Winnipeg

Engineering Qualification Requirements for Design & Contract Administration on Development Road Projects in the City of Winnipeg

Fall 2023

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Purpose of this Document

Introduction – Development Agreement Parameters

Typically, Development Agreements contain the following requirement, as included in the City of Winnipeg's Development Agreement Parameters:

> *"The development agreement shall provide that the Developer shall pay the cost for consulting services to the consultant(s) in connection with the servicing of the development including design and site services. Although during the design phase the consultants are ostensibly working for the Developer, during the provision of the site services the consultant is required to ensure that all of the City's requirements and standards are being met. The Developer's assignment of the consultant services shall be satisfactory to the City."*

For construction of Public Works infrastructure, "the City" means the Director of Public Works. For the purposes of this document, the Director of Public Works is represented by the Manager of Engineering, the Land Development Administrator, or a Streets Project Manager for the works outlined in Part A, with the Director of Public Works providing the final approval of the consulting engineer.

Application of Document

This document outlines the City's requirements for approval of the team(s) engaged to conduct work on infrastructure that will ultimately be managed under the administration and/or authority of the Public Works Department. Exceptions include:

1. New, renewal, or maintenance capital works that are conducted by the City of Winnipeg with City of Winnipeg staff.
2. New, renewal, or maintenance capital works that are contracted to outside firms by the City with a terms-of-reference in place to form a contract (Request for Proposal, Proposal, and Letter of Intent, inclusive).

The project requirements outlined in this document are primarily intended for and apply to new pavement construction. For any projects that may include pavement rehabilitations (e.g. tie-ins to existing streets), or infrastructure other than pavement (e.g. overhead sign structures), additional or amended conditions may be apply. Consult the Land Development Administrator or City Project Manager for direction and/or confirmation.

Requirements for managing project budgets, invoicing, risk management, and estimates have not been included in this document, as they are not a requirement of the City in this context. It is recommended that the Developer include their own requirements of the consultant for budget and risk management, and updated estimating.

Requirements for Approval of Consulting Team

Since Development progression can often proceed with considerable time between the design and construction phases, the City requires verification of the consulting teams for each of the Design and Construction phases.

- **Part A-2** specifies the consultant responsibilities during the **Design** phase of the project.

- **Part A-3** specifies the consultant's responsibilities during the **Construction and Post Construction** phases of the project.
- **Part B** outlines the submission requirements for the approval of the Director of Public Works for the consulting assignment
- The attached form ***Qualification of Consulting Engineers on Development Projects*** (Qualifications Form) is to be submitted to the Land Development Administrator for the consideration and approval of the Director of Public Works.
- The **Appendices** include project requirements, that may be applicable to any projects, and may be updated from time to time.

*Approval of the **Design** phase team is required:*

1. when the development project includes construction of a **Regional Street**.
2. when the development project includes construction of a collector street or local street that connects to a **Regional Street**.
3. at the discretion of the Director of Public Works.

Approval of the Construction phase team is required:

1. for the construction phase of any roadway infrastructure within an existing or planned right-of-way.
2. for construction of any infrastructure to be ultimately transferred to City ownership.

If the project is expected to proceed continuously from design through construction, the submission should include confirmation of the qualifications and experience of the team for both phases. ***Individual team members performing different or multiple roles must be profiled to demonstrate their qualifications for any and all tasks they will be assuming, for any phase.***

Other Circumstances requiring Approval of Consultants

For projects other than streets projects, including in-fill developments, single property, commercial developments, or others that may affect access or infrastructure in the right-of-way, approval of the consulting engineer by the Director of Public Works may be required. These may be any projects that may include pavement rehabilitations (e.g. tie-ins to existing streets, or replacement or alterations of sidewalks), or infrastructure other than pavement (e.g. overhead sign structures), additional or amended conditions may be apply. Consult the Land Development Administrator and/or City Project Manager for direction and/or confirmation.

Note that for any Water and Waste infrastructure constructed as part the development, the engineering consultant does not require formal approval by the Water and Waste Department, and approval of a consulting team's qualifications for road works is not transferable to other infrastructure

PART A PUBLIC WORKS ROADWAY CONSTRUCTION PROJECT REQUIREMENTS

A-1 General Requirements

A-1.1 Land Development Administrator

1.1.1 The Land Development Administrator is designated by the Manager of Engineering or Director of Public Works. Depending on the scope of the work, the Land Development Administrator may have a varying level of involvement to ensure the City's requirements are followed. It is the Land Development Administrator who will recommend the consulting assignment for approval by the Director of Public Works.

A-1.2 Project Management Processes

1.2.1 Unless otherwise specified below, Appendix A Definition of Professional Consulting Engineer Services – Public Works shall be applicable to the provision of Professional Engineering services for the Project.

1.2.2 The Consultant will be responsible for project reporting to the Land Development Administrator. The City of Winnipeg's Project Management Manual at *http://winnipeg.ca/infrastructure/asset-management-program/templatesmanuals.stm#2* and templates at *http://winnipeg.ca/infrastructure/asset-managementprogram/templates-manuals.stm#4* are recommended.

1.2.3 *Optional:* It is recommended that the consultant develop a Project Risk Management Plan, identifying risks and appropriate mitigation recommendations, as they relate to the successful completion of the Project. Use of the City of Winnipeg's Project Management templates, identified above is recommended.

A-2 Design Requirements

A-2.1 Preliminary Design

2.1.1 Preliminary Design Services to be conducted on projects for the Public Works Department are described in Appendix A Definition of Professional Consulting Engineer Services – Public Works.

2.1.2 The Consultant is responsible for:

(a) ***Ensuring persons with demonstrated qualifications and experience are assigned to all phases*** of the Project for the duration of the Project, with personnel changes only upon approval of the Director of Public Works;

(b) Confirming the scope of work required using professional engineering judgement;

(c) In accordance with Appendix B Site Investigation Requirements, determining the extent to with site investigation is required;

(d) Field surveys;

(e) Acquiring the historical and as-built drawings within Project limits from Underground Structure, where and as applicable;

(f) Engaging the services of appropriate qualified Subconsultant personnel where additional services are required, including, but not limited to: site investigation services (Appendix B), materials testing services, geotechnical services (Appendix B), Underground Structures acquisitions, pipeline loading assessments, ground-penetrating radar inspections, closed circuit television (CCTV) sewer inspection and/or hazardous materials investigation as required;

(g) Detailed examination of access and parking requirements for abutting residents/businesses as required;

(h) Construction staging plans that minimize disruption to the public. Assumptions must be stated in the Submission;

(i) Providing Project details and regular Project updates to the right-of-way coordination system; and

(j) Assisting with land acquisitions, easements, or zoning, as applicable.

(k) Review and incorporate regulatory requirements into the project plan and schedule. Obtain approvals from appropriate regulatory agencies as necessary.

