



**THE CITY OF WINNIPEG**

# **TENDER**

**TENDER NO. 10-2021**

**2021 LOCAL STREET/ALLEY RENEWAL PROGRAM: KINGSTON ROW, REGIS DR  
& OTHER LOCATIONS**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

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### **B2. SUBMISSION DEADLINE**

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, February 4, 2021.
- B2.2 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

### **B3. ENQUIRIES**

- B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.
- B3.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.
- B3.6 Any enquiries concerning submitting through MERX should be addressed to:  
MERX Customer Support  
Phone: 1-800-964-6379  
Email: merx@merx.com

### **B4. CONFIDENTIALITY**

- B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:
- (a) was known to the Bidder before receipt hereof; or
  - (b) becomes publicly known other than through the Bidder; or
  - (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.
- B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

### **B5. ADDENDA**

- B5.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.3 Addenda will be available on the MERX website at [www.merx.com](http://www.merx.com).
- B5.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D3.

## **B6. SUBSTITUTES**

- B6.1 The Work is based on the Plant, Materials and methods specified in the Tender.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
  - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.

- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B17.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

## **B7. BID COMPONENTS**

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid/Proposal;
  - (b) Form B: Prices;
  - (c) Form G1: Bid Bond and Agreement to Bond.
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.4 The Bid shall be submitted electronically through MERX at [www.merx.com](http://www.merx.com).
- B7.4.1 Bids will **only** be accepted electronically through MERX.
- B7.5 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B17.1(a).

## **B8. BID/PROPOSAL**

- B8.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
  - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
  - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
  - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;

- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
- (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B9. PRICES**

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D29. Any such costs shall be determined in accordance with D29.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B9.5.1 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.

## **B10. DISCLOSURE**

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- (a) N/A

## **B11. CONFLICT OF INTEREST AND GOOD FAITH**

B11.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B11.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

- (a) other commitments;
- (b) relationships;

- (c) financial interests; or
  - (d) involvement in ongoing litigation;
- that could or would be seen to:
- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
  - (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Tender process or the Work; or
  - (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

B11.3 In connection with its Bid, each entity identified in B11.2 shall:

- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
- (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
- (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

B11.4 Without limiting B11.3, the City may, in its sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B11.5 Without limiting B11.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:

- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its employees proposed for the Work;
- (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;
- (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B11.4 to avoid or mitigate a Conflict of Interest; and
- (d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.



B11.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in its sole discretion.

## **B12. QUALIFICATION**

B12.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf>

B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

B12.4 Further to B12.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:
  - (i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
  - (ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).

B12.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B12.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

### **B13. BID SECURITY**

- B13.1 A sample Bid Bond and Agreement to Bond are available on The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf>.
- B13.2 The Bidder shall provide digital bid security in the form of a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond).
- B13.3 Bid security shall be submitted in an electronic or digital format meeting the following criteria:
- (a) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures; all digital seals; with the surety company, or an approved verification service provider of the surety company.
  - (b) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
  - (c) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
  - (d) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B13.3(a).
- B13.4 Bonds failing the verification process will not be considered to be valid and the bid shall be determined to be non-responsive in accordance with B17.1(a).
- B13.5 Bonds passing the verification process will be treated as original and authentic.
- B13.5.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B13.6 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly formed with the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B13.7 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Tender.

### **B14. OPENING OF BIDS AND RELEASE OF INFORMATION**

- B14.1 Bids will not be opened publicly.
- B14.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the MERX website at [www.merx.com](http://www.merx.com).
- B14.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at [www.merx.com](http://www.merx.com).
- B14.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).
- B14.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to

Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

**B15. IRREVOCABLE BID**

- B15.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.
- B15.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

**B16. WITHDRAWAL OF BIDS**

- B16.1 A Bidder may withdraw his/her Bid without penalty prior to the Submission Deadline.

**B17. EVALUATION OF BIDS**

- B17.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
  - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
  - (c) Total Bid Price;
  - (d) economic analysis of any approved alternative pursuant to B6.
- B17.2 Further to B17.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.
- B17.3 Further to B17.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.
- B17.4 Further to B17.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B17.4.1 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.
- B17.4.2 A Bidder will provide a unit price for items A.3 i) or A.3 ii) on Form B: Prices but not both.
- B17.4.3 A Bidder will provide a unit price for items A.4 i) or A.4 ii) on Form B: Prices but not both.
- B17.4.4 Further to B17.4.2, if a unit price is included for both item A.3 i) and A.3 ii), the higher unit price will be used for the calculation of the Total Bid Price.
- B17.4.5 Further to B17.4.3, if a unit price is included for both item A.4 i) and A.4 ii), the higher unit price will be used for the calculation of the Total Bid Price.

**B18. AWARD OF CONTRACT**

- B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B18.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.

- B18.2.1 Without limiting the generality of B18.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
  - (b) the prices are materially in excess of the prices received for similar work in the past;
  - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
  - (d) only one Bid is received; or
  - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B18.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D29 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- B18.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B17.
- B18.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

- C0.1 The *General Conditions for Construction* (Revision 2020-01-31) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](http://www.winnipeg.ca/matmgt/gen_cond.stm)
- C0.2 A reference in the Tender to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

#### **D1. GENERAL CONDITIONS**

D1.1 In addition to the General Conditions for Construction, these Supplemental Conditions are applicable to the Work of the Contract.

#### **D2. SCOPE OF WORK**

D2.1 The Work to be done under the Contract shall consist of:

- (a) Asphalt Pavement Reconstruction
  - (i) E/W Leg of Alley bounded by Pulberry Street and St. Mary's Road
- (b) Pavement Rehabilitation
  - (i) N/S Leg of Alley bounded by Pulberry Street/Arden Street/St. Michaels Street/St. Mary's Road
  - (ii) Regis Drive – Charing Cross Crescent to Paddington Road
  - (iii) Kingston Row – Edinburgh Street to St. Mary's Road
  - (iv) Southwalk Bay – Charing Cross Crescent to Charing Cross Crescent
  - (v) Marwood Crescent – Edgemont Drive to Edgemont Drive
  - (vi) Sweetwater Bay – Edgewater Drive to Edgewater Drive
  - (vii) Ashwood Cove – Sweetwater Bay to the End
  - (viii) Cormorant Bay – Edgewater Drive to Edgewater Drive
  - (ix) Watercress Road – Edgewater Drive to Cormorant Drive

D2.2 The major components of the Work are as follows:

- (a) Asphalt Pavement Reconstruction
  - (i) Installation of catch basins and sewer service pipe
  - (ii) Removal of existing composite pavement
  - (iii) Excavation
  - (iv) Installation of subdrains
  - (v) Compaction of existing subgrade
  - (vi) Placement of separation/filtration geotextile fabric and geogrid
  - (vii) Placement of sub-base and base course materials (limestone and or recycled concrete)
  - (viii) Construction of 200 mm reinforced concrete pavement around new catch basins and garbage pads
  - (ix) Construction of 200 mm reinforced concrete pavement approaches
  - (x) Adjustment to existing manholes
  - (xi) Placement of asphalt pavement (50 mm Type IA and 70 mm Type III)
  - (xii) Renewal of concrete sidewalk
  - (xiii) Installation of detectable warning tiles (St. Mary's Road)
  - (xiv) Boulevard restoration
- (b) Pavement Rehabilitation
  - (i) Planing of existing asphalt pavement (Kingston Row)
  - (ii) Removal of existing asphalt pavement (tie-ins)
  - (iii) Renewal of miscellaneous pavement slabs (150 mm reinforced concrete pavement all streets) and 200 mm reinforced concrete pavement approach on N/S leg of alley

bounded by Pulberry Street/Arden Street/St. Michaels Street/St. Mary's Road at St. Michaels Road.

- (iv) Placement of pavement repair fabric at various locations
- (v) Planning of existing mountable curb (all streets except Kingston Row)
- (vi) Renewal of concrete barrier curb (Kingston Row)
- (vii) Renewal of existing sidewalk
- (viii) Installation of concrete barrier curb (Sweetwater Bay)
- (ix) Adjustment of catch basins and manholes
- (x) Installation of new catch basins/catch pits and sewer service/drainage connection pipe
- (xi) Manhole repair Sweetwater Bay (MH50002038) and Kingston Row (MH50010888) and (MH70045476)
- (xii) Placement of asphalt overlay (average thickness 85 mm)
- (xiii) Adjustment of paving stones at various locations
- (xiv) Boulevard restoration

### **D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is AECOM Canada Ltd., represented by:

Blair Cockrell  
Project Coordinator

Telephone No. (204) 928-8431

Email Address blair.cockrell@aecom.com

D3.2 At the pre-construction meeting, Blair Cockrell will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

### **D4. CONTRACTOR'S SUPERVISOR**

D4.1 At the pre-construction meeting, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D4.2 At least two (2) Business Days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor identified in D4.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

### **D5. NOTICES**

D5.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.

D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D3.

- D5.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg  
Legal Services Department  
Attn: Director of Legal Services  
Facsimile No.: 204-947-9155

## **D6. FURNISHING OF DOCUMENTS**

- D6.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Tender. If the Contractor requires additional sets of the Tender, they will be supplied to him/her at cost.

## **SUBMISSIONS**

### **D7. AUTHORITY TO CARRY ON BUSINESS**

- D7.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

### **D8. SAFE WORK PLAN**

- D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.
- D8.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>
- D8.3 Notwithstanding B12.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

### **D9. INSURANCE**

- D9.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
  - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
  - (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.



- D9.2 Deductibles shall be borne by the Contractor.
- D9.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, as applicable.
- D9.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

#### **D10. CONTRACT SECURITY**

- D10.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:
- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; and
  - (b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price.
- D10.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.
- D10.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:
- (a) give the Subcontractor written notice of the existence of the labour and material payment bond in D10.1(b); and
  - (b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

#### **D11. SUBCONTRACTOR LIST**

- D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, if applicable.

#### **D12. DETAILED WORK SCHEDULE**

- D12.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract Documents, as applicable.
- D12.2 The detailed work schedule shall consist of the following:
- (a) a Gantt chart for the Work;  
acceptable to the Contract Administrator.
- D12.3 Further to D12.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

## **SCHEDULE OF WORK**

### **D13. COMMENCEMENT**

- D13.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter from the Award Authority authorizing the commencement of the Work.
- D13.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D7;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
    - (iv) the Safe Work Plan specified in D8;
    - (v) evidence of the insurance specified in D9;
    - (vi) the contract security specified in D10;
    - (vii) the subcontractor list specified in D11; and
    - (viii) the detailed work schedule specified in D12.
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D13.3 The Contractor shall not commence the Work on the Site before May 18, 2020, and shall commence the Work on Site no later than May 26, 2021, as directed by the Contract Administrator and weather permitting.
- D13.4 The City intends to award this Contract by April 23, 2021.
- D13.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

### **D14. WORKING DAYS**

- D14.1 Further to C1.1(tt);
- D14.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.
- D14.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.
- D14.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

### **D15. RESTRICTED WORK HOURS**

- D15.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (48) hours in advance from the Contract Administrator for any work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

## **D16. WORK BY OTHERS**

D16.1 Work by others on or near the Site will include but not necessarily be limited to:

- (a) Manitoba Hydro Gas Division – lowering and/or rock wrapping of gas main and services on an as required basis;
- (b) Manitoba Hydro Underground Power – adjustment of manhole(s) frames and covers as required;
- (c) Canada Post – adjusting/relocating community mailboxes on Regis Drive;
- (d) Bell/MTS – adjustment of pedestals or manhole(s) frames as required;
- (e) Shaw – adjustment of pedestals or manhole(s) frames as required;
- (f) City of Winnipeg, Water and Waste Department – possible investigation of services, operating watermain valves, emergency repairs to Water and Waste Department infrastructure;
- (g) City of Winnipeg, Geomatics Branch – various works on survey monuments;
- (h) City of Winnipeg, Traffic Services – erection and maintenance of temporary traffic control (in accordance with E6), line painting and removal/installation of traffic signage.

D16.2 Further to D16.1, the contractor shall cooperate and coordinate all activities with all parties performing required Work by Others.

## **D17. SEQUENCE OF WORK**

D17.1 Further to C6.1, the sequence of work shall comply with the following:

- (a) Providing that the Work on each street is completed in a similar order to the order that the Work was commenced in, the Contractor will be permitted to have a maximum of (4) streets under construction at any one time. The asphalt reconstruction of the E/W leg of alley bounded by Pulberry Street and St. Mary's Road shall be classified as one (1) of the four (4) streets. Once the reconstruction of the alley is completed the contractor will be permitted to have a maximum of (3) streets under construction at any one time.

