PART 1 GENERAL

1.1 REFERENCES

.1 ASTM International

.1 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.3 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 CSA International

.1 CSA G40.20/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA S16-09, Design of Steel Structures.

.4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-M03 (R2008), Welded Steel Construction (Metal Arc Welding) Metric.

.3 Environmental Choice Program

.1 CCD-047-98 (R2005), Architectural Surface Coatings.

.2 CCD-048-98 (R2006), Surface Coatings - Recycled Water-borne.

.4 Green Seal Environmental Standards (GS)

.1 GS-11-2008, 2nd Edition, Paints and Coatings.

.5 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.6 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - current edition.

1.2 WORK DESCRIPTION FOR STEEL CONSTRUCTION

.1 Build a support structure for the ventilation unit in room 122. See plans for more details. The Entrepreneur must also install the requested grating. The Entrepreneur must also open the roof above the beam intersections an install the support above the existing structure.

.2 Build the flashing to tight the ducts way through the roof, see plans for details.

.3 Close all the holes opened after dismantling the old evacuation duct. See plans for details.

.4 Build a support for the ventilation unit of the room 150. See plans for details.

.5 The supports will be factory built and installed on field with a crane, which must be assumed by the Contractor.

1.3 GENERALITIES

.1 Use the latest versions of codes in force, sic code.

.2 The requirements of the national Building Code of Canada 2005, part 4, its revisions, and related documents apply to this project. Contractor shall comply with CSST and owner safety standards.

.3 Verify all dimensions on site before starting works and report any errors or omissions to the architect and engineer.

.4 Read structural plans in conjunction with architectural and mechanical plans.

.5 Do all the demolition, connection, drilling and moving works that are not specifically shown in drawings, but required to perform work.

.6 All temporary support works are under the direction and responsibility of the contractor. Take all necessary measures and install sufficient adequate supports to ensure the stability of the structure, buildings and other surrounding structures, as well as the safety of workers.

.7 Verify the presence of underground wires and pipes before proceeding to any excavation. Reroute or relocate obstacles that are encountered, if appropriate, with the consent of the authorities concerned.

.8 Dimensions and locations of openings, couplings, wells, etc. Provided for illustrative purposes only. Coordinate with mechanical, electrical and architectural documents.

.9 Do not exceed the dynamic loads shown in plans for all construction phases.

.10 All construction joints not listed in plans are subject to the engineer’s approval.

.11 Examine the documents and samples before providing the shop drawings of structural elements and the formulation forms to the engineer with the notation "reviewed for compliance". With this prior verification, the contractor confirms that the applicable requirements for works were (or will be) determined and verified, and that each document and sample submitted has been tested and found compliant with the requirements of work and contract documents. Documents and samples that are not stamped, signed by an engineer member of the OIQ (québec order of engineers), dated and identified in connection with the specific project will be returned without being examined and will be considered rejected.

.12 Submit one (1) copy of shop drawings and product descriptions. After the processing by the engineer, the contractor must make his/her own copies and do his/her own distribution.

.13 Wait for the manufacturing authorization.

.14 During construction, the weight of transport machinery as well as lifting machinery on structural floors must not exceed safe loads shown in plans. Submit to the structural engineer for approval, with a document signed and sealed by an OIQ member, which authorizes the moving of such machinery.

.15 It is forbidden to concentrate in the same place, on the level floors, terraces or roofs, excessive amounts of heavy materials, such as masonry, gypsum boards, and mounds of earth or gravel. All such materials must be scattered on floors as they are brought to the site, in order to not exceed design loads.

.16 The contractor must refer to architectural drawings for all waterproofing details, caulking, slopes, drips, etc., especially for parapets, pools, balconies, terraces, doors, windows, and others.

.17 All changes requested by the contractor that need modification (equivalence request, change of mechanical unit, modification of opening sizes, addition of openings, etc.) Are at the expense of the contractor. Time spent by the engineer on the study, calculations, and issuance of directives due to these changes is also at the expense of the contractor.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit required sample and documents.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates and bolts and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two (2) copies of WHMIS MSDS in accordance with Sections 01 35 29.06 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.

.1 For finishes, coatings, primers, and paints applied on site: indicate VOC concentration in g/L.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province, Canada.

