



CPWR - The Center for Construction Research and Training
Fall Hazard Identification and Control Audit of the Mandarin Building

City Center Project

Las Vegas, Nevada

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Submitted by

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Introduction:

The fall hazard audit of the Mandarin building included evaluation of 8 of the buildings floors. The rationale for floor selection was to select a sample floor per each phase of construction identified by the auditor. For example, the lower level floors were more complete and were in the process of installing and finishing drywall, where higher level floors still had unprotected edges. See the attached Fall-Safe audit report to review the audit report by location.

The fall hazards identified during the audit included floor holes, ladder use, scissor lift use, stairways, and unprotected sides and edges 6' or more above a lower level. There were 589 inspection points (audit questions) collected on the Mandarin Building audit. Controls selected for the fall hazards were as follows:

- The majority of floor holes were protected with hole covers (73.46%, n=260 audit questions)
- The remaining floor holes were protected with guardrail systems.
- 2 floor holes had no protection.
- The majority of unprotected sides and edges were protected with guardrail systems (82.5%, n=120 questions).
- The remaining unprotected sides and edges were protected with employees using personal fall arrest systems.
- The audit tool considers items such as scissor lifts, ladders, and stairways the hazard and the control. The idea being that the device itself creates a fall hazard and it safe use, setup and condition provides the safe control.

Fall-Safe Audit Tool, Report and Scoring Algorithm

The Fall-Safe audit tool was designed as part of a long term intervention study conducted with small to medium sized contractor in the Mid-Atlantic and Mid-West Regions of the US. The audit tool was used as both a data collection tool for research as well as a feedback reporting mechanism for the contractors for continuous improvement. The report is organized by Location (named by the auditor), Exposure category, Intervention category, and the list of related OSHA regulatory questions relating to that specific intervention. Each question has a 0, 1 or NA. The 0 represents the answer no, the 1 represent the answer Yes and the NA means that the question does not apply. The scoring system gives a higher score for the use of engineering control over personal protective equipment as well as administrative controls such as warning lines and safety monitors. The scoring algorithm is as follows:

- Engineering Controls = Questions answered Yes / Total Questions x 100%
- Personal Protective Equipment = Questions answered Yes / Total Questions x 85%
- Administrative Controls = Questions answered Yes / Total Questions x 70%

Mandarin Building – Summary of Fall Hazards and Controls

Hole Covers

- 18 of 25 hole covers audited were not color coded or labeled (72%, n=25)
- All hole covers audited were designed to support two times the intended load (100%, n=25).

- 1 hole cover was not secured (4.17%, n=24).
- 4 hole covers created tripping hazards. The trip hazard were created from protruding nails (13.79%, n=29)
- All hole covers were free from obvious defects and secured, with the exception of one (3.45%, n=29)
- There were 2 open holes audited with no control (cover, guardrail). In these instances the audit tool allows a “No Intervention” selection and each of the 2 exposures receive a score of 0.

Guardrail Systems

- Wire rope guardrails – 3 wire rope guardrails audited were not flagged (33.3%, n=9).
- 2 guardrails could not withstand a 200 pound force (40%, n=5).
- Spacing – 2 guardrails upright spacing exceeded 8 feet (25%, n=8).
- The majority of guardrails were smooth and free of defects (80%, n=20).
- 13 guardrails audited did not have toeboards installed or they were not structurally sound. Based on the auditor’s notes, the majority of those were not structurally sound (72.2%, n=18).
- All guardrails audited were between 39” and 45”
- All wire rope guardrail audited did not deflect more than 3 inches

Ladders

- 8 of 9 ladders audited had adequate access / egress (88.88%, n=9).
- All ladders were being used properly by employees with the exception of one (88.88%, n=9)
- All ladders were the correct size for the job.
- No defective ladders beings used
- 1 step ladder was being used without being fully opened with spreader bars locked (12.5%, n=8)
- All employees on this site used proper climbing procedures (100%, n=9), 3 point contact (100%, n= 9), and no employees used the top 2 steps of step ladders (0%, n=8).
- There was one instance where a drywall bucket was being used upside down as a makeshift ladder. This was audited as a ladder with a “No Intervention” Score of 0.

Personal Fall Arrest

- The auditor identified three instances where personal fall arrest was being utilized. In all cases, the employees were using a retractable lanyard with a full body harness. All elements of the personal fall arrest systems were correct and being used properly.

