

## **METAL FABRICATIONS**

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### **1. GENERAL**

#### **1.1 Work Included**

- .1 Supply and install ceiling framing system in Administration Building (Galvanized)
- .2 Supply and installation of loose lintels (Galvanized)
- .3 Supply and Installation of lateral support angle at top of masonry wall (Galvanized)
- .4 Bearing plates and anchor bolts (finished to match item)
- .5 Welds, bolts, washers, nuts, and shims (finished to match item)
- .6 Field touch-up of primed and galvanized surfaces including field welding

#### **1.2 Design Requirements**

- .1 Design details and connections, where not shown on Drawings, in accordance with CAN/CSA-S16, CSA S136, and CSA S136.1.
- .2 All metal fabrications to be hot dipped galvanized unless noted otherwise on the Drawings or elements fabricated from stainless steel.

#### **1.3 Quality Control**

- .1 Retain a Professional Engineer registered in the Province of Manitoba, with experience in work of comparable complexity and scope, to perform the following services as part of the Work of this Section:
  - .1 Design metal fabrication items as required to resist live, dead, lateral, wind, and seismic loads, including connection design.
  - .2 Structural design.
  - .3 Review, stamp, and sign Shop Drawings.
  - .4 Conduct shop and Site inspections.
  - .5 Prepare and submit inspection reports.
- .2 Do steel welding to CSA W59 by fabricators certified by the Canadian Welding Bureau to CSA W47.1.

#### **1.4 Submittals**

- .1 Shop Drawings and design briefs are to be signed and sealed by a Professional Engineer registered in the Province of Manitoba.

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- .2 Shop Drawings shall show work of this Section including large scale detail of members and materials, of connection and jointing details, and of anchorage devices, dimensions, thicknesses, description of materials, metal finishing, as well as other pertinent data and information.

## 2. PRODUCTS

### 2.1 Materials

- .1 Structural Steel: CAN/CSA-G40.21; Type W with minimum yield strength of 350 MPa.
- .2 Cold-Formed Steel C-Section: CAN/CSA-G40.21-03, minimum yield strength of 345 MPa.
- .3 Hollow Structural Steel Sections: CAN/CSA-G40.20/G40.21-M, Grade 350W, Class C.
- .4 Galvanized Sheet Steel: ASTM A653/A653M Grade A, Z275 Commercial Quality zinc coating, size and shape as shown.
- .5 Fasteners: Bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts hot dipped galvanized to CSA G164. For joining stainless steel components use stainless steel fasteners.
- .6 Primer Paint: CISC/CPMA 2-75.
- .7 Galvanizing: conforming to CAN/CSA-G164; minimum 610 g/m<sup>2</sup>.
- .8 Galvanized Primer Paint: Organic zinc rich primer. For galvanized fabrications where touchup is to remain unpainted in finished work: Inorganic zinc rich primer, Galvafruid by W.R. Meadows of Canada Ltd.
- .9 Grout: Non-shrink, non-metallic, flowable, 1-day 15 MPa (2100 psi) compressive strength, pull-out strength 7.9 MPa (1150 psi).
- .10 Drilled Anchors: HY-150 Adhesive anchors with stainless steel rods by Hilti Inc., sizes to suit.

### 2.2 Fabrication

- .1 Verify dimensions of installed Work before commencing fabrications and report any discrepancies to Contract Administrator.
- .2 Fit and assemble Work in shop where possible. Execute work in accordance with details and reviewed Shop Drawings. Where shop fabrication is not possible, make trial assembly in shop.
- .3 Seal exterior steel fabrications against corrosion in accordance with CAN/CSA S16.1.
- .4 Unless indicated otherwise, provide welded connection for work of this Section.

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- .5 Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to Contract Administrator's acceptance.
- .6 Assemble members without twists or open joints.
- .7 Correctly size holes for connecting Work of other Sections where such can be determined prior to fabrication. Where possible, show holes on shop drawings. Place holes not to cause appreciable reduction in strength of member.

