

**Part 1            General**

**1.1                WORK COVERED BY CONTRACT DOCUMENTS**

- .1            Work to be done under the Contract shall consist of exterior concrete wall repairs and the supply and installation of a new exterior mandoor in the existing tank room.

**1.2                CONTRACT METHOD**

- .1            Construct Work under the City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity.

**1.3                AND CODES**

- .1            Perform Work in accordance with the National Building Code of Canada (NBC) including all amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2            Meet or exceed requirements of contract documents, specifications, as specified standards, codes and referenced documents, latest editions.

**1.4                SEQUENCE**

- .1            Co-ordinate Progress Schedule and co-ordinate with City of Winnipeg Occupancy during construction.

**1.5                CONTRACTOR USE OF PREMISES**

- .1            use of immediate construction area until Substantial Performance.
- .2            Limit use of premises for Work, for storage, and for access, to allow:
  - .1            City of Winnipeg occupancy of adjacent areas.
  - .2            Continuous use of tank room during construction.
- .3            Co-ordinate use of premises under direction of Contract Administrator.
- .4            Obtain and pay for use of additional storage or Work areas needed for operations under this Contract.
- .5            Remove or alter existing work to prevent injury or damage to portions of existing Work which remain.
- .6            Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Contract Administrator.
- .7            At completion of operations condition of existing work: equal to or better than that which existed before new Work started.

**1.6                CITY OF WINNIPEG OCCUPANCY**

- .1            City of Winnipeg will occupy premises during entire construction period for execution of normal operations.

- .2 Co-operate with City of Winnipeg in scheduling operations to minimize conflict and to facilitate City of Winnipeg usage.

**1.7 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute Work with least possible interference or disturbance to building operations, occupants, and normal use of premises. Arrange with Contract Administrator to facilitate execution of Work.

**1.8 EXISTING SERVICES**

- .1 Notify City of Winnipeg and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves connecting to existing services, give City of Winnipeg minimum 48 hours notice for necessary interruption of mechanical or electrical service throughout course of Work. Minimize duration of interruptions.
- .3 Where unknown services and/or embedded electrical conduit are encountered, immediately advise Contract Administrator and confirm findings in writing.
- .4 Protect, relocate or maintain existing active services.

**1.9 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 Change Orders.
  - .6 Other Modifications to Contract.
  - .7 Field Test Reports.
  - .8 Copy of Approved Work Schedule.
  - .9 Health and Safety Plan and Other Safety Related Documents including:
    - .1 Material data sheets (MSDS) on all products used in Project.
  - .10 Other documents as specified.

**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            RELATED SECTIONS**

- .1            Section 01 11 00 – Summary of Work.

**1.2            ACCESS AND EGRESS**

- .1            Design, construct and maintain temporary "access to" and "egress from" Work areas, in accordance with relevant municipal, provincial and other regulations.

**1.3            USE OF SITE AND FACILITIES**

- .1            Execute Work with least possible interference or disturbance to normal use of premises. Make arrangements with Contract Administrator to facilitate Work as stated.
- .2            Maintain existing services to building and provide for personnel and vehicle access.
- .3            Where security is reduced by Work provide temporary means to maintain security.
- .4            Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5            Keep within limits of Work and avenues of ingress and egress.

**1.4            WORKING HOURS**

- .1            Working hours for concrete demolition will be restricted to between 2:30 p.m. and 7:00 a.m. (i.e. late afternoon to early morning is acceptable).
- .2            Working hours for all other Work processes will not be restricted.
- .3            The City of Winnipeg Noise Control By-Law No. 2480/79.

**1.5            BUILDING SMOKING ENVIRONMENT**

- .1            Smoking is not allowed.

**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        Submit to Contract Administrator submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. 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.
- .2        Do not proceed with Work affected by submittal until review is complete.
- .3        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.
- .4        Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .5        Verify field measurements and affected adjacent Work are co-ordinated.
- .6        Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- .7        Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator review.
- .8        Keep one reviewed copy of each submission on site.

**1.2                SHOP DRAWINGS AND PRODUCT DATA**

- .1        The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2        Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Manitoba, Canada.
- .3        Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4        Allow 5 working days for Contract Administrator's review of each submission.
- .5        Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.

- .6 Make changes in shop drawings as Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify Contract Administrator in writing of revisions other than those requested.
- .7 After Contract Administrator's review, distribute copies.
- .8 Submit one hard or electronic copy of shop drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.
- .9 Submit hard or electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.
- .10 Delete information not applicable to project.
- .11 Supplement standard information to provide details applicable to project.
- .12 If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

**1.3 MOCK-UPS**

- .1 Erect mock-ups in accordance with Section 01 45 00 - Quality Control.

**1.4 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

**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        Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2        Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1        Material Safety Data Sheets (MSDS).
- .3        Province of Manitoba
  - .1        The Workers Compensation Act RSM 1987 - Updated 2006.
  - .2        Manitoba Regulation 217/2006 – Workplace Safety and Health Regulation.

