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## Division 5

### 05410 Load-Bearing Lightweight Steel Framing

#### Part 1 – General

##### 1.01 System Descriptions

- .1 [Axial load-bearing lightweight steel framing.]
- .2 [Lateral (wind) load-bearing lightweight steel framing.]
- .3 [Brick connectors for steel stud / brick veneer walls.]
- .4 [Floor [roof] joist lightweight steel framing.]

##### 1.02 Work Included

- .1 Provide labour, materials, services and equipment necessary to complete installation of the lightweight steel framing system including:
  - .1 [Axial load-bearing studs.]
  - .2 [Lateral (wind) load-bearing studs (no axial load other than self weight and the weight of applied finishes).]
  - .3 [Steel bridging.]
  - .4 [Top and bottom track.]
  - .5 [Head and sill members and jamb studs for wall openings.]
  - .6 [Brick Connectors including the Tie Plate, V-Wires and Fasteners.]
  - .7 [Floor joists.]
  - .8 [Roof joists.]
  - .9 [Headers and trimmers for openings.]
  - .10 [Bridging.]
  - .11 [Connections.]

##### 1.03 Related Work

- .1 [Section [01\_\_\_] Allowances for independent inspection or testing.]
- .2 [Section [03\_\_\_] Concrete.]
- .3 [Section [04\_\_\_] Masonry.]
- .4 [Section [06\_\_\_] Wood Sheathing.]
- .5 [Section [07\_\_\_] Building Insulation for exterior and stud space.]
- .6 [Section [07\_\_\_] Exterior Insulation and Finish Systems (EIFS).]
- .7 [Section [07\_\_\_] Air Barriers.]
- .8 [Section [07\_\_\_] Vapour Retarders.]

- .9 [Section [09\_\_] Exterior Sheathing].
- .10 [Section [09\_\_] Non load-bearing steel stud framing.]
- .11 [Section [09\_\_] Gypsum Board.]
- .12 [Section [\_\_\_\_] \_\_\_\_\_.]

#### 1.04 References

- .1 National Building Code of Canada.
- .2 [Ontario] [\_\_\_\_] Building Code.
- .3 CSA-S136 Cold Formed Steel Structural Members.
- .4 [CSA W47.1 Certification of Companies for fusion Welding of Steel Structures].
- .5 [CSA W59 Welded Steel Construction (Metal Arc Welding)].
- .6 [CSA A370 Connectors for Masonry].
- .7 [CSA A371 Masonry Construction for Buildings].
- .8 [CSA S304.1 Masonry Design for Buildings (Limit States Design)].
- .9 [ANSI/AWS D1.3 Structural Welding Code – Sheet Steel]
- .10 ASTM A307 Standard Specification for Carbon Steel Bolts and Studs 60000 PSI Tensile Strength
- .11 ASTM-A653/A653M Standard Specification for Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated
- .12 (Galvannealed) by the Hot-Dip Process. by the Hot-Dip Process.
- .13 [ASTM-C954 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal
- .14 Plaster Bases to Steel Studs From .033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness].
- .15 [CAN/CGSB-1.181 Ready-Mixed Organic Zinc-Rich Coating].
- .16 CAN/CGSB-7.1 Lightweight Steel Wall Framing Components.
- .17 [CAN/ULC-S101 Standard Methods of Fire Endurance Tests of Building Construction Materials].
- .18 [ULC Fire Resistance Directory Design No. W424 – load bearing wall].

#### 1.05 Quality Assurance

- .1 Firm performing installation to have minimum three years experience in installation of Lightweight Steel Framing systems [supported by written certification by Bailey Metal Products Limited prior to award of contract].

#### 1.06 Co-ordination With Other Trades

- .1 Co-ordinate with other work including air and air and vapour barriers, exterior sheathings and insulation, stud space insulation, masonry, drywall, mechanical, electrical and plumbing. doors and windows, interior drywall partitions, floor sheathing, concrete and concrete formwork and stairs.

