running or surface water, and mechanical shock.

.5 When the air temperature is below 10 deg. C or when in the opinion of the Consultant, there is a possibility of it falling below 10 deg. C no concrete shall be placed until after the Consultant has approved the provisions made to ensure proper curing of concrete. These provisions shall conform to the requirements of CSA-A23.1.

.6 Adequate equipment shall be provided for heating the concrete materials and protecting the concrete from freezing or near freezing temperatures. No frozen materials or materials containing ice shall be used. All concrete materials and all reinforcement, forms, existing concrete and ground with which the concrete is to come into contact, shall be free from frost.

Whenever the temperature of the surrounding air is below 5 deg. C all concrete placed in the forms shall have a temperature of between 15 deg. C and 32 deg. C and adequate means shall be provided for maintaining a temperature of not less than 10 deg. C for 10 days or for as much more as is necessary to ensure proper curing of the concrete. Under no circumstances may dry heat be used. Means shall be taken to humidify the air within the enclosure and to ensure that the moisture requirements for curing are maintained.

.7 Do not allow traffic onto patch until material has adequately cured to its specified 24-hour compressive strength.

.2 In the event that the Contractor's wet curing procedures are unacceptable, and any portion of the concrete becomes surface dry during the specified curing period, the Consultant will have cause to reject the concrete.

3.7 INSPECTION AND TESTING

.1 To conform to CAN/CSA-A23.2-M94

.2 Inspection and testing to be conducted by a testing agency designated by the Consultant. The Owner will pay costs of inspection and testing described in this section.

.3 Contractor to inform testing agency 24 hours in advance of concrete placement.

.4 Testing shall include:

.1 Prepare and test concrete grout cubes or cylinders for compressive strength.

.2 Review manufacturer's product data sheets submitted by the Contractor.

.3 Bond tests of concrete patches to existing concrete as requested by Consultant.

.4 Submit one copy of the test results directly to the Owner, the Consultant, and the Contractor.

.5 A minimum of one set of concrete grout cubes (9 cubes) or cylinders (4 cylinders) shall be taken for compressive tests for pre-packaged concrete patch materials

.5 Testing procedures for concrete shall conform to the following requirements:

.1 Compression tests on concrete shall be carried out in accordance with CSA Standard A23.2 and A23.1. Strength test on approved grout shall consist of nine grout cubes with three cubes tested at seven (7) days and the remaining at 28 days. For cylinders, strength tests shall be undertaken on one cylinder each at 3 and 7 days with the remaining 2 tested at 28 days.

.6 The Contractor shall provide at no additional costs to the Owner:

.1 Samples of all material required for testing.

.2 Co-operation with the execution of concrete testing which shall include protection against injury or loss of grout cubes or cylinders.

.3 Access to the Testing Company to test and/or inspect materials.

.4 Site storage facilities meeting requirements of CSA A23.2 for concrete test specimens prior to removal to laboratory.

.7 Bond Strength:

.1 After the concrete or grout has cured (10 days minimum) the Testing Company may perform bond strength tests if requested by Consultant. Testing Company will drill through patches selected by Consultant.

.2 These cores are to be used for the evaluation of the bond strength of the new concrete to the existing by direct tensile force.

.3 Failure to achieve a minimum tensile bond strength as specified under this section, or 0.7 MPa if not otherwise specified shall constitute failure of patches.

.4 Upon completion of the tests, all core holes are to be filled with non-shrink cementitious grout, by the Contractor.

.8 Contractor shall pay for costs of additional testing as follows:

.1 If Contractor fails to notify testing agency in event of pour cancellation.

3.8 FIELD QUALITY CONTROL

.1 The Consultant shall evaluate bonding of fresh patch material to existing concrete after the fresh patch material has cured sufficiently.

.2 The evaluation shall be performed by sounding, using a "chain-drag" or other techniques.

.3 Detection of hollow sound in any areas shall be reason to suspect inadequate bonding and Contractor shall then core each such are, as requested by the Consultant, to determine bonding adequacy.

.4 Coring shall be through the new concrete and into the existing concrete. Core diameter shall be 75 mm (3 inch) or as required by the Consultant. Length of cores shall be twice the core diameter or twice the thickness of new concrete or as requested by the Consultant.

.5 Cores will be visually inspected and further testing required, if any, will then be determined by the Consultant.

.6 Contractor to patch core holes.

3.9 REJECTION OF DEFECTIVE WORK

.1 In the event that concrete tests do not conform to the requirements of this specification, the Consultant shall have the right to order additional tests of any portion of the repairs in accordance with CSA Standard A23.1. The testing company shall be selected by the Consultant and shall deal directly with the Consultant; such tests shall be made at the expense of the Contractor.

.2 Where, in the opinion of the Consultant, materials or workmanship fail to meet the requirements of the specification, such work or materials will be rejected. Work rejected shall be replaced or repaired to the approval of the Consultant and at no additional cost to the Owner.

.3 Failure of the bond between the topping and the existing concrete at any of the core specimens or failure of the compression tests will require additional core samples to be drilled at the expense of the Contractor. Subsequent failure of these additional samples shall result in rejection of the repair areas represented.

3.10 RECORD DRAWINGS

.1 Maintain accurate records of materials used, locations, size of each repair area and dates of all concrete repairs and concrete pours.

.2 Records to be kept up to date and made available to Consultant throughout the duration of the Work.

.3 Prior to Substantial Performance provide a plan showing location, size, and date of concrete repairs.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Provide all labour, materials, equipment and supervision necessary to prepare slab surface, slab soffit, column, and beam repair areas and place new concrete repair material as outlined in this Section.

.2 All repairs to painted surfaces are to be cleaned and repainted after the concrete repairs have been completed and sufficient time for concrete curing has lapsed.

1.2 REPAIR QUANTITY DETERMINATION

.1 Length and width shall be measured to the nearest 25-mm (1 inch).

1.3 REFERENCE STANDARDS

.1	Ontario Building Code	
.2	CSA-A23.1-14	Concrete Materials and Methods of Concrete Construction
.3	CSA-A23.2-14	Methods of Test for Concrete
.4	CAN/CSA-A3000-13	Cementitious Materials Compendium
.5	ASTM C260/C260M-10A	Standard Specification for Air-Entraining Admixtures for Concrete
.6	ICRI 310.2R-2013	Selecting and Specifying Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

1.4 PERFORMANCE REQUIREMENTS

.1 Concrete repair surfaces shall not scale or crack excessively.

.2 The concrete repair materials shall not spall or debond from the existing concrete.

1.5 SUBMITTALS

.1 Submit all mix designs, product specifications, and Manufacturer's recommendations for review by the Consultant a minimum of two weeks prior to placement or use of products.

.2 Submit details of proposed methods of concrete curing and provisions for weather protection to the Consultant for review a minimum of two weeks prior to placement.

.3 Submit Manufacturer's product data sheets for proposed curing compounds, admixtures and corrosion inhibitors.

.4 Do not commence placement of concrete until review is complete and proposed products and procedures are accepted by Consultant.

1.6 QUALIFICATIONS

.1 Use only qualified concrete placers and finishers, with a minimum of two years' experience in similar work.

2.0 PRODUCTS

2.1 MATERIALS

.1 Portland Cement to be type GU to CSA-A3000-13
.2 Aggregate: Natural stone to CSA-A23.1-14
.3 Water: Potable and to CSA-A23.1-14
.4 Air entraining agents to ASTM C260/C260M-10A
.5 Chemicals admixtures toCSA-A3000-13. Calcium chloride is not permitted.
.6 Pozzolanic mineral admixtures to CSA-A3000-13
.7 Curing materials to CSA-A23.1-14
.8 Blended hydraulic cementing material to be type 10SF to CSAA3000-13.
.9 Supplementary cementing material to be to CSA-A3000-13.
.10 Superplasticizing admixture to be to CSA-A3000-13.

2.2 SURFACE AND THROUGH SLAB DELAMINATION REPAIR CONCRETE MIX – SILICA FUME

.1 Normal weight "ready mixed" Portland cement/silica fume modified concrete mixed in accordance with Section 15, CSA-A23.1-14 class of exposure C-1 with the following requirements:
  .1 Compressive strength (28 days) with a 35 MPa minimum requirement
  .2 Air content with a 6.0% to 9.0% requirement
  .3 Aggregate size of 13 mm
  .4 Slump to be prior to superplasticizer of 50 mm maximum +/- 20mm and after superplasticizer of 125 mm maximum +/- 25mm
  .5 Water/cementing materials ratio to be 0.40 maximum
  .6 Cement content: 335 kg/m^3 minimum
  .7 Cement –Type GU: Normal Portland Cement
  .8 Silica Fume – Type U to have minimum 7.5 % Silica Fume by mass of cement (25 kg/m^3 min.)
  .9 Fly Ash – Type F to have maximum 15% by mass of cement (50 kg/cu. m. max)

.10 Concrete density to have normal weight (2360 kg/m^3)

.2 The intent of this mix design is to provide a low permeability, high electrical resistivity concrete mix with a coulomb rating less than 1500 when 28-day samples are tested using rapid chloride permeability testing.

.3 Non-chloride based plasticizers shall be used to facilitate concrete placement as required. Costs associated with the use of such materials shall be included in the contract price. Plasticizer shall be compatible with the air entrainment agent.

.4 Note that although a maximum slump is specified, the Contractor shall endeavour to provide concrete at the minimum slump that permits placement and handling.

.5 Mix design is the responsibility of the Contractor.

.6 Do not add calcium chloride to concrete.

.7 Addition of water to the concrete mix shall not be permitted on-site. The Contractor shall be permitted to adjust only the quantities of superplasticizer and air entraining agent on-site.

.8 No concrete shall be placed later than two (2) hours after the time of batching. No re-tempered concrete shall be allowed.

.9 The Contractor shall use superplasticizers to facilitate concrete placement and must demonstrate to the satisfaction of the Consultant that such admixtures will have no deleterious effect on the durability or strength of the proposed concrete mix (i.e. freeze/thaw durability).

2.3 AIR ENTRAINMENT

.1 Air entraining chemical admixtures shall be according to ASTM C260. Ensure chemical admixtures are compatible with one-another and that they will not negatively impact performance of the concrete.

.2 The total fresh air content of air entrained concrete will be tested via the pressure method with an air meter prior to the placement of concrete in accordance with CSA A23.2-4C.

.3 Air content in hardened concrete shall meet the requirements of CSA A23.1 and this specification and, if directed by the Consultant, will be tested and determined in accordance with ASTM C457 as outlined in CSA A23.1.

2.4 CEMENT SLURRY BONDING AGENT

.1 Cement slurry grout consisting of a mixture of one part cement to one part fine aggregate and enough water to make a "heavy cream" consistency. Aggregate to conform to CSA Standard CSA-A23.1-14 Clause 4.2.3.

.1 MasterKure ER 50 BASF

3.0 EXECUTION

3.1 CONCRETE SURFACE PREPARATION

.1 All concrete surfaces to receive new concrete shall have a minimum No. 6 CSP per ICRI 310.2R-2013 and be thoroughly abrasive-blast, sandblast or shotblast prior to concrete placement, unless surfaces have received hydro-demolition acceptable to Consultant.

.2 Clean all existing concrete surfaces to receive new concrete of foreign material, dust, debris, grease and oil as directed by Consultant. Emulsifiers shall be required for surfaces containing grease or oil.

.3 Contractor to notify Consultant to review surfaces prior to concrete placement.

3.2 CONCRETE PLACEMENT - READY-MIXED CONCRETE

.1 The patch area shall be thoroughly wetted for a period of not less than three (3) hours, and longer where required to achieve a saturated surface dry (SSD) state, prior to placing of concrete.

.2 Puddles or free water shall be blown from the patch area and the surface is to be permitted to dry to a saturated surface dry (SSD) state prior to application of cement slurry.

.3 Apply a cement slurry bonding agent to the surface of the concrete just prior to placing new concrete.

.4 The cement slurry bonding agent shall be broomed or scrubbed into the deck to fully saturate the surface but not to be allowed to puddle.

.5 Pre-wet burlap shall be available on site prior to placement of concrete to allow for immediate placement overtop of new concrete patches after their initial set.

.6 **Do not add extra water to the concrete.**

.7 On slab top surfaces place new dense concrete thoroughly compacted and vibrated into place to ensure good bond.

.1 Ensure reinforcing steel is secured in place and is not disturbed during placement.

.2 Vibrators are to be used for consolidation purposes only and are not to be used to an extent that causes segregation of the concrete.

.3 Internal vibrators shall conform to CSA A23.1-14 Clause 7.2.5.2 and Table 19: Internal Vibrators for Various Applications.

.4 Vibrators shall be inserted into concrete perpendicular to concrete surface.

.5 Vibrators shall be inserted such that zones of consolidation always overlap.

.8 Concrete surfaces to be flush with existing surfaces, free of voids and cracks, and have a uniform surface and transition to the existing surface.

.9 Finish concrete in accordance with CSA A23.1/A23.2. Initial finish shall be completed before any bleeding or free water is present on the surface of the concrete. Final finishing shall commence after the bleed water has disappeared and when the concrete has stiffened sufficiently to prevent the working of excess mortar to the surface. **Do not add water to finish.**

.10 Do not overwork concrete surface. Wood float finish is acceptable.

.11 Do not use steel trowels with air-entrained concrete. For air-entrained concrete, the surface can be further leveled and consolidated with a magnesium bull float for larger repairs or a magnesium trowel for smaller repairs. One or more passes shall be made at suitable time intervals to obtain a level finish free of float marks. Do not work bleed water on the concrete surface into the concrete during finishing.

.12 If mechanical floats are to be used for final finishing of larger air entrained concrete surfaces, the mechanical floating of the concrete surface shall commence as soon as the concrete surface has reached initial set and will support the weight of a power float machine equipped with magnesium float blades and the operator.

.13 Tool crack control joints as indicated on Drawings.

.14 Cure concrete as outlined in this section.

.15 Areas of concrete repair completely through the thickness of the slab shall be patched with concrete that is well consolidated and vibrated into place on smooth plywood forms with suitable release agents adequately shored from the slab below, to the approval of the Consultant. Once forms have been removed edges of through slab repair are to be grinded, hand patched, etc. as required to produce smooth (form like) transition from new patch material to the existing slab.

.16 Do not allow traffic on newly placed repair patches until 75% of the specified 28 day strength has been reached.

3.3 CONCRETE MIXING AND PLACING

.1 Concrete shall be machine mixed. Mixing and placing shall be in accordance with CSA-A23.1-14.

.2 Concrete shall be conveyed from the mixer to the place of deposit by methods that will ensure the required quality of concrete. Equipment for conveying the concrete shall be of such size and design as shall ensure a practically continuous flow of concrete at the delivery end without separation of materials.

