



# Ironworkers...*On the Safe Side*

**Safety and Health Bulletin Dedicated to Servicing Our District Councils, Local Unions and IMPACT Contractors Throughout North America**

*For Immediate Release*  
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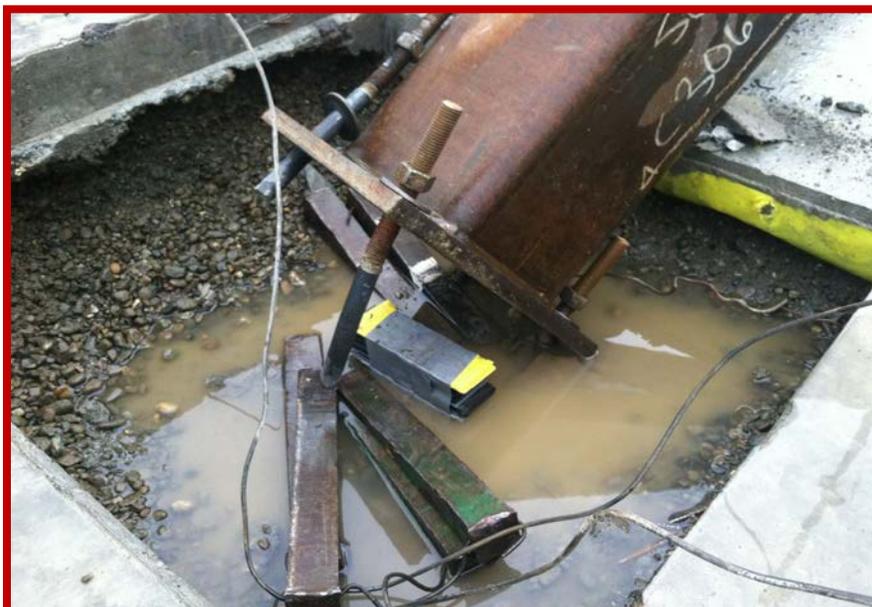
*Contact: Steve Rank*  
*Executive Director*  
*(202) 383-4829*

## **Near Misses in Three Column Collapses Attributed to Anchor Bolt Failure and Lack of Guying**

The Safety and Health Department was notified of three near-misses involving anchor bolt failure of two structural steel column collapses, and the collapse of a rebar column. We are thankful that no Ironworkers or other workers on the job sites were injured during these incidents. Collapse of structural steel columns due to anchor bolt failure and rebar column collapse due to improper guying are two of the **“deadly dozen”** hazards that are targeted in the **“2013 Zero fatality Campaign”**. This safety bulletin reemphasizes the importance of recognizing and avoiding defective anchor bolts that have been altered or modified, and rebar columns that have not been guyed or braced to prevent collapse.

The first two near misses involved anchor bolt failure of a fifty-foot and sixty-foot steel column. After investigation, the primary causation factor was attributed to improper anchor bolt modification and installation by another concrete contractor. The anchor bolts were not positioned correctly by the concrete contractor and were later cut-off and repositioned. The concrete company failed to install the replacement anchors correctly and with the approval of the project structural engineer of record.

Following is a photograph that was taken immediately after one of the column collapses. Special thanks to Steve Pendergrass, Business Manager, business agents, and organizers of Ironworkers Local 86 who responded to these near misses that resulted in an investigation by Washington OSHA officials. In both column collapses, the following OSHA violations contributed to these near misses.



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## OSHA violations contributing to these near misses.

1. OSHA 1926.755(b)(1) – “Anchor rods (anchor bolts) shall not be repaired, replaced or field-modified without the approval of the project structural engineer of record.”
2. OSHA 1926.755(b)(2) – “Prior to the erection of a column, the controlling contractor shall provide written notification to the steel erector if there has been any repair, replacement or modification of the anchor rods of that column.”

