



Code Compliance Research Report

CCRR-0145

Subject to Renewal: 11/18/2010
Visit www.archtest.com for current status

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Marshall Stamping Company
355 Glade Mills Road
Valencia, PA 16059
(800) 635-1166

www.marshallstamping.com

1.0 Subject

Marshall Extend-O-Column
Marshall Fixed Length Column

2.0 Research Scope

2.1 Building Codes:

2009 International Building Code (IBC)
2009 International Residential Code (IRC)

2.2 Properties:

Structural
Corrosion protection

3.0 Description

3.1 General – The Marshall Extend-O-Column and Marshall Fixed Length Columns are adjustable and fixed columns constructed of carbon steel for use in supporting loads in wood frame and light steel frame construction. The column sizes that are recognized in this report are listed in Tables A through H. Refer to Figure 1 for column details.

3.2 The posts are fabricated from the steel grades listed below.

- Tube - ASTM A500 Grade B, Carbon Steel
- Flange - ASTM A36 Hot-Rolled Carbon Steel
- Screw - AISI 1117 Carbon Steel

3.3 Corrosion protection - All Marshall Stamping steel column sections are protected with a rust inhibiting enamel applied to all surfaces including the inside of the column.

3.4 The columns, both fixed length and adjustable, are produced in the following diameters – 3.0, 3.5 and 4.0 inches with either an 11 gauge or 0.216 inch thickness. Refer to Tables A through H.

3.5 The adjustable columns are available in lengths from six (6) feet to twelve (12) feet, four (4) inches as designated in Tables A through D.

3.6 The fixed length columns are available in lengths from five (5) feet, nine (9) inches to twelve (12) feet as designated in Tables E through H.

4.0 Installation

4.1 Installation shall be in accordance with the applicable code, manufacturer's installation instructions and this report. Where differences occur between this report and the manufacturer's installation instructions, this report shall govern.

4.2 The Marshall Stamping Extend-O-Column must be installed with the adjustable screw mechanism on the bottom. The entire adjustment mechanism, including the entire collar nut, shall be encased in minimum 3500 psi concrete.

5.0 Supporting Evidence

5.1 Manufacturer's drawings and installation instructions.

5.2 Engineering calculations in accordance with American Institute of Steel Construction (AISC) 360-05, Specification for Structural Steel Buildings.

5.3 Reports of load testing in accordance with ASTM E 72.

5.4 Quality control manual in accordance with ICC-ES Acceptance Criteria for Quality Documentation, (AC10.)

6.0 Conditions of Use

6.1 The steel columns identified in this report are deemed to comply with the referenced building codes subject to the following conditions.

6.2 Steel column structural elements shall be designed to safely support applicable loads and load combinations in accordance with Chapter 16 of the IBC.

- 6.3 Design Strengths are applicable to American Institute of Steel Construction (AISC) 360-05, Specification for Structural Steel Buildings (ASD) as identified in Tables A through H.
- 6.3.1 Use of Marshall Stamping columns shall be accompanied by structural calculations. These calculations shall be signed and sealed by a registered design professional authorized to provide services in the jurisdiction where the project is located. The calculations shall address the following;
- 6.3.1.1 The transfer of design loads from the structure to the bearing surface below.
- 6.3.1.2 The ability of the column bearing surface to carry the design loads.
- 6.4 Allowable loads shall be limited to vertical, concentric loadings. The use of these columns to resist lateral loads is outside the scope of this report.
- 6.5 When Marshall Stamping Extend-O-Columns are used, the threaded adjustment rod shall not extend more than four (4) inches from the minimum height.
- 6.6 Jobsite manufacturing of Marshall Stamping columns is outside the scope of this report.
- 6.7 Installation outside of the building envelope is outside the scope of this report.
- 6.8 The Marshall Stamping columns identified in this report are manufactured in Valencia, Pennsylvania in accordance with the manufacturer's approved quality control system with inspections by Architectural Testing, Inc. (AA-676)

7.0 Identification

- 7.1 Marshall Stamping columns produced in accordance with this report shall be identified with labeling that includes the following information:
- 7.1.1 The manufacturers name and/or logo
- 7.1.2 The product name and model number
- 7.1.3 Design Thickness of the column
- 7.1.4 Material Grade (i.e. 42 ksi)
- 7.1.5 The mark of the independent inspection agency, Architectural Testing, Inc. (AA-676)
- 7.1.6 The ATI Code Compliance Research Report Number (CCRR-0145)

8.0 Code Compliance Research Report Use

- 8.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.
- 8.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product or manufacturer by ATI.
- 8.3 Reference to the Architectural Testing internet web site address at www.archtest.com is recommended to ascertain the current version and status of this report.