**1.2                SUBMITTALS**

- .1        Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Submit copies of incident and accident reports.
- .3        Submit WHMIS MSDS - Material Safety Data Sheets on all products used in conjunction with the Work.
- .4        W.H.I.M.I.S. Training: Provide copies of valid certification/training for all employees (regular or temporary) including all subcontractors.
  - .1        All individuals involved in the application of any product shall meet all WHMIS/provincial standards safety/protection requirements at all times.

**1.3                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.

**1.4                PERSONAL PROTECTIVE EQUIPMENT (PPE)**

- .1        All employees (regular or temporary) of contractor and subcontractors shall wear PPE in accordance with Manitoba Regulation 217/2006.
- .2        Fall Protection: Provide fall protection in accordance with Manitoba Regulation 217/2006.

**1.5                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.



**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            City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity

**1.2                INSPECTION**

- .1            Allow Contract Administrator access to Work. If part of Work is in preparation at locations other than place of Work, allow access to such Work whenever it is in progress.
- .2            Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Contract Administrator instructions, or law of Place of Work.
- .3            If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4            Contract Administrator will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such Work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

**1.3                INDEPENDENT INSPECTION AGENCIES**

- .1            Independent Inspection/Testing Agencies will be engaged for purpose of inspecting and/or testing portions of Work. Cost of such services will be paid by the Contractor via the testing cash allowance.
- .2            Allocated costs: to be paid for by City of Winnipeg.
- .3            Provide equipment required for executing inspection and testing by appointed agencies.
- .4            Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .5            If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Contract Administrator at no cost to City of Winnipeg. Pay costs for retesting and reinspection.

**1.4                ACCESS TO WORK**

- .1            Allow inspection/testing agencies access to Work.
- .2            Co-operate to provide reasonable facilities for such access.

**1.5                PROCEDURES**

- .1            Notify appropriate agency in advance of requirement for tests, in order that attendance arrangements can be made.

- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

#### **1.6 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Contract Administrator as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of the Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, City of Winnipeg will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Contract Administrator.

#### **1.7 REPORTS**

- .1 Submit copies of inspection and test reports to City of Winnipeg and Contract Administrator.
- .2 Provide copies to subcontractor of Work being inspected or tested [manufacturer or fabricator of material being inspected or tested].
- .3 Provide copies of concrete test results to Concrete Supplier.

#### **1.8 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Contract Administrator and may be authorized as recoverable.

#### **1.9 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Contract Administrator and as specified in specific Section.
- .3 Prepare mock-ups for Contract Administrator's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups 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.

.5 -ups may remain as part of Work.

**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                INSTALLATION AND REMOVAL**

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

**1.2                WATER SUPPLY**

- .1     The City of Winnipeg will make available, for the extent that it is available, a supply of potable water for construction use at no charge to the Contractor.
- .2     Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .3     The Contractor shall provide all necessary hoses, lines, connections, and other ancillary hardware which may be required.
- .4     The services are to be returned to their original condition at the temporary locations, or left in an altered condition only as approved by the City of Winnipeg.

**1.3                TEMPORARY HEATING AND VENTILATION**

- .1     Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2     Construction heaters used inside building must be vented to outside or be flameless type. Solid fuel salamanders are not permitted.
- .3     Provide temporary heat and ventilation in enclosed areas as required to:
  - .1     Facilitate progress of Work.
  - .2     Protect Work and products against dampness and cold.
  - .3     Prevent moisture condensation on surfaces.
  - .4     Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
  - .5     Provide adequate ventilation to meet health regulations for safe working environment.
- .4     Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.
- .5     Ventilating:
  - .1     Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2     Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3     Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
  - .4     Ventilate storage spaces containing hazardous or volatile materials.

- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of Work process to assure removal of harmful contaminants.
- .6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.
  - .5 Vent direct-fired combustion units to outside.
- .7 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

**1.4 TEMPORARY POWER AND LIGHT**

- .1 The City of Winnipeg will make available, for the extent that it is available, temporary power during construction for temporary lighting and operating of power tools to a maximum supply of 120 volts 30 amps.
- .2 Connect to existing power supply via existing electrical outlets.
- .3 Temporary power for equipment requiring in excess of that available on-site is responsibility of the Contractor.
- .4 Provide and maintain temporary lighting as required throughout project.

**1.5 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .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**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCES**

- .1            City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity.
- .2            Canadian Standards Association (CSA International)
  - .1            CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2            CSA O121-08, Douglas Fir Plywood.

**1.2                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.

**1.3                CONSTRUCTION PARKING**

- .1            will be permitted on site provided it does not interfere with normal operations, access by tenants or the public, or disrupt performance of Work.

**1.4                EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1            Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2            Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with Work activities.