D17.1.1 Completion of a street means that all of the necessary concrete, asphalt including approaches and landscaping Work is completed to the satisfaction of the Contract Administrator.

D17.1.2 Where the Contractor utilizes two (2) or more crews that work independently on the same major component of the Work as identified in D2, the Contract Administrator may approve an increase to the maximum number of streets under construction at any time.

D17.1.3 Placing the topsoil and finished grading of all boulevard and median areas shall be completed prior to commencing construction of asphaltic concrete overlays, including scratch courses.

D17.1.4 The Work on asphalt reconstruction of the E/W leg of alley bounded by Pulberry Street and St. Mary's Road shall be completed in two stages. The staging breakdown is as follows:

- (a) Stage 1 – Work shall commence from Pulberry Street to Station 0+215 as shown on Drawing CT-33. All construction works shall be completed prior to commencing Stage 2 construction works.
- (b) Stage 2-Work shall commence from Station 0+215 to St. Mary's Road.

D17.1.5 The Work on Kingston Row shall be completed in two stages and in accordance with the following:

- (a) Stage 1 – Work shall commence from Edinburgh Street to House No. 71 Kingston Row. Construction works shall be completed one side at a time and shall be in accordance with items (c), (d), (e) and (f) below. All construction works shall be completed prior to commencing Stage 2 construction works.

- (b) Stage 2 – Work shall commence from House No. 59 Kingston Row to St. Mary's Road. Construction works shall be completed one side at a time and shall be in accordance with items (c), (d), (e) and (f) below.
- (c) Planing of asphalt pavement shall be completed following curb, sidewalk and 150mm reinforced concrete pavement renewal on the side of Kingston Row under construction.
- (d) To accommodate renewal of the barrier curb prior to planing of pavement, asphalt may be removed up to a maximum of 200mm from the face of the curb.
- (e) Once all concrete works, boulevard grading and top soiling of the boulevard is complete the existing asphalt pavement shall be planed 48 hours prior to the placement of the bottom lift of new asphalt pavement on the side of Kingston row under construction.
- (f) Construction equipment travelling on a planed surface shall be kept to a minimum.
- (g) Once the bottom lift of new asphalt pavement is complete on both sides of the street within each stage the final lift of asphalt pavement shall be completed.

#### **D18. CRITICAL STAGES**

- D18.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Work on E/W leg of alley bounded by Pulberry Street and St. Mary's Road shall commence no later than June 7, 2021 and be totally completed by July 19, 2021.
- D18.2 When the Contractor considers the Work associated with E/W leg of alley bounded by Pulberry Street and St. Mary's Road to be totally completed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Completion. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D18.3 The date on which the E/W leg of alley bounded by Pulberry Street and St. Mary's Road Work has been accepted by the Contract Administrator as being totally completed to the requirements of the Contract is the date on which total completion of E/W leg of alley bounded by Pulberry Street and St. Mary's Road has been achieved.

#### **D19. SUBSTANTIAL PERFORMANCE**

- D19.1 The Contractor shall achieve Substantial Performance within eighty (80) consecutive Working Days of the commencement of the Work as specified in D13.
- D19.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D19.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

#### **D20. TOTAL PERFORMANCE**

- D20.1 The Contractor shall achieve Total Performance within eighty-five (85) consecutive Working Days of the commencement of the Work as specified in D13.
- D20.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract

Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

- D20.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

## **D21. LIQUIDATED DAMAGES**

- D21.1 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) E/W leg of alley bounded by Pulberry Street and St. Mary's Road – Three Thousand dollars (\$3,000.00);
- (b) Substantial Performance – Three Thousand dollars (\$3,000.00);
- (c) Total Performance – One Thousand dollars (\$1,000.00).

- D21.2 The amounts specified for liquidated damages in D21.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

- D21.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **D22. COVID-19 SCHEDULE DELAYS**

- D22.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public and directives from health authorities and various levels of government, and in close consultation with the Contract Administrator.

- D22.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

- D22.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. If the Contractor declares that COVID-19 will affect the start date, the Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or work by others.

- D22.4 For any delay related to COVID-19 and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D22.3. Failure to provide this notice will result in no additional time delays being considered by the City.

- D22.5 The Work schedule, including the durations identified in D18 to D20 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

- D22.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract Administrator. Where the Work is carried over only partially due to COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

D22.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

### **D23. SCHEDULED MAINTENANCE**

D23.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Reflective Crack Maintenance as specified in CW 3250-R7;
- (b) Sod Maintenance as specified in CW 3510-R9.

D23.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

### **CONTROL OF WORK**

#### **D24. JOB MEETINGS**

D24.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D24.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

#### **D25. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D25.1 Further to C6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

#### **D26. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS**

D26.1 Further to B12.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B12.4.

### **MEASUREMENT AND PAYMENT**

#### **D27. PAYMENT**

D27.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

### **WARRANTY**

#### **D28. WARRANTY**

D28.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) years thereafter for pavement rehabilitation works, and two (2) years

thereafter for pavement reconstruction works, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D28.2 Notwithstanding C13.2 or D28.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.

D28.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

### THIRD PARTY AGREEMENTS

#### D29. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D29.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D29.2 Further to D29.1, in the event that the obligations in D29 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D29.3 For the purposes of D29:

- (a) "**Government of Canada**" includes the authorized officials, auditors, and representatives of the Government of Canada; and
- (b) "**Government of Manitoba**" includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D29.4 Modified Insurance Requirements

D29.4.1 If not already required under the insurance requirements identified in D9, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.

D29.4.2 If not already required under the insurance requirements identified in D9, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.

D29.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.

D29.4.4 Further to D9.3, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.

D29.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

## D29.5 Indemnification By Contractor

D29.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

## D29.6 Records Retention and Audits

D29.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D29.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D29.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

## D29.7 Other Obligations

D29.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D29.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D29.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D29.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.



**FORM H1: PERFORMANCE BOND**  
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

\_\_\_\_\_ ,  
(hereinafter called the "Principal"), and

\_\_\_\_\_ ,  
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

\_\_\_\_\_ dollars (\$\_\_\_\_\_)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

TENDER NO. 10-2021

2021 LOCAL STREET/ALLEY RENEWAL PROGRAM: KINGSTON ROW, REGIS DR & OTHER LOCATIONS

which is by reference made part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE the condition of the above obligation is such that if the Principal shall:

- (a) carry out and perform the Contract and every part thereof in the manner and within the times set forth in the Contract and in accordance with the terms and conditions specified in the Contract;
- (b) perform the Work in a good, proper, workmanlike manner;
- (c) make all the payments whether to the Obligee or to others as therein provided;
- (d) in every other respect comply with the conditions and perform the covenants contained in the Contract; and
- (e) indemnify and save harmless the Obligee against and from all loss, costs, damages, claims, and demands of every description as set forth in the Contract, and from all penalties, assessments, claims, actions for loss, damages or compensation whether arising under "The Workers Compensation Act", or any other Act or otherwise arising out of or in any way connected with the performance or non-performance of the Contract or any part thereof during the term of the Contract and the warranty period provided for therein;

THEN THIS OBLIGATION SHALL BE VOID, but otherwise shall remain in full force and effect. The Surety shall not, however, be liable for a greater sum than the sum specified above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the Principal shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of Sureties to the contrary notwithstanding.

IN WITNESS WHEREOF the Principal and Surety have signed and sealed this bond the

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ .

**SIGNED AND SEALED**  
in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

\_\_\_\_\_  
(Name of Principal)

Per: \_\_\_\_\_ (Seal)

Per: \_\_\_\_\_

\_\_\_\_\_  
(Name of Surety)

By: \_\_\_\_\_ (Seal)  
(Attorney-in-Fact)

**FORM H2: LABOUR AND MATERIAL PAYMENT BOND**  
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

\_\_\_\_\_  
his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Principal"), and

\_\_\_\_\_  
his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), for the use and benefit of claimants as herein below defined, in the amount of

\_\_\_\_\_ dollars (\$\_\_\_\_\_)

of lawful money of Canada, for the payment whereof we, the Principal and the Surety jointly and severally bind ourselves firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

TENDER NO. 10-2021

2021 LOCAL STREET/ALLEY RENEWAL PROGRAM: KINGSTON ROW, REGIS DR & OTHER LOCATIONS

which is by reference made part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE the condition of the above obligation is such that if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labour, service and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect subject, however, to the following conditions:

- (a) A claimant is defined as one having a direct contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;
- (b) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work, labour or service was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;
- (c) No suit or action shall be commenced hereunder by any claimant
  - (i) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;

- (ii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;
  - (iii) other than in a court of competent jurisdiction in the Province of Manitoba.
- (d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.
- (e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

The Principal and Surety hereby agree that The Guarantors' Liability Act (Manitoba) shall apply to this Bond.

IN TESTIMONY WHEREOF, the Principal has hereunto set its hand affixed its seal, and the Surety has caused these presents to be sealed and with its corporate seal duly attested by the authorized signature of its signing authority this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

SIGNED AND SEALED  
in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

\_\_\_\_\_  
(Name of Principal)

Per: \_\_\_\_\_ (Seal)

Per: \_\_\_\_\_

\_\_\_\_\_  
(Name of Surety)

By: \_\_\_\_\_ (Seal)  
(Attorney-in-Fact)

**FORM J: SUBCONTRACTOR LIST**  
(See D11)

2021 LOCAL STREET/ALLEY RENEWAL PROGRAM: KINGSTON ROW, REGIS DR & OTHER  
LOCATIONS

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
SURFACE WORKS:		
Supply of Materials:		
Concrete		
Asphalt		
Base Course and Sub-base		
Separation/Filtration Geotextile Fabric and Geogrid		
Pavement Repair Fabric		
Sod		
Installation/Placement:		
Concrete		
Asphalt		
Base Course and Sub-base		
Separation/Filtration Geotextile Fabric and Geogrid		
Pavement Repair Fabric		
Sod		
Joint Sealant		
UNDERGROUND WORKS		
Supply of Materials:		
Sewer Service/Drainage Connection Pipe		
Subdrains		
Catch Basins/Catch Pits		
Frames and Covers		
Installation/Placement:		
Catch Basins/Catch Pits		

## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B6. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B6.
- E1.4 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
CT-00	Cover Page and Location Plan	A1
CT-01	Southwalk Bay – Charing Cross Crescent to Station 0+210	A1
CT-02	Southwalk Bay – Station 0+210 to Station 0+340	A1
CT-03	Southwalk Bay – Station 0+340to Station 0+480	A1
CT-04	Southwalk Bay – Station 0+480 to Charing Cross Crescent	A1
CT-05	Regis Drive – Paddington Road to Station 0+220	A1
CT-06	Regis Drive – Station 0+220 to Station 0+370	A1
CT-07	Regis Drive – Station 0+370 to Charing Cross Crescent	A1
CT-08	Marwood Crescent – Edgemont Drive to Station 0+230	A1
CT-09	Marwood Crescent – Station 0+230 to Edgemont Drive	A1
CT-10	Cormorant Bay – Edgewater Drive to Station 0+210	A1
CT-11	Cormorant Bay – Station 0+210 to Station 0+310	A1
CT-12	Cormorant Bay – Station 0+310 to Station 0+430	A1
CT-13	Cormorant Bay – Station 0+430 to Station 0+580	A1
CT-14	Cormorant Bay – Station 0+580 to Edgewater Drive	A1
CT-15	Watercress Road – Cormorant Bay to Station 0+200	A1
CT-16	Watercress Road – Station 0+200 to Edgewater Drive	A1
CT-17	Sweetwater Bay – Ashwood Cove to Station 0+200	A1
CT-18	Sweetwater Bay – Station 0+2000 to Station 0+310	A1
CT-19	Sweetwater Bay - Station 0+310 to Station 0+430	A1
CT-20	Sweetwater Bay - Station 0+430 to Station 5+00	A1
CT-21	Ashwood Cove – Sweetwater Bay to Station 0+210	A1
CT-22	Kingston Row (West leg) – Edinburgh Street to Station 0+210	A1
CT-23	Kingston Row (West leg) - Station 0+210 to Station 0+330	A1
CT-24	Kingston Row (West leg) - Station 0+330 to Station 0+450	A1
CT-25	Kingston Row (West leg) - Station 0+450 to Station 0+570	A1
CT-26	Kingston Row (West leg) - Station 0+570 to Station 0+600	A1
CT-27	Kingston Row (East leg) - Station 0+100 to Station 0+210	A1
CT-28	Kingston Row (East leg) - Station 0+210 to Station 0+330	A1
CT-29	Kingston Row (East leg) - Station 0+330 to Station 0+460	A1

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
CT-30	Kingston Row (East leg) - Station 0+460 to St Mary's Road	A1
CT-31	Alley St. Michael Road – St. Michael Road to Station 0+220	A1
CT-32	Alley Pulberry Street – Pulberry Street to Station 0+220	A1
CT-33	Alley Pulberry Street – Station 0+220 to St. Mary's Road	A1

## **E2. MOBILIZATION AND DEMOBILIZATION PAYMENT**

### DESCRIPTION

- E2.1 This Specification shall cover all operations relating to the mobilization and demobilization of the Contractor to the project location(s).
- E2.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.
- E2.3 The inclusion of a payment item for the Work under this Specification shall not release or reduce the responsibilities of the Contractor under any other specification in this Contract.

