

TRANSMITTAL SHEET

TO: All Bidders

DATE: December 1, 2022

TOTAL NUMBER OF PAGES (INCLUDING COVER PAGE): 24

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Utilities & Infrastructure Services

IF YOU DID NOT RECEIVE ALL PAGES, OR FURTHER INFORMATION IS REQUIRED,
PLEASE CONTACT THE SENDER

MESSAGE:

TENDER NO: 2022-02

Beach Crescent – Sanitary Lift Station Modifications

Please find attached a copy of **Addendum #1** for the above tender.

As of March 2021, please be advised that an ***Acknowledgement Form*** (historically sent as part of the City's addendum packages) confirming receipt of an Addendum is **no longer** included in the addendum package.

However, in accordance with Section 2.5.03 of the City's General Specifications, it remains a requirement that **each Addendum** will contain a signature page(s) which each Tenderer is **required to sign and include with its Tender submission.**



UTILITIES & INFRASTRUCTURE SERVICES
 Engineering Services
 175 Rothesay Avenue
 Saint John, NB, E2J 2B4

ADDENDUM

PROJECT TITLE:

Beach Crescent – Sanitary Lift Station Modifications

ADDENDUM NO: 1

DATE: December 1, 2022

PAGE: 1 OF 23

TENDER NO: 2022-02

MAKE THE FOLLOWING MODIFICATIONS TO THE ABOVE PROJECT. INCLUDE IN THE AMOUNT OF THE TENDER ANY ADDITIONS TO OR DEDUCTIONS FROM THE COST OF THE WORK BY REASON OF THESE INSTRUCTIONS. THE DATE FOR RECEIVING TENDERS REMAINS AS: **2:30PM, TUESDAY, DECEMBER 6, 2022.**

ADDITION TO THE SPECIFICATIONS

Division 2 – Submission of Tender

As a result of the COVID-19 pandemic, the City of Saint John is implementing adjustments to the tender submission procedure as follows:

Section 2.6.01 Location of Tender Box for the Submission of Tender

175 Rothesay Avenue, Saint John, New Brunswick

The tender box will be available at the main building entrance for submission of tenders by the Tenderer between the hours of 9:30 am and 2:30 pm only on the above tender closing date. Tenderers shall maintain physical distancing from others when depositing their tender in the tender box.

There will not be a public tender opening. Registered Bidders will receive an email invitation to view the Tender Opening using Microsoft Teams software. Email invitations will be sent to the address provided on the Official Bidder’s List. The Tender Opening Committee will conduct the evaluation of the tenders and Compliant tenders will be included in the summary of bids on the City’s Tenders & Proposals website within 1 business day following the tender closing.

TO DIVISION 3 – PARTICULAR SPECIFICATIONS

Page 3-15, Clause 3.1.30.n.11, add GA Figure 517 Eco-Centric to approved equivalents.

Page 3-17, Clause 3.1.30.o, replace “Golden- Anderson (G.A. Industries) Figure No. 250” with “Golden- Anderson (G.A. Industries) Figure No. 220D” under Acceptable Products

Page 3-17, Clause 3.1.30.r, add Winters D81 to approved equivalents for Pressure Sensors.

Page 3-17, Clause 3.1.30.r.9, add WinSMART LY16 to approved equivalents.

Page 3-18, add clause x) “Magnetic motor starter: Rated for 600 V, max horsepower 2 HP c/w NEMA 1 Type 1 General Purpose Enclosure. Acceptable Manufacturers: Square D SAG12V07 series, Siemens, Eaton.”