#### 1.07 Design Criteria

- .1 Design shall be based on Limit States Design principles using factored loads and resistances.
- .2 Determine factored loads and resistances in accordance with CSA-S136 [and the National Building Code] [\_\_\_\_].
- .3 Deflection Criteria:
  - .1 [Select studs that meet the deflection requirements of CSA S304.1 for wall studs supporting brick veneer].
  - .2 [Select studs with maximum deflection under specified loads of [L/360] when supporting non-masonry finishes.
  - .3 Select floor joists with maximum deflection under specified live loads of L/360 [L/480] [\_\_\_\_].
  - .4 Select roof joists with maximum deflection under specified live loads of [L/240] [L/360] [\_\_\_\_] for joists supporting [materials not susceptible to cracking] [materials susceptible to cracking].
  - .5 Building sway due to all effects shall not exceed 1/400 of building height or 1/500 of any storey height.
- .4 For lateral (wind) load-bearing studs, design end connections to accommodate vertical deflection movement of the structure without imposing axial loads onto the framing. Leave a minimum gap of [1/2" (12mm)] [\_\_\_\_]. Larger gaps may be required to accommodate structural movement. Co-ordinate with the Project Structural Engineer.
- .5 Design components or assemblies to accommodate specified erection tolerances of the structure.
- .6 Bridging Criteria:
 

Design bridging and its anchorage to prevent member rotation and member translation perpendicular to the minor axis. Provide for secondary stress effects due to torsion between lines of bridging. Collateral sheathing [may] [may not] be used to help restrain member rotation and translation perpendicular to the minor axis.

  - .1 [For lateral (wind) load-bearing studs, provide steel bridging at [60" (1520 mm)] [\_\_\_\_] on centre maximum [Provide a minimum of [\_\_\_\_] rows of equally spaced bridging].
  - .2 [For lateral (wind) load-bearing studs supporting brick veneer, provide steel bridging at 48 in. (1220 mm) o.c. maximum.] [Provide a minimum of [\_\_\_\_] rows of equally spaced bridging].
  - .3 [For axial load-bearing studs, provide bridging as required by the stud manufacturer's load tables but not more than 48 in. (1220 mm) o.c.] [Provide a minimum of [\_\_\_\_] rows of equally spaced bridging].

- .4 [For floor and roof joists, provide bridging at 2100 mm o.c. maximum.] [Provide a minimum of [\_\_\_\_] rows of equally spaced bridging].
- .5 For studs and joists, closer bridging spacing than that specified above may be required to satisfy structural requirements.
- .6 Show a bridging splice detail on the shop drawings.
- .7 For stud walls provide head, sill and jamb members and connections to frame openings. For joists, provide headers, trimmers and connections to frame openings.
- .8 The spacing of studs shall be [12" (300mm)] [16"(400mm)] [24" (600mm)] [and align with floor joist spacing].
- .9 The spacing of the floor joists shall be [12" (300mm)] [16"(400mm)] [24" (600mm)] [and align with wall stud spacing].
- .10 The spacing of the roof joists shall be [12" (300mm)] [16"(400mm)] [24" (600mm)][and align with wall stud spacing].
- .11 Allow for appropriate end eccentricities in the design of axial load-bearing members.
- .12 Provide diagonally braced stud walls to act as shear walls. The location of the shear walls and the applied factored lateral loads are indicated on the drawings.
- .13 Connections between light steel framing members shall be by bolts, welding or sheet metal screws.
- .14 Conform to the requirements of specified fire rated assemblies [\_\_\_\_\_].
- .15 Stud, track, joist and joist closure channel depths are shown on the drawings. Adjust material thickness, spacing or both as required by the design criteria. Use greater or lesser depths only if approved by the [Engineer] [Architect] [Consultant].
- .16 Design brick connectors, V-wires and screws to meet the requirements of CSA S136, CSA A370 and CSA S304.1. See 2.02.8.