### SCOPE OF WORK

- E2.4 Further to C12 of the General Conditions, where Mobilization and Demobilization is included as a bid item, it shall consist of the following, as applicable:
- (a) Mobilization shall include, but not be limited to:
    - (i) All activities and associated costs for transportation of the Contractor's personnel, equipment, and operating supplies to the site, and/or sites, and/or between sites;
    - (ii) Establishment of offices, buildings, other necessary general facilities and equipment parking/staging areas for the Contractor's operations at the site or sites;
    - (iii) Premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable;
    - (iv) General cleanup and housekeeping needed maintain a neat and orderly project site and/or sites;
    - (v) Other job related items.
  - (b) Demobilization shall include, but not be limited to:
    - (i) All activities and costs for transportation of personnel, equipment, and supplies not used in the project from the site, and/or sites, and/or between sites;
    - (ii) Disassembly, removal, and site cleanup and restoration of offices, buildings, and other facilities assembled on the site and/or sites;
    - (iii) Repair of access roads, temporary haul roads, and equipment parking areas leaving the project site in the same or better condition than at the start of the project;
    - (iv) General cleanup and housekeeping needed to restore a neat and orderly project site.
- E2.5 Access to the site, equipment parking, and staging areas are limited to that shown on the drawings or as approved by the Contract Administrator.

### MEASUREMENT AND PAYMENT

- E2.6 The lump-sum price for the Mobilization and Demobilization bid item shall not exceed five percent (5.00%) of the total bid price for the Contract.

E2.6.1 Further to B9, B17, C12 and E2.6, should the lump sum price exceed 5% of the Total Bid Price the lump sum price will be reduced to 5% of the Total Bid Price, the Total Bid Price will be determined using the reduced lump sum price and payment will be based on the reduced lump sum price.

E2.7 Payment for Mobilization:

- (a) 60% of the lump-sum price will be paid to the contractor for Mobilization on the first Progress Estimate for the Contract.

E2.8 Payment for Demobilization:

- (a) The remaining 40% of the lump-sum price will be paid upon:
  - (i) Restoration of the site and/or sites to the satisfaction of the Contract Administrator;
  - (ii) Distribution of the Declaration of Total Performance.

E2.9 Mobilization and Demobilization will be paid only once (to a maximum of 100%), regardless of the number of times the Contractor mobilizes to the site and/or sites.

### **E3. GEOTECHNICAL REPORT**

E3.1 Further to C3.1, the geotechnical report is provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The geotechnical report is contained in Appendix 'A'.

### **E4. PROTECTION OF EXISTING TREES**

E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
- (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
- (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
- (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
- (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E4.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.

E4.3 No separate measurement or payment will be made for the protection of trees.

E4.4 Except as required in clause E4.1(c) and E4.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.



## E5. TRAFFIC CONTROL

E5.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:

- (a) Where directed by the Contract Administrator, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW 3410.
- (b) In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor ("Construction Agency" in the manual) shall be responsible for placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC or by the Traffic Management Branch of the City of Winnipeg Public Works Department. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by their own forces or subcontractor.

E5.2 Notwithstanding E5.1, in accordance with the MTTC, the Contract Administrator shall make arrangements with the **Traffic Services Branch of the City of Winnipeg** to place, maintain, and remove all **regulatory signs** and traffic control devices authorized and/or required by the Traffic Management Branch in the following situations:

- (a) Parking restrictions,
- (b) Stopping restrictions,
- (c) Turn restrictions,
- (d) Diamond lane removal,
- (e) Full or directional closures on a Regional Street,
- (f) Traffic routed across a median,
- (g) Full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure.
- (h) Approved Designated Construction Zones with a temporary posted speed limit reduction. Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs. The Contractor is still responsible for all other temporary traffic control including but not limited to barricades, barrels and tall cones.

E5.2.1 An exception to E5.2 is the 'KEEP RIGHT/KEEP LEFT' sign (RB-25 / RB-25L) which shall be supplied, installed, and maintained by the Contractor at their own expense.

E5.2.2 Further to E5.2, for Kingston Row, the Traffic Services Branch shall install regulatory signs for the One Way Traffic plan. The Contractor will install and maintain all the other traffic signing devices for the One Way Traffic required on Kingston Row included to but not limited to barricades, cones, etc. to the satisfaction of the Contract Administrator.

E5.2.3 Further to E5.2, where the Contract Administrator has determined that the services of the Traffic Services Branch are required, the City shall bear the costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

## E6. TRAFFIC MANAGEMENT

E6.1 Further to clause 3.7 of CW 1130:

E6.1.1 The Contractor shall schedule construction activities to meet the following:

- (a) On Regis Drive, Southwalk Bay, Marwood Crescent, Sweetwater Bay, Ashwood Cove, Cormorant Bay, Watercress Road, the North/South leg alley bounded by Pulberry Street/Arden Avenue/St. Michael Road/St. Mary's Road at least one lane for local access traffic shall be maintained along each street during construction.
- (b) On Kingston Row, traffic management shall be as follows:

- (c) Stage 1 – shall be signed “One Way” in the west bound direction from Edinburgh Street to House No. 71 Kingston Row. At least one lane shall be maintained during construction.
- (d) Stage 2 – At least one lane for local access traffic shall be maintained during construction from St Mary’s Road to Rosewarne Avenue.
  - (i) Traffic will not be permitted to travel on a planed pavement surface.
- (e) Stage 1 of the East/West leg of alley bounded by Pulberry Street and St. Mary’s Road will be closed to all traffic during construction. After the completion of Stage 1 the alley shall be reopened and Stage 2 shall be closed to all traffic during construction, however access shall be maintained to Building No. 1106 St. Mary’s Road. The Contractor shall sign the street “Road Closed – No Exit” in accordance with the Manual of Temporary Traffic Control.

E6.1.2 Flag persons may be necessary to maintain the flow of traffic during certain work operations.

E6.1.3 Should the Contractor be unable to maintain an existing access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E6.1.4 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

## E7. REFUSE AND RECYCLING COLLECTION

E7.1 If access to refuse and/or recycling collection vehicles is restricted, on collection day(s) the Contractor shall move all of the affected property owners refuse and/or recycling materials to a nearby common area, prior to an established time, in accordance with E7.2 to permit the normal collection vehicles to collect the materials. Immediately following refuse and recycling collection the Contractor shall return refuse and recycling receptacles to the addresses marked on the receptacles. At all other times, the Contractor shall allow access for refuse and recycling collection vehicles.

E7.2 Collection Schedule:

### Regis Drive from Charing Cross Crescent to Paddington Road

<i>Collection Day(s):</i>	<b>Friday (front street) 130 Regis Condo Friday Recycling, Garbage Monday/Thursday front street.</b>
<i>Collection Time:</i>	<b>7:00 a.m. to 6:00 p.m.</b>
<i>Common Collection Area:</i>	<b>N/A</b>

### Kingston Row from Edinburgh Street to St. Mary’s Road

<i>Collection Day(s):</i>	<b>Wednesday service, St Mary’s Road to Mager Road back lane service both sides: Mager Road to Edinburgh Street North side front pickup and South side back lane.</b>
<i>Collection Time:</i>	<b>7:00 a.m. to 6:00 p.m.</b>
<i>Common Collection Area:</i>	<b>N/A</b>

### Southwalk Bay from Charing Cross Crescent to Charing Cross Crescent

<i>Collection Day(s):</i>	<b>Friday, front Street</b>
<i>Collection Time:</i>	<b>7:00 a.m. to 6:00 p.m.</b>
<i>Common Collection Area:</i>	<b>N/A</b>

**Marwood Crescent from Edgemont Drive to Edgemont Drive**

*Collection Day(s):* Tuesday, front street  
*Collection Time:* 7:00 a.m. to 6:00 p.m.  
*Common Collection Area:* N/A

**Ashwood Cove from Sweetwater Bay to the End**

*Collection Day(s):* Tuesday, front street  
*Collection Time:* 7:00 a.m. to 6:00 p.m.  
*Common Collection Area:* N/A

**Cormorant Bay from Edgewater Drive to Edgewater Drive**

*Collection Day(s):* Tuesday, front street  
*Collection Time:* 7:00 a.m. to 6:00 p.m.  
*Common Collection Area:* N/A

**Watercress Road from Edgewater Drive to Cormorant Bay**

*Collection Day(s):* Tuesday, front street.  
*Collection Time:* 7:00 a.m. to 6:00 p.m

**East/West Leg of Alley bounded by Pulberry Street and St. Mary's Road**

*Collection Day(s):* Private garbage and recycling pickup.  
*Common Collection Area:* N/A

**North/South leg Alley bounded by Pulberry St./Arden Ave./St. Michael Rd./St Mary's Rd**

*Collection Day(s):* No pickup  
*Collection Time:* N/A  
*Common Collection Area:* N/A

E7.3 No measurement or payment will be made for the work associated with this specification.

**E8. WATER OBTAINED FROM THE CITY**

E8.1 Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

**E9. SURFACE RESTORATIONS**

E9.1 Further to clause 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

## **E10. SUPPLY AND INSTALLATION OF PAVEMENT REPAIR FABRIC**

### DESCRIPTION

#### E10.1 General

E10.1.1 This specification covers the supply and installation of pavement repair fabrics for reinforcement of asphalt layers, distribution of loads, and reducing reflective cracking distresses.

#### E10.2 Definitions

E10.2.1 Pavement Repair Fabric composed of fiberglass strands coated with an elastomeric polymer and formed into a grid structure.

E10.2.2 Minimum Average Roll Value (MARV) is Property value calculated as typical minus two standard deviations. It shall yield a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed the value reported.

E10.2.3 Apertures are the open spaces formed between the interconnected network of longitudinal and transverse ribs of a fabric.

E10.2.4 Type A Pavement Repair Fabric will be used for full width asphalt reinforcement by allowing asphalt particles to penetrate through the fabric to achieve high interlock and effective bonding of the two asphalt lifts.

E10.2.5 Type B Pavement Repair Fabric is high strength fabric in the cross-machine direction and will be used for localized repair reinforcement (*i.e.* at joints and cracks) to minimize both thermal and stress related reflective cracking.

#### E10.3 Referenced Standard Construction Specifications

E10.3.1 CW 3110 – Sub-Grade, Sub-Base and Base Course Construction.

E10.3.2 CW 3410 – Asphaltic Concrete Pavement Works.

E10.3.3 Approved Products for Surface Works.

### MATERIALS

#### E10.4 Approved Products

E10.4.1 Use only those materials listed as Approved Products for Surface Works. The Approved Products are available at the City of Winnipeg, Corporate Finance, Material Management Internet site at:

[https://www.winnipeg.ca/finance/findata/matmgt/std\\_const\\_spec/current/Docs/Approved\\_Products\\_Surface\\_Works.pdf](https://www.winnipeg.ca/finance/findata/matmgt/std_const_spec/current/Docs/Approved_Products_Surface_Works.pdf)

#### E10.5 Material Identification

E10.5.1 Pavement Repair Fabric shall be labelled in accordance with ASTM D4873/D4873M, and must clearly show the manufacturer name, product style number and roll number. Products without proper identification or labelling, mislabelling, or misrepresentation of materials shall be rejected.

#### E10.6 Storage and Handling

E10.6.1 Pavement Repair Fabric rolls shall be elevated off the ground and adequately covered to protect them from site construction damage, precipitation, any contamination of dirt or dust and any other deleterious materials.

E10.6.2 Pavement Repair Fabric rolls shall be protected from extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical properties of the fabric.