TABLE A • 3 • 11 GA EXTEND-O-COLUMN

| MODEL NO. | ADJ. LENGTH | ASD(R _a) (kips) |
|-----------|------------------|-----------------------------|
| AC360 | 6' 0" - 6' 4" | 18.7 |
| AC363 | 6' 3" - 6' 7" | 18.2 |
| AC366 | 6' 6" - 6' 10" | 17.8 |
| AC369 | 6' 9" - 7' 1" | 17.3 |
| AC370 | 7' 0" - 7' 4" | 16.8 |
| AC373 | 7' 3" - 7' 7" | 16.3 |
| AC376 | 7' 6" - 7' 10" | 15.8 |
| AC379 | 7' 9" - 8' 1" | 15.3 |
| AC380 | 8' 0" - 8' 4" | 14.8 |
| AC383 | 8' 3" - 8' 7" | 14.2 |
| AC386 | 8' 6" - 8' 10" | 13.8 |
| AC389 | 8' 9" - 9' 1" | 13.3 |
| AC390 | 9' 0" - 9' 4" | 12.8 |
| AC393 | 9' 3" - 9' 7" | 12.3 |
| AC396 | 9' 6" - 9' 10" | 11.8 |
| AC399 | 9' 9" - 10' 1" | 11.3 |
| AC3100 | 10' 0" - 10' 4" | 10.9 |
| AC3103 | 10' 3" - 10' 7" | 10.4 |
| AC3106 | 10' 6" - 10' 10" | 10.1 |
| AC3109 | 10' 9" - 11' 1" | 9.5 |
| AC3110 | 11' 0" - 11' 4" | 9.1 |
| AC3113 | 11' 3" - 11' 7" | 8.7 |
| AC3116 | 11' 6" - 11' 10" | 8.3 |
| AC3119 | 11' 9" - 12' 1" | 8.0 |
| AC3120 | 12' 0" - 12' 4" | 7.6 |

TABLE B • 3.5 • 11 GA EXTEND-O-COLUMN

| MODEL NO. | ADJ. LENGTH | ASD(R _a) (kips) |
|-----------|------------------|-----------------------------|
| AC3560 | 6' 0" - 6' 4" | 23.8 |
| AC3563 | 6' 3" - 6' 7" | 23.4 |
| AC3566 | 6' 6" - 6' 10" | 22.9 |
| AC3569 | 6' 9" - 7' 1" | 22.5 |
| AC3570 | 7' 0" - 7' 4" | 22.0 |
| AC3573 | 7' 3" - 7' 7" | 21.5 |
| AC3576 | 7' 6" - 7' 10" | 21.0 |
| AC3579 | 7' 9" - 8' 1" | 20.5 |
| AC3580 | 8' 0" - 8' 4" | 20.0 |
| AC3583 | 8' 3" - 8' 7" | 19.5 |
| AC3586 | 8' 6" - 8' 10" | 19.0 |
| AC3589 | 8' 9" - 9' 1" | 18.6 |
| AC3590 | 9' 0" - 9' 4" | 18.1 |
| AC3593 | 9' 3" - 9' 7" | 17.5 |
| AC3596 | 9' 6" - 9' 10" | 17.1 |
| AC3599 | 9' 9" - 10' 1" | 16.6 |
| AC35100 | 10' 0" - 10' 4" | 16.1 |
| AC35103 | 10' 3" - 10' 7" | 15.6 |
| AC35106 | 10' 6" - 10' 10" | 15.1 |
| AC35109 | 10' 9" - 11' 1" | 14.6 |
| AC35110 | 11' 0" - 11' 4" | 14.1 |
| AC35113 | 11' 3" - 11' 7" | 13.7 |
| AC35116 | 11' 6" - 11' 10" | 13.2 |
| AC35119 | 11' 9" - 12' 1" | 12.7 |
| AC35120 | 12' 0" - 12' 4" | 12.2 |