.3 Concrete shall be deposited into patch repairs as near as practicable to its final position to avoid re-handling.

.4 Depositing shall be continuous throughout each division and the concrete shall be so placed and worked that a uniform texture will be produced.

.5 No concrete shall be placed later than one half hour after leaving the mixer. No re-tempered concrete shall be placed.

3.4 COMPACTION AND VIBRATION

.1 Concrete shall be consolidated by means of sufficient vibrators of adequate size operated by competent workmen.

.2 The use of vibrators to transport concrete shall not be allowed.

.3 Concrete shall be thoroughly worked around reinforcement, embedded items, and into corners.

.4 Compaction and vibration is to eliminate all air and stone pockets that may cause honeycombing, pitting or planes of weakness.

3.5 CONCRETE CURING (SILICA FUME)

.1 Incorporate fog-mist curing methods or evaporation retarder in order to prevent loss of moisture from concrete repair surfaces in all rapid drying conditions. In these conditions, fog-mist curing shall be initiated immediately after initial finishing, and continued until concrete is covered with wet-curing mats. Rapid-drying conditions may include any of the following:

.1 High concrete ambient temperatures
.2 Low humidity
.3 High winds
.4 Direct sunlight
.5 Heated interiors during cold weather.

.2 Initiate surface concrete repair wet curing as soon as possible after the concrete has sufficiently set, and no later than 30 minutes after finishing.

.1 Minimum acceptable wet curing method on slab surfaces is installation of pre-saturated filter fabric, burlap, or cotton mats that are covered with soaker hoses and plastic sheeting. Overlap wet-curing mats 150-mm and ballast in place without marring the concrete surface.

.2 Wet curing procedures are to keep the concrete surfaces continuously wet for a period of at least ten (10) consecutive days at a minimum temperature of 10° Celsius. Do not permit water to completely evaporate from the concrete surfaces at any time within the wet cure period.

.3 Prevent airflow in the space between the wet-curing mats and the plastic sheeting.

.3 Vertical repair patches are also to be wet cured for the duration of the ten (10) day wet-curing period by either:

.1 Maintaining formwork in place with form ties loosened and water applied to run down the inside form face after the concrete has hardened to keep the repair surfaces wet.

.2 Removing formwork from vertical surfaces and providing fog misting, light water spray, or application of wet burlap covered with polyethylene to keep the repair surfaces continually wet.

.4 Continuous water curing of exposed beam and slab soffit repairs is not required; however, exposed concrete soffit surfaces shall be misted with a water spray on a

daily basis during the wet-curing period, or as often as necessary to prevent surface dusting.

.5 Provide the Consultant with proposed fog-curing and wet-curing procedures at least 2-weeks prior to concrete placement. Any revisions to the proposed procedures must be submitted to the Consultant for review a minimum of one week prior to concrete placement.

.6 The use of chemical curing compounds is not permitted.

.7 Protect concrete from the harmful effects of heat, cold, running or surface water, and mechanical shock.

.8 Do not place concrete when air temperature is below 10° C, or without implementing provisions to ensure proper curing of concrete when -- in the opinion of the Consultant -- there is a possibility of air temperature falling below 10° C. These provisions shall be reviewed by the Consultant and conform to the requirements of CSA-A23.1-14.

.9 Maintain concrete material and forms between 15° C and 32° C until concrete placement whenever the surrounding air is below 5° C. No frozen material or material containing ice shall be used. All existing concrete, reinforcement, forms, and ground that the concrete will contact is to be free from frost.

.10 Maintain a curing temperature above 10° C for 10 days or longer to ensure proper concrete curing. Under no circumstances may dry heat be used. Provide means to humidify the air within the heated enclosure and ensure that moisture requirements for curing are maintained.

.11 Do not allow traffic onto patch until material has adequately cured to 75% of its specified 28-day compressive strength.

.12 The Consultant will have cause to not certify payment for repairs undertaken without adequate wet-curing procedures or that become surface dry during the specified curing period.

3.6 INSPECTION AND TESTING

.1 To conform to CSA-A23.2-14.

.2 Inspection and testing to be conducted by a testing agency designated by the Owner. The Owner will pay costs of inspection and testing described in this section.

.3 Contractor to inform testing agency 24 hours in advance of concrete placement.

.4 Testing shall include:

.1 Preparation and testing of concrete cylinders for compressive strength.

.2 Establishment of slump and the percentage of entrained air for each concrete truck, unless otherwise directed by Consultant.

.3 Review of concrete mix designs submitted by the Contractor.

.4 Bond testing of concrete repair patches to existing concrete where designated by the Consultant.

.5 Submission of test results to the Owner, Consultant, and the Contractor.

.6 A minimum of one set (4 cylinders) of concrete cylinders shall be taken for compressive strength testing of concrete patch material used each day unless otherwise directed by Consultant. Concrete cylinders are to be placed in an area with similar curing conditions to that of the cast concrete.

.5 Testing procedures for concrete shall conform to the following requirements:

.1 Compression tests on concrete shall be carried out in accordance with CSA Standard A23.2-14 and A23.1-14 except that a Strength Test shall consist of four test cylinders and one cylinder shall be tested at the age of three (3) days, the second cylinder shall be tested at the age of seven (7) days and the remaining two at an age of 28 days.

.2 Slump and air entrainment test shall be conducted at the time of sampling concrete for compressive tests and shall be conducted in conformity with CSA Standard A23.2-14. Slump and air entrainment tests shall be performed on all loads used each day.

.6 The Contractor shall provide at no additional costs to the Owner:

.1 Samples of all material required for testing.

.2 Co-operation with the execution of concrete testing, which shall include protection against injury or loss of cylinders.

.3 Access for the Testing Company to test and/ or inspect materials.

.4 Site storage facilities meeting requirements of CSA A23.2-14 for concrete test specimens prior to removal to laboratory.

.7 Bond Strength:

.1 After the concrete repairs have cured, the Testing Company may perform bond strength tests where requested by the Consultant.

.2 These cores are to be used for the evaluation of the bond strength of the new concrete to the existing by direct tensile force. Testing Company will perform the required drilling through patches selected by Consultant.

.3 Failure to achieve a minimum tensile bond strength of 0.9 MPa shall constitute failure of patches.

.4 Contractor to fill all core holes with non-shrink cementitious grout upon completion of the tests.

.8 Contractor shall pay for costs of additional testing as follows:

.1 Additional standby time required due to late delivery by concrete supplier.

.2 Additional slump and/ or air tests if first tests indicate that concrete properties are outside of specified requirements and the Contractor wishes to modify the mix and retest. All modifications are to be approved by the Consultant.

.3 If the Contractor fails to notify the testing agency of pour cancellation.

3.7 FIELD QUALITY CONTROL

.1 The Consultant shall evaluate bonding of fresh patch material to existing concrete after the fresh patch material has cured sufficiently.

.2 The evaluation shall be performed by acoustical sounding, using a "chain-drag" or other techniques.

.3 Hollow sounds detected in repair area provide reason to suspect inadequate bonding. Contractor to core these areas to determine bonding adequacy where requested by the Consultant.

.4 Coring shall be through the new concrete and into the existing concrete. Core diameter shall be 75-mm, or as required by the Consultant. Length of cores shall be twice the core diameter or twice the thickness of new concrete, unless otherwise requested by the Consultant.

.5 Cores will be visually inspected after removal and any further testing that is required will be determined by the Consultant.

.6 Contractor to patch core holes.

3.8 REJECTION OF DEFECTIVE WORK

.1 The Consultant shall have the right to order additional concrete testing of any portion of repairs in accordance with CSA Standard A23.1-14 if previous testing demonstrates non-conformance with specified requirements. The testing company shall be selected by the Consultant and shall deal directly with the Consultant. Payment for costs associated with the additional concrete testing will be at the Contractor's expense.

.2 Where it is the Consultant's opinion that material or workmanship fails to meet the specified requirements, the work shall be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

.3 Bond failure between repair material and the existing concrete, or failure to meet compressive strength requirements based on compression testing of concrete cylinders, will result in drilling of additional core samples at the Contractor's expense. Failure of these additional samples will require the work to be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

3.9 RECORD DRAWINGS

.1 Maintain accurate records of the location, size, and concrete placement date for each repair area.

.2 Records are to be kept up-to-date and made available to the Consultant for review throughout the duration of the Work.

.3 Provide a plan showing location, size, and date of concrete repairs prior to Substantial Performance.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Remove sound and unsound concrete from slab surfaces, soffits, columns, and walls where directed by the Consultant as described herein.

2.0 PRODUCTS

2.1 EQUIPMENT

.1 Provide hand-held jackhammers for concrete removal that are capable of efficiently removing sound and unsound concrete without causing excessive or unwanted removal.

.2 Maximum jackhammer size is 15 kg. Light chipping hammers are to be used where the Consultant deems it necessary to reduce the amount of concrete breakage. Maximum light chipping hammer size is 7 kg. The use of light chipping hammers is at no additional cost to the Owner.

.3 Equipment located outside shall be mufflered or placed within an acoustic enclosure to produce maximum operating noise levels of 70 dBa at 3.0 metres. Noise levels are also to be in accordance with all local and municipal by-laws and regulations.

.4 Use "Silenced" compressors.

.5 Compressors and all diesel-powered equipment are to be fitted with a diesel exhaust scrubber.

3.0 EXECUTION

3.1 PREPARATORY WORK BY CONTRACTOR

.1 Approximate locations and extents of concrete delamination repairs are shown on the drawings, and are provided as general guidelines only. Actual concrete removal areas to be designated on site by the Contractor.

.2 Contractor shall chain-drag suspended slab surfaces and chalk the perimeter outlines of all deteriorated and delaminated areas to be repaired. Includes delaminations, spalls, and unsound surfaces that may adversely affect the structure or performance of the traffic deck coating system. Contractor’s chalked outlines shall not extend onto sound concrete at patch edges or between adjacent patches.

.3 Contractor shall determine, by visual inspection and hammer-sounding, the locations and extent of deteriorated, delaminated and unsound soffit or full-depth slab removal areas to be repaired. The perimeter outlines of the soffit and full-depth slab repair areas shall be marked in chalk by the Contractor. Mark perimeter outlines of full-depth slab delaminations on slab surface, using measurements and a different colour of chalk. Co-ordinate locations of full-depth slab repair areas with results of surface chain-drag testing.

.4 Notify the Consultant to review and comment on the areas identified for repair. Consultant will review Contractor's chalk-marked outlines, adjust as required, and mark perimeters of actual repair areas using paint. Do not proceed with concrete removal or demolition until Consultant's review has been completed.

3.2 SURFACE CONCRETE REMOVAL

.1 Remove concrete in areas that are already spalled or that produce a hollow sound under a hammer test, which indicates the presence of concrete delaminations. The areas shall be initially located by the Contractor and marked on the concrete surface with a durable red-coloured paint. The Consultant will then review the markings and mark out the actual area of concrete to be removed.

.2 Take precautions to avoid punching through the slab.

.3 Outline patch area with a 13-mm deep vertical sawcut as close as possible to limits of concrete already removed. Reduce sawcut depth if necessary to avoid cutting reinforcement. Remove concrete to sawcut taking precautions to avoid damaging sawcut edge. Edges with spalls or chips will be rejected and shall be resawcut at Contractor's expense.

.4 Remove concrete within designated areas to obtain a minimum of 25-mm clearance around all exposed reinforcement within the delamination repair. Minimum removal depth shall not be less than 50-mm, which may include sound concrete.

.5 Upon exposure of visibly corroded or debonded reinforcement, additional concrete removal shall be performed until bars appear to be rust-free and well-bonded for a distance of 75-mm, and perimeter of designated area is sound, or until otherwise directed by the Consultant.

.1 This concrete removal shall not proceed until authorized by Consultant.

.2 Contractor shall not receive payment for concrete removals not authorized by and considered necessary to Consultant.

.6 Excess or unnecessary concrete removal to be at no extra cost to the Contract.

.7 Call for review by Consultant to confirm acceptability of patch preparation prior to cleaning of reinforcement. After concrete removal has been complete, a final check adjacent to the areas shall be made by the Contractor to determine any additional spalling or delamination which may have occurred. Contractor shall mark out these areas and notify Consultant to make a review.

.8 Remove additional concrete required to provide adequate development and/or lap for new reinforcing steel required as directed by the Consultant.

.9 Where the Consultant deems that required concrete removal is excessive adjacent to vertical surfaces, a key is to be chipped into existing columns and walls prior to concrete placement. The key is to have a minimum depth of 40 mm into the vertical element. Install shoring and bracing as required.

3.3 FULL SLAB DEPTH CONCRETE REMOVAL

.1 All slab concrete is to be removed in areas designated by Consultant.

.1 Remove concrete in areas that are already spalled or that produce a hollow sound under a hammer test, which indicates the presence of concrete delaminations. The areas shall be initially located by the Contractor and marked on the concrete surface with a durable red-coloured paint. The Consultant will then review the markings and mark out the actual area of concrete to be removed.

.2 Use light chipping hammers at patch perimeters to minimize damage to sound concrete.

.3 Upon exposure of visibly corroded or debonded reinforcement, additional concrete removal shall be performed until bars appear to be rust-free for a minimum length of 75mm and perimeter of designated area is sound or until otherwise directed by the Consultant.

.4 Excess or unnecessary concrete removal to be at no extra cost to the Contract.

.5 Outline patch area with a 13-mm deep vertical sawcut at surface and soffit of slab as close as possible to limits of concrete already removed. Reduce sawcut depth if necessary to avoid cutting reinforcement. Remove concrete to sawcut taking precautions to avoid damaging sawcut edge. Edges with spalls or chips will be rejected and shall be resawcut at Contractor's expense.

.6 Call for review by Consultant to confirm acceptability of patch preparation prior to cleaning of reinforcement.

.7 Refer to Clause 3.2 for additional removal requirements.

3.4 SOFFIT AND VERTICAL SURFACE CONCRETE REMOVAL

.1 All unsound soffit concrete is to be removed in areas designated by Consultant.

.2 Remove concrete in areas that are already spalled or that produce a hollow sound under a hammer test, which indicates the presence of concrete delaminations. The areas shall be initially located by the Contractor and marked on the concrete surface with a durable red-coloured paint. The Consultant will then review the markings and mark out the actual area of concrete to be removed.

.3 Take precautions to avoid punching through the slab.

.4 Use light chipping hammers for all soffit and vertical concrete removal.

.5 Remove concrete within designated areas to obtain a minimum of 25-mm clearance around all exposed reinforcement within the delamination repair. Minimum removal depth shall not be less than 50-mm, which may include sound concrete.

.6 Upon exposure of visibly corroded or debonded reinforcement, additional concrete removal shall be performed until bars appear to be rust-free for a distance of 75mm around the perimeter of a patch or until otherwise directed by the Consultant.