### **2.3 Welding**

- .1 Perform welding by electric arc process.
- .2 Execute welding to avoid damage or distortion to Work. Execute welding in accordance with following standards:
  - .1 CSA W48: For welding materials. If rods are used, only coated rods are allowed.
  - .2 CSA W59: For design of connections and workmanship.
  - .3 CAN/CSA W117.2: For safety.
- .3 Thoroughly clean welded joints and expose metals for a sufficient distance to perform welding operations.
- .4 Test welds for conformance and remove work not meeting specified standards and replace to Contract Administrator's acceptance.
- .5 Continuous weld all joints for the full length of each joint. Finish exposed welds smooth and flush, file, or grind as required.

### **2.4 Anchors and Fastening**

- .1 Use weld studs of size not larger than 10 mm for attaching miscellaneous materials and equipment to building steel. If weight of item requires larger fasteners use clips or brackets and secure by welding or through bolting.
- .2 Use self-drilling expansion type concrete anchors for attaching to masonry and concrete.

### **2.5 Inserts and Hangers**

- .1 Install inserts, hangers, and supports. Make inserts drilled type.
- .2 Before openings are cut through structure, obtain Contract Administrator's written acceptance for procedures, locations and reinforcements required.

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### 2.6 Shop Priming

- .1 Clean steel to SSPC SP7 and remove loose mill scale, weld flux, and splatter in preparation for shop priming.
- .2 Shop prime steel with one coat of primer paint to dry film thickness of 0.07 mm. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7°C. Paint items under cover and leave under cover until primer is dry. Follow paint Manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.
- .3 Clean but do not prime surfaces to be field welded.
- .4 Do not prime surfaces embedded in concrete, clean as if they were to be primed.
- .5 Do not prime machine finished surfaces, but apply an effective anti-rust compound.
- .6 Take precautions to avoid damage to adjacent surfaces.

### 2.7 Hot Dip Galvanizing

- .1 Hot dip galvanize, after fabrication, steel metal fabrication items. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with brush or spray-applied anti-corrosion coating containing 92 to 95% zinc, in accordance with Manufacturer's printed directions.
  - .1 Members exposed to elements when in final location.
  - .2 Members embedded on exterior side of exterior walls.
  - .3 Members imbedded in concrete.
  - .4 Members specified in this Section or indicated on Drawings.
- .2 Hot-dip galvanize members in accordance with CAN/CSA G164 and requirements of the following ASTM standards, with minimum coating weights or thicknesses as follows:
  - .1 Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips: ASTM A123/A123M; average weight of zinc coating of actual surface
    - .1 4.8 mm ( $\frac{3}{16}$ " ) and less member thickness: 600 g/m<sup>2</sup>
    - .2 6 mm ( $\frac{1}{4}$ " ) and heavier members: 640 g/m<sup>2</sup>
  - .2 Iron and Steel Hardware: ASTM A153/A153M; minimum weight of zinc coating, in gram per square meter of surface, in accordance with Table 1 for the various classes of materials used in the Work.

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### **3. EXECUTION**

#### **3.1 Erection**

- .1 Fit joints and intersecting members accurately. Make Work in true planes with adequate fastenings. Build and erect Work plumb, true, square, straight, level and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.
- .2 Perform drilling of concrete as required to fasten Work of this Section.
- .3 Unless otherwise indicated, grout set work in concrete with non-shrink grout. Trowel surface smooth and flush with adjacent surfaces.
- .4 Insulate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and masonry, concrete or plaster. Use bituminous paint, butyl tape, building paper or other approved means.
- .5 Obtain Contract Administrator's written acceptance prior to field cutting or altering of structural members.

#### **3.2 Field Painting**

- .1 Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up shop primer damaged during transit and installation, with primer to match shop primer.

**END OF SECTION**

## ALUMINIUM FABRICATIONS

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### 1. GENERAL

#### 1.1 Design Requirements

- .1 Design details and connections where not shown on the drawings in accordance with CSA S157/A157.1 for strength design in aluminium work.
- .2 Design railings, balustrade, toe board, stair stringer, thread, and landing construction and connections to requirements of the building code and other authorities having jurisdiction. Maximum deflection of  $L/360$  of clear span.

