PERMANENT VARIANCE APPLICATION[1]

OMB No. 1218-0265 / Expires 6/30/2018

Instructions: Please review the supplemental information and instructions **Supplemental Information and Completion Instructions** prior to completing the variance application. For questions about this form or the variance process, contact OSHA at VarianceProgram@dol.gov

Section I - Applicant Information

1. Applicant Company

Company Name: Precast /Prestressed Concrete Institute

Principal Address:

Street: 200 W. Adams Street #2100

City: Chicago State: IL ZIP Code: 60606

2. Contact Information

a. Authorized Representative:

Company Representative's Name: Robert J. Risser, P.E.

Title/Position: President / CEO

Address (if different from the company's principal address):

Street: N/A

City: State: ZIP Code:

Telephone: (312) 360-3203 Fax: Email: brisser@pci.org

b. Primary point of contact with the company (if different from the authorized representative):

Point of Contact Name: Jim Lewis, RA Leed AP BD&C

Title/Position: Manager, Architectural Services

Address (if different from the company's principal address):

Street: N/A

City: State: ZIP Code:

Telephone: (312) 428-4947 Fax: Email: jlewis@pci.org

3. Multiple Site Addresses

a. Site Name: Member Locations Across U.S.

Site address including:

Street:

City: State: ZIP Code:

b. Site Name:

Site address including:

Street:

City: State: ZIP Code:

[1]Use of this form is voluntary. A variance from a "performance standard" is not appropriate and cannot be granted because a performance standard does not describe a specific means or method for meeting the requirements of the standard. A variance from a definition in a standard is not appropriate and cannot be granted because a definition is not an enforceable provision of the standard since it does not describe any actions, means, or specific methods for meeting the requirements of the standard.

c. Site Name: _____

Site address including:

Street: _____

City: _____ State: _____ ZIP Code: _____

Section II - Support Information

4. List the OSHA standard(s) from which the applicant is requesting the permanent variance.

29C.F.R. 1910.28
b) Protection From Fall Hazards
1) Unprotected Sides and Edges

As It Relates To:

Work atop Precast materials flat stacked on Rolling Stock and Motor Vehicles in Precast yards to attach/detach rigging.

5. Describe the means to be used as an alternative for protecting employees from hazards as effectively as compliance with the standard, and how the proposed alternative would be at least as safe and healthful for employees as the existing requirements in the OSHA standard(s) from which the applicant is requesting the permanent variance.

See Attached.

6. By the signature entered below, the applicant certifies that it informed its employees of the variance application and their right to petition the Assistant Secretary for a hearing by using the means described below (place a check mark identifying the means selected):

__ a. Giving a copy of the variance application to the authorized employee representative(s);

__ b. Posting a statement giving a summary of the variance application and specifying where employees may examine a copy of it, at the place(s) where the applicant normally posts notices to employees (or, instead of a summary, posting the application itself); or

X c. Using other appropriate means (explain).

A summary letter (Attached) has been sent to each member company with instructions for posting within their workplaces. A complete copy of the variance application has been posted to the Members section of our website for downloading to provide employees upon request. In addition, a letter (Attached) has been sent to each of the union labor organizations known to PCI which represent Industry employees.

7. By the signature entered below, the applicant certifies the status of any outstanding OSHA or State Plan state[2] citation(s) as follows (place a check mark next to the item describing the current status):

X a. The applicant is not contesting any citations involving the standard that is the subject of this application;

__ b. The applicant is taking measures to abate any such citations; or

__ c. The applicant is contesting any such citations.

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[2]The following are states and territories with approved state plans for private-sector employers: AK, AZ, CA, CT,* HI, IA, IL,* IN, KY, MD, MI, MN, NC, NJ,* NM, NV, NY,* OR, PR, SC, TN, UT, VA, VT, VI,* WA, and WY. *Plans cover public-sector employees only; the remaining states cover both public-sector and private-sector employees.

8. If the applicant is requesting an Interim Order to use the alternative method until OSHA renders a decision on the permanent variance application, attach a statement of facts and argument explaining why OSHA should grant such an Order.

