CPWR - The Center for Construction Research and Training

Fall Hazard Identification and Control Audit of the Aria Building

City Center Project

Las Vegas, Nevada

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Submitted by

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Introduction

The fall hazard audit of the Aria building included the 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, ladders, scaffolds, scissor lift use, stairways, and unprotected sides and edges 6' or more above a lower level. There were 414 inspection points (audit questions) collected on the Aria Building audit. Controls selected for the fall hazards were as follows:

- The majority of floor holes were protected with hole covers (60.3%, n=131 audit questions)
- The remaining floor holes were protected with guardrail systems.
- The majority of unprotected sides and edges were protected with guardrail systems (91.25%, n=80 questions).
- The remaining unprotected sides and edges were protected with an employee using a personal fall arrest system.
- The audit tool considers items such as scaffolds, scissor lifts, ladders, and stairways as the hazard and the control (intervention). The idea being that the device itself creates a fall hazard and its' safe use, setup and condition 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%

Aria Building – Summary of Fall Hazards and Controls

Hole Covers

- 3 of 13 hole covers audited were color coded or labeled (23%, n=13).
- All hole covers audited were designed to support two times the intended load with the exception of one.
- 4 of the 13 hole covers were not secured (30.7%, n=13).

Guardrails Systems

- Wire rope – 63.6% of the wire rope guardrails audited were not flagged (n=11).
- Wood Guardrails - 50% of wooden guardrails had posts spaced at more than 8 feet apart (50%, n=6).
- The majority of all guardrails were smooth and free of defects (84.2%, n=19).
- 70.5% of guardrails audited did not have toeboards installed or structurally sound when required. Based on the auditor, the majority of those were not structurally sound (n=17).
- All guardrails audited were between 39 and 45" (100%, n= 17)
- All wire rope guardrail audited did not deflect more than 3 inches (100%, n=11).

Ladders

- Only 1 ladder audited had adequate access / egress (25%, n=4).
- No ladder audited was being used properly by employees (0%, n=5), and only 1 employee was using proper climbing procedures (20%, n=5). Only 2 of 6 employees (33.3%) were using the 3 point contact rule and 3 of 5 (60%) employees were standing on the top 2 steps of step ladders.
- 2 ladders of 5 audited (40%) were not the correct size for the job

Personal Fall Arrest

- The auditor on identified one employee using personal fall arrest on the Aria building. The employee was using a retractable lanyard with a full body harness. All elements of the personal fall arrest system were correct and being used properly.

Scaffolding

- All audit questions relating to the erection and construction of the scaffold audited were audited as being done correctly. This includes all bracers being present, all components compatible with each other, all pins, clips, and locking mechanisms installed, and properly secured to structure, and free of obvious defects (100%, n=4).
- 1 of 4 scaffolds audited was erected without the oversight of a competent person (25%, n=4).

- 3 of 4 scaffolds did not have guardrails above 10 feet (75%, n=4).
- 1 of 4 scaffolds did not have a safe access ladder (25%, n=4).
- All scaffolds audited were fully planked (100%, n=4).

Scissor Lifts

- The auditor inspected 5 scissor lifts.
- All scissor lifts were 100% in compliance with the audit questions. (n=5).

Stairways

- 3 of 4 stairways audited had hazardous projections such as protruding nails (75%, n=4).
- 1 handrail of 4 audited was not capable of supporting 200 pounds (25%, n=4).
- No handrails had the required screen or mesh installed for falling object protection (0%, n=3).
- 3 of 3 handrails had vertical members exceeding 19” apart (100%, n=3).

Conclusion

The majority of the fall hazards identified that were not properly controlled in this audit were in the areas of guardrails and ladders. Many 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 hazard. Also, the majority of wire rope guardrails were not properly flagged. The majority of ladder deficiencies were related to employee use of ladders as well as housekeeping around the ladder access / egress points.

Fall hazards that were well controlled were the use of personal fall arrest although on this building audit there was only one individual audited. The majority of the questions related to scaffolding and all fall hazards audit questions for 5 scissor lifts audited were answered positively.

The areas of emphasis recommended based on the audit conducted would be in the areas of ladder safety and proper guardrail installation, maintenance and awareness.

The Site Summary Score of 73.32% would be considered a barely acceptable score if this contractor were part of the Fall-Safe program. The minimum acceptable score to stay a member r of the Fall-Safe Program is 70%. On average the baseline (initial) audit scores of the Fall-Safe contractors were approximately 70%. With all of the intervention work, site analysis and training ongoing on this site, I would not consider this audit a baseline audit. Finally, this building’s overall site summary score was 10% less than the Mandarin building which had more fall exposures.

