

**1.1 LOCATION**

- .1 The Site is located at 1901 Brady Road, Winnipeg, MB, south of the Perimeter Highway, 4 km west of the Pembina Highway.

**1.2 ACCESS TO THE SITE**

- .1 Access to the Site is available from the main Site entrance at 1901 Brady Road, as shown on the Drawings.
- .2 Make arrangements with the authorities having jurisdiction for the movement of material and equipment to and from the Site over public roadways.
- .3 Contractor can work all operating hours, as approved by Contract Administrator.

**1.3 SCOPE OF WORK**

- .1 The scope of work shall be as outlined in Supplemental Condition (D2 – Scope of Work).

**1.4 CONTRACT TIMES**

- .1 The Works shall be completed according to the schedule outlined in the Supplemental Condition – Schedule of Work (from D13 to D16):

**1.5 MINIMUM STANDARDS**

- .1 Execute Work to meet or exceed the latest edition of:
  - .1 Manitoba Environmental Act License No. 3081R
  - .2 Manitoba Building Code, including all amendments up to project date.
  - .3 Rules and regulations of authorities having jurisdiction.
  - .4 Occupational Health and Safety Act.
  - .5 Canadian Construction Safety Code.
  - .6 Contract documents.
  - .7 Workplace Safety and Health.
  - .8 Canadian Electrical Code.

**1.6 STORAGE OF EQUIPMENT AND MATERIALS**

- .1 Contractor to coordinate with the Contract Administrator.

**1.7 FEES, PERMITS AND CERTIFICATES**

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and permits required.
- .3 Furnish certificates and permits when requested.

**1.8 DOCUMENTS**

- .1 Keep on copy of contract documents and shop drawings on the Site.

**1.9 AS-BUILT RECORD DRAWINGS**

- .1 As Work progresses and as required, record significant deviations from the Contract drawings. Prior to Preliminary Acceptance, submit one copy of As-Constructed drawings to Contract Administrator. Refer to sections 01 33 00 – Submittal Procedures and 01 78 00 – Closeout Submittals.

**1.10 MATERIAL AND EQUIPMENT**

- .1 Use new products unless otherwise specified. Refer to section 01 61 00 (Product Requirements)
- .2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.

**1.11 CUTTING AND REMEDIAL WORK**

- .1 Coordinate Work to keep cutting and remedial Work to a minimum. Refer to section 01 73 00 – Execution Requirements.

**1.12 CONSTRUCTION TIME AND SCHEDULING**

- .1 In conjunction with and in form acceptable to Contract Administrator provide within 10 working days after contract award, schedule showing dates for:
  - Submission of shop drawings, material tests and samples.
  - Delivery of equipment and materials.
  - Commencement and completion of Work of each major component of the Work.
  - Final completion date within time period required by contract documents.

**1.13 SUPERVISION**

- .1 Provide the necessary supervision and qualified tradesmen to ensure that flow of materials and on-Site installation compatible with the overall project schedule and progress.

**1.14 CONTRACTOR'S USE OF PREMISES**

- .1 The Contract Administrator will define the Contractor's use of the premises.
- .2 Make arrangements with the Contract Administrator if additional areas are required. Obtain written agreements and submit copies to Contract Administrator.
- .3 Confine operations within easements for construction, storage and access as shown on Contract Drawings.

**1.15 QUALITY CONTROL**

- .1 Refer to Section 01 45 00 – Quality Requirements. .

**1.16 PROJECT MEETINGS**

- .1 Project meeting will be held at times and locations approved by the Contract Administrator.
- .2 Refer to Section 01 31 19 – Project Meetings

**1.17 DEMONSTRATION AND TRAINING**

- .1 Provide training as per Section 01 79 00 – Demonstration and Training.

**END OF SECTION**

**Part 1            General**

**1.1                MEASUREMENT AND PAYMENT**

- .1 Further to General Conditions (C12 – Measurement and Payment) and Supplemental Conditions (D21 to D23 under Measurement and Payment):
  - .1 Notify Contract Administrator sufficiently in advance of operations to permit required measurements for payment. Assist by providing necessary equipment, workers, and survey personnel as required. Provide reasonable and necessary opportunities and facilities in making measurements.
  - .2 Non-payment for Rejected Products: Payment will not be made for any of the following:
    - .1 Products wasted or disposed of in a manner that is not acceptable.
    - .2 Products determined as unacceptable before or after placement.
    - .3 Products not completely unloaded from the transporting vehicle.
    - .4 Products placed beyond the lines and levels of the required Works.
    - .5 Products remaining on hand after completion of the Works.
    - .6 Loading, hauling, and disposing of rejected products.

**Part 2            Products**

**2.1                NOT USED**

- .1 Not Used.

**Part 3            Execution**

**3.1                NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                PROJECT MEETINGS IN GENERAL**

- .1 Further to Supplemental Condition (D18– Job Meetings) the following details of project meetings shall be followed.

**1.2                PRE-CONSTRUCTION MEETING**

- .1 Contract Administrator will schedule and administer a pre-construction meeting at the Site after the date of the Notice to Proceed and prior to start of construction at the Site.
- .2 Contract Administrator will make arrangements for meeting, prepare agenda with copies for participants, and preside at meeting. Provide data required to Contract Administrator and be prepared to discuss all items on the agenda.
- .3 Minimum Attendance Required: Contractor's project manager, Contractor's site supervisor, Contractor's construction safety officer, and major Subcontractors. Meeting attendees must be qualified and authorized to act on behalf of the party that each represents.
- .4 Agenda will include, but not necessarily be limited to, the following:
  - .1 Designation of responsible personnel.
  - .2 Lines of authority and communication.
  - .3 Health and safety.
  - .4 Use of the Site for storage, vehicle parking, access routes, and other Site requirements.
  - .5 City of Winnipeg's requirements and occupancy.
  - .6 Coordination with City of Winnipeg.
  - .7 Temporary facilities and controls provided by Contractor.
  - .8 Temporary utilities and services provided by City of Winnipeg.
  - .9 Field offices.
  - .10 Survey and Site layout by Contractor.
  - .11 Security and housekeeping procedures.
  - .12 Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures.
  - .13 Detailed work schedules.
  - .14 Progress meetings.
  - .15 Procedures for testing and inspection.
  - .16 Procedures for maintaining Project record documents.
  - .17 Other business relating to the Works.
- .5 Contract Administrator will record minutes and distribute copies to participants and those affected by decisions made. Identify errors in the minutes, if any, to Contract Administrator in writing within 3 days of receipt.

**1.3                PROGRESS MEETINGS**

- .1 Contract Administrator will schedule and administer meetings throughout the progress of the Works at maximum bi-weekly intervals or more frequently as required.

- .2 Contract Administrator will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- .3 Attendance Required: Contractor and Contractor's Health and Safety Officer.
- .4 Agenda:
  - .1 Review of minutes of previous meetings.
  - .2 Review of work progress and maintenance of construction work schedule.
  - .3 Field observations, problems, and decisions.
  - .4 Identification of problems which impede planned progress.
  - .5 Review of submittals schedule and status of submittals.
  - .6 Review of off-Site material fabrication/processing and delivery schedules.
  - .7 Review of health and safety concerns and issues including air monitoring results.
  - .8 Maintenance of work schedule.
  - .9 Corrective measures to regain projected schedules.
  - .10 Planned progress during succeeding work period.
  - .11 Coordination of projected progress.
  - .12 Maintenance of quality and work standards.
  - .13 Effect of proposed changes on work schedule and coordination.
  - .14 Change Orders and Applications for Payment.
  - .15 Other business relating to the Works.
- .5 Progress meetings attended by parties other than City of Winnipeg, Contract Administrator, Contractor, and Contractor's major Subcontractors and Suppliers will be split into two meetings. Part A will include all parties at the meeting. Part B will include only City of Winnipeg, Contract Administrator, Contractor, and Contractor's major Subcontractors and Suppliers, and will include discussions related to the Contract.
- .6 Contract Administrator will record minutes and distribute copies to participants and those affected by decisions made. All communication to Subcontractors, Suppliers, or others that Contractor is responsible for will be made through Contractor. Identify errors in the minutes, if any, to Contract Administrator in writing within 3 days of receipt.

#### **1.4 PRE-INSTALLATION MEETINGS**

- .1 When required in individual Sections, convene a pre-installation meeting at the Site prior to commencing work of the Section.
- .2 Require attendance of parties directly affecting, or affected by, work of the specific Section.
- .3 Notify Contract Administrator, in writing, a minimum of 5 days in advance of meeting date.
- .4 Prepare agenda and preside at meeting:
  - .1 Review conditions of installation, preparation, and installation procedures.
  - .2 Review coordination with related work.
- .5 Contract Administrator will record minutes and distribute copies to participants and those affected by decisions made.
- .6 Identify errors in the minutes, if any, to Contract Administrator in writing within 3 days of receipt.