9. If the variance application involves one (or more) states covered by Federal OSHA, and one (or more) State Plan state(s), provide the following information for each standard from which the applicant is requesting the permanent variance:

a. A side-by-side comparison of the OSHA standard(s) and the state standard(s) that is/are identical to the OSHA standard;[3]

To Date, We are unaware that any state plans have issued Individual Regulations outside of adopting these Federal Standards.

b. By the signature entered below, the applicant certifies that it has not filed an application for an permanent variance on the same material facts for the same place(s) of employment with the State Plan state/states in question; and

Agreed.

c. A statement identifying any pending citations issued to the applicant by a State Plan state for violating the state standard(s) that is/are the subject of this variance application.

None.

10. The applicant certifies by the signature below that the information contained in the application is accurate and true to the best of the applicant's knowledge.

Signature of the authorized representative: 

Print name: Robert J. Risser, P.E. President/CEO Date: 5/24/2017

Paperwork Reduction Act Statement OMB Control Number: 1218-0265

According to the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless such collection displays a valid OMB control number. Public reporting burden for this collection of information is estimated to average 30 hours per response. This burden includes locating and assembling information required to complete the variance application, informing affected workers of the decision to seek a variance, completing the variance application, and assembling the application documents, but does not include hosting an OSHA site visit. The obligation to respond to this collection is voluntary. Information obtained from this form will be used to determine if a variance will be granted to the applicant. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: U.S. Department of Labor, OSHA, Office of Technical Programs and Coordination Activities, Room N-3653, Frances Perkins Building, 200 Constitution Avenue, N.W., Washington, D.C. 20210. OMB Control Number: 1218-0265

[3]If the state standard(s) is/are not identical to the OSHA standard(s), the applicant must apply to the state for a permanent variance.

PCI Precast/Prestressed Concrete Institute

May 24, 2017

U.S. Department of Labor
Occupational Safety and Health Administration
Directorate of Technical Support and Emergency Management
Office of Technical Programs and Coordination Activities
200 Constitution Avenue NW, Room N3653
Washington, DC 20210

RE: Request for Permanent Variance from 29 C.F.R. 1910.28 (b) (1) for Work Atop Precast Material Flat Stacked on Rolling Stock and Motor Vehicles in Precast Plant Yards to Attach/Detach Rigging

Dear Assistant Secretary,

Our industry association, the Precast/Prestressed Concrete Institute (PCI), represents approximately 275 concrete product producer plants across the United States, employing some 25,000 to 27,000 workers. It is on their behalf that our association seeks this permanent variance from OSHA's recent Walking Working Surfaces Standard. We seek a permanent variance from 29 C.F.R. 1910.28 (b) (1) specifically as it relates to the work our member companies must perform in short term access to the top of precast materials flat stacked on rolling stock and motor vehicles in precast yards while attaching or detaching rigging devices during loading and unloading operations.

This new standard would require that our member companies provide protection for their workers in the form of either a guardrail system, safety net, or personal fall protection system. These solutions have long been considered infeasible due to the proximity and movement of the straddle cranes or mobile truck cranes utilized to move the product onto and off of the trailers and other vehicles such as rail cars. The industry has long relied upon effective standard operating procedures, fall protection plans, and training to control this hazard. Feasible solutions providing an increased level of worker protection simply do not exist. Despite this, the discussion found in the preamble to the recently passed standard describes methods that were provided to OSHA by

equipment manufacturers and their association, as well as an association of rope climbers, which are unusable by the industry. The agency appears to have adopted a viewpoint that these methods are feasible and would assist in eliminating what are described as numerous injuries due to falls from stacked materials. We find both the discussion of methods and injury statements to be erroneous. They will place an undue and unnecessary pressure on our member companies to comply with methods that will create increased risk of serious injury to its workers.

