

Thursday, November 7, 2024

DOCUMENT - 2024-346P

Construction of the Docksteader Peel Region Paramedic Services Reporting Station

ADDENDUM 1

Number of Pages: 4 + Section 01 83 16 – Exterior Enclosure Performance and Testing, Revised Addendum 1 and GEN-1 – Site Servicing Plan, dated September 23rd, 2024, Revised Addendum 1.

Referring to the above Document 2024-346P - Construction of the Docksteader Peel Region Paramedic Services Reporting Station, please note the following revision to the Closing Date.

Bidders are advised that the Bid Closing Date has been changed. Please refer to the Bid Details page through the Agency's Bidding System at peelregion.bidsandtenders.ca for the revised Bid Closing Date. Bidders shall note that the Bid Closing Date as stated on the Bid Details page of the Agency's Bidding System shall take precedence at all times and that any subsequent changes to the Bid Closing Date may not be captured through Addendum.

It is the sole responsibility of the Bidder to ensure their Bidder Submission is received by the time and date specified within the Agency's Bidding System.

Referring to the above Document 2024-469T - Balcony Rehabilitation Project at 1 Maple Ave, Brampton, please note the following revisions to the Specifications:

- Delete:
 Section 01 83 16 Exterior Enclosure Performance and Testing in its entirety.
 - **<u>Replace With</u>**: Section 01 83 16 Exterior Enclosure Performance and Testing, Revised Addendum 1.

Referring to the above Document 2024-469T - Balcony Rehabilitation Project at 1 Maple Ave, Brampton, please note the following revisions to the Drawings:

- 1.Delete:GEN-1 Site Servicing Plan, dated September 23rd,
2024 in its entirety.
 - **<u>Replace With</u>:** GEN-1 Site Servicing Plan, dated September 23rd, 2024, Revised Addendum 1.

Referring to the above Document 2024-346P - Construction of the Docksteader Peel Region Paramedic Services Reporting Station, please note the following responses to questions raised:

Question 1:

Will there be any geothermal drilling in this project

Answer 1:

No, there is no requirement for geothermal drilling in this project.

Question 2:

Vodaland would be interested in proposing an alternate trench drain in lieu that is spec'd on the project. The product is called 4.5in MEGA 110FC with load class E (as per EN 1433). Below is the product spec.

Channels shall be 39.4" (1000mm) long and the nominal clear opening shall be 4.5" (110mm) with 7.4" (187mm) overall width and built-in slope of 0.5% or 1% or Neutral per specifier's requirements. Channels shall have male-to-female interlocking joints. Gratings shall be ductile iron fastened to steel edge rails and meet system load class specified. Channels and grates shall withstand a required EN1433 load class E.

Materials: MEGA 110FC trench drain shall be manufactured from fiber reinforced concrete with cast-in galvanized steel edge rails.

Compressive strength: greater than 45 Mpa Flexural strength: greater than 20 Mpa Frost resistant: Yes Non Flammable: Yes UV Resistant: Yes Recyclable 100%: Yes Dilute acid and alkali resistant: Yes Material free of VOC, biocides, heavy metals: Yes Water absorption is sufficient for adhesion with concrete surfaces: Yes

Answer 2:

Alternatives will NOT be considered prior to contract award. The awarded bidder may submit alternatives for review in accordance with the Contract and the final decision on the use of any alternatives will be at the discretion of the Consultant and the Agency.

Question 3:

Vodaland would also be interested proposing an alternative oil water separator in lieu of what is spec's. Our separator is OILBASE100-2. This has a flow rate of 2 I/s or 31.7 gpm.

The oil water separator shall be manufactured from Fiberglass as per BS EN 976-1/2:1997 standard and have the following properties: Water absorption 0.01%, Frost proof, salt proof and Fuels and oils resistant. The oil separator shall be equipped with a coalescing unit and automatic shut-off value including a sludge trap for situations when the maximum oil capacity is reached. Useful capacity of the oil separator shall be 710L (187.5 gal), a sludge capacity of 200L (52.8 gal) & light liquids capacity of 100L (26.4 gal).

Cover shall be manufactured from fibreglass with a minimum inside opening Ø24.5" (620mm) with an option of Cast iron cover. Neck extensions are available with 0.5m,1m,1.5m lengths and with and without ladders. Flange adaptors are also available to attach cast iron manhole cover. Cast Iron cover shall withstand a required EN1433 load class D.

Answer 3:

Refer to the response to Question 2 above.

Question 4:

08 63 00 – Tubular Skylights – The drawings show the Daylight Collector System, but this option is not listed in the specifications. Please confirm if you wish to proceed with the recommended and drawn option for optimal daylight harvesting.

Answer 4:

Specifications provided are generic in order to capture systems able to be supplied by all listed manufacturers. Bidders to provide a complete system for tubular skylight system commensurate with requirements listed in Section 08 63 00.

Question 5:

After reviewing the tender documents, we kindly request a closing date extension of a couple weeks given the size of the project.

Answer 5:

The Closing Date has been extended to **12:00 p.m. Eastern Standard Time**, **Monday**, **December 2**, **2024**.

Mario MacGlashan Procurement Advisor

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1. <u>GENERAL</u>

1.1 <u>Summary</u>

- 1.1.1 Work Included: Provide labour, materials, products, equipment and services to complete the exterior enclosure performance and testing work specified herein. This includes, but is not necessarily limited, to:
 - .1 Below-grade construction, including foundation walls and slabs-on-grade.
 - .2 Above-grade construction, including:
 - .1 exterior opaque wall materials and assemblies;
 - .2 roofing systems, including steep-slope and low-slope roofing;
 - .3 outdoor plazas, planters and plaza paving systems and assemblies over occupied spaces; and
 - .4 openings and glazed assemblies including windows, doors, curtain wall and sloped glazing systems.
 - .3 Interface and penetration conditions (flashings, expansion joints and sealants) between each of the materials, components and systems that comprise the above and below-grade building exterior enclosure.
- 1.1.2 This Section includes the general design and performance requirements for the work of Sections which comprise the building enclosure portion of the Work. The requirements specified in this Section shall be read in conjunction with other requirements specified in Contract Documents.
 - .1 Read in conjunction with Section 01 91 15 Building Envelope Commissioning for additional requirements related to building envelope commissioning.
- 1.1.3 This Section also outlines the process for independent, third-party verification that the installed performance of the building enclosure meets or exceeds the minimum performance requirements stipulated in the Contract Documents for this Project.
 - .1 Provision of inspection and testing services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
 - .2 Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.

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.3 Use of testing to discover deficiencies will not be permitted where Contractor's quality-control procedures would make these tests unnecessary.