(l) Providing comprehensive management of the Project, including periodic summary updates to the Land Development Administrator, including monthly status reports during design services. Monthly status reports should include, but not be limited to:

  (i) Progress on tasks since previous report;

  (ii) Expected progress for the next period;

  (iii) Project schedule update;

  (iv) Identify potential problems, risks and concerns; and

  (v) Key stakeholder relations update.

(m) Prepare and submit a pavement design analysis and provide design briefs for all new or reconstructed pavements. Coordinate and obtain approval for pavement structure and design and pavement type from the Public Works Pavement Management Branch.

(n) Coordinate and obtain approvals for transportation planning and geometry from the Transportation Division of the Public Works Department.

(o) Develop construction traffic management plan and construction staging drawings, considering vehicles, trucks, Winnipeg Transit Operations and Planning, school buses, pedestrians, cyclists, emergency vehicles, and access management to provide an acceptable level of service during construction.

  (i) Where the project intersects with roadways open to traffic, consult with the Traffic Management Branch during the development of the plan

  (ii) If necessary, develop temporary accesses to allow for businesses to operate seamlessly during construction. Propose alternatives that have minimal maintenance requirements.

(p) Develop a construction wayfinding signage plan in consultation with Traffic management that will assist the public in locating areas affected during construction (see Appendix D Requirements for Site Accessibility Plan).

A-2.2 Detailed Design

2.2.1 Detailed Design Services to be conducted on projects for the Public Works Department are described in Appendix A Definition of Professional Consulting Engineer Services – Public Works

2.2.2 Design drawings are required for all Public Works new construction projects unless specifically declined, in writing, by the Land Development Administrator.

2.2.3 When construction is expected to commence within the subsequent 12 months, the drawings must be submitted to Underground Structures (UGS) for review and approval. Submitted drawings must:

(a) be sealed by a Professional Engineer, registered in the Province of Manitoba;

  (i) Further to (a), where bids are to be submitted electronically, the seal must be an electronically authenticated seal, approved by Engineers Geoscientists Manitoba.

(b) include a pavement design brief for new or reconstruction of Regional, Collector or Industrial Street Pavements and for new or reconstruction of Street Pavements that are Bus and/or Truck routes;

(c) include the pavement cross section (as applicable);

(d) include the dimensional jointing design (as applicable), particularly at approaches and tie-ins;

(e) include the proposed sidewalk jointing design for full width sidewalks (as applicable);

(f) include separate overall horizontal geometry layout drawings;

(g) include Department drawing numbers before the works are advertised. Drawing numbers can be requested from Permits & Plan Approval – GIS Support Services at (204) 986-4113;

(h) conform to the Manual for the Production of Construction Drawings for the City of Winnipeg, Works and Operations Division - November 1984 (Appendix B);

(i) include construction staging drawings/figures;

(j) include all relevant plan and profile information;

(k) include miscellaneous details as required to better present the scope of the work to the contractor;

(l) allow six weeks for circulation through Underground Structures (UGS);

(i) ensure that separate copies are sent to affected utilities, with specific requests made for estimates *(optional)*, where required.

(m) *Include a detailed signage plan* for all stages of construction for review by Traffic Management and the Land Development Administrator, detailing temporary signage and traffic control devices. The drawings must show all signs (including regulatory), traffic control devices while detailing traffic, pedestrian and bike movements during each construction stage.

2.2.4 Preparation of the Construction Contract documents must:

(a) reference the ***most current (at the time of construction)*** edition of The City of Winnipeg Standard Construction Specifications.

(b) Include the requirement for and Accessibility Plan Appendix D Requirements for Site Accessibility Plan

2.2.5 The Consultant is responsible for:

(a) ***Ensuring persons with demonstrated qualifications and experience are assigned to all phases of the Project for the duration of the Project***, with personnel changes only upon approval of the Director of Public Works;

(b) ongoing Project reporting, as per Part A2.1.2(l);

(c) ongoing comprehensive management of the Project;

(d) providing updates to the Land Development Administrator;

(e) ongoing coordination of meetings with the Land Development Administrator;

(f) ongoing Project details and updates to the right-of-way coordination system;

(g) ongoing consultation and coordination with all affected utilities;

(h) allowing sufficient time for review by the Land Development Administrator, the Land Development Administrator and any additional personnel;

(i) monitoring and updating the Project Risk Management Plan as applicable *(optional)*;

(j) ongoing communication, consultation and coordination with all affected stakeholders and public relations activities, as applicable; and

(k) any and all associated ancillary services required to successfully complete the Detailed Design to the satisfaction of the Developer and the City of Winnipeg.

A-3 Construction Requirements

A-3.1 Contract Administration

3.1.1 Contract Administration Services associated with the Contract are described in Appendix A Definition of Professional Consulting Engineer Services – Public Works, and shall be conducted in accordance with the City of Winnipeg's Project Management Manual (PMM Appendix E – Contract Administration Procedure, see Part A1.2.2), including any applicable project templates.

3.1.2 While the design phase of local streets in developments does not require approval of the qualifications of the design team, the drawings to be submitted to Underground Structures (UGS) for review and approval must:

(a) be sealed by a Professional Engineer, registered in the Province of Manitoba;

(i) Further to 2.2.3(a), where bids are to be submitted electronically, the seal must be an electronically authenticated seal, approved by Engineers Geoscientists Manitoba.

(b) include a pavement design brief for new or reconstruction of Regional, Collector or Industrial Street Pavements and for new or reconstruction of Street Pavements that are Bus and/or Truck routes;

(c) include the pavement cross section (as applicable);

(d) include the dimensional jointing design (as applicable), particularly at approaches and tie-ins;

(e) include the proposed sidewalk jointing design for full width sidewalks (as applicable);

(f) include separate overall horizontal geometry layout drawings;

(g) include Department drawing numbers before the works are advertised. Drawing numbers can be requested from Permits & Plan Approval – GIS Support Services at (204) 986-4113;

(h) conform to the Manual for the Production of Construction Drawings for the City of Winnipeg, Works and Operations Division - November 1984 (Appendix B);

(i) include construction staging drawings/figures;

(j) include all relevant plan and profile information;

(k) include miscellaneous details as required to better present the scope of the work to the contractor;

(l) allow six weeks for circulation through Underground Structures (UGS);

(i) ensure that separate copies are sent to affected utilities, with specific requests made for estimates *(optional)*, where required.

(m) *IF APPLICABLE, include a detailed signage plan* for all stages of construction for review by Traffic Management and the Land Development Administrator, detailing temporary signage and traffic control devices. The drawings must show all signs (including regulatory), traffic control devices while detailing traffic, pedestrian and bike movements during each construction stage.

3.1.3 Requirements for regional streets drawings are provided in A-2.2 Detailed Design, above.

3.1.4 Preparation of the Construction Contract documents must include:

(a) Reference to the ***most current (at the time of construction)*** edition of The City of Winnipeg Standard Construction Specifications;

(b) The requirement for an Accessibility Plan (Appendix D Requirements for Site Accessibility Plan).

