

# October Home Inspections

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## Inspecting Adjustable Steel Columns

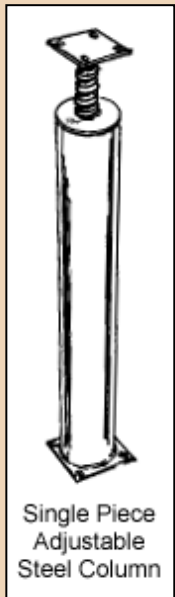
by Arlene Puentes, [October Home Inspections](#)

Adjustable steel columns are *hollow* (as opposed to concrete filled) and have a big screw on its end that allows the height of the column to be adjusted. In this article I will be discussing **two types of adjustable steel columns**. The single piece columns and the telescoping columns.

If a column has been used inappropriately, if it is improperly installed, or if its condition has deteriorated, the column may be unsafe. Common defects include the permanent use of temporary columns, improper installations and severe exfoliating rust, all of which can lead to a sudden collapse of the column and the structure it supports. This, of course, can lead to injury and property damage.

This article will help home and building inspectors to recognize these conditions. I will also argue that **telescoping** columns designed for use in the United States are designed to be *temporary* columns which ought to be replaced and that their presence may alert you to additional building defects.

### Single Piece Adjustable Columns and Evaluations that Prove a Load Bearing Capacity



When inspecting a finished building, you may *not* see the distinguishing adjusting screw at the end of a **single piece adjustable column** because the column may have been installed screw side down with the screw encased in the poured concrete floor. Very likely, what you will see before you is simply a metal column. You will look down and see that the column's tube is coming out of the concrete floor. You will look up and see a top plate which holds up a structural building component. At this point, estimate whether the column is over 3" in diameter, the required International Residential Code (IRC) diameter. If it is, and if there is no other evidence to the contrary, practicality and the scope of an inspection conducted according ASHI's Standards of Practice dictates that we cannot make evaluations about the column's load bearing capacity and that we must proceed with the inspection of the column as described later in this article.

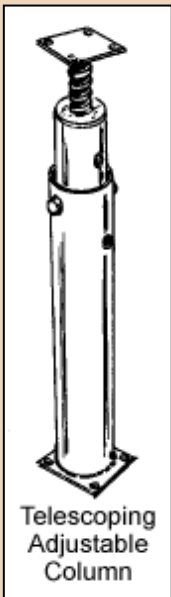
In new buildings and in new construction, you may find that the single piece adjustable column is labeled with a reference to an ICC-ES Report, a BOCA Report or a CCMC Evaluation. This means that it has been independently evaluated and found fit for permanent structural use. If it's manufactured for use in the U.S. it will cite an ICC-ES Legacy Report (issued by the International Code Council Evaluation Service), or a BOCA (Building Officials and Code Administrators) Report. An adjustable steel column manufactured for use in Canada will cite a CCMC (Canadian Construction Materials Centre) Evaluation. These reports are issued by nonprofit service corporations which evaluate mass-produced building elements' fitness for their intended use. The adjustable column reports include a description of the column, its allowable load, citations of third-



party engineering reports and the requirement that these columns be labeled with a reference to the report.

Although the International Residential Code (IRC) does not require metal columns to have been studied by an evaluation firm, the IRC *does* require that an engineer, architect or builder prove that the work will result in a system that is capable of transferring all loads from their point of origin through the load-resisting elements to the foundation. A column is a "load-resisting element." In the absence of an independent evaluation firm's report a designer would not specify a non-evaluated metal column because proving the non-evaluated column's fitness for duty would be economically prohibitive.

## Telescoping Adjustable Columns Should Not Be Used As Permanent Support In the U.S.



Telescoping adjustable columns are also known as "tele posts," "sectional columns," "double-sectioned columns," "jack posts," or "jacks." They come in two or more hollow steel tube sections that are assembled on site. A smaller diameter tube is fitted into a larger diameter tube and the sections are held in place with steel supporting pins which pass through the pre-drilled holes of both tubes. Telescoping adjustable columns are regularly used in construction to adjust or level a structure before installing a permanent column. Or, they're used as temporary supports during the course of a building repair. But many inspectors in the U.S. encounter these telescopic columns in permanent use.

This is a defect because no telescopic adjustable column has been evaluated by a U.S. evaluation firm and none of their manufacturers cite an engineering report to prove these columns' ability to carry a specific load. Also, according to the IRC, a steel column has to be at least 3 inches in diameter. All telescopic columns are all less than 3 inches in diameter. You must therefore assume that these adjustable columns are not designed for permanent structural use. Think of these telescopic columns the way you would think of a car jack. They

only exist to temporarily "jack up" a part of a building and should be replaced with a permanent column when the jacking up is done.