Scissor Lifts

- 2 scissor lifts were identified as not being used properly (25%, n=8).
- 2 scissor lifts in use did not have the entrance gate or chain in place (33.33%, n=6).
- No scissor lifts were identified as having obvious defects (100%, n=8).
- There was one instance of an employee not standing firmly on the floor of the basket (12.5%, n=8)

Stairways

- 1 handrail audited was not capable of withstanding 200 pounds. (25%, n=4).

Conclusion

The fall hazards identified in the building audit, especially worker behavior created hazards, were starkly different than in the Aria building. Employee use of ladders on the Mandarin site was nearly perfect, and the hazards identified were not as serious. This site also had many more holes than the Aria building, yet the holes were more often properly protected. The exception being the 2 open holes with no protection.

The majority of the fall hazards identified that were not properly controlled in this audit were in the areas of guardrails and hole covers. The majority of the guardrails that required toeboards utilized the screens that meet the 200 pound strength requirement if anchored properly. In most cases, the screens had become loose and were not re-secured properly creating a falling object and falling hazard. Also, some of the wire rope guardrails were not properly flagged, although not as many deficiencies as the Aria site. The low frequency ladder deficiencies included not properly setting up the ladder and one instance of poor access egress. One drywall bucket being used as a ladder and was identified as having no safe intervention. Scissor lift hazards were higher on this site with fall hazards created by not closing the gate / chain, and by not standing firmly on the floor of the basket. Additionally two scissor lifts were identified as not being used properly.

Fall hazards that were well controlled were those that utilized personal fall arrest. Mandarin had 3 instances of personal fall arrest usage with all requirements being met. All stairways audited met the requirements with one exception of a handrail not meeting a 200 pound breaking strength.

This site utilized engineering controls (guardrails, hole covers) over personal fall arrest which is a preferred method. The recommendation would again be to implement an intensive fall hazard control maintenance program that ensured the security. Strength and required identifiers for all guardrails and hole covers. Personnel should be trained in the requirements of hole covers and guardrails as well as user training for all types of ladders and scissor lifts and aerial lifts.

The Site Summary Score of 82.33% would be considered an acceptable score if this contractor were part of the Fall-Safe program. On average the baseline audit scores of the Fall-Safe contractors were much lower than this score (approximately 70%). Although it could be argued that this audit would not be considered a baseline audit due to the recent efforts on site.

Fall-Safe Program Management and Related Functions

Company: Perini **Visits Date:** 7/25/2008

Site: Mandarin **Workers Managed:** Approximately
6,000

Contact: **Print Date:** 8/20/2008

Address:

Location: **Floor 38** **Number Exposed:** 6

Exposure: Ladder

Intervention: **Possible:** 0%
0 0

Raw Score: 0.00% **Adjusted Score:** 0.00%

Intervention: Ladder **Possible:** 100%

1	Correct size for the job.	1
2	Ladder tied or secured.	1
3	Installed at correct angle.	1
4	Side rails extend 3' above working surface.	1
5	Extension not overextended.	1
6	Proper climbing procedures being followed.	1
7	Three point contact rule being followed.	1
8	Free from obvious defects.	1
9	Being used properly and not being bypassed.	0

10 Adequate access/egress. 0

Raw Score: 80.00% Adjusted Score: 80.00%

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Guardrail System Possible: 100%

- 1 Top edge between 39" and 45" and at least 2"x4" construction. 1
- 2 Midrail centered and at least 1"x6" or 2"x4" construction. 1
- 3 Guardrail capable of withstanding 200 lb. force. 0
- 4 Midrails capable of withstanding 150 lb. force. 0
- 5 Toeboards installed and structurally sound. 0
- 6 Posts no more than 8' apart and at least 2"x4" construction. 0
- 7 Smooth and free from defects. 0
- 8 Being used properly and not being bypassed. 0

Raw Score: 25.00% Adjusted Score: 25.00%

Intervention: Guardrail System Possible: 100%

- 1 Top edge between 39" and 45" and at least 1/4" diameter. 1
- 2 Wire rope does not deflect below 39" with 200 lbs. applied. 1
- 3 Flagged every 6'. 0
- 4 Midrail centered. 1
- 5 Toeboards installed and structurally sound. 1
- 6 Smooth and free from defects. 1
- 7 Being used properly and not being bypassed. 1