200 West Adams Street | Suite 2100
Chicago, IL 60606 | Phone 312-786-0300
Fax: 312-621-1114 | www.pci.org

PCI has engaged a study into this topic through a Task Group of its producer members. We have also engaged the services of an industry leading occupational safety & health consulting firm, Optimum Safety Management, to guide the process. Through this collective team, we have assembled a body of research that we provide to you along with this letter and our application for variance from this OSHA standard.

It is our sincere hope that we can gain the favor of your agency in relieving this pressure on our members. Doing so will allow us to continue to produce in what you will see has been a very safe and successful operation over the last decade in our industry.

Sincerely,
Precast/Prestressed Concrete Institute

Robert J. Risser, P.E.
President and C.E.O.

Attachments:

- Permanent Variance Application
- Response to Application Question 5
- Job Hazard Analyses
- Fall Protection Plan – Rolling Stock and Motor Vehicles

Precast/Prestressed Concrete Institute (PCI)

May 24, 2017

RE: Request for Permanent Variance from 29 C.F.R. 1910.28 (b) (1) for
Work Atop Precast Material Flat Stacked on Rolling Stock and Motor Vehicles
in Precast Plant Yards to Attach/Detach Rigging

Response to Permanent Variance Application Question 5.

> Describe the means to be used as an alternative for protecting employees from hazards as effectively as compliance with the standard, and how the proposed alternative would be at least as safe and healthful for employees as the existing requirements in the OSHA standard(s) from which the applicant is requesting the permanent variance.

The members of PCI propose to utilize an administrative control in the form of a Fall Protection Plan and Training. These plans have been developed after rigorous discussion and Job Hazard Analysis by a team of member company safety professionals, with an average of over twenty years of experience each, operating as a Task Group in conjunction with an industry leading occupational safety and health consulting firm, Optimum Safety Management, also with over twenty years of precast industry experience.

We offer the following discussion as to why this proposed alternative is actually safer than the existing requirements of 29 C.F.R. 1910.28 (b) (1) which require that our member companies provide protection for their workers in the form of either a guardrail system, safety net, or personal fall protection system.

Analysis of Member Companies OSHA Recordkeeping Data

Each year, PCI solicits the OSHA 300 logs of each of its member companies. Across the industry, an average of one hundred sixty five (165) plants respond and provide their logs. These records have been retained and were made available to our consultant for an analysis.

The firm analyzed ten (10) years of data, from 2006 through 2015. An initial pass through the logs was performed and identified a total of sixty five (65) injuries relative to slip, trip or fall having to do with rolling stock or motor vehicles. The member companies represented were contacted for additional clarity on each of the injuries. The intent was to clean the data down to only those related to workers who were atop flat stacked materials on rolling stock or motor vehicles, performing the task of attaching or detaching rigging. Through this process, injuries which related to non-conforming activities were eliminated.

After elimination of these injuries from the data, there were found to be only twelve (12) injuries from falls during attaching or detaching rigging. There are an additional three (3) injuries in which clarifying data was not available. None of the injuries from these activities were fatal. It should be noted that it is unclear in each case as to whether the crew was performing their work under the direction of a fall protection plan and that they were properly trained. It is possible that there were simply no controls in place.

Through this analysis, the data shows that there were between twelve (12) and fifteen (15) injuries over a ten (10) year period. Our association represents the entire industry and workforce of approximately 275 plants employing between 25,000 to 27,000 workers. Assuming the low end of employees, and that they work approximately 2,000 hours per year conservatively, the total work hours per year is 50,000,000. The companies represented in our sampling are 165 of the 275, or 60%. Therefore, we will utilize 60% of the hours each year, or 30,000,000. Extrapolating these figures over a 10 year range, we find the following:

Total number of injuries: between twelve (12) and fifteen (15), use fifteen (15) in calculations

Total number of hours worked: 30,000,000 hours X 10 years = 300,000,000

The resulting Total Recordable Injury Rate is calculated as follows:

$$\frac{\text{\# of Injuries X 200,000}}{\text{Total Hours Worked}} \quad \text{therefore} \quad \frac{15 \text{ X } 200{,}000}{300{,}000{,}000} = .010$$

Conclusions:

