DIVISION: 05 00 00—METALS
SECTION: 05 50 00—METAL FABRICATIONS

REPORT HOLDER:

AFCO MANUFACTURING CORPORATION

EVALUATION SUBJECT:

“ZIP” ADJUSTABLE COLUMNS

“2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence”
DIVISION: 05 00 00—METALS  
Section: 05 50 00—Metal Fabrications  

REPORT HOLDER:  
AFCO MANUFACTURING CORPORATION  

EVALUATION SUBJECT:  
“ZIP” ADJUSTABLE COLUMNS  

1.0 EVALUATION SCOPE  
Compliance with the following codes:  
- 2015, 2012 and 2009 International Residential Code® (IRC)  
- 2013 Abu Dhabi International Building Code (ADIBC)†  
†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.  

Property evaluated:  
Structural  

2.0 USES  
The “Zip” Adjustable Columns are prefabricated steel column assemblies used as structural members to transfer axial compressive loads from wood or steel beams to concrete footings. They may be used under the IRC when an engineered design is prepared in accordance with IRC Section R301.1.3.  

3.0 DESCRIPTION  
3.1 General:  
The “Zip” Adjustable Columns are comprised of round tubing, with a top plate welded to the top and a screw jack assembly welded to the bottom of the tubing. The screw jack assembly consists of a screw plate, a screw, a collar and an optional turn bar for adjusting the column length. The columns are available in five models with nominal diameters and base-metal wall thicknesses as shown in Table 1. All columns are available in lengths ranging from 1 foot to 12 feet (305 to 3658 mm). The screw jack assembly allows the column to be adjusted up to 4 inches (102 mm) in length. The assembly is painted with a primer.  

3.2 Models 3X, 35, 4X:  
For models 3X, 35 and 4X, the tubing conforms to ASTM A513, Type 1, Grade 1008-1010, with a minimum yield stress of 30 ksi (206 MPa). The screw is fabricated from steel bar conforming to ASTM A108, minimum grade 1200. The screw has a nominal diameter of 1 1/4 inches (32 mm) and a length of 6.25 inches (159 mm). The collar is fabricated from steel bar conforming to ASTM A576, minimum grade 1100. The collar is 3/4-inch thick (19 mm) with a threaded hole for the screw, and is butt welded to the bottom of the tubing.  

3.3 Models 34 and 36:  
For models 34 and 36, the tubing conforms to ASTM A500 Grade B, with a minimum yield stress of 42 ksi (290 MPa). The screw is fabricated from steel bar conforming to ASTM A108, minimum grade 1200. The screw has a nominal diameter of 1 1/4 inches (32 mm) and a length of 6.25 inches (159 mm). The collar is fabricated from steel bar conforming to ASTM A576, minimum grade 1100. The collar is 1 inch thick (25.4 mm) with a threaded hole for the screw, and is butt welded to the bottom of the tubing.  

3.4 Screw Plates:  
Two screw plates are available and are used interchangeably. They are fabricated from steel complying with ASTM A568, Grade 1008-1010. The minimum yield strength is 37.3 ksi (257 MPa).  

3.5 Top Plates:  
Four top plates are available and are used interchangeably. Three are H-shaped plates and the fourth is a combination plate, comprised of a rectangular plate and H-shaped plate. The top plates are fabricated from steel conforming to ASTM A568, grade 1008-1010, with a minimum yield strength of 37.3 ksi (257 MPa). The top plates are welded to the tubing at the manufacturing facility.  

4.0 DESIGN AND INSTALLATION  
4.1 Design:  
Design loads determined in accordance with IBC Section 1605.3 [for allowable stress design (ASD)] must not exceed the allowable loads given in Table 2. Design loads determined in accordance with IBC Section 1605.2 [for load and resistance factor design (LRFD)] must not exceed the design strengths given in Table 2. The capacity of the end plates must be calculated in accordance with applicable code requirements for the steel, concrete or wood to determine whether the supplied end plate thickness is adequate for the applied load interface (wood beams, steel beams or concrete).  