Page 3-28, add the following:

d) Transformer

1 PRODUCTS:

- .1 INDOOR TYPE: DRY.
- .2 TRANSFORMER CAPACITY, CONFIGURATION, AND PRIMARY AND SECONDARY VOLTAGES AS INDICATED, POSITIVE POLARITY.
- .3 VOLTAGE TAPS: -5.0%, -2.5%, 0%, +2.5%, +5%.
- .4 220°C INSULATION, 115°C TEMPERATURE RISE.
- .5 AVERAGE SOUND LEVEL, BASIC IMPULSE LEVEL, AND IMPEDANCE AT 170°C, TO CSA C9.
- .8 EFFICIENCY: TO CSA C802.2, LATEST EDITION.
- .9 ENCLOSURE: VENTILATED, DRIP PROOF HOOD.
- .10 WINDINGS: COPPER.
- .11 MOUNTING: AS INDICATED.
- .12 VIBRATION ISOLATORS.
- .13 ACCEPTABLE MANUFACTURERS: DELTA, SCHNEIDER, HAMMOND, SIEMENS, EATON, MARCUS.

2 INSTALLATION:

- .1 SECURELY MOUNT TRANSFORMERS AS INDICATED ON THE DRAWINGS.
- .2 INSTALL FLOOR-MOUNTED TRANSFORMERS ON CONCRETE HOUSEKEEPING PADS.
- .3 FOR TRANSFORMERS MOUNTED ABOVE THE FLOOR, CONSTRUCT A SUPPORT STRUCTURE FROM STEEL CHANNEL AS REQUIRED TO SUPPORT TRANSFORMER WEIGHT.
- .4 INSTALL TRANSFORMERS TO MAINTAIN ALL REQUIRED CEC CLEARANCES.
- .5 INSTALL TRANSFORMER ON VIBRATION ISOLATORS FOR ALL FOUR (4) CORNERS.
- .6 PERFORM DC INSULATION RESISTANCE TESTS OF PRIMARY AND SECONDARY WINDINGS TO GROUND, AND PRIMARY TO SECONDARY (500V TEST FOR WINDINGS 300V AND BELOW, 100V FOR WINDINGS 300V-750V, 500V FOR GREATER THAN 750V). REPORT READINGS BELOW 100 MEGAOHMS IMMEDIATELY.
- .7 MAKE ALL POWER, BONDING, AND GROUNDING CONNECTIONS INCLUDING SECONDARY NEUTRAL TO GROUND.
- .8 ADJUST TAPS TO ACHIEVE RATED SECONDARY VOLTAGE AT FULL LOAD.

Under Appendix 3A, Section 03 10 00, CONCRETE FORMS AND ACCESSORIES, Page 2, Clause 1.5.6, revise to read “Each shop drawing submission must bear the stamp and signature of qualified professional engineer registered or licensed in Province of New Brunswick.”

Under Appendix 3A, replace Section 04 20 00, MASONRY with the attached “MASONRY (Issued for Addendum No. 1)”.

Under Appendix 3A, Add Section 07 21 00 – Insulation (attached).

Under Appendix 3A, Add Section 07 27 00 – Sheet Membrane Air / Vapour Barrier (attached).

TO THE DRAWINGS

On Drawing C02, replace the note “RAISE EXISTING CONTROL VAULT HATCH TO 7m ELEVATION, FINISHED GRADE AROUND THE HATCH TO BE RAISED TO 6.85m” with, “RAISE EXISTING CONTROL VAULT FROM 5.95m ELEVATION TO 7m ELEVATION, FINISHED GRADE AROUND THE HATCH TO BE RAISED FROM 5.79m (VARIES) TO 6.85m. EXTEND EXISTING 1200x965 CHIMNEY WITH 15M BARS SPACED 200mm O.C. AND DOWEL 15M BARS 150mm INTO EXISTING CONCRETE CHIMNEY SPACED 200mm APART. ANCHOR BARS WITH CHEMICAL ANCHORS. EXISTING 915x763 ACCESS HATCH TO BE REUSED ONCE CHAMBER CHIMNEY IS ADJUSTED. CONTRACTOR TO VERIFY ALL DIMENSIONS.”

On Drawing C04, replace the note “NEW STANDARD FRAME & COVER” with “NEW CITY OF SAINT JOHN STANDARD ALUMINUM HATCH COVER (S045-109).”