- The industry simply does not have the experience of a significant number of injuries with this activity. There are only an extremely minor instance of falls from rolling stock or motor vehicles during the operation of attaching/detaching rigging across the entirety of the industry.
- Through a Freedom of Information Act Request, PCI obtained a copy of the letter submitted to OSHA by the Society of Professional Rope Access Technicians (SPRAT). SPRAT states in its letter that “the prevalence of incidents that have occurred in these situations” warrants a requirement to use “fall protection of some sort” on stacked materials. Through this analysis of its data, and unaware of any data to the contrary, PCI has disproven SPRAT’s claims and asks that OSHA recognize the inaccuracy of the statements in SPRAT’s letter as it evaluates this Request for Permanent Variance.

Evaluation of Claimed Feasibility Re: Use of New Fall Protection Devices in Preamble

In the preamble to the standard, OSHA received letters from the Precast/Prestressed Concrete Institute (PCI), American Iron and Steel Institute (AISI) and International Sign Association (ISA) requesting that OSHA specifically address stacked materials to allow alternative fall protection measures, such as safe work practices and training, versus conventional fall protection systems. All three organizations believe that conventional fall protection systems (guardrails and personal fall arrest systems) on stacked materials is infeasible and that it creates a greater hazard. These concerns are no different when these same materials are stacked, ready for shipment, on rolling stock and motor vehicles.

On the other hand, OSHA received letters from the American Society of Safety Engineers (ASSE), Society of Professional Rope Access Technicians (SPRAT), Capital Safety Group (CSG), International Safety Equipment Association (ISEA) and Ellis Fall Safety Solutions (Ellis) all stating that they felt conventional fall protection systems on stacked materials, rolling stock, and motor vehicles were feasible and practical. CSG, ISEA and Ellis even submitted product solutions that they felt would be feasible and practical.

Through a Freedom of Information Act request, PCI has gained copies of these submissions. Reviewing the documents, here is what we find:

- SPRAT states in its letter that "the prevalence of incidents that have occurred in these situations" warrants a requirement to use "fall protection of some sort" on stacked materials. They go on to recommend industrial rope access systems.

  There are a number of issues with their statements that cause issues for the industry. The first of these is their statement regarding the prevalence of incidents. This has been discussed and shown to be inaccurate in another area of this document.

  The second statement of concern is that they believe rope access techniques are feasible and will provide a greater level of safety. There is no evidence to substantiate this claim. Neither is there, to PCI's knowledge, any member who has implemented this system.

  While OSHA has included SPRAT's statements in the final rule, it has also stated that "OSHA is not adopting SPRAT's recommendations."

- Both ISEA and CSG issued an identical letter, simply changing the letterhead. In their letter, they discuss solutions in general and mention systems including "trailer-mounted systems, A-frames, rope grab systems, and ropes at tie-off points." The pictures and diagrams included with their letter to OSHA include very large systems which must be driven up to the side or end of the product in the stacks or on rolling stock or motor vehicles. Each of these systems is depicted in an open area with no obstructions and no

mobile or straddle crane in use. This is simply not representative of the environment or operation they are required to be utilized in.

Members of the staff at PCI have reportedly had conversation with the author of the CSG letter. During the discussion, the author admitted never having been in a precast producer's yard to witness the operation prior to or since writing the letter.

In addition, to PCI's knowledge, there are no member locations which have implemented these systems. It should be further noted that both ISEA and CSG are in the business of promoting and manufacturing these systems. They could benefit greatly from seeing their use expanded into new markets and industries. However, their financial gain should not be a factor in promoting a solution that attempts to solve a problem that does not legitimately exist, at substantial risk to the safety of workers across an entire industry.

The photographs included here depict standard arrangement of precast product elements being loaded and unloaded in storage yards across the country.

Typical loading arrangements for Double Tee product.

Precast double tee product is typically produced in widths ranging from 10' to 12', thicknesses ranging from 36" to 52" and lengths often near 100'.

Typical loading arrangements for wall panel and hollow core floor product.

