2.1 NONCONVENTIONAL MASONRY CONNECTORS

.1 Design Criteria:

.1 Comply with requirements of CSA A370-04, ACI/ASCE/TMS/518 and U.B.C. for nonconventional masonry connectors.

.2 Deflection: maximum 2.0 mm (0.079"), including free play, when acted upon by a lateral load of 0.45 kN (100 lbs.), in all possible positions of adjustment.

.3 Positive restraint at position of maximum adjustment.

.4 Free Play of multi-component ties: Not more than 1.2 mm (0.047") when assembled in all possible configurations.

.2 Adjustable BVTS:

.1 Components:
- .1 BVTS: Length to suit thickness of gypsum sheathing, membrane and insulation.
- .2 AB-Clip.
- .3 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.

.2 Finish: All steel components hot dip galvanized as per A370-04.

.3 Spacing:
- .1 Typical: Provide Adjustable BVTS at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Opening and Wall Ends: Provide Adjustable BVTS at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Adjustable BVTS at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Adjustable BVTS at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide 2 - (fastener description and embedment), as per A370-04 per adjustable BVTS.

.3 Block Shear Connector:

.1 Components:
- .1 Block Shear Connector Plate: Length to suit concrete block width and thickness of membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- 3. Insulation Support.

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Block Shear Connectors at [maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.] [as indicated on structural drawings.]
- .2 Openings and Wall Ends: Provide Block Shear Connectors at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Block Shear Connectors at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Block Shear Connector at maximum [ ] mm (in) from bottoms of walls.

.4 BVTS (Brick Veneer Tie Support):

.1 Components:
- .1 BVTS: Length to suit thickness of gypsum sheathing, membrane and insulation.
- .2 Corrugated Strip Tie: Standard 0.76 mm (0.03") conventional corrugated strip tie, to A-370-04.

.2 Finish: All steel components hot dip galvanized as per A370-04.

.3 Spacing:
- .1 Typical: Provide BVTS at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide BVTS at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide BVTS at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide BVTS at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide 1 - (fastener description and embedment), as per A30-04, per BVTS.

.5 Cat-Tie:

.1 Components:
- .1 AB-Clip
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Cat-Tie at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Cat-Tie at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Cat-Tie at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Cat-Tie at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide 2 - (fastener description and embedment), as per A30-04, per Cat-Tie.

.6 Lateral Tie Clip:

.1 Components:
- .1 Lateral Tie Clip.

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing: Provide [2] [4] Lateral Tie Clips per V-Tie ([1] [2] per leg of V-Tie).

.7 Pac-Tie:

.1 Components:
- .1 Backer Plate.
- .2 AB-Clip
- .3 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Pac-Tie at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Pac-Tie at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Pac-Tie at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Pac-Tie at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide 2 - (fastener description and embedment), as per A30-04, per Pac-Tie.

.8 Rap-Tie:

.1 Components:
- .1 L-Plate: Length to suit thickness of membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Rap-Tie at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Rap-Tie at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Rap-Tie at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Rap-Tie at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide [1] [2] - (fastener description and embedment), as per A30-04, per Rap-Tie.

.9 Side Mounting Rap-Tie:

.1 Components:
- .1 Flat Plate: Length to suit steel stud width and thickness of gypsum sheathing, membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Side Mounting Rap-Tie at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Side Mounting Rap-Tie at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Side Mounting Rap-Tie at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Side Mounting Rap-Tie at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide 2 - No. [ ] self-tapping sheet metal screws, as per, as per A30-04, per Side Mounting Rap-Tie embedded minimum 20 mm (0.79") into steel stud.

.10 Slotted Block Tie (Type [I] [II]):

.1 Components:
- .1 Slotted Block Plate (Type [I] [II]): Length to suit block width and thickness of membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Slotted Block Tie (Type [I] [II]) at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Slotted Block Tie (Type [I] [II]) at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Slotted Block Tie (Type [I] [II]) at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Slotted Block Tie (Type [I] [II]) at maximum [ ] mm (in) from bottoms of walls.

.11 Slotted Rap-Tie:

.1 Components:
- .1 Slotted L-Plate: Length to suit thickness of membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Slotted Rap-Tie at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Slotted Rap-Tie at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Slotted Rap-Tie at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Slotted Rap-Tie at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide [1] [2] - (fastener description and embedment), as per A30-04, per Slotted Rap-Tie.