Fall-Safe Program Management and Related Functions

Company:	Perini	**Visits Date:**	7/24/2008
Site:	Aria Building	**Workers Managed:**	Approximately 6,000
Contact:	**Scott Blais**	**Print Date:**	8/20/2008

Address: **Perini Building Company**
4884 Sinatra Drive
Las Vegas, NV 89101

Location: **Floor 56 Top Steel** **Number Exposed:** 8

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.	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: **Floor Holes.**

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%**

Location Summary Score: **93.75%**

Location: **Floor 55** **Number Exposed:** 16

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: **Aerial lifts.**

Intervention: Scissor Lifts **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: Cover **Possible :** **100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labelled.	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: **Aerial lifts.**

Intervention: Scissor Lifts **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: Cover **Possible : 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labelled.	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 labelled.	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 labelled.	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 labelled.	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: **87.71%**

Location: **Floor 51** **Number Exposed:** 20

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'.	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: Floor Holes.

Intervention: Cover **Possible : 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labelled.	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'.	0
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: 71.43% **Adjusted Score: 71.43%**

Exposure: Floor Holes.

Intervention: Cover **Possible : 100%**

1	Designed to support 2 times the intended load.	0

2	Secured.	0
3	Color coded or labelled.	0
4	Installed so as to eliminate tripping hazards.	0
5	System free from obvious defects.	0
6	Being used properly and not being bypassed.	1

Raw Score: **16.67%** **Adjusted Score:** **16.67%**

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'.	0
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: **71.43%** **Adjusted Score:** **71.43%**

Location Summary Score: **74.21**

Location: **Floor 50** **Number Exposed:** 41

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.	0
7	Worker not standing on top 2 steps.	0
8	Being used properly and not being bypassed.	0
9	Adequate access/egress.	0

Raw Score: 55.56% **Adjusted Score: 55.56%**

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'.	0
4	Midrail centered.	0
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: 42.86% **Adjusted Score: 42.86%**

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

1	Top edge between 39" and 45".	1
2	Midrail centered.	1
3	Toeboards installed and structurally sound.	0
4	Post spaced not more than 8' apart.	0
5	Installed according to manufacturer's specifications.	0
6	Smooth and free from defects.	0
7	Being used properly and not being bypassed.	1

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

Exposure: Scaffolding.

Intervention: Scaffolding **Possible : 100%**

1	Competent person present during erection and dismantling.	1
2	Scaffold wheels on firm base.	1

	3	Scaffold wheels locked during use.	1
	4	System plumb, level, rigid and square.	1
	5	All braces present and properly installed.	1
	6	All components compatible with each other.	1
	7	All pins clips and locking mechanisms installed.	1
	8	Worker not riding unless height to base width 2 to 1 or less and the surface grade is within 3 degrees of level.	1
	9	Safe means of access provided.	0
	10	Proper guardrails or other form of protection above 10'.	1
	11	Working surface fully planked.	1
	12	Working surface clean and not slippery.	1
	13	Free from obvious defects.	1
	14	Toprail between 38" and 45".	1
	15	Midrail centered.	1
	16	Being used properly and not being bypassed.	1

Raw Score: 93.75% **Adjusted Score: 93.75%**

Exposure: Stairways

Intervention: Stairways **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
NA	4	Swing of a door shall not reduce the platform to less than 20"	0
	5	Free from hazardous projections, such as protruding nails.	0
	6	No slippery conditions on stairs.	0
	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.	0
14	Vertical members are no more than 19" apart.	0
15	Being used properly and not being bypassed.	0

Raw Score: 64.29% **Adjusted Score: 64.29%**

Exposure: Floor Holes.

Intervention: Cover **Possible : 100%**

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

Raw Score: 16.67% **Adjusted Score: 16.67%**

Exposure: Ladder

Intervention: Ladder **Possible : 100%**

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

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

Exposure: Floor Holes.

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

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labelled.	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: **Ladder**

Intervention: Ladder **Possible :** **100%**

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

Raw Score: **12.50%** **Adjusted Score:** **12.50%**

Location Summary Score: **47.61%**

Location: **Floor 35** **Number Exposed:** 16

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.	0
5	Three point contact rule being followed.	0
6	Free from obvious defects.	1
7	Worker not standing on top 2 steps.	1
8	Being used properly and not being bypassed.	0
9	Adequate access/egress.	1

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

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.	1
7	Smooth and free from defects.	1
8	Being used properly and not being bypassed.	1

Raw Score: 62.50% **Adjusted Score: 62.50%**

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

1	Top edge between 39" and 45".	1
2	Midrail centered.	1
3	Toeboards installed and structurally sound.	0
4	Post spaced not more than 8' apart.	0
5	Installed according to manufacturer's specifications.	0
6	Smooth and free from defects.	0

7	Being used properly and not being bypassed.	0

Raw Score: 28.57% **Adjusted Score: 28.57%**

Exposure: Stairways

Intervention: Stairways **Possible : 100%**

1	Installed between 30 and 50 degrees from horizontal.	0
2	Landing is at least 30" in the direction of travel.	0
3	Riser height and tread depth uniform with 1/4"	0
4	Swing of a door shall not reduce the platform to less than 20"	0
5	Free from hazardous projections, such as protruding nails.	0
6	No slippery conditions on stairs.	0
7	Metal pan landings and tread are secured in place.	0
8	Stairs with 4 or more risers or rising 30" has at least one handrail.	0
9	Stairs with 4 or more risers or rising 30" has a stairrail on unprotected sides.	0
10	Stairrail is not less than 36" in line with the face of riser.	0
11	Handrail and stairrails capable of withstanding a 200 lb. force.	0
12	Midrails are half way between stairrail and step.	0
13	Screen or mesh extends from the steps to the toprail.	0
14	Vertical members are no more than 19" apart.	0
15	Being used properly and not being bypassed.	0

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

Exposure: Floor Holes.