#### 1.2 Quality Assurance

- .1 Retain a Professional Engineer registered in the Province of Manitoba, with experience in work of comparable complexity and scope, to perform the following services as part of the Work of this Section:
  - .1 Structural design
  - .2 Review, stamp, and sign Shop Drawings
  - .3 Conduct shop and Site inspections
  - .4 Prepare and submit inspection reports
- .2 Do welding to CSA W59.2. All Work is to be performed by a firm certified by the Canadian Welding Bureau to the requirements of CSA W47.2 in Division 2.

#### 1.3 Submittals

- .1 Shop Drawings and design briefs are to be signed and sealed by a Professional Engineer registered in the Province of Manitoba.
- .2 Shop Drawings shall show work of this Section including large scale detail of members and materials, of connection and jointing details, and of anchorage devices, dimensions, thicknesses, description of materials, metal finishing, as well as other pertinent data and information.

### 2. PRODUCTS

#### 2.1 Materials

- .1 Aluminium Plates, Shapes and Extrusions: 6061-T6 alloy, anodizing quality.
- .2 Fasteners: Stainless steel ASTM type 316 for all bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts with appropriate isolation devices.

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- .3 Grout: Non-shrink, non-metallic, flowable, 1-day 15 MPa (2100 psi) compressive strength, pull-out strength 7.9 MPa (1150 psi).
- .4 Bituminous Paint: to MPI (Master Paint Institute) EXT 5.4D, without thinner.
- .5 Drilled Anchors: HY-150 Adhesive anchors with stainless steel rods by Hilti Inc., sizes to suit.

### 2.2 Aluminium Finishes

- .1 Clear Anodic Finish: AA-M12C22A41, as fabricated nonspecular mechanical finish, medium matte etched chemical finish, architectural class I clear anodic coating of minimum 18 µm (0.7 mil) thick complying with AAMA 611.

### 2.3 Fabrication

- .1 Verify dimensions of installed Work before commencing fabrications and report any discrepancies to Contract Administrator.
- .2 Fit and assemble Work in shop where possible. Execute Work in accordance with details and reviewed Shop Drawings. Where shop fabrication is not possible, make trial assembly in shop.
- .3 Supply and install bolted connections wherever possible. Bolted connections shall be bearing-type connections with the thread excluded from the planes of shear. Welded connections will not be permitted unless approved by the Contract Administrator. Inform Contract Administrator if required welding procedures will negatively influence the original yield strength of the members at the compression or tension flange. Adjust welding procedures as required by the Contract Administrator at no additional cost.
- .4 Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to Contract Administrator's acceptance.
- .5 Assemble members without twists or open joints.
- .6 Correctly size holes for connecting Work of other Sections where such can be determined prior to fabrication. Where possible, show holes on Shop Drawings. Place holes not to cause appreciable reduction in strength of member.
- .7 Handrail
  - .1 Fabricate posts and railings of 40 mm nominal size 6061-T6 Schedule 40 aluminum pipe, 48 mm o.d., 3.68 wall thickness with shop welded connections.
  - .2 Expansion sleeves at location of building expansion joints and at 8000 mm o.c. maximum spacing. Locate expansion sleeves within 300 mm of post.
  - .3 Handrail turned back to wall, floor or post at end of run.

## ALUMINIUM FABRICATIONS

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- .4 Posts located maximum 300 mm each way from corner or point of change of direction. Space both posts equal distance from corner.
- .5 Welded aluminum end caps at railing terminations.
- .6 Aluminum toe board 125 mm high, 6.0 mm thick plate.
- .7 Provide continuous toe board at all handrails except at gates or where 125mm or higher concrete curbs are installed.
- .8 Dimension between bottom of toe board and walking surface not to exceed 3.0 mm.

### 2.4 Welding

- .1 Execute welding to avoid damage or distortion to Work. Execute welding in accordance with following standards:
  - .1 CSA W48: For welding materials. If rods are used, only coated rods are allowed.
  - .2 CSA W59.2: For design of connections and workmanship.
  - .3 CAN/CSA W117.2: For safety.
- .2 Thoroughly clean welded joints and expose aluminium surfaces for a sufficient distance to perform welding operations.
- .3 Test welds for conformance and remove work not meeting specified standards and replace to Contract Administrator's acceptance.
- .4 Continuous weld all joints for the full length of each joint. Finish exposed welds smooth and flush, file, or grind as required.