Raw Score: 85.71% Adjusted Score: 85.71%

Intervention: Guardrail System Possible: 100%

- 1 Top edge between 39" and 45". 1
- 2 Midrail centered. 1
- 3 Toeboards installed and structurally sound. 1
- 4 Post spaced not more than 8' apart. 1
- 5 Installed according to manufacturer's specifications. 1

6	Smooth and free from defects.	1
7	Being used properly and not being bypassed.	1
	Raw Score: 100.00%	Adjusted Score: 100.00%

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1
3	Entrance gate/chain in place.		1
4	Employee standing firmly on floor of basket.		1
5	Not being used on an incline steeper than mfr. Specs.		1
6	Free from obvious defects.		1
7	Being used properly and not begin bypassed.		1
	Raw Score: 100.00%	Adjusted Score: 100.00%	

Exposure: Floor Holes.

Intervention:		Possible:	0%
0			0
	Raw Score: 0.00%	Adjusted Score: 0.00%	

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 83.33%	Adjusted Score: 83.33%	

Intervention:	<u>Guardrail System</u>	Possible:	100%
1	Top edge between 39" and 45" and at least 1/4" diameter.		1
2	Wire rope does not deflect below 39" with 200 lbs. applied.		1

2	Wire rope does not deflect below 39" with 200 lbs. applied.	1
3	Flagged every 6'.	1
4	Midrail centered.	1
5	Toeboards installed and structurally sound.	0
6	Smooth and free from defects.	1
7	Being used properly and not being bypassed.	1
Raw Score: 85.71%		Adjusted Score: 85.71%

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1
3	Entrance gate/chain in place.		1
4	Employee standing firmly on floor of basket.		1
5	Not being used on an incline steeper than mfr. Specs.		1
6	Free from obvious defects.		1
7	Being used properly and not begin bypassed.		1
Raw Score: 100.00%		Adjusted Score: 100.00%	

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		0
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
Raw Score: 66.67%		Adjusted Score: 66.67%	

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention:	<u>Guardrail System</u>	Possible:	100%
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1	Top edge between 39" and 45" and at least 1/4" diameter.	1
2	Wire rope does not deflect below 39" with 200 lbs. applied.	1
3	Flagged every 6'.	1
4	Midrail centered.	1
5	Toeboards installed and structurally sound.	0
6	Smooth and free from defects.	1
7	Being used properly and not being bypassed.	1
Raw Score: 85.71%		Adjusted Score: 85.71%

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.	1	
2	Employee protected above 10' with toprail and midrail.	1	
3	Entrance gate/chain in place.	1	
4	Employee standing firmly on floor of basket.	1	
5	Not being used on an incline steeper than mfr. Specs.	1	
6	Free from obvious defects.	1	
7	Being used properly and not begin bypassed.	0	
Raw Score: 85.71%		Adjusted Score: 85.71%	

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.	1	
2	Secured.	1	
3	Color coded or labeled.	1	
4	Installed so as to eliminate tripping hazards.	1	
5	System free from obvious defects.	1	
6	Being used properly and not being bypassed.	1	
Raw Score: 100.00%		Adjusted Score: 100.00%	

Exposure: Floor Holes.

Intervention: Cover **Possible:** **100%**

- 1 Designed to support 2 times the intended load. 1
- 2 Secured. 1
- 3 Color coded or labeled. 1
- 4 Installed so as to eliminate tripping hazards. 1
- 5 System free from obvious defects. 1
- 6 Being used properly and not being bypassed. 1

Raw Score: 100.00% **Adjusted Score: 100.00%**

Exposure: **Floor Holes.**

Intervention: Cover **Possible:** **100%**

- 1 Designed to support 2 times the intended load. 1
- 2 Secured. 1
- 3 Color coded or labeled. 1
- 4 Installed so as to eliminate tripping hazards. 1
- 5 System free from obvious defects. 1
- 6 Being used properly and not being bypassed. 1

Raw Score: 100.00% **Adjusted Score: 100.00%**

Exposure: **Floor Holes.**

Intervention: Cover **Possible:** **100%**

- 1 Designed to support 2 times the intended load. 1
- 2 Secured. 1
- 3 Color coded or labeled. 1
- 4 Installed so as to eliminate tripping hazards. 1
- 5 System free from obvious defects. 1
- 6 Being used properly and not being bypassed. 1

Raw Score: 100.00% **Adjusted Score: 100.00%**

Exposure: **Floor Holes.**

Intervention: Cover **Possible:** **100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 83.33%		Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	1
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 100.00%		Adjusted Score: 100.00%

Location Summary Score: 77.47%

Location: Floor 36

Number Exposed: 0

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Guardrail System Possible: 100%

1	Top edge between 39" and 45" and at least 1/4" diameter.	1
2	Wire rope does not deflect below 39" with 200 lbs. applied.	1
3	Flagged every 6'.	1
4	Midrail centered.	1
5	Toeboards installed and structurally sound.	0
6	Smooth and free from defects.	1
7	Being used properly and not being bypassed.	1

Raw Score: 85.71%

Adjusted Score: 85.71%

Exposure: Floor Holes.