3.1.5 The Consultant is required to provide **Non-Resident** Contract Administration Services including but not limited to:

(a) ***Ensuring persons with demonstrated qualifications and experience are assigned to administer the Project for the duration of the Project***, with personnel changes only upon approval of the Land Development Administrator;

(b) conducting pre-award and pre-construction meetings with formal notes as described in the City of Winnipeg's Project Management Manual (see Part A1.2.2);

(c) complete management of stakeholder-relations activities, as required; and

(d) provision of complete current reports on the Project status on a monthly basis advising of progress, schedule, Changes in Service, and Changes in Work.

3.1.6 The Consultant is required to provide **Resident** Contract Administration Services including but not limited to:

(a) coordination of the day-to-day Site activities;

(b) ensuring construction contractor conformance to the City of Winnipeg's *Manual of Temporary Traffic Control*;

(c) sufficiently qualified and experienced full-time inspection;

(d) field and/or laboratory testing and verification of construction material quality including careful review of material, testing and verification of acceptance, as per the Standard Construction Specifications;

(e) field measurement and verification of construction material quantities in a manner so as to minimize disputes with the contractor;

(f) provision of periodic and timely progress updates to the Land Development Administrator, through:

(i) regular site meetings with formal minutes as described in the City of Winnipeg's Project Management Manual Part A1.2.2;

(ii) other formal and/or informal documented means.

(g) representation to the local residents and/or businesses in a professional manner, with responsible and prompt reactions to reasonable requests;

(h) on-going updates to the lane-closure information line as required;

(i) coordinating and monitoring traffic management and construction work;

(j) ensuring the Contractor's signage is in conformance with the City of Winnipeg's Manual of Temporary Traffic Control and the staging/signage plans in the Contract;

(k) Maintain an up-to-date set of construction staging drawings;

(l) On projects located adjacent to the City limits and required designated construction zones, temporary traffic control devices required by the Province must be procured and provided to Traffic Services to set up and maintain;

(m) supervision of Subconsultants required to perform any services for the Project; and

(n) provision of Project details and regular Project updates to the right-of-way coordination system.

3.1.7 The Consultant is responsible for:

(a) ongoing Project reporting to the Land Development Administrator. The City of Winnipeg's Project Management Manual and templates are recommended for format and content;

(b) ongoing comprehensive management of the Project;

(c) ongoing coordination of meetings with the Land Development Administrator;

(d) ongoing Project details and updates to the right-of-way coordination system;

(e) provision of an annual summary report by ***November 1*** of each year, of new in-service infrastructure;

(f) ongoing consultation and coordination with all affected utilities;

(g) allowing sufficient time for review of any scope changes or adjustments by the Land Development Administrator and any additional City of Winnipeg personnel;

(h) monitoring and updating the Project Risk Management Plan, as required *(optional)*;

(i) ongoing communication, consultation and coordination with all affected stakeholders and public relations activities, where required; and

(j) any and all associated ancillary services required to successfully complete the Project to the satisfaction of the Developer and the City of Winnipeg.

A-3.2 Post Construction

3.2.1 Post-Construction Services associated with the Contract are described in Appendix A Definition of Professional Consulting Engineer Services – Public Works, and shall be conducted in accordance with the City of Winnipeg's Project Management Manual.

3.2.2 The Consultant is required to provide Post-Construction Services including but not limited to:

(a) preparation of the following for every construction contract or phase administered under the development:
    (i) Certificate of Substantial Performance;
    (ii) Final Acceptance Report.
(b) additional Contract Administration for maintenance items within the warranty period of the construction contract;
(c) resolution of deficiencies and/or outstanding warranty issues, as per the *Pavement Acceptance Manual for Developments*;
(d) provision of as-built drawings in accordance with the Public Works As-Built Drawing requirements identified in Appendix G As-Built Drawing Requirements, within three (3) months of Substantial Performance of the construction contract, unless waived or amended in writing by the Land Development Administrator;
(e) submission of a final construction report within three months of Substantial Performance of the construction contract, including:
    (i) Summary report – a brief (three to five page) description of:
        - services accomplished, including initial and final scope of Project;
        - for new street pavements – final pavement design;
        - issues encountered and resolutions achieved;
        - any outstanding services or issue-resolutions required.
    (ii) Appendices:
        - stakeholders list;
        - daily field reports;
        - all meeting minutes (pre-construction, construction);
        - field test reports;
        - Copies of all certificates; and
        - As-built drawings (pdf format).

PART B SUBMISSION REQUIREMENTS

B-4 General Submission Requirements

B-4.1 Qualification of Consulting Engineers on Development Projects

4.1.1 The information requested in Part B4.2.2 can be provided by completion of the attached Qualifications form.

B-4.2 Submission Requirements

4.2.1 Submissions should include suitable discussion for each of:

(a) The details of the scope of the project, as per B-5.1;

(b) The profile of the proposed consulting firm, as per B-5.2;

(c) The details of the project team, as per B-5.3, and the qualifications and experience of the key personnel, as per B-5.4;

(d) A description of the proposed consulting team's understanding of the project with the Technical Summary, as per B-5.5; and

(e) The signed ***Statement of Conformance***, contained in the Qualifications form.

4.2.2 Submissions should be tailored to the current services being provided, recognizing that development projects can be built out over years and in several stages. The team proposed for the current scope of work, described in B-5.1 should be profiled.

4.2.3 If the project is expected to proceed continuously from design through construction, the submission should combine the requirements of the Design and Construction Phases, in consultation with the Land Development Administrator. ***Individual team members performing different or multiple roles must be profiled to demonstrate their qualifications for any and all roles, tasks and/or phases they will be delivering.***

B-5 Submission Requirements for Consulting Services

B-5.1 Details of the Scope of the Project

5.1.1 Submissions should include a detailed description of the scope of services for the project, including:

(a) infrastructure type and classification (regional, collector, local, pathways);

(b) project limits in detail (e.g. measurements, or end-of-radius);

(c) any likely technical and/or non-technical issues that may present during the work noted above;

(d) design schedule and/or proposed construction schedule (including unscheduled);

(i) The consultant's schedule should include critical dates for review and approval processes by the City and other organizations anticipated during each phase of the Project. Reasonable times should be allowed for completion of these processes.

B-5.2 Firm Profile

5.2.1 Submission should describe the experience of the consultant and any subconsultants, including:

(a) general firm profile information, including years in business, average volume of work, number of employees, typical services performed and available, including local office information, and other pertinent information for the consultant and all subconsultants;

(b) details demonstrating the history and experience of the consultant and subconsultants in providing design, management of construction and contract administration services on three projects of similar complexity, scope and value.