On Drawing M04 fitting No.8 “200 Ø DI WAFER CHECK VALVE”, replace the note with “200 Ø DI SWING CHECK VALVE.”

On Drawing E03 replace both notes “2-CITY SUPPLIED HEAT CONTROL PANELS” with THE left note to read “CITY SUPPLIED HEAT CONTROL PANEL” and the right note to read “CITY SUPPLIED VENTILATION CONTROL PANEL”

On Drawing E06 Bill of Materials table, Item 1, replace to read “NEMA 12 ENCLOSURE”

CLARIFICATIONS

Q - can you confirm if the City is supplying the SCADA radio. There is a difference between the spec and drawing. If they want us to supply the iNET900 radio. This is discontinued. Are we going to supply the new orbits.

A – The City is supplying the temporary bypass station SCADA panel, the orbit radio as well as the heating and ventilation control panel.

Q - Drawing 4-7 Single Line

The drawings show existing feeder being re used with the pad mount transformer being relocated as well as site grading and elevation change is this still the intent and how is that possible? Or is there to be a new feeder from pad mount TX?

A – The Contractor is to co-ordinate an outage with Saint John Energy (SJE). SJE will pull the primary cable out to facilitate the transformer move. The cable is to be reused and SJE will reinstall it into the new pad.

Q - Temporary lift station

Will the COSJ be doing the SCADA programing needed for the Temporary set up ?

A - City of SJ will supply the temporary bypass pumping SCADA panel only. Programming is the responsibility of the contractor.

Q - Particular Specification - 3.1.07 Archeological Investigation

- Will you provide clarification on the specific process that will be followed?

- Is the plan to shift through every bucket?

- What is the delay from notification of excavation until the Archeologist will be on site and how often must this occur?

- Is all excavated material required to remain on-site until the investigation is completed?

- If something is found of archeological significance how are we to mitigate costs of such delay or stoppage, are we to demobilize or go on standby? Will this direction be provided by the Consultant based on the anticipated delay or stoppage?

- Will we be compensated for the additional by-pass pumping costs including 'pump watch'?

- If a resulting stoppage occurs - Will we be awarded additional contract time on a day per day basis, i.e. a week stoppage is a week contract extension? How will delays be handled to be compensated for lost time even if financial compensation is given through stand-by?

This section is very vague as it relates to contract completion and financial impacts.

At minimum this process, including direction, compensation and extensions. should be agreed to by all parties prior to contract execution.

A – Archeological investigation is required for any tree removal or for excavations in grassed areas to the north and west of the existing asphalt. In the event that an item of archeological significance is encountered, any impact on project schedule due to delay or stoppage will be negotiated with the Contractor at that time, based on the specific conditions of the delay (or stoppage).

Q - Mechanical Specifications - h) Quiet Operation and Vibration

- Is there an objective target (rather than purely subjective) for the noise in dBa and vibration as switching frequencies have the potential to induce additional vibration and perceived noise levels? If this occurs and switching frequencies need to be skipped to control vibration/noise it may impact the performance of the motor/pump.

A – No change to this clause. It will remain at the Consultant’s discretion to determine if noise or vibration levels are excessive.

Q - We propose two alternate products for the roof assembly:

- ½" Composite Cover Board over the Insulation with factory-laminated base sheet (2-1 Soprasmart ISO HD)
- 1 ply Mod Bit Vapour Barrier, torch-applied with sanded top surface (Sopralene 180SP 3.5)

A – These are acceptable products. Roof assemblies are to be provided for shop drawings review.

Note: Signed copy of the addendum **must** be enclosed in the tender documents, according to the Instructions to Tenderers and Tendering Procedures in Division 2 of the Contract Specifications.