**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                ADMINISTRATIVE**

- .1        Unless directed otherwise, transmit submittals to Contract Administrator.
- .2        Transmit each submittal with Contract Administrator accepted form and the correct number of copies.
- .3        Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- .4        Identify the Project, Contractor, Subcontractor, or Supplier; pertinent Drawing and detail number and Section number, as appropriate.
- .5        Apply Contractor's approval stamp prior to initial submission to Contract Administrator, signed and dated, certifying that Contractor has satisfied Contractor's obligations under the Contract Documents including, but not limited to review and approval, verification of products required, field dimensions, adjacent construction work, and coordination of information with respect to Contractor's review and approval of that submittal. Unstamped or unsigned submittals will be returned by Contract Administrator without action.
- .6        Except as specified otherwise, for each submittal for review allow 3 days excluding delivery time to and from Contractor. Schedule submittals to expedite the Contract and according to specified scheduling. Coordinate submission of related items.
- .7        Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .8        Do not proceed with Work affected by submittal until review is complete.
- .9        Present submittals in SI Metric units. Where items or information is not produced in SI Metric units converted values are acceptable
- .10       Review submittals prior to submission to Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .11       Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .12       Identify product or system limitations which may be detrimental to successful performance of the completed Works.
- .13       Provide space for Contract Administrator's review stamp and comments on submittals.
- .14       Make corrections to each submittal required by Contract Administrator. Promptly revise and resubmit the required number of corrected copies of each submittal and submit new submittals required by such correction; identify changes made since previous submission and changes other than those requested by Contract Administrator.
- .15       Promptly distribute copies of reviewed submittals to Subcontractors, Suppliers, and other concerned parties as appropriate. Instruct parties to promptly report any inability to comply with provisions.
- .16       Submittals not requested will not be recognized or processed. Submittals received directly from Subcontractors, Suppliers, vendors, or other Representatives or without Contractor stamp will be returned by Contract Administrator without action.
- .17       Adjustments made on Contractor's drawings by Contract Administrator are not intended to change the Contract Price. If adjustments affect the Contract Price, state such in

- writing, as specified elsewhere in the Contract, to Contract Administrator for approval prior to proceeding with the Works.
- .18 It is the responsibility of Contractor to review submittals made by Suppliers and Subcontractors before transmitting them to Contract Administrator to assure proper coordination of the Works and to determine that each submittal is according to Contractor's desires and that there is sufficient information about materials and equipment for Contract Administrator to determine compliance with the Drawings and Specifications. Incomplete or inadequate submittals will be returned for revision without review.
  - .19 Unless specified otherwise submit three copies of submittals.
  - .20 Verify field measurements and affected adjacent Work are co-ordinated.
  - .21 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
  - .22 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator review.
  - .23 Requirements of this article shall apply to all required submittals.
  - .24 Keep one reviewed copy of each submission on Site.

## **1.2 DETAILED WORK SCHEDULES**

- .1 Pursuant to the General Terms and Conditions, within 7 days after the date of the Notice to Proceed and prior to commencing work at the Site, submit initial detailed work schedule in duplicate, and one electronic copy in Microsoft Project Gantt Chart format. Submit updated detailed work schedules with each Application for Payment and at each progress meeting, identifying changes since previous version and estimated percentage of completion for each item of the Works. If a schedule remains unchanged from one period to the next, submit a written notice to that effect.
- .2 Submit a computer generated horizontal bar chart with separate line for each item of work identified in the Schedule of Prices, identifying first work day of each week.
- .3 Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities, and include the Contract Times. Show coordination of interrelated work activities and items. Indicate the early and late start, early and late finish, float dates, and duration.
- .4 City of Winnipeg controls the float time in the work schedule, and therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the work schedule, City of Winnipeg may initiate changes to the Works that absorb float time only. City of Winnipeg-initiated changes that affect the critical path on a critical path methods schedule shall be the sole grounds for extending said completion dates. Contractor initiated changes that encroach on the float time identified in the work schedule may be accomplished with City of Winnipeg's concurrence. Such changes, however, shall give way to City of Winnipeg initiated changes competing for the same float time.
- .5 Portions of the Works that are listed in the work schedule with a float time may, at the option of City of Winnipeg, be performed using any or no amount of the float time, but in no event shall performance of the Works during the float times entitle Contractor to an increase in the Contract Price as to such portions of the Works or as to other portions of the Works.
- .6 Provide sub-schedules to define critical activities which dictate the rate of progress.
- .7 Show accumulated percentage of completion of each item, and total percentage of the Works completed, as of the last day of each month.

- .8 Provide separate schedule of submittal dates for Shop Drawings, product data, Samples, factory and field testing dates, and product delivery dates, including those furnished by City of Winnipeg, and dates reviewed submittals will be required from Contract Administrator. If during performance of the Works Contractor believes it necessary or advantageous to change sequence of activities shown on Contractor's work schedule, submit proposed revisions to Contract Administrator for approval prior to changing the sequence of work. No change shall be made in the order in which work activities are being performed until Contract Administrator's written approval for the revised schedule has been obtained. The schedule will be acceptable to Contract Administrator as providing an orderly progression of the Works to completion within any specified dates identified in Section 01 11 00, but such acceptance will neither impose on Contract Administrator responsibility for the sequencing, scheduling, or progress of the Works nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
- .9 Identify activities modified since previous submittal, major changes in scope, and other identifiable changes. Provide narrative report to define problem areas causing delay, anticipated delays and length, and impact on schedule. Report corrective action taken, or proposed, and its effect.
- .10 Distribute copies of reviewed schedules to Subcontractors, Suppliers, and other concerned parties. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

### **1.3 CONSTRUCTION QUALITY CONTROL REPORTS**

- .1 Record daily Construction Quality Control activities in Contractor's Site log book.
- .2 Each work day submit a Construction Quality Control report for the previous work day.

### **1.4 PROPOSED PRODUCTS LIST**

- .1 Within 15 days after the date of the Notice to Proceed and prior to products arrival on the Site, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- .2 For products specified only by reference standards or description, give name of manufacturer, trade name, model or catalog designation, and reference standards.
- .3 For products requiring special handling procedures, submit a Material Safety Data Sheet (MSDS) prior to product's arrival on the Site.

### **1.5 SHOP DRAWINGS**

- .1 When specified in individual Sections, prepare detailed drawings of material and structures to be supplied by Contractor from typical details shown on "Approved for Construction" Drawings and/or from specified requirements.
- .2 Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- .3 Indicate materials, methods of construction, attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of the Works.
- .4 Where articles or equipment attach or connect to other articles or equipment, indicate that such work has been coordinated, regardless of the Section under which the adjacent items will be supplied and installed.
- .5 Confirm dimensions shown on Contractor's drawings with actual measurements of existing and/or completed associated structures and affected adjacent work at the Site.

- .6 Submit three hard copies and one digital copy of Contractor's drawings on USB memory stick or electronic file transfer or Compact Disc (CD) compatible for use with Windows 7 and AutoCAD 2014.
- .7 After Contract Administrator completes its review, Shop Drawings will be stamped with one of the following notations:
  - .1 Reviewed.
  - .2 Reviewed as Noted.
  - .3 Not Subject to Review.
  - .4 Revise and Resubmit.
- .8 If a Shop Drawing is acceptable, it will be marked "Reviewed" or "Reviewed as Noted". Two hard copies of the Shop Drawing will be returned to Contractor.
- .9 Upon return of a Shop Drawing marked "Reviewed" or "Reviewed as Noted", Contractor may order, ship, or fabricate the materials included on the Shop Drawing, provided it is according to the corrections indicated. Upon receipt of Shop Drawings stamped "Reviewed" or "Reviewed as Noted", produce copies and distribute according to PART 1, SUBMITTAL PROCEDURES and for Project record document purposes.
- .10 If a Shop Drawing marked "Reviewed as Noted" has extensive corrections or corrections affecting other drawings or Works, Contract Administrator may require that Contractor make the corrections indicated thereon and resubmit the Shop Drawings for Project record document purposes.
- .11 Shop Drawings that are for information only will be marked "Not Subject to Review" and one copy will be returned to Contractor.
- .12 If a Shop Drawing is unacceptable, two copies will be returned to Contractor marked "Revise and Resubmit".
- .13 Upon return of a Shop Drawing marked "Revise and Resubmit", Contractor shall make the corrections indicated and repeat the initial approval procedure.
- .14 Shop Drawings lacking adequate details or information to allow Contract Administrator to determine whether or not the Shop Drawing meets the requirements of the Contract Documents will also be marked "Revise and Resubmit" and returned without further comment.
- .15 Shop Drawings not bearing Contract Administrator's "Reviewed" or "Reviewed as Noted" notation shall not be issued to Subcontractors nor utilized for construction purposes. No work requiring submission and approval of Shop Drawings shall be performed or equipment requiring submission and approval of Shop Drawings installed without Shop Drawings bearing one of these notations.
- .16 Submit Shop Drawings well in advance of the need for the material or equipment for construction and with ample allowance for time required to make delivery of material or equipment after data covering such is approved. Contractor shall assume the risk for all materials or equipment which are fabricated or delivered prior to the approval of Shop Drawings. No materials or equipment shall be incorporated into the Works nor included in progress payments until approval thereof has been obtained in the specified manner.
- .17 Contract Administrator will review and process all Shop Drawings promptly, but a reasonable time should be allowed for this, for Shop Drawings being revised and resubmitted, and for time required to return the approved Shop Drawings to Contractor.
- .18 Approval of Shop Drawings shall not relieve Contractor from the responsibility of furnishing materials and equipment of proper dimension, size, quality, quantity, and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Approval shall not relieve Contractor from responsibility for errors of any sort on Shop Drawings. Approval is intended only to assure conformance with the

design concept of the Project and compliance with the information given in the Contract Documents. Contractor is responsible for information that pertains solely to the fabrication processes, to the technique of construction, and for the coordination of the work of all trades.