E10.6.3 Store and handle the Pavement Repair Fabric in accordance with the manufacturer's recommendations. Manufacturer's data sheets shall include preparation instructions and recommendations as well as storage and handling requirements and recommendations.

E10.7 Certification

E10.7.1 The Contractor shall provide Manufacturer's Mill Certificate and MARV Roll Data to the Contract Administrator prior to installation. The Certification shall state that the Pavement Repair Fabric meets MARV requirements as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer. The Pavement Repair Fabric shall be annually tested by accredited a third party testing facility.

E10.7.2 The Contractor shall provide a letter to the Contract Administrator stating the product name, manufacturer, style number, and other pertinent information to fully describe the Pavement Repair Fabric.

E10.7.3 All testing and data shall be in accordance with approved ASTM standards. Data reported in accordance with other standards will not be accepted.

E10.8 Pavement Repair Fabric Properties

E10.8.1 Pavement Repair Fabric shall consist of a high strength, fiberglass grid custom knitted and coated with an elastomeric polymer and self-adhesive glue with square or rectangular opening configurations.

E10.8.2 The axis with the least strength will be taken as the ultimate strength of the fabric for any given property.

E10.8.3 Type A Pavement Repair Fabric shall meet the requirements in Table CW 3140.1.

**Table CW 3140. 1 – Type A Pavement Repair Fabric Property Requirements**

Physical Property	Machine Direction	Cross-Machine Direction	Test Method
Tensile Strength, Minimum	100 kN/m	100 kN/m	ASTM D 6637
Tensile Strength @ 2% Strain, Minimum	80 kN/m	80 kN/m	ASTM D 6637
Secant Stiffness EA at 2% Strain	4,000 kN/m	4,000 kN/m	ASTM D 6637
Elongation at Break, Maximum	3%		ASTM D 6637
Coating Softening Point, Minimum	150 °C		ASTM D 36
Coating Melting Point, Minimum	350 °C		ASTM D 276
Glass Melting Point, Minimum	820 °C		ASTM D 338
Mass/Unit Area, Minimum	420 g/m <sup>2</sup>		ASTM D 5261

E10.8.4 Type B Pavement Repair Fabric shall meet the requirements in Table CW 3140.2

**Table CW 3140. 2 – Type B Pavement Repair Fabric Property Requirements**

Physical Property	Machine Direction	Cross-Machine Direction	Test Method
Tensile Strength, Minimum	100 kN/m	200 kN/m	ASTM D 6637
Tensile Strength @ 2% Strain, Minimum	80 kN/m	160 kN/m	ASTM D 6637
Secant Stiffness EA at 2% Strain	4,000 kN/m	8,000 kN/m	ASTM D 6637

Elongation at Break, Maximum	3%	ASTM D 6637
Coating Softening Point, Minimum	150 °C	ASTM D 36
Coating Melting Point, Minimum	350 °C	ASTM D 276
Glass Melting Point, Minimum	820 °C	ASTM D 338
Mass/Unit Area, Minimum	420 g/m <sup>2</sup>	ASTM D 5261

E10.8.5 All physical property requirements are Minimum Average Roll Values (MARV) determined in accordance with ASTM 4759. Values not labelled as MARV will not be accepted.

E10.8.6 Aperture Sizes shall be as follows:

- (a) Between 10 mm and 14 mm for pavement repair fabric immediately below or within Type 1A asphalt layer.
- (b) Between 19 mm and 25.4 mm for pavement repair fabric immediately below or within Type III asphalt layer.

E10.8.7 If the fabric has a rectangular aperture size, the smaller dimension shall be used to establish the suitable Pavement Repair Fabric.

## CONSTRUCTION METHODS

- E10.9 Pavement Repair Fabric shall not be placed when weather conditions, in the opinion of the Contract Administrator, are not suitable for installation including heavy rainfall, extreme cold or frost conditions, or extreme heat.
- E10.10 Make all repairs as required prior to placement of Pavement Repair Fabric. Seal cracks and fill holes using a method that provides a proper level surface. Receiving surface shall be smooth, with the existing cracks pretreated.
- E10.11 Surfaces shall be mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel, and other contaminants prior to placement of Pavement Repair Fabric.
- E10.12 Pavement Repair Fabric placement should not be undertaken if rain is likely to fall prior to covering the fabric with an asphalt mat overlay. Pavement Repair Fabric that is placed and will not adhere due to moisture shall be removed and replaced at the Contractor's expense.
- E10.13 Pavement Repair Fabric shall be laid out by mechanical means or by hand using sufficient pressure to eliminate ripples. Remove any ripples by pulling the fabric tight. Cutting of the fabric may be permitted on tight radii to prevent ripples.
- E10.14 Transverse joints shall be overlapped 75 mm or as recommended by the manufacturer, whichever is greater. Longitudinal joints shall be overlapped 37.5 mm or as recommended by the manufacturer, whichever is greater.
- E10.15 Prior to the asphalt topping placement, the fabric shall be inspected by the Contract Administrator for damage during installation. Damaged fabric shall be removed and replaced at the Contractor's expense.
- E10.16 Activate self-adhesive glue by rolling with a rubber coated drum roller or a pneumatic tire roller. In no instance shall steel-wheeled or vibratory rollers be used. Rolling shall continue until the adhesive is activated and the fabric is bonded to the leveling course.
- E10.17 Roller tires shall be kept clean to the satisfaction of the Contract Administrator.
- E10.18 If bonding of the fabric is not readily achieved, it shall be removed and replaced at the Contractor's expense.
- E10.19 Pavement Repair Fabric shall be laid and rolled over ironworks (e.g., manhole covers). Once the fabric has been rolled, those portions covering the ironworks shall be removed by cutting the fabric with a utility knife or other methods approved by the Contract Administrator.
- E10.20 Protect the Pavement Repair Fabric until placement of the finished asphalt topping.
- E10.21 Where a tack coat or emulsified asphalt is specified, the approved tack coat/emulsion and dose should be used as recommended by the manufacturer in conjunction with the Pavement Repair Fabric. Tack coat or emulsified asphalts shall not be diluted. Unless otherwise recommended by the manufacturer, apply tack coat or emulsified asphalt at the rate of 0.35 liters per square meter of surface area.
- E10.22 Where tack coat or emulsified asphalt is placed prior to the fabric, it must fully cure prior to placement of the fabric. Where tack coat or emulsified asphalt is placed after the fabric, it must fully cure prior to construction traffic, including paving, travelling on the surface.
- E10.23 Prevent spattering of tack coat or emulsified asphalt when placed adjacent to curbs, gutters, structures and other adjacent surfaces. Clean any surfaces where it has been contaminated by the tack coat or emulsified asphalt.
- E10.24 Leveling course or overlay layer shall be a minimum thickness of 40 mm. Place and compact asphalt over the Pavement Repair Fabric in accordance with CW 3410.

## QUALITY ASSURANCE TESTING

- E10.25 The Contract Administrator shall test the adhesion for pavement repair fabric in field during construction is as follows:
- E10.25.1 Place approximately 1 m<sup>2</sup> of fabric on a prepared surface that is representative of the project conditions.
  - E10.25.2 Activate self-adhesive glue by rolling with a rubber-tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.
  - E10.25.3 Use a calibrated spring balance by inserting the hook of the balance under the centre of the fabric and pulling upward until the fabric starts to pull away from the surface.
  - E10.25.4 A 9 kg pull is required without pulling the grid free or creating ripples in the fabric.
- E10.26 The minimum frequency shall be one test, then test every 2000 square meters.

## MEASUREMENT AND PAYMENT

- E10.27 Supply and installation of Pavement Repair Fabric will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Supply and Install Pavement Repair Fabric i) Type A". The area to be paid for will be the total number of square metres of Pavement Repair Fabric, supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
- E10.28 Only material placed within the designated limits will be included in the payment for "Supply and Install Pavement Repair Fabric i) Type A".
- E10.29 No measurement or payment will be made for Pavement Repair Fabric removed and replaced due to improper installation or damaged materials.
- E10.30 No measurement or payment will be made for transverse and longitudinal overlap.

## **E11. SUPPLY AND INSTALL WATERMAIN AND WATER SERVICE INSULATION**

### DESCRIPTION

- E11.1 Notwithstanding 3.12 of CW 2110, this specification covers the supply and installation of insulation in roadway excavations over watermains and water services.
- E11.2 Referenced Standard Construction Specifications
- (a) CW 2030 – Excavation Bedding and Backfill
  - (b) CW 3110 – Sub-grade, Sub-base and Base Course Construction
- E11.3 Referenced Standard Details
- (a) SD-018 - Watermain and Water Service Insulation

### MATERIALS

- E11.4 Acceptable insulation is:
- (a) Extruded Polystyrene rigid foam insulation – Type 4, 4" in thickness.
    - DOW - Roofmate or Highload 40
    - Owen's Corning - Foamular 350 or Foamular 400.
    - 2" X 48" X 96", 2" X 24" X 96, 4" X 24" X 96",
- E11.5 Sand Bedding:
- (a) In accordance with CW 2030.



## CONSTRUCTION METHODS

- E11.6 Prior to the installation of any sub-base material or geotextile material, locate all existing water services.
- E11.7 Further to SD-018, where directed by the Contract Administrator, excavate the sub-grade to allow the top of the insulation to be installed flush with the surrounding sub-grade. Install the insulation on a level surface centered over the located watermain or water service for the full width of the roadway excavation. Install sand bedding if required to level the surface.
- E11.8 Stockpile and dispose of excavated material in accordance with CW 3110.
- E11.9 Thickness of insulation is 100mm (4"). If using 50mm (2") panels two (2) layers are required. Total width of insulation to be as directed by the Contract Administrator. Place sufficient full width panels to meet or exceed the specified width.
- E11.10 Place insulation panels adjacent to each other over the specified area with no gaps between panels and less than 15mm of elevation difference along the adjoined edges. Where 2" thick panels are being used, offset the top layer to prevent the panel joints from aligning with the joints in the lower layer.
- E11.11 Use full panels of insulation where possible. Where necessary cut insulation panels to obtain coverage to specified lengths. Insulation pieces shall be a minimum of dimension of 300 mm in width or length.
- E11.12 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

## MEASUREMENT AND PAYMENT

- E11.13 Watermain and Water Service Insulation shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Watermain and Water Service Insulation". The area to be paid for shall be the total square meters of watermain and water service insulation supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
- E11.14 Excavation of the roadway subgrade in accordance with E11.7 and locating existing water services in accordance with E11.6 will not be measured for payment and will be included in the payment for "Watermain and Water Service Insulation".

## **E12. BIDDING INSTRUCTIONS FOR LIMESTONE AND/OR RECYCLED CONCRETE BASE COURSE AND SUB-BASE MATERIALS**

### DESCRIPTION

- E12.1 General
- E12.1.1 This specification covers the bidding instructions for Limestone Base Course B, 100mm Limestone B Sub-Base Materials, Granular B Recycled Base Course Materials, and 100mm Granular B Interim (RCA).

### METHOD

- E12.2 General
- E12.2.1 A Bidder will provide a unit price for items A.3 i) or A.3 ii) on Form B: Prices but not both.
- E12.2.2 A Bidder will provide a unit price for items A.4 i) or A.4 ii) on Form B: Prices but not both.

**E13. 100MM INTERIM GRANULAR B (RCA)**

DESCRIPTION

E13.1 General

E13.1.1 Further to CW-3110 100mm Interim Granular B (RCA) is a well-graded recycled aggregate intended for use as a sub-base within the pavement structure.

E13.1.2 100mm Interim Granular B (RCA) material shall have the following properties:

Tests	Testing Method	Interim Granular B	
		50 mm	100 mm
Los Angeles Abrasion, % maximum	ASTM C535 (Grading 1)	--	35
Los Angeles Abrasion, % maximum	ASTM C131 (Grading A)	35	--
California Bearing Ratio (CBR) – 4 days soaked, % minimum @ 2.54 mm	ASTM D1883	50	--
Micro-Deval Abrasion, % maximum	ASTM D6928	20	20
Percentage of Fractured Particles, minimum two or more fractured faces, % mass	ASTM D5821	70	60
Atterberg Limits* Liquid Limit, % maximum	ASTM D4813	22	25
Plasticity Index, % maximum		4	6
Content Composition, maximum	Mass %	10% asphalt material 3% clay 3% deleterious material	

\*Atterberg Limits shall not be a basis for rejection of Interim Granular B.