1.2 <u>References</u>

- 1.2.1 The following definitions apply to this Section:
 - .1 "Post-Disaster Building": means a building that is essential to provision of services in event of a disaster. This facility is classified as post disaster as defined in the OBC.
 - .2 "Operational and Functional Component" and "OFC": means components within building which are directly associated with the function and operation of the facility. OFCs consist of architectural components, building services components, and building contents. Items specified herein may be designated as OFCs and may need to be designed in accordance with performance requirements specified herein and in Section 13 48 50.
 - .3 "Building enclosure" and "Building Enclosure": means the part of the building that physically separates the exterior environment from the interior environment. It includes abovegrade walls and openings, below-grade walls, slabs, roofs, and the various components and accessories used to achieve continuity and physical connections and transitions between various assemblies.
 - .4 "Air Barrier Assembly": means a collection of Air Barrier Materials (i.e. self-adhered sheet air barriers, liquid applied membranes, medium density sprayed polyurethane foam, mechanically fastened commercial building wraps and boardstock air barriers) and Air Barrier Accessories (i.e. sealants, tapes and transition membranes) assembled together to form a continuous barrier to air infiltration into the environmental separator.
 - .5 "Air Barrier Material": means a primary material that controls the movement of air into and out of a building.
 - .6 "Air Barrier Accessory": means the materials or products which are used to connect different Air Barrier Materials to form a continuous air barrier assembly.
 - .7 "Vapour Retarder": means a membrane that reduces the rate at which water vapor can move through a material. The materials the ability to retard the diffusion of water vapor is measured in units known as "perms" or permeability.
 - .8 "Vapour Barrier": means material or system within the building construction assembly that impedes water vapour transmission

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to less than 72 ng/(s-sq.m-Pa) when tested in accordance with ASTM E96 to prevent the accumulation of moisture having potential to cause deterioration of the Building Enclosure.

- .9 "Class 1 Vapour Barrier": means material or system within the building construction assembly that impedes water vapour transmission to less than 5.72 ng/(s-sq.m-Pa) when tested in accordance with ASTM E96 to prevent the accumulation of moisture having potential to cause deterioration of the Building Enclosure.
- .10 "Testing with Sealed Openings": means testing with intentional openings sealed means that mechanical openings are purposely closed off. Mechanical systems that are intended to be sealed with dampers are only sealed by closing the damper, with no additional sealing provided. Windows and doors are left in the closed and locked position.
- .11 "Enclosure-Only Testing": similar to sealed openings approach, except all mechanical penetrations are temporarily masked to completely prevent air leakage through them.
- .12 "Guarded Testing": means a compartmentalized version of a Whole Building Air Test in order to permit testing during the construction phase. All parameters required in a Whole Building Air Test apply.
- .13 "Whole Building Air Testing": means the testing of the airtightness of a building by means of an air pressure test (airtightness test or "blower door test") which determines the overall remaining leakage of a building.
- 1.2.2 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to Section 01 42 19 for list of standards used in Specifications.

1.3 Administrative Requirements

- 1.3.1 Pre-Installation Meetings: arrange pre-installation meetings attended by third-party inspection and testing company, Consultant, and Subcontractors whose work is directly associated with or impacted by Building Enclosure activities prior to starting work on the Building Enclosure.
 - .1 Quality Management Plan: review Contractor's quality control plan, and confirm that approaches to quality control and quality assurance procedures are coordinated with third-party inspection and testing company monitoring and testing requirements.

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- .2 Document and Product Review: review Contract Documents and confirm compatibility between overlapping and adjacent components supplied and installed by multiple parties who are contributing different Products associated with the assembly of the Building Enclosure.
- 1.3.2 Scheduling: Schedule construction of sample panels, mock-ups, associated pre-construction and during construction and post-construction testing thereof to account for site-specific installation conditions. Ensure sufficient time is accounted for notifying witnesses of tesiting, and to permit corrections to proposed construction methods without negatively impacting the Construction Schedule.
- 1.3.3 Role of the Consultant: Consultant is the registered professional of record and is responsible for responding to the Owner's stated project requirements and providing statements of compliance to the Authorities Having Jurisdiction indicating that the objectives of building code functional statements for Building Enclosure performance are met.
 - .1 Consultant will rely on third-party inspection and testing company reports in conjunction with the Contractor's field quality control reports to provide opinion on Building Enclosure performance.
- 1.3.4 Role of the third-party inspection and testing company:
 - .1 Third-party inspection and testing company will schedule and arrange testing during construction of the Building Enclosure and provide observation during installation of Building Enclosure components in accordance with their contract with Owner.
 - .2 Third-party inspection and testing company must assist in establishing best-practice installation procedures for Products forming the Building Enclosure.
 - .3 Third-party inspection and testing company must assist in establishing methods for corrective action where site conditions or actual installation result in non-conforming Building Enclosure performance.
 - .4 Third-party inspection and testing company will perform testing as directed by the Owner and Consultant and will schedule with Contractor mutually agreed timing for access to site and performance of their activities.
 - .5 Third-party inspection and testing company will make recommendations for correction to observed deficiencies to Consultant. Consultant will make final recommendation for any assembly modifications to Contractor.

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1.3.5 Role of the Contractor:

- .1 Provision and coordination of trades, and sequence of construction to ensure total performance of Building Enclosure from substructure to walls and to roof, including proper insulation depths, continuity of air barrier system joints, junctures and transitions between materials, assemblies of materials, and products.
- .2 Identify a site supervisor to fulfill the "Air Boss" role at Construction Start-Up meeting from the Contractor team. This individual to be solely responsible to ensure continuity of the air barrier is maintained, communicating requirements of airtightness to trades on site and addressing concerns or inquiries back to Consultant or Testing & Inspection team via Request for Information process.
- .3 Organize trades training for any individuals working on, adjacent to, or penetrating through the air barrier. Training to be repeated on an ongoing basis when new trades working within proximity of the air barrier join the subject development.
- .4 Organize preconstruction meetings between trades involved in, working adjacent to, or running services through any portion of the entire Building Enclosure system to discuss where each trade scope begins and ends, responsibility and sequence of installation for proper insulation, waterproofing, air-tight joints, junctures, and transitions between materials, products and assemblies of products specified in different sections.
- .5 Build mock-ups satisfactory to Consultant and third-party inspection and testing company of each assembly type including, junctures, and transitions between products, materials and assemblies.
- .6 Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify Consultants required to review and third-party inspection and testing company a minimum of 10 Business Days in advance of operations to permit assignment of personnel.. Auxiliary services required include, but are not limited to, following:
 - .1 Provision of access to the Work.
 - .2 Provision of incidental labour and facilities necessary to facilitate inspections and tests.
 - .3 Provision of adequate quantities of representative samples of materials that require testing or assistance in taking samples.
 - .4 Delivery of samples to testing laboratories.