5.2.2 For each project listed in 5.2.1(b), the Submission should include:

(a) Name of project. Include Bid Opportunity/Tender number or other Bid Opportunity/Tender, or development information as reference;

(b) description of the project;

(c) role of the consultant;

(d) design and schedule (anticipated Project schedule and actual project delivery schedule, showing design separately); and

(e) project owner.

(i) Reference information (two current names with telephone numbers per project) must be made available upon request of the Land Development Administrator.

5.2.3 Additional Submission Requirements

(a) Authority to Carry on Business

(b) EGM Certificate

(c) Proof of Insurance

B-5.3 Team Profile

5.3.1 The Submission should:

(a) describe the consultant's approach to overall team formation and coordination of team members.

(b) include a methodology describing the team's project management approach and organization during the performance of Services.

B-5.4 Key Personnel

5.4.1 Submission should include:

(a) names of key personnel assigned to the project, who shall not be substituted without written permission from the Land Development Administrator;

(b) a description of the job function that each individual and group of individuals identified will be performing;

(c) an organizational chart for the project which identifies the roles of key personnel.

(d) the experience and qualifications of the key personnel assigned to the project, including:

(i) job title;

(ii) educational background and degrees;

(iii) professional affiliations;

(iv) years of experience administering projects for the City of Winnipeg;

(v) years of experience in current position; and

(vi) years of experience in design.

5.4.2 For each person identified in 5.4.1(a), list three (3) projects, comparable in scope, size and complexity, in which the person listed did comparable work and played a comparable role. Provide the following:

(a) Name (include Tender number or the other Tender information as reference) and description of the project;

(b) Role of the person; and

(c) Project Owner.

(i) Reference information (two current names with telephone numbers per project) must be made available upon request of the Land Development Administrator.

submission requirements

B-5.5 Technical Summary

5.5.1 The Submission should address the technical deliverables and associated task requirements required by the Scope of Services B-5.1. It should clearly identify and explain work activities and identify all assumptions and interpretations.

5.5.2 Submissions should describe:

(a) the consultant's practical understanding of the Project, specifically the team's understanding of the broad functional and technical requirements and urban design issues;

(b) the consultant's technical approach and methodology to complete the Services, specifically with reference to the key issues identified in 5.1.1(c)

5.5.3 The submission should discuss the consultant's communication strategies, with respect to

(a) The consultant's project team as well as stakeholders (both technical and non-technical);

(b) the City, and the various departments and divisions; and

(c) the public, including neighbouring residences and businesses, as applicable

5.5.4 Methodology should be presented in accordance with the Scope of Services identified in B-5.1, as well Appendix A Definition of Professional Consulting Engineer Services – Public Works, and Appendix B General Project Requirements for Public Works street projects.

5.5.5 Submissions may also address any other relevant information that conveys the consultant's understanding of the Project requirements.

B-5.6 Statement of Conformance

5.6.1 The Submission must include the Statement of Conformance included within the Qualifications form, signed by the Proposed Consultant and the Developer, indicating that, acting reasonably, all will comply with and complete the requirements outlined in this document, specifically Part A-2 Design Requirements, A-3 Construction Requirements – whichever is applicable – and the attached Appendices.

submission requirements

Appendix A Definition of Professional Consulting Engineer Services – Public Works

A.1 DEFINITIONS

A.1.1 "Consulting Engineer" means the Professional Engineer or Professional Engineering firm engaged by the City to perform Consulting Engineering Services as described herein and within the Scope of Services of a Contract. The "Consulting Engineer" will hold and maintain, for the duration of the Project, a Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba in the "Practicing Entity" category.

A.1.2 "Professional Engineer" means an individual engineer registered to practice in the Province of Manitoba by the Association of Professional Engineers and Geoscientists of Manitoba (APEGM), as required by the Engineering and Geoscientific Professions Act of the Province of Manitoba and the by-laws of the Association of Professional Engineers and Geoscientists of the Province of Manitoba.

A.1.3 "Professional Engineering" means the practice of professional engineering in the Province of Manitoba, as governed by the Engineering and Geoscientific Professions Act of the Province of Manitoba and the by-laws of the Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM).

A.1.4 "Seal" means the impression of the stamp issued by APEGM to registered Professional Engineers, plus the signature of the registered Professional Engineer, plus the date the signature was applied.

A.2 DEFINITIONS

A.2.1 Further to the General Conditions for Consultant Services, it is the intent of this Appendix to clarify the City's specific requirements of the consulting services of Professional Engineers; to more fully identify the services to be rendered by Consulting Engineers to the City and to other parties on behalf of the City; and to provide a more clearly determined basis of obligation in respect thereof by Consulting Engineers to the City and to third parties in the provision of such services.

A.3 GENERAL REQUIREMENTS OF PROFESSIONAL ENGINEERS

A.3.1 All services described herein shall be performed in the City of Winnipeg, unless otherwise authorized in writing by the Project Manager, and under the direct supervision of a Professional Engineer registered in the Province of Manitoba.

A.3.2 All drawings, reports, recommendations and other documents originating therefrom involving the practice of Professional Engineering shall bear the Seal of a Professional Engineer.

A.3.3 Reports and documents not involving the practice of Professional Engineering, such as letters of information, minutes of meetings, construction progress reports, may be originated and signed by other responsible personnel engaged by the Consulting Engineer and accepted by the Project Manager. Progress estimates, completion certificates and other reports related to the technical aspects of a Project, must be endorsed by the Consulting Engineer in a manner acceptable to the Project Manager.

A.3.4 None of the services, tasks, actions or requirements described herein, nor any verbal instruction from the Project Manager, are intended to relieve the construction contractor of his contractual and/or other legal obligations in respect thereof, unless specifically indicated, in writing, by the Project Manager.

A.4 PROFESSIONAL ENGINEERING SERVICES – ADVISORY SERVICES

A.4.1 Advisory services have been referred to by the City of Winnipeg as "Type 1 Services".

A.4.2 Advisory services are normally not associated with or followed by preliminary design and/or design services.

A.4.3 Advisory services include, but are not limited to:

(a) Expert Testimony;

(b) Appraisals;

(c) Valuations;

(d) Rate structure and tariff studies;

(e) Management services other than construction management;

(f) Feasibility studies;

(g) Planning studies;

(h) Surveying and mapping;

(i) Geotechnical investigations;

(j) Hydrological investigations;

(k) Safety audits;

(l) Value engineering audits;

(m) Inspection, testing, research, studies, or reports concerning the collection, analysis, evaluation; and

(n) Interpretation of data and information leading to conclusions and recommendations based upon specialized engineering experience and knowledge.

A.5 PROFESSIONAL ENGINEERING SERVICES – PRELIMINARY DESIGN

A.5.1 Preliminary Design services have been referred to by the City of Winnipeg as “Type 2 Services”.

A.5.2 Engineering services for preliminary design normally precede the detailed design of a Project.