BY:



CHIEF CITY ENGINEER

CONTRACTOR'S SIGNATURE

TO BE SIGNED AND ATTACHED TO TENDER DOCUMENTS

PART 1 - GENERAL

- 1.1 WORK INCLUDED .1 This Section specifies requirements for supplying, transporting and installing brick and masonry accessories, connectors, mortar and grout where indicated.
- 1.2 RELATED WORK .1 Metal Fabrications: Section 05 50 00
.2 Sheet Membrane Air/vapour Barrier: Section 07 27 00
.3 Insulation: Section 07 21 00
- 1.3 REFERENCE STANDARDS .1 AASHTO M32-2009, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
.2 ASTM A153/A153M-09, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
.3 ASTM D1056-2014, Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
.4 CSA-G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement.
.5 CSA-S304.1-04(R2010), Design of Masonry Structures.
.6 CSA-W186-M1990(R2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.
.7 CAN/CSA A179-2014, Mortar and Grout for Unit Masonry.
.8 CAN/CSA A370-2014, Connectors for Masonry.
.9 CAN/CSA A371-2014, Masonry Construction for Buildings.
.10 CAN/CSA A82.1-M87(R2003), Burned Clay Brick.

1.4 REQUIREMENTS OF
REGULATORY AGENCIES

- .1 Construct masonry work as required by jurisdictional authorities.
- .2 Before commencing masonry Work, verify site conditions will allow construction of masonry within required limitations of wall heights, wall thicknesses, openings, bond, anchorage, lateral support, and compressive strength of masonry units and mortars.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings for masonry reinforcement and connectors in accordance with Section 01 00 00.
- .2 Shop drawings consist of bar bending details, lists and placing drawings.
- .3 On placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.
- .4 Submit samples of facebrick for review and approval.

1.6 PRODUCT DELIVERY,
STORAGE AND HANDLING

- .1 Deliver materials to job site in dry condition.
- .2 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
- .3 Deliver products to the place on site as directed, and to meet installation schedule.

1.7 ENVIRONMENTAL
REQUIREMENTS

- .1 Cold weather requirements:
 - .1 Conduct all work in accordance with CSA-A371.
- .2 Supplement Clause 5.15.2 of CSA-A371 with following requirements:
 - .1 Maintain temperature of mortar between 5°C and 50°C until batch is used.

- .2 Hot weather requirements:
 - .1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
 - .2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.

1.8 PROTECTION

- .1 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
- .2 Provide temporary bracing of masonry work during and after erection until permanent lateral support system is in place.

PART 2 - PRODUCTS

2.1 MORTAR AND GROUT
MIXING

- .1 Mortar: to CSA-A179.
- .2 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
- .3 Colour: ground coloured natural aggregates or metallic oxide pigments unless indicated otherwise.
 - .1 Acceptable product: Northern Pigment Company Ltd., Toronto, or approved equivalent.
- .4 Use same brands of materials and source of aggregate for entire project.
- .5 Mortar for all walls: Type S based on Proportion specifications of CSA-A179.

- 2.2 MASONRY ACCESSORIES .1 Masonry reinforcing: horizontal joint reinforcing to CSA A370, welded, truss type, fabricated from 4.76 mm diameter steel wire to AASHTO M32, deformed for longitudinal wires and smooth for cross wires, with loops for box ties where faced with masonry veneer, hot dip galvanize after fabrication to ASTM A153/A 153M, Class B, 458 g/m³ zinc coating.
- .1 Cavity wall, brick veneer: use extra heavy duty Blok-Trus II BL 37 truss type by Blok-Lok Ltd., which will be used in conjunction with the Wedge-Lok insulation fastener system.
 - .2 Reinforcing steel for core-filled masonry: to CAN/CSA-G30.18, Grade 400, and as specified in Section 03 20 00.
 - .3 Control joint filler: purpose-made closed cell neoprene to ASTM D1056 of size and shape indicated, and backer rod and caulking as per section 07 92 00.
 - .1 Acceptable product: Dur-o-wal D/A 2015, or Blok-Lok Exp-Joint.
 - .4 Lateral ties: Provide 152mm x 102mm x 7.9mm x 200mm long galvanized angle clips each side of all interior block walls. Clips spaced at 1200 mm centre to centre.
 - .5 Masonry thru-wall flashing: purpose made rubberized base flashing, complete with primer/adhesive.
 - .1 Acceptable Products: W.R. Grace Bituthene, Blueskin TWF or approved equivalent. (Replaced: Addendum #1)
 - .6 Weep hole vents: ultraviolet resistant polypropylene co-polymer, 13 mm wide x 90 mm deep x 100 mm high vent, colour to suit mortar.
 - .1 Acceptable product: Dur-o-wal DA1069, or Blok-Lok Cell-Vent.
 - .7 Insulation wedges: impact resistant plastic clip to fasten insulation, installed at 400 mm o.c. vertical and 800 mm o.c. horizontal.
 - .1 Acceptable product: Blok-Lok Wedge-Lok