4.2 Installation:  
Installation of the “ZIP” Adjustable Columns described in this report must comply with this report and the manufacturer’s published installation instructions. The
manufacturer’s published installation instructions and the approved plans must be available at the jobsite at all times during installation.

The columns must be supported on code-complying foundations capable of supporting the imposed load. The columns are placed vertically with the screw jack assembly at the bottom or top of the column and in the desired position under the beam. The screw plate or column, as applicable, must be anchored to the foundation in accordance with the approved plans. The column must be adjusted to ensure full bearing of the beam on the cap plate. Maximum length adjustment of the columns is 4 inches (102 mm). After the column has been adjusted to the desired length, one screw thread must be damaged to one half its depth for a length of 1 1/2 inches (38 mm) with a cold chisel or screw driver to prevent vertical movement of the column. The top plate must be attached to the supported beam in accordance with the approved plans.

5.0 CONDITIONS OF USE

5.1 The column assemblies must be fabricated and installed in accordance with this report, the manufacturer’s published installation instructions, the approved plans and the applicable code. In the event of a conflict between the manufacturer’s published installation instructions and this report, this report governs.

5.2 Where required by the code official, engineering calculations and construction documents consistent with this report must be submitted for approval. The documents must contain details of the attachment to the structure consistent with the requirements of this report. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.3 Loading on the columns must be limited to concentric axial compressive loads, in accordance with Section 4.1. Other loading conditions, such as but not limited to, eccentric loads, tensile axial loads, bending loads, and lateral loads, are outside the scope of this report.

5.4 Connections of the post to the foundation and the supported construction, and bearing capacity of the supported beam, are outside the scope of this report and must be approved by the code official.

5.5 Maximum adjustment of the adjustable columns is 4 inches (102 mm) and the overall column height must be limited to the maximum height given in Table 2.

5.6 “Zip” Adjustable Columns are manufactured in Holly, Michigan, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Adjustable Steel Columns (AC335), dated February 2008 (editorially revised November 2016).

7.0 IDENTIFICATION

7.1 “Zip” Adjustable Columns are labeled with the manufacturer’s name (AFCO Mfg, Corp.), the product name and model, the length, the design thickness, and the ICC-ES evaluation report number (ESR-2452).

7.2 The report holder’s contact information is the following:

AFCO MANUFACTURING CORPORATION
POST OFFICE BOX 230
HOLLY, MICHIGAN 48442
(248) 634-4415
www.afcomfg.com

<table>
<thead>
<tr>
<th>MODEL</th>
<th>OUTSIDE DIAMETER (inches)</th>
<th>NOMINAL WALL THICKNESS (inch)</th>
<th>DESIGN THICKNESS (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3X</td>
<td>3.0</td>
<td>0.120</td>
<td>0.120</td>
</tr>
<tr>
<td>35</td>
<td>3.5</td>
<td>0.120</td>
<td>0.120</td>
</tr>
<tr>
<td>4X</td>
<td>4.0</td>
<td>0.120</td>
<td>0.120</td>
</tr>
<tr>
<td>34</td>
<td>3.5</td>
<td>0.216</td>
<td>0.205</td>
</tr>
<tr>
<td>36</td>
<td>4.0</td>
<td>0.226</td>
<td>0.214</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm.
### TABLE 2—CONCENTRIC AXIAL COMPRESSION ALLOWABLE LOAD AND DESIGN STRENGTH CAPACITIES OF ZIP ADJUSTABLE COLUMNS (lbf)