.7 Excess or unnecessary concrete removal to be at no extra cost to the Contract.

.8 Outline patch area with a 13-mm deep vertical sawcut as close as possible to limits of concrete already removed. Reduce sawcut depth if necessary to avoid cutting reinforcement. Remove concrete to sawcut taking precautions to avoid damaging sawcut edge. Edges with spalls or chips will be rejected and shall be resawcut at Contractor's expense.

.9 Call for review by Consultant to confirm acceptability of patch preparation prior to cleaning of reinforcement. After concrete removal has been complete, a final check adjacent to the areas shall be made by the Contractor to determine any additional spalling or delamination which may have occurred. Contractor shall mark out these areas and notify Consultant to make a review

3.5 EXISTING EXPOSED ELECTRICAL SERVICES

.1 The Contractor shall perform temporary removal, replacement, and/or relocation of existing electrical wiring, conduit, equipment, fixtures, or hardware in designated concrete delamination repair areas as required for completion of the Work.

.2 All exposed conduit, fixtures, attached devices, louvers and ducts are to be protected or Contractor to correct damages at his own expense. The Contractor shall promptly report any damage to the Owner and the Consultant.

.3 Prior to commencing the Work, the Contractor shall contact the Owner to locate all protective or alarm systems and sensors. All services shall be protected against damage or interruption. The Contractor shall provide the Owner with minimum 48 hours advance notice of any necessary interruption. All claims resulting from damage shall be the responsibility of the Contractor.

3.6 EXISTING EMBEDDED ELECTRICAL SERVICES

.1 It is the Contractor's responsibility to ensure that all potential areas of buried conduit be identified and that all high voltage systems located in the area of work are switched off to prevent possible injury. Co-ordinate requirements with Owner.

.2 The Contractor shall take the utmost caution during concrete removal operations in order to prevent damage to embedded conduits. Any damage caused to such conduits will be immediately reported to the Owner and Consultant. In no instance will damaged or deteriorated conduits be covered up by the Contractor without specific approval from the Owner.

.3 Contractor to repair or abandon damaged conduit within the slab at the discretion of the Consultant. Owner to pay for repairs provided that damage did not result from Contractor's negligence.

.4 Contractor to coordinate required repairs with designated Electrical Sub-Contractor. Owner shall designate Electrical Sub-Contractor for the Work.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Clean and prepare existing reinforcement, where exposed in delamination repairs and where otherwise designated by the Consultant.

.2 Identify corroded or damaged reinforcement and supplement corroded or damaged reinforcement with new replacement reinforcing steel and accessories, including supply, fabrication, handling and placing.

1.2 REFERENCE STANDARDS

.1 Ontario Building Regulations
.2 CSA-A23.1-14Concrete Materials and Methods of Concrete Construction
.3 CSA G30.18-09(R2014) Carbon Steel Bars for Concrete Reinforcement
.4 ASTM A775/A775M-16 Standard Specification for Epoxy-Coated Reinforcing Steel Bars
.5 ACI Manual of Standard Practice for Detailing – 28th Edition
.6 CSA W186-M1990 (R2012) Welding of Reinforcing Bars in Reinforced Concrete Construction
.7 Reinforcing Steel Institute of Ontario (RSIO) Manual of Standard Practice – June 2010.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Store and protect reinforcement in a manner that prevents excessive rusting and fouling with dirt, grease, form oil, and other bond-breaking coatings.

.2 Reinforcement shall be free from excessive rusting, mud, oil or other coatings that adversely affect its bonding capacity at the time concrete is placed.

2.0 PRODUCTS

2.1 ON-SITE APPLIED EPOXY COATING

.1 This clause only applies to those repairs which use repair concrete which does not contain the appropriate amount of silica fume supplementary cementing material.

.2 On-site applied high-solids epoxy coatings. Approved products:

.1 Tri-Tex Co Inc. Chemorclad 9600
.2 PPG Amerlock 400

.3 Pigment is to be added to all epoxy coating to obtain an opaque or solid colour (white, green, orange, etc.) finish to facilitate inspection.

3.0 EXECUTION

3.1 PREPARATION - REINFORCEMENT IN PLACE

.1 Exposed reinforcement and steel shall be completely cleaned of cement paste, rust, oil, and contaminants. Dry abrasive blast clean to near-white blast, completely cleaned of all grease, oil, dirt, mil scale, cement paste, old epoxy, etc. Additional cleaning shall be performed if subsequent corrosion occurs after initial cleaning. Wire brush, grinding or similar hand-cleaning methods shall not be permitted.

.2 The Contractor may elect to cut, remove, and replace damaged or corroded reinforcement with new reinforcement in lieu of cleaning existing exposed reinforcement. Provide required tension lap splices with existing cleaned reinforcement at no additional cost to the Owner.

.3 Epoxy coating of exposed reinforcing steel as outlined below only applies to those repairs which do not utilize silica fume modified concrete mixes.

.1 After the Consultant has reviewed the degree of cleaning, epoxy shall be provided on designated steel and reinforcement bars.

.4 Apply 100% coverage of epoxy coating to reinforcement and steel in the patch areas in accordance with Manufacturer's recommendations. Total coating dry film thickness to be 7 to 12 mils to provide adequate protection while minimizing loss of reinforcing bond development.

.5 Apply epoxy coating to cleaned surface as soon as possible after cleaning and before oxidation that is discernible to the unaided eye occurs. In no case shall application of the coating be delayed more than 8 hours after cleaning.

.6 Apply additional coats where required to achieve minimum thickness after the first coat is completely cured and dry (tack-free), in accordance with Manufacturer's recommendations.

.7 **Place concrete within the time frame as specified:**

.1 **For high solids epoxy coatings, place concrete when epoxy coating is dry.**

.2 **For 100% solids epoxy coatings, place concrete before second coat is tack free.**

.8 Repair visible holes, voids and cracks that appear after coating.

.9 Coverage shall be uniform and free from running. Epoxy coating will be rejected if uniform coverage is not provided.

3.2 INSTALLATION

.1 Replace or supplement damaged or severely corroded reinforcement that is exposed in concrete delamination repair patches with new reinforcement as directed by the Consultant. Additional reinforcing steel shall be provided when the existing reinforcing steel has a section loss of 20% or greater.

.2 The replacement reinforcing bars shall be of the same bar size or greater than the original bars. Additional concrete removal may be required (at unit price cost, except as noted in 3.1.2.) to allow for placement of supplemental reinforcing bars. The length of the supplemental bars shall be equal to the length of the deteriorated segment of the existing bars, plus the required lap splices at each end. Splicing requirements shall be in accordance with the Standards. Supplemental bars shall be placed parallel to, and approximately 20-mm from, the existing bars.

.3 Fully exposed reinforcement for the entire bar length shall be removed and replaced with new reinforcement of the same bar size or greater.

.4 Accurately place new and existing reinforcement exposed in the delamination repair patches in the positions shown on the drawings. Reinforcement shall be firmly tied and supported by bar supports and side form spacers to ensure proper concrete cover and spacing within allowable tolerances before and during concrete placement.

.5 Bar supports shall be sufficient in number and strength to carry the reinforcement they support and prevent displacement by workers or equipment before and during concrete placement. Bars shall be tied at all intersections where spacing is greater than 250-mm in each direction and at alternate intersections where spacing is less than 250-mm in each direction.

.6 Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, and embedded items. If bars are moved more than one bar diameter, or enough to exceed the specified tolerances, the resulting arrangement of bars shall be subject to approval of the Consultant.

3.3 WELDING

.1 Any welding of reinforcing steel shall be in accordance with CSA W186-M1990 (R2012).

.2 Copies of the Canadian Welding Bureau approved welding procedure and certificate of current operator qualification shall be submitted to the Consultant prior to commencement of welding.

3.4 INSPECTION AND TESTING

.1 No concrete shall be placed until the Consultant has completed his review of in-place reinforcing. The Contractor shall provide a minimum of 24 hours' notice of the time when the reinforcement will be substantially in place and ready for the Consultant's review.

.2 Inspection and testing of factory coated reinforcement to be conducted by a testing agency designated by the Consultant. The Owner will pay cost of inspection and testing described in this Section.

.3 Inspection and testing of reinforcement coated in place shall include visual inspection with flashlight and mirror. This inspection shall be first made by the Contractor. When the Contractor is satisfied the epoxy coating is in conformance with the specifications, they shall notify the Consultant to review the work.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Provide all labour, materials, equipment and services necessary to supply, erect, and strip all formwork and falsework for poured-in-place concrete shown or indicated on the Contract Drawings and Specifications.

1.2 REFERENCE STANDARDS

.1 Ontario Building Code
.2 CSA-A23.1-14 Concrete Materials and Methods of Concrete Construction
.3 CSA-A23.2-14 Methods of Test for Concrete
.4 CSA-S269.1-16 Falsework and Formwork
.5 ACI SP-004-R14: (8th) Ch.5 Formwork for Concrete
.6 ACI 347-R14 Recommended Practice for Concrete Formwork
.7 CSA-O86-14 Engineering Design in Wood (Limit States Design)
.8 CSA-O121-08 R2013 Douglas Fir Plywood
.9 CSA-O153 -13Poplar Plywood

1.3 SUBMITTALS

.1 Submit shop drawings for falsework and formwork that indicate the method, sequence, and schedule of construction shoring, stripping and re-shoring.

.2 Indicate formwork and falsework design data, including design loads, for Consultant review. Consultant review does not relieve the Contractor of responsibility for formwork and safety during construction.

.3 Shop drawings submittals shall bear the stamp and signature of a qualified Professional Engineer registered or licensed in the Province of Ontario.

1.4 HANDLING REQUIREMENTS

.1 Protect formwork materials before, during, and after installation. Protect installed work and materials of other Sections.

.2 In the event of damage, make required repairs or replacements to Consultant's requirements at no additional cost to the Owner.

2.0 PRODUCTS

2.1 FORMWORK MATERIALS

.1 Form Material:

.1 Exposed surfaces: Use metal forms, plywood forms, or plywood lined forms of sufficient structural strength. Plywood to be to CSA O121-08 R2013 – Douglas Fir Plywood or CSA O153-13 – Poplar Plywood. Plywood lining to be new GIS exterior grade fir plywood manufactured with waterproof glue.

.2 Unexposed surfaces: Use metal forms, plywood forms, or wood lumber. Plywood to be to CSA O121-08 R2013 – Douglas Fir Plywood or CSA O153-13 – Poplar Plywood. Wood lumber to be to CAN/CSA O86-14 – Engineering Design in Wood.

.3 Plywood and wood formwork materials: Material to be to CSA-S269.1-16 - Falsework and Formwork. Material is to be free from warping and sawn straight so that lines and shapes are accurately retained.

.4 Formwork for unexposed surfaces shall be made with a good grade of lumber or plywood and fitted so that there is no leakage of mortar.

.2 Ties and Spreaders:

.1 Form ties shall be adjustable in length to permit tightening of forms. Use only the snap-off type of form tie that will leave no metal within 25-mm of the concrete surface after removal. Twisted wire form ties are not acceptable.

.3 Form Release Agent:

.1 Form release agent shall be a Consultant-approved chemical agent that is not an oil based product.

.4 Void Form:

.1 Void form shall be of a deteriorating material such as Wax-Mat as supplied by National Concrete Accessories Ltd. or approved alternate.

3.0 EXECUTION

3.1 FORMWORK

.1 Lines and Levels:

.1 Verify lines, levels, and column centers before proceeding with work and ensure that dimensions agree with Drawings.

.2 Co-ordinate forming and setting of recesses, chases, sleeves, inserts, bolts, and hangers.

.2 Design:

.1 Design, construct, and erect formwork in accordance with CSA A23.1-14, CSA-S269.1-16, ACI 347R-14, and all applicable construction safety regulations at the Place of Work.

.2 Build forms sufficiently strong and rigid to sustain the weight or fluid pressure of the concrete without noticeable deflection. Ensure forms are fitted sufficiently tight to prevent mortar leakage.

.3 The Contractor shall be responsible for design and construction of falsework.

.4 Do not exceed the safe live load of the structure, considering the strength and age of the concrete, with any construction or shoring loads.

.5 Provide 20mm x 20mm chamfer strips at exposed corners or edges of columns, walls, beams, and slabs.

.3 Construction:

.1 Construct forms so that the finished concrete will conform to the shape and dimensions shown on the Drawings.

.2 Construct forms so that they may be dismantled and removed without damaging the concrete.

.3 Set shores on wedges or use adjustable shores so they may be removed without causing undue strains in the concrete.

.4 Provide temporary openings at the bottom of column and wall forms to facilitate cleaning and review. Use water to flush out cuttings, shavings,

debris, snow and ice, and foreign matter. Ensure that water and debris fully drain to the exterior through clean-out ports, and close the openings with a patch, flush on the inside.

.5 Notify the Consultant when formwork is completed and cleaned to allow for review.

.4 Treatment of Forms:

.1 Install form release agent on form surfaces and allow to dry before placing reinforcing steel, anchoring devices, and embedded parts.

.2 Keep untreated forms wetted down to prevent shrinkage before placing concrete and wet surfaces without allowing ponding at time of placing concrete.

.5 Alignment:

.1 Provide suitable means for checking the alignment and elevation of formwork and check frequently during concrete placement.

.2 Carry out corrective wedging as required until concrete is in place.

.3 Remove concrete that becomes misaligned during placing to satisfaction of Consultant.

.4 Align forms to ensure movement and deflections of the finished product are confined.

.5 Tolerances for all concrete work shall conform to the requirements of CSA Standard CSA-A23.1-14 and ACI 347-R14.

.6 Camber formwork for slabs and beams to provide cambers shown on Drawings. Make allowances for settlement of forms, closure of form joints, and elastic shortening of forms and add to indicated camber requirements.

.6 Stripping:

.1 Do not remove shoring or strip formwork until the concrete has gained sufficient strength to carry dead loads and construction loads that are likely to be imposed. Notify the Consultant before removing formwork.

.2 Remove Falsework progressively in accordance with CSA S269.1-16. Ensure that no shock loads or unbalanced loads are imposed upon the structure during removal.

.3 Loosen forms carefully using a method that prevents spalling and damage to the concrete surface and edges. Do not use wedge pry bars, hammers, or other tools against exposed concrete surfaces.

.4 Leave forms loosely in place for protection until curing requirements are complete.

.5 Completely remove forms from under steps and within void spaces. Provide temporary openings, if necessary.

.6 Remove metal spreader ties on exposed concrete by removing or snapping off inside the wall surface. Point up and patch the resulting pockets flush to surrounding areas.

.7 Re-Use of Formwork:

.1 Forms may be re-used after adequate cleaning if the surfaces are not cracked or roughened. The formwork shall be trimmed and properly patched to provide a smooth surface.