- .19 Contractor shall not be relieved of any part of its responsibilities for correctness of its drawings or adequacy of its design bearing Contract Administrator's "Reviewed" or "Reviewed as Noted" notation. Contract Administrator's approval is for the sole purpose of ascertaining conformance with general design concepts, and in no way constitutes approval of the detail design inherent in Contractor's drawings, responsibility for which remains solely with Contractor. Drawings prepared by Contractor's representatives including Subcontractors, Suppliers, vendors, or other Representatives shall be considered Contractor's drawings.
- .20 The final accepted shop drawing submittal requirements will be as follows:
  - .1 Three hard copies submitted to Contract Administrator.
  - .2 One hard copy for Contract Administrator's field office.
  - .3 Hard copies for the Operations and Maintenance Manual.
  - .4 One electronic copy submitted to Contract Administrator.

## **1.6 PRODUCT DATA**

- .1 Submit the number of copies which Contractor requires, plus two copies which will be retained by Contract Administrator.
- .2 Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to the Project.
- .3 Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- .4 After review, distribute according to Contract Documents and provide copies for Project Record Documents.

## **1.7 SAMPLES**

- .1 The submittal of Samples shall conform to the requirements of the General Terms and Conditions, Shop Drawings, and Samples and to procedures described in this article.
- .2 When specified in individual Sections, submit Samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- .3 Samples and Shop Drawings which are related to the same unit of Works or Section shall be submitted at the same time. If related Shop Drawings and Samples are submitted at different times, they cannot be reviewed until both are furnished to Contract Administrator.
- .4 Contractor shall review, approve, and submit all Samples promptly. Samples shall be identified with correct reference to individual Section, page, article, and paragraph number, and Drawing number when applicable.
- .5 Contractor shall submit at least three Samples of each item required for Contract Administrator's approval. Submission of Samples shall conform to all applicable provisions under Part 1, Submittal Procedures. Two of the Samples shall be delivered to Contract Administrator's office identified in Part 1, Submittal Procedures unless otherwise authorized by Contract Administrator. One Sample shall be delivered to Contract Administrator's field office. Submit the number of Samples specified in individual Sections; one of which will be retained by Contract Administrator.

- .6 Contract Administrator will review and take action on Samples with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the Works and with the information given in the Contract Documents.
- .7 Contractor shall make all corrections required and shall resubmit the required number of new Samples until approved.
- .8 Contract Administrator's approval of Samples shall not relieve Contractor of responsibility for any deviation from the requirements of the Contract Documents. Contract Administrator's approval shall not relieve Contractor from responsibility for errors or omissions in the Samples.
- .9 No portion of the Works requiring a Sample submission shall be commenced until the submission has been approved by Contract Administrator. All such portions of the Works shall be according to approved Samples.
- .10 Submit Samples of finishes, textures, and patterns for Contract Administrator's selection.
- .11 Reviewed Samples which may be used in the Works are indicated in individual Sections.

#### **1.8 MANUFACTURER INSTALLATION INSTRUCTIONS**

- .1 When specified in individual Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Contract Administrator.
- .2 Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- .3 Whenever the Specifications refer to manufacturer's instructions, such reference shall mean written instructions of the manufacturer.

#### **1.9 MANUFACTURER CERTIFICATES**

- .1 When specified in individual Sections, or when required by reference standards, submit certification and/or test results by manufacturer to Contract Administrator.
- .2 Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications, as appropriate.
- .3 Certificates may be recent or previous test results on material or product, but must be acceptable to Contract Administrator.

#### **1.10 SITE LAYOUT**

- .1 Within 7 days after date of Notice to Proceed and prior to mobilization to the Site, submit Site layout drawings, showing existing conditions and facilities and construction facilities and temporary controls to be provided by Contractor including but not limited to the following:
  - .1 Existing property lines, structures, roads, utilities, and other existing Site feature or facility.
  - .2 Temporary access roads and utilities to be constructed.
  - .3 Field offices and sheds.
  - .4 The means of ingress and egress and temporary traffic control facilities.
  - .5 Proposed location of Site access.
  - .6 Equipment and material staging areas.
  - .7 Material stockpile areas.
  - .8 Work zones specified in Contractor's Safe Work Plan.
  - .9 Grading, including contours, required to construct temporary construction facilities.

- .10 Any other data deemed pertinent by Contractor or required by Contract Administrator.

### **1.11 SUBMITTALS SCHEDULE**

- .1 Submit a submittals schedule within 15 days after the date of the Notice to Proceed.
- .2 The submittals schedule shall be in tabular form listing all submittals required by the Contract Documents and the date on which Contractor will make each submittal. As a minimum, the submittals schedule shall consist of the following columns:
  - .1 Submittal Number: Number consecutively.
  - .2 Section Number: Section number or description of location in the Contract Documents where submittal is requested.
  - .3 Page Number: Page number of the Section in the Contract Documents where submittals are requested.
  - .4 Item: Description of item or items to which submittals pertain.
  - .5 Submittal Type: A letter code indicating what type of submittal was requested. The type key shall be as follows:
    - .1 Test Results and/or Certificates.
    - .2 Manufacturers' Literature or Data (Informative only).
    - .3 Shop Drawings.
    - .4 Operation and Maintenance Instructions.
    - .5 Samples.
    - .6 Alternative Product Supporting Data.
    - .7 Administrative such as schedules, etc.
  - .3 Deficiencies: Manner in which submittal or proposed alternative product does not meet the requirements of the Contract Documents.
  - .4 Anticipated Submittal Date: Date on which Contractor anticipates submittal to be delivered to Contract Administrator.
  - .5 Response Required: Indicate "yes" if Contractor anticipates response from Contract Administrator and "no" if no response is anticipated.
  - .6 The submittals schedule will be reviewed by Contract Administrator and Contract Administrator will respond in writing listing deficiencies. Do not list submittals not called for in the Contract Documents. The schedule shall include all items for which Contractor proposes to use substitute or "or-equal" products. Correct deficiencies and resubmit the submittals schedule prior to beginning any work.

### **1.12 SUBMITTALS FOR PROGRESS MEETINGS**

- .1 At least 24 hours prior to scheduled progress meetings submit the following:
  - .1 Updated detailed work schedule detailing all activities. Include review of progress with respect to previously established dates for starting and stopping various stages of the Works, major problems and action taken, injury reports, equipment breakdown, and material removal.
  - .2 Any other information required by Contract Administrator or relevant to agenda for upcoming progress meeting.

### **1.13 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution monthly with progress statement and as directed by Contract Administrator.
- .2 Project identification: name and number of project and date of exposure indicated.

- .3 Frequency of photographic documentation: weekly or as directed by Contract Administrator.

**Part 2            Products**

**2.1                NOT USED**

**Part 3            Execution**

**3.1                NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                QUALITY CONTROL**

- .1        Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Works of specified quality.
- .2        Comply with manufacturers' instructions, including each step in sequence.
- .3        Should manufacturers' instructions conflict with the Contract Documents, request clarification from Contract Administrator before proceeding.
- .4        Comply with specified standards as minimum quality for the Works except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- .5        Perform work by persons qualified to produce workmanship of specified quality. Use persons licensed to perform the Works where required by these Specifications or Laws and Regulations.
- .6        Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- .7        Materials furnished and finished or intermediate stages of the Works shall be sampled, tested, and inspected as specified in the individual Sections and as required by reference standards.
- .8        Performance of tests or observations by Contract Administrator or City of Winnipeg are for the sole benefit of Contract Administrator and City of Winnipeg and are not intended to replace Contractor's quality control program. Contractor is solely responsible for establishing and implementing a quality control program to ensure that the Works are according to the Contract Documents.
- .9        It is Contractor's responsibility to notify Contract Administrator when Contractor believes the Works (or intermediate stages or parts of the Works) are of specified quality and to permit Contract Administrator or City of Winnipeg to perform independent tests or analyses.
- .10      Testing by Contract Administrator or failure to detect defective work shall not prevent rejection when defect is discovered, nor shall it obligate Contract Administrator for final acceptance.

