Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

Bid Receiving - PWGSC / Réception des soumissions - TPSGC
11 Laurier St./11 rue Laurier
Place du Portage, Phase III
Core 0B2 / Noyau 0B2
Gatineau, Québec K1A 0S5

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Construction Services Division/Division des services de construction
11 Laurier St./11 Rue Laurier
3C2, Place du Portage
Phase III
Gatineau, Québec K1A 0S5

Title - Sujet O-276 Roof/Siding & O-276 Roof	
Solicitation No. - N° de l'invitation EP076-180006/A	**Amendment No. - N° modif.** 003
Client Reference No. - N° de référence du client 20180006	**Date** 2017-08-17
GETS Reference No. - N° de référence de SEAG PW-$$FG-364-73117	
File No. - N° de dossier fg364.EP076-180006	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2017-08-24**	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Doyle, Ashton	**Buyer Id - Id de l'acheteur** fg364
Telephone No. - N° de téléphone (873) 469-4679 ( )	**FAX No. - N° de FAX** ( ) -
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:**	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
Vendor/Firm Name and Address **Raison sociale et adresse du fournisseur/de l'entrepreneur** **Telephone No. - N° de téléphone** **Facsimile No. - N° de télécopieur**	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) **Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)** **Signature** **Date**	

Canada

This Amendment number 003 is raised to:

1. Publish industry questions and responses; and
2. Provide a revised Bid & Acceptance Form with the updated construction time of 20 weeks;
3. Issue addendum 001;
4. Issue addendum 002; and
5. Issue addendum 003.

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1. The following question is hereby responded to (note that questions 1 and 2 were responded to in previous amendments):

Question #3
Would it be possible to get a list of General Contractors bidding on this project?

Answer #3
You can use the solicitation page on Buy and Sell to view who has signed up as an interested Bidder. The list can be found on the right hand side of the solicitation page on Buy and Sell, “Access the List of Interested Suppliers for this tender”.

Question #4
Regarding the above noted project, I noticed there are two doors and frames to be supplied and installed, however we are unable to find any specifications, hardware and related info.

The only info we could find was on A202, window and door schedule, however there is nothing shown for hardware requirements, or door details

Answer #4
Refer to addendum no. 001.

Question #5
Considering some areas of work are located on the airside, for those who don’t have the required Red badge for airside access, who will be responsible for paying the Escort? If we are to assume this cost, what is the hourly/daily rate for an escort?

Answer #5
The Client will cover the costs of all escorts on the airside portion of the project.

Question #6

The schedule indicates a 16-week completion, though do you have a specific deadline (i.e. March 31st, 2018)? The composite aluminum panels will take about 12-16 weeks after shop drawing approval before they arrive on site, which brings us to January. If there is a specific time line in mind, please clarify.

Answer #6

The construction time has been changed to 20 weeks.

Question #7

Regarding the pre cast pavers for the lighting rods. A101 indicates 400mm x 400mm slabs, whereas detail 27/A300 indicates 600 x 600.

Answer #7

Refer to addendum no. 001

Question #8

I've noticed on the elevation A203 that there are new windows, yet there is no specification for these. Can you please provide a specification for windows? The same goes for the doors & frames.

Answer #8

Refer to addendum no. 001

Question #9

There are two details 18/A303. The first one appears to be the correct one, can you please confirm what the second one is to be and if the preceding details will change too?

Answer #9

Refer to addendum no. 001

Question #10

Details 20, 22, 23/A105 refer to a section detail 20/A303, which is not located on the drawing. I mentioned before that there were two (2) details for 18/A303, may one of these be mistakenly identified?

Answer #10

Detail 20/A303 is on drawing A303.

Question #11

Can they/we use a crane, forklift or any other heavy machinery on what is considered air side? If so, what is the protocol for the operators on airside? Do escorts have to be in the machine at all times or can they surveil from outside?

Answer #11

Use of all cranes with a tip point above the apex (110ft) of the roof trusses requires a permit through NavCan which can take up to 30 days. All cranes tip points below the apex (110ft) require a 7 day notification to the Airport Authority. In both cases the client will assist in the completion of these applications. As for all other heavy machinery there are no restrictions.