**1.5                SANITARY FACILITIES**

- .1            The Contractor may use on-site facilities for the duration of the project. The facilities must be maintained in a neat condition or use will be revoked.

**1.6                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.
- .3            Store materials resulting from demolition activities that are salvageable.
- .4            Stack stored new or salvaged material not in construction facilities.

**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                INSTALLATION AND REMOVAL**

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

**1.2                HOARDING**

- .1        Contractor must barricade off the area under construction to prevent the general public from improper access to the construction area. Suitable barricades and protection systems include:
  - .1        For wall repair area:
    - .1        Stanchions with a minimum of three (3) horizontal bands of fluorescent warning tape and/or snow fencing around perimeter of work area. Spacing of stanchions not to exceed 20'.
  - .2        For new door opening prior to completed door installation:
    - .1        Erect temporary site enclosures using 38 x 89 mm construction grade lumber framing at 600] mm centres and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121.
- .2        Repair surface coatings and/or finishes which are damaged by temporary hoardings and barricades.
- .3        Provide adequate signage, fencing, etc. to inform the public of the Work being undertaken.

**1.3                ENCLOSURES**

- .1        Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2        Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3        Design enclosures to withstand wind pressure.

**1.4                TIGHT SCREENS**

- .1        Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2        Maintain and relocate protection until such work is complete.

**1.5                FIRE ROUTES**

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

**1.6 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.

**1.7 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Be responsible for damage incurred due to lack of or improper protection.

**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            City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity.
- .2            Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3            Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.
- .4            If there is question as to whether products or systems are in conformance with applicable standards, Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.
- .5            The Cost for such testing will be borne by the Contractor.

**1.2                QUALITY**

- .1            Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2            Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of Work.
- .3            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.
- .4            Should disputes arise as to quality or fitness of products, decision rests strictly with Contract Administrator based upon requirements of Contract Documents.
- .5            Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6            Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

**1.3                AVAILABILITY**

- .1            Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Contract Administrator of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

- .2 In event of failure to notify Contract Administrator at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Contract Administrator reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

#### **1.4 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Contract Administrator.
- .9 Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.5 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.

#### **1.6 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Contract Administrator in writing, of conflicts between specifications and manufacturer's instructions, so that Contract Administrator will establish course of action. Where conflicts exist, the more stringent instruction will be enforced.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

**1.7 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contract Administrator if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Contract Administrator reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contract Administrator, whose decision is final.

**1.8 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

**1.9 REMEDIAL WORK**

- .1 Perform remedial Work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

**1.10 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Contract Administrator.

**1.11 EXISTING UTILITIES**

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

**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            City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity.

**1.2                PROJECT CLEANLINESS**

- .1            Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by City of Winnipeg or other Contractors.
- .2            Remove waste materials from site at daily regularly scheduled times. Do not burn waste materials on site.
- .3            Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4            Provide on-site containers for collection of waste materials and debris.
- .5            Dispose of waste materials and debris off site.
- .6            Clean interior areas prior to start of finishing Work, and maintain areas free of dust and other contaminants during finishing operations.
- .7            Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8            Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9            Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10          Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**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 other than that caused by City of Winnipeg or other Contractors.

- .5 Remove waste materials from site at regularly scheduled times. 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 Remove stains, spots, marks and dirt from existing surfaces, fixtures, and finishes within the Work area or affected by the affected by the Work.
- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Sweep and power wash clean all Work areas.

**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        City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity.

**1.2            ADMINISTRATIVE REQUIREMENTS**

- .1        Acceptance of Work Procedures:
  - .1        Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1        Notify Contract Administrator in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2        Request Contract Administrator's inspection.
  - .2        Contract Administrator's Inspection:
    - .1        Contract Administrator and Contractor to inspect Work and identify defects and deficiencies.
    - .2        Contractor to correct Work as directed.
  - .3        Completion Tasks: submit written certificates that tasks have been performed as follows:
    - .1        Work: completed and inspected for compliance with Contract Documents.
    - .2        Defects: corrected and deficiencies completed.
    - .3        Work: complete and ready for final inspection.
  - .4        Final Inspection:
    - .1        When completion tasks are done, request final inspection of Work by Contract Administrator, and Contractor.
    - .2        When Work incomplete according to Contract Administrator, complete outstanding items and request re-inspection.
  - .5        Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6        Commencement of Lien and Warranty Periods: date of City of Winnipeg's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
  - .7        Final Payment:
    - .1        When Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
    - .2        Refer to City of Winnipeg General Conditions as identified in Section C of the Bid Opportunity.
  - .8        Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

**1.3 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
- .1 Remove surplus materials, excess materials, rubbish, tools 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**

## 1. GENERAL

### 1.1 Section Includes

- .1 Structural steel work in this section includes structural sections indicated on drawings.