I researched 4 companies [click here for note 1](#) which manufacture telescoping columns for use in the U.S. Three of the four say "temporary" in their marketing material or installation instructions. One company claims "permanent" and "lifetime support." I spoke to a customer service representative of this company and he made this odd statement: he said that his company's telescopic columns "are designed for permanent support but not for structural support." They're designed, he said, "for added or additional support."

I am not convinced by this permanency claim. If a structure needs additional support from a column, why should that additional supporting column be exempt from the standards of a permanent column? When an architect, builder or engineer specifies or installs an *evaluated* single piece adjustable column he or she has the assurance of third party engineering reports that prove the ability to carry a specified load. When a telescopic column is installed the installer gets a one year limited warranty,

scanty installation instructions and conflicting and confusing use information.

On the box, this company implies structural use: "give[s] lifetime support at butt or lap joints in main supporting beams" "For Remodeling and Additions" "Corrects Sagging Floors, Supports

Basement Beams” “Levels and Supports RV’s and Manufactured Homes” “Solid Support in Crawlspace, Under Porches or Decks.” With those structural sounding words set before them, those inclined to perform unconventional home improvements can be misled into mistaking these columns for permanent structural ones. We home inspectors must not be misled. When we see a temporary telescopic column in use we must recommend that it be replaced with an appropriate permanent column



The danger of using temporary telescopic columns is, of course, disastrous and sudden column failure, as described to me by an experienced home inspector and one of the building code officials consulted for this article. The home inspector watched a floor system fail when a friend of his took a step in her kitchen. One temporary column's failure created a chain reaction that brought down the others. He said he could hear the clang clang as each column toppled. The building code official described a brick building re-hab project where the columns, used properly here as temporary support, “almost failed on us.”

### Historic Home Inspections

NYC Metro,  
Nassau  
County and  
NY's  
Hudson  
Valley

The presence of a temporary telescoping column is also a clue to construction, additions or renovations that were not properly designed, work that was done without required municipal permits or structural problems that were not adequately addressed. When you see a telescoping column you know that you need to carefully inspect for other evidence of unconventional construction including the lack of foundation or load bearing support under the columns and bending (or dishing) of the metal plate from the weight of the supported framing member. You must also carefully consider whether the situation warrants your referring the matter to qualified structural engineer.

### **It's Different In Canada**

The NBC (National Building Code) of Canada requires that adjustable steel columns conform to Article number CAN/CGSB-7.2-94 entitled "Adjustable Steel Columns" which allows single tube adjustable columns *and* telescoping adjustable columns, even at tube diameters of less than 3 inches (76 mm). Four Canadian manufactures of telescoping adjustable columns have submitted proof to the Canadian Construction Materials Centre (CCMC) that they meet the article's structural requirements. In Canada, it is important to check that the column has a label to distinguish them from temporary columns.

### **Inspecting Permanent Adjustable Columns**

After you've noted whether the column before you is a permanent or temporary column, inspect for permanent column restraint which is required for compliance to the ICC-ES criteria, the CCMC and the IRC. That is, the bottom plate must be permanently connected to a concrete footing with embedded anchor bolts or by the complete encasement of the bottom base plate in concrete. The top plate must be secured to the supported load.

Inspect the top plate for dishing and for adequate beam support. The CCMC requires that the plate be sized to the full width of the supported beam or that a 50 mm x 200 mm (a 2x8) wood cap which extends across the full width of the beam be installed with the grain at 90° to the beam direction.

Notice how far the screw is extended. Only one ICC-ES Legacy Report allows the extension of the screw to be as much as 6 ½ inches (165 mm). That is for the Marshall Stamping Company Extend-O-Column. The other six reports only allow a 3 inch (76 mm) or 4 inch (102 mm) extension. The CCMC allows a 133 mm (5 inches) screw extension. To play it safe, recommend an evaluation for U.S. adjustable columns in situations where the screw is extended more than 4 inches or take down the ICC-ES Report number and research the report in your office after the inspection (they're all available online). Recommend an evaluation for CCMC labeled adjustable columns when the screw

extends more than 5 inches (133 mm).

According to all ICC-ES Reports the columns must be installed vertically and plumb. Also, the height adjusting screw must be disabled after installation. This is achieved by destroying the screw threads with a chisel or a weld or by setting the column screw side down and completely encasing the screw in concrete. (In this case, of course, you won't even see the screw.) Disabling is required, I am told by my code enforcement sources, to discourage tampering after installation.

Inspect also for corrosion, especially at the bottom where the column could have been exposed to a wet floor. Visually examine the column for rust and give rusty areas and the bottom of the column a good probe with your screwdriver or pick. Your recommendations based on the amount of corrosion present requires a judgment call that you must make very carefully. Is there crumbling, flaking steel? Has the corrosion made the steel thinner? These conditions require a recommendation for replacement or further evaluation. Or, is there simply surface corrosion that has not effected the column's ability to carry a load? If there is only surface corrosion, or if the prime coat from the manufacturer has worn thin, recommend surface preparation and painting with a rust inhibiting paint.