## Important OSHA standards pertaining to column stability and repairs

1. OSHA 1926.752(a) – Approval to begin steel erection. “Before authorizing the commencement of steel erection, the controlling contractor shall ensure that the steel erector is provided with the following notifications.”
2. OSHA 1926.752(a)(1) – “The concrete in footings, piers and walls and the mortar in the masonry piers and walls has attained, on the basis of an appropriate ASTM standard test method of field cured samples, either 75 percent of the intended minimum compressive strength design strength or sufficient enough to support the loads imposed during steel erection.”
3. OSHA 1926.752(a)(2) – “Any repairs, replacements and modifications to the anchor bolts conducted in accordance with 1926.755(b).”
4. OSHA 1926.755(a)(1) – “All columns shall be anchored by a minimum of four anchor rods (anchor bolts).”
5. OSHA 1926.755(a)(2) – “Each column anchor rod (anchor bolt) assembly, including the column-to-base plate weld and the column foundation, shall be designed to resist a minimum eccentric gravity load of 300 pounds located 18 inches from the extreme outer face of the column in each direction at the top of the column shaft.”
6. OSHA 1926.755(b)(1) – “Anchor rods (anchor bolts) shall not be repaired, replaced or field-modified without the approval of the project structural engineer of record.”
7. OSHA 1926.755(b)(2) – “Prior to the erection of a column, the controlling contractor shall provide written notification to the steel erector if there has been any repair, replacement or modification of the anchor rods of that column.”

## Quick reference checklist pertaining to column anchorage, written notifications and repairs

- ✓ Prior to steel erection, the controlling contractors must provide the steel erector with written notifications of concrete strength and any repairs or modifications to anchor bolts.
- ✓ Steel erection cannot begin unless the concrete strength in piers, walls and footings are at least 75 percent of intended design strength.
- ✓ Columns must be anchored by a minimum of 4 anchor bolts.
- ✓ Anchor bolts and base plates must be designed to withstand a 300 pound eccentric load placed 18 inches from outer face and top of columns.
- ✓ Columns must be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim packs which are adequate to transfer the construction loads.
- ✓ All columns must be evaluated by a competent person to determine if guying is necessary.
- ✓ Anchor bolts must not be repaired or field modified without the approval of the project structural engineer of record.

The third near miss involved a rebar column collapse due to insufficient preplanning and guying. Following is a photograph of the column that collapsed that shows a couple of guy cables still on the column. The column guying system for this rebar column was not designed by a qualified person to maintain stability and prevent collapse. Following is a photograph that was taken immediately after the rebar column collapsed.



Special thanks to Colin Daniels, Business Manager of Ironworkers Local 771 for his efforts to follow-up on this rebar column collapse and Bert Royer, Canadian Regional Director for the Ironworker Management Progressive Action Cooperative Trust. This column was built and erected by a non-union rebar company. Due to Colin Daniels and the efforts of Local 771, the project owner assigned a Union Rebar company to rebuild and erect a new column. Great job guys!

### **Quick reference checklist pertaining to rebar column stability**

- ✓ Guying and bracing systems for rebar columns must be designed by a qualified person.
- ✓ Anchorage points and adequate materials must be provided prior to the erection of rebar columns.
- ✓ Guying systems must be installed and removed under the direction of a qualified person.
- ✓ Rebar columns must be built and hoisted to prevent collapse.

The Safety and Health Department will continue to work closely with the National Training Fund, Department of Reinforcing, and IMPACT to develop new training materials that reflect new safety standards. The International Association ***“2013 ZERO Fatality”*** campaign targets the deadly dozen serious hazards, which includes common activities such as maintaining column stability. Our goal for 2013 is to pursue a downward trend to achieve zero fatalities from structural steel column collapse and rebar column collapse incidents. We encourage our members to ***“See Something - Say Something”***, to help recognize and avoid workplace hazards.

I will continue to work closely with District Councils, Local Unions, and IMPACT Regional Advisory Boards throughout the United States and Canada to promote the 2013 Zero Fatality campaign and help improve safety performance in the workplace. If you have any questions regarding column stability situations, please contact the Safety and Health Department at (202) 383-4800.

Steve Rank  
Executive Director of Safety and Health  
Iron Workers International