Question #12

If the scaffolding is to be tarped it will need to be engineered and constructed to resist wind loads. Two options are possible, one is to anchor into the existing structure and the other will require a larger foundation to the scaffolding by creating buttresses. Can you confirm if we can anchor into the building or if we have to design the scaffolding to take a larger footprint by using buttresses?

Answer #12

The contractor may anchor into the building as long as they can restore any damage caused to the building afterwards.

Question #13

Item 2.1.1.4 of Specification section 07 42 40 (insulated metal panels) is asking for a total of 2 colours. Please confirm the exact location of the 2 colours on the elevations. This will affect our price

Answer#13

Only one colour will be chosen and used throughout the whole project.

Question #14

Item 2.1.3 of specification section 07 42 40 (insulated metal panels) is asking a minimum of 1.6mm thick for the flashings. The thickest flashings available in prepainted is 0.72mm thick as per our manufacturers.

Please clarify.

Answer#14

Refer to addendum no. 002

Question #15

Note 10 on A110 refers to “Further inspection for concrete curbs and to replace if not concrete”. Can you clarify if this will be issued as a cash allowance or shall we assume that this is to be replaced in our bid? Can you also clarify if this is to be replaced with a concrete curb, if so, please provide a detail for concrete curbs?

Answer#15
The note reads: Curb to be removed if not concrete construction.

Question #16
Can you confirm if we are only providing backing for walls types W2 on the East and West elevations as per drawings A202 & A203 or are we also continuing this work throughout the entire perimeter of the building (i.e.: on the North and South elevations)

Answer#16
Only provide backing for walls on East & West Elevations.

Question #17
On drawing A101, along with grid lines 10 & Cgi, there is no indication of detail 2 on A300. When I look at pictures from the job showing and google maps, it is evident that this detail is present on the roof. Can your technical design team correct this and add the detail for 2/A300 on grid line 10 of A101?

Answer#17
Refer to addendum no. 002

Question #18
It is noted on the Roof Assembly Demolition Notes for RX1 that this roof assembly contains Asbestos Cement Roof Decking. This is not indicated in the provided Designated Substances Spec Section 01 14 25. We are requesting that this material be tested by the consultants to obtain a measured % value of asbestos, to determine if the product in use is friable or non-friable, and what level of abatement will be required when it is disturbed. There are drawing details indicating penetrations through this assembly and we feel it is imperative to identify the toxicity of this product before disturbing it to ensure protection of workers above and in the hangar below. Please clarify.

Answer#18
Refer to addendum no. 003

Question #19
On Architectural Roof Plan A101, there is a new roof drain shown between Grid 17-18 close to Grid Cgi. However, this is not indicated on the mechanical roof plans. This will require coordination and pricing from the asbestos abatement contractors to install. Please clarify if this is required.

Answer#19
Refer to addendum no. 003

All other terms and conditions remain unchanged

BID AND ACCEPTANCE FORM (BA) - Revision 1

BA01 IDENTIFICATION
T-58 Hangar & O-276 Roofs, T-58 Siding, Replacement, 200 Comet Private, Ottawa, Ontario

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

Telephone: _____ Fax: _____ PBN: _____

E-mail address: _____

Industrial Security Program Organisation Number (ISP ORG#)_____
(when required)

BA03 THE OFFER
The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the Total Bid Amount of

$ _____excluding applicable taxe(s).
(amount in numbers)

BA04 BID VALIDITY PERIOD
The bid shall not be withdrawn for a period of 30 days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT
Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents (CD).

BA06 CONSTRUCTION TIME

The Contractor shall perform and complete the Work within 20 weeks from the date of notification of acceptance of the offer.

BA07 BID SECURITY
The Bidder is enclosing bid security with its bid in accordance with GI08 - Bid Security Requirements of R2710T - General Instructions - Construction Services - Bid Security Requirements.

BA08 SIGNATURE

_____
Name and title of person authorized to sign on behalf of Bidder (Type or print)

_____ _____
Signature Date

Addendum No. 001

Project Number: R.081980.001

The following changes in the bid documents are effective immediately. This addendum

will form part of the contract documents.