### 1.2 References

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA G40.20/G40.21 98, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CAN/CSA S16 01, Limit States Design of Steel Structures.
  - .3 CSA W47.1 92(R2001), Certification of Companies for Fusion Welding of Steel Structures.
  - .4 CSA W48 01, Filler Metals and Allied Materials for Metal Arc Welding.
  - .5 CSA W55.3 1965(R1998), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
  - .6 CSA W59 M1989(R2001), Welded Steel Construction (Metal Arc Welding).
- .2 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A307 [00], Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
  - .2 ASTM A325 02, Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- .3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA).
  - .1 CISC/CPMA 1 73b, Quick Drying, One Coat Paint for Use on Structural Steel.
  - .2 CISC/CPMA 2 75, Quick Drying, Primer for use on Structural Steel.
- .4 The Society for Protective Coatings (SSPC)
  - .1 SSPC SP 6/NACE No. 3 00, Commercial Blast Cleaning.

### 1.3 Measurement Procedures

- .1 No measurement will be made for work under this section.

### 1.4 SHOP DRAWINGS

- .1 Submit shop drawings including fabrication and erection documents and materials list in accordance with Section 01 33 00 Submittal Procedures.
- .2 Erection drawings: indicate details and information necessary for assembly and erection purposes including:
  - .1 Description of methods.
  - .2 Sequence of erection.
  - .3 Type of equipment used in erection.
  - .4 Temporary bracings.
- .3 Ensure Fabricator drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the province of Manitoba, Canada.

## 2. PRODUCTS

### 2.1 Materials

- .1 Structural steel: to CAN/CSA G40.20/G40.21 Grade 300W.

- .2 Anchor bolts: to ASTM A307
- .3 Bolts, nuts and washers: to ASTM A325.
- .4 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
- .5 Shop paint primer: to CISC/CPMA1.

## **2.2 FABRICATION**

- .1 Fabricate structural steel in accordance with CAN/CSA S16 and in accordance with reviewed shop drawings.

## **2.3 SHOP PAINTING**

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA S16.
- .2 Clean members, remove loose mill scale, rust, oil, dirt and other foreign matter. Prepare surface according to SSPC SP 6.
- .3 Apply one coat of primer in shop to steel surfaces to achieve minimum dry film thickness of 1.0 mil.
- .4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5 degrees C.
- .5 Maintain dry condition and 5 degrees C minimum temperature until paint is thoroughly dry.
- .6 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

## **3. EXECUTION**

### **3.1 GENERAL**

- .1 Structural steel work: in accordance with CAN/CSA S16.
- .2 Welding: in accordance with CSA W59.
- .3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

### **3.2 CONNECTION TO EXISTING WORK**

- .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Contract Administrator for direction before commencing fabrication.

### **3.3 ERECTION**

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA S16 and in accordance with reviewed erection drawings.
- .2 Field cutting or altering structural members: to approval of Contract Administrator.
- .3 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.
- .4 Continuously seal members by continuous welds where indicated. Grind smooth.

### **3.4 FIELD PAINTING**

- .1 Touch up damaged surfaces and surfaces without shop coat with primer to SSPC SP 6 except as specified otherwise. Apply in accordance with CAN/CGSB 85.10.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1            The requirements for the application of a penetrating silane sealer to concrete.

**1.2            RELATED SECTIONS**

- .1            Section 07 92 10            Concrete Joint Sealants

**1.3            REFERENCES**

- .1            American Society for Testing and Materials International, (ASTM).
  - .1            C672-98 Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals
- .2            International Concrete Repair Institute
  - .1            Guideline No. 03732, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
- .3            Publication: "Evaluating Sealers" by Dr. Stella L. Marusin; published in Concrete International, November, 1989.

**1.4            MEASUREMENT PROCEDURES**

- .1            Sealer application will not be measured but will be paid for as a fixed price item.

**1.5            DELIVERY, STORAGE AND HANDLING**

- .1            Deliver, handle, store and protect materials of this section in accordance with manufacturer's recommendations.
- .2            Protect products from freezing.

**1.6            SITE CONDITIONS**

- .1            Site Environmental Requirements:
  - .1            Ensure substrate temperature at time of installation is in accordance with manufacturer's printed instructions.
  - .2            Apply coating during dry weather. Allow surfaces to dry minimum of 3 days after rainfall or cleaning before applying further coats.
  - .3            Protect plants and vegetation which might be damaged by water repellents.
  - .4            Protect surfaces not intended to have application of water repellents.

**1.7            PRECAUTIONS**

- .1            Concrete sealers contains flammable solvents. Extra precautions should be taken in confined areas. Do not allow open flame or sparks in areas where the sealer is being used. Adequate ventilation must be provided when applying. The Contractor must note the presence of unit heaters within the parkade.