<table>
<thead>
<tr>
<th>HEIGHT</th>
<th>3X Allowable Load (for ASD)</th>
<th>3X Design Strength (for LRFD)</th>
<th>35 Allowable Load (for ASD)</th>
<th>35 Design Strength (for LRFD)</th>
<th>4X Allowable Load (for ASD)</th>
<th>4X Design Strength (for LRFD)</th>
<th>34 Allowable Load (for ASD)</th>
<th>34 Design Strength (for LRFD)</th>
<th>36 Allowable Load (for ASD)</th>
<th>36 Design Strength (for LRFD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6'0&quot; - 6'4&quot;</td>
<td>12,160</td>
<td>19,455</td>
<td>15,245</td>
<td>24,395</td>
<td>18,255</td>
<td>29,210</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>6'3&quot; - 6'7&quot;</td>
<td>11,925</td>
<td>19,080</td>
<td>15,030</td>
<td>24,050</td>
<td>18,060</td>
<td>28,900</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>6'6&quot; - 6'10&quot;</td>
<td>11,685</td>
<td>18,695</td>
<td>14,810</td>
<td>23,695</td>
<td>17,860</td>
<td>28,575</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>6'9&quot; - 7'1&quot;</td>
<td>11,440</td>
<td>18,305</td>
<td>14,585</td>
<td>23,335</td>
<td>17,655</td>
<td>28,245</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>7'0&quot; - 7'4&quot;</td>
<td>11,195</td>
<td>17,910</td>
<td>14,355</td>
<td>22,970</td>
<td>17,440</td>
<td>27,905</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>7'3&quot; - 7'7&quot;</td>
<td>10,945</td>
<td>17,510</td>
<td>14,125</td>
<td>22,595</td>
<td>17,005</td>
<td>27,560</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>7'6&quot; - 7'10&quot;</td>
<td>10,690</td>
<td>17,105</td>
<td>13,885</td>
<td>22,215</td>
<td>17,005</td>
<td>27,210</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>7'9&quot; - 8'1&quot;</td>
<td>10,440</td>
<td>16,700</td>
<td>13,645</td>
<td>21,830</td>
<td>16,780</td>
<td>26,850</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>8'0&quot; - 8'4&quot;</td>
<td>10,180</td>
<td>16,290</td>
<td>13,400</td>
<td>21,440</td>
<td>16,550</td>
<td>26,480</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>8'3&quot; - 8'7&quot;</td>
<td>9,925</td>
<td>15,875</td>
<td>13,150</td>
<td>21,040</td>
<td>16,320</td>
<td>26,110</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>8'6&quot; - 8'10&quot;</td>
<td>9,665</td>
<td>15,465</td>
<td>12,900</td>
<td>20,645</td>
<td>16,085</td>
<td>25,730</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>8'9&quot; - 9'1&quot;</td>
<td>9,405</td>
<td>15,050</td>
<td>12,650</td>
<td>20,240</td>
<td>15,845</td>
<td>25,350</td>
<td>25,580</td>
<td>40,905</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>9'0&quot; - 9'4&quot;</td>
<td>9,150</td>
<td>14,635</td>
<td>12,395</td>
<td>19,835</td>
<td>15,600</td>
<td>24,960</td>
<td>25,315</td>
<td>40,505</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>9'3&quot; - 9'7&quot;</td>
<td>8,890</td>
<td>14,240</td>
<td>12,140</td>
<td>19,425</td>
<td>15,355</td>
<td>24,570</td>
<td>24,550</td>
<td>39,280</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>9'6&quot; - 9'10&quot;</td>
<td>8,630</td>
<td>13,810</td>
<td>11,885</td>
<td>19,015</td>
<td>15,110</td>
<td>24,175</td>
<td>23,790</td>
<td>38,060</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>9'9&quot; - 10'1&quot;</td>
<td>8,375</td>
<td>13,400</td>
<td>11,625</td>
<td>18,600</td>
<td>14,860</td>
<td>23,775</td>
<td>23,035</td>
<td>36,850</td>
<td>31,080</td>
<td>49,695</td>
</tr>
<tr>
<td>10'0&quot; - 10'4&quot;</td>
<td>8,120</td>
<td>12,990</td>
<td>11,370</td>
<td>18,190</td>
<td>14,610</td>
<td>23,375</td>
<td>22,280</td>
<td>35,650</td>
<td>31,080</td>
<td>49,695</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 lbf = 4.4 N.

Note: LRFD Design Strength must be compared to factored loads.

---

**FIGURE 1—“ZIP” ADJUSTABLE COLUMN**