A.5.3 Preliminary design services include, but are not limited to:

(a) Preliminary engineering studies;

(b) Engineering investigations;

(c) Surface and subsurface site explorations, measurements, investigations, and surveys;

(d) Operational studies including drainage studies, traffic studies, and noise attenuation;

(e) Functional planning;

(f) Formal and/or informal consultations with stakeholders and/or the general public;

(g) Physical, economical (capital and operating) and environmental studies including evaluation, comparison, and recommendation regarding alternative preliminary designs;

(h) Special applications to public agencies for necessary authorizations, preparation and submission of reports and drawings thereto and appearance before same in support of the application;

(i) Identification of the necessary authorizations from regulatory authorities and/or public agencies and determination of any related impacts and/or risks to the Project;

(j) Coordination with all the utilities including (but not limited to) hydro, telephone, gas, telecoms, fibre optics, traffic signals and other City or developer works with respect to location, relocation, construction and/or reconstruction;

(k) Preparation and submission of a report and appropriate drawings to the Project Manager, fully documenting data gathered, explaining adequately the assessment made, stating with clarity the resulting conclusions, and containing all recommendations which are relevant to this stage of Project implementation.

A.6 PROFESSIONAL ENGINEERING SERVICES – DETAILED DESIGN

A.6.1 Detailed Design services have been referred to by the City of Winnipeg as "Type 3 Services".

A.6.2 Engineering services for detailed design normally involve preparation of detailed designs, construction contract specifications and drawings, analysis of bids and recommendations regarding construction contract award.

A.6.3 Detailed design services include, but are not limited to:

(a) Addressing alternative methods of accommodating; relocating; avoiding, and/or protecting utilities and railways; proposing alternative methods of solution, reviewing same with the appropriate regulatory approval agencies and stakeholders;

(b) Application to public agencies for necessary authorizations, preparation and submission of reports and drawings thereto, and appearance before same in support of the application;

(c) Formal and/or informal consultations with stakeholders and/or the general public;

(d) Preparation and submission of detailed engineering calculations, drawings, and criteria employed in the design(s), securing review of and acceptance by the Project Manager;

(e) Submission of engineering drawings and plans for circulation through the Underground Structures process;

(f) Preparation of detailed engineering drawings, specifications and tender documents consistent with the standards and guidelines of the City, securing review of and acceptance by the Project Manager;

(g) Preparation and provision to the Project Manager in written form, a fully detailed formal construction contract estimate;

(h) Provision of appropriate response to bidders and advice to the Project Manager during the tender advertising period and, subject to acceptance by the Project Manager, issuing addenda to the tender documents;

(i) Submission of a review, analysis, comparison, tabulation, calculation, and evaluation of the bids received, to the Project Manager, including a recommendation for construction contract award;

(j) Arranging and attending a pre-award meeting with the recommended construction contractor, the Consulting Engineer and the Project Manager;

(k) Preparation of a report including revised contract estimate, identifying and explaining variations from the earlier formal estimate.

A.7 PROFESSIONAL ENGINEERING SERVICES – CONTRACT ADMINISTRATION

A.7.1 Contract Administration services have been referred to by the City of Winnipeg as "Type 4 Services".

A.7.2 Engineering services for Contract Administration are associated with the construction of a Project and include the office and field services required to ensure the execution of the Project in accordance with the intent of the City and in conformance with the particulars of the drawings and specifications.

A.7.3 Engineering services for Contract Administration can be generally divided into NON-RESIDENT and RESIDENT services.

A.7.4 NON-RESIDENT Contract Administration services include but are not limited to:

(a) Consultation with and advice to the Project Manager during the course of construction;

(b) Review and acceptance of shop drawings and other submissions supplied by the construction contractor or supplier to ensure conformance with the drawings and specifications;

(c) Review and report to the Project Manager upon laboratory, shop and other tests conducted upon materials and/or equipment placed or installed by the construction contractor to ensure conformance with the drawings and specifications;

(d) Acceptance of and/or recommendations for alternate materials and methods, subject to the approval of the Project Manager;

(e) Provision to the Project Manager of a complete, current monthly Project status report;

(f) Provision to the Project Manager a current update of revised construction contract-end cost estimate on a monthly basis, or more frequently if necessary, with explanation and justification of any significant variation from the preceding construction contract-end cost projection;

(g) Definition and justification of any changes to the construction contract for review by the Project Manager;

(h) Supplying the Project Manager with a copy of all significant correspondence relating directly or indirectly to the Project, originating from or distributed to, parties external to the Consulting Engineer, immediately following receipt or dispatch;

(i) Provision of adequate and timely direction of field personnel by senior officers of the Consulting Engineer;

(j) Establishment prior to construction and submission to the Project Manager of written and photographic records of, and assessment of the physical condition of the project site and the properties, buildings, facilities, and structures adjacent to the project site sufficient to equip the Consulting Engineer to provide valid evidence and relevant testimony in settlement of any claim involving the City by any court of law, or by any other party for damages thereto arising from the Project;

(k) Arranging and attending pre-construction meetings and on-site or off-site review meetings, including representatives of the construction contractor, the Project Manager, and other technical stakeholders as applicable;

(l) The preparation and submission of:

(i) a detailed design notes package including items such as structural, geotechnical, hydraulic and heating, air-conditioning and ventilation design calculations; mechanical and electrical design calculations related to process equipment and building services; process design calculations; and instrumentation and process control design calculations;

(ii) approved related shop drawings and equipment process manuals all within one (1) month of completion of each separate installation construction contract required to complete the works.

A.7.5 RESIDENT Contract Administration services include but are not limited to:

(a) Provision of qualified resident personnel – acceptable to the Project Manager – present at the Project site to carry out the services as specified below:

(i) inspection of all pipe prior to installation;

(ii) inspection and acceptance of excavation for, and full-time inspection at the time of bedding placement, pipe laying and backfilling in respect of installation of water mains, land drainage sewers, and wastewater sewers;

(iii) inspection of installation of all connections to water mains, sewers, manholes, valves, hydrants or house services, and excavation and/or exposing of all underground services, structures, or facilities;

(iv) inspection of all excavations to determine soil adequacy prior to installation of base and subbase courses for sidewalks, public back lanes, and street pavements;

(b) Further to 7.5(a), full time inspection will require assignment of qualified resident personnel – acceptable to the Project Manager – to each specific location when the referenced work is being undertaken by the construction contractor:

(i) full-time inspection and/or testing of water mains and sewers;

(ii) full-time inspection during pavement placement; during finishing of public sidewalks and public lanes and/or street pavements;

(iii) full-time inspection during construction of bridge infrastructure and other structural works.