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.3 Low-emission materials

.1 Submit a list of paints and coatings used inside buildings, which must comply with the limitations and restrictions on VOC content and chemical composition.

1.5 QUALITY ASSURANCE

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

.2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Rolled or welded structural steel and plates: conform to current standards CAN/CSA G40.20/G40.21, profiles: grade 350w, plates: grade 300w.

.2 Hollow structural sections (hss): conform to current standards CAN/CSA G40.20/G40.21, GRADE 350W, CLASS C.

.3 Cold-formed channels (CFC): conform to standards CSA S136 and ASTM A607, grade 50.

.4 High-strength bolts, nuts and washers: conform to standards ASTM-A325M/A325 threads excluded (ø20 MM, unless otherwise indicated).

.5 Anchor bolts: conform to standard ASTM-A307 (SIC).

.6 Welding materials: to CSA W59.

.7 Welding electrodes: to CSA W48 Series.

.8 Bolts and anchor bolts: to ASTM A307.

.9 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 METAL FABRICATIONS – GENERAL

.1 The steel framing works must comply with the standard CAN/CSA S16, its revisions and addenda.

.2 Obtain the authorization of the structural engineer before performing cutting or drilling works on steel members or other structural elements.

.3 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.4 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.5 Where possible, fit and shop assemble work, ready for erection.

.6 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 WELDED ASSEMBLIES

.1 The contractor must be certified by the Canadian Welding Bureau (CWB). All works must be performed as per welding standards CSA W59 and W48, and companies must be qualified under the standard CSA W47.1, division 1 or 2.1.

.2 Special measures must be taken to properly prepare steel by heating during welding works to existing elements.

.3 All surfaces to be welded on site must be treated with solvent and a steel brush in accordance to SSPC-SP1 and SSPC-SP3, and repainted once the assembly is completed.

2.4 BOLTED ASSEMBLIES

.1 Bearing connections with threads excluded from plans for shearing, except by friction for bracing and vertical assemblies with slotted holes.

2.5 BRACING

.1 Bracings must be installed with initial tension (plate bracing)

.2 Unless otherwise indicated, the assemblies must be able to develop full capacity of the tension member.

.3 The bracing assemblies must be designed to resist to the indicated charges (Tf/Cf = Tensile strength/ maximal pondered compression)

2.6 MECHANICAL AND CHEMICAL ANCHORS

.1 Anchors must be installed in accordance with the manufacturer's recommendations.

.2 Masonry anchors: all masonry walls must be bonded to structural columns using 38 X 6.4 mm plate at 600 mm O.C. refer to architectural plans for the location of walls.

.3 Contractor shall use new profiles as steel structure elements only. Welded junctions must be approved by the architect and the structural engineer.

.4 Assembly parts must be centered on the beams and columns unless indicated otherwise in structural drawings.

.5 The assemblies and plate orientation must conform to the building architectural finish. All assemblies that will be exposed must be approved by the architect and structural engineer.

.6 All parts and anchors required for assembly of the frame and that will be embedded in concrete will be provided by the steel structure contractor and installed by others.

.7 All parts to be embedded in concrete must be free of rust, paint, and mortar, and must be positioned in accordance with shop drawings duly approved by the steel framing contractor.

.8 Alignment and positioning of anchor bolts must be made within templates and must comply with steel tolerances specified by the steel manufacturer. No hole will be expanded with a torch on site. All repairs required due to incorrectly positioned or absent anchors must be approved by the structural engineer and will be made at the expense of the trade that installed them.

.9 The contractor shall develop an anti-shrinkage mortar under the support plates, and this mortar must be able to withstand a force of 30 MPa in less than 24 hours.

.10 Elements not fitting well or that do not respect admissible tolerances must be reported to the structural engineer. All adjustments must be submitted by the contractor to the structural engineer for approval. Drawings showing the adjustments must be sealed and signed by an engineer who is a member of the OIQ. Unless otherwise indicated on structural plans, no part can be adjusted by heating on the construction site.

.11 Fire protection of steel structures is the responsibility of the architect.

2.7 PAINT

.1 SP7 preparation, CISC/CPMA 2-75 primer, red color, retouching done on site.

2.8 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m in accordance with CAN/CSA G164.

.2 Chromium plating: chrome on steel with plating sequence of 0.009 mm thickness of copper 0.010 mm thickness of nickel and 0.0025 mm thickness of chromium.