- .2 Wear protective clothing and prevent direct contact with skin. The special precautions recommended by the manufacturer shall be rigidly followed where hazardous materials are included.
- .3 The solvent is flammable; do not allow open lights, flames, sparking motors or pilot lights in the vicinity. Smoking near the solvent is to be forbidden.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Silane sealers shall meet or exceed the following performance standards:
  - .1 Scaling Resistance Test: ASTM C672; (non air entrained) Results: 0 rating "No Scaling" 50 cycles treated concrete; vs. 5 rating "Severe Scaling" 10 cycles Untreated concrete.
  - .2 Percent Active Ingredients: greater than 100%.
  - .3 All concrete sealers must meet the latest requirements of the Alberta Transportation and Utilities (AT&U), Technical Standards Branch, Specification B388 Specification for the Supply of Concrete Sealers, Type 1c. Sealers will be applied at AT&U approved application rates +30% unless otherwise determined by site mock-up.
- .2 The sealer employed shall consist of one (only) of the following:
  - .1 Hydrozo 100 Plus by BASF Building Systems. Minimum application rate of 355 mL/m<sup>2</sup> (2.82 m<sup>2</sup>/L).
  - .2 Sikagard SN100 by Sika Canada Inc. Minimum application rate of 205 mL/m<sup>2</sup> (4.88 m<sup>2</sup>/L)
- .3 The Contractor shall submit to the Consultant as part of the bid package, in writing, the sealer to be employed coupled with manufacturer's printed product literature, specifications, and application instructions.
- .4 The sealer shall be delivered to the job site in the manufacturer's original unopened containers.
- .5 Containers shall include manufacturer's labels indicating; the supplier, name of material, formula or specification number (if applicable), date of manufacture and shelf life.

## **Part 3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

### **3.2 PREPARATION**

- .1 All vertical concrete surfaces to which the sealer is to be applied are to be prepared by sandblasting. Follow surface preparation procedures outlined under this specification.

- .2 Clean out existing precast panel joints and provide new foam backer rod and sealant. All joint sealant must be in place prior to the commencing with sealer application.
- .3 Areas which exhibit delamination, spalling, or scaling shall be repaired by removing the deteriorated concrete to the depth required to obtain a sound surface. Complete repairs in accordance with applicable sections.
- .4 Within 24 hours prior to application of the sealer shotblast all horizontal surfaces to remove contaminants, laitance, curing compounds or other surface defects to clean and texture substrate which will reduce the bond of the overlay. Vertical surfaces are to be sandblasted as well to a height of [8"] above finished floor level.
- .5 Additional surface preparation may be required where contamination remains after the initial surface preparation and cleaning. This contamination is likely to be oil or car fluids, however it is not limited to these substances. Costs for additional shotblasting, sandblasting is to be included in the fixed price.
- .6 The substrate surface shall have a profile designation of ICRI-CSP-3 as defined by the International Concrete Repair Institute. Sample surfaces are available for inspection in the Consultant's office. These samples will be used as the standard of acceptance. All paint lines and directional arrows and lines must be removed.
- .7 After the concrete surface has been prepared to the required soundness and surface profile, surfaces may still need to be cleaned by vacuuming or air blasting with oil-free compressed air to remove the residue created by the surface preparation method or to remove spent media.
- .8 Avoid surface preparation by water blasting during cooler temperatures, or application to saturated surfaces, as efflorescence or lime bloom may occur in cementitious substrates.
- .9 Following final cleaning, the surface must be maintained in a clean condition using polyethylene film or other suitable clean covers until the sealer is ready to be placed.
- .10 No traffic shall be allowed on the prepared surface.
- .11 The surface of the concrete must be allowed to dry continuously for at least 72 hours at a minimum of 10°C following a heavy rainfall.
- .12 If the concrete surface becomes wet and subsequently dries, the surface preparation and cleaning procedure must be repeated.
- .13 Service life of the sealer is primarily dependent upon good service preparation, therefore preparation is of the utmost importance.

### 3.3 APPLICATION

- .1 Protect adjacent work areas and finish surfaces from damage during sealer application.
- .2 Concrete must be minimum 28 days old prior to sealer application. All joint sealant must be in place and cured.
- .3 Slab temperature to be obtained immediately prior to sealer application, to confirm that the slab temperature is within allowable range as dictated by manufacturer's specifications.