Precast wall panel and hollow-core floor plank are loaded flat also. The typical size range for wall panel in this loading scenario is approximately 10’ to 12’ wide, thickness of between 8” and 14”, and lengths of between 15’ and 50’, dependent upon the building design. Hollow core floor plank is typically 4’ to 6’ wide and can span lengths of 20’ to 60’.

Typical loading arrangements for Other Precast Elements.

These other precast elements can vary widely in height, width, and length. The dimensions depend greatly upon the configuration and use such as building columns and beams up to highway bridge girders and other structural elements.

As can be seen in the photographs, precast products are large and require the use of a straddle crane or mobile truck or crawler crane for loading. Some of the producers, because of constraints in other areas of their yards, will have straddle lifts that are narrow, allowing for straddling of only one product width. Others, with the ability to use a wider lift, will have straddle lifts capable of straddling two or more rows of product. In the case of producers using mobile cranes, because the yards are so large and product is stored across the entirety of the yard, the crane must move from point to point and load out the product onto trailers near where it is stored.

The use of these systems is infeasible in most every yard across the industry for the following reasons:

- They will become entangled in the crane rigging during lifting, travel, and placing. This will create further safety issues including constant damage to the system and potential damage to the travel lifts or other mobile cranes in use.
- In the case of narrow straddle cranes, they simply require more area than is available beneath the crane. The rolling stock or motor vehicle consumes almost the entirety of the space available. There is not adequate space to straddle the product and the system.
- Product is loaded onto rolling stock and motor vehicles in many locations within the yard environment. With the tight constraints, the additional equipment being

moved into the area adjacent the crane will create logistics issues which will add yet another set of hazards. One of these is on the Focus Four hazard list: Caught-In or Between.

- They must be moved into position each and every time that a worker must access the panel stack. This move is performed with the use of a forklift or other large wheeled equipment. This equipment adds an additional element of danger and risk for the workers due to the following conditions.
  - Additional heavy equipment movements with awkward attachments projecting upward near the crane and its rigging causing risk to the ground crew who work with the crane.
  - Tight conditions underneath the straddle crane creating additional risk for damage to the crane, the moving equipment, their operators and ground crew members.

In addition to the use of these systems, ISEA and CSG mentioned "rope grab systems and rope at tie-off points." Conventional personal fall protection devices have traditionally proven to be infeasible for a variety of reasons; no overhead anchorage point, anchoring to points at foot level providing excessive free fall distance, swing fall issues, time to setup system outweighs exposure time which creates more exposure, entanglement with crane rigging, among other issues.

- The Ellis letter provides for a similar application of these "wheeled or fork-lifted devices." Again, all of the photographs and applications depict wide open areas with both mobile vehicles and trailers with no overhead or straddling obstructions. They are simply not usable in the PCI producer applications.

It is our opinion that these entities have solutions that work for certain industries, in certain applications. However, they have attempted to apply them to the precast industry in ways that are not feasible because of the unique circumstances the industry faces.

In addition to being infeasible, it is PCI's opinion that the use of these proposed methods creates a greater danger to the workers in the industry. The use of forklifts for material and equipment movement is recognized as a serious hazard and a leading cause of injury in the workplace. Due to this fact, PCI producer members strive to eliminate unnecessary movements within the operating environment.

Several producer members have calculated the number of movements of a fall protection system that would be required in a year if a system like those proposed could be and was implemented. The number becomes substantial and illustrates the extreme significance of the risk added. Please note that each time a worker must access the top of a piece during loading, the system must be moved in after the straddle lift arrives with the piece, and be moved out after the worker

accesses the piece to detach the rigging. The crane can then leave the area. Based upon this understanding, here is an example for your review.

