

## Adjustable Steel Columns

Adjustable steel columns are commonly seen in basement homes or in crawlspaces where additional support may have been necessary or desired. These columns sometimes are also known as screw jacks, beam jacks, Lally or Lolly columns. There are several key points to look for during the inspection process.

Almost all of these columns have an adjustable screw on one end that allows its height to be adjusted on site. The two most commonly used columns used in residential construction are single piece columns and Telescopic columns.

Single piece columns are just that a single piece of hollow steel with an adjusting screw on one end. Telescopic columns are two or more sections of hollow steel tube that can be assembled on site. The screw is usually located on the smallest section/end.

Determining if an adjustable column is designed for permanent use is important but can be challenging. First the wall thickness is important but usually cannot be seen or determine. The next feature to look for is the diameter of the column. Here 3" is the magic number anything less is considered temporary. It is important to note that any diameter column can fail if it is improperly loaded and installed.

Sometimes, but not too frequently, you may be able to see a label that references the evaluation report. Usually this means that an independent evaluation was conducted and it was found fit for permanent structural use. ICC-ES, BOCA or CCMC are the typical abbreviations

Due to the design of the telescopic columns some of the sections may be less than the required 3" diameter or the tube wall is thinner. Therefore, if evidence of an independent evaluation is not present, most if not all telescopic columns are not suitable for permanent installation and must be considered temporary. A word of caution here, as some telescopic columns will be branded by the manufacture as "permanent" and as we know people will argue the point based on this. Pipes of any type are not allowed or suitable for use as columns.

If an adjustable column of either type has been installed improperly or their condition has deteriorated, it may be unsafe. It is possible for a home inspector to recognize common defects while inspecting and make the determination if the conditions found warrant reporting. Some common conditions to inspect for follow:

## Bearing Support

All columns must have proper bearing support at both the top and bottom. This is a critical inspection point so pay close attention to the connections between posts and beams, posts and piers, beams and floors and ceilings. Connection failure is often the weak link in residential structural movement and collapse



Columns must be mechanically connected to the floor and beam to resist against lateral displacement. Permanent connection to the concrete footing with embedded anchor bolts or by complete encasement of the bottom base in concrete should be present. The top plate should be sized to the full width of the supported beam or a 2x8 wood cap extends across the beam (grain install 90 degrees to the beam direction) Again a means of mechanical connection should be present. Watch out for the use of nails, deck type screws or cheap lag screws.

Check the top plate to ensure it is not bent or deformed. This can also be referred to as “dishing” and represent a defect.



Check and see if the column is plumb. A leaning column is unsafe and should be reported. A general guide line is lateral displacement between the top and bottom should not exceed 1". Also check for bowed or bent columns and report accordingly.

### Condition

Check the condition of the post. Model building standards require a rust prohibitive coating to prevent corrosion. Check for corrosion especially at the bottom where it could be exposed to water. Probe any rusty areas as needed. If there is crumbling or flaking steel then the wall thickness may be compromised and replacement may be needed. Light surface corrosion is not uncommon in our area, especially on older homes. In this case cleaning and painting is advised as maintenance task.



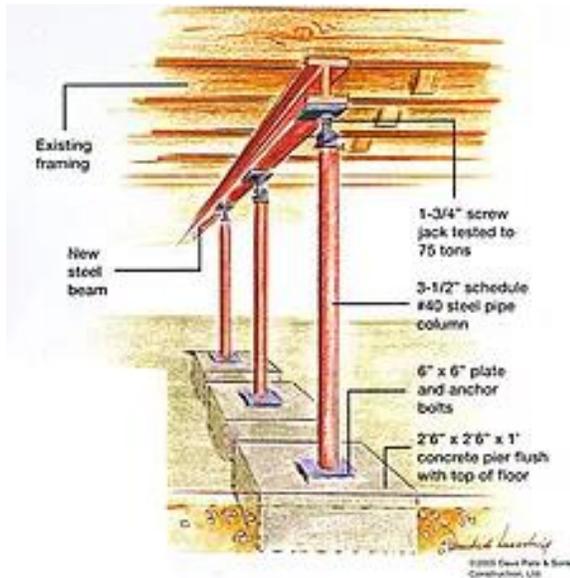
#### Adjusting Screw.

An adjusting screw may not be visible. In this case the column was installed with the adjusting screw at the bottom and it may be covered by the concrete. This is an acceptable practice and has some advantages over placing it at the top. First the adjusting screw is thicker and solid so it will resist corrosion better and second it is now fixed and cannot be tampered with.

When the screw is visible how far it extends is important. The actual allowable extension appears to vary by manufacture but 3 to 4 inches of exposed screw thread is a good guide line. Additionally, the screw should be disabled either by welding or mechanical damage to the threads to prevent tampering.

#### Spacing

Columns are typically placed every 8 feet on a wood frame residential structure and should be present under any splices in the beam. Check beam splices for signs of upward movement (gap larger at top than bottom) there should be some method in place to resist upward movement. As with wood decks watch out for excessive cantilevers at the ends of the beams.



## Footings

Check for footing or proper support at the base of the column. Since we cannot see through the concrete slab determine if a footing is present may not always be possible. However, there are sometimes visual clues that can be observed.

Settlement crack patterns may be noted around the base of the column. If displacement is noted at these cracks then the slab may have settled around the post bottom. Other times no evidence of settlement is visible in the slab but can be seen at the top of the post. Check for a gap between the top of the post and the beam that it should be supporting. The absence of a proper footing on newly added columns sitting on an existing slab should be suspect.

Be especially vigilant in your inspection when temporary telescopic columns are present. This is usually a clue that additions and modifications have been made or it can be an indication of an attempt to correct an adverse condition that exists in the home. You need to look for evidence of unconventional construction and suspect that there is a good possibility that the work was done without the required permits, engineering review and design or municipal (AHJ) inspections.

## References