



SAFETY DIRECTIVE

Title: **Re-bar Caps**
Issuing Department: Town Manager's Safety Office
Effective Date: September 01, 2014
Approved: Gilbert Davidson, Town Manager
Type of Action: New

1.0 PURPOSE

- 1.1 To ensure effective compliance with OSHA Standard 29 CFR 1926.701(b) by all Town of Marana employees when guarding re-bar or reinforcing steel.
- 1.2 To clarify the difference between re-bar (reinforcing steel) and a concrete Forming Stake.
- 1.3 To clarify the need to effectively guard re-bar where re-bar is utilized in place of an industry recognized concrete Forming Stake.

2.0 DEPARTMENTS AFFECTED

This directive applies to all departments and employees, of the Town of Marana who have the potential for exposure to hazards of protruding reinforcing steel, onto and into which employees could fall.

3.0 REFERENCES

- 3.1 OSHA Standard 29 CFR 1926.701(b) - Reinforcing Steel

4.0 DEFINITIONS

- 4.1 Forming Stakes: Metal stakes used to support concrete forms in the construction of sidewalks, concrete pads, street curbs or similar. Recognized by the concrete industry, forming stakes are made from rolled, hardened steel, with pre-drilled holes that will allow for nailing the concrete form to the stake and adjusting a concrete form to a specific height. The head of a concrete forming stake is normally and continuously blunted from repeated hammering.
- 4.2 Re-bar: Ribbed, soft steel used to strengthen poured concrete or provide additional strength to slump blocked walls or similar construction, sometimes called Reinforcing Steel. Re-bar or reinforcing steel is normally cut with a saw, torch or re-bar cutter, the result being the cut end is sharp and sometimes angled to a point.

- 4.3 Re-bar cap: A term applied to a method of protecting employees against possible impalement or serious injury by falling onto exposed steel in the form of re-bar or concrete Forming Stakes. Re-bar caps are normally manufactured from plastic material and are manufactured with high visibility orange or lime green coating.

5.0 POLICIES AND PROCEDURES

- 5.1 ADOSH Enforcement. Beginning in January 2007, the Arizona Department of Occupational Safety and Health (ADOSH) has indicated that they will begin to strictly enforce OSHA Standard 1926.701(b) regarding the protection or capping of re-bar/reinforced steel to avoid potential employee impalement. Additionally, letters of interpretation published by OSHA indicate that the traditional “Mushroom style” re-bar cap is not considered effective protection against impalement. Refer to excerpt below extracted from the OSHA Web Site:
http://www.osha.gov/SLTC/etools/construction/falls/protruding_rebars.htm

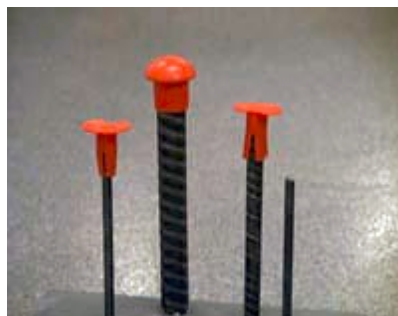
"Tests designed by California OSHA were conducted that entailed dropping sand-filled canvas bags onto re-bar protected by standard mushroom caps. Weights of the bags ranged from 140 to 160 pounds, and the bags were dropped from three, five and seven feet. The mushroom caps provided absolutely NO protection."

"Manufacturers of the mushroom caps agree that those caps were designed to provide SCRATCH PROTECTION ONLY and were never intended to prevent impalement, even at grade."

"Considering the serious nature of the hazard, the standard mushroom-style plastic re-bar caps should not be used for protection against impalement. Protective devices capable of withstanding at least 250 pounds dropped from a height of ten feet should be used. Although there are no 'approved' mushroom caps on the market, steel reinforced covers and wooden troughs are available, and have been approved by California OSHA and recognized by the California AGC to meet the design criteria."