MEASUREMENT AND PAYMENT

E13.2 100mm Interim Granular B (RCA) shall be measured on a weight basis and paid for at the Contract Unit Price per tonne for "100 mm Interim Granular B (RCA)". The area to be paid for shall be the total square meters of 100 mm interim granular B (RCA) supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

# **APPENDIX 'A'**

# **GEOTECHNICAL REPORT**

## **APPENDIX 'A' - GEOTECHNICAL REPORT**

The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in pavement structure and/or soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.

**AECOM Canada Ltd.**

**GENERAL STATEMENT**

**NORMAL VARIABILITY OF SUBSURFACE CONDITIONS**

The scope of the investigation presented herein is limited to an investigation of the subsurface conditions as to suitability for the proposed project. This report has been prepared to aid in the evaluation of the site and to assist the engineer in the design of the facilities. Our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of earth work, foundations and similar. In the event of any changes in the basic design or location of the structures as outlined in this report or plan, we should be given the opportunity to review the changes and to modify or reaffirm in writing the conclusions and recommendations of this report.

The analysis and recommendations presented in this report are based on the data obtained from the borings and test pit excavations made at the locations indicated on the site plans and from other information discussed herein. This report is based on the assumption that the subsurface conditions everywhere are not significantly different from those disclosed by the borings and excavations. However, variations in soil conditions may exist between the excavations and, also, general groundwater levels and conditions may fluctuate from time to time. The nature and extent of the variations may not become evident until construction. If subsurface conditions differ from those encountered in the exploratory borings and excavations, are observed or encountered during construction, or appear to be present beneath or beyond excavations, we should be advised at once so that we can observe and review these conditions and reconsider our recommendations where necessary.

Since it is possible for conditions to vary from those assumed in the analysis and upon which our conclusions and recommendations are based, a contingency fund should be included in the construction budget to allow for the possibility of variations which may result in modification of the design and construction procedures.

In order to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated, we recommend that all construction operations dealing with earth work and the foundations be observed by an experienced soils engineer. We can be retained to provide these services for you during construction. In addition, we can be retained to review the plans and specifications that have been prepared to check for substantial conformance with the conclusions and recommendations contained in our report.

# EXPLANATION OF FIELD & LABORATORY TEST DATA

The field and laboratory test results, as shown for each hole, are described below.

## 1. NATURAL MOISTURE CONTENT

The relationship between the natural moisture content and depth is significant in determining the subsurface moisture conditions. The Atterberg Limits for a sample should be compared to its natural moisture content and plotted on the Plasticity Chart in order to determine the soil classification.

## 2. SOIL PROFILE AND DESCRIPTION

Each soil stratum is classified and described noting any special conditions. The Modified Unified Classification System (MUCS) is used. The soil profile refers to the existing ground level at the time the hole was done. Where available, the ground elevation is shown. The soil symbols used are shown in detail on the soil classification chart.

## 3. TESTS ON SOIL SAMPLES

Laboratory and field tests are identified by the following and are on the logs:

- N - Standard Penetration Test (SPT) Blow Count. The SPT is conducted in the field to assess the in-situ consistency of cohesive soils and the relative density of non-cohesive soils. The N value recorded is the number of blows from a 63.5 kg hammer dropped 760 mm which is required to drive a 51 mm split spoon sampler 300 mm into the soil.
  
- SO<sub>4</sub> - Water Soluble Sulphate Content. Expressed in percent. Conducted primarily to determine requirements for the use of sulphate resistant cement. Further details on the water-soluble sulphate content are given in Section 6.
  
- $\gamma_D$  - Dry Unit Weight. Usually expressed in kN/m<sup>3</sup>.
  
- $\gamma_T$  - Total Unit Weight. Usually expressed in kN/m<sup>3</sup>.
  
- Q<sub>u</sub> - Unconfined Compressive Strength. Usually expressed in kPa and may be used in determining allowable bearing capacity of the soil.

- C<sub>u</sub> - Undrained Shear Strength. Usually expressed in kPa. This value is determined by either a direct shear test or by an unconfined compression test and may also be used in determining the allowable bearing capacity of the soil.
  
- C<sub>PEN</sub> - Pocket Penetrometer Reading. Usually expressed in kPa. Estimate of the undrained shear strength as determined by a pocket penetrometer.

The following tests may also be performed on selected soil samples and the results are given on separate sheets enclosed with the logs:

- Grain Size Analysis
- Standard or Modified Proctor Compaction Test
- California Bearing Ratio Test
- Direct Shear Test
- Permeability Test
- Consolidation Test
- Triaxial Test

#### 4. SOIL DENSITY AND CONSISTENCY

The SPT test described above may be used to estimate the consistency of cohesive soils and the density of cohesionless soils. These approximate relationships are summarized in the following tables:

**Table 1 Cohesive Soils**

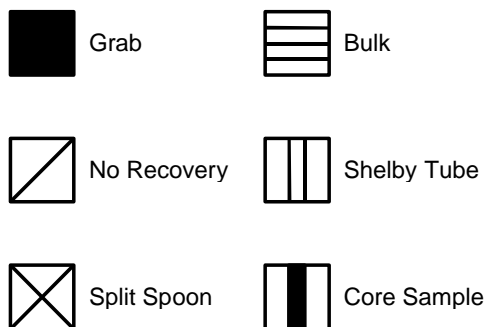
N	Consistency	C <sub>u</sub> (kPa) approx.
0 - 1	Very Soft	<10
1 - 4	Soft	10 - 25
4 - 8	Firm	25 - 50
8 - 15	Stiff	50 - 100
15 - 30	Very Stiff	100 - 200
30 - 60	Hard	200 - 300
>60	Very Hard	>300

**Table 2 Cohesionless Soils**

N	Density
0 - 5	Very Loose
5 - 10	Loose
10 - 30	Compact
30 - 50	Dense
>50	Very Dense

## 5. SAMPLE CONDITION AND TYPE

The depth, type, and condition of samples are indicated on the logs by the following symbols:



## 6. WATER SOLUBLE SULPHATE CONCENTRATION

The following table, from CSA Standard A23.1-14, indicates the requirements for concrete subjected to sulphate attack based upon the percentage of water-soluble sulphate as presented on the logs. CSA Standard A23.1-14 should be read in conjunction with the table.

**Table 3 Requirements for Concrete Subjected to Sulphate Attack\***

Class of exposure	Degree of exposure	Water-soluble sulphate (SO <sub>4</sub> ) <sup>†</sup> in soil sample, %	Sulphate (SO <sub>4</sub> ) <sup>‡</sup> in groundwater samples, mg/L <sup>‡</sup>	Water soluble sulphate (SO <sub>4</sub> ) in recycled aggregate sample, %	Cementing materials to be used <sup>§††</sup>	Performance requirements <sup>§,§§</sup>		
						Maximum expansion when tested using CSA A3004-C8 Procedure A at 23 °C, %		Maximum expansion when tested using CSA A3004-C8 Procedure B at 5 °C, % <sup>†††</sup>
						At 6 months	At 12 months <sup>††</sup>	At 18 months <sup>‡‡</sup>
S-1	Very severe	> 2.0	> 10 000	> 2.0	HS <sup>**</sup> , HSb, HSLb <sup>***</sup> or HSe	0.05	0.10	0.10
S-2	Severe	0.20–2.0	1500–10 000	0.60–2.0	HS <sup>**</sup> , HSb, HSLb <sup>***</sup> or HSe	0.05	0.10	0.10
S-3	Moderate (including seawater exposure*)	0.10–0.20	150–1500	0.20–0.60	MS, MSb, MSe, MSLb <sup>***</sup> , LH, LHb, HS <sup>**</sup> , HSb, HSLb <sup>***</sup> or HSe	0.10		0.10

\*For sea water exposure, also see Clause 4.1.1.5.

<sup>†</sup>In accordance with CSA A23.2-3B.

<sup>‡</sup>In accordance with CSA A23.2-2B.

<sup>§</sup>Where combinations of supplementary cementing materials and portland or blended hydraulic cements are to be used in the concrete mix design instead of the cementing materials listed, and provided they meet the performance requirements demonstrating equivalent performance against sulphate exposure, they shall be designated as MS equivalent (MSe) or HS equivalent (HSe) in the relevant sulphate exposures (see Clauses 4.1.1.6.2, 4.2.1.1, and 4.2.1.3, and 4.2.1.4).

<sup>\*\*</sup>Type HS cement shall not be used in reinforced concrete exposed to both chlorides and sulphates, including seawater. See Clause 4.1.1.6.3.



††The requirement for testing at 5 °C does not apply to MS, HS, MSb, HSb, and MSe and HSe combinations made without portland limestone cement.

‡‡ If the increase in expansion between 12 and 18 months exceeds 0.03%, the sulphate expansion at 24 months shall not exceed 0.10% in order for the cement to be deemed to have passed the sulphate resistance requirement.

§§For demonstrating equivalent performance, use the testing frequency in Table 1 of CSA A3004-A1 and see the applicable notes to Table A3 in A3001 with regard to re-establishing compliance if the composition of the cementing materials used to establish compliance changes.

\*\*\*Where MSLb or HSLb cements are proposed for use, or where MSe or HSe combinations include Portland-limestone cement, they must also contain a minimum of 25% Type F fly ash or 40% slag or 15% metakaolin (meeting Type N pozzolan requirements) or a combination of 5% Type SF silica fume with 25% slag or a combination of 5% Type SF silica fume with 20% Type F fly ash. For some proposed MSLb, HSLb, and MSe or HSe combinations that include Portland-limestone cement, higher SCM replacement levels may be required to meet the A3004-C8 Procedure B expansion limits. Due to the 18-month test period, SCM replacements higher than the identified minimum levels should also be tested. In addition, sulphate resistance testing shall be run on MSLb and HSLb cement and MSe or HSe combinations that include Portland-limestone cement at both 23 °C and 5 °C as specified in the table.

†††If the expansion is greater than 0.05% at 6 months but less than 0.10% at 1 year, the cementing materials combination under test shall be considered to have passed.

## 7. SOIL CORROSIVITY

The following table, from the Handbook of Corrosion Engineering (Roberge, 1999) indicates the corrosivity rating can be obtained from the soil resistivity, presented on the logs.

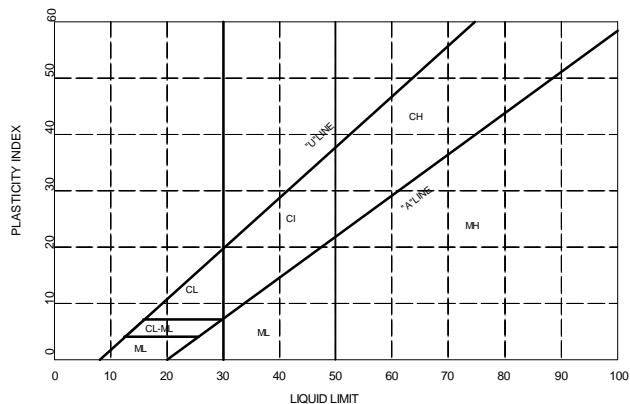
**Table 4 Corrosivity Ratings Based on Soil Resistivity**

Soil Resistivity (ohm-cm)	Corrosivity Rating
>20,000	Essentially non-corrosive
10,000 – 20,000	Mildly corrosive
5,000 – 10,000	Moderately corrosive
3,000 – 5,000	Corrosive
1,000 – 3,000	Highly corrosive
<1,000	Extremely corrosive

## 8. GROUNDWATER TABLE

The groundwater table is indicated by the equilibrium level of water in a standpipe installed in a testhole or test pit. This level is generally taken at least 24 hours after installation of the standpipe. The groundwater level is subject to seasonal variations and is usually highest in the spring. The symbol on the logs indicating the groundwater level is an inverted solid triangle (▼).