Intervention: Cover

Possible: 100%

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 1 |
| 3 | Color coded or labeled. | 1 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |
| 6 | Being used properly and not being bypassed. | 1 |

Raw Score: 100.00%

Adjusted Score: 100.00%

Intervention: Guardrail System

Possible: 100%

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 1/4" diameter. | 1 |
| 2 | Wire rope does not deflect below 39" with 200 lbs. applied. | 1 |
| 3 | Flagged every 6'. | 1 |
| 4 | Midrail centered. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Smooth and free from defects. | 1 |
| 7 | Being used properly and not being bypassed. | 1 |

Raw Score: 85.71%

Adjusted Score: 85.71%

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Guardrail System

Possible: 100%

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 1/4" diameter. | 1 |
| 2 | Wire rope does not deflect below 39" with 200 lbs. applied. | 1 |
| 3 | Flagged every 6'. | 1 |
| 4 | Midrail centered. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Smooth and free from defects. | 0 |
| 7 | Being used properly and not being bypassed. | 1 |

Raw Score: 71.43%

Adjusted Score: 71.43%

Exposure: Floor Holes.

Intervention: Cover

Possible: 100%

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 1 |
| 3 | Color coded or labeled. | 0 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |
| 6 | Being used properly and not being bypassed. | 1 |

Raw Score: 83.33%

Adjusted Score: 83.33%

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Guardrail System

Possible: 100%

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 1/4" diameter. | 1 |
| 2 | Wire rope does not deflect below 39" with 200 lbs. applied. | 1 |
| 3 | Flagged every 6'. | 1 |
| 4 | Midrail centered. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Smooth and free from defects. | 1 |
| 7 | Being used properly and not being bypassed. | 1 |

Raw Score: 85.71%

Adjusted Score: 85.71%

Exposure: Floor Holes.

Intervention: Cover

Possible: 100%

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 1 |
| 3 | Color coded or labeled. | 1 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |
| 6 | Being used properly and not being bypassed. | 1 |

Raw Score: 100.00%

Adjusted Score: 100.00%

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Guardrail System

Possible: 100%

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 1/4" diameter. | 1 |
| 2 | Wire rope does not deflect below 39" with 200 lbs. applied. | 1 |
| 3 | Flagged every 6'. | 1 |
| 4 | Midrail centered. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Smooth and free from defects. | 1 |
| 7 | Being used properly and not being bypassed. | 1 |

Raw Score: 85.71%

Adjusted Score: 85.71%

Exposure: Floor Holes.

Intervention: Cover

Possible: 100%

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 1 |
| 3 | Color coded or labeled. | 0 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |
| 6 | Being used properly and not being bypassed. | 1 |

Raw Score: 83.33%

Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover

Possible: 100%

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 0 |
| 3 | Color coded or labeled. | 1 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |
| 6 | Being used properly and not being bypassed. | 1 |

Raw Score: 83.33% **Adjusted Score: 83.33%**

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 83.33%	Adjusted Score:	83.33%

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 83.33%	Adjusted Score:	83.33%

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 83.33%	Adjusted Score:	83.33%

Location Summary Score: 85.71%

Location: Floor 33

Number Exposed: 15

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention:	<u>Guardrail System</u>	Possible:	100%
1	Top edge between 39" and 45" and at least 1/4" diameter.		1
2	Wire rope does not deflect below 39" with 200 lbs. applied.		1
3	Flagged every 6'.		1
4	Midrail centered.		1
5	Toeboards installed and structurally sound.		0
6	Smooth and free from defects.		1
7	Being used properly and not being bypassed.		1
	Raw Score: 85.71%	Adjusted Score: 85.71%	

Intervention:	<u>Personal Fall Arrest</u>	Possible:	85%
1	Anchor point proper and capable of withstanding 5000 lbs. or 2 times the intended load.		1
2	Free fall limited to 6' or less.		1
3	Sufficient total fall clearance.		1
4	Rigged to avoid swing fall.		1
5	Retractable attachment point to worker in center of back.		1
6	System free from obvious defects.		1
7	Being used properly and not being bypassed.		1
	Raw Score: 100.00%	Adjusted Score: 85.00%	

Exposure: Floor Holes.