Intervention: Cover **Possible : 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	0
3	Color coded or labelled.	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: **Stairways**

Intervention: Stairways **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
NA	4	Swing of a door shall not reduce the platform to less than 20"	0
	5	Free from hazardous projections, such as protruding nails.	0
	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.	0
NA	14	Vertical members are no more than 19" apart.	0
	15	Being used properly and not being bypassed.	1

Raw Score: **84.62%** **Adjusted Score:** **84.62%**

Exposure: **Floor Holes.**

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

	1	Designed to support 2 times the intended load.	1
	2	Secured.	1
	3	Color coded or labelled.	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 labelled.	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.	1

Raw Score: **50.00%** **Adjusted Score:** **50.00%**

Location Summary Score: **55.29%**

Location: **Floor 20** **Number Exposed:** 10

Exposure: **Floor Holes.**

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%**

Location Summary Score: **85.71%**

Location: **Floor 2** **Number Exposed:** 70

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.	0
	5	Three point contact rule being followed.	0
	6	Free from obvious defects.	1
	7	Worker not standing on top 2 steps.	1
	8	Being used properly and not being bypassed.	0
NA	9	Adequate access/egress.	0

Raw Score: **62.50%** **Adjusted Score:** **62.50%**

Exposure: **Aerial lifts.**

Intervention: Scissor Lifts **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: **Stairways**

Intervention: Stairways **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.	0
NA	14	Vertical members are no more than 19" apart.	0
	15	Being used properly and not being bypassed.	1

Raw Score: 92.86% **Adjusted Score: 92.86%**

Exposure: Floor Holes.

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.	0
	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: 57.14% **Adjusted Score: 57.14%**

Exposure: Aerial lifts.

Intervention: Scissor Lifts **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: 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.	1
7	Being used properly and not being bypassed.	1

Raw Score: **71.43%** **Adjusted Score:** **71.43%**

Location Summary Score: **80.65%**

Location: **flloor 1 west** **Number Exposed:** 53

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.	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.	0
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: Scaffolding.

Intervention: Scaffolding **Possible : 100%**

1	Competent person present during erection and dismantling.	1
2	Scaffold base on firm foundation or adequate sill.	1
3	System plumb, level, rigid and square.	1
4	All braces present and properly installed.	1
5	All components compatible with each other.	1
6	All pins clips and locking mechanisms installed.	1
7	Below point of required tying to structure or tied to structure.	1
8	Safe means of access provided.	1
9	Proper guardrails or other form of protection above 10'.	0
10	Working surface fully planked.	1
11	Working surface clean and not slippery.	1
12	Free from obvious defects.	1
13	Top rail between 38" and 45".	1
14	Midrail centered.	1
15	Being used properly and not being bypassed.	1

Raw Score: 93.33% **Adjusted Score: 93.33%**

Exposure: Aerial lifts.

Intervention: Scissor Lifts **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: Cover **Possible : 100%**

1	Designed to support 2 times the intended load.	1
2	Secured.	1
3	Color coded or labelled.	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: Scaffolding.

Intervention: Scaffolding **Possible : 100%**

1	Competent person present during erection and dismantling.	1
2	Scaffold base on firm foundation or adequate sill.	1
3	System plumb, level, rigid and square.	1

4	All braces present and properly installed.	1
5	All components compatible with each other.	1
6	All pins clips and locking mechanisms installed.	1
7	Below point of required tying to structure or tied to structure.	1
8	Safe means of access provided.	1
9	Proper guardrails or other form of protection above 10'.	0
10	Working surface fully planked.	1
11	Working surface clean and not slippery.	1
12	Free from obvious defects.	1
13	Top rail between 38" and 45".	1
14	Midrail centered.	1
15	Being used properly and not being bypassed.	1

Raw Score: 93.33% **Adjusted Score: 93.33%**

Exposure: Floor Holes.

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: Scaffolding.

Intervention: Scaffolding **Possible : 100%**

1	Competent person present during erection and dismantling.	0
2	Scaffold base on firm foundation or adequate sill.	1
3	System plumb, level, rigid and square.	1

4	All braces present and properly installed.	1
5	All components compatible with each other.	1
6	All pins clips and locking mechanisms installed.	1
7	Below point of required tying to structure or tied to structure.	1
8	Safe means of access provided.	1
9	Proper guardrails or other form of protection above 10'.	0
10	Working surface fully planked.	1
11	Working surface clean and not slippery.	1
12	Free from obvious defects.	1
13	Top rail between 38" and 45".	1
14	Midrail centered.	1
15	Being used properly and not being bypassed.	1

Raw Score: **86.67%** **Adjusted Score:** **86.67%**

Exposure: **Floor Holes.**

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%**

Location Summary Score: **90.89%**

Site Summary Score: **73.32%**