3.2 INSERTS AND EMBEDDED ITEMS

.1 Confirm the location of sleeves, openings, etc. that are shown on the Structural Drawings against Architectural and Mechanical drawings. Any sleeves, openings, etc. that are not shown on the Structural Drawings must be approved by the Consultant.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Provide all labour, materials, equipment and services necessary to supply and install new reinforcing steel work shown on indicated in all the Contract Drawings and Specifications including accessories such as hanger bars, spirals, wire ties, support bars, chairs, spacers supports or other devices required to position reinforcing properly.

1.2 REFERENCE STANDARDS

.1 Ontario Building Code
.2 CSA-A23.1-14 Concrete Materials and Methods of Concrete Construction
.3 CSA-G30.5-M1983 R98 Welded Steel Wire Fabric for Concrete Reinforcement **(Withdrawn)**
.4 CSA-G30.18 09 Carbon Steel Bars for Concrete Reinforcement
.5 ASTM A775/A775M-07b Standard Specification for Epoxy-coated Reinforcing Steel Bars
.6 ACI Manual of Standard Practice for Detailing – 28th Edition
.7 Reinforcing Steel Manual of Standard Practice – June 2010
.8 SP-71(08): ASTM Standards in 318-08
.9 CSA-23.3-04 Design of Concrete Structures
.10 CSA W186-M1990 (R2007) Welding of Reinforcing Bars in Reinforced Concrete Construction

1.3 SUBMITTALS

.1 Mill Tests:

.1 Upon request, provide the Consultant with a certified copy of mill tests of steel supplied, showing physical and chemical analysis, minimum 2-weeks prior to commencing reinforcing work.

.2 Shop Drawings:

.1 Prepare shop drawings for concrete reinforcement, bar support and accessories in accordance with (RSIO) Reinforcing Steel Institute of Ontario – Manual of Standard Practice.

.2 If requested by the Consultant, submit shop drawings in accordance with the General Requirements.

.3 Shop drawings shall clearly indicate bar sizes, grades, spacing, location, bending details, and quantities of reinforcing mesh, bar supports, mechanical splices, and accessories and identifying code marks to permit correct placement without reference to structural drawings.

.4 Placing drawings and bar lists will be reviewed for number and size of bars only. The Consultant's review of reinforcing shall be a visual inspection of in-situ work as required to determine general conformity to the engineering drawings. The Consultant's review shall in no way relieve the Contractor of his responsibility for carrying out the Work in accordance with the drawings.

.5 Substitution of imperial reinforcing sizes and grades will only be accepted if drawings showing imperial sizes are submitted to the Consultant for review. Approval must be obtained before any work is commenced.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Store and protect reinforcement in a manner to prevent excessive rusting and fouling with dirt, grease, form-oil and other bond-breaking coatings.

.2 Reinforcement at the time concrete is placed shall be free from excessive rusting, mud, oil or other coatings that adversely affect its bonding capacity.

.3 Special care shall be taken when handling epoxy-coated reinforcing steel to prevent damage to the epoxy-coating. Bundle and transport epoxy-coated reinforcement in accordance with ASTM A775/A775M-07b. Epoxy-coated reinforcing bars shall not be dropped or dragged, and shall be lifted with spreaders and non-metallic slings. Bar-to-bar abrasion and excessive handling of bundles must be prevented.

.4 The contractor shall repair all damages to the epoxy coating using a manufacturer's approved epoxy patching materials. If damaged areas rust before being repaired, the rust shall be completely removed before the steel surfaces are repaired.

.5 Coat cut ends of epoxy coated reinforcing with approved epoxy patching material.

2.0 PRODUCTS

2.1 MATERIALS

.1 Reinforcing steel bars shall conform to CSA G30.18-09 (grade 300 MPa) unless otherwise specified herein or on the drawings, Plain finish.

.2 Reinforcing bars to be welded shall conform to CSA G30.18-09.

.3 Welded wire fabric shall conform to CSA G30.5. Sizes and gauges as shown on the drawings.

.4 Bar supports shall conform to ACI 316 unless otherwise approved by the Consultant.

.5 Chairs, bolsters, bar supports, spacers shall be epoxy coated or plastic. The use of pebbles, pieces of broken stone or brick, pipe, or wooden blocks will not be permitted.

.6 Tie wire for coated reinforcing shall be plastic-coated.

.7 Mechanical splices, to Consultant's approval.

2.2 FABRICATION

.1 Fabricate reinforcing to CSA-A23.1 and reviewed shop drawings.

.2 Fabricate reinforcing steel within the following tolerances:

.1 Sheared length plus or minus 25 mm
.2 Depth of truss bar plus or minus 10 mm
.3 Outside dimension of stirrups, ties and spirals, plus or minus 10 mm
.4 Other bends plus or minus 25 mm

.3 Colour-code each bar to correspond with code mark appearing on bar list.

.4 Ship bundles of bar reinforcement clearly identified in accordance with bar lists.

.5 Bars shall not be field bent, straightened, or re-bent, except where indicated or authorized by the Consultant. When field bending is authorized, bend without heat, applying slow and steady pressure. Replace bars that develop cracks or splits.

.6 Splicing of reinforcing bars, unless indicated on the drawings, is prohibited except with the written approval of the Consultant. Such splices shall conform to the splice length for that class of splice according to CAN3-A23.3-04. Splices, where possible, shall be staggered.

.7 Fabrication, handling and shipping of epoxy-coated steel shall conform with MTO Form 905. and CSA-S413-07.<SPEC NOTE: Include the following Article only if deemed necessary by Project Engineer to meet specific project requirements. RJC no longer typically specifies epoxy-coated reinforcing steel for structural slabs due to bonding and cracking issues.

3.0 EXECUTION

3.1 INSTALLATION

.1 Reinforcement shall be accurately placed in the positions shown on the drawings, firmly tied, and supported by bar supports and side form spacers to assure proper concrete cover and spacing within allowable tolerances before and during placing of concrete.

.2 Bar supports shall be sufficient in number and strength to carry the reinforcement they support and prevent displacement by workers or equipment before and during concreting. Bars shall be tied at all intersections, except where spacing is less than 250-mm in each direction, when alternate intersections shall be tied.

.3 Bars shall be placed to the following tolerances unless noted otherwise.

.1 Clear concrete protection of reinforcement 5 mm ±.

.2 Where the depth of a flexural member, thickness of a wall or smallest dimension of a column is:

.1 200 mm or less ..... 5 mm ±.
.2 larger than 200 mm but less than 600 mm ..... 10 mm ±.
.3 600 mm or larger ..... 20 mm ±.

Lateral spacing of these bars shall be within 30 mm ± of the specified spacing.

.3 For **longitudinal** location of bends and ends of bars 50 mm ±.

.4 As Item 3 at discontinuous ends of members 20 mm ±.

.5 Specified spacing between bars 10 mm ±.

.4 Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits or embedded items. If bars are moved more than one bar diameter or

enough to exceed the specified tolerances, the resulting arrangement of bars shall be subject to approval of the Consultant.

3.2 WELDING

.1 Any welding of reinforcing steel shall be in accordance with CSA W186-M1990 (R2007).

.2 Copies of the Canadian Welding Bureau approved welding procedure and certificate of current operator qualification shall be submitted to the Consultant prior to commencement of welding.

3.3 INSPECTION AND TESTING

.1 No concrete shall be placed until the Consultant has completed his review of reinforcing in place. The Contractor shall provide a minimum of 24 hours notice of the time when the reinforcement will be substantially in place and ready for the Consultant's review.

.2 Inspection and testing of reinforcement coated in place shall include visual inspection with flashlight and mirror.

END OF SECTION

1.0 GENERAL

1.1 SECTION INCLUDES

.1 Visually review for deteriorated masonry. Testing/verification of masonry joint condition. Raking identified unsound joints.

.2 Preparation of masonry surfaces including joint surface cleaning, flushing of voids and open joints, and masonry wetting.

.3 Repointing of identified masonry joints.

.4 Resetting of dislodged masonry units. Ensuring cure of mortar.

.5 Provide all labour, materials, equipment and supervision necessary to install historic mortar as outlined in this Section as indicated on the drawings.

1.2 MEASUREMENT AND PAYMENT

.1 Work of this Section will be measured by Consultant and paid as follows:

.1 Pointing: per linear foot of joints raked and pointed.
.2 Repair work will be paid for on a unit price basis according to pre-established unit prices. Measurement will be based on metres squared of masonry surface to be repaired.

1.3 REFERENCES

.1 Standards to be latest editions, unless otherwise noted

.2 CAN/CSA-A371-04 (R2014), Masonry Construction for Buildings.

.3 CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.

.4 CAN/CSA-A370-14, Connectors for Masonry.

.5 CAN/CSA-A82-14, Fired Masonry Brick Made from Clay or Shale. Standards and Guidelines for the Conservation of Historic Places in Canada (2010).

.6 ASTM-C144-11: Standard Specification for Aggregate for Masonry Mortar.

.7 ASTM-C207-06 (2011): Standard Specification for Hydrated Lime for Masonry Purposes.

.8 ASTM-C270-14a: Standard Specification for Mortar for Unit Masonry.

.9 ASTM-C780-15: Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

.10 ASTM-C1072-13e1: Standard Test Method for Measurement of Masonry Flexural Bond Strength.

.11 CSA-A179-04 (R2014): Mortar and Grout for Unit Masonry.

.12 NPS Preservation Brief #2 – Repointing Mortar Joints in Historic Buildings.

.13 Standards and Guidelines for the Conservation of Historic Places in Canada.

1.4 SUBMITTALS

.1 Submit labelled samples of materials used on project for approval before work commences.

.2 Submit mortar design mix, product literature and required ambient conditions.

.3 Submit two (2) samples of each type and colour of mortar to be used. Each sample shall be installed on the masonry to be used in the Work. Samples to be sufficient size and quantity to allow review of colour range.

.4 Submit mortar properties including:
- .1 Mix proportions
- .2 Compressive strength of mortar
- .3 Mortar type

1.5 INSTALLER QUALIFICATIONS

.1 Work of this Section shall be performed by a single masonry trade contractor with:
- .1 A minimum of 10 years' experience in historic masonry work, and
- .2 A good level of understanding of structural behaviour of masonry walls.

.2 Masons shall be journeymen and have:

- .1 An Interprovincial Trade Certificate with 10 years minimum experience in historic stone and brick masonry work, and
- .2 Proof of license or certification for propriety restoration mortars.

.3 Obtain written approval from Consultant prior to changes of qualified personnel.

1.6 MOCK-UPS

.1 Construct a mock up to show the following:

- .1 Cut and cleaned mortar joint to required depth
- .2 Filled and tooled joint

.3 Selected mortar colour

.2 Mock up to be 1.0 m x 1.0 m area, for each masonry material, where directed by the Consultant, to demonstrate a full understanding of specified procedures, techniques and formulations before work commences.

.3 Allow 24 hours for review of mock-up by Consultant before proceeding with repointing work.

.4 When accepted by Consultant, mock-up will demonstrate minimum standard for the work of this Section.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with written Manufacturer's Instructions.

.2 Store cementitious materials and aggregates in accordance with CSA-A23.1.

.3 Store lime putty in plastic lined sealed drums.

.4 Keep material dry. Protect from weather, freezing and contamination. Store above ground on raised platforms.

.5 When temperature is 10°C or less: Store cements and sands for immediate use within heated enclosure.

.6 Ensure that manufacturer's labels and seals are intact upon delivery.

2.0 PRODUCTS

2.1 MANUFACTURERS – PREMIX MORTAR

.1 The following products are approved as the basis of design. Substitutions are not allowed unless the alternate is approved in writing by the Consultant prior to use on site. It is the Contractor's responsibility to document that the substitution is equivalent to the specified product to the Consultant's satisfaction.

.2 Cathedral Stone, Product Type JAHN M110 Historic Pointing Mortar Type "N".

.3 King Packaged Materials Company Product Type King 1-1-6 Type N Mortar

2.2 MORTAR

.1 Sand: to ASTM-C144. Passing a 1.18mm sieve.

.2 Water: clean and potable

.3 Lime:

.1 Processed Lime (Quicklime): to ASTM-C5.
.2 Hydrated lime: ASTM-C207.

.4 Portland cement: CAN/CSA-A5.

.5 Masonry cement: CAN/CSA-A8.

.6 White cement: use white silica sand and white Portland cement and lime.

.7 Colour: To match the existing.

.8 Air entrainment: To meet exposure requirements.

2.3 MIX PROPORTIONS

.1 Lime mortar: proportion mortar by volume as follows:
.1 5 sand to 1 lime, with water to make as stiff as can be worked

.2 Cement mortar: Proportion mortar by volume as follows:
.1 Type N: 1 Type N Portland Cement: 1 hydrated lime: 6 sand

.3 For normal exterior pointing and bedding: based on proportion specifications consisting of 1 part white Portland cement, 1 parts lime and 6 parts sand with enough water to make as stiff as can be worked.

.4 Obtain written approval of Consultant before changing mix proportions.

2.4 REMIXED MORTAR

.1 Type N: Compressive strength 3.5MPa to 7.5MPa

2.5 MASONRY MORTAR

.1 Mix masonry mortar with sand in proportion of [1:3] and with enough water to make as stiff as can be worked.

.2 Mortar used in repointing shall match the existing mortar.

.3 Discard mix not used and placed within 1.5 hours.

.4 Colouring pigments: metallic oxide composition not exceeding 15 percent of weight of binder materials.

3.0 EXECUTION

3.1 EXAMINATION

.1 Investigate possible structural problems and report to Consultant before beginning work.

.2 Study existing pointing styles and methods of reproducing them, and submit sample for approval before starting work.

.3 Examine horizontal and vertical joints to determine which were struck first and whether they are same style, as well as other aspects of workmanship that establish authenticity of original work.

.4 Report in writing, to Consultant areas of deteriorated mortar revealed during work. Obtain Consultant's approval and instructions for mortar mix required for deteriorated mortar areas revealed during work, before proceeding with work.

.5 Examine joints visually for obvious signs of deteriorated masonry.

.6 Test joints not visually deteriorated as follows:

.1 Test for loose and deteriorated mortar by scratching the surface of the joint using a flat head screwdriver.

.2 Mark unsound joints for review by Consultant.

.3 Consultant will review joints and determine repair quantities prior to removal of joints.

.7 Immediately report to Consultant evidence of moisture damage or structural distress and stop work in that area.

3.2 WORK IN COLD OR HOT AMBIENT CONDITIONS

.1 Comply with requirements of CSA-A371.

.2 Comply with requirements of pre-mixed mortar manufacturer.

.3 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

.4 Maintain dry beds for masonry and use dry masonry units only. Do not wet masonry units in winter.