DRAWINGS

1. A 300 Details & Photos T-58
   1. Detail 27/A300 LIGHTNING ROD SUPPORT- NEW WORK; All pre-cast pavers for lightning rod supports are new, 600x600x50 mm pavers

.2 A 303 - T58 Details
   1. Revise detail number 18/A303 PENTHOUSE PH# 3- BASE NEW WORK, to number 19/A303 PENTHOUSE PH # 3- BASE NEW WORK

   2. Revise detail number 19/A303 PENTHOUSE PH#3 PARAPET - DEMOLITION, to number 19A/ A303 PENTHOUSE PH#3 PARAPET- DEMOLITION

SPECIFICATIONS

1. Add Section 08 11 00 - Metal Doors and Frames
2. Add Section 08 44 13 - Glazed Aluminum Curtain Wall
3. Add Section 08 80 50 - Glazing

1 GENERAL

1.01 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 00 10 – General Instructions

.3 Section 07 21 31 - Sprayed Insulation – Polyurethane Foam.

.4 Section 07 92 00 - Sealants.

.5 Section 09 91 99 - Painting.

1.02 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM A653/A 53M-09a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian Standards Association (CSA International)
- .1 CSA G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CSA W59-03(r2008), Welded Steel Construction (Metal Arc Welding).

.3 Canadian Steel Door Manufacturers' Association (CSDMA)

.4 National Fire Protection Association (NFPA)
- .1 NFPA (Fire) 252, Fire Tests of Door Assemblies.
- .2 NFPA (Fire) 80, Standard for Fire Doors and Other Opening Protectives.

.5 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC S702-09, Standard for Thermal Insulation Mineral Fibre, for Buildings
- .2 CAN/ULC S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
- .3 ULC CAN4-S104-M80(R1985), Standard Method for Fire Tests of Door Assemblies.
- .4 CAN4-S105-09, Standard Specification for Fire Door Frames Meeting the Performance Required by ULC CAN4-S104.

1.03 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide shop drawings:
- .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, arrangement of hardware, and finishes.
- .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire ratings and finishes
- .3 Include schedule identifying each unit, with door marks and numbers relating to

numbering on drawings and door schedule.

.4 Submit test and engineering data, and installation instructions.

1.04 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data in accordance with Section 01 00 10 – General Instructions.

1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 00 10 – General Instructions.

2 PRODUCTS

2.01 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75 for interior installations, Z275 for exterior installations, minimum nominal base steel thickness of 1.6mm

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75

2.02 DOOR CORE MATERIALS

.1 Stiffened: face sheets laminated insulated core.

.1 Fibreglass: to CAN/ULC S702, semi-rigid, minimum density 24 kg/m³.

.2 Exterior doors:

.1 Polyurethane: to CAN/ULC-S704 rigid, modified polyurethane, closed cell board. Density 32 kg/m³.

2.03 ADHESIVES

.1 Steel stiffened cores and steel components: heat resistant, resin reinforced neoprene/rubber (poly-chloroprene) based, low viscosity, contact cement.

.2 Polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

2.04 PRIMER

.1 Low VOC type recommended by door and frame manufacturer.

2.05 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 00 - Painting. Protect weather strips from paint. Provide final finish free of scratches or other blemishes.

2.06 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior top cap: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma or steel.

.3 Metallic paste filler: to manufacturer's standard.

.4 Sealant: in accordance with Section 07 92 00 - Sealants

2.07 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 1.6 mm welded thermally broken type construction.

.4 Factory blank, reinforce, drill and tap frames for surface, recessed, mortised, templated and electronic hardware as required using templates provided by finish hardware supplier.

.5 Provide factory installed boxes for exterior frames complete with conduit connectors to suit electrified hardware installations.

.6 Protect mortised cut outs with steel guard boxes.

.7 On site modifications are not acceptable.

.8 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.9 Manufacturer's nameplates on frames and screens are not permitted.

.10 Conceal fastenings except where exposed fastenings are indicated.

.11 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

2.08 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.09 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush.

.2 Exterior doors: polyurethane insulated core.

.4 Door skins: Hot dipped galvanized steel sheets minimum nominal base steel thickness of 1.6mm

.3 Seam treatment: fabricate doors with longitudinal edges continuously welded, finished flush and smooth.

