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OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
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Date: 4/26/17

To: All concerned parties

Purpose: To provide guidance on the use of locking pins on "Fabricated Frame Scaffolds"

Scope: Employers within the State of Nevada

When does an employer use locking pins to lock together scaffold ends or panels?

It is the opinion of the office of the Chief Administrative Officer for the Nevada Occupational Safety and Health Administration (NV OSHA) that locking pins must be used whenever the possibility of uplift within the fabricated frame scaffold system exists. A review of the Federal regulations will be used to clarify this position and follows:

***1926.452(c)(3)** - Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means.*

The intent of the above referenced regulation is to ensure that each fabricated frame scaffold panel/end frame is directly connect to the panel/end frame that is below it or above it. The use of the coupling/stacking pin ensures that the frame aligns to the frame below it or below it and thus ensures that the engineered structural integrity is satisfied and that assigned rated capacity is achievable (see below diagram for reference). It is NV OSHA's position that when using coupling/stacking pins (or an equivalent means) that the panels/end frames will allow for the use of a locking pin to secure the panels/end frames together. In other words, manufactured frame scaffold panels/end frames that are connected by coupling/stacking pins must be compatible with the coupling/stacking pins. Further, whenever scaffold systems are erect in multiple tier configurations, use of coupling/stacking pins and locking pins must be in accordance with manufacturer's recommendations.

***1926.452(c)(4)** - Where uplift can occur which would displace scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means.*

The intent of the above referenced regulation is to ensure that panels/end frames (see below diagram for reference) do not separate when uplift is introduced into the manufactured frame scaffolding system. The wording in the regulation ("locked

together") indicates that the means used for securing the panels/end frames must be durable enough to withstand any stress placed upon it and that it will be secured in place to ensure the locking mechanism does not fall out during normal use of the scaffolding system. Uplift can be introduced into manufactured scaffolding system by many means which include, but not limited to, the following:

1. Mobile equipment: Industrial trucks, all-terrain forklifts, earth moving equipment, water trucks, Skid steers or crane activity. Any time any piece of mobile construction equipment may come into contact with a manufactured frame scaffolding system, the possibility of uplift must be assumed. If contact occurs, the system needs to be inspected to ensure fitness for further use.

2. Natural events: Wind, monsoonal events, earthquakes, flooding or subsidence of excavated locations near the base of the manufactured frame scaffolding system. The use of locking pins is required whenever the before mentioned conditions are present.

3. Uneven grading or surfaces: Whenever a scaffold is erected on an uneven surface the erector will use a combination of leveling base plates, mud sills and cribbing to bring the base tier of scaffolding panels/end frames to plumb before adding more tiers. The erector must ensure that the cribbing used is not displaced easily leaving an unsupported base plate/mud sill. If unsupported, the scaffold base will sag when encumbered from above and the possibility of the panel/frame ends separating when returning to a rest position is high. The use of locking pins is required whenever the before mentioned conditions are present.

4. Loading: Whenever a load is placed upon a manufactured frame scaffold that is outside the base foot print of the scaffold pins must be used. In essence, "side-loading." Whenever the center of gravity is compromised by applying load to the outside (the side away from the building surface or surface being addressed by the scaffold) of a manufactured frame scaffold the potential for the lean in the scaffold is introduced. The locking of the panels/end frames together will inhibit the center of gravity from moving away from where it is engineered to be but will not prevent it. The locking of the panel/end frames together ensures that the manufactured frame scaffold remains as erect as possible and will distribute any unwanted lean or loading throughout the system and any associated guys or ties.

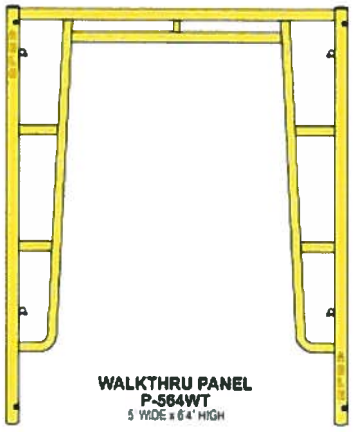
   Side loading can be introduced into a manufactured frame scaffold system via, but not limited to, the following: Davit use, out riggers or any other unusual loading of the scaffold system that applies dynamic change to the center of gravity of the engineered system. The use of locking pins is required whenever the before mentioned conditions are present.

1926.452(c)(2) *- Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, and square. All brace connections shall be secured.*

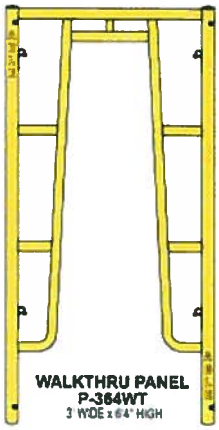
The intent of this regulation is to ensure that the vertical members of a manufactured frame scaffold remain vertical and lateral to other members of the system. Whenever a brace is cut or removed the potential for the vertical member to be displaced is present. Displacement of vertical member can potentially lead to shifting in the manufactured frame scaffolding system and thus the separation of the panels/end frames if they are not locked together using locking pins.

Jess Lankford

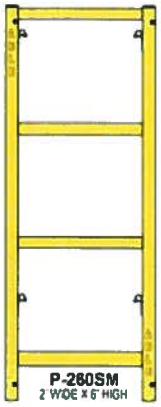
Chief Administrative Officer
Nevada Occupational Safety and Health Administration



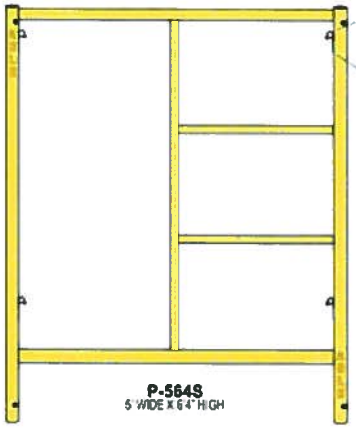
WALKTHRU PANEL
P-564WT
5' WIDE x 6'4" HIGH



WALKTHRU PANEL
P-364WT
3' WIDE x 6'4" HIGH



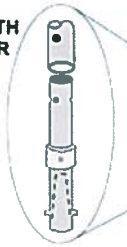
P-260SM
2' WIDE X 6' HIGH



P-564S
5' WIDE X 6'4" HIGH

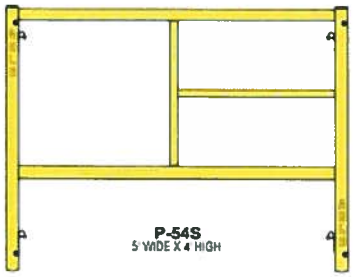
FL-1
FAST LOCK

COUPLING PIN WITH SPRING RETAINER INSTALLED

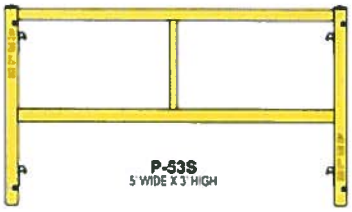


P55S2
5' WIDE X 5' HIGH
ALSO AVAILABLE WITH ZINC COATING

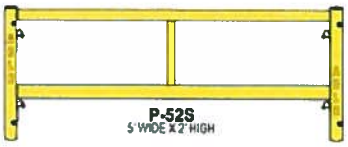
COUPLING PIN FOR ALL PANELS
SEE BOTTOM OF PAGE FOR DIFFERENT LOCKING OPTIONS



P-54S
5' WIDE X 4' HIGH



P-53S
5' WIDE X 3' HIGH



P-52S
5' WIDE X 2' HIGH