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.5 Provision of security and protection of samples and test equipment at Project Site.

1.4 <u>Submittals</u>

- 1.4.1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for the exterior enclosure commissioning work and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Include recommendations for product application and use.
 - .3 Include test data substantiating that products comply with requirements.
- 1.4.2 Shop Drawings: Submit Shop Drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
 - .1 Energy Simulation: Submit energy simulation data conforming to the following:
 - .1 Performance of Glazing: simulated using WINDOW (latest edition) software by Lawrence Berkley Laboratories ("LBL").
 - .2 Performance of Framing (opaque and glazed assemblies): simulated using THERM software by LBL.
 - .2 Simulations must be carried out by a qualified simulator and summary reports must bear seal of a Professional Engineer and clearly demonstrate materials used to reduce thermal bridging in the field and at the interfaces of Building Enclosure assemblies.
 - .3 Alternatively test results based on testing in accordance with AAMA 1503.1 may be submitted in lieu of energy simulation to verify performance.
- 1.4.3 Contractor's Quality Control Plan: submit quality control plan before pre-construction conference, describing approach to maintaining material and installation quality including the following:
 - .1 Lists of third-party standards, guidelines or reference documents forming part of proposed construction best-practices used to achieve specified performance requirements;
 - .2 Substrate preparation and installation of air barrier and vapour retarding membranes;
 - .3 Treatment of transitions between Building Enclosure components and their penetrations (including doors, frames, glazing, flashings, louvers and other penetrations);

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- .4 Confirmation of compatibility between Building Enclosure components;
- .5 Proposed list of observations and tests forming a part of Contractor's quality assurance and quality control activities;
- .6 Methods for addressing corrective action plans and addressing deficient or incompatible installation procedures;
- .7 Format and frequency of reports, records of pre-construction meetings and site modifications; and
- .8 Proposed construction schedule indicating stages of Building Enclosure construction and potential dates for Consultant's, and third-party inspection and testing company's review activities.
- 1.4.4 Manufacturer's Certificates: Submit third-party verification stating conformance with Project requirements, including any material compatibility or limitations specific to Project conditions.
- 1.4.5 Test and Evaluation Reports: Submit reports indicating test methods and results, and stating specifically which attributes apply to the products supplied to the Project.
- 1.4.6 Manufacturer's Installation Instructions: Submit written installation requirements stating required workmanship practices to achieve assembly performance required for the Project.

1.5 <u>Closeout Submittals</u>

- 1.5.1 Maintenance Schedule: Submit summary table that indexes Building Enclosure components requiring maintenance and indicates frequency at which each component requires repair or replacement (i.e. replacement of sealants, gaskets, glazing units, paints or coatings and similar components).
- 1.5.2 Operation and Maintenance Data: Submit operation and maintenance data for each component listed in aforementioned schedule including the following as a minimum:
 - .1 Product Data Sheets as specified in this Section.
 - .2 Extended Warranty Information: Include warranties for products, equipment, components, and sub-components whose duration exceeds one year. Include warranties on components with the system they are a part of. Reference all specific operation and maintenance procedures that must be performed to keep warranty valid.
 - .3 Sources of Material: Include reference to contact information where specific materials can be obtained.
 - .4 Installation and Maintenance Instructions: Submit information for each material, component or system.

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1.6 **Quality Assurance**

- 1.6.1 Mock-Ups: Construct mock-ups of each assembly as specified in this Section, including junctures, transitions and interfaces to establish baseline quality for installation and workmanship, and to evaluate enclosure-related constructability and performance, with a specific emphasis on required coordination of Subcontractors and sequencing necessary to ensure that performance of enclosure materials, components, systems, assemblies, and interfaces meets or exceeds requirements of Contract Documents.
 - .1 Required Mock-ups: Provide "first installation" in-situ or on site mock-up (as determined by Consultant) of each major Building Enclosure system, including:
 - .1 Each below grade underslab and vertical waterproofing system.
 - .2 Each type of horizontal waterproofing system enclosing occupied space below.
 - .3 Each substantially different type of vertical enclosure assembly (including associated air barriers, insulation, and support materials) including, but not limited to precast concrete assemblies, masonry assemblies, curtain wall and glazed assemblies, and rain screen cladding assemblies.
 - .4 Each low-slope and each steep-slope roofing assembly.
 - .2 Extent of Mock-ups: Ensure extent of each mock-up includes interface of various materials and systems, both between various major assemblies (e.g. foundation waterproofing connection to wall assembly) and between various materials in the same assembly (e.g. interface between window and wall).
 - .1 Wall mock-ups must be minimum of 10 sq. m (100 sq. ft.) and extend one full structural bay wide by one full story high plus additional height as required to connect to assemblies below and above. Ensure mock-up includes typical exterior wall-to-interior floor slab connection. In addition, conform to the following:
 - .3 Curtain Wall Systems, Entrances and Windows: minimum of two full sized unit within rough opening demonstrating installation of transition membranes, sealants and flashings.
 - .4 Air Barrier Membranes: apply air barrier membrane to minimum area of 36 sq.m (390 sq. ft), including placement of a single opening (window and/or door) demonstrating overlaps, adhesion to substrates, and compatibility with adjacent materials.

- .5 Cladding Panels (each type): assemble a test panel including placement of a single opening (window and/or door) demonstrating progressive installation, attachment to substrate, installation of insulation, joint sealants, and placement of flashings and closure strips.
 - .1 Roof mock-ups must be minimum of 10 sq. m (100 sq. ft.) and include parapet or roof edge conditions, as well as typical pipe, supports, and similar penetrations.
 - .2 Horizontal below-grade waterproofing or slab-on-grade vapour retarder mock-ups must be minimum of 10 sq. m (100 sq. ft.) and include edge conditions and typical penetration details.
 - .3 Vertical below-grade waterproofing (foundation wall waterproofing) mock-ups must include typical edge, termination, and penetration details.
 - .4 Solar wall assembly mock-ups must be minimum of 10 sq. m (100 sq. ft.) and include penetration details, installation of insulation, attachment to substrate, installation of insulation, joint sealants, and placement of flashings and closure strips.
- .6 Sequencing Requirements: Stage each component within mock-ups so that each layer of construction can be reviewed and tested as required to verify performance before succeeding layers of materials are applied.
- .7 Post Mock-Up Debrief: arrange for post mock-up debrief meetings attended by Contractor, Owner, third-party inspection and testing company, Consultant, and Subcontractors whose work is directly associated or impacted by Building Enclosure activities.
 - .1 Schedule debrief meeting immediately after testing results and observations of the mock-ups is completed.
 - .2 Incorporate lessons-learned arising from observed conditions and testing into Contractor's quality control plan.
- .8 Modifications to Mock-Ups: mock-ups may require modifications to account for site conditions and compatibility between adjacent materials and assemblies.
 - .1 Provide corrective actions as required to obtain acceptance. Repair mock-ups which are permitted to form a part of the final construction that have been damaged or that failed testing.