MAJOR DIVISION		LOG SYMBOLS	UCS	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE GRAINED SOILS	GRAVELS (MORE THAN HALF COARSE GRAINS LARGER THAN 4.75 mm)	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL GRADED GRAVELS, LITTLE OR NO FINES	$C_u - \frac{D_{60}}{D_{10}} > 4$ $C_c - \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3	
		GRAVELS WITH FINES	GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
			GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW 'A' LINE $W_p$ LESS THAN 4
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE 'A' LINE $W_p$ MORE THAN 7		
	SANDS (MORE THAN HALF COARSE GRAINS SMALLER THAN 4.75 mm)	CLEAN SANDS (LITTLE R NO FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u - \frac{D_{60}}{D_{10}} > 6$ $C_c - \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3	
			SP	POORLY GRADED SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW 'A' LINE $W_p$ LESS THAN 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE 'A' LINE $W_p$ MORE THAN 7
FINE GRAINED SOILS	SILTS (BELOW 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	$W_L < 50$	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)  WHENEVER THE NATURE OF THE FINE CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER 'F'. E.G. SF IS A MIXTURE OF SAND WITH SILT OR CLAY	
		$W_L > 50$	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
	CLAYS (ABOVE 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	$W_L < 30$	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS		
		$30 < W_L < 50$	CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS		
		$W_L > 50$	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS (BELOW 'A' LINE)	$W_L < 50$	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
		$W_L > 50$	OH	ORGANIC CLAYS OF HIGH PLASTICITY		
	HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS
BEDROCK			BR	SEE REPORT DESCRIPTION		
FILL			FILL	SEE REPORT DESCRIPTION		



SOIL COMPONENTS					
FRACTION		SIEVE SIZE (mm)		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
		PASSING	RETAINED	PERCENT	IDENTIFIER
GRAVEL	COARSE	75	19	50 - 35	AND
	FINE	19	4.75		
SAND	COARSE	4.75	2.00	35 - 20	Y
	MEDIUM	2.00	0.425		
	FINE	0.425	0.080		
SILT (non-plastic) or CLAY (plastic)		0.080		20 - 10	SOME
				10 - 1	TRACE
OVERSIZE MATERIALS					
ROUNDED OR SUB-ROUNDED COBBLES 75 mm TO 200 mm BOULDERS >200 mm			ANGULAR ROCK FRAGMENTS ROCKS > 0.75 m3 IN VOLUME		

**MODIFIED UNIFIED SOIL CLASSIFICATION SYSTEM**

August 2015

## APPENDIX B - SITE INVESTIGATION REQUIREMENTS FOR PUBLIC WORKS STREET PROJECTS

### General

This guideline provides basic principles and requirements for site investigations and testing with which to guide the designer in the preparation of proposals and completion of their investigations. Irrespective of the requirements listed in this document, it is important that the Engineer clearly outlines what assumptions were made in estimating the effort and resources necessary to complete the scope of work. A proposal should be submitted for approval to the City's Project Manager.

When using this guideline, the designer remains responsible for the proposed plan in accordance to good engineering standards that address the specific needs and site conditions of the project. Without limiting that broad and general obligation, this guideline should be the minimum requirement.

Boreholes and pavement core spacing, and material testing guidelines presented in this guide are only applicable to pavement investigations. Site investigation and testing may also be conducted as per common industry practice for other road elements such as sidewalks, boulevards, and medians. The City's Project Manager should be notified of any unusual conditions or difficulties encountered, and any changes made in the investigation program.

### New Construction and Reconstruction Projects

The number of boreholes can be calculated using Table 1.

Table 1 : Number of Boreholes and Depths

Lanes/Locals	Industrials and Collectors	Arterials
<p>Number of boreholes = <math>0.1 \times (\text{Street area (m}^2\text{)})^{0.45}</math></p> <p>A minimum of two boreholes, 2 m ± 150 mm depth from the bottom of the proposed or the existing pavement per project location.</p>	<p>Number of boreholes = <math>0.1 \times (\text{Street area (m}^2\text{)})^{0.46}</math></p> <p>A minimum of three boreholes, 2.5 m ± 150 mm depth from the bottom of the proposed or the existing pavement per project location.</p>	<p>Number of boreholes = <math>0.1 \times (\text{Street area (m}^2\text{)})^{0.48}</math></p> <p>A minimum of three boreholes, 2.5 m ± 150 mm depth from the bottom of the proposed or the existing pavement per project location.</p>

<sup>1</sup>If previous soil information is available and relevant, the number of boreholes can be reduced - confirm with the City's Project Manager.

<sup>2</sup>Additional boreholes should be undertaken where adverse soil conditions are expected or encountered during the course of field drilling.

Offset the boreholes as appropriate to provide coverage across the full width of the proposed construction. Boreholes should not be advanced on utility cut patching. The locations of the boreholes should be shown clearly on a scaled plan map of the site under investigation.

The following factors should be considered while selecting borehole locations:

- Visual sub-grade variability;
- Significant pavement failures (rutting, fatigue cracking, settlement and faulting) which are often associated with sub-grade issues to diagnose the cause of these conditions; and,
- Existing buried infrastructure.

Information regarding the sampler type, date and time of sampling, sample type and color, sample depth, ground water elevations, boreholes location, etc. should be shown in log form using notations and a graphical system. The log form should distinguish between visual evaluations of soil samples in the field

versus a more precise laboratory evaluation supported by tests. Detailed boring logs including the results of laboratory tests should be included in the geotechnical report.

Measure and identify pavement materials (thickness and types of pavement structure materials). Photograph core samples recovered from the pavement surface (concrete, asphalt or composite).

Visual identification of the soil must be reported at the following depths from the bottom of the proposed or the existing pavement – 0.6 m, 0.9 m, 1.2 m, 1.6 m, 2.0 m, and 2.5 m (if required). Ensure that each soil type encountered in the boreholes is identified. The visual identification should describe the existing pavement structure, if any, including the materials encountered and the layer thicknesses.

Backfill boreholes with granular fill. Patch pavement surface with an approved cold patch asphalt or rapid set cementitious product to match the surface pavement type.

Where significant embankments are proposed along the roadway, specific testing and recommendations for the fill materials and placement should be made including expected settlements, load compensation requirements, and potential buoyancy of the embankment. The size, complexity and extent of the testing program will depend primarily on the type, height and size of embankment as well as the expected imported soil conditions – confirm with the City's Project Manager.

For embankments less than 100 m in length, a minimum of two boreholes are required. For embankments more than 100 m in length, the spacing between boreholes along the length of the embankment should not exceed 75 m with a minimum of two (2) boreholes. Extend the boreholes depths to a minimum of 2 m ± 150 mm below the proposed sub-grade level. At critical locations and where embankment heights exceed 1.0 m, a minimum of two (2) boreholes are required in the transverse direction to define the existing geological conditions for stability analyses.

#### Laboratory Testing Program

Determine the moisture content of the soils encountered in every borehole in accordance with ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass, at the following depths from the bottom of the proposed or existing pavement – 0.6 m, 0.9 m, 1.2 m, 1.6 m, 2.0 m, and 2.5 m (if required).

Classify and test the anticipated sub-grade soil in accordance with Table 2. The sub-grade soil is the material on which the pavement structure will be built; 0.6 m, 0.9 m, and 1.2 m may be used for locals, collectors, and arterials, respectively – confirm with the City's Project Manager.

Table 2: Boreholes Testing Frequency

Lanes/Locals	Collectors	Arterials
<p>Number of boreholes = <math>0.1 \times (\text{Street area (m}^2\text{)})^{0.4}</math></p> <p>A minimum of two boreholes should be tested per project location.</p>	<p>Number of boreholes = <math>0.1 \times (\text{Street area (m}^2\text{)})^{0.41}</math></p> <p>A minimum of three boreholes should be tested per project location.</p>	<p>Number of boreholes = <math>0.1 \times (\text{Street area (m}^2\text{)})^{0.42}</math></p> <p>A minimum of three boreholes should be tested per project location.</p>

The testing program should include:

- Particle Size Analysis – ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis and ASTM D7928 Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis;
- Atterberg Limits – ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; and,
- California Bearing Ratio (CBR) – ASTM D1883 Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils. CBR test shall be performed at 100 % maximum dry density and optimum water content. All samples shall be soaked prior to testing.

The sub-grade classification should be in accordance with:

- ASTM D3282 - Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes; and,
- ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes.

The designer should consider the site specific factors listed above for borehole locations while selecting testing location and frequency.

More advanced testing may be required depending upon site conditions including direct shear tests, triaxial tests, unconfined compressive tests, permeability tests, consolidation tests, point load tests, slaking tests, pinhole dispersion tests or other tests as deemed appropriate and justified by the designer – confirm with the City's Project Manager.

## **Rehabilitation Projects**

For any rehabilitation projects (Concrete, Asphalt or Composite), measure and identify pavement materials (thickness and types of pavement structure materials). Photograph core samples recovered from the pavement.

For concrete rehabilitation projects, 150 mm-diameter cores shall be taken at joints to identify proper rehabilitation strategies (i.e. mill/fill, partial depth repair, full depth repair). The number and location of cores will be determined by the designer after visiting the site – confirm with the City's Project Manager. A minimum of two (2) cores shall be collected mid-slab to determine the existing pavement thickness and concrete strength in accordance with CSA A23.2-14C – wet condition.

Factors that should be considered while selecting pavement core locations include but are not limited to:

- Significant variation in joint condition;
- Pumping slabs, cracks or distress and perceived moisture issues from side slopes/edge cracking; and,
- Significant changes in pavement structure thickness.

Non-destructive testing (i.e. Falling Weight Deflectometer and Ground Penetrating Radar) can be used to identify layer thicknesses and structural adequacy, load transfer at joints, and appropriate rehabilitation strategies, including partial depth repairs, full depth repairs, slab replacement, and overlays – confirm with the City's Project Manager.

PROJECT: Local Street and Alley Renewals - 21-R-02      CLIENT: City of Winnipeg      TESTHOLE NO: TH20-01  
 LOCATION: UTM 14 - 5521815 m N, 635450 m E      PROJECT NO.: 60636196  
 CONTRACTOR: Maple Leaf Drilling Ltd.      METHOD: Geoprobe 7822DT - 125 mm SSA      ELEVATION (m):

SAMPLE TYPE     GRAB     SHELBY TUBE     SPLIT SPOON     BULK     NO RECOVERY     CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH	COMMENTS	DEPTH
						SPT (N)	Total Unit Wt (kN/m <sup>3</sup> )			
0	ASPH CONC FILL		ASPHALT - 60 mm							
			CONCRETE - 130 mm							
			GRANULAR (Fill)		G1	●			Test hole cored/drilled through existing pavement	
1	CH		CLAY - some silt, some sand, trace gravel - dark grey, stiff, moist - high plasticity		G2	●			(G3): Gravel 4.1%, Sand 18.0%, Silt 19.2%, Clay 58.7%	1
					G3	●				
					G4	●				
					G5	●				
2			END OF TEST HOLE AT 1.98 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with bentonite, auger cuttings, and asphalt patch to original ground surface.		G6	●				2

LOG OF TEST HOLE 60636196 - TEST HOLE LOGS.GPJ UMA WINN.GDT 11/3/20



LOGGED BY: Enrico Manimbao      COMPLETION DEPTH: 1.98 m  
 REVIEWED BY: Ryan Harras      COMPLETION DATE: 9/21/20  
 PROJECT ENGINEER: Ryan Cunningham      Page 1 of 1

PROJECT: Local Street and Alley Renewals - 21-R-02      CLIENT: City of Winnipeg      TESTHOLE NO: TH20-02  
 LOCATION: UTM 14 - 5521863 m N, 635541 m E      PROJECT NO.: 60636196  
 CONTRACTOR: Maple Leaf Drilling Ltd.      METHOD: Geoprobe 7822DT - 125 mm SSA      ELEVATION (m):

SAMPLE TYPE     GRAB     SHELBY TUBE     SPLIT SPOON     BULK     NO RECOVERY     CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
							* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt (kN/m³)	+ Torvane + × QU/2 × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ●	(kPa)			
0		ASPH CONC FILL	ASPHALT - 25 mm CONCRETE - 125 mm GRANULAR (Fill)								Test hole cored/drilled through existing pavement  (B7) Soaked CBR: 4.0, SPMDD: 1535 kg/m3, OMC: 24.6%	
0.5					G1	●						
0.5					G2	●						
1		CH	CLAY - some silt, some sand, trace gravel - dark grey, stiff, moist - high plasticity		G3	●						
1.5					B7	●						
1.5					G4	●						
1.8					G5	●						
1.98			END OF TEST HOLE AT 1.98 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with bentonite, auger cuttings, and asphalt patch to original ground surface.		G6	●						





LOG OF TEST HOLE 60636196 - TEST HOLE LOGS.GPJ UMA WINN.GDT 11/3/20



LOGGED BY: Enrico Manimbao      COMPLETION DEPTH: 1.98 m  
 REVIEWED BY: Ryan Harras      COMPLETION DATE: 9/21/20  
 PROJECT ENGINEER: Ryan Cunningham      Page 1 of 1

PROJECT: Local Street and Alley Renewals - 21-R-02      CLIENT: City of Winnipeg      TESTHOLE NO: TH20-03  
 LOCATION: UTM 14 - 5521907 m N, 635612 m E      PROJECT NO.: 60636196  
 CONTRACTOR: Maple Leaf Drilling Ltd.      METHOD: Geoprobe 7822DT - 125 mm SSA      ELEVATION (m):

SAMPLE TYPE     GRAB     SHELBY TUBE     SPLIT SPOON     BULK     NO RECOVERY     CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
							* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt (kN/m³)	+ Torvane + × QU/2 × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ●	(kPa)			
0	ASPH CONC FILL	  	ASPHALT - 130 mm CONCRETE - 160 mm GRANULAR (Fill)								Test hole cored/drilled through existing pavement  (G5): Gravel 5.8%, Sand 14.0%, Silt 22.0%, Clay 58.2%	
0.5			CLAY - silty, some sand, trace gravel - dark grey, stiff, moist - high plasticity		G1	●						
1					G2	●						
1.5					G3	●						
2					G4	●						
2.5					G5	●						
2.5			END OF TEST HOLE AT 1.98 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with bentonite, auger cuttings, and asphalt patch to original ground surface.		G6	●						

LOG OF TEST HOLE 60636196 - TEST HOLE LOGS.GPJ UMA WINN.GDT 11/3/20



LOGGED BY: Enrico Manimbao      COMPLETION DEPTH: 1.98 m  
 REVIEWED BY: Ryan Harras      COMPLETION DATE: 9/21/20  
 PROJECT ENGINEER: Ryan Cunningham      Page 1 of 1



Table 01 – Core Hole and Test Hole Summary

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-01	Regis Dr. - 1.8 m N of S Curb, 60 m SE of Paddington Rd (Pavement Slab)	Asphalt	0	-										
		Concrete	151	30.4										
CH20-02	Regis Dr. - 1.9 m N of S Curb, 9 m W of 62 Regis Dr. Driveway W Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	134	56.3										
CH20-03	Southwalk Bay - 2 m S of N Curb, 2.4 m W of 111 Southwalk Bay Driveway W Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	145	33.9										
CH20-04	Southwalk Bay - 1.9 m W of E Curb, 2.4 m N of 38 Southwalk Bay Driveway N Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	134	42.1										
CH20-05	Marwood Cre. - 2 m E of W Curb, 2.4 m S of 54 Marwood Cres. Driveway S Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	136	25.8										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-06	Marwood Cre. - 1.8 m N of S Curb, 2.4 m E of 14 Marwood Cres. Driveway E Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	135	34.3										
CH20-07	Ashwood Cove - 4.9 m S of N Curb, 6.3 m E of 6 Ashwood Cove Driveway E Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	136	24.3										
CH20-08	Sweetwater Bay - 2 m E of W Curb, 2.6 m S of 44 Sweetwater Bay Driveway S Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	133	32.1										
CH20-09	Sweetwater Bay - 2.6 m W of E Curb, 2.7 m N of 51 Sweetwater Bay Driveway N Edge (Joint)	Asphalt	0	-										
		Concrete	160	-										
CH20-10	Sweetwater Bay - 1.8 m S of N Curb, 1 m E of 80 Sweetwater Bay Driveway W Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	145	28.7										
CH20-11	Sweetwater Bay - 1.8 m E of W Curb, 3 m S of 113 Sweetwater Bay Driveway S Edge (Joint)	Asphalt	0	-										
		Concrete	150	-										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-12	Watercress Rd. - 2.2 m W of E Curb, 15 m S of Intersection of Watercress Rd. and Edgewater Dr. (Joint)	Asphalt	0	-										
		Concrete	150	-										
CH20-13	Watercress Rd. - 2 m E of W Curb, 5 m S of 10 Watercress Rd Driveway S Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	145	23.6										
CH20-14	Watercress Rd. - 2.3 m N of S Curb, 1.2 m W of 43 Watercress Rd Driveway E Edge (Joint)	Asphalt	0	-										
		Concrete	150	-										
CH20-15	Watercress Rd. - 1.7 m N of S Curb, 11 m E of Intersection of Watercress Rd. and Cormorant Bay (Pavement Slab)	Asphalt	0	-										
		Concrete	161	28.8										
CH20-16	Cormorant Bay - 2.8 m W of E Curb, 17 m N of 6 Cormorant Bay Driveway N Edge (Joint)	Asphalt	0	-										
		Concrete	170	-										
CH20-17	Cormorant Bay - 2 m E of W Curb, 1 m N of 25 Cormorant Bay Driveway N Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	150	31.1										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-18	Cormorant Bay - 2.2 m S of N Curb, 2.1 m E of 59 Cormorant Bay Driveway E Edge (Joint)	Asphalt	0	-										
		Concrete	160	-										
CH20-19	Cormorant Bay - 2.8 m W of E Curb, 2.5 m N of 99 Cormorant Bay Driveway N Edge (Joint)	Asphalt	0	-										
		Concrete	180	-										
CH20-20	Cormorant Bay - 1.8 m W of E Curb, 1.5 m N of 139 Cormorant Bay Driveway S Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	151	18.4										
CH20-21	Cormorant Bay - 0.9 m E of W Curb, 8 m N of 150 Cormorant Bay Driveway N Edge (Joint)	Asphalt	0	-										
		Concrete	160	-										
CH20-22	Kingston Row - 4.4 m N of S Curb, 5.1 m E of 118 Kingston Row Driveway E Edge (Pavement Slab)	Asphalt	100	-										
		Concrete	> 200**	-										
CH20-23	Kingston Row - 2.5 m N of S Curb, 6 m W of 110 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	130	-										
		Concrete	> 170**	-										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

\*\* Maximum depth of pavement coring machine (300 mm) reached prior to advancing through concrete. Concrete core not recovered.

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-24	Kingston Row - 1.5 m S of N Curb, 2.5 m W of 101 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	90	-										
		Concrete	0***	-										
CH20-25	Kingston Row - 4.5 m S of N Curb, In line with 105 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	90	-										
		Concrete	0***	-										
CH20-26	Kingston Row - 5.5 m S of N Curb, 0.5 m W of 131 Kingston Row Driveway E Edge (Pavement Slab)	Asphalt	135	-										
		Concrete	> 165**	-										
CH20-27	Kingston Row - 1.4 m N of S Curb, In line with 94 Kingston Row Driveway W Edge (Joint)	Asphalt	80	-										
		Concrete	0***	-										
CH20-28	Kingston Row - 2 m S of N Curb, 3.1 m W of 9 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	210	-										
		Concrete	0***	-										
CH20-29	Kingston Row - 4 m S of N Curb, 3 m E of 19 Kingston Row Sidewalk E Edge (Joint)	Asphalt	120	-										
		Concrete	150	-										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

\*\* Maximum depth of pavement coring machine (300 mm) reached prior to advancing through concrete. Concrete core not recovered.

\*\*\* Concrete was decomposed to granular and irretrievable/unmeasurable.

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-30	Kingston Row - 1.9 m S of N Curb, 15 m W of Intersection of Kingston Row and Mager Drive W (Pavement Slab)	Asphalt	90	-										
		Concrete	220	52.3										
CH20-31	Kingston Row - 3.8 m S of N Curb, In line with 53 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	75	-										
		Concrete	171	43.3										
CH20-32	Kingston Row - 1.2 m S of N Curb, 11 m E of 45 Kingston Row Driveway E Edge (Joint)	Asphalt	55	-										
		Concrete	140	-										
CH20-33	Kingston Row - 1 m N of S Curb, In line with 32 Kingston Row Sidewalk W Edge (Pavement Slab)	Asphalt	180	-										
		Concrete	0***	-										
CH20-34	N-S Alley Between St. Michael Rd. and Arden Ave - 1.5 m W of E Edge, 50 m N of 7-11 Building North Edge (Joint)	Asphalt	45	-										
		Concrete	120	-										
CH20-35	N-S Alley Between St. Michael Rd. and Arden Ave - 1.6 m E of W Edge, In line with 7-11 Building North Edge (Pavement Slab)	Asphalt	50	-										
		Concrete	131	Sample Not Suitable For Testing										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

\*\*\* Concrete was decomposed to granular and irretrievable/unmeasurable.

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
CH20-36	Kingston Row - 2.5 m S of N Curb, 4 m E of 11 Kingston Row Driveway E Edge (Pavement Slab)	Asphalt	65	-										
		Concrete	0***	-										
CH20-37	Kingston Row - 2 m N of S Curb, 8 m W of 24 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	115	-										
		Concrete	0***	-										
CH20-38	Kingston Row - 2.5 m N of S Curb, 2.5 m E of 45 Kingston Row Driveway E Edge (Pavement Slab)	Asphalt	65	-										
		Concrete	0***	-										
CH20-39	Kingston Row - 5.5 m S of N Curb, In line with 53 Kingston Row Driveway W Edge (Pavement Slab)	Asphalt	75	-										
		Concrete	0***	-										
CH21-01	Regis Dr. - 2.6 m S of N Curb, 5.1 m E of 7 Regis Dr. House W Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	150	-										
CH21-02	Regis Dr. - 2.1 m S of N Curb, 6.8 m E of 11 Regis Dr. House W Edge (Pavement Slab)	Asphalt	0	-										
		Concrete	150	-										

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

\*\*\* Concrete was decomposed to granular and irretrievable/unmeasurable.

Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits			
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	
CH21-03	Regis Dr. - 2.3 m S of N Curb, 3.0 m W of 127 Regis Dr. Driveway W Edge (Joint)	Asphalt	0	-											
		Concrete	125****	-											
CH21-04	Southwalk Bay - 2.2 m N of S Curb, 3.4 m E of 110 Southwalk Bay Driveway E Edge (Joint)	Asphalt	0	-											
		Concrete	150	-											
CH21-05	Southwalk Bay - 2.2 m S of N Curb, 3.7 m E of 83 Southwalk Bay Driveway E Edge (Pavement Slab)	Asphalt	0	-											
		Concrete	150****	-											
CH21-06	Southwalk Bay - 1.8 m N of S Curb, 7.3 m E of 70 Southwalk Bay Driveway E Edge (Pavement Slab)	Asphalt	0	-											
		Concrete	150	-											
TH20-01	E-W Alley Between Pulberry St. and St. Mary's Rd. - 1 m S of N Edge, 45 m NE of Pulberry Street (Joint)	Asphalt	60	-	GRANULAR (FILL)	0.3	6.7								
					CLAY	0.7	27.8								
					CLAY	0.9	30.3	4.1	18.0	19.2	58.7	60.8	19.5	41.3	
		Concrete	130	-	CLAY	1.2	33.5								
					CLAY	1.5	35.4								
CLAY	1.9	41.3													
TH20-02	E-W Alley Between Pulberry St. and St. Mary's Rd. - 2 m N of S Edge, 125 m NE of Pulberry Street (Joint)	Asphalt	25	-	GRANULAR (FILL)	0.3	6.8								
					GRANULAR (FILL)	0.5	5.1								
					CLAY	0.9	31.6								
		Concrete	125	-	CLAY	1.2	31.3								
					CLAY	1.5	34.8								
					CLAY	1.9	27.5								

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

\*\*\*\* Concrete was decomposed to granular. Measurement taken within core hole.