### 2.5 Anchors and Fastening

- .1 Use weld studs of size not larger than 10 mm for attaching miscellaneous materials and equipment to building structure. If weight of item requires larger fasteners use clips or brackets and secure by welding or through bolting.

### 2.6 Inserts and Hangers

- .1 Install inserts, hangers, and supports. Make inserts drilled type.
- .2 Before openings are cut through structure, obtain Contract Administrator's written acceptance for procedures, locations, and reinforcements required.



## ALUMINIUM FABRICATIONS

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### 3. EXECUTION

#### 3.1 Damaged Members

- .1 Repair or replace members damaged during transit or erection, before securing in position.

#### 3.2 Erection

- .1 Erect aluminum in accordance with CSA S157/A157.1 and Drawings.
- .2 Field connections are to be bolted wherever possible. Field welding of aluminum will not be permitted unless approved by the Contract Administrator.
- .3 Perform required field welding. Visible field welds to be smooth, grind or file as required. Touch up galvanizing as required.
- .4 Obtain the Contract Administrator's permission prior to Site cutting or making adjustments which are not part of the scheduled Work.
- .5 Install items plumb, square and level; fit accurately, and maintain free from distortion or defects detrimental to appearance and performance.
- .6 Make adequate provision for all erection loads, and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of necessary permanent bracing.
- .7 Set column bases and other vertical members to design elevations on levelling nuts or stainless steel wedges. Do not use wood wedges.
- .8 Use only light drifting to draw parts together. Enlarge holes for bolted connections with reamers or twist drill only. Do not burn to form holes, enlarge holes or match unfair holes.
- .9 Obtain Contract Administrator's written permission prior to field cutting or altering structural members.
- .10 After erection field prime welds, nuts, bolts, washers and touch up abrasions and damage to bituminous coatings.
- .11 Supply and Install anchors for setting in concrete with minimum 100 embedment.
- .12 Paint aluminum surfaces in contact with concrete with two (2) coats of alkali-resistant bituminous paint.
- .13 Prevent electrolysis between aluminum and dissimilar metals in contact with appropriate isolation devices.

**END OF SECTION**

## **PRE-ENGINEERED STRUCTURE FRAMES**

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### **1. GENERAL**

#### **1.1 General Description and Requirements**

- .1 The final roof top mechanical penthouses are comprised of several components furnished by a number of separate Subcontractors.
- .2 This section includes the requirements for the design, materials, accessory items, fabrication, delivery, and erection of steel framed structures on top of existing concrete structures.
- .3 All metal fabrications to be hot dipped galvanized unless elements are fabricated from stainless steel or aluminum.

#### **1.2 System Description**

- .1 The pre-engineered building frames shall be independent structures partially adjacent to existing concrete walls. The concrete walls provide partial or full shielding from the effects of wind.
- .2 Roof structures shall be open web steel joists with metal decking.
- .3 Wall sub-structures shall be cold formed Z-girts, with hanger rods as required, and supported by the pre-engineered structure frame. The Z-girts will support prefinished metal cladding, insulation and liners furnished by others.
- .4 The penthouse walls will incorporate louvres, doors, and other items furnished by others.

#### **1.3 Design Requirements**

- .1 Design building frames and components for applicable dead and live loads established by the National Building Code of Canada with the Manitoba Amendments. Hourly wind pressures shall be 1 in 30. Allow for loads imposed by attached mechanical and electrical equipment and services including fans, ductwork and heaters.
- .2 Horizontal and vertical deflection of girts: Maximum 1/240 of span, maximum 1/360 of wall height, respectively.
- .3 The column bases shall be designed as pinned supports.
- .4 In addition to the design loads in the above clause .1, the building frames shall be designed for a 10 KN concentrated load acting at midspan of the structure.
- .5 The steel structures shall be designed fully braced, considering interferences with louvres, doors and other installations.
- .6 Coordinate design and detailing with other Subcontractors as required by the Contract Administrator.