.4 Factory blank, reinforce, drill and tap doors for surface, recessed, mortised, templated and electrified hardware as required using templates provided by finish hardware supplier.

.5 On site modifications are not acceptable.

.6 Factory reinforce doors as required for hardware. Provide flush PVC or steel top caps to exterior doors.

.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.8 Manufacturer's nameplates on doors are not permitted.

2.11 EXTERIOR DOORS AND FRAMES

.1 Fabricate doors by using insulated core.

.2 Thermal break for frames: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation continuously within frame adjacent to substrate in accordance with Section 07 21 31 – Sprayed Insulation – Polyurethane Foam.

3 EXECUTION

3.01 INSTALLATION GENERAL

.1 Install doors and frames to CSDMA Installation Guide.

3.02 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

3.03 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

.2 Provide even margins between doors and jambs and doors and finished floor surface as follows.
- .1 Hinge side: 1.0 mm.
- .2 Latchside and head: 1.5 mm.
- .3 Finished floor surface: 13 mm.

.3 Adjust operable parts for correct function.

3.04 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

.3 Provide paint finish to frame and door.

3.05 SCHEDULE & HARDWARE

.1 Provide new insulated door and frame where indicated; two required – Door D1 and Door D2.

.2 Door size to be +/- 915 x 2135 x 45mm to match existing, site verify before fabrication.

.3 Each new door to be prepared to receive existing salvage electric strike and lockset.

.4 Provide following new hardware to each door:

.1 LCN door closer,
.2 1 set of weather-stripping,
.3 Aluminum thermally broken aluminum threshold,
.4 Overhead stop.
.5 1 ½ pair hinges, 5 knuckles, ball bearing, with NRP.

END OF SECTION

PART 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 00 10 – General Instructions

.3 Section 07 92 00 – Sealants

.4 Section 08 80 50 – Glazing.

1.2 REFERENCES

.1 American Architectural Manufacturers Association (AAMA).
- .1 AAMA CW-DG-1-96, Aluminum Curtain Wall Design Guide Manual.
- .2 AAMA CW-10-12, Care and Handling of Architectural Aluminum from Shop to Site.
- .3 AAMA 2605-11, Voluntary Specification Performance Requirements and Test Procedures for Superior Performance Organic Coatings on Aluminum Extrusions and Panels.

.2 American Society for Testing and Materials International, (ASTM).
- .1 ASTM B209-14, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .2 ASTM B221-14, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .3 ASTM E283-04(2012), Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .4 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .5 ASTM E331-00(2016), Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .6 ASTM C864-05 (2015), Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

.3 Canadian Standards Association (CSA International).
- .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
- .2 CSA S136-12, North American Specification for the Design of Cold-Formed Steel Structural Members.
- .3 CAN3 S157-05/S157.1-05 (R2015), Strength Design in Aluminum.
- .4 CSA W59.2-M1991(R2013), Welded Aluminum Construction.
- .5 CSA A440.2-04, Energy Performance of Windows and Other Fenestration Systems
- .6 CSA A440-11, North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

1.3 SYSTEM DESIGN

.1 System to be comprised of horizontal and vertical mullions with architectural pressure plates and caps.

1.4 CURTAINWALL PERFORMANCE REQUIREMENTS

.1 Design and size components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of system as calculated in accordance with NBC.

.2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with NBC.

.3 Limit mullion deflection to L/175; with full recovery of glazing materials.

.4 Provide system to accommodate, without damage to components or deterioration of seals:
- .1 Movement within system.
- .2 Movement between system and perimeter framing components.
- .3 Dynamic loading and release of loads.
- .4 Deflection and creep of structural support framing.
- .5 Penetration of moisture with rain screen design for discharge and drainage.

.5 Limit air infiltration through assembly to 0.0003 m^3 /s/m^2 of wall area, measured at a reference differential pressure across assembly of 75 Pa as measured in accordance with ASTM E283.

.6 Water leakage: none, when measured with a pressure difference of 575 Pa in accordance with ASTM E331.

.7 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage rain screen network

.8 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

1.5 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures

.2 Provide component dimension, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow diagrams.

.3 Shop drawings:
- .1 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
- .2 System design for glazing thickness, attachment, deflection, seismic, wind,

and thermal movement to be designed and stamped by Professional Engineer licensed to practice in the Province of Ontario.