**1.2                TOLERANCES**

- .1        Monitor tolerance control of installed products to produce acceptable Works. Do not permit tolerances to accumulate.
- .2        Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with the Contract Documents, request clarification from Contract Administrator before proceeding.
- .3        Adjust products to appropriate dimensions; position before securing products in place.

**1.3                REQUIREMENTS FOR REFERENCES**

- .1        For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by Laws and Regulations.

- .2 Conform to reference standard by date of issue current as of bid closing date, except where a specific date is established by Laws and Regulations or by individual Section.
- .3 Specific provisions of Laws or Regulations may be referenced in the Project Specifications to assist Contractor and identify options selected by Contract Administrator. Such references do not relieve Contractor from compliance with other applicable provisions of Laws and Regulations not specifically referenced.
- .4 No inference or provision of any reference document including, but not limited to, any standard specification, manual, or code shall be effective to change the relationships, duties, and responsibilities of City of Winnipeg, Contractor, or Contract Administrator from those set forth in the Contract Documents, nor shall it be effective to assign to City of Winnipeg or Contract Administrator any duty or authority to supervise or direct the furnishing or performance of the Works or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract.
- .5 Reference standards referred to in these Specifications form part of the Specifications to the extent specified in individual Sections.
- .6 In case of conflict or discrepancy between a reference standard and the Project Specifications or with another reference standard, the more stringent requirements shall apply.
- .7 Should specified reference standards conflict with the Contract Documents, request clarification from Contract Administrator before proceeding.

#### **1.4 INSPECTING AND TESTING BY CITY OF WINNIPEG**

- .1 Further to General Conditions C11 – Inspection, the following requirements shall be applied for inspection and testing.
- .2 City of Winnipeg may employ and pay for services of an independent inspecting company and testing laboratory to perform inspecting and testing services as specified in individual Sections.
- .3 Employment of inspecting company and testing laboratory and services performed by such inspecting company and testing laboratory in no way relieves Contractor of obligation to perform the Works according to requirements of the Contract Documents.
- .4 Reports will be submitted by the independent firm to Contract Administrator, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents. Copies will be provided to Contractor upon request.
- .5 Deliver to inspecting company and testing laboratory at designated location, adequate samples of materials proposed to be used which require testing.
- .6 Cooperate with personnel of inspecting company and testing laboratory and provide safe access to the Works and the manufacturer's operations.
- .7 Provide incidental labor and facilities:
  - .1 To provide access to the Works to be tested.
  - .2 To obtain and handle samples at the Site or at source of products to be tested.
  - .3 To facilitate tests and inspections.
  - .4 For inspecting company and testing laboratory's exclusive use for storage and curing of test samples.
- .8 Notify Contract Administrator and inspecting company and testing laboratory 24 hours prior to expected time for operations requiring inspecting and testing services.

- .9 Retesting required because of Contractor's negligent non-conformance to specified requirements will be performed by the same inspecting company and testing laboratory on instructions by Contract Administrator. Costs for retesting and reinspection will be payable by Contractor to City of Winnipeg on demand or City of Winnipeg may deduct cost of inspecting or testing charges from monies which are due or may become due Contractor.
- .10 If defects or deficiencies are revealed during testing or inspecting, action will be taken as per C11.

**1.5 MANUFACTURERS' FIELD SERVICES AND REPORTS**

- .1 When specified in individual Sections, require Suppliers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment as applicable, and to initiate instructions when necessary.
- .2 Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- .3 Submit report within 14 days of observation to Contract Administrator for information.

**1.6 MILL TESTS**

- .1 Submit mill test certificates as required of specification Sections or requested by Contract Administrator.

**1.7 EQUIPMENT AND SYSTEMS**

- .1 Submit adjustment and balancing reports for mechanical, electrical and municipal equipment systems.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
  - .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
  - .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.
- .2 U.S. Environmental Protection Agency (EPA) / Office of Water
  - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

**1.2 OFFICE FACILITIES**

- .1 The Contractor shall supply one (1) office facility to be located at a Site specified by the Contract Administrator. The Contractor shall relocate the office facility to an alternate Site upon request of the Contract Administrator.
- .2 The office facility shall meet the following requirements:
  - .1 The field office shall be for the exclusive use of the Contract Administrator and City staff and will be used for weekly site meetings.
  - .2 The building shall be conveniently located near the Site of the Work.
  - .3 The building shall have a minimum floor area of 25 square metres, two windows and a door entrance with a suitable lock.
  - .4 The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C or 24-25°C.
  - .5 The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
  - .6 The building shall be furnished with two desks, one drafting tables, table 3m X 1.2m, one stool, one two drawer legal size filing cabinet, and a minimum of 12 chairs.
  - .7 A portable toilet shall be located near the field office building. The toilet shall have a locking door.
  - .8 The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when he/she deems it necessary.
- .3 No payment will be provided for Office Facilities. The costs associated with the Office Facilities will be considered incidental to the pay item Site Development and Restoration.

**1.3 EMERGENCY AND FIRST AID EQUIPMENT**

- .1 Provide and maintain emergency and first-aid equipment in appropriate locations on the Site. Include the following equipment and supplies:
  - .1 First-aid kit large enough to accommodate on-Site personnel.

- .2 Portable emergency eye wash.
- .3 Two 9 kg ABC type dry chemical fire extinguishers.
- .4 Blankets and towels.
- .5 Stretcher.
- .6 One hand-held emergency siren.

**1.4 INSTALLATION AND REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES**

- .1 Indicate use of supplemental or other staging area.
- .2 Provide construction facilities in order to execute work expeditiously.
- .3 Remove from Site all such work after use.

**1.5 SITE AND CONSTRUCTION ACCESS**

- .1 Refer to E4.4.1 – Site and Construction Access.

**1.6 BARRIER AND FENCING**

- .1 Refer to E4.4.2 – Safety Fence, and Section 01 56 00 – Temporary Barriers and Enclosures.

**1.7 SCAFFOLDING**

- .1 Scaffolding in accordance with CAN/CSA-S269.2.

**1.8 HOISTING**

- .1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists to be operated by qualified operator.

**1.9 SITE STORAGE/LOADING**

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.10 CONSTRUCTION PARKING**

- .1 Contractor is responsible for his own parking.
- .2 Provide and maintain adequate access to project Site.

**1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable containers for storage of tools, equipment and materials, in an area designated by Contract Administrator.

**1.12 SANITARY FACILITIES**

- .1 Provide and maintain required temporary sanitary facilities and enclosures according to OHSA.
- .2 Remove and dispose of sanitary wastes off Site on a periodic basis as required and according to Laws and Regulations.

**1.13 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Refer to Section 01 55 26 – Traffic Control

**1.14 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work Site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.

**1.15 WATER CONTROL**

- .1 Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- .2 Protect the Site from puddling or running water. Grade the Site to drain. Provide water barriers as necessary to protect the Site from soil erosion.
- .3 Prevent surface water runoff from leaving work areas.
- .4 Contain and collect wastewaters and transfer such collected wastewaters to wastewater storage tanks.
- .5 Do not discharge decontamination water, surface water runoff, or groundwater which may have come in contact with potentially contaminated material, off the Site or to municipal sewers.
- .6 Provide, operate, and maintain necessary equipment appropriately sized to keep excavations, staging pads, and other work areas free from water.
- .7 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of the pumping equipment.
- .8 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.
- .9 Control surface drainage including ensuring that gutters are kept open at all times, water is not directed across or over pavements or sidewalks except through approved pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to a suitable outlet.
- .10 Dispose of water in a manner not injurious to public health or safety, to property, or to any part of the Works completed or under construction.
- .11 Contain and collect surface water runoff from potentially contaminated materials.

**1.16 DEWATERING**

- .1 Dewater the various parts of the Works including, without limitation, open excavations and work areas.
- .2 Employ construction methods, plant, procedures, and precautions that will ensure the Works, including excavations, are stable, free from disturbance, and dry.
- .3 Dewatering Methods: Includes sheeting and shoring; groundwater control systems; surface or free water control systems employing ditches, diversions, drains, pipes, and/or pumps; and any other measures necessary to enable the whole of the Works to be carried out in the dry.
- .4 Provide sufficient and appropriate labor, plant, and equipment necessary to keep the Works free of water including standby equipment necessary to ensure continuous operation of dewatering system.

- .5 Take precautions necessary to prevent uplift of any structure or pipeline and protect excavations from flooding and damage due to surface runoff.