2. PRODUCTS

2.1 <u>Design And Performance Requirements</u>

- 2.1.1 Statement of Building Enclosure Design Intent: The design intent of this building's enclosure is to provide exterior floor, wall, and roof assemblies which prevent uncontrolled air and vapour infiltration into the building; eliminate water infiltration (including condensation) into conditioned spaces; and provide thermal insulation continuity to minimize cold bridging. Products and assemblies used to perform these functions must be technically sound, durable and serviceable.
 - .1 Design Assumptions:
 - .1 Climate Zone: ASHRAE Climate Zone 6a
 - .2 Ambient Interior Air Temperature:
 - .1 Occupied Spaces:
 - .1 Heating: 21°C (70°F)
 - .2 Cooling: 23°C (73°F)
 - .2 Vehicle/Supervisor Bay:
 - .1 Heating: 21°C (70°F)
 - .2 Cooling: 26°C (78°F)
 - .3 Electrical/Mechanical Rooms:
 - .1 Cooling: 25°C (77°F)
- 2.1.2 General Assembly Performance:
 - .1 Assemblies described in Contract Documents are expected to achieve the minimum performance requirements specified in this Section as verified by inspection and testing. Performance criteria identified in this Section shall supersede other criteria identified in other parts of Contract Documents.
 - .2 Comply with applicable building code, and other regulations and requirements of Authorities Having Jurisdiction, in design, engineering, fabrication and installation of the Work.
 - .3 Drawings and details are diagrammatic and are only intended to show design concept, aesthetics, interfacing requirements, configuration, components and arrangements. They are not intended to identify or solve completely problems of thermal and structural movements, assembly framing, engineering design, fixings and anchorages.
 - .4 When difficult-to-construct material connections occur within Building Enclosure construction, advise Consultant at once so that details can be reviewed and installation methodologies confirmed. Poor installation of difficult-to-construct detail is not acceptable.

- .5 Building Enclosure assemblies shall comply with requirements of OBC Supplementary Standard SB-10 and Region of Peel Net Zero Emissions Building Standard for New Construction.
- .6 Design of Building Enclosure assemblies is based on "Rain Screen" principle. The definition of the rain screen principle for the purpose of these Specifications is "as advocated by National Research Council of Canada".
 - .1 This approach is founded on the premise that multipleelement protection is necessary in most situations to achieve effective control, by means of a first line of defense that minimizes rainwater passage into wall by minimizing number and size of holes and managing driving forces acting on wall; a second line of defense that intercepts all water that gets past first line of defense and effectively dissipates it to exterior.
 - .2 All voids between assembly components as well as those between components and structure shall have:
 - .1 Gaskets, baffles, overlaps, seals and compartmentalization as required to provide a barrier "Rain Screen" to effectively prevent excessive rain water entry into any of Building Enclosure cavities but allow pressure moderation of cavity air spaces.
 - .2 Low permeability Vapour Barriers to minimize vapour diffusion, where required.
 - .3 Air barriers and seals as required to prevent entry of interior building air into Building Enclosure cavities, and exterior air into building. Air barriers and seals shall be able to withstand wind design pressures.
 - .4 Thermal separators, isolators and seals placed to eliminate direct contact between interior humid air and a cold surface or structural component to prevent condensation and ice build-up on surfaces during cold weather.
- .7 Air Barrier Continuity:
 - .1 This Project incorporates design principles of positive air and vapour leakage control at Building Enclosure line. Drawing details illustrate continuity of air barrier/vapour retarder at penetrating elements such as door, window and louver frames.
 - .2 In order to maintain continuity of Air Barrier Assemblies, interfacing of various building elements requires close coordination by all trades involved with exterior building elements.

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- .3 Air-barrier assembly extends nominally from foundation line, vertically along exterior walls and to positively contact with roof air barrier/vapour retarder or roofing membrane as applicable. Continuity also extends to waterproofing at podium areas, and to inner surface of glazing units. Provide a continuous, unbroken and nonperforated air and vapour seal to totally enclose Building Enclosure and to separate interior and exterior environments.
- .4 Manufacturers of window and door frames must ensure correctly designed and positioned metallic legs, extensions or recesses are provided at thermal break line to facilitate connections of rigid or flexible transition materials prior to setting these elements in their allotted openings.
- .5 Penetrations of air barrier and paths of air infiltration / exfiltration must be sealed.
- .6 Air barrier system shall have following characteristics:
 - .1 It must be continuous, with all joints sealed.
 - .2 It must be structurally supported to withstand positive and negative air pressures applied to Building Enclosure.
 - .3 Connection shall be made between:
 - .1 Foundation and walls.
 - .2 Walls and windows or doors.
 - .3 Different wall systems.
 - .4 Wall and roof.
 - .5 Wall and roof over unconditioned space.
 - .6 Walls, floor and roof across construction, control and expansion joints.
 - .7 Walls, floors and roof to utility, pipe and duct penetrations.
 - .4 Materials: materials used for air barrier system in opaque wall assemblies shall comply with CAN/ULC S741 and shall have an air permeance not exceeding 0.02 L/(s^{·m2}) (0.004 cfm/ft2) under a pressure differential of 75 Pa (1.57 psf) when tested in accordance with ASTM E2178.
- 2.1.3 Whole Building ('enclosure-only testing' and with 'sealed openings' testing results): less than 0.6 air changes per hour (ACH) under a pressure differential of 75 Pa (1.57 psf).

- 2.1.4 Air Leakage Criteria (in-situ): The air leakage of individual assemblies must not exceed the criteria specified in individual technical specification sections when tested in the field in accordance with ASTM E783.
- 2.1.5 Thermal Performance Criteria: install insulation materials to maintain continuity of performance of the Building Enclosure meeting thermal resistance or thermal conductance ratings specified below:
 - .1 Values provided are imperial measurements unless indicated otherwise.
 - .2 Roofing Assemblies:
 - .1 Nominal R-Value: Minimum R45
 - .2 Assembly U-value: Maximum U-0.022
 - .3 Opaque Wall Assemblies Above-Grade:
 - .1 Nominal R-Value: Minimum R30
 - .2 Assembly U-value: Maximum U-0.033
 - .4 Curtain Wall and Glazed Assemblies:
 - .1 Maximum U-Value: 0.20 (including glass and framing)
 - .2 Solar Heat Gain Coefficient: Maximum 0.30
 - .5 Skylights:
 - .1 Maximum U-Value: 0.47 (including glass and framing)
 - .2 Solar Heat Gain Coefficient: Maximum 0.36
 - .6 Slabs-on-Grade:
 - .1 Nominal: Minimum R30
 - .2 Assembly U-value: Maximum U-0.033
- 2.1.6 Water Infiltration: There must be no water penetration beyond boundary of watertightness defined for fenestration system when following assemblies are tested in the field in accordance with the test method described in Part 3 of this Section.
- 2.1.7 Thermal Bridging: Ensure wall assembly and interface details are thermally broken and meet the OBC SB-10 requirements for continuous insulation to reduce structural connections which create thermal bridging.
 - .1 As a minimum, provide materials to minimize or prevent thermal bridging at the following locations and interfaces:
 - .1 Cladding and insulation attachment at opaque wall assemblies.
 - .2 At-grade transitions.
 - .3 Slab-edges and transitions.