Intervention:		Possible:	0%
0			0
	Raw Score: 0.00%	Adjusted Score: 0.00%	

Intervention:	<u>Cover</u>	Possible:	100%
---------------	--------------	-----------	------

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 1 |
| 3 | Color coded or labeled. | 0 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |
| 6 | Being used properly and not being bypassed. | 1 |

Raw Score: 83.33% Adjusted Score: 83.33%

Intervention: Guardrail System **Possible: 100%**

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 2"x4" construction. | 1 |
| 2 | Midrail centered and at least 1"x6" or 2"x4" construction. | 1 |
| 3 | Guardrail capable of withstanding 200 lb. force. | 1 |
| 4 | Midrails capable of withstanding 150 lb. force. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Posts no more than 8' apart and at least 2"x4" construction. | 1 |
| 7 | Smooth and free from defects. | 1 |
| 8 | Being used properly and not being bypassed. | 1 |

Raw Score: 87.50% Adjusted Score: 87.50%

Intervention: Guardrail System **Possible: 100%**

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 1/4" diameter. | 1 |
| 2 | Wire rope does not deflect below 39" with 200 lbs. applied. | 1 |
| 3 | Flagged every 6'. | 1 |
| 4 | Midrail centered. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Smooth and free from defects. | 1 |
| 7 | Being used properly and not being bypassed. | 1 |

Raw Score: 85.71% Adjusted Score: 85.71%

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Guardrail System **Possible: 100%**

1	Top edge between 39" and 45" and at least 1/4" diameter.	1
2	Wire rope does not deflect below 39" with 200 lbs. applied.	1
3	Flagged every 6'.	1
4	Midrail centered.	1
5	Toeboards installed and structurally sound.	0
6	Smooth and free from defects.	1
7	Being used properly and not being bypassed.	1
Raw Score: 85.71%		Adjusted Score: 85.71%

Exposure: Floor Holes.

Intervention: Cover **Possible: 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 83.33%		Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover **Possible: 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 83.33%		Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover **Possible: 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 83.33%		Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1	Designed to support 2 times the intended load.	1
2	Secured.	0
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	0
6	Being used properly and not being bypassed.	0
Raw Score: 33.33%		Adjusted Score: 33.33%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 83.33%		Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1	Designed to support 2 times the intended load.	1
---	--	---

2	Secured.	1
3	Color coded or labeled.	1
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1
Raw Score: 100.00%		Adjusted Score: 100.00%
		Location Summary Score: 75.36%

Location: **Floor 30**

Number Exposed: 9

Exposure: **Unprotected sides and edges 6' or more above lower level.**

Intervention: Personal Fall Arrest Possible: **85%**

1	Anchor point proper and capable of withstanding 5000 lbs. or 2 times the intended load.	1
2	Free fall limited to 6' or less.	1
3	Sufficient total fall clearance.	1
4	Rigged to avoid swing fall.	1
5	Retractable attachment point to worker in center of back.	1
6	System free from obvious defects.	1
7	Being used properly and not being bypassed.	1
Raw Score: 100.00%		Adjusted Score: 85.00%

Exposure: **Floor Holes.**

Intervention: Cover Possible: **100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labeled.	0
4	Installed so as to eliminate tripping hazards.	1
5	System free from obvious defects.	1
6	Being used properly and not being bypassed.	1

Raw Score: 83.33% **Adjusted Score: 83.33%**

Intervention: Guardrail System **Possible: 100%**

- | | | |
|---|---|---|
| 1 | Top edge between 39" and 45" and at least 1/4" diameter. | 1 |
| 2 | Wire rope does not deflect below 39" with 200 lbs. applied. | 1 |
| 3 | Flagged every 6'. | 0 |
| 4 | Midrail centered. | 1 |
| 5 | Toeboards installed and structurally sound. | 0 |
| 6 | Smooth and free from defects. | 0 |
| 7 | Being used properly and not being bypassed. | 0 |

Raw Score: 42.86% **Adjusted Score: 42.86%**

Exposure: Unprotected sides and edges 6' or more above lower level.