**1.17 EROSION AND SEDIMENT CONTROL**

- .1 Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation.
- .2 Minimize amount of soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, regrade, or otherwise develop in such a way as to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Contract Administrator.
- .3 Provide and maintain temporary measures which may include, but are not limited to silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and any other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off the Site or to other areas of the Site where damage might result or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction. Place silt fences and/or hay bales in ditches to prevent sediments from escaping from the ditch terminations.
- .4 Hay or Straw Bale:
  - .1 Wire bound or string tied.
  - .2 Securely anchored by at least two stakes or rebar driven through the bale 300 mm to 450 mm into the ground.
  - .3 Chinked (filled by wedging) with hay or straw to prevent water from escaping between the bales.
  - .4 Entrenched a minimum of 100 mm into the ground.
- .5 Silt Fence:
  - .1 An assembled, ready to install unit consisting of geotextile attached to driveable posts.
  - .2 Geotextile: Uniform in texture and appearance having no defects, flaws, or tears that would affect its physical properties. Contain sufficient ultraviolet ray inhibitor and stabilizers to provide a minimum 2-year service life from outdoor exposure.  
Product: Terrafix Terrafence, or approved alternate.
  - .3 Net Backing: Industrial polypropylene mesh joined to the geotextile at both top and bottom with double stitching of heavy-duty cord.  
Minimum Width of Netting: 760 mm.
  - .4 Posts: Sharpened wood approximately 50 mm square protruding below the bottom of geotextile to allow a minimum of 450 mm embedment.
    - a. Post Spacing: Not to exceed 2.4 m.
    - b. Securely fasten each post to the geotextile and net backing by staples suitable for such purpose.
- .6 Plan construction procedures to avoid damage to, or work or equipment encroachment onto water bodies or drainage ditch banks. In the event of damage, promptly take action to mitigate the effects of such damage. Restore the affected bank or water body to its existing condition.
- .7 Installation:

- .1 Construct temporary erosion control items in accordance with the typical sections and elevation controls shown on the Drawings. Actual alignment and/or location of the various items as directed by Contract Administrator.
  - .2 Do not construct bale barriers and silt fence in flowing streams or in swales where there is the possibility of a washout.
  - .3 Check erosion and sediment control measures weekly and after each rainfall. During prolonged rainfall, check daily.
  - .4 Bales and/or silt fence may be removed at the beginning of the work day, but shall be replaced at the end of the work day.
  - .5 Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.
  - .6 Prior to or during construction, Contract Administrator may require installation or construction of improvements to prevent or correct temporary conditions on the Site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to the specific condition. Temporary improvements shall remain in place and in operation as necessary or until otherwise directed by Contract Administrator.
  - .7 Pay close attention to the repair of damaged bales, end runs, and undercutting beneath bales.
  - .8 Unless otherwise shown on the Drawings or directed by Contract Administrator, remove temporary erosion and sediment control devices upon completion of the Works. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape the area to permit natural drainage; all to the satisfaction of Contract Administrator. Materials once removed become the property of Contractor.
  - .8 Construct fill areas by selective placement to avoid erosive surface silts or clays.
  - .9 Do not disturb existing embankments or embankment protection.
  - .10 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
  - .11 Unless specified otherwise, provide erosion and sediment control according to Province of Manitoba regulations.
  - .12 If soil and debris from the Site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where in Contract Administrator's determination it is undesirable, remove the accumulation and restore the area to its original condition.
- 1.18 DUST AND PARTICULATE CONTROL**
- .1 Refer to E3 – Environmental Protection Plan
- 1.19 NOISE CONTROL**
- .1 Refer to E3 – Environmental Protection Plan
- 1.20 POLLUTION CONTROL**
- .1 Refer to E3 – Environmental Protection Plan
- 1.21 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS**

- .1 Remove temporary utilities, equipment, facilities, materials, prior to final Application for Payment inspection.
- .2 Clean and repair damage caused by installation or use of temporary work.
- .3 Restore existing and permanent facilities used during construction to original and functional condition.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 U.S. Environmental Protection Agency (EPA) / Office of Water
  - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

**1.2 INSTALLATION AND REMOVAL**

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from Site all such work after use.

**1.3 TEMPORARY HEATING AND VENTILATION**

- .1 Provide temporary heating and ventilation as required during construction period, including attendance, maintenance and fuel.

**1.4 TEMPORARY POWER AND LIGHT**

- .1 Contractor is responsible for all power and lighting required during construction.
- .2 Provide and maintain temporary lighting throughout project.

**1.5 TEMPORARY COMMUNICATION FACILITIES**

- .1 Provide and pay for temporary telephone, fax, data hook up, necessary for own use.

**1.6 WATER SERVICES**

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

**1.7 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes and regulations.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 01 56 00 Temporary Barriers and Enclosure
- .2 Section 01 50 00 Temporary Facilities and Control

**1.2 REFERENCE STANDARDS**

- .1 Government of Manitoba
  - .1 Work Zone Traffic Control Manual (latest version)
- .2 City of Winnipeg
  - .1 Manual of Temporary Traffic Control on City Street (latest version)

**1.3 CONTROL OF PUBLIC TRAFFIC**

- .1 Further to clauses 3.6 and 3.7 of CW1130 - Site Requirements, in accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all 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.

**1.4 INFORMATIONAL AND WARNING DEVICES**

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices according to City of Winnipeg Manual of Temporary Traffic Control on City Street.
- .3 Meet with Contract Administrator prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Contract Administrator.
- .4 Continually maintain traffic control devices in use:
  - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - .2 Remove or cover signs which do not apply to conditions existing from day to day.

**1.5 TRAFFIC MANAGEMENT**

- .1 Further to clause 3.7 of CW1130 - Site Requirements:
  - .1 Maintain a minimum of one lane of traffic for the duration of the Project.
  - .2 Access to the existing gravel road used by the on-Site Contractor shall be maintained at all times while the on-Site Contractor is working.
  - .3 Pedestrian and ambulance/emergency vehicle access to the Site must be maintained at all times.

**1.6 VEHICULAR ACCESS**

- .1 Existing Access Roads:
  - .1 Reasonable use of existing on-Site roads for construction traffic is permitted subject to the following conditions:
    - .1 Do not interrupt or interfere with traffic on roads at any time.
    - .2 Comply with weight and load size restrictions where applicable.
    - .3 Tracked vehicles are not allowed on paved areas.
    - .4 Comply with Site rules and speed limits.
  - .2 Maintenance and Use:
    - .1 Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as determined by Contract Administrator; transport and place into designated area approved by Contract Administrator.
    - .2 Maintain existing paved areas used for construction; promptly remove standing water and repair breaks, potholes, low areas, and other deficiencies, to maintain paving and drainage in original or specified condition.
    - .3 Remove mud from vehicle wheels before entering public roads.
  - .3 Removal and Repair: Repair existing facilities damaged by use to original condition.
- .2 Construct and maintain temporary all-weather access roads from public thoroughfares and Site roadways to construction area at a width and load bearing capacity to provide unimpeded access for construction purposes as Contractor requires for performance of the Works.
- .3 Construct and maintain temporary bridges and culverts to span low areas and allow unimpeded drainage.
- .4 Extend and relocate temporary roads as work progress requires. Provide detours as necessary for unimpeded traffic flow.
- .5 Provide unimpeded access for emergency vehicles. Maintain sufficient width and turning space.
- .6 Provide and maintain access to fire hydrants and control valves, free of obstructions.
- .7 Remove mud from vehicle wheels before entering public roads.
- .8 Obtain Contract Administrator's prior approval for location and extent of temporary roads.
- .9 Contract Administrator may collect soil samples for chemical analyses from the traveling surfaces of constructed and existing access routes prior to, during, and upon completion of the Works. Excavate and dispose of clean soil contaminated by Contractor's activities at no additional cost to the City of Winnipeg.
- .10 Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as determined by Contract Administrator; transport and place into designated area approved by Contract Administrator. Clean access roads at least once per day.
- .11 Remove temporary access roads upon completion of the work.

**1.7 PEDESTRIAN SAFETY:**

- .1 During the Project, as directed by Contract Administrator, a temporary snow fence shall be installed around any deep excavations or similar conditions that present danger to the public. The Contractor shall be responsible for maintaining the snow fence in a proper

working condition. It is not anticipated that fencing will be required around the proposed cell excavation as long as design slopes are maintained during construction.

**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                BARRIERS**

- .1            Refer to E4 – Site Development and Restoration
- .2            Provide barriers to prevent unauthorized entry to construction areas and to protect adjacent structures from damage from Contractor's operations.
- .3            Provide protection for plant life designated to remain. Replace damaged plant life.
- .4            Protect vehicular traffic, stored materials, the Site, and structures from damage.

**1.2                FENCING**

- .1            Refer to E4 – Site Development and Restoration
- .2            Construction: Standard snow fence, minimum 1.1 m high.
- .3            Provide fence to delineate work areas.
- .4            Enforce and require that workers and visitors observe and respect the limits marked with temporary fencing.
- .5            Temporary fences shall be visible at night and in good condition.

**1.3                INSTALLATION AND REMOVAL**

- .1            Provide temporary controls in order to execute Work expeditiously.
- .2            Remove from site all such work after use.

**1.4                SECURITY**

- .1            Comply with City of Winnipeg's security procedures.
- .2            Provide security and facilities to protect the Works and the Site from unauthorized entry, vandalism, or theft. Control access to the Site at all times.
- .3            Initiate security program at time of mobilization to the Site.
- .4            Maintain security program throughout construction period until demobilization from the Site.
- .5            Maintain log of workers and visitors and make available to Contract Administrator on request. Include date, name, address, company employed by, company/person visited, time in and time out for each person, and record of deliveries and security incidents.