TABLE C • 4 • 11 GA EXTEND-O-COLUMN

| MODEL NO. | ADJ. LENGTH | ASD(R _a) (kips) |
|-----------|------------------|-----------------------------|
| AC460 | 6' 0" - 6' 4" | 28.9 |
| AC463 | 6' 3" - 6' 7" | 28.5 |
| AC466 | 6' 6" - 6' 10" | 28.1 |
| AC469 | 6' 9" - 7' 1" | 27.6 |
| AC470 | 7' 0" - 7' 4" | 27.2 |
| AC473 | 7' 3" - 7' 7" | 26.8 |
| AC476 | 7' 6" - 7' 10" | 26.3 |
| AC479 | 7' 9" - 8' 1" | 25.8 |
| AC480 | 8' 0" - 8' 4" | 25.3 |
| AC483 | 8' 3" - 8' 7" | 24.8 |
| AC486 | 8' 6" - 8' 10" | 24.4 |
| AC489 | 8' 9" - 9' 1" | 23.9 |
| AC490 | 9' 0" - 9' 4" | 23.4 |
| AC493 | 9' 3" - 9' 7" | 23.0 |
| AC496 | 9' 6" - 9' 10" | 22.4 |
| AC499 | 9' 9" - 10' 1" | 21.9 |
| AC4100 | 10' 0" - 10' 4" | 21.4 |
| AC4103 | 10' 3" - 10' 7" | 20.9 |
| AC4106 | 10' 6" - 10' 10" | 20.4 |
| AC4109 | 10' 9" - 11' 1" | 19.9 |
| AC4110 | 11' 0" - 11' 4" | 19.5 |
| AC4113 | 11' 3" - 11' 7" | 18.9 |
| AC4116 | 11' 6" - 11' 10" | 18.4 |
| AC4119 | 11' 9" - 12' 1" | 17.9 |
| AC4120 | 12' 0" - 12' 4" | 17.4 |

TABLE D • 3.5 • 216 EXTEND-O-COLUMN

| MODEL NO. | ADJ. LENGTH | ASD(R _a) (kips) |
|------------|------------------|-----------------------------|
| AC3560216 | 6' 0" - 6' 4" | 41.5 |
| AC3563216 | 6' 3" - 6' 7" | 40.6 |
| AC3566216 | 6' 6" - 6' 10" | 39.9 |
| AC3569216 | 6' 9" - 7' 1" | 39.0 |
| AC3570216 | 7' 0" - 7' 4" | 38.2 |
| AC3573216 | 7' 3" - 7' 7" | 37.3 |
| AC3576216 | 7' 6" - 7' 10" | 36.4 |
| AC357926 | 7' 9" - 8' 1" | 35.5 |
| AC3580216 | 8' 0" - 8' 4" | 34.7 |
| AC3583216 | 8' 3" - 8' 7" | 33.8 |
| AC3586216 | 8' 6" - 8' 10" | 32.8 |
| AC3589216 | 8' 9" - 9' 1" | 31.9 |
| AC3590216 | 9' 0" - 9' 4" | 31.0 |
| AC3593216 | 9' 3" - 9' 7" | 30.0 |
| AC3596216 | 9' 6" - 9' 10" | 29.2 |
| AC3599216 | 9' 9" - 10' 1" | 28.3 |
| AC35100216 | 10' 0" - 10' 4" | 27.4 |
| AC35103216 | 10' 3" - 10' 7" | 26.6 |
| AC35106216 | 10' 6" - 10' 10" | 25.7 |
| AC35109216 | 10' 9" - 11' 1" | 24.8 |
| AC35110216 | 11' 0" - 11' 4" | 23.9 |
| AC35113216 | 11' 3" - 11' 7" | 23.1 |
| AC35116216 | 11' 6" - 11' 10" | 22.3 |
| AC35119216 | 11' 9" - 12' 1" | 21.4 |
| AC35120216 | 12' 0" - 12' 4" | 20.7 |

TABLE E • 3 • 11 GA FIXED COLUMN

| MODEL NO. | LENGTH | ASD(R_a) (kips) |
|-----------|--------|---------------------|
| FC359 | 5' 9" | 19.2 |
| FC360 | 6' 0" | 18.7 |
| FC363 | 6' 3" | 18.2 |
| FC366 | 6' 6" | 17.8 |
| FC369 | 6' 9" | 17.3 |
| FC370 | 7' 0" | 16.8 |
| FC373 | 7' 3" | 16.3 |
| FC376 | 7' 6" | 15.8 |
| FC379 | 7' 9" | 15.3 |
| FC380 | 8' 0" | 14.8 |
| FC383 | 8' 3" | 14.2 |
| FC386 | 8' 6" | 13.8 |
| FC389 | 8' 9" | 13.3 |
| FC390 | 9' 0" | 12.8 |
| FC393 | 9' 3" | 12.3 |
| FC396 | 9' 6" | 11.8 |
| FC399 | 9' 9" | 11.3 |
| FC3100 | 10' 0" | 10.9 |
| FC3103 | 10' 3" | 10.4 |
| FC3106 | 10' 6" | 10.1 |
| FC3109 | 10' 9" | 9.5 |
| FC3110 | 11' 0" | 9.1 |
| FC3113 | 11' 3" | 8.7 |
| FC3116 | 11' 6" | 8.3 |
| FC3119 | 11' 9" | 8.0 |
| FC3120 | 12' 0" | 7.6 |