Fall Protection System Movement Example

	# of pieces	# of moves for system
Average pieces shipped each day to a construction site:	35	
Requires one access at heights to unhook piece on rolling stock or motor vehicle:		2 each
Movements of fall protection system by forklift each day per plant:		**70**
Total movements of the fall protection system each year per plant: (5 days per week, 50 weeks per year)		**17,500**
Total movements across the industry each year using 275 plants:		**4,812,500**

Based upon the example rates above, in an average precast production plant, a worker or pair of workers must ascend to the top of a stack of precast material to perform this short duration task, between two and three minutes, approximately 35 times per day. Over the course of a year, that is 8,750 times per plant or 2,406,250 times per year across the industry. If we are to compare this to the injury statistics shown above, there have been 15 instances of injury in 10 years. That is 15 injuries in 2,406,250 times a worker has accessed the top of a stack. As a percentage, this will not compute to an answer other than zero on most calculators.

As you can see from the data, to force the utilization of a system such as those suggested would trade an operation that has exceedingly low evidence of injury over a sustained history for an operation that has exceedingly high potential for injury and equipment damage. For this reason, we believe the systems suggested by these organizations, and accepted by OSHA as feasible, are truly infeasible and should not be considered viable for our industry.

Other Methods Investigated by Industry Task Group

The members of the Task Group and its Consultant have further investigated other innovations and technology that are emerging. These include; custom developed loading stations and air bag fall protection systems. Each of these have been found to be infeasible due to many of the reasons already stated including; space required inside the crane envelope, available real estate, mobile loading over a large yard area, and damage to the crane or the system itself.

In lieu of the infeasible and dangerous alternatives discussed throughout this document, we offer to strengthen the industry's existing means of controlling this risk. You will find discussion of the proposed Administrative Control on the following page.

Proposed Administrative Control

Seasoned industry safety professionals, with an average of over twenty years of experience each, from several members of PCI have participated in a Task Group in conjunction with an industry leading occupational safety and health consulting firm, Optimum Safety Management, also with over twenty years of precast industry experience. Together, this task group has assembled a thorough Job Hazard Analysis for each of the common loading operations for which we are seeking a Permanent Variance. These operations consist of the following:

- Double Tees flat
- Wall Panels flat
- Hollow Core Floor Plank stacked
- Other Precast Elements stacked

You will find attached a copy of each of these Job Hazard Analysis Templates that our members will be adopting and customizing for use in their facilities, or utilizing an equivalent version.

From this Job Hazard Analysis process, the Task Group and our consultant have developed a Fall Protection Plan for Rolling Stock and Motor Vehicles. This plan follows similar methodology to 1926 Subpart M Appendix E, the Sample Fall Protection Plan - Non-Mandatory Guidelines for Complying with 1926.502(k). You will find a copy of this plan also attached to this application.

The plan outlines the following considerations:

- Introductory comments
- Site Specific Information
- Definitions
- Statement of Company Policy
- Hazard Exposures
- Infeasible / Greater Hazard Controls
- Fall Exposure Controls
- Training
- Fall Protection Plan Enforcement

It is our firm belief that the industry has generally performed well over a long period of time in controlling the risk associated with this activity. Through adoption of this more rigorous and formal process, the industry will indeed secure the safety of its most valuable asset, its workforce.

Fall Protection Plan

Rolling Stock and Motor Vehicles

Developed: May 15, 2017

Implemented:

Revised: Original

This Template Fall Protection Plan has been prepared by Optimum Safety Management™ ("Optimum") and is being presented to the members of the Precast / Prestressed Concrete Institute ("PCI"). The preparation of this plan is being sponsored by PCI, and its contents contain the work and opinions of Optimum.

The document is intended as a guide for the member to use in the development of a plan for its own activities. Direct application to an individual members' organization or circumstances is not intended. The member should take into consideration their particular configuration or practices, and available technology and industry best practices, in final determination of work practices and compliance measures it will utilize.

IN ADDITION, THE METHODS DESCRIBED IN THIS PLAN DO NOT MEET OSHA REQUIREMENTS AT THE TIME OF ITS CREATION. This plan has been developed with the intent of submittal to OSHA as part of a Request for Permanent Variance from 29 C.F.R. 1910.28 (b) (1) for Work Atop Rolling Stock or Motor Vehicles in Precast Plant Yards to Attach/Detach Rigging. **UNTIL SUCH A TIME AS OSHA GRANTS A VARIANCE, EITHER INTERIM, TEMPORARY, OR PERMANENT, UTILIZING THIS PLAN COULD BE CONSIDERED TO BE A VIOLATION OF OSHA STANDARDS AND SUBJECT THE MEMBER COMPANY TO CITATIONS AND PENALTIES.**

OSHA's "Safety and Health Regulations" are continuously being reinterpreted. Therefore, Optimum Safety Management™ is unable to guarantee the exactness of the information conveyed in this publication. Optimum Safety Management™ assumes no responsibility and will be held harmless for any inaccuracies or omissions contained within this manual and will not be held liable to any extent or form for any injury or loss resulting from the manner in which this information is interpreted and/or applied. Precast/Prestressed Concrete Institute member acknowledges that Optimum Safety Management™ has been hired for consultancy and advisory services only. **ENFORCEMENT OF ALL SAFETY AND HEALTH REGULATIONS WILL BE THE SOLE RESPONSIBILITY OF PRECAST/PRESTRESSED CONCRETE INSTITUTE'S MEMBER AND WILL NOT BE THE RESPONSIBILITY OF OPTIMUM SAFETY MANAGEMENT™**. Careful effort has been dedicated in order to provide a simplified, understandable explanation of OSHA regulations based on currently available information. This "Fall Protection Plan" is distributed under the full terms and conditions of the contract in force with Precast/Prestressed Concrete Institute.

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Introduction

This fall protection plan is specific for accessing precast products during loading/unloading operations. Where conventional fall protection is infeasible or creates a greater hazard when preparing products for storage or shipment, the company will only allow properly trained employees to access the product piece for the time necessary to complete rigging activities. This plan establishes that employees are to access the product piece and only for the time necessary to attach or detach rigging. No other activity is allowed or permitted. Multiple employees will be designated and trained to perform the activity on the selected product piece.

Product pieces are manufactured in a variety of shapes and sizes based on the client's design specifications. Typical product pieces include wall panels, architectural wall panels, floor panels, double tees, beams and columns. When produced, the products are moved from the plant to the storage yard. When ready for shipping, they are moved to either a rail car or motor vehicle. This plan is specific to accessing a product piece for the purposes of hooking or unhooking rigging to ready the piece(s) for stacking in storage or shipping via rail car or motor vehicle.

Site Specific Information

- Location:
- Date Prepared:
- Plan Prepared by (Qualified Person):
- Plan Approved by:
- Designated Employees:
    - o
    - o
    - o
    - o
    - o
    - o
    - o
    - o
    - o
    - o
- Competent Persons:
    - o
    - o
    - o
    - o
    - o
    - o
    - o

Definitions

"Competent Person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

"Designated Employee" means an employee who conforms to the following:

- The designated employee will be trained in the proper procedures to be followed to access the "Limited Access Zone" and "Work Zone".
- The designated employee will be named in this plan or designated by a method of identification listed in this plan.

"Limited Access Zone" means an area on top of a precast concrete product that conforms to the following:

- The limited access zone will be restricted to entry by a "Designated Employee" that is passing though for access to the "Work Zone". No other employees will be permitted to enter the zone.
- The limited access zone will consist of the area between the "Work Zone" and the edge of the piece.

"Motor Vehicle" means any commercial van or truck, including tractor trailer or flatbed.

"Qualified Person" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated their ability to solve or resolve problems relating to the subject matter, the work, or the project.

"Rolling Stock" means any locomotive, railcar, or vehicle operated exclusively on rails.

"Work Zone" means an area on top of a precast concrete panel that conforms to the following:

- The work zone will be separated from the edge by the "Limited Access Zone".
- The work zone will be designated as the area inside the rigging attachment points utilized to lift the concrete product.

Statement of Company Policy

COMPANY NAME is dedicated to the protection of its employees from on the job injuries. All employees have the responsibility to work safely on the job.

The purpose of this plan is:

(a) To supplement our standard safety policy by providing safety standards specifically designed to cover fall protection during securement of products on rolling stock or motor vehicles and:

(b) to ensure that each employee is trained and made aware of the safety provisions which are to be implemented by this plan prior to start of all product loading/unloading actions in the yard.