## 1.08 Submittals

- .1 Submittals to be in accordance with Section [01\_\_\_\_] Submittals.
- .2 Submit 4 certified copies of mill reports covering chemical and mechanical properties, and coating designation of steel used in this work.
- .3 Submit 3 representative pieces of all framing components parts [including mechanical fasteners if used]. The length of pieces submitted need not exceed 300 mm. Tag pieces with the name of the part, the metal thickness exclusive of coating and the manufacturer.
- .4 Submit [\_\_\_\_\_] copies of engineering calculations or data verifying the capacity of the members and the ability of the assemblies to meet the design requirements.
- .5 Submit 5 copies of shop drawings.
- .6 Each shop drawing submitted shall bear the stamp and signature of a qualified Professional Engineer registered in the [Province of Ontario] [\_\_\_\_\_].
- .7 Include all necessary shop details and erection diagrams. Indicate member sizes, locations, thickness exclusive of coating, coatings, and materials. Include connection details for attaching framing to itself and for attachment to the structure. Show splice details where permitted. Indicate dimensions, openings, requirements of related work and critical installation procedures. Show temporary bracing required for erection purposes.
- .8 Indicate design loads.
- .9 Do not fabricate until all submittals are reviewed.
- .10 Submit 5 copies of field review reports as required in section [3.08 Inspection].
- .11 Brick Connectors
  - .1 Submit product data for ties, wires & fasteners, indicating sizes, load capacities, mechanical play and type of corrosion protection.
  - .2 Submit samples of ties, wire and fasteners.

## Part 2 – Products

### 2.01 System Description

- .1 Lightweight Steel Framing System and accessories [including brick connectors] as manufactured by Bailey Metal Products Limited, One Caldari Road, Concord Ontario L4K 3Z9 1-800-668-2154 or Mantane Construction Products Limited 1-800-665-2013 shall be the base bid. Alternative manufacturers may bid providing that the specifications and details are met and approval to bid given by the [Engineer] [Architect] [Consultant]. Applications for approval must be submitted 7 days prior to bid closing.

### 2.02 Materials

- .1 Unless noted otherwise herein, the lateral (wind) load bearing and axial load-bearing lightweight steel framing system components shall conform to the requirements of CAN/CGSB-7.1.
- .2 Steel wall studs to be [Bailey] [Mantane] type [L.S.F. with 1.62" (41mm) flanges] [C.W.S. with 1.62" (41mm) flanges] [C.W.S. with [1.30"/1.22" (33mm/31mm flanges)]. See Table 3.