Intervention: Personal Fall Arrest **Possible: 85%**

- | | | |
|---|---|---|
| 1 | Anchor point proper and capable of withstanding 5000 lbs. or 2 times the intended load. | 1 |
| 2 | Free fall limited to 6' or less. | 1 |
| 3 | Sufficient total fall clearance. | 1 |
| 4 | Rigged to avoid swing fall. | 1 |
| 5 | Retractable attachment point to worker in center of back. | 1 |
| 6 | System free from obvious defects. | 1 |
| 7 | Being used properly and not being bypassed. | 1 |

Raw Score: 100.00% **Adjusted Score: 85.00%**

Exposure: Floor Holes.

Intervention: Cover **Possible: 100%**

- | | | |
|---|--|---|
| 1 | Designed to support 2 times the intended load. | 1 |
| 2 | Secured. | 1 |
| 3 | Color coded or labeled. | 1 |
| 4 | Installed so as to eliminate tripping hazards. | 1 |
| 5 | System free from obvious defects. | 1 |

6 Being used properly and not being bypassed. 1

Raw Score: 100.00% Adjusted Score: 100.00%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1 Designed to support 2 times the intended load. 1

2 Secured. 1

3 Color coded or labeled. 0

4 Installed so as to eliminate tripping hazards. 1

5 System free from obvious defects. 1

6 Being used properly and not being bypassed. 1

Raw Score: 83.33% Adjusted Score: 83.33%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1 Designed to support 2 times the intended load. 1

2 Secured. 1

3 Color coded or labeled. 0

4 Installed so as to eliminate tripping hazards. 0

5 System free from obvious defects. 1

6 Being used properly and not being bypassed. 1

Raw Score: 66.67% Adjusted Score: 66.67%

Exposure: Floor Holes.

Intervention: Cover Possible: 100%

1 Designed to support 2 times the intended load. 1

2 Secured. 1

3 Color coded or labeled. 0

4 Installed so as to eliminate tripping hazards. 0

5 System free from obvious defects. 1

6 Being used properly and not being bypassed. 1

Raw Score: 66.67% **Adjusted Score: 66.67%**

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		0
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 66.67%	Adjusted Score: 66.67%	

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		0
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 66.67%	Adjusted Score: 66.67%	

Location Summary Score: 74.62%

Location: Floor 22

Number Exposed: 25

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1
3	Entrance gate/chain in place.		0
4	Employee standing firmly on floor of basket.		1

5	Not being used on an incline steeper than mfr. Specs.	1
6	Free from obvious defects.	1
7	Being used properly and not begin bypassed.	1
	Raw Score: 85.71%	Adjusted Score: 85.71%

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		0
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
	Raw Score: 83.33%	Adjusted Score: 83.33%	

Intervention:	<u>Guardrail System</u>	Possible:	100%
1	Top edge between 39" and 45" and at least 2"x4" construction.		1
2	Midrail centered and at least 1"x6" or 2"x4" construction.		1
3	Guardrail capable of withstanding 200 lb. force.		1
4	Midrails capable of withstanding 150 lb. force.		1
5	Toeboards installed and structurally sound.		0
6	Posts no more than 8' apart and at least 2"x4" construction.		1
7	Smooth and free from defects.		1
8	Being used properly and not being bypassed.		1
	Raw Score: 87.50%	Adjusted Score: 87.50%	

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1
3	Entrance gate/chain in place.		1

4	Employee standing firmly on floor of basket.	1
5	Not being used on an incline steeper than mfr. Specs.	1
6	Free from obvious defects.	1
7	Being used properly and not begin bypassed.	1
Raw Score: 100.00%		Adjusted Score: 100.00%

Exposure: Floor Holes.

Intervention:	<u>Cover</u>	Possible:	100%
1	Designed to support 2 times the intended load.		1
2	Secured.		1
3	Color coded or labeled.		1
4	Installed so as to eliminate tripping hazards.		1
5	System free from obvious defects.		1
6	Being used properly and not being bypassed.		1
Raw Score: 100.00%		Adjusted Score: 100.00%	

Intervention:	<u>Guardrail System</u>	Possible:	100%
1	Top edge between 39" and 45" and at least 2"x4" construction.		1
2	Midrail centered and at least 1"x6" or 2"x4" construction.		1
3	Guardrail capable of withstanding 200 lb. force.		0
4	Midrails capable of withstanding 150 lb. force.		0
5	Toeboards installed and structurally sound.		0
6	Posts no more than 8' apart and at least 2"x4" construction.		1
7	Smooth and free from defects.		0
8	Being used properly and not being bypassed.		1
Raw Score: 50.00%		Adjusted Score: 50.00%	