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- .4 Glazing-to-wall transitions.
- .5 Interior-to-exterior wall intersections.
- .6 Assembly corners.
- .7 Parapets.
- .8 Roof penetrations and transitions.
- .9 Exterior-to-interior structural components.

2.2 <u>Service Providers</u>

- 2.2.1 The following service providers may be acceptable subject to conformance to requirements of Contract Documents:
 - .1 Exp inc.
 - .2 Intertek Testing Services
 - .3 UL CLEB
- 2.2.2 Comparable providers to those listed herein offering equivalent services in Consultant's opinion, and subject to Consultant's review, will be considered provided they meet the requirements of this Specification.

3. EXECUTION

3.1 <u>Examination</u>

3.1.1 Examine substrates, areas, and conditions, for compliance with requirements for installation tolerances, supports, and other conditions affecting performance of the Work.

3.2 <u>Preparation</u>

- 3.2.1 Protect construction from weather and other sources of moisture that are deleterious to the tested assemblies.
- 3.2.2 Repair or replace Building Enclosure components that are damaged as a consequence of exposure to weather conditions deleterious to the final construction.

3.3 <u>Workmanship</u>

- 3.3.1 Install materials and systems according to best-practices relating to quality of workmanship, and coordination and installation of specified Products to maintain continuity of the Building Enclosure.
 - .1 Treatment of Penetrations: Use methods for making and sealing penetrations to maintain continuity of vapour, water and air control assemblies.

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- .1 Ensure mechanical and electrical work scheduled installed/modified within exterior Building Enclosure system is properly tied into Building Enclosure and does not compromise performance of Building Enclosure.
- .2 Ensure mechanical and electrical penetrations through Building Enclosure are sealed against air leakage and water penetration and are designed to prevent condensation within exterior Building Enclosure system.
- .3 Ensure mechanical water piping that is installed/modified within exterior wall system is free of leaks and protected from freezing.
- .4 All penetrations through vapour, water and air control assemblies must be fully sealed according to manufacturer instructions.
- .2 Modification of Installation: Identify installation difficulties and make modification to installation to account for site conditions that differ from manufacturer's standard detailing or testing results. Make such modifications to reduce or eliminate potential for installation deficiencies.
- .3 Sequencing and Compatibility: Confirm compatibility between Products provided by different parties or that are used to join dissimilar components. Sequence such transitions and overlap materials to ensure they shed water to the exterior face of the Building Enclosure.
- .4 Workmanship: Train installers on Building Enclosure bestpractices and provide them with update when modifications occur resulting from changes to site conditions and testing results.

3.4 Field Quality Control (Performance Testing)

- 3.4.1 The objective of performance testing is to demonstrate that each Building Enclosure system, and system-to-system interface meets or exceeds the performance requirements of the Contract Documents and the Building Enclosure Design Intent specified in this Section.
 - .1 Unless otherwise indicated, costs associated with initial performance testing shall be paid by Owner through cash allowance.
 - .2 Costs associated with re-testing caused by failure of the Building Enclosure tests, during mock-up review or during the construction phase, shall be the responsibility of the Contractor.
- 3.4.2 Contractor's Collaboration: third-party inspection and testing company will coordinate with Contractor's schedule and make

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themselves aware of current work. Third-party inspection will bring to attention of the Consultant and Contractor any observation or testing requirement forming a part of their scope of auditing services, but not less than those listed in this Section.

- .1 Access to Site: Contractor must provide reasonable access to the Project site, and any personnel or equipment required to assist third-party inspection and testing company in performance of their service and maintain site safety.
- .2 Services: Contractor must provide electrical, water or other utilities or services required by third-party inspection and testing company for performance of their work.
- .3 Scheduling and Coordination:
 - .1 Contractor must coordinate sequence of testing activities to accommodate required inspection and testing services with minimum delay.
 - .2 Contractor must coordinate construction activities to avoid removing and replacing construction to accommodate observations and tests required by third-party inspection and testing company.

3.5 <u>Non-Conformance</u>

- 3.5.1 Non-conformance and deficiencies identified during periodic site visits or performance testing shall be resolved as follows:
 - .1 Third-party inspection and testing company will record the results of the performance test or its site visit observation in a report. All deficiencies or non-conformance issues shall be noted as action items on a punch-list and reported to Contractor through Consultant.
 - .2 Corrections of identified minor deficiencies may be made during the site visit at the discretion of third-party inspection and testing company. In such cases the deficiency and associated resolution will be documented in the field report.
 - .3 As site visits or tests progress and a deficiency is identified, the third-party inspection and testing company will discuss the issue with Contractor and Consultant for follow-up and resolution.
 - .1 Third-party inspection and testing company shall document deficiency and Contractor's response.
 - .2 Contractor shall correct the deficiency and notify thirdparty inspection and testing company and Consultant in writing that issue is resolved and/or product, material or assembly is ready to be retested.

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- .3 Contractor shall reschedule the test and the test shall be repeated. This process shall be repeated until test results meet or exceed requirements of Contract Documents.
- .4 Contractor shall be responsible for costs associated with re-testing.
- .4 Conformance will only be deemed complete upon successful performance testing and review by third-party testing and inspection agent.

3.6 <u>Air Infiltration Testing</u>

- 3.6.1 Read in conjunction with Testing Responsibility Matrix in Section 01 91 15
- 3.6.2 Glazed Assemblies (curtain wall and punched windows):
 - .1 Test Method(s): pressurized chamber testing in accordance with ASTM E783.
 - .2 Scope of Testing: Mock-up (first installation) and during construction phase.
 - .3 Frequency: One (1) test to be completed at 10%, 25%, and 75% installation completion, as per Section 01 91 15 Building Envelope Commissioning.
 - .4 Success Criteria: Not to exceed leakage rate indicated in Section 08 44 13.
- 3.6.3 Opaque Wall Assemblies (including transitions to adjacent systems, field of air barrier and penetrations):
 - .1 Test Method(s): Refer to Testing Responsibility Matrix in Section 01 91 15
 - .2 Scope of Testing: Mock-up (first installation) and during construction phase.
 - .3 Frequency: As determined by third-party inspection and testing company.
 - .4 Success Criteria: Not to exceed leakage rate indicated in Section 07 27 14.
- 3.6.4 Whole Building Air Leakage Testing:
 - .1 Test Method(s):
 - .1 Fan pressurization testing in accordance with ASTM E779 or orifice blower door testing in accordance with ASTM E1827 or EN 13829 Method A
 - .2 Smoke Tracer: third-party inspection and testing company may include observations using smoke tracer or theatrical fog in accordance with ASTM E1186 in conjunction with building pressurization to confirm

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anomalies identified using infrared scanning or to differentiate thermal bridging effects.

- .2 Frequency:
 - .1 At completion of air barrier work, and prior to installation of insulation ('enclosure-only testing').
 - .2 At completion of mechanical systems work, upon systems start-up ('sealed openings testing').
- .3 Success Criteria: As specified in this Section.

3.7 <u>Water Penetration Testing</u>

- 3.7.1 Read in conjunction with Testing Responsibility Matrix in Section 01 91 15
- 3.7.2 Glazed Assemblies (curtain wall and punched windows):
 - .1 Test Method(s): pressurized chamber testing in accordance with ASTM E1105
 - .2 Scope of Testing: Mock-up (first installation) and during construction phase.
 - .3 Frequency: One (1) test to be completed at 10%, 25%, and 75% installation completion, as per Section 01 91 15 Building Envelope Commissioning.
 - .4 Success Criteria: No leakage at 720 Pa (15 psf) pressure differential.
- 3.7.3 Tubular Skylights:
 - .1 Test Method(s): Refer to Testing Responsibility Matrix in Section 01 91 15
 - .2 Scope of Testing: Mock-up (first installation) and during construction phase.
 - .3 Frequency: as selected by Consultant.
 - .4 Success Criteria: No leakage.
- 3.7.4 Opaque Wall Assemblies including auxiliary components such as louvers, expansion joints and similar components:
 - .1 Test Method(s): Water-spray test in accordance with AAMA 501.2 at transitions, corners, penetrations determined by Consultant.
 - .2 Scope of Testing: Mock-up (first installation) and during construction phase.
 - .3 Frequency: One (1) test to be completed at 10%, 25%, and 75% completion of aluminum curtain wall and opaque wall transitions, as per Section 01 91 15 Building Envelope Commissioning.

.4 Success Criteria: No leakage.

3.8 Thermal Performance Verification

- 3.8.1 Read in conjunction with Testing Responsibility Matrix in Section 01 91 15
- 3.8.2 Wall Assemblies including openings and auxiliary components such as louvers, expansion joints and similar components:
 - .1 Test Method(s): Thermographic scan in accordance with ASTM C1060 or CAN/CGSB 149-GP-2MP.
 - .2 Frequency: To be performed for all wall assemblies.
 - .3 Success Criteria: Insulation is at full thickness and continuous in all cavities. No unacceptable thermal bridging.
- 3.8.3 Roof Assemblies:
 - .1 Test Method(s): Thermographic scan in accordance with ASTM C1153.
 - .2 Frequency: To be performed for all roof assemblies.
 - .3 Success Criteria: Insulation is at full thickness and continuous. No thermal anomalies associated with wet insulation.

3.9 Adhesion Testing

- 3.9.1 Read in conjunction with Testing Responsibility Matrix in Section 01 91 15
- 3.9.2 Air Barrier Membrane Testing:
 - .1 Test Method(s): Pull-off testing in accordance with ASTM D4541 and ASTM D7234.
 - .2 Frequency: Minimum of two (2) tests per membrane and substrate type, as per Section 01 91 15 Building Envelope Commissioning.
 - .3 Success Criteria: Pull-off strength of membrane conforms to manufacturer's published data.
- 3.9.3 Sealants Adhesion Tests:
 - .1 Test Method(s):
 - .1 Destructive: in accordance with Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - .2 Non-destructive: in accordance with ASTM C1521, using Nondestructive Spot Method.
 - .3 For joints with dissimilar substrates, verify adhesion to each substrate separately.

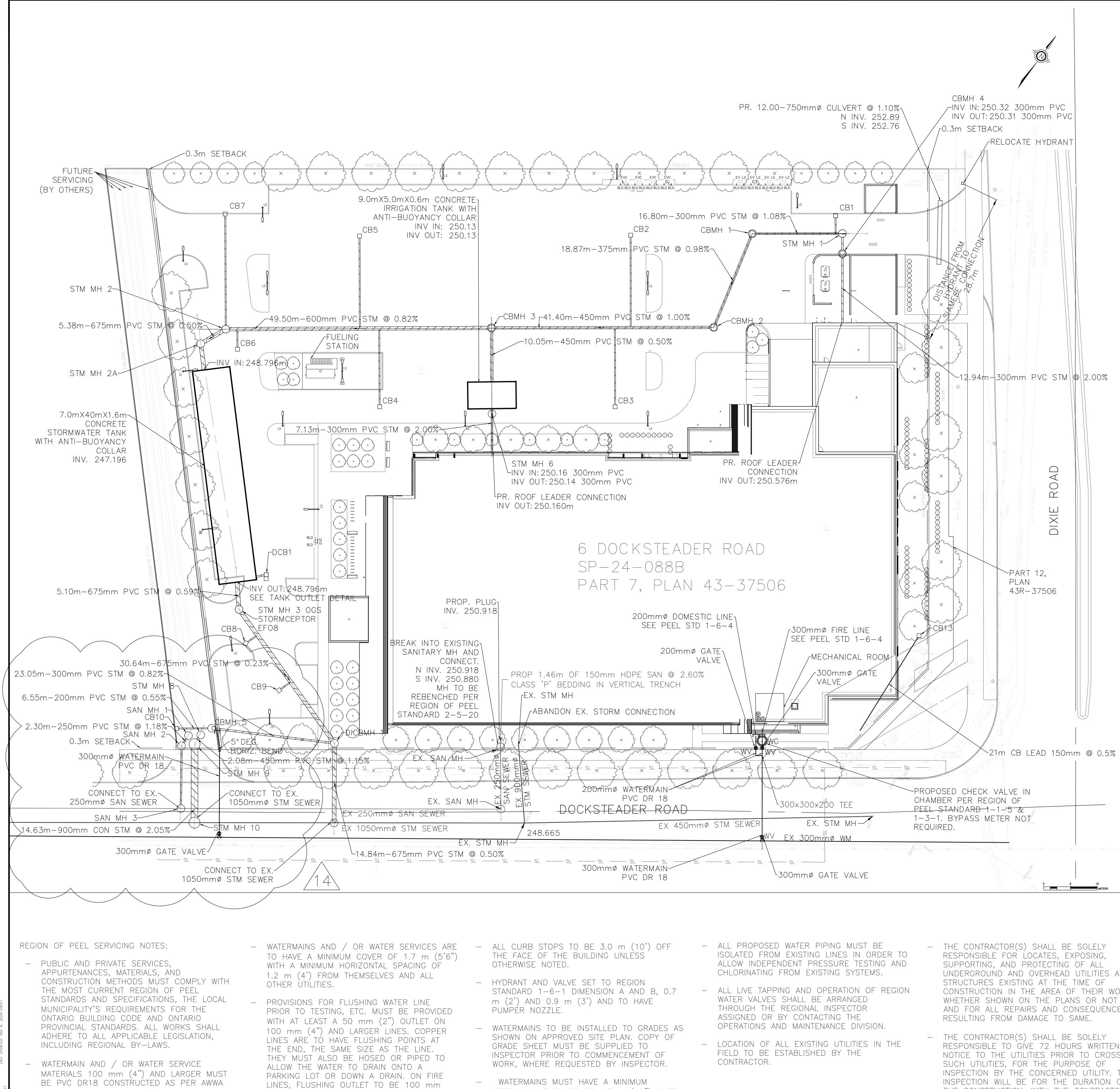
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- .2 Frequency: Minimum of five (5) tests for every 305m (1000 ft) of joint length and one (1) test every 305m (1000 ft) thereafter for each sealant and substrate type, as per Section 01 91 15 Building Envelope Commissioning.
- .3 Success Criteria: Sealant adhesion passes sealant manufacturer's field-adhesion hand-pull test published data.