- .3 For stud depths see 1.07.15.
- .4 Track to have 1.18" (30mm) flanges, with same depth as studs.
- .5 [Deflection track for lateral (wind) load-bearing walls to have a minimum of [2" (51mm)] [3" (76mm)] [\_\_\_\_\_] flanges to accommodate vertical deflection of [\_\_\_\_]. Use longer flanges where required.].
- .6 Steel joists to be [Bailey] [Mantane] type L.S.F. For joist depths see 1.07.15.
- .7 The minimum design thickness of steel framing , exclusive of coating, shall be [\_\_\_\_] for lateral (wind) load-bearing studs, [\_\_\_\_] for axial load-bearing studs and [\_\_\_\_] for joists. Use thicker material where required structurally. Material used to fabricate steel framing shall comply with the thickness tolerance requirements of CSA S136.
- .8 Steel shall conform to the requirements of CSA-S136 and shall be identified as to specification, type, grade and mechanical properties.
- .9 Steel shall have a metallic coating that conforms to ASTM A653.
- .10 Lightweight steel framing members shall have a minimum galvanizing coating of [Z275 (G-90)] [Z180 (G60)]. The coating designation shall be marked on the members with indelible ink.
- .11 Sheet metal screws shall have a minimum coating thickness of .008 mm of zinc. Other coatings providing equal or better corrosion protection may be used.
- .12 Welding electrodes shall be of the 480 MPa minimum tensile strength series (e.g. E480XX, ER480S-X).
- .13 Zinc rich paint for touching up welds and damaged metallic coatings shall conform to CAN/CGSB-1.181.
- .14 Bolts and nuts to ASTM A307 [hot dipped galvanized].
- .15 Concrete anchors to be wedge or screw type with ¼" (6mm) minimum diameter and a minimum coating thickness of .008mm zinc. Use larger diameters where required structurally. [Powder actuated concrete fasteners are not permitted.]
- .16 Brick Connectors shall conform to the requirements of CSA S136, CSA-A370 and CSA-S304.1 including the requirement that tie deflection due to one half the total mechanical play plus a tension or compression load of 0.45 kN does not exceed 1.0 mm. See Table 4.
- .17 Bailey ESS (Economical Stainless Steel) Brick Connector System:
  - .1 Metal Plate; Bailey ESS-3-[05][10][15][20] Fabricated from stainless steel to CSA A370. Height to be 3" with 2 ¼" slot for vertical adjustment and length to accommodate [1/2" (12mm)] [1" (25mm)] [1 ½" (38mm)] [2" (50mm)] exterior sheathing/insulation.
  - .2 V Wire for [1" ][2" ] air space; Bailey ESSW – [1][2] Fabricated from stainless steel to CSA A370.
  - .3 Fasteners; (2) Bailey ESSF-1, # 10 -16x3/4" Stainless Steel Hex Head Self Drilling Screws to CSA A370.
- .18 Bailey HDG (Hot Dip Galvanized) Brick Connector System:
  - .1 Metal Plate; Bailey HDG-3-[05][10][15][20] Fabricated from steel, hot dip galvanized after fabrication to CSA A370. Height to be 3" with 2 ¼" slot for vertical adjustment and length to accommodate [1/2" (12mm)] [1" (25mm)] [1 ½" (38mm)] [2" (50mm)] exterior sheathing/insulation.
  - .2 V Wire for [1" ][2" ] air space; Bailey HDGW–[1][2] cold drawn steel wire, hot dip galvanized after fabrication to CSA A370.
  - .3 Fasteners; (2) # 10 -16x3/4" Galvanized Hex Head Self Drilling Screws to CSA A370.
- .19 Bailey Bayonet 10-18B Galvanized Steel Brick Connector System:
  - .1 Metal Plate; Bailey 10-18B 4" High for stud depth [3 5/8" ][4" ][6" ][8" ] and sheathing insulation thickness of [1/2" ][1" ][1 ½" ][2" ] made from steel hot dip galvanized after fabrication to CSA A370.
  - .2 Bailey galvanized V Wire 0.187" (4.76mm) cold drawn steel wire, hot dip galvanized after fabrication to CSA A370.
  - .3 Fasteners; (2) # 10 -16x3/4" Galvanized Hex Head Self Drilling Screws to CSA A370.

## Part 3 – Execution

### 3.01 General

- .1 Fabrication and erection shall conform to the approved shop drawings. Modifications required to accommodate as-built conditions shall be submitted for approval.

### 3.02 Examination

- .1 Inspect site and verify that there are no conditions that will adversely affect installation.
- .2 Do not begin installation until unsatisfactory conditions have been corrected.
- .3 Starting installation confirms acceptance of conditions.
- .4 Installer to confirm site dimensions prior to installation.

### 3.03 Welding

- .1 Companies engaged in welding shall be certified by the Canadian Welding Bureau to CSA Standard W47.1. and/or

ANSI/AWS D1.3 whichever is applicable. Companies shall have welding procedures approved and welders qualified for the base material types and thickness that are to be welded.

- .2 Welding shall conform to CSA S136, CSA W59 and/or ANSI/AWS D1.3, whichever is applicable.
- .3 For material less than 3 mm thick, shop drawings may show nominal weld leg sizes. For such material, the effective throats of welds shall not be less than the thickness of the thinnest connected part.
- .4 Touch-up welds and coatings damaged by welding with zinc rich paint. Prior to touching-up prepare surface in accordance with paint manufacturer's recommendations.

### 3.04 Screws

- .1 Steel screws shall be of the minimum diameter indicated on the shop drawings.
- .2 Penetration beyond joined materials shall be not less than 3 exposed threads.
- .3 Installation, thread types and drilling capability shall conform to the manufacturer's recommendations.
- .4 Screws covered by sheathing materials shall have low profile heads.

### 3.05 Concrete Anchors

- .1 Installation to conform to manufacturer's recommendations.