.5 For masonry work which will be done below 5°C, measure temperatures of masonry material prior to use; maintain temperatures as close as possible for mortar batches; ensure mortar temperature on mortar boards does not exceed 50°C; use dry masonry units; lay masonry on unfrozen surfaces free from snow and ice; use windbreaks when laying masonry not protected by enclosures; provide a high-low registering thermometer where directed on site.

.6 When mean air temperature will, over a 24 hour period, go below 5°C but not below 0°C, conduct masonry work as for normal temperatures except heat water or sand to produce mortar temperatures between 5°C and 50°C. Protect entire constructed masonry by enclosing within weatherproof membrane for 72 hours.

.7 When mean air temperature will, over a 24 hour period, go below 0°C but not below -4°C, conduct masonry work as for normal temperatures except heat water and sand to produce mortar temperatures between 5°C and 50°C and maintain temperature of mortar boards above 0°C. Protect entire constructed masonry by enclosing within weatherproof membrane for 72 hours and maintain air temperature within enclosure at minimum 10°C.

.8 When mean air temperature is below -4°C, conduct laying of masonry in enclosures heated to maintain air temperature above 0°C. Conduct masonry work as for normal temperatures except heat water and sand to produce mortar temperatures between 5°C and 50°C and heat units if necessary so that temperature of units at time of laying is minimum 7°C. Maintain enclosure in position for 72 hours and maintain air temperature within enclosure at minimum 10°C.

.9 When mean air temperature will, over a 24 hour period, go above 38°C (or 32°C with a 3.6 m/s wind), maintain mortar and grout at a temperature between 21°C and 49°C and limit spread of mortar bed to 1.22m (4 ft.). Place units within one (1) minute of spreading mortar. Provide shade and air breaks as required.

3.3 MIXING

.1 Prepare mortar by: mixing dry materials; add water; mix whole measures.

.2 Mix mortar ingredients in quantities for use in 1.5 hours.

.3 Use manual mixing provided quantities of materials and water are accurately controlled and the method of mixing is approved by the Consultant.

.4 Operate power driven mixer when fully charged as recommended by the manufacturer.

.5 Add water slowly while mixing until all lumps are eliminated.

3.4 MORTAR STRENGTH TOLERANCES

.1 Mortar compression strength: Mortar strength shall not exceed 25% of stone strength.

3.5 RAKING JOINTS

.1 Use manual raking tool to remove deteriorated mortar a minimum of 2x the joint thickness and 19 mm to a maximum of 150mm leaving square corners and a flat surface at back of cut. Clean out voids and cavities encountered.

.2 Ensure that no masonry is chipped, altered, or damaged by work to remove mortar. Repair or replace masonry damaged during removals at no additional cost to the Owner. The Consultant will review damage and direct repair or replacement.

.3 Notify Consultant if mortar is unsound past the raking depth.

.4 Clean with non-ferrous brush or compressed air surfaces of joints without damaging texture of exposed joints or masonry units.

.5 Flush open joints and voids. Clean open joints and voids with low pressure water and, if not free draining, blow clean with compressed air.

.6 Leave no standing water.

3.6 REPOINTING

.1 Dampen joints prior to repointing.

.2 Keep masonry damp while pointing is being performed.

.3 Completely fill joint with mortar. If surface of masonry units has worn rounded edges keep pointing back from surface to keep same width of joint. Avoid feather edges. Pack mortar solidly into voids and joints.

.4 Tool and compact using jointing tool to force mortar into joint.

.5 Build-up pointing in layers not exceeding 13 mm in depth. Allow bottom layers to set before applying subsequent layers. Maintain joint width.

.6 Tool joints to match existing profile.

.7 Use suitable jointing tool to form compacted tooled joints to match existing profiles.

.8 Remove excess mortar from masonry face before it sets. Finish jointing neatly to specified profile.

3.7 FIELD QUALITY CONTROL

.1 Use batching box.

.2 Monitor mixing time.

3.8 CLEANING

.1 Clean surfaces of mortar droppings stains and other blemishes resulting from Work, with natural bristle brush, clean sponge and water after initial set.

.2 Do not smear wet mortar.

.3 Review with Consultant prior to using other cleaning methods for persistent stains.

3.9 PROTECTION

.1 Protect adjacent finished work against damage that may be caused by the work of this Section.

.2 At end of each working day, cover unprotected work with waterproof tarps. Extend tarps to 0.5 m over surface area of work and install tightly to prevent finished work from drying out too rapidly and to prevent weather from eroding recently repointed material.

.3 Maintain tarps in place for a minimum of 2 weeks after repointing.

.4 Ensure that bottoms of tarps permit airflow to reach mortar in joints.

.5 Anchor coverings securely in position.

.6 Install and maintain wetted burlap protection during the curing process:

.1 Minimum of 7 days in summer.
.2 Minimum of 15 days in cold weather conditions using dry heated enclosures.

.7 Wet mist burlap only. Ensure no direct spray reaches surface of curing mortar.

.8 Shade areas of work from direct sunlight during periods over 25°C and maintain constant dampness of burlap.

.9 Maintain ambient temperature of 10°C for minimum of 15 days after repointing masonry.

.10 No exhaust products shall enter the curing area.

END OF SECTION

1.0 GENERAL

1.1 MEASUREMENT PROCEDURES

.1 Measurement for payment for this work will be on a m^2 basis and will include costs associated with supplying materials, and executing work as described herein and reflected in contract.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
  .1 ASTM C144-04, Standard Specification for Aggregate for Masonry Mortar.

.2 Canadian Standards Association (CSA International)

  .1 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  .2 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.

1.3 DEFINITIONS

.1 Repair of Stone: Mechanical or plastic repair, done to restore original appearance and function of partly deteriorated stones.

.2 Filling: Material used to rebuild broken or deteriorated part of stone.

.3 Adhesive: Material used to fasten broken/fractured stone elements by direct application at fracture interface and/or by application to added reinforcing elements such as dowels.

.4 Mortar: Material used to repoint the adjacent mortar joints to stone element being repaired.

1.4 SUBMITTALS

.1 Provide submittals and samples in accordance with Section 01 10 01 – General Requirements.

.2 Provide adhesive, mortar, and filling samples to CAN/CSA A179.

.3 Submit upon request by Consultant purchase orders, invoices, suppliers test certificates and documents to prove that materials used in contract meet requirements of specification. Allow free access to sources where materials were procured.

1.5 QUALITY ASSURANCE

.1 Mock-ups:
- .1 Construct mock-up in accordance with this Section.
- .2 Construct mock-up 1.0 m^2 minimum of stonework to be refaced with specified materials and methods.
- .3 Do not use existing stonework when constructing job mock-up.
- .4 Construct mock-up where directed.
- .5 Allow 24 hours for inspection of mock-up by Owner and Consultant before proceeding with stone repair work.
- .6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
- .7 Clean mock-up to demonstrate cleaning operations to Owner and Consultant before starting cleaning work.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:
- .1 Deliver, store, handle and protect materials in accordance with Section 01 10 01 – General Requirements.
- .2 Keep material dry. Protect from weather, freezing and contamination. Store materials in a dry area and supported free of ground.

.2 Waste Management and Disposal:

- .1 Refer to Section 01 10 01 – General Requirements.

1.7 AMBIENT CONDITIONS

.1 Maintain a minimum temperature of 10 degrees C during and 48 hours after repair, throughout thickness of stone.

.2 Allow materials to reach minimum temperature of 10 degrees C prior to use.

.3 Maintain temperature between 21 degrees C and 24 degrees C during repair and 48 hours after, throughout thickness of stone.

.4 Ensure epoxy resin compatible with humidity condition of stone as specified by manufacturer.

.5 Provide temporary enclosures and heating equipment to maintain specified temperatures. Take precautions to avoid overheating masonry.

.6 Refer to manufacturer's instructions for environmental requirements of products.

2.0 PRODUCTS

2.1 MATERIALS

.1 Portland cement: to CAN/CSA-A3000.

.2 Sand: cleaned and graded in accordance to ASTM C144.

.3 Epoxy mixture for adhesive:
.1 Hilti HIT-HY 70

.4 Water: clean and free of deleterious materials such as acid, alkali and organic material in accordance to CAN/CSA A179.

.5 Dowels: Stainless steel 3mm to 6mm diameter or threaded rod.

.6 Deformed wire: stainless steel.

.7 Stone slabs: To match existing.

2.2 MORTAR MIXES

.1 Mortar: Refer to Section 04 01 25 – Historic – Masonry Repointing

2.3 FILLING MIXES

.1 Filling to contain lime putty, sand, and crushed stone and match surrounding stones in texture, strength, porosity and colour.
.2 Submit samples for testing.

2.4 ADHESIVE MIXES

.1 Adhesive to contain epoxy and sand.

.2 Submit samples for testing.

3.0 EXECUTION

3.1 SITE VERIFICATION OF CONDITIONS

.1 Report in writing, to Consultant areas of deteriorated stone not identified in the documents.

.2 Obtain Owner’s and Consultant's approval and instructions for repair and replacement of masonry units before proceeding with repair work.

.3 Stop work in that area and report to Owner and Consultant immediately any evidence of mould.

3.2 PREPARATION

.1 Remove deteriorated portions of stones using low impact removal methods until sound surface is reached.

3.3 PROTECTION

.1 Prevent damage to the building and site elements which are to remain. Make good damage.

.2 Protect surrounding components from damage during work.

.3 Take utmost care not to damage historic fabric. Make good any damage.

.4 Obtain Consultant's approval for repair methodology.

3.4 REPAIR OF A FRACTURED STONE

.1 Remove elements which require minor repair. Do not damage existing Work.

.2 Drill 13 mm diameter holes, a minimum of 75 mm long in each section at fracture.

.3 Insert 6 mm diameter dowels, sized to fit the repair and apply specified adhesive to holes and interface. Let adhesive cure for manufacturer's recommended time.

.4 Reinstate consolidated element into work and repoint with specified mortar. Joints to match existing.

.5 Obtain Owner's and Consultant's approval for alternative repair methodology before commencing work.

3.5 REFACING PARTLY DETERIORATED STONE WITH SLAB (DUTCHMAN)

.1 Drill 13 mm diameter holes, a minimum of 75 mm long at interface of existing and new stone slabs.

.2 Insert 13 mm diameter dowels, 50 mm long into existing stone and apply specified adhesive to holes and interface. Dowel to be countersunk at face of stone.

.3 Make horizontal dovetailed grooves 5 mm deep at interface of existing and new stone slabs.

.4 Apply specified adhesive to dovetailed grooves and interface of existing stone.

.5 Fill dowel holes and dovetailed grooves of new stone slab with specified adhesive. Erect new stone slab into position. Secure stone temporarily to allow adhesive to set.

.6 Repoint with specified mortar. Joints to match existing.

3.6 REFACING PARTLY DETERIORATED STONE WITH FILLING

.1 Follow manufacturer's written requirements.

.2 Remove dust from cavity and wet surfaces.

.4 Roughen stone surfaces to form grooves in back of cavity.

.6 Install specified metal wire mesh as indicated.

.8 Build up gradually new section in layers not exceeding 10 mm thickness allowing each layer to set before proceeding with next.

.10 Use wood float and avoid excessive trowelling to prevent crazing.

.12 Form roughly to required shape with wood float, then chisel finish to final shape when mortar has set.

.13 Remove laitance with stiff, near-dry fibre brush.

.15 Cover repairs with damp cloths, occasionally sprayed with water for several days.

.16 Repoint with specified mortar. Joints to match existing.

3.7 STONE REINSTALLATION

.1 Brush stone with fibre brush and wash with clean water to remove and residual debris from the surfaces.

.2 Set stone in original position with water soaked hardwood edges.

.3 Insert and compress firm mortar to within 50 mm of point surface. Allow mortar to set for 48 hours.

.4 Pull out wooden wedges when dried and shrunken.

.5 Point to surface in multiple layers not exceeding 12 mm in depth.

3.8 MORTAR JOINT REPAIR

.1 Make good any damage to mortar joints.

.2 Refer to Section 04 01 25 – Historic - Masonry Repointing.

3.9 CLEANING

.1 Proceed in accordance with Section 01 10 01 – General Requirements.

.2 Obtain Consultant's approval of cleaning operations before starting cleaning work.

.3 Using clean water and natural fibre brush, remove debris from reinstated stones.

.4 Protect foundations, plants, grass, vegetation, and adjacent grounds from excessive water accumulation

.5 Clean stone work surfaces after repairs have been completed and mortar has set.

.6 Clean stone surfaces of adhesive or mortar residue resulting from work performed without damage to stone or joints.

.7 Clear site of debris, surplus material and equipment, leaving work area in clean and safe condition.

3.10 PROTECTION OF COMPLETED WORK

.1 Protect finished work from impact damage for period of two weeks.

END OF SECTION

1.0 GENERAL

1.1 SECTION INCLUDES

.1 Removal, storage, and resetting of displaced stone units on existing building as indicated on drawings and as directed by Consultant.

1.2 MEASUREMENT AND PAYMENT

.1 Measurement for payment for this work shall be on a per stone basis and shall include costs associated with supplying materials, repointing, and executing work as described herein.

.2 Some areas of this work are also included in lump sum pricing.

1.3 REFERENCES

.1 ASTM C97 / C97M-15, Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.

.2 ASTM C170 / C170M-15a, Standard Test Method for Compressive Strength of Dimension Stone.

.3 ASTM C568 / C568M-10, Standard Specification for Limestone Dimension Stone.

.4 CAN/CSA A179-04 (R2014), Mortar and Grout for Unit Masonry.

.5 Parks Canada Standards and Guidelines for the Conservation of Historic Places in Canada (2010).

.6 SCAQMD, California State, Rule 1168-05, Adhesives and Sealants Applications.

1.4 DEFINITIONS

.1 The following terms have the meanings indicated when used in this Section:

.1 Lewis: Instrument inserted at top of stone as means of attachment in raising and lowering. Holds stone by means of keys or wedges fitted to dovetailed recess.

.2 Dogs: Metal appliance for securing parts or members together by means of one or more projecting teeth or bent portions, lug, cramp.

1.5 SUBMITTALS

.1 Submit sample of used or previously quarried or salvaged stone. Submit one stone, sized and dressed to match existing stone units. Make stone supply accessible to Owner and Consultant. Owner will select number of stones for sampling and request sizing and dressing according to requirements.

.2 Submit mortar samples in quantity and size specified in CAN/CSA A179.

.3 Submit maintenance data for masonry work.

1.6 QUALITY ASSURANCE

.1 Allow Owner and Consultant access to mason's workshop for review of current work-in-progress.

.2 Execute work with personnel experienced in preservation of historic masonry.

.3 Masons shall have minimum of 5 years' experience with historic masonry.

.4 Consultant may reject masons who do not demonstrate appropriate abilities or experience.