.12 Slotted Rap-Tie:

.1 Components:
- .1 Slotted Flat Plate: Length to suit steel stud width and thickness of gypsum sheathing, membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Slotted Side Mounting Rap-Tie at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Slotted Side Mounting Rap-Tie at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Slotted Side Mounting Rap-Tie at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Slotted Side Mounting Rap-Tie at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide 2 - No. [ ] self-tapping sheet metal screws, as per, as per A30-04, per Slotted Side Mounting Rap-Tie embedded minimum 20 mm (0.79") into steel stud.

.13 Slotted Stud Tie (Type [I] [II]):

.1 Components:
- .1 Slotted Stud Plate (Type [I] [II]): Length to suit steel stud width and thickness of gypsum sheathing, membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Slotted Stud Tie (Type [I] [II]) at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.
- .2 Openings and Wall Ends: Provide Slotted Stud Tie (Type [I] [II]) at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Slotted Stud Tie (Type [I] [II]) at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Slotted Stud Tie (Type [I] [II]) at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide [2] [4] - No. [ ] self-tapping sheet metal screws, as per, as per A30-04, per Slotted Stud Tie (Type [I] [II]) embedded minimum 20 mm (0.79") into steel stud.

Specifications (CSA A370-04)

.14 Fast Angle Support:

.1 Components:
- .1 Fero FAST Bracket, shim plate and rectangular washer.
- .2 FAST™ Bracket, manufactured from 4.76 mm (3/16") mild steel plate is sized to suit cavity width (thickness of rigid insulation + air space).
- .3 Shim plate (3/16" thick) for adjusting when required. If tolerance exceeds 3/16", select the next size bracket.
- .4 Rectangular washer attached as per manufacturer's guidelines.
- .5 Use 15 mm (5/8") diameter anchor bolts or inserts supplied by masonry contractor, as per all manufacturer's recommendations pertaining to installation, edge distance, etc.
- .6 Use 100 mm x 100 mm x 6 mm (4" x 4" x 1/4"), Galvanized steel angle.

.2 Finish:
- .1 All steel components [hot dip galvanized] after fabrication as per CSA A370-04.

.3 Spacing:
- .1 Typical: Provide angle support at [ ] mm on centre spacing ± 100 mm [( ) ft ±4"].
- .2 Install the first Angle Support at 100 mm (±4") from the end of the assembly, corners or change of direction.

.4 Installation:
- .1 Snap a chalk line and mark the approximate location of the anchors. Drill holes if required.
- .2 Install FAST™ Brackets and finger tighten anchor. *(Note: the brackets are installed after the installation of the air barrier).*
- .3 Insert shims behind the angle if required.
- .4 Alternate between right and left slot configuration to make sliding impossible.
- .5 Install shelf angle.
- .6 Level and tighten anchor bolts snug plus half turn or as specified.
- .7 Install shim if required, in front of the angle to ensure that the vertical leg of angle is in contact with the front of the support system (bracket).
- .8 Coordinate vertical control joint with angle iron.
- .9 The end of one piece of angle terminates at the midpoint of the bracket, i.e. two pieces of angle met at the centre of the bracket.
- .10 The rigid insulation cut out at the location of the bracket is saved and inserted back inside the bracket to maintain continuity.

.15 Stud Shear Connector:

.1 Components:
- .1 Stud Shear Connector Plate: Length to suit steel stud width and thickness of gypsum sheathing, membrane and insulation.
- .2 V-Tie: Length to provide placement of V-Tie legs at centreline of solid unit veneer.
- .3 Insulation Support

.2 Finish: All steel components [hot dip galvanized] [stainless steel] as per A370-04.

.3 Spacing:
- .1 Typical: Provide Stud Shear Connector [at maximum [ ] mm (in) o.c. horizontal by maximum [ ] mm (in) o.c. vertical.] [as indicated on structural drawings.]
- .2 Openings and Wall Ends: Provide Stud Shear Connector at maximum [ ] mm (in) o.c., at maximum [ ] mm (in) from openings and wall ends.
- .3 Tops of Walls: Provide Stud Shear Connector at maximum [ ] mm (in) from tops of walls.
- .4 Bottoms of Walls: Provide Stud Shear Connector at maximum [ ] mm (in) from bottoms of walls.

.4 Fasteners: Provide [2] [4] - No. [ ] self-tapping sheet metal screws, as per, as per A30-04, per Stud Shear Connector embedded minimum 20 mm (0.79") into steel stud.

Fero Corporation

15305 - 117 Avenue, Edmonton, Alberta T5M 3X4
Phone: (780) 455-5098 Fax: (780) 452-5969
www.ferocorp.com info@ferocorp.com