Test Hole No.	Test Hole Location	Pavement Structure			Subgrade Description *	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits			
		Type	Thickness (mm)	Compressive Strength (MPa)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	
TH20-03	E-W Alley Between Pulberry St. and St. Mary's Rd. - 0.5 m S of N Edge, 205 m NE of Pulberry Street (Joint)	Asphalt	130	-	GRANULAR (FILL)	0.4	7.2								
					CLAY	0.7	25.5								
					CLAY	0.9	31.8								
		Concrete	160	-	CLAY	1.2	30.8								
					CLAY	1.5	26.8	5.8	14.0	22.0	58.2	55.4	18.8	36.6	
					CLAY	1.9	21								

\* Subgrade Description based on City of Winnipeg Specifications for Geotechnical Investigation Requirements for Public Works Projects (September 2015)

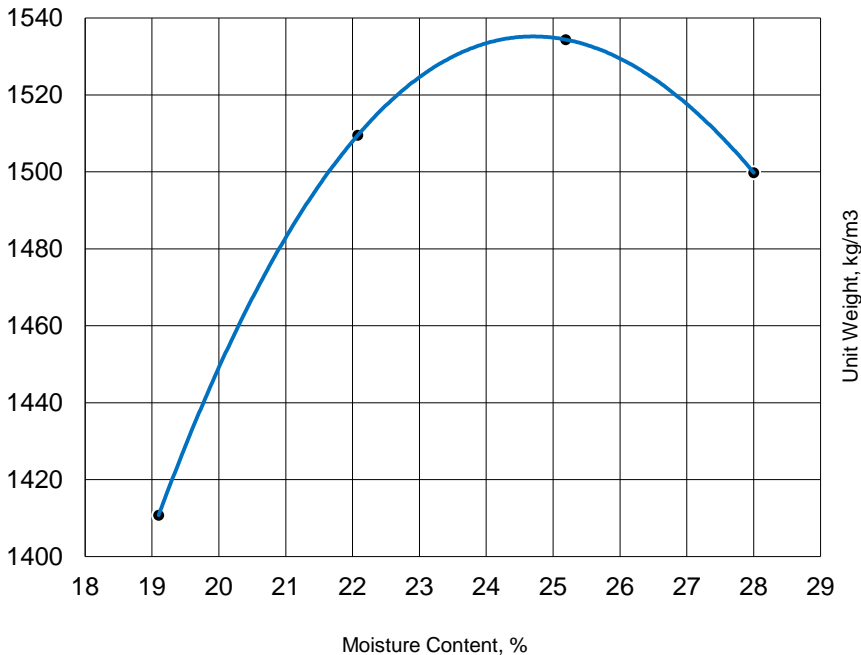
**MAXIMUM DRY DENSITY AND MOISTURE CONTENT - Proctor Method (ASTM D698)**

CLIENT:	AECOM	PROJECT No.:	112-2021
	99 Commerce Drive	PROCTOR Test No.:	1
	Winnipeg MB R3P 0Y7	LAB No.:	HM 478
ATTENTION:	Enrico Manimbao		
PROJECT:	2021 Streets - 60636196		
	Pulberry Street		

Date Sampled:	21-Sep-20	Date Received:	21-Sep-20	PROCEDURE	A
Sampled By:	Client	Date Tested:	22-Sep-20	PREPARATION	Dry
				COMPACTION METHOD	Manual
				BLOWS PER LAYER	25
				NO. OF LAYERS	3
				MOLD SIZE	101.3 mm
				MOLD VOLUME	935
				WEIGHT OF HAMMER	2.5 kg

MATERIAL INFORMATION		Test No.	1	2	3	4
Material Type:	Clay	Wet Density	1680	1843	1921	1920
Material Use:	Backfill	Moisture Content	19.1	22.1	25.2	28.0
Material Supplier:	Not provided	Dry Density	1411	1510	1534	1500
Material Source:	See Remarks					

**Moisture - Density Relationship**



Maximum Dry Density (MDD):  
1535 kg/m<sup>3</sup>  
 Optimum Moisture Content  
24.6 %

STONE CORRECTION (ASTM D 4718)

Retained on 4.75 mm sieve:  
0 %  
 Corrected Moisture:  
24.6 %  
 Corrected Maximum Dry Density:  
1535 kg/m<sup>3</sup>

Remarks: Hole No. TH20-02  
 Sample No. B7  
 Depth 2' - 6'

*P. Bevel*

Tested by: IA

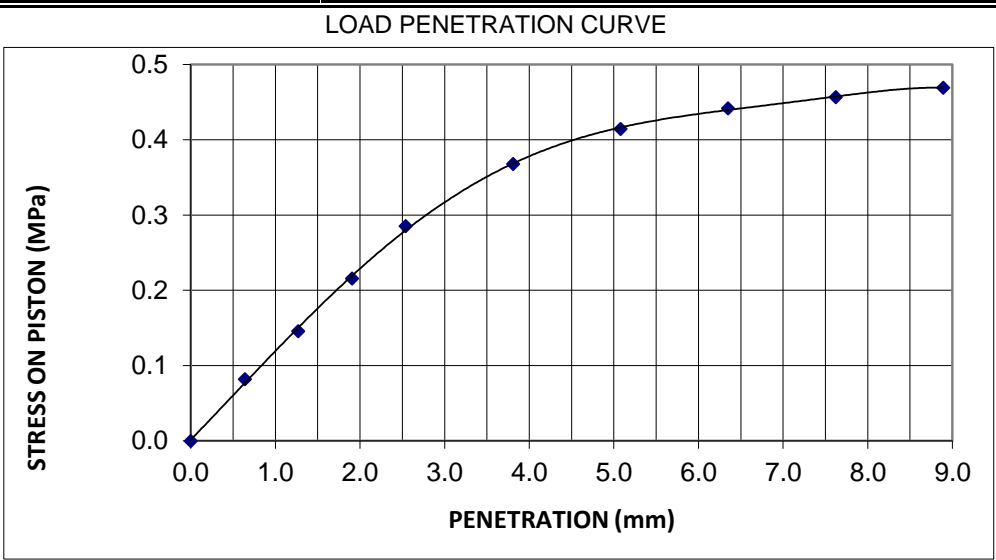
Reviewed by: Paul Bevel

**CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D 1883**

CLIENT:	AECOM	PROJECT NO.:	112-2021
	99 Commerce Drive	TEST NO.:	1
	Winnipeg, MB R3P 0Y7	LAB NO.:	HM 478
ATTENTION:	Enrico Manimbao	DATE RECEIVED :	21-Sep-20
PROJECT:	2021 Streets - 60636196	DATE TESTED / BY:	Sep 24-28, 2020
	Pulberry Street		

SAMPLE DATA		SPECIMEN DATA	
Sample Type:	<b>CLAY</b>	DESCRIPTION	Before Soaking / After Testing
Source:	See Remarks	Moisture Content (MC), %	<b>24.9</b> /
Sampled by:	Client	MC of top 25mm layer, %	<b>30.7</b>
Optimum Moisture Content:	<b>24.6%</b>	Dry Density, kg/m <sup>3</sup>	<b>1537</b>
Maximum Dry Density:	<b>1535</b>	Compaction, %	- / -
Method of Compaction:	Standard Proctor	Surcharge Weight, grams	4546
Tested by:	<b>IA</b>	Date Tested:	<b>22-Sep-20</b>
		Swell, %	<b>3.33</b>


LOAD DATA	
PENETRATION mm	STRESS MPa
0	0.00
0.64	0.08
1.27	0.15
1.91	0.22
2.54	0.29
3.81	0.37
5.08	0.41
6.35	0.44
7.62	0.46
8.89	0.47



PENETRATION mm	STANDARD LOAD MPa	TEST LOAD		BEARING RATIO (soaked)	
		ACTUAL MPa	CORRECTED MPa	at 2.5 mm penetration	at 5.1 mm penetration
2.54	6.9	0.29	0.28	<b>4.0</b>	-
5.08	10.3	0.41	0.41	-	<b>4.0</b>

Remarks: 4 days soaked

Source: Hole No. TH 20-02  
Sample No.: B7  
Depth: 2' - 6'

Reviewed by:   
Gladys Paciente, P.Eng

**CONCRETE CORE COMPRESSIVE STRENGTH TEST REPORT (CSA A23.2-14C)**

CLIENT: AECOM  
 99 Commerce Drive, Winnipeg  
 MB R3P 0Y7  
  
 ATTENTION: Enrico Manimbao  
 PROJECT: 2021 Streets - 60636196  
 Pulberry St  
 STRUCTURE: N/P

DATE: September 23, 2020  
 FILE NO: 112-2021  
 REPORT NO: 20-001  
 TECHNOLOGIST: IA  
 DATE CORES TAKEN: Not provided (Client)  
 DOCUMENT NO: 112-2021  
 DATE RECEIVED IN LAB: September 21, 2020

Core Location	Length as Drilled (mm)	Core Diameter (mm)	Core Length (mm)	Length / Diameter (mm)	Correction Factor	Mass (grams)	Age at Break (days)	Date of Break	Type of Fracture	Comp. Strength as Calculated (MPa)	Comp. Strength as Corrected (MPa)
Core 1 - Regis	151.20	91.35	141.15	1.54	0.96	2270.0		23-Sep	1	31.4	30.4
Core 2 - Regis	133.70	91.35	120.41	1.31	0.94	1980.0		23-Sep	1	59.9	56.3
Core 3 - Southwalk	145.00	91.35	135.34	1.48	0.96	2230.0		23-Sep	1	35.3	33.9
Core 4 - Southwalk	134.00	91.35	125.49	1.37	0.96	2070.0		23-Sep	1	43.8	42.1
Core 5 - Marwood Crescent	136.00	91.35	133.28	1.45	0.96	2150.0		23-Sep	1	26.9	25.8
Core 6 - Marwood Crescent	135.40	91.35	132.06	1.44	0.96	2150.0		23-Sep	1	35.7	34.3
Core 7 - Ashwood	135.50	91.35	138.09	1.51	0.97	2200.0		23-Sep	1	25.1	24.3
Core 8 - Sweet Water	133.00	91.35	108.62	1.18	0.93	1750.0		23-Sep	1	34.5	32.1
Core 10 - Sweet Water	144.90	91.35	131.50	1.44	0.96	2130.0		23-Sep	1	29.9	28.7
Core 13 - Watercress Road.	145.00	91.35	134.14	1.46	0.96	2170.0		23-Sep	1	24.6	23.6
Core 15 - Watercress Road.	160.50	91.35	143.57	1.57	0.97	2360.0		23-Sep	1	29.7	28.8
Core 17 - Cormorant	150.10	91.35	128.72	1.40	0.96	2060.0		23-Sep	1	32.4	31.1
Core 20 - Cormorant	150.50	91.35	140.87	1.54	0.96	2250.0		23-Sep	1	19.0	18.4
Core 30 - Kingston Row	220.30	91.35	123.60	1.35	0.94	2040.0		23-Sep	1	55.6	52.3
Core 31 - Kingston Row	170.50	91.35	153.03	1.67	0.98	2470.0		23-Sep	1	44.2	43.3
Core 35 - Pulberry	130.50	91.35	127.50	1.39		2000.0					

**Remarks:**

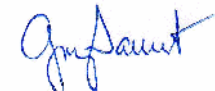
Core 35 taken from Pulberry had pre existing fracture and was not suitable for testing.

Reviewed by:



 Paul Bevel  
 Manager, Field & Lab Testing  
 Services

Approved by:



 Gladys Paciente, P.Eng  
 Lab Supervisor/RSO

**CONCRETE CORE COMPRESSIVE STRENGTH TEST REPORT (CSA A23.2-14C)**





Photograph 1: CH20-09 - Sweetwater Bay (Partial Recovery)



Photograph 2: CH20-11 - Sweetwater Bay (Partial Recovery)



Photograph 3: CH20-12 - Watercress Road (Partial Recovery)



Photograph 4: CH20-14 - Watercress Road (Partial Recovery)



Photograph 5: CH20-16 - Cormorant Bay



Photograph 6: CH20-18 - Cormorant Bay





Photograph 7: CH20-19 - Cormorant Bay



Photograph 8: CH20-21 - Cormorant Bay



Photograph 9: CH20-22 - Kingston Row (No Concrete Recovery)



Photograph 10: CH20-23 - Kingston Row (No Concrete Recovery)



Photograph 11: CH20-24 - Kingston Row



Photograph 12: CH20-25 - Kingston Row



Photograph 13: CH20-26 - Kingston Row (No Concrete Recovery)



Photograph 14: CH20-27 - Kingston Row



Photograph 15: CH20-28 - Kingston Row



Photograph 16: CH20-29 - Kingston Row



Photograph 17: CH20-32 - Kingston Row



Photograph 18: CH20-33 - Kingston Row



Photograph 19: CH20-34 - N-S Oriented Alley Between St. Michael Rd. and Arden Ave.



Photograph 20: CH20-36 - Kingston Row



Photograph 21: CH20-37 - Kingston Row





Photograph 22: CH20-38 - Kingston Row



Photograph 23: CH20-39 - Kingston Row



Photograph 24: CH21-01 - Regis Drive



Photograph 25: CH21-02 - Regis Drive



Photograph 26: CH21-03 - Regis Drive



Photograph 27: CH21-04 - Southwalk Bay



Photograph 28: CH21-05 - Southwalk Bay



Photograph 29: CH21-06 - Southwalk Bay



Photograph 30: TH20-01 - E-W Oriented Alley Between Pulberry Street & St. Mary's Road



Photograph 31: TH20-02 - E-W Oriented Alley Between Pulberry Street & St. Mary's Road



**Photograph 32: TH20-03 - E-W Oriented Alley Between Pulberry Street & St. Mary's Road**