- .4 Ensure concrete is dry prior to applying sealer, confirm acceptability by ASTM D4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method. The Consultant will supplement the ASTM D4263 test method with periodic readings of surface moisture obtained from an electronic moisture gauge.
- .5 Remove all oils, grease, dirt and wax solutions from surface, using a non-solvent degreaser/detergent. Remove all debris from working surface. Prepare components as per manufacturer's instructions.
- .6 Manufacturer's representative must be on site during initial applications, and provide written acceptance of methods and equipment employed.
- .7 Apply sealer by low pressure spray techniques in accordance with recommended application rates specified herein or as determined by the pre-construction mock-ups but not less than manufacturer's minimum recommended coverage rate. Coverage rates are dependent on substrate porosity, texture and profile.
- .8 Apply flood coat of sealer to complete saturation working to a wet edge. Apply using two coat application in two directions on horizontal surfaces as well as 8 inches (200 mm) up adjacent vertical concrete faces with a flooding action. Broom sealer material from any pooled area.
- .9 On sloped or vertical surfaces, apply water repellent products from the bottom up with total saturation, providing an 8 inch to 12 inch (200 mm to 300 mm) controlled run down.
- .10 Adequate cure time must be allocated to new concrete prior to installation of the sealer. Consult manufacturer for specified concrete cure period.
- .11 Areas can be opened to traffic after curing a minimum of 24 hours at 24°C. Consult with manufacturer for cure times at lower temperature.
- .12 Allow Consultant to view empty sealer containers after every application process. Do not discard containers without prior authorization from Consultant.
- .13 The system manufacturer/contractor shall assume responsibility for performance of the sealer.
- .14 Coverages rates where shown will vary depending on surface profile and porosity. Dilution of the products is strictly forbidden. They are provided in a factory blended state ready for installation. The introduction of thinners will not be allowed and will jeopardize performance.

### **3.4 CLEANING**

- .1 Use manufacturer recommended cleaning solvent. Clean equipment immediately after use.
- .2 Remove temporary coverings and protection of adjacent work areas. Remove over spray coating from windows or areas not intended to be coated with hot soap water solution or a mild detergent cleaner.
- .3 Remove construction debris resulting from work in this section.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

**Part 1            General**

**1.1**

- .1        This section covers the installation of a flexible joint sealant to cleaned and routed cracks and joints in concrete. The work covered under this section consists of all labour, material, equipment, supervision and incidentals required to prepare and seal the joints and cracks as shown and detailed on the drawings, and as specified herein.

**1.2                RELATED SECTIONS**

- .1        Section 07 19 20            Silane Sealer

**1.3                REFERENCE DOCUMENTS**

- .1        American Society for Testing and Materials (ASTM):
  - .1        ASTM C719-93(2010), Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
  - .2        ASTM C920-11 Standard Specification for Elastomeric Joint Sealants.
  - .3        ASTM C1193-11a Standard Guide for Use of Joint Sealants.
  - .4        ASTM C1330-02(2007) Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

**1.4                MEASUREMENT PROCEDURES**

- .1        No measurement will be made under this section. All precast concrete panel joints in exterior wall repair area require foam backer rod and sealant. Include costs in items for which joint sealant is required.

**1.5                WARRANTY**

- .1        The Contractor and/or system manufacturer shall furnish a written performance warranty covering labour and materials at the time of bid submission or approval, stating that the installed sealant will be free of defects related to workmanship or material deficiency for a minimum of five (5) years from the date of Substantial Performance. The Contractor shall co-sign the warranty and the approved warranty shall be made part of the contractual agreement. The following problems shall be specifically covered under the warranty in writing:
  - .1        Cohesive or adhesive failure of the seal.
  - .2        Abrasion or tear failure of the seal resulting from normal weathering.
  - .3        Moisture leakage through a sealed joint or crack.
  - .4        Chalking, cracking, sliding, debonding, shrinkage in the sealant.
- .2        The system manufacturer and/or Contractor shall submit a detailed warranty statement consistent with the terms of this specification at the time of bid submission for approval. The approved warranty shall be made part of the contractual agreement.

## 1.6 DELIVERY STORAGE AND HANDLING

- .1 The sealant shall be delivered to the jobsite in the manufacturer's original unopened containers.
- .2 Containers shall include manufacturer's labels indicating: the supplier, name of materials, formula or specification number, colour, date of manufacture, and shelf life. Product data sheets in accordance with WHIMIS shall be on-site and available at all times.

## Part 2 PRODUCTS

### 2.1 MATERIALS

- .1 Multi-component, nonsag, silyl-terminated polyether elastomeric joint sealant for joints in existing precast concrete wall panels to ASTM C920, Type M, Grade NS, Class 50.  
Acceptable products:
  - .1 Sonlastic 150 by BASF Building Systems.

### 2.2 ACCESSORIES

- .1 Primers, bond breakers and miscellaneous materials required to install the sealant shall be in accordance with manufacturer's recommendations, and as approved by the Contract Administrator. Use of aggregate bond breakers is prohibited.
  - .1 Primer: Use only manufacturer's approved primer.
  - .2 Closed-cell foam backing rod shall conform to ASTM C1330.
  - .3 Bond breaker tape: self-adhesive, pressure sensitive tape mad from TFE-flouorocarbon (Teflon) or polyethylene which sealant will not adhere to.