System, or approved equivalent.

- .8 Dovetail anchor slots: as specified in Section 03 30 00.
- .9 Mortar mesh: Mor-Control by Block-Lok Ltd., Mortar Net by Mortar Net USA Ltd., or approved equivalent.

2.3 FACE BRICK

- .1 Face brick to be burnt clay brick conforming to CAN/CSA-A82.1 of types, sizes, textures. Size 57 x 90 x 190 mm and tint mortars to match each colour of existing brick work.
 - .1 Acceptable manufacturers: Shaw Group.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- .1 Conduct Work in accordance with CSA-A371.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.
- .3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.
- .4 Exercise care to provide full mortar joint coverage on all bearing surfaces of masonry. Replace masonry that does not meet above requirement.

3.2 TOLERANCES

- .1 Tolerances in notes to Clause 5.3 of CSA-A371 apply.

3.3 EXPOSED MASONRY

- .1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

- 3.4 JOINTING .1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, compressed, uniformly concave joints unless otherwise indicated.
- 3.5 BUILDING-IN .1 Verify accessories, frame anchors, guards, and such items specified in other Sections are available for building in before Work commences. Cooperate in the setting and aligning of built-in Work and provide for later installation of items which are included in the Work of other Sections, to avoid cutting, fitting, and patching.
- .2 Prevent displacement of built-in items during construction.
- 3.6 CUTTING .1 Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects.
- .2 Make cuts straight, clean and free from uneven edges.
- 3.7 REINFORCEMENT AND CONNECTORS .1 Fabrication:
- .1 Fabricate reinforcement in accordance with CSA-A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Fabricate connectors in accordance with CSA-A370.
- .3 Obtain Consultant's approval for locations of reinforcement splices other than shown on placing drawings.
- .4 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.
- .5 Ship reinforcement and connectors, clearly identified in accordance with drawings.
- .2 General:

- .1 Supply and install masonry connectors and reinforcement in accordance with CSA-A370, CSA-A371, CSA-A23.1 and CSA-S304.1 unless indicated otherwise.
 - .2 Prior to placing concrete, mortar, or grout, obtain Consultant's approval of placement of reinforcement and connectors.
 - .3 Movement joints:
 - .1 Reinforcement will not be continuous across movement joints unless otherwise indicated.
 - .4 Field bending:
 - .1 Do not field bend reinforcement and connectors except where indicated or authorized by the Consultant.
 - .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
 - .3 Replace bars and connectors which develop cracks or splits.
- 3.8 LAYING MASONRY UNITS
- .1 Bond: running.
 - .2 Coursing heights: 200 mm for one block and one joint; 200 mm for three brick and three joints.
 - .3 Jointing: concave where exposed or where paint coating is specified.
 - .4 Mixing and blending: mix units within each pallet and with other pallets to ensure uniform blend of colour and texture.
 - .5 Cut blocks as required to ensure coursing height aligns with intersecting and adjacent walls.
- 3.9 MASONRY ACCESSORIES
- .1 Masonry reinforcing ties:
 - .1 Install ties in accordance with CSA A370 and CSA-A371. In case of conflict between these two standards, the more

- stringent requirements will apply.
- .2 Place reinforcement continuously in horizontal joints at 400 mm o.c., beginning with course above bearing, unless otherwise specified or indicated.
 - .3 Place additional reinforcing at spacing of 200 mm o.c. in courses above and below openings, and extending 800 mm beyond jambs of openings.