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1

3	Entrance gate/chain in place.	0
4	Employee standing firmly on floor of basket.	0
5	Not being used on an incline steeper than mfr. Specs.	1
6	Free from obvious defects.	1
7	Being used properly and not begin bypassed.	0
Raw Score: 57.14%		Adjusted Score: 57.14%

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1
3	Entrance gate/chain in place.		1
4	Employee standing firmly on floor of basket.		1
5	Not being used on an incline steeper than mfr. Specs.		1
6	Free from obvious defects.		1
7	Being used properly and not begin bypassed.		1
Raw Score: 100.00%		Adjusted Score:	100.00%

Exposure: Aerial lifts.

Intervention:	<u>Scissor Lifts</u>	Possible:	100%
1	Only authorized person operating lift.		1
2	Employee protected above 10' with toprail and midrail.		1
3	Entrance gate/chain in place.		1
4	Employee standing firmly on floor of basket.		1
5	Not being used on an incline steeper than mfr. Specs.		1
6	Free from obvious defects.		1
7	Being used properly and not begin bypassed.		1
Raw Score: 100.00%		Adjusted Score:	100.00%

Location Summary Score: 84.85%

Location: **Floor 15**

Number Exposed: 11

Exposure: **Ladder**

Intervention:	<u>Ladder</u>	Possible:	100%
1	Correct size for the job.		1
2	Fully opened and spreader bars locked.		1
3	Firm foundation for ladder feet.		1
4	Proper climbing procedures being used.		1
5	Three point contact rule being followed.		1
6	Free from obvious defects.		1
7	Worker not standing on top 2 steps.		1
8	Being used properly and not being bypassed.		1
9	Adequate access/egress.		1
Raw Score: 100.00%		Adjusted Score: 100.00%	

Exposure: **Unprotected sides and edges 6' or more above lower level.**

Intervention:	<u>Guardrail System</u>	Possible:	100%
1	Top edge between 39" and 45" and at least 1/4" diameter.		1
2	Wire rope does not deflect below 39" with 200 lbs. applied.		1
3	Flagged every 6'.		1
4	Midrail centered.		1
5	Toeboards installed and structurally sound.		1
6	Smooth and free from defects.		1
7	Being used properly and not being bypassed.		1
Raw Score: 100.00%		Adjusted Score: 100.00%	

Exposure: **Stairways**

Intervention:	<u>Stairways</u>	Possible:	100%
1	Installed between 30 and 50 degrees from horizontal.		1
2	Landing is at least 30" in the direction of travel.		1
3	Riser height and tread depth uniform with 1/4"		1

4	Swing of a door shall not reduce the platform to less than 20"	1
5	Free from hazardous projections, such as protruding nails.	1
6	No slippery conditions on stairs.	1
7	Metal pan landings and tread are secured in place.	1
8	Stairs with 4 or more risers or rising 30" has at least one handrail.	1
9	Stairs with 4 or more risers or rising 30" has a stairrail on unprotected sides.	1
10	Stairrail is not less than 36" in line with the face of riser.	1
11	Handrail and stairrails capable of withstanding a 200 lb. force.	1
12	Midrails are half way between stairrail and step.	1
13	Screen or mesh extends from the steps to the toprail.	1
14	Vertical members are no more than 19" apart.	1
15	Being used properly and not being bypassed.	1

Raw Score: 100.00%

Adjusted Score: 100.00%

Exposure: Ladder

Intervention: Ladder Possible: 100%

1	Correct size for the job.	1
2	Fully opened and spreader bars locked.	1
3	Firm foundation for ladder feet.	0
4	Proper climbing procedures being used.	1
5	Three point contact rule being followed.	1
6	Free from obvious defects.	1
7	Worker not standing on top 2 steps.	1
8	Being used properly and not being bypassed.	1
9	Adequate access/egress.	1

Raw Score: 88.89%

Adjusted Score: 88.89%

Exposure: Stairways

Intervention: Stairways Possible: 100%

1	Installed between 30 and 50 degrees from horizontal.	1
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Location: **Floor 10**