**1.5                ACCESS TO SITE**

- .1            Refer to E4 – Site Development and Restoration
- .2            Provide and maintain access roads, sidewalk crossings, ramps and construction roadways as may be required for access to Work.

**1.6 PUBLIC TRAFFIC FLOW**

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, or lights, as required to perform Work and protect public.

**1.7 FIRE ROUTES**

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

**1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 BASIC PRODUCT REQUIREMENTS**

- .1 Provide new materials, equipment, and articles incorporated in the Works, not damaged or defective and of the best quality (compatible with specifications) for the purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Contract Administrator based upon requirements of Contract Documents.
- .4 Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

**1.2 PRODUCT OPTIONS**

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

**1.3 PRODUCT SUBSTITUTIONS**

- .1 Document each request for substitutions with complete data substantiating compliance of proposed substitution with the Contract.
- .2 A request for substitution constitutes a representation that Contractor:
  - .1 Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
  - .2 Will provide the same warranty for the substitution as for the specified product.
  - .3 Will coordinate installation and make changes to other work which may be required for the Works to be complete at Contractor's expense and at no additional cost to City of Winnipeg.
  - .4 Waives claims for additional costs or time extension which may subsequently become apparent.
- .3 Substitutions will not be considered when they are indicated or implied on Shop Drawings or product data submittals without separate written request.
- .4 Substitution Submittal Procedure:
  - .1 Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.

- .2 Submit Shop Drawings, product data, certified test results, and other data as required by Contract Administrator attesting to proposed product equivalence. Burden of proof is on Contractor.
- .3 Contract Administrator will notify Contractor in writing of decision to accept or reject request.
- .4 Contract Administrator will be sole judge as to acceptance or rejection of Contractor's request.
- .5 In the event Contractor obtains Contract Administrator's approval for the use of product other than that shown or specified, Contractor shall, at Contractor's own expense and using methods approved by Contract Administrator, make all changes to the Works, including structures, piping, electrical, equipment, and controls that may be necessary to accommodate this product.

#### **1.4 PRODUCT DELIVERY AND HANDLING REQUIREMENTS**

- .1 Make all arrangements for transportation, delivery, and handling of products required for prosecution and completion of the Works.
- .2 Shipments of products to Contractor or Subcontractors shall be delivered to the Site only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of the Project, street number, and city. Do not deliver shipments to Contract Administrator except where otherwise directed in writing.
- .3 Provide advance notice of delivery of products to the Site as required in other Sections. Do not deliver products of any kind to the Site until approval in writing has been applied for and obtained from Contract Administrator.
- .4 Arrange delivery of products to the Site according to work sequence and in ample time to facilitate inspection prior to installation. Schedule deliveries to limit requirement for on-Site storage to the practical minimum.
- .5 Coordinate deliveries to avoid conflict with the Works and conditions at the Site and to accommodate the following:
  - .1 Work of City of Winnipeg.
  - .2 Limitations of storage space.
  - .3 Availability of equipment and personnel for handling products.
  - .4 City's use of the Site
- .6 Do not have products delivered to the Site until related Shop Drawings or Samples have been approved by Contract Administrator.
- .7 Do not have products delivered to the Site until required storage facilities have been provided.
- .8 Transport and handle products according to manufacturers' instructions.
- .9 Immediately upon delivery, inspect shipments to ensure that products comply with requirements of the Contract Documents and reviewed submittals, quantities are correct, and products are undamaged.
- .10 Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

#### **1.5 PRODUCT STORAGE AND HANDLING REQUIREMENTS**

- .1 Refer to E3 – Environmental Protection Plan.

- .2 Limit on-Site storage of products to areas shown on the Drawings or otherwise approved by Contract Administrator.
- .3 Make all arrangements and provisions necessary for storage of materials and equipment.
- .4 Place all excavated materials, construction equipment, and materials and equipment to be incorporated into the Works to prevent damage to the Works or existing structures.
- .5 Store and protect products according to manufacturers' recommendations and instructions and requirements of Specifications, with seals and labels intact and legible.
- .6 Store sensitive products in weathertight, climate-controlled enclosures. Protect products subject to ultraviolet degradation from direct exposure to sunlight.
- .7 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- .8 Provide off-Site storage and protection when the Site does not permit on-Site storage or protection.
- .9 Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.
- .10 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- .11 Furnish equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- .12 Arrange storage of products to permit easy access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- .13 Store materials and equipment neatly and compactly, and in locations that will cause a minimum of inconvenience to City of Winnipeg.
- .14 Protect delivered products from contamination or damage.
- .15 Do not use lawns, grass plots, or other private property for storage purposes without written permission of Contract Administrator or other person in possession or control of such premises.
- .16 Contractor shall be fully responsible for loss or damage to stored products, materials, and equipment.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1           General**

**1.1           COORDINATION**

- .1 Do not deliver material or equipment of any kind to the Site until approval in writing has been applied for and obtained by Contractor from Contract Administrator.
- .2 Coordinate delivery of material and equipment to the Site with work sequence; schedule deliveries to limit requirement for storage at the Site to the practical minimum; limit on-Site storage of materials to areas approved by Contract Administrator.
- .3 Coordinate scheduling, submittals, and work of the various Sections of the Project Specifications and other requirements of the Contract Documents to assure efficient and orderly sequence of the Works.
- .4 Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such elements.
- .5 Coordinate completion and cleanup of work of separate Sections in preparation for Substantial Performance. Refer to Section 01 74 11- Cleaning.
- .6 After City of Winnipeg's occupancy of the Site or premises, coordinate access to the Site for correction of defective work and work not according to the Contract Documents, to minimize disruption of City of Winnipeg's activities. Refer to Section 01 74 11 - Cleaning.

**1.2           PERMITS**

- .1 Contractor to obtain and pay for all permits, licenses, certificates, and governmental inspections required for the performance of the Works in force at the Tender closing date.
- .2 Give all required notices and comply with all local, provincial, and federal laws, ordinances, rules, regulations, codes, and orders relating to the Works, which are, or become, in force during the performance of the Works.

**1.3           EXAMINATION**

- .1 Refer to General Conditions C3 – Declarations.

**1.4           FIELD SURVEYING**

- .1 Unless otherwise specified, Contract Administrator will establish reference bench marks and base lines adjacent to the Works. Contractor shall be responsible for laying out the Works from established reference points.
- .2 Verify locations of survey control points prior to starting work. Promptly notify Contract Administrator of any discrepancies discovered.
- .3 Notify Contract Administrator in writing at least 5 working days in advance of commencing work on any part of the construction to enable Contract Administrator to establish bench marks and base lines.
- .4 Locate, preserve, and protect survey control and reference points as set or established by Contract Administrator. Promptly report to Contract Administrator the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Make good any errors entering into the Works through Contractor failure to notify Contract Administrator concerning lack of preservation of such survey reference points. Accurately replace or relocate dislocated reference or survey control points based on original survey control by professionally qualified personnel. Make no changes without prior written notice to and approval from Contract Administrator.

- .5 Develop and make such additional detailed surveys as are needed for construction, such as bench marks, slope stakes, batterboards, stakes for establishing the design elevations of excavations and final grades, and other working points, lines, and elevations. Maintain bench marks and base lines established by Contract Administrator, existing property boundaries, lines and grade hubs, and other references and construction or survey points.
  - .6 Contract Administrator may, at any time, check Contractor's survey and layout work but this shall not relieve Contractor of responsibility to carry out the Works to the lines and grades as set out according to the Drawings and the Project Specifications or as otherwise necessary for performance of the Works according to the Contract Documents.
  - .7 Provide reasonable and necessary opportunities and facilities for setting points and making measurements during construction.
  - .8 Maintain a complete and accurate log of control and survey work as it progresses.
  - .9 Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
  - .10 As a minimum, Contractor must carry out and submit to the Contract Administrator topographical survey information at the following stages:
    - .1 Cell 31 construction
      - .1 Prior to commencing excavation to determine existing conditions and elevations
      - .2 Final grades of Granular Drainage Blanket
      - .3 Substantial completion of work
    - .2 Leachate Collection System
      - .1 Prior to commencing work to determine existing conditions and elevations
      - .2 Final grades of Area C – Storage Tank components (road works, drainage works, reinforced concrete pad for leachate truck, base prep for Leachate Tanks and Secondary Containment)
      - .3 Final rim elevation of manholes and related appurtenances.
      - .4 Substantial completion of work
  - .11 Measurement and Payment for the surveys will be made on a lump sum basis according to Form B-Prices and will be paid upon completion of all surveying works, as approved by Contract Administrator.
- 1.5 PROGRESS CLEANING**
- .1 Refer to Section 01 74 11 – Cleaning.
- 1.6 FINAL CLEANING**
- .1 Refer to Section 01 74 11 – Cleaning.
- 1.7 REMOVAL AND DISPOSAL**
- .1 Refer to E3 – Environmental Protection Plan.
- 1.8 ADJUSTING**
- .1 Adjust operating products and equipment to ensure smooth and unhindered operation.