## Part 3 EXECUTION

### 3.1 SURFACE PREPARATION OF CONCRETE

- .1 All new Portland cement concrete to cure for minimum 28 days. Proprietary repair mortars to cure for minimum 7 days.
- .2 At cracks, sawcut a reglet along the crack, as indicated by the Contract Administrator. Reglets to be uniform in size over the given length. Reglet depth will be site confirmed as it si dependent upon recess depth and backing material.
- .3 Clean joints and saw cuts by grinding, sandblasting, or wire brushing to expose a sound surface free of contamination and in order to provide a clean, sound substrate for optimum seal adhesion.
- .4 Thoroughly clean all joint and crack reglets. Ensure that surfaces to be sealed are sound, dry, free from dirt, water, frost, loose scale, corrosion, oil, grease, waterproofing or water-repellant treatments, or other contaminants which may adversely affect the performance of the sealing materials.
- .5 Remove loose particles present or resulting from grinding, abrading, or blast cleaning by blowing out joints with oil-free compressed air (or vacuuming) prior to primer application.

Conform to ASTM C1193. These practices will be considered the governing standards and will be used in part by the Contract Administrator to ascertain acceptability of work.

- .6 If the substrate is suspected of being substandard, an on-site trial application is to be conducted to verify that the substrate is satisfactory. Work will not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer. All costs associated with verification to be carried by Contractor.
- .7 Prior to installation of the sealant an inspection of both the joint and substrate is required to confirm the joint design and to ensure that the substrate is sound and acceptable for sealant application. A substrate that is unsound, cracked, or weak must be repaired prior to sealant.
- .8 Do not proceed with Work until any unsatisfactory conditions have been corrected in a manner acceptable to the Contract Administrator.

### 3.2 PREPARATION

- .1 Back-Up Material: Install appropriate size backer rod, larger than joint where necessary according to manufacturer's recommendations.
- .2 Bond Breaker: Install bond-breaker strip in joint to be sealed on top of back-up material to prevent adhesion of sealant to back-up material; install per manufacturer's recommendations. The tape shall be installed continuously with no skips or voids in the tape application.
- .3 Installation of a primer and bond breaker will be required in all joints. These as well as other miscellaneous materials required to install the sealant shall be in strict accordance with project specifications and as approved by the Contract Administrator. The use of aggregate bond breakers will be strictly prohibited.
- .4 Pack joints continuously with closed cell baker rod joint backing material allowing a recess to receive sealant. Installation of backer rod with a sharp tool such as putty knife is not permitted. Ensure surface skin of the backer rod is not punctured or cut during installation. A puncture in the backer rod may result in out-gasing into the uncured sealant resulting in voids or other defects in the cured sealant. Sealant backing rod to meet requirements of ASTM C1330.
- .5 Backer rod to be installed under adequate compression to hold it in-place in the joint opening and to resist the pressure applied when tooling a non-sag sealant into place. Backer rod diameter to be 25% greater than the joint width. Install backer rod without stretching. Under no circumstances should backer rod that is too small for the joint be doubled up or braided together to fit the opening.
- .6 Where joint configuration and/or size does not permit the use of a backer rod, install bond breaker tape continuously with no skips or voids in the tape application.
- .7 Priming of all substrates is mandatory. Prime substrates as recommended by the sealant manufacturer. Primer to be installed prior to installation of the sealant backing. Allow primer to dry until all the solvent evaporates. This typically takes 5 to 30 minutes, depending on temperature and humidity.
- .8 Prime only those surfaces that will be sealed with sealant the same day. If a previously primed surface that was performed the day before is encountered it must be reprimed.

### 3.3 SEALANT INSTALLATION

- .1 Prepare sealants that require mixing; follow manufacturer's recommended procedures, mixing thoroughly.
- .2 Mix only as much material as can be applied within manufacturer's recommended application time period.
- .3 Apply materials only within manufacturer's specified application life period. Discard sealant after application life is expired or if prescribed application period has elapsed.
- .4 Application of sealants shall be by skilled applicators installed in accordance with manufacturer's printed directions and supervision. The sealants shall be carefully applied to meet the design requirements.
- .5 Sealant shall not be installed on wet or damp substrates. Wet or damp substrates should be allowed to dry before application of primer and/or sealant.
- .6 Do not install sealants under conditions of precipitation or temperatures below 4°C. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions in accordance with manufacturer's recommendations if application during inclement weather occurs.
- .7 All sealants have a temperature range for optimum handling which can vary considerably, and should be stored at a temperature within this range for at least 16 hours before use.
- .8 Do not use sealant that has started to set in its container, exceeded shelf life or installation times as stated by the manufacturer.
- .9 The sealant shall be carefully handled and stored to prevent inclusion of foreign materials, or exposure to excessive temperatures as specified by the manufacturer.
- .10 Sealant to be installed in a manner that will completely fill the cavity formed in the joint opening by the substrates and sealant backing or bond breaker.
- .11 After mixing, apply the sealant to the joint using a professional bulk gun. Nozzle shall be sized and shaped to fit the intended joint opening width, which will confine the sealant to the joint and aid in building pressure to force the sealant into the cavity. joint. Ensure that mixing and placing procedures do not entrain air within the sealant.
- .12 Immediately after applying the sealant, tool the bead. Tooling forces material into cavities and into more intimate contact with the substrate. Wet tooling will not be permitted.
- .13 The joint is to be tooled as to provide a concave-shaped surface. Specifically, the sealant and concrete are to be flush at the edges but recessed at the joint centre, forming a parabolic arc. Do not re-use any material forced outside of the joint by the tooling procedure.
- .14 Sealant installation shall be a full bead free from air pockets and embedded impurities and free from ridges, wrinkles and sags.
- .15 Use anti-tack solutions only with the approval and directions of the sealant manufacturer.