.4 Submit two samples 75 x 75 mm in size illustrating prefinished aluminum surface, finish, colour and texture.

.5 Design data:
.1 Provide framing member structural and physical characteristics, calculations, dimensional limitations, special installation requirements.

.6 Submit test:
.1 Submit substantiating data, test results of previous tests which purport to meet performance criteria, and supportive data.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with manufacturer's printed instructions.

.2 Handle work of this section in accordance with AAMA CW-10.

.3 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 00 10 – General Instructions.

1.8 MOCK-UP

.1 Provide completed curtainwall single window system including sill, and vision glass. Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.

.2 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with work.

.3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

PART 2 Products

2.1 MATERIALS

.1 Extruded aluminum: 6063-T6, ASTM B221.

.2 Sheet aluminum: ASTM B209.

.3 Anchors: 3-way adjustable hot-dip galvanized cast iron. Exposed anchors to be finished to match curtain wall framing.

.4 Fasteners: stainless steel. Exposed fasteners to be finished to match curtain wall framing.

.5 Thermal breaks: rigid polymer or polyamide

.6 Vision glass units: in accordance with Section 08 80 50 - Glazing

.7 Sealant: in accordance with Section 07 92 00 – Sealants

.8 Isolation coating: alkali resistant bituminous paint

2.2 COMPONENTS

.1 Curtain Wall Mullion system:
- .1 Horizontal and vertical members: 63.5 mm x 133 mm and of thickness required and reinforced as required to support imposed loads.
- .2 Thermally broken with interior tubular section insulated from exterior pressure plate.
- .3 Matching stops and pressure plates of sufficient size and strength to provide adequate bite on glass.
  - .1 Gaskets to meet the requirements of ASTM C864.
  - .2 Pressure caps: nominal 19mm for horizontals and verticals.
  - .3 3mm thick curtainwall cap closures where indicated.
- .4 Drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system.
- .5 Internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
- .6 Glazing system: 4 sided captured.
- .7 Glazing Plane: Front

.2 Flashings and sills: 2 mm thick aluminum, finish to match curtain wall sections where exposed, secured with concealed fastening method.

2.3 FABRICATION

.1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

.2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof

.3 Prepare and install components to receive anchor devices.

.4 Arrange fasteners and attachments to ensure concealment from view.

.5 Design and reinforce framing members for external imposed loads.

.6 Visible manufacturer's identification labels not permitted.

2.4 FINISHES

.1 Exterior and Interior exposed aluminum surfaces: clear anodized to

AA-M10C22A41, Architectural Class I.

.2 Touch-up primer for galvanized steel surfaces: SSPC 20 Paint zinc rich.

.3 Concealed steel items: galvanized in accordance with ASTM A123 to 600 gm/m².

2.5 SOURCE QUALITY CONTROL

.1 Perform work in accordance with AAMA CW-I-9. Maintain one copy on site.

.2 Installer qualifications: company specializing in performing the work of this section recognized by manufacturer.

PART 3 Execution

3.1 EXAMINATION

.1 Verify dimensions, tolerances, and method of attachment with other work.

.2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 INSTALLATION

.1 Install curtain wall system in accordance with manufacturer's instructions.

.2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

.3 Provide alignment attachments and shims to permanently fasten system to building structure. Apply protective primer to adjacent surfaces.

.4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

.5 Provide thermal isolation where components penetrate or disrupt building insulation.

.6 Install sill flashings.

.7 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder materials.

.8 Apply spray foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.9 Install glass in accordance with Section 08 80 50. Apply pressure plates and pressure caps.

.10 Install perimeter sealant and backing materials in accordance with Section 07 92

00.

3.3 SITE TOLERANCES

.1 Maximum variation from plumb: 1.5 mm/m non-cumulative or 10 mm/30 m, whichever is less.

.2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.

.3 Maximum sealant space between curtain wall and adjacent construction: 13 mm.

3.4 CLEANING

.1 Remove protective material from prefinished aluminum surfaces.

.2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

.3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.5 PROTECTION

.1 Protect finished Work from damage.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 35 21 – LEED Requirements

.3 Section 01 74 21 - Waste Management and Disposal

.4 Section 01 78 00 - Closeout Submittals

.5 Section 07 92 00 – Sealants

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM C542-05(2011), Specification for Lock-Strip Gaskets.
- .2 ASTM C1048-12, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
- .3 ASTM D2240-15, Standard Test Method for Rubber Property - Durometer Hardness.
- .4 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB 12.1-M90, Tempered or Laminated Safety Glass.
- .2 CAN/CGSB 12.3-M91, Flat, Clear Float Glass.
- .3 CAN/CGSB 12.8-97, Insulating Glass Units.
- .4 CAN/CGSB 12.11-M90, Wired Safety Glass.

.3 Insulating Glass Manufacturer's Alliance (IGMA).
- .1 TM-4000-02 - Insulating Glass Manufacturing Quality Procedures
- .2 TM-4100-03 - Preventing Insulating Glass Failures
- .3 TR-1200-83(07) - Guidelines for Commercial Insulating Glass Dimensional Tolerances

1.3 SYSTEM DESCRIPTION

.1 Exterior Performance Requirements:
- .1 Provide continuity of building vapour and air barriers using glass and glazing materials.
- .2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ASTM E330.
- .3 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures

.2 Shop Drawings:
- .1 Indicate glass types, assembly, spacers, films, coatings and other components.
- .2 Provide templates and design templates of privacy and graphic window film for review and approval by Departmental Representative.
- .3 Provide computer generated modeling of light diffusing glass units to confirm required VLT values.

.3 Samples:
- .1 Submit duplicate 150 x 150 mm size samples of each glazing type.

.4 LEED Submittals:
- .1 Provide documentation in accordance with Section 01 35 21 – LEED Requirements

1.5 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data in accordance with Section 01 78 00 - Closeout Submittals

1.6 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.8 SITE CONDITIONS

.1 Environmental Requirements:
- .1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
- .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.9 WARRANTY

.1 Manufacturer warrants that insulated thermal units will not fail for a period of not less than 10 years.

PART 2 PRODUCTS

2.1 MATERIALS: FLAT GLASS

.1 Float glass: to CAN/CGSB 12.3, Glazing quality, thickness as required for

intended use.

.2 Safety glass: to CAN/CGSB 12.1, transparent.
- .1 GL3: type 1 – laminated, heat strengthened.
- .2 GL1, GL2, GL4: type 2 – tempered.
- .3 Class B-float.
- .4 Category 1.
- .5 Edge treatment.

.3 Heat-Strengthened float glass: to ASTM C1048
- .1 Type I, Class 1 (clear), Quality Q3, Kind HS

.4 Silvered mirror glass (Washrooms):
- .1 Silver backed float glass for normal humidity use.
- .2 Thickness as required for intended use, but no less than 3mm thick.
- .3 All mirrors to have polished beveled edges.

.5 Low emissivity (LOW E) glass. To CAN/CGSB 12.8
- .1 Metallic coating: soft, sputtered.
- .2 Visible light transmittance: minimum 54%.
- .3 Exterior reflectance: minimum 19%.
- .4 Interior reflectance: minimum 16%.
- .5 Solar heat gain co-efficient: maximum 0.29.
- .6 U-values:
  - .1 Winter nighttime: maximum 0.24

2.2 MATERIALS: SEALED INSULATING GLASS

.1 GL1: Double insulating glass units: manufactured to TM-4000, approximately 25 mm overall thickness.
- .1 Glass:
  - .1 Outer lite: 6 mm clear tempered float glass to CAN/CGSB-12.1.
  - .2 Inner lite: 6 mm clear tempered float glass to CAN/CGSB-12.1.
- .2 Inter-cavity space thickness: approximately 13 mm
- .3 Spacer: warm edge spacer type
- .4 Glass coating: surface number 2, low "E" and ceramic frit as described below. No ceramic frit on door glazing.
- .5 Inert gas fill: minimum 90% cavity filled argon.

.2 GL2: Double insulating glass units: manufactured to TM-4000, approximately 25 mm overall thickness.
- .1 Glass:
  - .1 Outer lite: 6 mm tinted tempered float glass to CAN/CGSB-12.1.
  - .2 Inner lite: 6 mm clear tempered float glass to CAN/CGSB-12.1.
- .2 Inter-cavity space thickness: approximately 12 mm
- .3 Spacer: warm edge spacer type
- .4 Glass coating: surface number 2, sandblast finish to match Departmental Representative’s sample.
- .5 Inert gas fill: minimum 90% cavity filled argon.

.3 GL3: Double insulating glass units: manufactured to TM-4000, approximately 25 mm overall thickness.
- .1 Glass:
  - .1 Outer lite: 6 mm tinted heat-strengthened
  - .2 Inner lite: 6 mm clear laminated glass with 0.030 in. polyvinylbutyral (PVB) interlayer.
- .2 Inter-cavity space thickness: approximately 13 mm
- .3 Spacer: warm edge spacer type
- .4 Glass coating: surface number 2, low "E" and ceramic frit as described below.
- .5 Inert gas fill: minimum 90% cavity filled argon.

.4 GL4: Clear tempered float glass to CAN/CGSB-12.1, 6mm thick with sandblast finish to match Departmental Representative's sample.

.5 Fritting on Sealed Insulating Glass Units (GL3):
- .1 Bird strike mitigation fritting pattern as follows: 3 mm wide horizontal band. Bands to be set 50 mm apart, clear inside dimension from band to band. Band to be white, translucent (20-40% light transmissivity).
- .2 Adjacent glazed units will have fritting appear to be continuous, ie: horizontal bands must line up horizontally from unit to unit.

2.3 ACCESSORY COMPONENTS

.1 Sealant: in accordance with Section 07 92 00 - Sealants

2.4 ACCESSORIES

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.

.2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:
- .1 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2 %, designed for compression of 25 %, to effect an air and vapour seal.

.4 Lock-strip gaskets: to ASTM C542.

.5 Washroom mirror attachment accessories:
- .1 Stainless steel clips.
- .2 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

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 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION: EXTERIOR - DRY METHOD (PREFORMED GLAZING)

.1 Perform work in accordance with FGMA Glazing Manual.

.2 Cut glazing tape to length; install on glazing light. Seal corners by butting tape and sealing junctions with sealant.

.3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

.5 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.

.6 Trim protruding tape edge.

3.5 INSTALLATION: INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

.1 Perform work in accordance with FGMA Glazing Manual.

.2 Cut glazing tape to length and install against permanent stops, projecting 1.6 mm above sight line.

.3 Place setting blocks at 1/3 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of light or unit.

.5 Install removable stops, with spacer shims inserted between glazing and applied stops at 600 mm intervals, 6 mm below sight line.

.6 Fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.

.7 Trim protruding tape edge.

3.6 INSTALLATION: WASHROOM MIRRORS

.1 Provide 13mm thick solid plywood backing to mirrors with offset mounts. Backing to be 13mm smaller than mirror along complete perimeter. Finish plywood backing edges with type 304 brushed stainless steel angle, 16mm x 16mm x 2mm, mechanically fastened to rear face of backing. Backing and offset mounts to be mechanically fastened to solid wall substrate. Adhere mirrors to backing with compatible adhesive, applied in accordance with adhesive manufacturer’s instructions.

.2 Set other mirrors direct to wall substrates. Anchor rigidly to wall construction.

.3 Place plumb and level.

3.7 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer and caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.

3.8 PROTECTION OF FINISHED WORK

.1 After installation, mark interior lights with an "X" by using removable plastic tape or paste.

END OF SECTION

Addendum No. 002

Project Number: R.081980.001

The following changes in the bid documents are effective immediately. This addendum will form part of the contract documents.

DRAWINGS

1. A 101
    1. Detail 2/A300 also applies to location at gridlines 10 & Cgi.

SPECIFICATIONS

1. Section 07 42 40 Insulated Metal Building Panels
    1. Part 2 Products: 2.1.3. Revise minimum thickness for copings and flashings from 1.6mm to 0.72 mm.

Addendum No. 003

Project Number: R.081980.001

The following changes in the bid documents are effective immediately. This addendum

will form part of the contract documents.

DRAWINGS

1. A 101
   1. Remove new roof drain located between gridlines 17& 18 and to the North-West of gridline Cgi.