TABLE F • 3.5 • 11 GA FIXED COLUMN

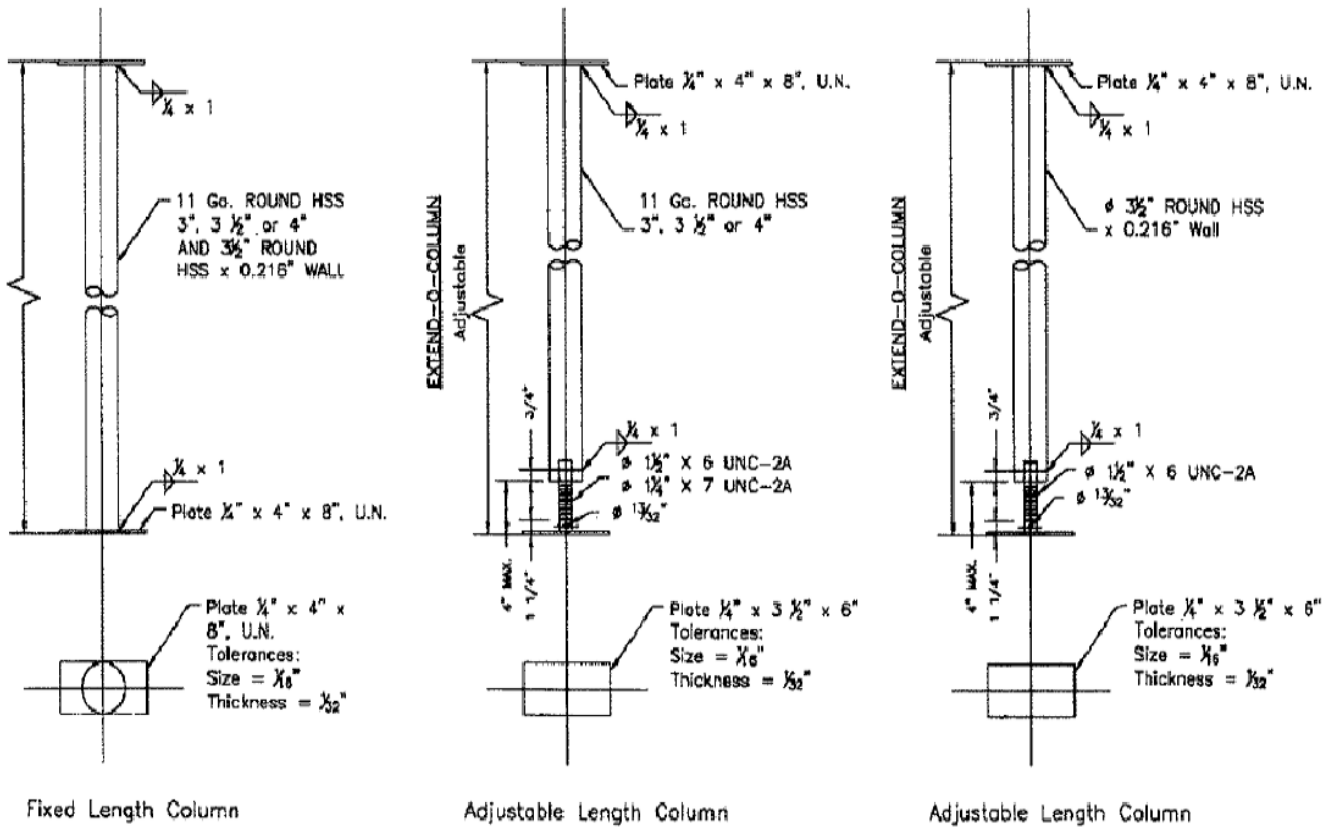
| MODEL NO. | LENGTH | ASD(R_a) (kips) |
|-----------|--------|---------------------|
| FC3559 | 5' 9" | 24.2 |
| FC3560 | 6' 0" | 23.8 |
| FC3563 | 6' 3" | 23.4 |
| FC3566 | 6' 6" | 22.9 |
| FC3569 | 6' 9" | 22.5 |
| FC3570 | 7' 0" | 22.0 |
| FC3573 | 7' 3" | 21.5 |
| FC3576 | 7' 6" | 21.0 |
| FC3579 | 7' 9" | 20.5 |
| FC3580 | 8' 0" | 20.0 |
| FC3583 | 8' 3" | 19.5 |
| FC3586 | 8' 6" | 19.0 |
| FC3589 | 8' 9" | 18.6 |
| FC3590 | 9' 0" | 18.1 |
| FC3593 | 9' 3" | 17.5 |
| FC3596 | 9' 6" | 17.1 |
| FC3599 | 9' 9" | 16.6 |
| FC35100 | 10' 0" | 16.1 |
| FC35103 | 10' 3" | 15.6 |
| FC35106 | 10' 6" | 15.1 |
| FC35109 | 10' 9" | 14.6 |
| FC35110 | 11' 0" | 14.1 |
| FC35113 | 11' 3" | 13.7 |
| FC35116 | 11' 6" | 13.2 |
| FC35119 | 11' 9" | 12.7 |
| FC35120 | 12' 0" | 12.2 |