.5 Masons shall attend a pre-installation conference with the Owner and Consultant.

.6 Where masons leave work force, replacement masons shall also meet specified requirements.

1.7 MOCK-UPS

.1 Field erect an in situ sample of work complete with specified materials and workmanship. Complete mock-up of stone replacement to confirm method of installation and to establish the acceptable quality of workmanship.

.2 Construct Mock-up to be minimum 2 stones.

.3 Use both existing and replacement stonework when constructing job mock-up.

.4 Construct mock-up where directed by Consultant.

.5 Allow 48 hours for review of mock-up by Consultant before proceeding with stonework.

.6 When accepted by Owner and Consultant, mock-up will demonstrate minimum standard for the work of this Section.

.7 Mock-up may remain mock as part of finished work.

2.0 PRODUCTS

2.1 MATERIALS

.1 Limestone: to ASTM C568, category I - Low Density, colour and texture shall match Consultant approved sample.

2.2 STONE CHARACTERISTICS

.1 To match exiting stone.

2.3 ANCHORS, TIES, SEALANTS

.1 Anchors, cramps, dowels: stainless steel type 304 or 316.

.2 Sealants: in accordance with Section 07 92 00 – Building Envelope Sealants.

2.4 MORTAR

.1 Mortar: Refer to Section 04 05 26 – Historic Mortaring.

3.0 EXECUTION

3.1 EXAMINATION

.1 Report, in writing, to Consultant areas of deteriorated masonry not previously identified.

.1 Visually review and sound all surfaces of the exterior wall areas identified in the contract documents to locate targeted repair areas and localized deteriorated masonry.

.2 The Contractor and Consultant shall identify and mark areas for replacement.

.3 The Contractor shall commence with repairs upon receipt of approval by the Consultant in writing.

3.2 PREPARATION

.1 Weather (seasoned or aged) stone for six months or time specified by Consultant. Prevent absorption of ground water and water accumulation on stone. Rest stones in their natural bedding during weathering.

.2 Move and lift stone units using means to prevent damage. Submit stone units dropped or impacted to Consultant for review and approval prior to use. Do not make holes or indentations for Lewises or dogs on face or top side of stone.

.3 Identify bedding planes of stone units. Duplicate bedding marks and maintain pattern on usable pieces of cut stone with adjacent stone.

.4 Provide shoring and bracing in accordance with shop drawings.

3.3 STONE REMOVAL

.1 Rake out mortar joints of stones to be removed.

.2 Create relief cuts in the stone to be removed.

.3 Remove stone using least damaging means practical. Do not pry against adjacent stones.

.4 Do not damage existing adjacent stones to remain.

.5 Remove loose material from deteriorated stones. Create level surface 50 mm from masonry face for setting of stone face plates.

.6 Clean dust, mortar and stone fragments from slot.

3.4 CUTTING/SIZING OF STONE

.1 Use calipers, squares and levels to measure hole for new stone. Allow for mortar joints of thickness to match existing joints.

.2 Provide 1:10 slope on top face of stone unit where horizontally projecting from the building, sloping down to front face.

3.5 MOVING STONES

.1 Use Lewises or dogs to lift stones to working level.

.2 Slide stones into place on wood ramps.

.3 Protect edges and face of stone from damage when hoisting and lifting from position. Use separators or wood shims to isolate units from hoisting belts.

.4 Incorporate only undamaged stone in Work.

3.6 INSERTING REPLACEMENT STONE

.1 Clean stone by washing with water and natural fibre brush before laying.

.2 Dampen surfaces of slot and apply bedding mortar.

.3 Where shims are necessary to level, install plastic shims that are of sufficient size to not contribute to point loading.

.4 Lay heavy stones and projecting stones after mortar in courses below has hardened sufficiently to support weight.

.5 Prop and anchor projecting stones until wall above is set.

.6 Set large stones on water soaked softwood wedges to support stone in proper alignment until mortar has set. Remove wedges when dry. Do not break off.

.7 Do not smear mortar onto stone face.

.8 Install non-corrosive anchors, dowels and cramps.

.9 Set stones to match alignment of adjacent stones and completely bed and head joints. Completely fill anchor, dowel and lifting holes and voids.

3.7 FILLING JOINTS/POINTING

.1 Fill joints and point in accordance with Section 04 01 25 - Historic - Masonry Repointing.

3.8 STONE SCHEDULE

.1 To match existing

3.9 REPOINTING

.1 Refer to Section 04 01 26 – Historic – Masonry Repointing

3.10 CLEANING

.1 Clean stone work surfaces after repairs have been completed and mortar has set.

.2 Clean stone surfaces of adhesive or mortar residue resulting from work performed without damaging stone or joints.

.3 Remove drypack mortar by brushing off.

.4 Remove pointing mortar, once initially set approximately 1-2 hours, with stiff bristle brush

3.11 PROTECTION

.1 Cover top of completed and partially completed wall, not enclosed or sheltered, with weatherproof coverings at end of each working day. Drape cover over wall and extend 0.5 m down both sides. Anchor securely in position.

.2 Prevent finished work from curing too quickly.

.3 Protect adjacent work from marking or damage due to work of this Section.

.4 Provide temporary bracing of masonry work during erection until permanent structure provides adequate bracing.

END OF SECTION

1.0 GENERAL

1.1 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 10 01 – General Requirements.

.2 Protect and store stones to facilitate their resetting.

.1 Store dismantled masonry units on wood pallets, protected from exposure to water, elements, and potential mechanical damage fully covered under polyethylene.

.2 Submit storage and identification system to Consultant for review.

.3 Waste Management and Disposal:

.1 Refer to Section 01 10 01 – General Requirements.

1.2 SEQUENCING

.1 Stones and other units, that are to be relocated individually during resetting operations, are numbered on drawing/photograph number.

.2 Mark following:

.1 Stones and other elements or components to show identity and position.
.2 Wood platforms or other equipment used to transport and store stones.
.3 Work and storage areas.
.4 Location from which stones are removed on photographs.

.3 Prepare chart or card-index to help locate any stone or unit when necessary, and to control availability of platforms and of work and storage areas.

.4 Keep chart or card-index up-to-date and, if required, produce copy every day.

.5 Chart or card-index to contain relevant information.

.6 Submit up-to-date copies of chart or card-index, as well as chronological information concerning each numbered unit (individual cards of units), when requested.

2.0 PRODUCTS

2.1 NOT USED

.1 Not Used.

3.0 EXECUTION

3.1 EXAMINATION

.1 Examine masonry, staging and storage areas.

3.2 SITE VERIFICATION OF CONDITIONS

.1 Report in writing, to Consultant areas of deteriorated stone not identified in the documents. Obtain Consultant's approval and instructions for repair of stone before proceeding.

.2 Stop work in that area and report to Owner and Consultant immediately evidence of mould.

3.3 PREPARATION

.1 Remove deteriorated portions of stones by chiselling until sound surface is reached.

.2 Obtain Consultant's approval for alternative methodology and tools to be employed before commencing the work.

.3 Clean stone surface of dust and stone chips.

3.4 PROTECTION

.1 Prevent damage to building, fencing, trees, landscaping, pavement, and utility lines which are to remain. Make good damage.

.2 Protect surrounding components from damage during work.

.3 Make good damage to historic fabric.

.4 Obtain Consultant's approval for repair methodology.

3.5 TEMPORARY MARKING AND RECORDING

.1 Mark stone, on face, before removal using marking product which can be completely erased when required without damaging masonry unit:

.1 Ball-point pen on diachylon, attached to stone.
.2 Waxless chalk directly on stone.

.2 Photographically record stonework to be dismantled and rebuilt.

.3 Ensure that temporary marking will remain in use resistant to weather, handling and cleaning until final marking of stones.

.4 Ensure that markings and adhesive are removed without damaging units by brushing with vegetable fibre brush used either dry or with water. Use no solvent, acid or other chemical product.

3.6 SUPPORT

.1 Construct shoring and cradling, and other temporary framing work needed to support structure, or parts of it, during removal operations and in anticipation of resetting, if structure is not to be completely dismantled, according to approved drawings, bearing seal and signature of qualified Professional Engineer familiar with historic masonry structures and licensed to practice in Ontario.

3.7 LOOSENING STONES

.1 Use approved methods to loosen stones which will cause no damage either to stones or to other architectural elements.

.3 Use hand tools only. Obtain Consultant's approval for use of power tools before commencing work.

3.8 SPECIAL TECHNIQUES

.1 Avoid damaging arris of stone when removing mortar and freeing up.

.2 Use wood wedges where required to remove or dislocate stone.

.1 Use flat pry bars protected with impact absorbing protection (burlap, cardboard).

.3 Use nylon hoisting belts. Use at least 2 belts per stone.

.4 Avoid damaging edges of stone by protecting when hoisting and lifting from position. Use separators or wood shims to isolate units from hoisting belts.

.1 Where damage occurs, repair stone in accordance with Section 04 03 41 - Historic - Repair of Stone.

3.9 HANDLING

.1 Place detached stones on wood surfaces during handling. Prevent contact with metal.

.2 When stones are lowered to ground, place directly on wooden platform that will be used for transport or storage.

.3 Transport and keep stones on wooden platforms.

.4 Ensure that sharp edges of stones do not come into contact with any hard object.

3.10 TEMPORARY STORAGE STAGING AREA

.1 Place stones in designated area of site for cleaning, detailed inspection and for final marking, before storage.

.2 Stones to be accessible and retrievable when required.

3.11 CLEANING

.1 Do cleaning operations at above freezing temperature. After cleaning, protect wet stones against freezing until dry.

.2 Clean stones by wet scrubbing with vegetable fibre brush unless otherwise instructed by Consultant.

.3 Remove excess mortar by using hand tools.

3.12 FINAL MARKING

.1 Do final marking after cleaning, on surface that supports good adhesion and legibility and will not be visible after resetting.

.2 Do marking in colour and dimensions to be legible from distance of 2 m.

.3 Ensure that product used will not affect mortar to stone adhesion when resetting.

.4 Ensure that product used for marking will survive storage until resetting of stone. Storage time may last several years and another cleaning may become necessary before resetting.

3.13 FINAL STORAGE

.1 When stones are placed under shelter, shelter must be adequately ventilated and designed to keep condensation formed on the internal surfaces of shelter.

.2 Layout storage so that each stone will have faces visible, and be accessible or removable without having to move adjacent stones.

.4 Show layout of stones to be stored on record drawing and submit copy to Consultant.

.5 Store rubble stone in a wood box.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 Provide all labour, materials, equipment, and supervision to: prepare the stair and foundation wall surfaces, detail all cracks and joints, patch perimeter and voids and install a hot rubberized waterproofing system (membrane and protection board) to areas designated on drawings.

1.2 REFERENCE STANDARDS

.1	CAN/CGSB-8.1-M88	Sieves, Testing, Woven Wire, Metric Series
.2	CAN/ CGSB-37.50-M89	Hot Applied Rubberized Asphalt for Roofing and Waterproofing
.3	CAN/ CGSB-37.51	Application of Hot Applied Rubberized Asphalt for Roofing and Waterproofing
.4	ASTM C117-95	Standard Test Method for Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing
.5	ASTM C136-01	Test Method for Sieve Analysis of Fine and Coarse Aggregates
.6	CGSB 37-GP-9Ma	Standard for: Primer, Asphalt, Unfilled, for Asphalt Roofing, Damproofing, and Waterproofing
.7	CGSB 37-GP-15M	Application of Asphalt Primer for Asphalt Roofing, Damproofing and Waterproofing
.8	ASTM D4263-83	Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
.9	ASTM D5957-98 2013	Standard Guide for Flood Testing Horizontal Waterproofing Installations

1.3 SITE EXAMINATION

.1 Bidders shall visit the Site and examine the slab and wall surfaces to receive membrane. Rough surfaces may require additional surface preparation after cleaning. Bid shall include all costs of surface preparation and patching of rough surfaces. No extras for surface preparation or additional material will be entertained after bid closing.

1.4 SUBMITTALS

.1 Contractor to submit manufacturers shop drawings identifying details of waterproofing system which have not already been indicated in these documents including installation specifications, material thicknesses, details at joints, cracks, upstands, walls, drains, and termination points to the Consultant for review prior to starting work.

.2 Submit installation procedures to the Consultant for review prior to starting work including slab preparation requirements.

.3 Submit with Bid a description of the products to be used to patch rough surfaces suitable for membrane application.

.4 The waterproofing system manufacturer shall submit certificates confirming the following:

.1 A minimum of 7,500 m^2 (82,000 sq.ft.) of the system has been installed on parking structures of similar climate and exposures and has performed satisfactorily. Provide to Consultant a list of similar completed waterproofing applications for verification of "satisfactory performance".

.2 The system will meet the warranty requirements as specified in this section.

.3 Waterproofing system Applicator is presently a licensed Applicator of the waterproofing system.

.4 The Applicator has a minimum of three (3) years of directly applicable waterproofing installation experience, or has installed a minimum of 5,000 m^2 (55,000 sq.ft.) of the specified waterproofing system.

.5 Provide a certificate signed by the Applicator and system manufacturer certifying the following:

.1 Surfaces to receive waterproofing systems were inspected and found to be satisfactory to receive the waterproofing system in accordance with the manufacturer's requirements.

.2 In the event of inclement weather after the application of primer and before the application of membrane, substrate surfaces primer application meets the more stringent requirements of the manufacturer's recommendations.

.3 Prior to covering the membrane with overburden, notify the Consultant in writing that the installation has been inspected and approved by the Inspection company and the manufacturer's Technical representative.

.4 Waterproofing system was applied in accordance with manufacturer's recommendations.

.5 Completed waterproofing system conforms to system described.

.6 Installation of the waterproofing system shall not be permitted until the surface preparation has been reviewed and approved by the Manufacturer in writing. Contractor to submit the Manufacturer's surface preparation review letter to the Consultant prior to commencing installation of waterproofing system.

.7 Any existing conditions, not specified, which may adversely affect the bonding, or performance of the membrane shall be brought to the attention of the Consultant, in writing, for resolution prior to installation of membrane. Application of waterproofing shall imply acceptance of surfaces.

.8 Confirm in writing the compatibility of the proposed waterproofing system with the existing waterproofing prior to application.

.9 Provide three (3) copies of maintenance instructions for finished surfaces prior to Substantial Performance.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 Do not install waterproofing system when ambient air temperature or substrate temperature is less than that specified in manufacturer's specifications.

.1 If this temperature is not reached, installation of temporary heaters is required.

.2 Maintain air temperatures and substrate temperature at installation area in accordance with manufacturer's specifications.

.3 Protect materials from moisture damage or contamination until adequately cured.

.4 All working conditions shall meet the requirements of the Occupational Health and Safety Act of the Province of Ontario.