(c) Conduct detailed inspection of construction sufficient to ensure that the construction carried out by the construction contractor conforms to the drawings and specifications;

(d) Co-ordination and staging of all other works on the Project site including traffic signal installations, hydro, telephone, and gas utility work, railway work forces and/or other City or developer work;

(e) With approval of the Project Manager, provision of notice to adjacent residents and businesses of those stages of construction of the Project that will interrupt public services or access thereto, sufficiently in advance of same to permit preparation therefore;

(f) Enforcement of construction contractor conformance with the City of Winnipeg Manual of Temporary Traffic Control in Work Areas on City Streets and with reasonable standards of safety for motorists and pedestrians;

(g) Provision of reference line and elevation to the construction contractor and checking upon the construction contractor's adherence thereto;

(h) Representation of the City to the local residents and businesses and other inquiries in a professional manner, with responsible and prompt reaction to requests, minimizing impact and/or disruption of the Project to the extent possible;

(i) Arranging for and carrying out of testing of materials utilized by the construction contractor to ensure conformance with the drawings and specifications;

(j) Measurement, calculation, preparation, certification, and prompt submission of progress estimates to the Project Manager for payment to the construction contractor for construction performed in accordance with the drawings and specifications;

(k) Arrange, attend and prepare and distribute records of and minutes for, regularly held on-site or offsite Project review meetings including representatives of the construction contractor and the City;

(l) Promptly report any significant and unusual circumstances to the Project Manager;

(m) Promptly arrange for and conduct a detailed final inspection of the Project with the construction contractor and the Project Manager prior to commencement of the period of contractor warranty specified in the construction contract for the Project, and providing to the Project Manager in written form an appropriate recommendation for commencement of the warranty period for the constructed or partially constructed Project;

(n) Act as Payment Certifier and administer all construction contracts as required under the Builder's Liens Act of Manitoba;

(o) Keep a continuous record of working days and days lost due to inclement weather during the course of construction contract works.

A.8 PROFESSIONAL ENGINEERING SERVICES – POST CONSTRUCTION SERVICES

A.8.1 Engineering Services in the post-construction phase of a Project are associated with the completion and close-out of the Project and generally considered part of Contract Administration (Type 4) Services.

A.8.2 The Consulting Engineer is required to provide post-construction services including but not limited to:

(a) Preparation of a Certificate of Substantial Performance in the standard City of Winnipeg format;

(b) Preparation of a Certificate of Total Performance in the standard City of Winnipeg format;

(c) Provision of inspection services during the warranty period of the construction contract;

(d) Provision of inspection services (as per 7.5a)) for maintenance (paid) items within the warranty period of the construction contract;

(e) Coordination of a detailed inspection of the Project with the construction contractor and the Project Manager prior to the end of the period of construction contract warranty specified in the construction contract for the Project;

(f) Prompt resolution of:

(i) deficiencies in design;

(ii) outstanding construction contract warranty issues.

(g) Submission of a final construction report within three (3) months of the Substantial Performance date of the construction contract, including final or projected final construction contract costs;

(h) Provision of record drawings, within three (3) months of Substantial Performance date;

(i) Preparation of a Certificate of Acceptance in the standard City of Winnipeg format.

A.9 PROFESSIONAL ENGINEERING SERVICES – ADDITIONAL SERVICES

A.9.1 Additional Services have been referred to by the City of Winnipeg as "Type 5 Services".

A.9.2 Additional services are Consulting Engineering services that fall outside those described above and may or may not be associated with a construction project, but are not in place of or in substitution for those services elsewhere specified in the Definition of Professional Consultant Services – Engineering, with respect to other types or categories of Services.

A.9.3 Engineering Services called Additional Services include but are not limited to:

(a) Revision of completed, or substantially completed, drawings and/or specifications that were in conformance with the original intent of the City or had been accepted by the Project Manager;

(b) Preparation of operating manuals and/or training of operating personnel;

(c) Start-up and/or operation of operating plants;

(d) Procurement of materials and equipment for the City;

(e) Preparation for and appearance in litigation on behalf of the City;

(f) Preparation of environmental studies and reports and presentation thereof in public hearings;

A.9.4 Preparation and submission to the Project Manager, final quantities and dimensional measurements which the City requires for assessment of Local Improvement Levies within one (1) month of Project completion.

Appendix B General Project Requirements

Applicable to all Projects as Required

Where applicable, the ***most current*** version of the following shall apply to the Services, in the applicable phase (links for convenience; most current version shall be applicable):

(a) City of Winnipeg's Accessibility Design Standards (2015) Accessibility Design Standards;

(b) Universal Design Policy www.winnipeg.ca/ppd/Universal_Design.stm;

(c) the most current (at the time of construction) edition of The City of Winnipeg Standard Construction Specifications *City of Winnipeg Standard Construction Specifications*;

(d) City of Winnipeg's Project Management Manual *Project Management Manual*, also at the Infrastructure Planning Office main page.;

(e) City of Winnipeg's Tree Planting Details and Specifications Downtown Area and Regional Streets *Tree Planting Details and Specifications Downtown Area and Regional Streets*, also at *http://winnipeg.ca/publicworks/parksOpenSpace/UrbanForestry/default.stm*;

(f) City of Winnipeg's Tree Removal Guidelines *Tree Removal Guidelines*, also at http://winnipeg.ca/publicworks/parksOpenSpace/UrbanForestry/default.stm;

(g) City of Winnipeg's 2012 Draft Updated *Transportation Standards Manual* (previous version February 1991);

(h) Manual for the Production of Construction Drawings – City of Winnipeg (November 1984);

(i) Winnipeg Pedestrian and Cycling Strategies *Winnipeg Pedestrian and Cycling Strategies*;

(j) Manual of Temporary Traffic Control on City Streets https://legacy.winnipeg.ca/publicworks/trafficControl/manual-temporary-traffic-control.stm

(k) Appropriate geometric standards set by the Transportation Association of Canada (TAC);

(l) Current and best practices in pedestrian and cycling infrastructure design.

The following City of Winnipeg Plans are to be considered, where applicable:

(m) OurWinnipeg 2045; https://winnipeg.ca/interhom/cityhall/ourwinnipeg/default.stm

(n) OurWinnipeg Sustainable Transportation Strategy, currently under review; *https://winnipeg.ca/publicworks/transportation/transportationmasterplan.stm*

(o) Winnipeg Transportation Master Plan , current version: *Transportation Master Plan - 2011*

(p) The following attached documents shall be applicable to the Project, as updated from time to time:

(q) *Definition of Professional Consultant Services – Engineering – Public Works* shall be applicable to the provision of Professional Engineering services for this Project unless otherwise specified herein – 0

(r) Site Investigation Requirements for Public Works Street Projects – Appendix C

(s) As-Built Drawing Requirements for Public Works Projects – Appendix G

Appendix C Site Investigation Requirements

This document was created for use on all Public Works Streets Projects, and includes instructions for all street renewals. In this appendix, "City Project Manager" can also mean the Land Development Administrator

Effective Date: December 2020

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
Number of boreholes = $0.1 \times (\text{Street area } (m^2))^{0.45}$ A minimum of two boreholes, 2m ± 150 mm depth from the bottom of the proposed or the existing pavement per project location.	Number of boreholes = $0.1 \times (\text{Street area } (m^2))^{0.46}$ A minimum of three boreholes, 2.5m ± 150mm depth from the bottom of the proposed or the existing pavement per project location.	Number of boreholes = $0.1 \times (\text{Street area } (m^2))^{0.48}$ A minimum of three boreholes, 2.5m ± 150mm depth from the bottom of the proposed or the existing pavement per project location.