- .2 Core-fill reinforcement:
 - .1 Install bars vertically and continuously in cores of hollow masonry units where indicated.
 - .2 Embed bars solidly in cores with concrete grout filling voids completely.
 - .3 Install reinforcing steel in core fills and bond beams where indicated.
- .3 Mortar mesh: place in the wall air space horizontally above the foundation walls and above all lintels.
- .4 Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 600 mm oc.

3.10 MORTAR AND GROUT
MIXING

- .1 Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp workable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour nor more than 2 hour then remix with sufficient water to produce mortar of proper consistency for pointing.
- .2 Mix mortar in mechanical batch mixer using material proportions to produce specified strengths while keeping water-cement ratios to the minimum required to produce proper workability.
- .3 Mix grout to semi-fluid consistency to manufacturer's instructions.

- .4 Mix in dry block admix to mortar for exterior block work at the rate of 500 ml per 45 kg of cement.
- .5 Mix in mortar colour pigments.

3.11 SUPPORT OF LOADS

- .1 Use 20 MPa concrete grout to Section 03 30 00 where concrete fill is used instead of solid units in core fills and lintels. Install grout in accordance with CSA-A371.
- .2 Install expanded metal mesh below voids to be filled with concrete or grout, keep mesh 25 mm back from faces of units.
- .3 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.

3.12 PROVISION FOR MOVEMENT

- .1 Caulk corner joints of all block work where walls butt into continuous walls, at dissimilar material intersections (concrete walls and columns) and at masonry wall intersection with floor slabs, caulking to be done before painting. Slightly rake the vertical mortar joint during installation so as to provide slight slot for caulking joint. Tie wall butting to intersecting wall with Flex-o-Lok anchor system with masonry screw anchors and ties at every second block course.

3.13 CLEANING

- .1 Clean concrete block and brick masonry as work progresses.
- .2 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block and finally by brushing.
- .3 Cleaning of brick masonry:
 - .1 Clean 10 m² area wall designated by the

Consultant as directed below and leave for one (1) week. If no harmful effects appear and after mortar has set and cured, protect windows, sills, doors, trim and other work, and clean brick masonry as follows:

- .2 Remove large particles with wood paddles without damaging surface. Saturate masonry with clean water and flush off loose mortar and dirt.
- .3 Scrub with solution of 25 ml trisodium phosphate and 25 ml household detergent dissolved in 1 L of clean water using stiff fibre brushes, then clean off immediately with clean water using hose. Alternatively, use proprietary compound recommended by brick masonry manufacturer in accordance with manufacturer's directions.
- .4 Repeat cleaning process as often as necessary to remove mortar and other stains.
- .5 Use acid solution treatment only for difficult to clean brick masonry as recommended by manufacturer.

PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 This Section specifies requirements for furnishing all materials, labour, tools and equipment necessary to complete rigid insulation as indicated and as specified herein.
- 1.2 REFERENCES .1 CAN/ULC-S701-2011, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
.2 CGSB 71-GP-24M-83, Adhesive, Flexible for Bonding Cellular Polystyrene Insulation.
- 1.3 PRODUCT DELIVERY, STORAGE AND HANDLING .1 Package insulation materials and label them to designate manufacturer, type, density and insulation value, and reference standard specification number if applicable.
.2 Store insulation materials in dry areas, protected from wetting and traffic.
.3 Store insulation board flat, on a flat surface, to prevent edge damage and placing of materials on top of stored boards.
.4 Store insulation board and adhesives at a minimum temperature of 4°C for 12 hours before installation, and store freezable adhesives only at temperatures above 0°C at all times.
- 1.4 JOB CONDITIONS .1 Install insulation materials subject to damage by water, freezing, sunlight or similar adverse environmental conditions with adequate protection against damage.
.2 Protect polystyrene insulation from sunlight at all times until permanent cover is installed.