**1.9 PROTECTION OF INSTALLED WORK**

- .1 Protect installed work and provide special protection where specified in individual Sections.
- .2 Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- .3 Maintenance of Flow: Maintain the flow of water in the water distribution system and in existing sewers, drains, and watercourses. In the event that any emergency or situation should arise which requires interruption of normal operation of any existing systems, restore normal operation as soon as possible even though permission for such planned shutdown was obtained.
- .4 Flotation: Take necessary precautions against the flotation of any structures during construction. Make good any damage caused by flotation.

**1.10 DEMOBILIZATION**

- .1 Remove all Contractor plant, equipment, temporary utilities and material from the Site upon completion of the Project.
- .2 Remove and dispose of all debris resulting from Work to the satisfaction of Contract Administrator.
- .3 Refer to E4 – Site Development and Restoration.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                PROJECT CLEANLINESS**

- .1        Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2        Remove waste materials from Site at scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on Site.
- .3        Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4        Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5        Provide on-Site containers for collection of waste materials and debris.
- .6        Provide and use marked separate bins for recycling.
- .7        Dispose of waste materials and debris off Site.
- .8        Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9        Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10      Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11      Refer to E3 – Environmental Protection Plan.

**1.2                PROGRESS CLEANING**

- .1        Execute cleaning during progress of the Works and as required by the General Conditions.
- .2        Requirements of Regulatory Agencies:
  - .1        In addition to the requirements herein, maintain the cleanliness of the Works and surrounding premises within the Works limits to comply with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.
  - .2        Comply with all federal, provincial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.
- .3        Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials on or within the Works or on the premises surrounding the Works. Contractor to pay for waste disposal.
- .4        Provide regular cleaning and maintenance of Site trailers, sanitary facilities, roads used under the Contract and City of Winnipeg facilities approved for use by Contractor, as directed by Contract Administrator.
- .5        Refer to E3 – Environmental Protection Plan.

**1.3 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris.
- .5 Remove waste materials from Site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on Site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .14 Remove dirt and other disfiguration from exterior surfaces.
- .15 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .16 Sweep and wash clean paved areas.
- .17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .18 Clean roofs, downspouts, and drainage systems.
- .19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .20 Remove snow and ice from access to the site.
- .21 Refer to E3 – Environmental Protection Plan.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

.1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned with Contract Administrator's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Two weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, three final copies of operation and maintenance manuals in English.
- .6 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or non-defective, and of same quality and manufacture as products provided in Work.
- .7 Furnish evidence, if requested, for type, source and quality of products provided.
- .8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .9 Pay costs of transportation.

**1.2 FORMAT**

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

**1.3 CONTENTS - EACH VOLUME**

- .1 Table of Contents: provide title of project; Date of submission; names.
  - .1 Addresses, and telephone numbers of Contract Administrator and Contractor with name of responsible parties.
  - .2 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
  - .1 List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure.
- .6 Training: refer to Section 01 79 00 - Demonstration and Training.

#### **1.4 AS-BUILTS AND SAMPLES**

- .1 Maintain, in addition to requirements in General Conditions, at Site for Contract Administrator one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to Contract.
  - .5 Reviewed shop drawings, product data, and samples. Field test records.
  - .6 Inspection certificates.
  - .7 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Contract Administrator.

#### **1.5 RECORDING ACTUAL SITE CONDITIONS**

- .1 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - .2 Field changes of dimension and detail.
  - .3 Changes made by change orders.
  - .4 Details not on original Contract Drawings.
  - .5 References to related shop drawings and modifications.
- .4 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.

- .5 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

## **1.6 EQUIPMENT AND SYSTEMS**

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Additional requirements: as specified in individual specification sections.

## **1.7 MATERIALS AND FINISHES**

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

## **1.8 SPARE PARTS**

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to Site; place and store.

- .4 Receive and catalogue items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

**1.9 MAINTENANCE MATERIALS**

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to Site; place and store.
- .4 Receive and catalogue items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

**1.10 SPECIAL TOOLS**

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to Site; place and store. Receive and catalogue items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual.

**1.11 STORAGE, HANDLING AND PROTECTION**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and to satisfaction of Contract Administrator.
- .6 Refer to E3 – Environmental Protection Plan.

**1.12 OPERATION AND MAINTENANCE DATA**

- .1 Submit data bound in 216 mm by 279 mm text pages, binders with durable plastic covers.
- .2 Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of Project.
- .3 Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titling clearly printed under reinforced laminated plastic tabs.
- .4 Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on 14 kg white paper, in three parts as follows:
  - .1 Part 1: Directory, listing names, addresses, and telephone numbers of Contract Administrator, Contractor, Subcontractors, and major equipment Suppliers.
  - .2 Maintenance instructions for equipment and systems.
  - .3 Part 2: Project documents and certificates, including the following:
    - .1 Shop Drawings and product data.
    - .2 Air and water balance reports.

- .3 Certificates.
- .4 Photocopies of warranties and bonds.
- .5 Submit one draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Contract Administrator's comments. Revise content of all document sets as required prior to final submission.
- .6 Submit two sets of revised final volumes within 10 days after final inspection.

**1.13 WARRANTIES**

- .1 Refer to C13 – Warranty, and D24 – Warranty.
- .2 Develop warranty management plan to contain information relevant to Warranties.
- .3 Submit warranty management plan, 30 days before planned pre-warranty conference, to Contract Administrator approval.
- .4 Warranty management plan to include required actions and documents to assure that Contract Administrator receives warranties to which it is entitled.
- .5 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .6 Submit, warranty information made available during construction phase, to Contract Administrator for approval prior to each monthly pay estimate.
- .7 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:
  - .1 Separate each warranty with index tab sheets keyed to Table of Contents listing.
  - .2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .8 Obtain warranties, executed in duplicate by Subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .9 Verify that documents are in proper form, contain full information, and are notarized.
- .10 Co-execute submittals when required.
- .11 Retain warranties until time specified for submittal.
- .12 Except for items put into use with Contract Administrator's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .13 Include information contained in warranty management plan as follows:
  - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, Subcontractors, manufacturers or suppliers involved.
  - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.
    - .3 Location where installed.
    - .4 Name and phone numbers of manufacturers or suppliers.
    - .5 Names, addresses and telephone numbers of sources of spare parts.
    - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
  - .7 Cross-reference to warranty certificates as applicable.

- .8 Starting point and duration of warranty period.
- .9 Summary of maintenance procedures required to continue warranty in force.
- .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
- .11 Organization, names and phone numbers of persons to call for warranty service.
- .12 Typical response time and repair time expected for various warranted equipment.
- .3 Procedure and status of tagging of equipment covered by extended warranties.
- .4 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .14 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- .15 Written verification will follow oral instructions. Failure to respond will be cause for the Contract Administrator to proceed with action against Contractor.

**1.14 WARRANTY TAGS**

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Contract Administrator.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
  - .1 Type of product/material.
  - .2 Model number.
  - .3 Serial number.
  - .4 Contract number.
  - .5 Warranty period.
  - .6 Inspector's signature.
  - .7 Construction Contractor.
  - .8 Installation Date:

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1     Demonstrate scheduled operation and maintenance of equipment and systems to Contract Administrator's personnel two weeks prior to date of final inspection.
- .2     Contractor shall submit the course contents to Contract Administrator's review minimum of 2 weeks prior to the training session. Contractor shall incorporate all comments from the Contract Administrator and submit the finalized course content at least two weeks prior to first training session.
- .3     Contract Administrator will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

**1.2                QUALITY CONTROL**

- .1     When specified in individual Sections require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Contract Administrator's personnel, and provide written report that demonstration and instructions have been completed.

**1.3                SUBMITTALS**

- .1     Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2     Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Contract Administrator's approval. Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .3     Give time and date of each demonstration, with list of persons present.

**1.4                CONDITIONS FOR DEMONSTRATIONS**

- .1     Equipment has been inspected and put into operation.
- .2     Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

**1.5                PREPARATION**

- .1     Verify that conditions for demonstration and instructions comply with requirements.
- .2     Verify that designated personnel are present.

**1.6                DEMONSTRATION AND INSTRUCTIONS**

- .1     Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.
- .2     Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
- .3     Review contents of manual in detail to explain aspects of operation and maintenance.
- .4     Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

**1.7                TIME ALLOCATED FOR INSTRUCTIONS**

- .1     For each training session, allow full 8 hour day for instruction and training.
-

**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

---

**Part 1 General**

**1.1 SUMMARY**

- .1 Acronyms:
  - .1 Cx - Commissioning.
  - .2 O&M - Operation and Maintenance.
  - .3 PI - Product Information.
  - .4 PV - Performance Verification.
  - .5 TAB - Testing, Adjusting and Balancing.