## PRE-ENGINEERED STRUCTURE FRAMES

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### 1.4 References

- .1 CAN/CSA-S16 Limit States Design of Steel Structures
- .2 CAN/CSA-G40.20 General Requirements for Rolled or Welded Structural Quality Steel
- .3 CAN/CSA-G40.21 Structural Quality Steels
- .4 CAN/CSA-S136 Cold Formed Steel Structural Members
- .5 CSA W59 Welded Steel Construction (Metal Arc Welding)
- .6 CSA W47.1 Certification of Companies for Fusion Welding of Steel
- .7 ASTM A307 Specification for Carbon Steel Bolts and Studs
- .8 ASTM A325M Specification for High-Strength Bolts for Structural Steel Joints
- .9 ASTM A446 Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, (Structural) Physical Quality
- .10 ASTM A653/A653M Specification for Steel Sheet, Zinc Coated, (Galvanized) or Zinc-Iron Coated Alloy Coated (Galvannealed) by the Hot-Dip Process
- .11 ASTM A570 Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
- .12 SSPC, SP6 Commercial Blast Cleaning; SP3 Power Tool Cleaning
- .13 Canadian Sheet Steel Building Institute, Standard for Steel Buildings Systems (CSSBI)
- .14 Metal Building Manufacturer's Association, Metal Building Systems Manual

### 1.5 Quality Control

- .1 Retain a Professional Engineer registered in the Province of Manitoba, with experience in work of comparable complexity and scope, to perform the following services as part of the Work of this Section:
  - .1 Structural design.
  - .2 Review, stamp, and sign Shop Drawings.
  - .3 Conduct shop and Site inspections.
  - .4 Prepare and submit inspection reports.
- .2 Do steel welding to CSA W59 by fabricators certified by the Canadian Welding Bureau to CSA W47.1.

## **PRE-ENGINEERED STRUCTURE FRAMES**

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### **1.6 Submittals**

- .1 Shop Drawings and design briefs are to be signed and sealed by a Professional Engineer registered in the Province of Manitoba.
- .2 Shop Drawings shall show work of this Section including large scale detail of members and materials, of connection and jointing details, and of anchorage devices, dimensions, thicknesses, description of materials, metal finishing, as well as other pertinent data and information.

## **2. PRODUCTS**

### **2.1 Manufacturers**

- .1 Pre-engineered structure acceptable manufacturers:
  - .1 Makloc Building Systems
  - .2 Varco-Pruden
  - .3 Accepted equivalent

### **2.2 Components**

- .1 Structural steel shapes shall conform to CSA G40.21 grade 350W, except plate, angles and channels shall be grade 300W.
- .2 Hollow Structural Steel Sections: CAN/CSA-G40.20/G40.21-M, Grade 350W, Class C.
- .3 Cold-formed steel structural members shall conform to ASTM A570M grade 50 (Fy = 345 MPa).
- .4 Structural bolts shall conform to ASTM A325M except that anchor bolts to concrete substructure shall be ASTM A307.
- .5 Galvanized Sheet Steel: ASTM A653/A653M Grade A, Z275 Commercial Quality zinc coating, size and shape as shown.
- .6 Roof deck: ASTM A446 Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, (Structural) Physical Quality
- .7 Galvanizing: conforming to CAN/CSA-G164; minimum 610 g/m<sup>2</sup>.
- .8 Galvanized Primer Paint: Organic zinc rich primer. For galvanized fabrications where touchup is to remain unpainted in finished work: Inorganic zinc rich primer, Galvafruid by W.R. Meadows of Canada Ltd.

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**PRE-ENGINEERED STRUCTURE FRAMES**

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- .9 Drilled Anchors: HY-150 Adhesive anchors with stainless steel rods by Hilti Inc., sizes to suit.