PART 2 - PRODUCTS

- 2.1 GENERAL .1 Confirm all materials of an insulation system and the construction with which it is in contact are compatible.
- .2 Inform others whose Work is affected of the thickness and installation methods of insulation to be installed.
- 2.2 MATERIALS .1 Rigid board wall insulation: above grade: closed cell, cellular foamed polystyrene to CAN/ULC S701, Type 2, thickness indicated, (based on 50mm equal to RSI 1.761) shiplapped edges.
- .1 Acceptable product: Styrofoam Cavitymate SC by Dow Chemical Canada Inc., Celfort 200 as manufactured by Owens Corning, TrueBoard type 2 by TrueFoam or approved equivalent.
- .2 Vapour barrier type adhesive: to CGSB 71-GP-24, Type 2, Class as recommended by manufacturer and compatible with polystyrene insulation.
- 2.3 COMPATIBILITY .1 Confirm all materials that come in contact with insulation board adhesive are compatible. Provide proof of compatibility if requested.
- 2.4 PERFORMANCE REQUIREMENTS .1 Fit insulation within construction elements and dimensions indicated on Drawings, without compression.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- .1 Install insulation after building substrate materials are dry.
- .2 Verify all surfaces to which board insulation is applied are clean, reasonably smooth with no abrupt changes in plane, free of grease and with protruding fins of mortar or concrete removed, and that the surfaces are otherwise acceptable for board insulation application as specified.
- .3 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .4 Fit insulation tightly around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and other protrusions.
- .5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .6 Do not enclose insulation until it has been inspected and approved by the Consultant.

3.2 EXAMINATION

- .1 Examine substrates and immediately inform Consultant in writing of defects.
- .2 Prior to commencement of work ensure:
 - .1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.
- .2 Surfaces have not been coated with releasing agents, and other contaminants which would affect positive bonding of polyurethane insulation.
- .3 Report, in writing, to Consultant defects or conditions which would affect work. Do not proceed with work until conditions have been

rectified.

3.3 RIGID BOARD WALL
INSULATION INSTALLATION

- .1 Apply full bed of Type 2 vapour barrier adhesive to polystyrene insulation board edges by trowel, to fill any gaps between joints of sheets and any penetrations.
- .2 Install pressure-treated wood strapping vertically at 400 o.c. over insulation and exterior wall building wrap.

PART 1 - GENERAL

- 1.1 WORK INCLUDED .1 This section specifies requirements for providing sheet membrane air/vapour barrier where indicated on Drawings.
- 1.2 RELATED WORK .1 Masonry: Section 04 20 00
.2 Insulation: Section 07 21 00
- 1.3 SUBMITTALS .1 Manufacturer's Installation Instructions: indicate preparation, installation requirements and techniques, product storage and handling criteria.
.2 Prior to commencing the Work, submit manufacturers complete set of standard details for air barrier.
- 1.4 QUALIFICATIONS .1 Applicator: Company specializing in performing work of this section with minimum five (5) years documented experience approved by materials manufacturers.
- 1.5 QUALITY ASSURANCE .1 Submit in writing, a document stating that the applicator of the primary air barrier membranes specified in this section is recognized by the manufacturer as suitable for the execution of the Work.
.2 Perform Work in accordance with the printed requirements of the air barrier manufacturer and this specification.
.3 Maintain one (1) copy of manufacturer instructions on site.
.4 At the beginning of the Work and at all times during the execution of the Work, allow access to Work site by the air barrier

membrane manufacturers' representative.

- .5 Components used in this section shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.

1.6 DELIVERY, STORAGE
AND HANDLING

- .1 Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- .2 Store role materials on end in original packaging.
- .3 Store adhesives and primers at temperatures of 5°C and above to facilitate handling.
- .4 Keep solvent away from open flame or excessive heat.
- .5 Protect rolls from direct sunlight until ready for use.

1.7 SEQUENCING

- .1 Sequence work to permit installation of materials in conjunction with related materials and seals.

1.8 COORDINATION

- .1 Coordinate work of this section with all sections referencing this Section.
- .2 Promote continuity of the air seal throughout.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

- .1 Specifications for this Section are based on Perma-barrier sheet membrane air/vapour barrier membrane and accessories supplied by Grace Membrane Systems and Bakor Blueskin SA Air/Vapour Barrier Membrane or approved

equivalent.

- .2 Self-adhering, cold-applied, composite sheet membrane minimum thickness 1.016 mm (40 mils).

2.2 ACCESSORIES

- .1 Substrate cleaner: non-corrosive type recommended by sealant manufacturer.
- .2 Primer: rubber based, dispersed in solvent, recommended by air/vapour barrier manufacturer.
- .3 Tape: minimum 0.762 mm thick, self-adhering type, compatible with sheet material.
- .4 Wall flashing membranes: minimum 0.762 mm thick, self-adhering type, compatible with sheet material.
- .5 Mastic: single component rubber based mastic.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verify surfaces and conditions are ready to accept the Work of this Section. Notify the Consultant in writing of any discrepancies. Commencement of the work or any parts thereof means acceptance of the prepared surfaces.

3.2 PREPARATION

- .1 All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane.
- .2 Cure all new concrete for a minimum of 14 days. Concrete must be dry before air barrier membranes are applied.

3.3 PRIMER

- .1 Prime all surfaces to receive membrane

applied by means of roller or spray at a rate recommended by manufacturer.

- .2 Allow primer to dry adequately before proceeding with the membrane.
- .3 To avoid excess pickup of air borne dust, prime only as much area as can be covered with membrane the same working day. If not covered in the same working day, reprime.

3.4 INSTALLATION

- .1 Apply membrane horizontally to primed block work between projecting masonry reinforcing beginning at base of wall area.
- .2 Install each length of membrane such that its upper edge runs continuously along the underside of the line of masonry reinforcing. Overlap subsequent sheets applied over the sheet below an average of 50 mm immediately below the line of reinforcing. Minimum overlap shall be 38 mm. Minimum edge lap in accordance with manufacturer's written instructions.
- .3 Press membrane firmly into place by means of a hand roller. Confirm the continuous contact with the substrate.
- .4 Membrane installation to interface with other elements designated as integral to the overall air/vapour barrier system. Confirm the compatibility with those components.

3.5 DETAILS

- .1 Confirm the integrity of membrane installation at the base of tie wire locations by applying mastic to seal voids caused in fitting the membrane around projections.
- .2 Fit membrane tightly around all penetrations through it and seal using mastic.
- .3 Continue the membrane into all openings in the wall area, such as windows and doors, and terminate at a point that will ensure that it

will not be visible from the interior.

- .4 Tie the membrane installation into and make continuous with all framed openings, including any mechanical and electrical penetrations through walls and roof.
- .5 Co-ordinate installation of membrane with roofing to ensure continuity of air/vapour barrier membrane with roofing system.
- .6 At the end of each working day, assuming a wall area has been only partially covered, apply a bead of mastic along top edge of membrane at its termination to prevent the vertical drainage of precipitation from running in behind the membrane. Tool mastic to ensure that it is worked into the surface of the block work.
- .7 Before covering membrane with cavity insulation, inspect and repair punctures, damaged areas or inadequately lapped seams. Make repairs using the membrane sized to extend a minimum of 100 mm in all directions from the perimeter of the affected area.