1.6 PERFORMANCE REQUIREMENTS

.1 The waterproof membrane system is comprised of a hot rubberized waterproof membrane or torch applied rubberized sheet membrane. The performance

requirements and warranty / guaranty requirements apply to the total system and are the responsibility of the waterproofing system applicator and manufacturer.

.2 The waterproofing system shall satisfy the following requirements for the duration of the warranty:

Waterproofing System Requirements for Duration of Warranty:

.1 The system shall be totally waterproof, flexible and thermally compatible with the substrate under applicable service conditions.

.2 The system shall not allow moisture penetration at termination details, drains, upturns, or splices.

.3 The system shall be free of visible pinholes or blisters.

.4 The system shall remain skid resistant and resist traffic wear and damage under its intended use, wet, dry or under snow and provide good traction.

.5 The system shall exhibit zero chloride permeability.

.6 The system shall withstand active cyclical crack movements to a maximum of 1.5 mm and remain waterproof. In locations where cracks have been reinforced with rubber sheets they shall withstand movements to a maximum of 3 mm and remain waterproof. Membrane shall comply with crack bridging requirements of CGSB-37-GP-50-M89.

.7 The membrane, primer or surface patching shall fully adhere to the concrete substrate.

.8 All layers of the system shall fully adhere to each other.

.9 The system shall not debond, crack, or wear excessively. Loss of wear course will constitute defect in material and/ or workmanship.

.10 The waterproofing system shall not blister, swell, crack, delaminate, disintegrate, compress or stretch unduly:

.1 When subjected to long term weight and/or power steering movements of stationary vehicles.
.2 When subjected to moving car traffic at all locations including ramps and curves.
.3 When subjected to temperature ranges from winter to summer.
.4 When exposed to ultra violet or any other sun’s rays.

1.7 PROJECT CONDITIONS

.1 Do not apply membrane nor proceed during inclement weather. Ensure all surfaces to receive membrane are free of water, dew, frost, snow, ice and other contaminants.

.2 Do not apply material when substrate temperature is below 5 degrees Celsius.

.3 All adjacent parts of the building shall be protected from damage caused by operations. Any damage caused by this contract shall be repaired to match the original materials and appearance.

.4 Locate kettles, equipment and materials well away from the building, in areas designated by the Consultant and/or Owner.

.5 Conduct operations so as to leave deck exposed for the minimum period of time. Protect, as required, to prevent water infiltration or environmental damage to interior spaces. All costs associated with the environmental damage to the interior spaces and/or tenant property (i.e. storage locker contents, cars, etc.) will be responsibility of the Contractor.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original unopened packaging in undamaged condition, sealed with labels intact clearly identifying manufacturer's name, brand name, weight, instruction for use and all identifying references to standards as required..

.2 Deliver and store all materials susceptible to damage from moisture, on a dry base off ground and protected from damp, wet, freezing or contact with non-compatible materials. Any materials damaged and/or exposed to the elements and/or moisture, shall be removed from the worksite at the discretion of the Consultant.

.3 Make all arrangements with regard to delivery and storage on the site with the Contractor and schedule deliveries accordingly. Store materials in a neat, safe manner, not to exceed the allowable structural capacity of the storage area.

1.9 WARRANTY

.1 Remedy all defects in the membrane system and related membrane installed hereunder which appear within a period of [the warranty period] [five (5) years] [from the date of Substantial Completion].

.2 Make all necessary repairs and replacements within 48 hours of receipt of written notification.

.3 Provide a written warranty confirming above, issued on the corporate letterhead, signed and sealed by an authorized signing officer.

.4 Nothing contained in this article shall be construed as in any way restricting or limiting the liability in common law and statutory liability of the Contractor.

.5 Obtain from the membrane manufacturer a material warranty stating that the membrane shall be free of manufacturing defects and premature deterioration and will not leak for a [five (5) year] [ten (10) year] warranty period.

2.0 PRODUCTS

2.1 WATERPROOFING MEMBRANE

.1 Surface Conditioner (primer) shall be an asphalt cut-back meeting, or exceeding the requirements of CGSB-37-GP-9Ma and CGSB-37-GP-15M.

.2 Liquid Waterproofing Membrane shall be a hot poured rubberized asphalt meeting or exceeding the requirements of these Contract Documents and CGSB-37-GP-50- M89 and CGSB-37-51-M90.

.3 Sheet Waterproofing Membrane shall be SBS modified bitumen reinforced with non-woven polyester meeting or exceeding the requirements of these contract documents and CGSB-37.50-M89.

.4 Polyester Fabric Reinforcing

.1 Bakor Polyester Reinforcement
.2 Hydrotech 2016 Reemay
.3 Tremco 2014 Reemay.
.4 Multiseal 2016 Polyester Fabric Reinforcing
.5 Or approved alternative

.5 Elastomeric (butyl) reinforcing sheet

.1 Bakor 9990-25 Elastomeric Flashing (47 mil/63 mil)
.2 Hydrotech 6147/6166 (47 mil/63 mil)
.3 Tremco Elastomeric Sheeting (60 mil)
.4 Multiflex 6300 (63 mils)
.5 Or approved alternative

2.2 PROTECTION BOARD

.1 Approved products:

.1 3mm Coroplast
.2 3mm asphalt impregnated protection board
.3 IKO Protection Board
.4 Soprema – 3.2mm Sopraboard
.5 Monsey Baker 990.31
.6 Or approved alternative

2.3 FLASHING

.1 Flashing to be 0.5 mm galvanized steel, to ASTM 653 with G90 zinc coating paint.

2.4 SURFACE PATCH MATERIALS

.1 Products used to patch rough surfaces shall be 100% solids epoxy and shall contain no additives or fillers. Membrane material may be used to fill rough areas if approved by manufacturer. Alternate products may be suggested for approval but must be suitable for installation below hot applied waterproofing.

.2 No extras will be entertained for surface preparation or additional membrane material will be entertained after bid closing.

2.5 APPROVED SLAB WATERPROOFING SYSTEMS FOR LANDSCAPED DECKS AND BELOW CONCRETE TOPPINGS

.1 Approved hot rubberized waterproofing systems – 2-ply systems:

.1 Hydrotech 6125 membrane as supplied by Hydrotech Membrane Corporation of Canada.

.2 Bakor 790-11 membrane as supplied by Bakor Inc.

.3 Multiseal 2000 hot applied rubberized asphalt membrane as supplied by Multiseal Construction Products.

.4 Tremproof 6100 membrane as supplied by Tremco.

.5 Bemalastic 1213 BDM as supplied by McAsphalt Industries Ltd.

2.6 ALUMINUM FASTENER BARS

.1 All fastener bars to be aluminum ¼" x 1" (6mm x 25 mm) in size and fastened to wall with ¼" x 2" long (6 mm x 50 mm) countersunk anchors at 18" (450 mm) centres and covered with an additional layer of membrane.

3.0 EXECUTION

3.1 SURFACE PREPARATION

.1 Preparation of slab and vertical surfaces is to be in strict accordance with the more stringent requirements of the membrane manufacturer's recommendations and these Contract Documents including the following: preparation and smoothing of rough surfaces, detailing of slab cracks, joints and voids as required. No extras for surface preparation will be entertained after bid closing.

.2 Slab cleaning shall be water blast, sand blast or shot blast, leaving slab surfaces free of all laitance and previous membranes.

.3 Surfaces shall be cleaned of all grease and oil with an emulsifier where required.

.4 The minimum standard for preparation of vertical surfaces for membrane application shall be sandblasting, including removal of existing paint and/or existing waterproofing upturn, hand patching voids or depressions in concrete surfaces and re-pointing masonry block wall joints as required. No extras shall be entertained for this item after the award of Contract. This applies to all walls, columns, and curbs.

.5 New concrete surfaces shall be allowed to air dry a minimum of 14 days after moist curing and not exhibit any condensation under plastic sheet test prior to the placement of the waterproof membrane.

.6 No primer or membrane shall be applied until the surface preparation has been reviewed by Consultant and inspected and accepted in writing by a representative of the system manufacturer.

.7 Placing and compaction equipment shall not exceed the capacity of the structure. Submit vehicle weights for Consultants review.

.8 Ensure environmental and site conditions, as recommended by the membrane manufacturer, are suitable for installation of work of this section.

.9 Commencement of work shall imply acceptance of the previously prepared concrete surfaces and assumption of full responsibility for the surfaces prepared to receive the primer and membrane.

.10 Application procedures that result in toxic fumes or flammable solvent collecting or endangering workmen or building occupants are not permitted.

.11 Paint and finishes damaged by Contractor must be repaired to match existing.

3.2 MEMBRANE APPLICATION – LIQUID SYSTEMS

.1 Prior to application of the waterproof membrane apply surface conditioner (primer) as a fine spray evenly at a rate of 0.1 to 0.2 L/m2 depending on the condition of the concrete surface. Before application of the waterproof membrane, concrete surface condition shall be dry and frost free. Allow adequate time to cure.

.2 Should the primer be exposed to inclement weather, Contractor to review with manufacturer if primer is to be reapplied (refer to item 1.5.4.2).

.1 Apply a 2-ply hot rubberized waterproof membrane system as follows:

.3 Apply first coat of hot rubberized waterproofing with squeegees, within 48 hours of primer placement, evenly to provide a continuous coating to give minimum and maximum dry thicknesses as below.

.4 While the membrane is still hot, embed a continuous polyester fabric reinforcing sheet into the first coat of hot-rubberized membrane ensuring that the fabric is completely embedded without wrinkles, fish mouths, voids, irregularities, etc… Polyester fabric reinforcing sheets are to be overlapped at joints a minimum of 50mm (2”).

.5 Apply the second coat of membrane to the same thickness requirements as the first coat.

.6 While the membrane is still hot, embed protection board sheeting into the second coat of hot-rubberized membrane ensuring that the protection board is completely embedded without irregularities. Protection board sheets are to be overlapped at joints a minimum of 25mm (1”) in the direction of the drainage slope.

1. Minimum dry thicknesses:

Hot Rubberized Waterproofing System Membrane: Hydrotech 6125 by Hydrotech Membrane Corporation of Canada.
First Coat mm (mils): 2.3 (90)
Second Coat mm (mils): 3.2 (125)

Total System mm (mils): 5.5 (215)

Hot Rubberized Waterproofing System Membrane: Bakor 790-11 by Bakor Inc.
First Coat mm (mils): 2.3 (90)
Second Coat mm (mils): 3.2 (125)
Total System mm (mils): 5.5 (215)

Hot Rubberized Waterproofing System Membrane: Multiseal 2000 by Multiseal Construction Products.
First Coat mm (mils): 2.5 (100)
Second Coat mm (mils): 2.5 (100)
Total System mm (mils): 5.0 (200)

Hot Rubberized Waterproofing System Membrane: Tremproof 6100 by Tremco Commercial Sealants and Waterproofing
First Coat mm (mils): 2.3 (90)
Second Coat mm (mils): 2.3 (90)
Total System mm (mils): 4.6 (180)

Hot Rubberized Waterproofing System Membrane: Bemalastic 1213 BDM by McAsphalt Industries Ltd.
First Coat mm (mils): 2.0 (80)
Second Coat mm (mils): 2.0 (80)
Total System mm (mils): 4.0 (160)

2. Maximum dry thickness:

Hot Rubberized Waterproofing System Membrane: Hydrotech 6125 by Hydrotech Membrane Corporation of Canada.
First Coat mm (mils): 2.8 (110)
Second Coat mm (mils): 3.7 (145)
Total System mm (mils): 6.5 (255)

Hot Rubberized Waterproofing System Membrane: Bakor 790-11 by Bakor Inc.
First Coat mm (mils): 2.8 (110)
Second Coat mm (mils): 3.7 (145)
Total System mm (mils): 6.5 (255)

Hot Rubberized Waterproofing System Membrane: Multiseal 2000 by Multiseal Construction Products.
First Coat mm (mils): 3.0 (120)
Second Coat mm (mils): 3.0 (120)

Total System mm (mils): 6.0 (240)

Hot Rubberized Waterproofing System Membrane: Tremproof 6100 by Tremco Commercial Sealants and Waterproofing
First Coat mm (mils): 3.2 (125)
Second Coat mm (mils): 3.2 (125)
Total System mm (mils): 6.4 (250)

Hot Rubberized Waterproofing System Membrane: Bemalastic 1213 BDM by McAsphalt Industries Ltd
First Coat mm (mils): 3.0 (120)
Second Coat mm (mils): 3.0 (120)
Total System mm (mils): 6.0 (240)

.3 Carry waterproof membrane up junction of horizontal deck and vertical surfaces to the finished elevation of the wearcourse unless otherwise indicated in Contract Documents. Mask top of upturn to ensure neat straight finish to coating. All vertical surface irregularities to be patched prior to coating application.

.7 Contractor to saw cut a 16 x 16 mm (5/8" x 5/8") reglet at finished elevation for termination of waterproofing system.

.1 Carry waterproof membrane down junction of horizontal deck and vertical surfaces to a min 600 mm (2'-0") below the finished elevation of the wearcourse unless otherwise indicated in Contract Documents. Mask top of downturn to ensure neat straight finish to coating. All vertical surface irregularities to be patched prior to coating application.

.8 Contractor to saw cut a 16 x 16 mm (5/8" x 5/8") reglet at vertical surface where new system is to meet existing waterproofing system.

.9 Contractor to embed a 450 mm (24") wide elastomeric reinforcing sheet at junction between horizontal deck and vertical surface.

.1 Cracks less than 3.0 mm wide shall be reinforced by pressing 200 mm wide polyester fabric reinforcing centred in 300 mm wide stretch coat of membrane centred over crack. Stretch coat of membrane to be 1.5 mm thick minimum. After cooling, full membrane application shall be carried over top.

.2 Where cracks exceed 3.0 mm a 1.5 mm first layer of waterproofing membrane shall be applied and reinforced with an elastomeric reinforcing sheet completely covered with a second layer of membrane 1.5 mm thick.

.3 At drains install elastomeric reinforcing sheet between membrane plies extending 150 mm around perimeter of drain.

.4 Heat waterproof membrane in a double shell, indirect fired melter using a high flash point oil as the heat transfer medium.

.10 Melter shall be equipped with a positive mechanically operated agitator, and thermometers.

.11 **UNDER NO CIRCUMSTANCES SHALL WATERPROOF MEMBRANE MATERIAL BE HEATED IN A ROOFING OR DIRECT FIRED HEATING KETTLE.**

.12 Melter shall be equipped with two temperature gauges clearly marked to indicate which gauge is for oil and which is for material temperature.

Melter Requirements:

.1 Equipment used for preparation and melting of waterproof membrane material shall be approved for use by the waterproof membrane manufacturer.

.2 Membrane application temperature shall not be less than 190°C and not greater than 205°C. Temperature requirements shall apply from kettle to point of application.