**2.3 Fabrication**

- .1 Verify dimensions of installed Work before commencing fabrications and report any discrepancies to Contract Administrator.
- .2 Fit and assemble Work in shop where possible. Execute work in accordance with details and reviewed Shop Drawings. Where shop fabrication is not possible, make trial assembly in shop.
- .3 Shop connections shall be welded to the maximum practical extent. Where that is not possible use bolted connections. Field welded connections shall be kept to a minimum as practical.
- .4 Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to Contract Administrator's acceptance.
- .5 Assemble members without twists or open joints.
- .6 Correctly size holes for connecting Work of other Sections where such can be determined prior to fabrication. Where possible, show holes on shop drawings. Place holes not to cause appreciable reduction in strength of member.

**2.4 Welding**

- .1 Perform welding by electric arc process.
- .2 Execute welding to avoid damage or distortion to Work. Execute welding in accordance with following standards:
  - .1 CSA W48: For welding materials. If rods are used, only coated rods are allowed.
  - .2 CSA W59: For design of connections and workmanship.
  - .3 CAN/CSA W117.2: For safety.
- .3 Thoroughly clean welded joints and expose metals for a sufficient distance to perform welding operations.
- .4 Test welds for conformance and remove work not meeting specified standards and replace to Contract Administrator's acceptance.
- .5 Continuous weld all joints for the full length of each joint. Finish exposed welds smooth and flush, file, or grind as required.

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### 2.5 Anchors and Fastening

- .1 Use weld studs of size not larger than 10 mm for attaching miscellaneous materials and equipment to building steel. If weight of item requires larger fasteners use clips or brackets and secure by welding or through bolting.

### 2.6 Inserts and Hangers

- .1 Install inserts, hangers, and supports. Make inserts drilled type.
- .2 Before openings are cut through structure, obtain Contract Administrator's written acceptance for procedures, locations and reinforcements required.

### 2.7 Hot Dip Galvanizing

- .1 Hot dip galvanize, after fabrication, structural members specified in this Section. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with brush or spray-applied anti-corrosion coating containing 92 to 95% zinc, in accordance with Manufacturer's printed directions.
- .2 Hot-dip galvanize members in accordance with CAN/CSA G164 and requirements of the following ASTM standards, with minimum coating weights or thicknesses as follows:
  - .1 Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips: ASTM A123/A123M; average weight of zinc coating of actual surface
    - .1 4.8 mm ( $\frac{3}{16}$ " ) and less member thickness: 600 g/m<sup>2</sup>
    - .2 6 mm ( $\frac{1}{4}$ " ) and heavier members: 640 g/m<sup>2</sup>
  - .2 Iron and Steel Hardware: ASTM A153/A153M; minimum weight of zinc coating, in gram per square meter of surface, in accordance with Table 1 for the various classes of materials used in the Work

## 3. EXECUTION

### 3.1 Examination

- .1 Examine concrete base for the penthouse structures and report conditions which would adversely affect erection of structure.
- .2 Comply with details of attaching mechanical and electrical equipment and services to building.
- .3 Commencing erection will imply acceptance of substrate conditions.

**PRE-ENGINEERED STRUCTURE FRAMES**

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**3.2 Erection**

- .1 Erect structures in accordance with fabricator's specifications and instructions.
- .2 Provide galvanized steel channel framing for doorframes, and stainless steel at louvres. Coordinate with other Subcontractors as directed by the Contract Administrator.
- .3 Installation tolerances:
  - .1 Vertical position:  $\pm 3$  mm.
  - .2 Horizontal position:  $\pm 3$  mm.
  - .3 Deviation from plumb: 3 mm maximum each plane.
  - .4 Racking of face: 6 mm maximum.
  - .5 Racking in elevation: nil.
- .4 Fit joints and intersecting members accurately. Make Work in true planes with adequate fastenings. Build and erect Work plumb, true, square, straight, level and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.
- .5 Perform drilling of concrete where required to fasten Work of this Section.
- .6 Insulate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and masonry, concrete or plaster. Use bituminous paint, butyl tape, building paper or other approved means.
- .7 Obtain Contract Administrator's written acceptance prior to field cutting or altering of structural members.

**3.3 Field Painting**

- .1 Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up galvanized surfaces damaged during transit and installation, with primer and topcoat to match galvanizing.

**END OF SECTION**