3.10 Repair And Protection

- 3.10.1 Repair damaged construction and restore substrates and finishes following observation, testing, sample taking and similar services. Repair surfaces immediately after testing and sampling is completed to prevent damage to assemblies resulting from moisture diffusion or air leakage.
- 3.10.2 Protection of Installed Products: take necessary precautions to prevent puncturing, tearing, weakening or damaging of Building Enclosure membranes during construction; and immediately repair damage as directed by Consultant.

END OF SECTION



C900-16. SIZE 50 mm (2") AND SMALLER

MUST BE POLYETHYLENE CONSTRUCTED AS

PER AWWA C901 AND CSA B.137.10.

(4") DIAMETER MINIMUM ON A HYDRANT.

- VERTICAL CLEARANCE OF 0.3 m (12") OVER / 0.5 m (20") UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING.

- UNDERGROUND AND OVERHEAD UTILITIES AND CONSTRUCTION IN THE AREA OF THEIR WORK. WHETHER SHOWN ON THE PLANS OR NOT AND FOR ALL REPAIRS AND CONSEQUENCES
- RESPONSIBLE TO GÍVE 72 HOURS WRITTEN NOTICE TO THE UTILITIES PRIOR TO CROSSING INSPECTION BY THE CONCERNED UTILITY. THIS INSPECTION WILL BE FOR THE DURATION OF THE CONSTRUCTION, WITH THE CONTRACTOR RESPONSIBLE FOR ALL COSTS ARISING FROM SUCH INSPECTION.

- CITY OF BRAMPTON GENERAL NOTES;
- PROPERTIES SHALL NOT BE ADVERSELY AFFECTED.
- THE SITE.
- STANDARD #237.
- PER 0.P.S.D. 310.010.
- STANDARD PROCTOR DENSITY.
- UTILITIES MUST BE MAINTAINED.
- ALLOWANCE.
- / ACCESS PERMIT APPLICATION.
- 11. WITHIN THE COB'S RIGHT-OF-WAY, STORM PIPE.
- ALLOWED IS 200MM.
- THAN 200MM.
- SUMP AND TOP AS PER MUNICIPAL STANDARDS.
- 15. FOUNDATION DRAINS SHALL NOT BE
- ENSURE CLEARANCES ARE MET.

- ALL PROPOSED WATER PIPING MUST BE ISOLATED THROUGH A TEMPORARY CONNECTION THAT SHALL INCLUDE AN APPROPRIATE CROSS-CONNECTION CONTROL DEVICE, CONSISTENT WITH THE DEGREE OF HAZARD, FOR BACKFLOW PREVENTION OF THE ACTIVE DISTRIBUTION SYSTEM, CONFORMING TO REGION OF PEEL STANDARDS 1-7-7 OR 1-7-8.

– ALL WATER METERS MUST BE INSTALLED IN HEATED AND ACCESSIBLE SPACE.

- PROPOSALS TO CONNECT TO AN EXISTING SERVICE LATERAL REQUIRES APPROVAL FROM THE REGION OF PEEL INSPECTOR AT CONSTRUCTION STAGE.

1. ALL THE CONSTRUCTION WORK FOR THIS PROJECT SHALL COMPLY WITH THE STANDARD DRAWINGS AND SPECIFICATIONS OF THE COB AND THE ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS AND DRAWINGS (OPSS/D)

2. ALL SURFACE DRAINAGE SHALL BE COLLECTED AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. DRAINAGE OF ABUTTING

3. PROPOSED ELEVATIONS ALONG SITE PROPERTY LINES MUST MATCH EXISTING ELEVATIONS.

4. A SILT FENCE AS PER COB STANDARD #406 MUST BE PLACED AROUND THE PERIMETER OF

5. AT ALL ENTRANCES TO THE SITE, THE ROAD CURB AND SIDEWALK WILL BE CONTINUOUS THROUGH THE DRIVEWAY. THE DRIVEWAY GRADE WILL BE COMPATIBLE WITH THE EXISTING SIDEWALK AND A CURB DEPRESSION WILL BE PROVIDED FOR AT EACH ENTRANCE. ACCESS CONSTRUCTION AS PER COB

6. SIDEWALK TO BE REMOVED AND REPLACED AS

7. THE PORTION OF THE DRIVEWAY WITHIN THE MUNICIPAL BOULEVARD MUST BE PAVED WITH 40MM HL3 AND 50MM HL8. SUB BASE TO BE 150MM GRANULAR "A" (OR 130MM OF 20MM CRUSHER RUN LIMESTONE) AND 300MM GRANULAR "B" (OR 225MM OF 50MM CRUSHER RUN LIMESTONE) COMPACTED TO 100%