Number Exposed: 14

Exposure: **Ladder**

Intervention:	<u>Ladder</u>	Possible:	100%
1	Correct size for the job.		1
2	Fully opened and spreader bars locked.		1
3	Firm foundation for ladder feet.		1
4	Proper climbing procedures being used.		1
5	Three point contact rule being followed.		1
6	Free from obvious defects.		1
7	Worker not standing on top 2 steps.		1
8	Being used properly and not being bypassed.		1
9	Adequate access/egress.		1
	Raw Score: 100.00%	Adjusted Score: 100.00%	

Exposure: **Ladder**

Intervention:	<u>Ladder</u>	Possible:	100%
1	Correct size for the job.		1
2	Fully opened and spreader bars locked.		1
3	Firm foundation for ladder feet.		1
4	Proper climbing procedures being used.		1
5	Three point contact rule being followed.		1
6	Free from obvious defects.		1
7	Worker not standing on top 2 steps.		1
8	Being used properly and not being bypassed.		1
9	Adequate access/egress.		1
	Raw Score: 100.00%	Adjusted Score: 100.00%	

Exposure: **Ladder**

Intervention: Ladder Possible: **100%**

1	Correct size for the job.	1
2	Fully opened and spreader bars locked.	1
3	Firm foundation for ladder feet.	1
4	Proper climbing procedures being used.	1
5	Three point contact rule being followed.	1
6	Free from obvious defects.	1
7	Worker not standing on top 2 steps.	1
8	Being used properly and not being bypassed.	1
9	Adequate access/egress.	1

Raw Score: 100.00%

Adjusted Score: 100.00%

Exposure: Ladder

Intervention: Ladder

Possible: 100%

1	Correct size for the job.	1
2	Fully opened and spreader bars locked.	1
3	Firm foundation for ladder feet.	1
4	Proper climbing procedures being used.	1
5	Three point contact rule being followed.	1
6	Free from obvious defects.	1
7	Worker not standing on top 2 steps.	1
8	Being used properly and not being bypassed.	1
9	Adequate access/egress.	1

Raw Score: 100.00%

Adjusted Score: 100.00%

Location Summary Score: 100.00%

Location: Floor 5

Number Exposed: 9

Exposure: Ladder

Intervention: Ladder

Possible: 100%

1	Correct size for the job.	1
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8	Stairs with 4 or more risers or rising 30" has at least one handrail.	1
9	Stairs with 4 or more risers or rising 30" has a stairrail on unprotected sides.	1
10	Stairrail is not less than 36" in line with the face of riser.	1
11	Handrail and stairrails capable of withstanding a 200 lb. force.	1
12	Midrails are half way between stairrail and step.	1
13	Screen or mesh extends from the steps to the top rail.	1
14	Vertical members are no more than 19" apart.	1
15	Being used properly and not being bypassed.	1

Raw Score: 100.00% Adjusted Score: 100.00%

Exposure: Floor Holes.

Intervention:	<u>Guardrail System</u>	Possible:	100%
1	Top edge between 39" and 45" and at least 2"x4" construction.		1
2	Midrail centered and at least 1"x6" or 2"x4" construction.		1
3	Guardrail capable of withstanding 200 lb. force.		1
4	Midrails capable of withstanding 150 lb. force.		1
5	Toeboards installed and structurally sound.		1
6	Posts no more than 8' apart and at least 2"x4" construction.		1
7	Smooth and free from defects.		1
8	Being used properly and not being bypassed.		1

Raw Score: 100.00% Adjusted Score: 100.00%

Exposure: Stairways

Intervention:	<u>Stairways</u>	Possible:	100%
1	Installed between 30 and 50 degrees from horizontal.		1
2	Landing is at least 30" in the direction of travel.		1
3	Riser height and tread depth uniform with 1/4"		1
4	Swing of a door shall not reduce the platform to less than 20"		1
5	Free from hazardous projections, such as protruding nails.		1
6	No slippery conditions on stairs.		1

7	Metal pan landings and tread are secured in place.	1
8	Stairs with 4 or more risers or rising 30" has at least one handrail.	1
9	Stairs with 4 or more risers or rising 30" has a stairrail on unprotected sides.	1
10	Stairrail is not less than 36" in line with the face of riser.	1
11	Handrail and stairrails capable of withstanding a 200 lb. force.	0
12	Midrails are half way between stairrail and step.	1
13	Screen or mesh extends from the steps to the toprail.	1
14	Vertical members are no more than 19" apart.	1
15	Being used properly and not being bypassed.	1

Raw Score: 93.33%

Adjusted Score: 93.33%

Location Summary Score: 90.73%

Site Summary Score: 82.33%