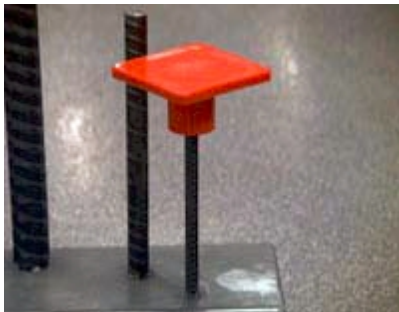
Though the excerpt references CAL OSHA in testing and application, ADOSH will still cite to the Federal OSHA Standard based upon the recognition of the impalement hazard.

- 5.2 Mushroom Style Caps. When “Mushroom Style” caps are placed on vertically installed re-bar at or below grade, an employee has the potential to trip, fall and impact the mushroom cap. Because re-bar is “soft” steel and is easily cut resulting in a sharp end, the re-bar will push through the plastic cap resulting in employee impalement or serious injury. Examples of Mushroom Style caps are included in the figure below.



Typical Example – Mushroom Re-bar Cap

- 5.2.1 When re-bar is positioned in such a manner as to not pose an impalement hazard on the employee such as horizontal installation, or if the tip of the re-bar is high enough off the working surface (3' - 6') that the employee cannot fall onto the re-bar, such as during the construction of a wall, then "Mushroom Style" caps may be utilized to protect the employee from scratches. If the employee constructing a wall elevates themselves into a position where they may fall onto the re-bar, then the mushroom caps must be replaced with an acceptable method of re-bar protection.
- 5.3 Effective Re-bar Caps. To fully comply with protecting Town employees from potential impalement from re-bar installed at or below grade, or where employees may potentially fall onto re-bar that is not capped with adequate protection, affected Town departments shall take immediate steps to bring the Town into full compliance and shall remove the "Mushroom Style" re-bar cap from use where employees are exposed to impalement and replace the re-bar cap with a more effective model, with integral reinforced steel construction. This includes the effective capping of re-bar where re-bar is utilized as a replacement for industry recognized concrete Forming Stakes. Examples of effective re-bar caps are included in the figures below.



Typical Example – Effective Re-bar Cap

- 5.3.1 According to OSHA only re-bar caps designed to provide impalement protection, such as those containing steel reinforcement, should be used.
- 5.4 Bracing and Covering with Lumber. OSHA also gives an example of an effective alternative to impalement protection that allows for utilization of a commercially designed and available brace that will position a 2" x 4" or 2" x 6" piece of lumber directly over the exposed re-bar. Examples of this technique are included in the figures below.



Accepted Practice – Bracing and covering exposed re-bar with lumber

5.5 Contractors and Vendors

5.5.1 Departments shall inform their contractors of the need to adequately protect re-bar in accordance with OSHA Standard 1926.701(b).

5.5.2 Departments shall also inform vendors that where re-bar is utilized as a replacement for industry recognized concrete forming stakes or any other means such as pipe support, temporary survey mark, etc., the re-bar shall be covered with effective caps or accepted practice coverings, installed in situations where employees (or civilians) may be subjected to potential impalement by falls, on Town construction and remodel projects or right-of-way construction projects, such as sidewalk installation or repair and curb installation or repair.

5.6 Concrete Forming Stakes. When utilized in a Town of Marana application, concrete Forming Stakes shall be capped with a “Mushroom Style” cap or better. Concrete Forming Stakes shall be kept in good repair and discarded when the driving head splinters to a point beyond effective repair.

6.0 RESPONSIBILITIES

6.1 The Safety Coordinator has overall responsibility for the Town’s safety programs. The Safety Coordinator shall consult with the Town Manager regarding appropriate changes and amendments to this administrative directive.

6.2 Department Heads, managers and supervisors are responsible for ensuring that the requirements of this directive are fully implemented in their work areas.

6.3 Employees are responsible for attending all mandatory training classes, and understanding the policies and procedures outlined in this directive, as well as all Town health and safety procedures.

6.4 The Safety Coordinator and the Safety Committee are authorized to halt any operation of the Town where there is danger of serious personal injury.

7.0 ATTACHMENTS

7.1 NONE

REVISION HISTORY

<i>REV</i>	<i>DESCRIPTION OF CHANGE</i>	<i>DATE</i>
OR	Original Release	09/01/14

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