[1]If previous soil information is available and relevant, the number of boreholes can be reduced – confirm with the City's Project Manager.

[2]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 $\pm$ 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
Number of boreholes = 0.1 × (Street area (m^2))$^{0.4}$ A minimum of two boreholes should be tested per project location.	Number of boreholes = 0.1 × (Street area (m^2))$^{0.41}$ A minimum of three boreholes should be tested per project location.	Number of boreholes = 0.1 × (Street area (m^2))$^{0.42}$ A minimum of three boreholes should be tested per project location.

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 95 % 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.

Appendix D Requirements for Site Accessibility Plan

The following clauses have been taken from the road construction Tender template of the City of Winnipeg and are required to be used in development construction contracts within the right-of-way, particularly within Regional Streets rights-of-way, to comply with the City of Winnipeg's Accessibility Policies.

D.1 CONTRACT REQUIREMENT

D.1.1 All construction contracts conducting work in the right-of-way or on public property shall include the requirement for a Site Accessibility Plan, as outlined in D.2.

D.2 SITE ACCESSIBILITY PLAN

D.2.1 The Contractor shall provide the Contract Administrator with an Accessibility 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.

D.2.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:

(a) How the Contractor will maintain at least one crossing in each direction for each intersection (one north/south crosswalk and one east/west crosswalk).

(b) How the Contractor will maintain access to bus stops within the site.

(c) How the Contractor will maintain access to pedestrian corridors and half signals.

(d) How the Contractor will maintain cycling facilities.

(e) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.

D.2.3 Any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.

D.2.4 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D.2.5 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:

(a) Signage

(b) Temporary Ramping

(c) Transit Stops

(d) Detour Signage

D.2.6 At minimum, the Contractor shall review the site conditions on a daily basis to ensure that all features related to the Accessibility Plan are in place. The site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.

D.2.7 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D.2.8 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D.2.9 Deficiencies as a direct result of actions by the Contractor that are not immediately corrected and/or failure to produce records that demonstrate that the site was maintained in compliance with the

Accessibility Plan may result in a pay adjustment via the monthly Progress Payment. The rate of pay adjustment will be as per the following schedule:

(a) First Offence – A warning will be issued and documented in the weekly or bi-weekly site meeting.

(b) Second Offence – A field instruction to immediately correct the site will be issued by the Contract Administrator.

(c) Third and subsequent Offences – A pay reduction will be issued in the amount of $250.00 per instance and per day.

Appendix E Traffic Control and Traffic Management

The following clauses have been taken from the road construction Tender template of the City of Winnipeg and may be required to be used in development construction contracts within the right-of-way, particularly within Regional Streets rights-of-way. For inclusion in the development construction contract, TRAFFIC CONTROL must be discussed with the Land Development Administrator, and/or the Traffic Management Branch of Public Works. For greenfield construction, these will generally not apply, unless tying in to existing, operating streets. Not all clauses will apply to all circumstances, and clauses may be amended for specific contract and/or site conditions.

E.1 TRAFFIC CONTROL

E.1.1 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 CW3410.

(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, the Contract Drawings, Staging Plans and Traffic Management Plans 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.

(c) In addition, the Contractor shall be responsible for supplying, removing, placing and maintaining all regulatory signing including but not limited to:

(i) Parking restrictions;

(ii) Stopping restrictions;

(iii) Turn restrictions;

(iv) Diamond lane removal;

(v) Full or directional closures on a Regional Street;

(vi) Traffic routed across a median;

(vii) 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.

(d) The Contractor shall remove and stockpile any regulatory signage not required during construction such as, but not limited to, parking restrictions, turn restrictions and loading restrictions.

E.1.2 Further to E.1.1(c) ,the Contractor shall make arrangement with the Contract Administrator to supply regulatory signs as required.

E.1.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

E.1.4 Further to E.1.1(c) and E.1.1(d) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the Contract Work is complete. The Contractor shall arrange to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.

E.1.5 Any changes to the approved Traffic Management Plan must be submitted to the Contract Administrator a minimum of five (5) Working Days prior to the required change for approval.

E.1.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, Traffic Services may be engaged to perform the Traffic Control. In

this event the Contractor shall bear costs charged to the project by the Traffic Services Branch of the City of Winnipeg in connection with the required Works.

E.2 TRAFFIC MANAGEMENT

E.2.1 Further to clause 3.7 of CW 1130:

(a) Single lane closures on intersecting and/or adjoining Regional Streets shall only be permitted during non-peak periods when required for construction activities when approved by the Traffic Management Branch. Storage/parking of materials, equipment or vehicles is not permitted on Regional Streets at any time unless approved by the Contract Administrator, in consultation with the Traffic Management Branch.

CLAUSES FOR REGIONAL STREETS: Modify and add clauses as required.

E.2.2 Maintain a minimum of one lane of traffic *[eastbound]* (Phase I) and one lane of traffic *[westbound]* (Phase II) during their respective construction times, including during paving and milling operations. When no work is being performed on site, non-essential lane closures will not be permitted.

E.2.3 Maintain a minimum of two *[northbound]* lanes of traffic on *[location]* Street during the morning peak period (07:00 – 09:00) and maintain a minimum of two *[southbound]* lanes of traffic on *[location]* Street during the afternoon peak period (15:30 – 18:00).

(a) Further to E.2.3, in accordance with E.1.1(c)(vi), the Traffic Services Branch will be responsible for routing traffic across the median twice per day. Costs associated with any additional requests by the Contractor to modify traffic control during non-peak periods will be the Contractor's responsibility.

E.2.4 No lane closures of westbound traffic will be permitted during Phase I and no lane closures of eastbound traffic will be permitted during Phase II, without the written permission of the Contract Administrator; and

E.2.5 Where left turn lanes exist, an additional lane to accommodate the left turn storage lane shall be maintained at all times.

E.2.6 *[North/South]* traffic at *[location]* and *[location]* intersection must be maintained during construction to allow for one lane of traffic in each direction to go straight through and another lane in each direction to turn left. When no work is being performed in the intersection and providing it is safe for vehicles, north and south lane closures in the intersection will not be permitted.