.3 Shop coat primer: MPI-EXT 5.1A in accordance with chemical component limits and restrictions requirements and VOC limits of GS-11.

.4 Zinc primer: zinc rich, ready mix, to MPI-EXT 5.2C in accordance with chemical component limits and VOC limits of GS-11.

2.9 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.10 SHOP PAINTING

.1 Primer: VOC limit 250 g/L maximum to GS-11.

.2 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

.3 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

.4 Clean surfaces to be field welded; do not paint.

2.11 ANGLE LINTELS

.1 Steel angles: galvanized, sizes indicated for openings. Provide 150 mm minimum bearing at ends.

.2 Weld or bolt back-to-back angles to profiles as indicated.

.3 Finish: shop painted.

.1 Primer: VOC limit 250 g/L maximum to GS-11 when applied onsite.

2.12 PIPE RAILINGS

.1 Steel pipe: 50 mm nominal outside diameter, formed to shapes and sizes as indicated.

.2 Galvanize exterior pipe railings after fabrication.

2.13 ACCESS LADDERS

.1 Stringers: steel angle, see plan for dimensions.

.2 Steel Rungs: 25 mm diameter, welded to stringers at 300 mm on centre.

.3 Brackets: sizes and shapes as indicated, weld to stringers at 30 mm on centre, complete with fixing anchors.

.4 Galvanize finish for exterior.

.5 Galvanize exterior ladders after fabrication.

2.14 CHANNEL FRAMES

.1 Fabricate frames from steel, sizes of channel and opening as indicated.

.2 Weld channels together to form continuous frame for jambs and head of openings, sizes as indicated.

.3 See plan for anchor dimensions.

.4 Finish: galvanized

PART 3 EXECUTION

3.1 DEMOLITION

.1 Perform structural demolition in compliance with the latest edition of standard csa s350, as well as with CSST requirements and the safety code for the construction industry.

.2 The contractor shall submit to the structural engineer a demolition and temporary support plan for approval, if applicable.

.3 The contractor shall communicate to the structural engineer any anomaly and/or discrepancy between plans and the existing building during its demolition or renovation.

.4 If some details shown on plans cannot be adapted because of certain construction site conditions, the contractor shall notify the structural engineer for the study of new details.

.5 All temporary retaining works, underpinning works, excavation works near to existing structures, etc., are the sole responsibility of the contractor.

.6 The contractor has the responsibility to protect all engineering works and existing equipment. All similar works must be performed by specialized labour with extensive experience in this field. These works must be performed in accordance with the instructions of the occupational health and safety commission (CSST).

.7 Before the demolition, notify the owner of all defects or damages in the existing buldings to be kept during the demolition.

.8 Carry out the demolition shown on plans and the demolition necessary for the work.

.9 Provide and implement required equipment (garbage chute, screens, barricades, and scaffolding) for the protection of workers and owner’s representatives on the construction site.

.10 Do not carry out the demolition of structural elements not shown in the structural plans without the authorization of the engineer in charge.

.11 When demolition works are to be carried out near existing structures, take necessary precautions to not disturb or damage in any way these facilities. The contractor is liable for any damage and must repair at his/her own expense.

.12 In areas affected by the demolition works, assume any responsibility for protection against dust, demolition dangers, weather, lack of coordination and caution, both inside and outside the building.

.13 Demolition materials become the property of the contractor and must be removed from the site daily.

3.2 EXAMINATION

.1 Verification of Conditions: before installation of metallic structures, verify if conditions of substrates previously installed under other Sections or Contracts are acceptable in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative immediately after any unacceptable condition is found.

.3 Begin the work after the correction of all the unacceptable conditions and after having the approbation of Departmental Representative.

3.3 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Supply components for work by other trades in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CSA S16 or weld field connection.

.7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.

.8 After completion, touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer.

.1 Primer: maximum VOC limit 250 g/L to GS-11.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

.1 Primer: maximum VOC limit 250 g/L to GS-11.

3.4 PIPE RAILINGS

.1 Install pipe railings as indicated.

3.5 ACCESS LADDERS

.1 Install access ladders in locations as indicated.

.2 Erect ladders 200 mm clear of wall on bracket supports.

3.6 CHANNEL FRAMES

.1 Install steel channel frames to openings as indicated.

3.7 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION