

Unit 4:

Hazard Analysis and Risk Assessment Project

Ronald Jones 223981

Columbia Southern University

BOS 3651, Total Environmental Health and Safety Management

Professor Old

April, 4th, 2014

### Abstract

The scenario I am describing is one I have been exposed before. Many years ago, when I became a journeyman mason, this hazard or similar ones were encountered. I always knew it was dangerous, but being young, I continued to work. Years later, after I became our company's safety director, fall protection in these instances became pretty standard. Not just because of me, but it seems safety has become a higher priority as the years progressed in the construction industry.

## Hazard Assessment and Risk Analysis Project

**Risk Assessment of Open Stairwell Fall Exposure by Masons**

As safety officer for XYZ Masonry, I have been tasked with the hazard analysis and risk assessment of what will be an upcoming safety concern at a new site. In a recent pre-job safety analysis and meeting with the general contractor, it was pointed out the upcoming construction project contains two, four story concrete masonry unit (CMU) stairwells in opposite corners of the building. It was also noted a CMU elevator is also being placed near the center of the building's layout. I noted in the plans that each structure was to be built one floor at a time, as horizontal precast planks, which make up the structure of each floor, were going to bear four inches on the stairwells which are made of 12" CMU's.

My preliminary hazard assessment (PHA) after noting this fact was that workers, especially masons, were going to be exposed to openings in the floors that measured 12' by 20', and were going to have to lean over the wall on their knees to start the stairwells next floor. This presents a serious fall hazard. Without a form of fall protection, the likelihood of a mason falling down the stairwell was indicated by myself as occasional (which is unacceptable), because of the number of masons involved. Until the wall is five courses off the floor (40"), the hazard exists when masons reach over the wall inside the stairwell to tool (smooth) the mortar joints. This situation is going to take place a minimum of six times on this job. Each exposure is approximately a full day (8 hours) for an entire crew. This doesn't include the elevator due to possibility of being able to build it all at once.

After the floor is complete, there will still be rough openings for doorways that will need to be protected from fall hazards, as anyone can access them after the floor is completed (OSHA, n.d.). The following form shown on the next page illustrates my specific concerns and findings in my risk assessment. It also includes a post risk assessment which factors in the abatement measures I am proposing:

**BOS 3651— Unit IV Hazard Analysis/Risk Analysis Project**

Student Name Ronald Jones 223981

<b>Type of Hazard</b>	Laying Concrete Block on a Multiple Story Stairwell that bears precast floor members	<b>Date</b>	04/08/2014
<b>Hazard Description</b>	CMU stairwell at a four story commercial structure, precast of each floor is designed to bear on the masonry of stairwell. Requires Masons lean over into an open the stairwell to begin a new level, one course at a time.		
<b>Exposure Interval</b>	8 hours/floor	<b>Activity</b>	Laying Block while exposed to a fall hazard, leaning in open stairwell.
<b>Initial Risk Assessment</b> <small>(with existing planned/ designed-in countermeasures)</small>		<b>Additional Control Measures</b>	
Hazard Target(s) <small>(check all applicable)</small>	Severity <small>(worst credible)</small>	Probability <small>(for exposure interval)</small>	Risk Code <small>(from matrix)</small>
Personnel	1	C	H
Equipment	<input type="text"/>	<input type="text"/>	<input type="text"/>
Downtime	2	D	M
Environment	<input type="text"/>	<input type="text"/>	<input type="text"/>
Product	<input type="text"/>	<input type="text"/>	<input type="text"/>
Masons laying block at such points will have to be equipped with personal fall arrest systems (PFAS). Anchorage points to be properly secured to precast with proper anchors. One anchor per harness @ 5000lbs per anchor. Controlled access zone establishment to restrict non essential personnel until block wall is five courses 40" from precast level. Future door opening(s) must be properly guarded against fall protection. installed at 21 and 42' inches, using 2" x 4" lumber anchored to outside wall of stairwell.			
<b>Code Each Risk Assessment:</b>	SEVERITY: 1 – Catastrophic 2 – Critical 3 – Marginal 4 – Negligible	PROBABILITY <small>(Likelihood of Occurrence):</small> A – Frequent B – Probable C – Occasional D – Remote E – Improbable	RISK CODE: H – High S – Serious M – Medium L – Low
<b>Post-Control Measure Risk Assessment</b>			
Hazard Target(s) <small>(check all applicable)</small>	Severity <small>(worst credible)</small>	Probability <small>(for exposure interval)</small>	Risk Code <small>(from matrix)</small>
Personnel	3	E	L
Equipment	<input type="text"/>	<input type="text"/>	<input type="text"/>
Downtime	3	E	L
Environment	<input type="text"/>	<input type="text"/>	<input type="text"/>
Product	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Comments</b> Anchorage points may be achieved by installing 6" x 1/2" expansion bolts drilled in webs of precast members. Though PFAS may save from immediate harm, properly rescuing a fall victim is also critical. Personnel must be trained in extraction of a suspended fall victim. Recommend training course/demonstration for all employees, with a refresher prior to start of job.			

As illustrated in the form, the resulting pre-control risk assessment matrix is too high. This forbids the action from proceeding until all abatement measures are in place (Manuele, 2008). The abatement measures are described in the form. By implementing the use of PFAS, the masonry operations may continue at the greatly reduced risk level of ‘low’. This means the operations may continue as long as discretion is used when implementing the abatement procedures (Manuele, 2008). This includes proper use of PFAS, and the proper guard rails.

Since we already own the PFAS systems, the cost will be negligible. The only issue I’m concerned about is the proper utilization of the abatement recommendations. I understand masons are not used to wearing PFAS harnesses in this situation, so a safety meeting and demonstration of their proper use in this scenario is also strongly advised, as is a PFAS rescue drill (OSHA, n.d.).

### References

Manuele, F. (2008). *Advanced safety management*. Hoboken, New Jersey: John Wiley & Sons, Inc.

OSHA. (n.d.). *Subpart M: Fall protection*. Retrieved April 7, 2014, from

[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=10758&p\\_table=STANDAR](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10758&p_table=STANDAR)

DS