### 3.06 Fabrication

- .1 Where specified, provide cut-outs centred in the webs of members to accommodate services. Unreinforced cut-outs shall be limited to the dimensions in Table 1A and 1B. The effect of cut-outs on the strength and stiffness of the member shall be considered.
- .2 Fabrication tolerances for members shall conform to Table 2.
- .3 The steel thickness exclusive of coating shall be marked on each member by colour coding.

### 3.07 Storage of Materials

- .1 Products shall be protected from conditions that may cause physical damage or corrosion.

### 3.08 Installation

- .1 Methods of construction may be either piece by piece (stick-built) or by fabrication into panels (panelized) either on or off-site.
- .2 Lightweight steel framing shall be erected true and plum within the specified tolerances. Temporary bracing shall be employed wherever necessary to withstand all loads to which the structure may be subject during erection and subsequent construction. Temporary bracing shall be left in place as long as required for the safety and integrity of the structure. The Erector shall ensure that during erection a margin of safety consistent with the requirements of the National Building Code and CSA-S136 exists in the uncompleted structure.
- .3 Erection tolerances:
  - .1 For the purposes of this section, camber is defined as the deviation from straightness of a member or any portion of a member with respect to its major axis, and sweep is defined as the deviation from straightness of a member or any portion of a member with respect to its minor axis.
  - .2 For lateral (wind) load-bearing studs, out-of-plumbness shall not exceed 1/500th of the member length.
  - .3 For axial load bearing studs, out-of-plumbness shall not exceed 1/1000th of the member length.
  - .4 For joists, out of straightness (camber and sweep) shall not exceed 1/1000th of the member length.
  - .5 For track, camber shall not exceed 1/1000th of the member length.
  - .6 Studs shall seat into top and bottom tracks. The gap between the end of the stud and the web of the track shall not exceed 1.5mm for axial load-bearing studs and 4 mm for lateral (wind) load-bearing studs.
  - .7 Align adjacent prefabricated panels to provide surface continuity at the interface.
  - .8 Spacing of joists and studs shall not be more than +/- 3 mm from the design spacing. The cumulative error in spacing shall not exceed the requirements of the finish materials.
- .4 Make all field measurements necessary to insure the proper fit of all members.
- .5 Cutting of members may be by saw or shear. Torch cutting is not permitted.
- .6 Align cut-outs in [studs] [joists].
- .7 All axial loaded members shall be aligned vertically to allow for full transfer of the loads down to the foundation. Vertical alignment shall be maintained at floor/wall intersections.
- .8 Joists or their end stiffeners shall be located directly over axial load bearing studs below and axial load bearing studs above shall be located directly over joists or their end stiffeners. Alternatively, provide load distribution members at floor levels to transfer loads. The use of track as a load distribution member is not permitted.

- .9 Complete bearing shall be maintained under tracks to provide for load transfer in axial loaded assemblies. Any discrepancy shall be brought to the attention of the [Engineer] [Architect] [Consultant].
- .10 Splicing of axially loaded members is not permitted.
- .11 Holes that are field cut into lightweight steel framing members shall conform to the requirements of Section 3.06.1 and 3.08.5 except as approved by the Engineer responsible for the production of the shop drawings.
- .12 Insulation equal to that specified shall be placed in all jamb and header assemblies that will be inaccessible after their installation into the wall. Insure that insulation is kept dry and not compressed.
- .13 Handling and lifting of prefabricated panels shall not cause permanent distortion to any member or collateral material.
- .14 Insure that connected parts are in contact. Provide clamping before welding or installing screws, as required.
- .15 Reinforce cut-outs which occur within 12" (300mm) of the end of a stud.
- .16 Anchor top and bottom tracks securely to structure at [\_\_\_\_\_] 30" (800mm) o.c. maximum. Place one additional anchor within 4" (100mm) of each end of each piece of track and additionally as required by structural design.
- .17 Install additional studs at abutting walls, openings, terminations against other materials and on each side at corners unless explicitly detailed otherwise on the approved shop drawings.
- .18 Frame all openings in stud walls except openings less than 4" (100mm) and provide framing at points of attachment of wall mounted fixtures to adequately carry loads by using additional framing members and bracing as required structurally.
- .19 Brick Connector Installation
  - .1 Install brick connectors in accordance with CSA S136, CSA A370, CSA A371 and CSA S304.1.
  - .2 Attach Brick Connectors directly to web of the steel stud with two screw fasteners as specified in Part 2.
- .20 Follow good safety practices during handling and installation.

### 3.09 Inspection

- .1 [The lightweight steel framing Design Engineer, responsible for the production of the shop drawings, shall provide periodic field review during construction and shall submit reports in accordance with Section 1.08. [These field reviews shall include review of mill tests reports, welded connections, member sizes and material thickness, coating thickness, screwed connections, erection tolerances, brick ties and all field cutting.]
- .2 [Additional inspection and testing of materials and workmanship shall be carried out by a qualified Independent Inspection Agency appointed by the [Engineer] [Architect] [Consultant]. Inspection shall include:
  - .1 Checking that mill test reports are properly correlated to materials.
  - .2 Sampling fabrication and erection procedures for general conformity to the requirements of the specification.
  - .3 Checking that the welding conforms to the requirements of Section 3.03 Welding.
  - .4 Checking fabricated members against specified member shapes.
  - .5 Visual inspection of all welded connections including sample checking of joint preparation and fit-up.
  - .6 Sample checking of screwed and bolted joints.
  - .7 Sample checking that tolerances are not exceeded during fit-up or erection.
  - .8 Additional inspection and testing of welded connections as required by CSA W59.
  - .9 General inspection of field cutting and alterations required by other trades.
  - .10 Submission of reports to the [Engineer] [Architect] [Consultant], the Contractor and the authorities having jurisdiction covering the work inspected with details of deficiencies discovered.
  - .11 Checking that brick ties conform to the submittals in Section 1.08 and that installation conforms to the requirements of CSA S136, CSA A370, CSA A371 and CSA S304.1.
- .3 The Contractor shall provide the necessary co-operation to insure that the inspection can proceed.
- .4 The inspection provided in this section does not relieve the Contractor of his responsibility for the performance of the contract. The Contractor is solely responsible for quality control and he shall implement his own supervisory and quality control procedures.
- .5 Materials or workmanship not conforming to the requirements of the contract documents may be rejected at any time during the progress of work.
- .6 The cost of field reviews is included in the contract price. The cost of inspection is included in [the cash allowance for testing] [\_\_\_\_\_].

### 3.10 Cleaning

- .1 Clean work in accordance with section [01\_\_\_\_].

### End of Section.

TABLE 1A – ALLOWABLE DIMENSIONS FOR  
UNREINFORCED CUT-OUTS IN STUDS

Member Depth (mm)	Across the Member Web (mm)	Along the Member Length (mm)	*Centre to Centre Spacing (mm)
92,102 > 152	40 max. 65 max.	105 max. 115 max.	600 min. 600 min.

\* The distance from the centreline of the last unreinforced cut-out to the end of the member shall be not less than 300 mm.

TABLE 1B – ALLOWABLE DIMENSIONS FOR  
UNREINFORCED CUT-OUTS IN JOISTS

Member Depth (mm)	Across the Member Web (mm)	Along the Member Length (mm)	*Centre to Centre Spacing (mm)
> 152	40 max.	105 max.	600 min.

\* The distance from the centreline of the last unreinforced cut-out to the end of the member shall be not less than 600 mm

TABLE 2 – FABRICATION TOLERANCES FOR  
LIGHTWEIGHT STEEL FRAMING MEMBERS

Member Type	Member Depth A (mm)	Flange Width B (mm)	Lip Length C (mm)	Thickness t (mm)	Inside Radius r (mm)	Corner Angles
Track or Studs	-1, +2	-1, +2 **	-0, +4	See CSA S136	*	$\pm 30^\circ$

\* Only applicable to members subjected to web crippling.  
For  $r < 2t$  +28%  
For  $2t < r < 4t$  +9%

Where r is the manufacturer's specified inside bend radius and t is the thickness exclusive of coating.

\*\* Where drywall is attached directly to the flange, the minimum flange width shall be 31 mm.

Member Type	Length
Tracks	-
Wind Bearing Studs	$\pm 3$ mm
Axial Load Bearing Studs	$\pm 1.5$ mm
Joists and Rafters	$\pm 3$ mm

TABLE 3  
BAILEY AND MANTANE LIGHTWEIGHT STEEL FRAMING MEMBERS

The following is a summary of standard stud and joist standard sections available. Please refer to Bailey and Mantane literature for additional information including section properties, load tables and engineering notes and details.

**Bailey Axial Load-Bearing Studs (Central and Eastern Canada)**

System	Depth	Flange	Thickness	Yield Strength
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.060", 0.075"	50 ksi
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.048"	33 ksi
C.W.S.	3 5/8", 6"	1.62"	0.044"	33 ksi
C.W.S.	3 5/8", 6"	1.62"	0.033"	33 ksi

**Mantane Axial Load-Bearing Studs (Western Canada)**

System	Depth	Flange	Thickness	Yield Strength
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.060", 0.075"	50 ksi
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.036", 0.048"	33 ksi

**Bailey Lateral (Wind) Load-Bearing Studs (Central and Eastern Canada)**

System	Depth	Flange	Thickness	Yield Strength
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.060", 0.075"	50 ksi
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.048"	33 ksi
C.W.S.	3 5/8", 6"	1.62"	0.044"	33 ksi
C.W.S.	3 5/8", 6"	1.62"	0.033"	33 ksi
C.W.S.	2 1/2", 3 5/8", 6"	1.30"/1.22"	0.044"	33 ksi
C.W.S.	2 1/2", 3 5/8", 6"	1.30"/1.22"	0.033"	33 ksi

**Mantane Lateral (Wind) Load-Bearing Studs**

System	Depth	Flange	Thickness	Yield Strength
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.060", 0.075"	50 ksi
L.S.F.	3 5/8", 4", 6", 8"	1.62"	0.036", 0.048"	33 ksi
L.S.F.	4", 6"	1.62"	0.033"	33 ksi
L.S.F.	3 5/8"	1.30"/1.22"	0.033"	33 ksi

**Bailey Floor Joists (Central and Eastern Canada)**

System	Depth	Flange	Thickness	Yield Strength
Floor Joist	6", 8", 10"	1.62"	0.060", 0.075"	50 ksi
Floor Joist	6", 8"	1.62"	0.048"	33 ksi

**Mantane Floor Joists (Western Canada)**

System	Depth	Flange	Thickness	Yield Strength
Floor Joist	6", 8", 10", 12"	1.62"	0.060", 0.075"	50 ksi
Floor Joist	6", 8"	1.62"	0.048"	33 ksi
Floor Joist	5 1/2", 7 1/4", 9 1/4", 11 1/4"	1.75"/1.875"	0.060", 0.075"	50 ksi
Floor Joist	5 1/2", 7 1/4"	1.75"/1.875"	0.048"	33 ksi

TABLE 4  
BAILEY AND MANTANE BRICK CONNECTORS FOR BRICK VENEER STEEL STUD WALLS

System **ESS** (Economical Stainless Steel)  
System **HDG** (Hot Dip Galvanized After Fabrication)  
System **1018B** (Bayonet Hot Dip Galvanized after Fabrication)

<b>FEATURE</b>	<b>ESS-3</b>	<b>HDG-3</b>	<b>BAYONET</b>
Meets Requirements of CSA A370-94 Connectors For Masonry	Yes	Yes	Yes
Corrosion Protection	Level III	Level II	Level II
Attaches to web side of stud with fasteners loaded in shear	Yes	Yes	Yes
Plate Height	3" (76mm)	3" (76mm)	4" (102mm)
Vertical Adjustment (Slot Size)	2 ¼" (57mm)	2 ¼" (57mm)	3" (76mm)
Use with 3 5/8", 4", 6" and 8" Studs with 1.62" Flanges	Yes	Yes	Yes
Use with 3 5/8" Studs with 1.30"/1.22" Flanges	No	Yes	Yes
Use with 4" and 6" Studs with 1.30"/1.22" Flanges	No	No	Yes