### Does the Adjusting Screw Go Up or Down?

It doesn't matter. Each ICC-ES Legacy report and CCMC report — which every manufacturer uses as the installation instructions — says that the screw can go either end up. Do not be misled by the instructions found on the boxes which contain the temporary telescoping columns. In this article we've dismissed their use as permanent support so their instructions, which require that the screw be on the bottom when supporting wood, can be similarly dismissed.

[click here for note 2](#)

So, distinguish between the temporary adjustable steel columns and the permanent adjustable steel columns. It's an important item to report and acts as a guide to the remainder of your inspection. Inspect the top and bottom plates, the column's restraints, verify full beam support, note the length of the screw extension, eyeball for plumb and vertical installation, check for corrosion, and insure that the height adjusting screw is disabled.

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#### SIDEBAR

**Aren't these columns called lallys?** Well, yes. I've heard that term used a lot. Lally columns or lolly columns are terms that are widely used in my area (Hudson Valley, NY) for any steel column. The terms also appear in various construction dictionaries. Originally a Lally Column was a proprietary name for the concrete filled steel column invented by John Lally. Many people feel that the term should only be spelled "Lally" and that it should only be applied to concrete filled steel columns. Perhaps they're right. But, of course, language is fluid and in this case the popular use may have become the accepted use.

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#### SIDEBAR 2

##### Where to buy permanent adjustable steel columns:

The following is a list of manufacturers of single piece adjustable steel columns. All of the columns on this list have been evaluated by an ICC or BOCA Legacy Report.

You should contact these manufacturers for a list of their retailers or distributors. When making inquiries, **make sure you refer to these specific columns by name** because some of these manufacturers also sell temporary split adjustable columns that are not appropriate for permanent use.

Column	Manufacturer
Tapco M & H Series Monoposts Tapco Stanchions	The Akron Products Co. PO Box 188, Seville, OH 800-262-2342
Extend-O-Column Fixed Plate Column	Marshall Stamping Co. 355 Glade Mills Road Valencia, PA 16059 724-898-2900
Hutch Adjustable Tubular Column	Hutch Manufacturing Company 200 Commerce Ave Loudon, TN 37774 865-458-4676
"Zip It's Up" Adjustable Clip-on Column	Afco Manufacturing Corp 428 Cogshall Street Holly, MI 48442 248-634-4415
Tiger Brand Jack Post Adjustable Column	Tiger Brand Jack Post Company 10721 South Water St Meadville, PA 16553 814-333-4302
Standard Duty Adjusta-Column Heavy Duty Adjusta-Column	Quality Manufacturing, Inc. 4111 Jimbo Dr. Burton, MI 48529 810-743-7046

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## References

The Following ICC-ES Legacy Reports:

[http://www.icc-es.org/reports/pdf\\_files/BOCAI-ES/98-60.pdf](http://www.icc-es.org/reports/pdf_files/BOCAI-ES/98-60.pdf)

[http://www.icc-es.org/reports/pdf\\_files/BOCAI-ES/94-54.pdf](http://www.icc-es.org/reports/pdf_files/BOCAI-ES/94-54.pdf)



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[http://www.icc-es.org/reports/pdf\\_files/BOCAI-ES/97-70.pdf](http://www.icc-es.org/reports/pdf_files/BOCAI-ES/97-70.pdf)  
[http://www.icc-es.org/reports/pdf\\_files/BOCAI-ES/95-19.pdf](http://www.icc-es.org/reports/pdf_files/BOCAI-ES/95-19.pdf)

Residential Code of New York State  
Part III - Building Planning and Construction  
Chapter R4 Foundations  
§RR407 Columns

International Residential Code  
Section R407 Columns

The Following CCMC Reports:

[http://irc.nrc-cnrc.gc.ca/ccmc/registry/05/preface/05121\\_e.pdf](http://irc.nrc-cnrc.gc.ca/ccmc/registry/05/preface/05121_e.pdf)  
[http://irc.nrc-cnrc.gc.ca/ccmc/registry/05/09199\\_e.pdf](http://irc.nrc-cnrc.gc.ca/ccmc/registry/05/09199_e.pdf)  
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[http://irc.nrc-cnrc.gc.ca/ccmc/registry/05/13131\\_e.pdf](http://irc.nrc-cnrc.gc.ca/ccmc/registry/05/13131_e.pdf)

Among the experts interviewed for this article:

Mr. Paul Andreassen, ASHI Member and Senior Building Code Official, Town of Saugerties, NY  
Mr. Mark J. Anderson, Code Compliance Specialist II, NYS Department of State  
Mr. Ed Cota, Cautrell Enterprises, Inc.  
Mr. Daniel Friedman, ASHI Member and author of [www.inspect-ny.com](http://www.inspect-ny.com)

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