### 3.4 CLEANING

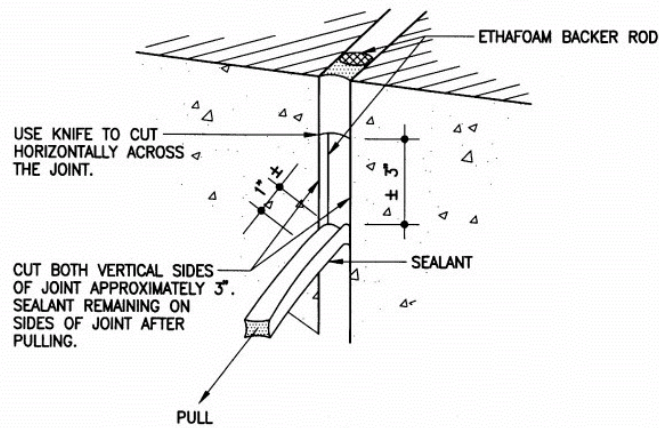
- .1 Do not clean inadvertent spills or splatters of sealant on concrete or masonry with solvent because of possible permanent staining of the substrate. Scrape, wipe or scrub such spills with dry tools or rags.
- .2 Clean bulk caulking guns, barrel and nozzle completely after every day's use.
- .3 The special precautions recommended by the manufacturer shall be rigidly followed where hazardous materials are involved.

### 3.5 SAMPLES AND MOCK-UP

- .1 Provide five colour samples to Contract Administrator minimum one week prior to scheduled mock-up installation. Proceed with mock-up only after colour selection has been identified by Contract Administrator.
- .2 One complete panel joint shall be installed in accordance with this Section as a mock-up for review by Contract Administrator and City of Winnipeg.
- .3 If mock-up installation meets technical and appearance requirements, it will be deemed acceptable and may remain as part of the finished work.

### 3.6 FIELD ADHESION TESTING

- .1 Field adhesion testing of miscellaneous joints and cracks will be complete at the discretion of the Contract Administrator.
- .2 Field adhesion testing will be performed during the field mockup and throughout the course of the work by the Contract Administrator in the presence of and with the assistance of the Contractor and be completed throughout the course of the work. The purpose of the field adhesion testing is to help detect application problems such as improper cleaning, use of improper primer, poor primer application, or improper joint configuration.
- .3 A minimum three (3) field adhesion tests will be completed for each type of sealant used for the first 500 lineal feet and two (2) tests per 500 lineal feet thereafter.
- .4 The field adhesion test shall be performed as follows:
  - .1 Make a knife cut across the full width of the joint.
  - .2 Make two (2) cuts (from the cross cut) approximately 3" long, along both sides of the joint.
  - .3 Place a 1" mark on the sealant tab.
  - .4 Grasp the 3" sealant tab firmly 1" from its bonded edge and pull at a 90° angle.
  - .5 If dissimilar substrates are being sealed, check the adhesion of sealant to each substrate separately. This is accomplished by extending the vertical cut along one side of the joint, checking adhesion to the opposite side and then repeating for the other surface.



**FIGURE 1.1 HAND PULL TEST**

- .5 Field adhesion test criteria: the sealant should tear cohesively within itself without bond loss.
- .6 At this time the joint will be inspected for complete fill. The joint should not have voids, and joint dimensions should match those shown on the drawings.
- .7 This testing will be completed by the Contract Administrator in the presence of and with the assistance of the Contractor and results recorded by the Contract Administrator, retained and made available for review upon request. A sample log form has been appended with this specification.
- .8 Repair of Sealant at Field Adhesion Test Locations
  - .1 Repair the sealant pulled from the test area by applying new sealant to the test area. Assuming good adhesion was obtained, use the same application procedure to repair the area as was used originally for the joint. Care should be taken to ensure that the original sealant surfaces are clean and that the new sealant is in contact with the original sealant.
  - .2 Contractor shall carry costs associated with sealant testing and repair in their bid including but not limited to access, labour, materials, etc.

**END OF SECTION**