3.3 FLOOD TESTING

.1 Completed membrane installation to be flood tested by Contractor at the Contractor's expense, prior to placing overburden. Consultant shall be present during testing.

.2 Plug drains on horizontal surfaces and restrict run-off.

.3 Maintain surfaces continuously wet for at least one hour.

.4 Repair leaks and re-test.

3.4 INSPECTION AND TESTING

.1 Testing to be conducted by a testing agency designated by the Consultant. The Owner will pay costs of inspection and testing described in this section.

.2 Contractor shall inform Consultant and designated testing agency 24 hours in advance of work to be performed under this section.

.3 Prior to application of primer, or membrane, test of moisture content of concrete mass shall be made by taping down a 18" x 18" (450 mm x 450 mm) polyethylene sheet for a period of 16 hours minimum to detect evaporation from slab surface. Number of tests shall be designated by the membrane manufacturer, or Consultant, minimum number to be 1 test per 5000 sq.ft. Locations to be determined by Consultant.

.4 To confirm membrane thickness, Consultant to perform cut tests. Number of tests to be 1 test per 550 sq.ft. of membrane minimum.

.5 To evaluate bonding of membrane to substrate, and/ or interlayer bonding, pull off adhesion tests may be performed by the Consultant or the Designated Testing Agency at the discretion of Consultant.

.6 Additional tests may be performed at the discretion of the Consultant to confirm in-situ material thickness and bond.

.7 Contractor to repair waterproofing system at test locations at no extra cost.

.8 Finished installation will be flood tested prior to substantial completion of Contract.

END OF SECTION

1.0 GENERAL

1.1 REFERENCE STANDARDS

.1 All Reference Standards are latest editions, unless noted otherwise.

.2 ASTM C920 – Standard specification for Elastomeric Joint Sealants.

.3 Sealant, Waterproofing and Restoration Institute (SWRI) publication, *Sealants: The Professionals' Guide 2013.*

1.2 SUBMITTALS

.1 Samples:

.1 Submit samples of each type of material and colour to be used and to facilitate colour selection.

.2 Cure samples under equivalent conditions to job site, before submission.

.2 Submit letters from the sealant manufacturer's representative that all areas and surfaces were inspected and found satisfactory to receive materials, in accordance with sealant manufacturer's requirements.

1.3 MAINTENANCE MATERIAL SUBMITTALS

.1 Leave one unopened tube of each sealant type and colour on site upon completion of work.

1.4 QUALITY ASSURANCE

.1 Sealant manufacturer's representative shall review site conditions, joint design and installer's qualifications. Report unsatisfactory conditions to the Consultant.

.2 Representative shall check container labels, random inspect preparation of substrate materials and perform random testing of installed work.

.1 Cut test locations to be 150 mm long.

.2 Certify thickness, hardness and surface finish conforms to intended design.

.3 Report to the Consultant.

1.5 QUALIFICATIONS

.1 Perform the work of this Section using skilled mechanics having at least five years' experience, and trained and competent in use of sealant materials.

1.6 MOCK-UP

.1 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.

.2 Construct mock-up in location directed by the Consultant.

.3 Joint to be size, shape and depth of joints applicable to the work, complete with back-up material, primer, and sealant.

.4 Mock up may be part of finished work.

.5 Allow 24 hours for review of mock-up by Consultant before proceeding with sealant work.

.6 Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of any materials will result. Prepare joint samples at the site of each type of sealant for each joint condition.

1.7 PERFORMANCE REQUIREMENTS

.1 The sealant system shall satisfy the following requirements for the duration of the warranty period:

- .1 Totally waterproof, flexible and thermally compatible with the substrate under applicable service conditions.
- .2 Provide a weathertight seal that does not allow moisture penetration.
- .3 Withstand active cyclical movements of 75% extension and 50% compression of the joint width and remain bonded and watertight.
- .4 Shall not debond, crack or craze.
- .5 Shall not leak.

.2 Reference to products does not relieve the manufacturer of responsibility to comply fully with all specified criteria.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle, store and protect materials as recommended by materials manufacturer.

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

.3 Store material in heated conditions during winter work.

1.9 FIELD CONDITIONS

.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.

.3 Polyurethane sealant and substrate materials shall be minimum 4°C. Silicone sealants to be minimum -29°C.

.4 If applying sealants below 4°C, special care must be taken to ensure that substrate surfaces are clean and dry. Further, the applicator is to consult with the sealant manufacturer and follow their recommendations.

2.0 PRODUCTS

2.1 MATERIALS

.1 Joint Cleaner: Xylol, methylethylketone, alcohol, or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

.2 Primers: Types recommended by sealant manufacturer.

.3 Joint Back-Up: Round closed cell foam, extruded polyolefin, Shore A hardness of 20, tensile strength 140 to 200 kPa, oversized 30-50%, compatible with sealant and primer, non-adhering to sealant, and non-gassing.

.4 Bond Breaker: Pressure-sensitive plastic tape that will not bond to sealants.

.5 Vent/Weeping tubes: non-metallic, 6mm inside diameter minimum.

Sealants:

.1 Category 1 – CAN/CGSB 19.13, one-part silicone.
.1 790 by Dow Corning

.2 Spectrem 1 by Tremco Ltd.

.2 Colour of Sealants: Selected by the Owner to match adjacent finishes. Contractor to provide colour samples to facilitate selection.

3.0 EXECUTION

3.1 EXAMINATION

.1 Examine surfaces before commencing work of this Section.

.2 Installation of sealant implies acceptance of surfaces. Notify the Consultant in writing of any existing conditions that may affect the bonding or performance of the sealant for resolution before installation of materials.

3.2 PREPARATION

.1 Ensure ambient and existing site conditions are suitable for installation of work of this Section, as recommended by the manufacturer.

.2 Ensure all existing sealant and extruded tapes are removed and surfaces prepared and primed in accordance with the manufacturer's recommendations.

.3 Prepare surfaces in strict accordance with the manufacturer's recommendations, including preparation and smoothing of rough surfaces and detailing of cracks, joints and voids.

.3 Ensure joint surfaces are sound and free of all moisture, dust, oils and other materials that may adversely affect sealant bond.

.4 Minimum standard of cleaning for concrete, brick, and stone surfaces shall be grinding, or equivalent to remove all traces of existing sealant and to expose clean substrate.

.5 Clean metal flashings and mullions so as not to damage surface finishes.

.6 On non-porous substrates: use a two-wipe method when cleaning. The first wipe shall contain the solvent, followed immediately by the second wipe with a clean cloth to collect any re-deposited material loosened by the first wipe.

.7 After cleaning, ensure that joints are dry, dust free and frost free before applying sealant.

.8 Examine joint sizes and correct to achieve depth ratio of one-half of joint width with minimum width and depth of 6.0 mm and maximum width of 25 mm.

.9 Install joint back-up to achieve correct joint depth.

.10 Where necessary to prevent staining, mask adjacent surfaces before priming and caulking.

.11 Apply bond breaker tape where required, in accordance with manufacturer's instructions.

.4 Prime sides of joints in accordance with manufacturer's instructions immediately before caulking.

3.3 APPLICATION

.1 Apply sealants in accordance with manufacturer's instructions. Apply using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

.2 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, and embedded impurities. Tool surface neatly to produce slight concave joint.

.3 Do not use application procedures that result in toxic fumes or flammable solvents collecting and endangering workers or building occupants.

.4 Cure sealants in accordance with sealant manufacturer’s instructions.

3.4 FIELD QUALITY CONTROL

.1 Provide safe access for Consultant to perform periodic reviews of various phases of the work of this Section.

.2 Notify Consultant, and any testing agency that may be designated by the Consultant, 24 hours in advance of work to be performed under this Section.

.3 Repair test locations.

.4 Tests may be performed at the Consultant’s discretion to confirm in-situ material thickness.

3.5 CLEANING AND PROTECTION

.1 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings, using recommended cleaners as work progresses. Remove masking tape after tooling of joints.

.2 Protect caulked joints until sufficiently cured.

.3 Protect completed work of this Section from staining or contamination.

END OF SECTION

1.0 GENERAL

1.1 WORK INCLUDED

.1 The work included in this section relates to the repair and inspection procedures to be undertaken when existing electrical conduits, fixtures, etc. are damaged due to the construction activity.

.2 Damaged electrical conduits, fixtures, etc. must be repaired in a timely fashion. If repair cannot be made in a timely fashion, a temporary lighting system must be installed.

.3 Visit site to ascertain existing conditions and note all conditions that will affect the construction activity.

1.2 REGULATORY REQUIREMENTS

.1 Comply with Safety Codes Act and rules and regulations made pursuant thereto, including Canadian Electrical Code.

.2 Unless otherwise indicated, all references in the Contract Documents to "Canadian Electrical Code" or "CEC" shall mean the edition of the Canadian Electrical Code, Part I, CSA C22.1 and the variations made thereto by Alberta regulation, which are in force on the date of bid closing for the Contract.

.3 All electrical products shall be tested, certified, and labelled in accordance with a certification program accredited by the Standards Council of Canada.

.4 Submit to authority having jurisdiction and utility company, necessary number of drawings and specifications for examination and approval before commencement of electrical work. Pay associated fees.

.5 Submit to the Consultant, copy of electrical permit obtained from authority having jurisdiction.

1.3 EXAMINATION OF SITE

.1 Bidders shall visit and examine the site and all applicable drawings before tendering. The Bid shall include all costs necessary for completion of any required electrical work as outlined. No extras will be awarded due to failure to visit the site or adequately review all the required interfacing details.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store, and maintain packaged materials with manufacturer's seals and labels intact.

.2 Store materials in regulation containers in accordance with Occupational Health and Safety Regulations and manufacturer's instructions.

.3 Toxic or hazardous chemicals shall be secured in a locked storage area.

.4 All containers to be labelled with material expiration dates. Materials older than the expiry date shall be rejected.

.5 Shelf life will be strictly adhered to and materials shipped without dates will be rejected.

.6 Immediately remove rejected materials from site.

.7 Submit copies of material safety data sheets (MSDS) for all products prior to arrival on site.

2.0 PRODUCTS

2.1 MATERIALS

.1 Use new products unless otherwise specified.

.2 Provide three (3) copies maintenance instructions for finished surfaces and maintenance materials before Substantial performance.

3.0 EXECUTION

3.1 EXPOSED CONDUITS, FIXTURES, ETC.

.1 Ensure all exposed conduits and fixtures are properly protected and operational at all times during the Work. Refer to Section 01 10 01 – General Requirements.

.2 Any damage to exposed conduits and fixtures will be the responsibility of the Contractor to repair or replace. All required work to exposed fixtures (i.e. removal, replacement, repairs, etc.) may be performed by the Contractor's own electrician.

3.2 EXISTING EMBEDDED ELECTRICAL SERVICES

.1 Ensure potential areas of buried conduit are identified and high voltage systems located in the area of work are switched off to prevent possible injury. Co-ordinate requirements with Owner.

.2 Take the utmost caution during concrete removal operations in order to prevent damage to buried conduits. Damage caused to conduits will be immediately reported to the Owner and Consultant. In no instance will damage or deteriorated conduits be covered up without specific approval from the Owner. Allow reasonable time for implementation of any electrical repairs required.

.3 Take all precautions to ensure embedded conduits found are not live before removing concrete around them. Expect to find lighting conduits, 600V main power lines, exhaust fan conduits, alarm lines, telephone lines, etc.

.4 Repair or abandon damaged conduit within the slab at the discretion of the Owner. Owner to pay for repairs provided damage has not resulted from negligence. Negligence shall be determined at the discretion of the Consultant.

.5 All repairs to embedded electrical services will be performed by the Owner's electrician and included in the cash allowance.

3.3 TEMPORARY LIGHTING

.1 If electrical repairs cannot be performed in a timely fashion the Owner at their discretion can request that the Contractor provide a temporary lighting system in accordance to Section 01 10 01 – General Requirements.

3.4 INSPECTION OF WORK

.1 All repair work to the existing electrical systems (damaged or replaced) are to be inspected by the local utility provider.

.2 Contact local utility provider and arrange for an inspection of the repairs by making an application for inspection within 48 hours of repairing the damage. Call for an inspection regardless of which electrician is performing the repair.

.3 The cost of inspections will be the responsibility of the Contractor.

.4 Copies of inspection certificates provided by the local utility provider and authority having jurisdiction shall be distributed to the Owner and the Consultant upon completing the project.

END OF SECTION

Agreement to Bond

To: The Corporation of the City of Oshawa (the "*City*")
50 Centre Street South, 6th floor
Oshawa, ON. L1H 3Z7

And to: Insert name of Contractor here

We, the undersigned, hereby undertake and agree to become bound as Surety for the **Contractor** as follows if the bid for the **contract** contained herein is accepted by the **City**

Bond	**Percent of the Total Price**
(a) A performance bond conforming to the form of a Performance Bond in the format of C.C.D.C. 221 or in a form acceptable to the **City.**	%
(b) A labour and material payment bond conforming to the form of labour and material payment bond in the format of C.C.D.C. 222 or in a form acceptable to the **City.**	%

Surety Information	Print or Type Details
Dated at (City or Town)	
Date	
Surety	
Signature of Authorized Signing Officer	
Office or Position of Authorized Signing Officer	

If the above-mentioned bid is accepted, the undersigned will execute the bond within ten (10) days of notification of acceptance of the bid.

Note: This agreement must be executed on behalf of the Surety Company by its authorized officers under the company's Corporate Seal and the Surety Company must be a satisfactory Guarantee Company, authorized by law to carry on business in the Province of Ontario.

Letter of Undertaking

(Bid Security)

The City of Oshawa
Purchasing Services
50 Centre Street South, 6th floor
Oshawa, ON. L1H 3Z7

Re**: Bid Security – Contract No.**

Pursuant to the request of and for the account of our customer:

Contractor Information	Print or Type Details
Name of Contactor	
Address	
Amount equal to 100% of the contract price	$

We hereby undertake and agree to provide in your favour an irrevocable Standby Letter of Credit in an amount equal to 100% of the contract amount, stipulated in the table above, for the due and proper performance of the Work shown and described in the **R.F.T.** Document, if our customer's Bid is accepted by the City. Such Standby Letter of Credit is automatically renewable unless advised by written notice to the Manager, Purchasing Services 30 days preceding the expiry date or dates that the letter of credit will not be renewed, in which case the City may draw on the Standby Letter of Credit, notwithstanding that the customer may not be in default of any contract with the City or the work is otherwise being performed from time to time in accordance with all requirements of the City.

Authorization	Print or Type Details, except Signature
Name of Bank or Financial Institution	
Contact information	Telephone: Email:
Per Authorized Signing Officer Print Name	
Signature of Authorized Signing Officer	