8. A UTILITY CLEARANCE RADIUS OF 1.2 METRES BETWEEN THE PROPOSED DRIVEWAY ENTRANCE CURB RETURN AND ALL ABOVE GROUND

9. ROAD OCCUPANCY /ACCESS PERMIT MUST BE OBTAINED 48 HOURS PRIOR TO COMMENCING ANY WORKS WITHIN THE MUNICIPAL ROAD

10. THE SERVICE CONNECTION TRENCH WITHIN THE TRAVELED PORTION OF THE ROAD ALLOWANCE SHALL BE BACKFILLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ROAD OCCUPANCY

SEWERS AND STORM SEWER CONNECTIONS MUST BE CONCRETE, OR APPROVED EQUAL WITH TYPE "B" BEDDING THROUGHOUT. THE STRENGTH OF THE CONCRETE PIPE MUST BE AS PER COB STANDARD #341 AND AS FOLLOWS; MINIMUM 65-D FOR REINFORCED PIPE AND MINIMUM ES FOR NON-REINFORCED

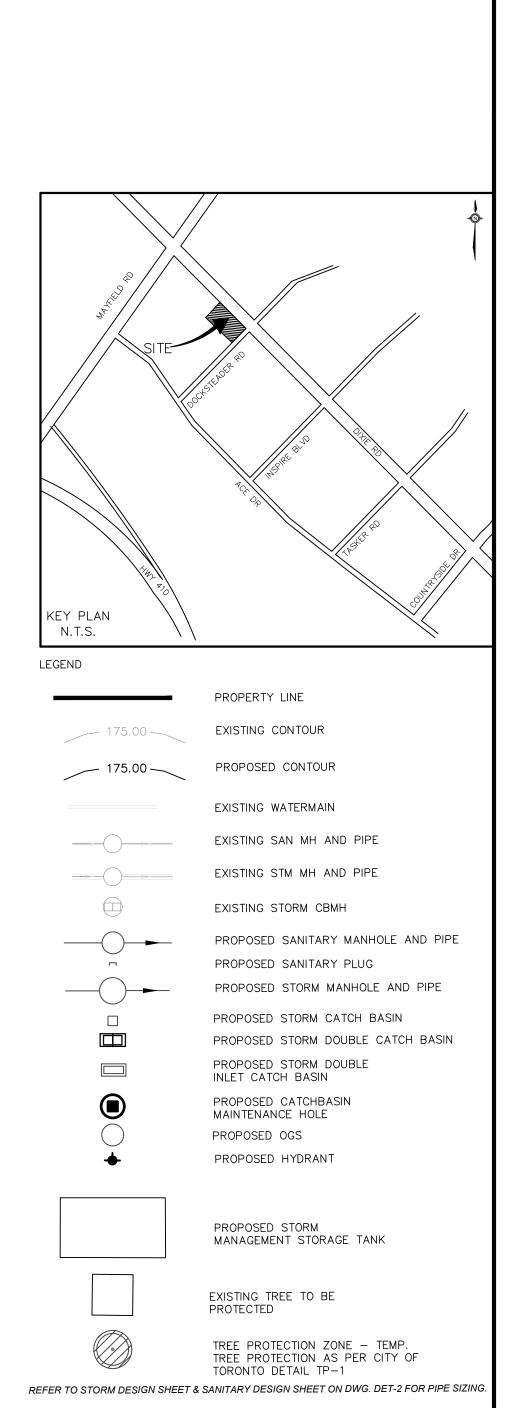
12. THE MINIMUM CATCH BASIN LEAD DIAMETER

13. STORM SEWER PIPES CONNECTING TO THE COB'S STORM SEWER SHALL NOT BE SMALLER

14. ALL CATCH BASIN MAINTENANCE HOLES AND MAINTENANCE HOLES WITH INLET CONTROL DEVICES MUST HAVE A MINIMUM 0.3 METRE

CONNECTED TO THE STORM SEWER ON SITES WITH STORMWATER MANAGEMENT CONTROL.

16. IT IS THE RESPONSIBILITY OF THE DESIGN ENGINEERING CONSULTING FIRM TO ENSURE THAT AN ELEVATION DETAIL OF EXISTING AERIAL PLANT IS SUBMITTED WHEN OVERHEAD CABLING IS PRESENT. CABLES SHALL NOT BE LESS THAN 4.7 METRES FROM THE HIGHEST POINT OF THE FINISHED PAVEMENT TO THE LOWEST POINT OF THE AERIAL CABLE DIRECTLY ABOVE THE PAVEMENT AREA TO



ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO CITY OF BRAMPTON BENCHMARK No. 313 HAVING AN ELEVATION OF 252.147 METRES.

PROPERTY DATA

	XIY DATA Xomprises all of Pin 14225—1509(LT).SUBJ	ECT TO EASE	EMENTS	5
	PART 8, PLAN 43R-37506 AS IN PR3261366 382.TOGETHER WITH EASEMENT OVER PART (-
IJM-1	907, PARTS 2, 4, 5, 6 AND 23, PLAN 43R-	37506 AS IN	PR32	61366.
	ON FILE NO.			
-RE-2	023–0077			
14.	Addendum 1	2024 NOV 6	M.S.	F.A.
13.	Issued for Tender	2024 SEP 23	M.S.	F.A.
12.	Issued for Building Permit	2024 JULY 5	M.S.	F.A.
11.	Issued for Site Plan Approval	2024 JUNE 6	M.S.	F.A.
10.	99% Construction Documents	2024 MAY 31	M.S.	F.A.
9.	Issued for Building Permit	2024 MAY 24	M.S.	F.A.
8.	Issued for Site Plan Approval	2024 MAY 13	M.S.	F.A.
7.	66% Construction Documents	2024 APR 19	M.S.	F.A.
6.	33% Construction Documents	2024 MAR 22	M.S.	F.A.
5.	Issued for Site Plan Approval	2024 MAR 20	M.S.	F.A.
4.	Issued for Site Plan Approval	2024 FEB 6	M.S.	F.A.
3.	Issued for Site Plan Approval	2023 NOV 29	M.S.	F.A.
2.	Issued for Site Plan Approval	2023 NOV 20	M.S.	F.A.
1.	Issued for 100% Schematic Design	2023 MAY 25	M.S.	A.C.
No.	Revision	Date	Вy	Appr'd



MUNICIPALITY

MORRISON HERSHFIELD Suite 300, 125 Commerce Valley Drive W Markham, ON L3T 7W4 Tel: 416 499 3110 Fax: 416 499 9658

Frank November 05, 2024 90228081

REGION OF PEEL FILE C603732 SITE PLAN SP-24-088B

PEEL ZERO CARBON EMS 6 DOCKSTEADER ROAD BRAMPTON, ON.

urveyed by: rawn by:	Krcmar M.S.	Checked by: F.A. Approved by: F.A.	220481900
esigned by:		Date: 2024/11/06	GEN-1
SILE	SERVI	CING PLAN Scale: 1: 250	Sheet No. OF 6