**1.2 COMMISSIONING PLAN**

- .1 Comprehensive commissioning plan shall be provided by Contractor for the review of Contract Administrator minimum of two weeks prior to commissioning. The commissioning plan shall detail list of actions to be carried out on each day of commissioning period. The commissioning plan shall include a schedule that would indicate the dates of commissioning. It shall also include commissioning forms to be filled out by the contractor to record and document the results of commissioning procedures. Commissioning forms are to be developed by Contractor with input from Contract Administrator.

**1.3 GENERAL**

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
  - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
  - .2 Effectively train O&M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
  - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
  - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

**1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS**

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Contract Administrator, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

## **1.5 PRE-CX REVIEW**

- .1 Before Construction:
  - .1 Review contract documents, confirm by writing to Contract Administrator.
    - .1 Adequacy of provisions for Cx.
    - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
  - .1 Co-ordinate provision, location and installation of provisions for Cx.
- .3 Before start of Cx:
  - .1 Have completed Cx Plan up-to-date.
  - .2 Ensure installation of related components, equipment, sub-systems, systems is complete.
  - .3 Fully understand Cx requirements and procedures.
  - .4 Have Cx documentation shelf-ready.
  - .5 Understand completely design criteria and intent and special features.
  - .6 Submit complete start-up documentation to Contract Administrator.
  - .7 Have Cx schedules up-to-date.
  - .8 Ensure systems have been cleaned thoroughly.
  - .9 Complete TAB procedures on systems, submit TAB reports to Contract Administrator for review and approval.
  - .10 Ensure "As-Built" system schematics are available.
- .4 Inform Contract Administrator in writing of discrepancies and deficiencies on finished works.

## **1.6 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

## **1.7 COMMISSIONING DOCUMENTATION**

- .1 Contract Administrator to review and approve Cx documentation.
- .2 Provide completed and approved Cx documentation to Contract Administrator.

## **1.8 STARTING AND TESTING**

- .1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

## **1.9 WITNESSING OF STARTING AND TESTING**

- .1 Provide 14 days' notice prior to commencement.
- .2 Contract Administrator representative to witness of start-up and testing.

## **1.10 MANUFACTURER'S INVOLVEMENT**

- .1 Factory testing: manufacturer to:
  - .1 Coordinate time and location of testing.
  - .2 Provide testing documentation for approval by Contract Administrator.
  - .3 Obtain written approval of test results and documentation from Contract Administrator before delivery to Site.

- .2 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Contract Administrator.
  - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
  - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .3 Integrity of warranties:
  - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
  - .2 Verify with manufacturer that testing as specified will not void warranties.
- .4 Qualifications of manufacturer's personnel:
  - .1 Experienced in design, installation and operation of equipment and systems.
  - .2 Ability to interpret test results accurately.
  - .3 To report results in clear, concise, logical manner.

#### **1.11 PROCEDURES**

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
  - .1 Included in delivery and installation:
    - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
    - .2 Visual inspection of quality of installation.
  - .2 Start-up: follow accepted start-up procedures.
  - .3 Operational testing: document equipment performance.
  - .4 System PV: include repetition of tests after correcting deficiencies.
  - .5 Post-substantial performance verification: to include fine-tuning.
- .3 Correct deficiencies and obtain approval from Contract Administrator after distinct phases have been completed and before commencing next phase.
- .4 Document required tests on approved PV forms.

#### **1.12 START-UP DOCUMENTATION**

- .1 Assemble start-up documentation and submit to Contract Administrator for approval before commencement of commissioning.
- .2 Start-up documentation to include:
  - .1 Factory and on-Site test certificates for specified equipment.
  - .2 Pre-start-up inspection reports.
  - .3 Signed installation/start-up check lists.
  - .4 Start-up reports,
  - .5 Step-by-step description of complete start-up procedures, to permit Contract Administrator to repeat start-up at any time.

#### **1.13 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS**

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit Contract Administrator for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

**1.14 TEST RESULTS**

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

**1.15 START OF COMMISSIONING**

- .1 Start Cx after elements of the facility affecting start-up and performance verification of systems have been completed.

**1.16 INSTRUMENTS / EQUIPMENT**

- .1 Provide the following equipment as required:
  - .1 2-way radios.
  - .2 Ladders.
  - .3 Equipment as required to complete work.

**1.17 COMMISSIONING PERFORMANCE VERIFICATION**

- .1 Carry out Cx:
  - .1 Under accepted simulated operating conditions, over entire operating range, in all modes.
  - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 EMCS trending to be available as supporting documentation for performance verification.

**1.18 WITNESSING COMMISSIONING**

- .1 Contract Administrator representative to witness activities and verify results.

**1.19 AUTHORITIES HAVING JURISDICTION**

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .3 Provide copies to Contract Administrator within 5 days of test and with Cx report.

**1.20 REPEAT VERIFICATIONS**

- .1 Assume costs incurred by Contract Administrator for third and subsequent verifications where:
  - .1 Verification of reported results fail to receive Contract Administrator's approval.
  - .2 Repetition of second verification again fails to receive approval.
  - .3 Contract Administrator deems Contractor's request for second verification was premature.

**1.21 DEFICIENCIES, FAULTS, DEFECTS**

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Contract Administrator.
- .2 Report problems, faults or defects affecting Cx to Contract Administrator in writing. Stop Cx until problems are rectified. Proceed with written approval from Contract Administrator.

**1.22 COMPLETION OF COMMISSIONING**

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Contract Administrator.

**1.23 ACTIVITIES UPON COMPLETION OF COMMISSIONING**

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

**1.24 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS**

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

**1.25 OCCUPANCY**

- .1 Cooperate fully with Contract Administrator during stages of acceptance and occupancy of facility.

**1.26 INSTALLED INSTRUMENTATION**

- .1 Use instruments installed under Contract for TAB and PV if:
  - .1 Accuracy complies with these specifications.
  - .2 Calibration certificates have been deposited with Contract Administrator.

**1.27 PERFORMANCE VERIFICATION TOLERANCES**

- .1 Application tolerances:
  - .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within +/- 10 of specified values.
- .2 Instrument accuracy tolerances:

- .1 To be of higher order of magnitude than equipment or system being tested.
- .3 Measurement tolerances during verification:
  - .1 Unless otherwise specified actual values to be within +/- 2% of recorded values.

**1.28 PERFORMANCE TESTING**

- .1 Performance testing of equipment or system by Contract Administrator will not relieve Contractor from compliance with specified start-up and testing procedures.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .2 Province of Manitoba
  - .1 The Workers Compensation Act RSM 1987 - Updated 2006.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of Site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for Site tasks and operation found in Work plan.
- .3 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .4 On-Site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

**1.3 SAFETY ASSESSMENT**

- .1 Perform Site specific safety hazard assessment related to project.

**1.4 GENERAL REQUIREMENTS**

- .1 Develop written Site-specific Health and Safety Plan based on hazard assessment prior to beginning Site Work and continue to implement, maintain, and enforce plan until final demobilization from Site. Health and Safety Plan must address project specifications.

**1.5 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on Site, safety of property on Site and for protection of persons adjacent to Site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with Site-specific Health and Safety Plan.

**1.6 COMPLIANCE REQUIREMENTS**

- .1 Comply with The Workers Compensation Act, Workplace Safety Regulation.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

**1.7 UNFORSEEN HAZARDS**

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in

accordance with Acts and Regulations of Province having jurisdiction and advise Contract Administrator verbally and in writing.

### **1.8 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have a working knowledge of occupational safety and health regulations.
  - .2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter Site to perform Work.
  - .3 Be responsible for implementing, enforcing daily and monitoring Site-specific Contractor's Health and Safety Plan.

### **1.9 POSTING OF DOCUMENTS**

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Site in accordance with Acts and Regulations of Province having jurisdiction.

### **1.10 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction.

### **1.11 WORK STOPPAGE**

- .1 Give precedence to safety and health of public and Site personnel and protection of environment over cost and schedule considerations for Work.

### **1.12 DANGEROUS WORK CONDITIONS**

- .1 Further to clause C 6.24 of the General Conditions, the Contractor shall be aware that underground chambers, manholes, and sewers are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.
- .2 The Contractor shall be aware of the potential hazards that can be encountered in gate chambers, manholes and sewers such as explosive gases, toxic gases and oxygen deficiency.
- .3 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.
- .4 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes and shafts as required and approved by the Manitoba Workplace Safety and Health Act (the "Act"). If no ventilation is supplied, a Worker must wear a respirator or supplied air to enter the confined space.
- .5 Workers must wear a respirator or supplied air at all times when entering a chamber, manhole or sewer where live sewage is present.
- .6 The Contractor shall provide a photoionization detector (PID) on Site at all times to monitor potential hydrocarbon vapours in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his use during inspections. In addition, the Contract Administrator shall collect discrete air samples for laboratory analysis.

- .7 The Contract Administrator may issue a Stop Work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the Stop Work order for not following these safety guidelines.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**