TABLE G • 4 • 11 GA FIXED COLUMN

| MODEL NO. | LENGTH | ASD(R_a) (kips) |
|-----------|--------|---------------------|
| FC459 | 5' 9" | 29.4 |
| FC460 | 6' 0" | 28.9 |
| FC463 | 6' 3" | 28.5 |
| FC466 | 6' 6" | 28.1 |
| FC469 | 6' 9" | 27.6 |
| FC470 | 7' 0" | 27.2 |
| FC473 | 7' 3" | 26.8 |
| FC476 | 7' 6" | 26.3 |
| FC479 | 7' 9" | 25.8 |
| FC480 | 8' 0" | 25.3 |
| FC483 | 8' 3" | 24.8 |
| FC486 | 8' 6" | 24.4 |
| FC489 | 8' 9" | 23.9 |
| FC490 | 9' 0" | 23.4 |
| FP493 | 9' 3" | 23.0 |
| FC496 | 9' 6" | 22.4 |
| FC499 | 9' 9" | 21.9 |
| FC4100 | 10' 0" | 21.4 |
| FC4103 | 10' 3" | 20.9 |
| FC4106 | 10' 6" | 20.4 |
| FC4109 | 10' 9" | 19.9 |
| FC4110 | 11' 0" | 19.5 |
| FC4113 | 11' 3" | 18.9 |
| FC4116 | 11' 6" | 18.4 |
| FC4119 | 11' 9" | 17.9 |
| FC4120 | 12' 0" | 17.4 |

TABLE H • 3.5 • 216 FIXED COLUMN

| MODEL NO. | LENGTH | ASD(R_a) (kips) |
|------------|--------|---------------------|
| FC3559216 | 5' 9" | 42.3 |
| FC3560216 | 6' 0" | 41.5 |
| FC3563216 | 6' 3" | 40.6 |
| FC3566216 | 6' 6" | 39.9 |
| FC3569216 | 6' 9" | 39.0 |
| FC3570216 | 7' 0" | 38.2 |
| FC3573216 | 7' 3" | 37.3 |
| FC3576216 | 7' 6" | 36.4 |
| FC3579216 | 7' 9" | 35.5 |
| FC3580216 | 8' 0" | 34.7 |
| FC3583216 | 8' 3" | 33.8 |
| FC3586216 | 8' 6" | 32.0 |
| FC3589216 | 8' 9" | 31.9 |
| FC3590216 | 9' 0" | 31.0 |
| FC3593216 | 9' 3" | 30.0 |
| FC3596216 | 9' 6" | 29.2 |
| FC3599216 | 9' 9" | 28.3 |
| FC35100216 | 10' 0" | 27.4 |
| FC35103216 | 10' 3" | 26.6 |
| FC35106216 | 10' 6" | 25.7 |
| FC35109216 | 10' 9" | 24.8 |
| FC35110216 | 11' 0" | 23.9 |
| FC35113216 | 11' 3" | 23.1 |
| FC35116216 | 11' 6" | 22.3 |
| FC35119216 | 11' 9" | 21.4 |
| FC35120216 | 12' 0" | 20.7 |


Figure 1- Column Drawings