E.2.7 Intersecting local street, median opening and private approach access shall be maintained at all times unless joint/slab repairs or planing/paving operations require temporary closure. Temporary closures are to be staggered such that consecutive intersections are not closed at the same time. Traffic on intersecting regional/collector streets *[list streets]* shall be maintained at all times as stated in E.2.6 unless planing/paving operations require temporary complete closures. Temporary complete closures shall be no longer than 10 minutes during asphalt planing/paving operations and shall be completed during off peak hours.

E.2.8 Flag persons may be necessary to maintain the flow of traffic during certain work operations.

E.2.9 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, they 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.

E.2.10 Pedestrian access must be maintained on the [north] side at all times. One pedestrian crossing in the [east-west] direction must be maintained at each of the ^[location] and ^[location] intersections at all times.

E.2.11 Ambulance/emergency vehicle access must be maintained at all times.

CLAUSES FOR LOCAL/RESIDENTIAL STREETS. Modify and add clauses as required.

E.2.12 Further to clause 3.7 of CW 1130:

E.2.13 The Contractor shall schedule construction activities to meet the following:

(a) *[location]* at least one lane for local access traffic shall be maintained along this street during construction. At least one intersection on adjacent bays shall be open at a time.

(b) *[location]* local access and/or bus traffic shall be maintained when possible as determined by the Contract Administrator. The road shall be closed to traffic only with the approval of the Contract Administrator.

(c) *[location]* will be closed to through traffic. Local access and/or bus traffic shall be maintained. The Contractor shall sign the street "Road Closed – No Exit" in accordance with the Manual of Temporary Traffic Control.

(d) *[location]* will be closed to all traffic. The Contractor shall sign the street "Road Closed – No Exit" in accordance with the Manual of Temporary Traffic Control.

(e) *[location]* intersecting street and private approach access shall be maintained at all times.

E.2.14 Should the Contractor be unable to maintain an existing access to a residence or business, they 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.

E.2.15 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

Appendix F Quality Control and Quality Assurance

F.1 QUALITY CONTROL AND QUALITY ASSURANCE

F.1.1 All roadway construction works are required to follow all of the City's most current (at the time of construction) Standard Construction Specifications, all Quality Control and Quality Assurance requirements must be conducted as per the respective applicable specifications.

F.2 SUPPLY OF DOCUMENTATION

F.2.1 All testing reports, regardless of results, must be directly and promptly supplied to the City's Research and Standards Engineer.

Appendix G As-Built Drawing Requirements

G.1 AS-BUILT DRAWING REQUIREMENTS FOR PUBLIC WORKS PROJECTS (2021)

G.1.1 AS-BUILT drawings are required for all Public Works construction projects except for Regional Street Mill & Fill projects and TBO projects, unless specifically declined, in writing, by the Project Manager. AS-BUILT drawing submissions are required for ALL Regional Street renewals, Local Street reconstructions, and any addition to infrastructure inventory such as new streets, street widening's and/or realignments as well as new multi-use paths.

(i) Though drawings may not be required, please note the location of any new or relocated sidewalks, approaches, curb inlets, or bus stops, or any other modifications, on existing streets or intersection improvements in the final project report.

G.1.2 Initial submission of AS-BUILT drawings must be received no later than three months after Substantial Performance.

(i) If Substantial Performance will not be granted prior to year-end, contact Public Works to establish drawing submission requirements (i.e. for snow clearing updates).

G.1.3 The drawings are to contain the following information, and be in the format specified below.

(a) Drawings are to:

(i) Be in the AutoCAD format and indicate the version used

(ii) Be AS-BUILT drawings with dimensions corrected in both TEXT and GRAPHICS

(iii) Show pavement dimensions to the "back of curb" (edge of pavement)

(iv) Be produced in the NAD 83 (June 1990), UTM, ZONE 14, (Global co-ordinate system) ***NOTE:*** *aerial/assessment data is available at https://data.winnipeg.ca/*

(v) Indicate whether a scale factor was used, and if used the scale factor will be provided;

(vi) Show all bore holes and their UTM coordinates

(vii) Include, where applicable:

- Pavement cross-section(s)
- Asphalt Supplier
- Concrete Supplier
- Geotextile used – type, manufacturer & supplier
- Sub-drains used – type, manufacturer & supplier
- Other materials – type, manufacturer & supplier
- Contractor and construction date

G.1.4 In addition, included on the files will be a separate drawing in AutoCAD format with the following (8) basic layers (none of which are to include text) and a list describing additional layers used:

G.1.5 Layer Names:

1) Street Surface
2) Walk
3) Alley
4) Approach
5) Ramp Curb
6) Dimensions (to include all dimensions in the drawing)
7) Drainage Inlets
8) Elevations (minimum all high & low points)

G.1.6 Consultant to provide a separate AutoCAD file with AutoCAD points in the location of the bore holes. Label each point with the required information making sure that they match the borehole PDF names. Create this in basic cad and not as a Civil3d file with survey points.

(a) The provided cad file will:

(i) Show all bore holes and their UTM coordinates.

(ii) Label attributes with simple text for each bore hole location:

- NORTHING
- EASTING
- PDF_FILE_NAME
- BH_ID
- BID_OPP
- CITY_FILE_KEY

G.1.7 The PDF provided will be a marked-up version of the original soil log provided in the geotechnical report.

(a) The mark-up will:

(i) Be created for each borehole location

(ii) Show the original soil log unobstructed

(iii) Show the new pavement structure accurately located vertically next to the existing soil log

(iv) Show UTM coordinates of the soil log location

(v) Be labeled with a unique bore hole identification number

(vi) Have a unique file name

G.1.8 Include a PDF copy of all as-built drawings

G.1.9 Two (2) copies of the AutoCAD Digital Drawings, borehole logs and PDF copies shall be submitted by either of the following ways;

(a) USB flash drive. Both copies shall be clearly labelled identifying the Project number.

(b) Consultant FTP site.

G.1.10 As-built drawings in hard copy on Mylar or paper not required.

G.1.11 As-built drawing submissions as follows:

(a) Draft as-built drawings for roadway infrastructure are to be sent to the Land Development Administrator for review and approval. Final copies to be sent to:

PWD Engineering Division
Permits & Plan Approval – GIS Support Services
City of Winnipeg
Public Works Department
106-1155 Pacific Avenue
Winnipeg, MB R3E 3P1

(b) If the project includes any new infrastructure that will be retained by the Water and Waste Department (WWD), including water main, sewer main, or land drainage piping, the Consultant must provide a preliminary set of drawings and AutoCAD files that meet the WWD Drawing Standards, to:

WWD Engineering Division
Drafting and Graphics Branch
City of Winnipeg
Water and Waste Department
110-1199 Pacific Avenue
Winnipeg, MB R3E 3S8

(i) The drawings will be reviewed to ensure that the Drawings meet the WWD Drawing Standard. Any deficiencies will be marked and returned for correction or revision.

(ii) A final set of revised drawings will be provided for final acceptance.

(iii) Any securities held for Drawings will not be paid out, until the after drawings are finalized and accepted by the WWD.