This fall protection plan addresses employees four feet or more above ground elevation when working on precast products being loaded/unloaded on or from rolling stock or motor vehicles and the use of conventional fall protection is infeasible or creates a greater hazard. Specific Job Hazard Analyses (JHAs) are developed to provide clear instruction for accessing work on these surfaces. These include:

- Beam and Column loading/unloading
- Double Tee loading/unloading
- Wall Panel loading/unloading
- Wall Panel Vertical or A-Frame loading/unloading
- Floor Plank loading/unloading

This plan is designed to enable the company and employees to recognize the fall hazards when on top of precast products for rigging purposes during preparation for loading/unloading and to establish procedures that are to be followed in order to prevent falls to lower levels. Each employee will be trained in these procedures and strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee will notify the Competent Person of the concern and address it before proceeding.

It is the responsibility of the Competent Person to implement this Fall Protection Plan. The Competent Person is responsible for continual observational safety checks of their work operations and to enforce safety policy and procedures. The Competent Person is also responsible to correct any unsafe acts or conditions immediately. It is the responsibility of the employee to understand and adhere to the procedures of this plan and to follow the instructions of the foreman. It is also the responsibility of the employee to bring to the Competent Person's attention any unsafe or hazardous conditions or acts that may cause injury to either themselves or any other employees. Any changes to this Fall Protection Plan must be approved by the Qualified Person.

Hazard Exposures

Fall from Heights

Employees are exposed to falls greater than four feet when attaching/detaching the rigging on product pieces being prepared for shipment; typically flat wall panels, beams, columns, floor planks, double tees and flat panels secured to vertical or A-frame type support frames.

Trip Hazards

Wall panels sometimes have haunches extending from the surface of the panel. A haunch serves as a support for other components such as beams. These protrude from the surface, but are sizable and easily recognized as a trip hazard. Double tee surfaces sometimes have minimal changes in elevation. Beams and other structural elements often have attachment points and rebar loops protruding from the top surface.

Infeasible / Greater Hazard Controls

OSHA's Walking/Working Surface standard 1910.28(b)(1)(i) "unprotected sides and edges" states that "each employee on a walking-working surface with an unprotected side or edge that is 4 feet or more above a lower level is to be protected from falling by one or more of the following:

- Guardrail systems;
- Safety net systems; or
- Personal fall protection systems (personal fall arrest, travel restraint, or positioning systems).

As it relates to accessing precast product pieces in preparation for loading/unloading, attaching or detaching the rigging, the precast industry has determined that guardrail systems, safety nets, controlled access zones, and safety monitor systems are infeasible. Additionally, the precast industry has determined that personal fall protection systems are infeasible and create a greater hazard.

The following are reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems, or safety net systems) are infeasible or why their use would create a greater hazard.

- Guardrail Systems – INFEASIBLE:
  The time it would take to access the top of a piece and install guard rails would exceed the amount of time that it takes an employee to perform the tasks covered under this fall protection plan. This would lead to more time of exposure to the same fall hazard. Additionally, the extra traffic by fork lifts that would be required to move the necessary equipment would pose more of a risk.

- Safety Nets – INFEASIBLE:
  The time it would take to access the top of a piece and install and test safety nets would exceed the amount of time that it takes an employee to perform the tasks covered under this fall protection plan. This would lead to an increase in the time of employee exposure to the same hazard.

- Personal Fall Arrest Systems – INFEASIBLE:
  The precast pieces are being moved by a mobile gantry crane, lattice or hydraulic boom mobile crane. The mobile gantry crane is a frame work on four wheels that passes over the trailer, therefore preventing installation of overhead anchor points on any structure. The other types of cranes also have boom angles and swing radii movement requirements for proper positioning of the load on the trailer. These crane designs and movements are what makes the installation of personal fall arrest systems infeasible. Due to the necessity of crane operations for handling material, there is no feasible solution for utilizing anchor points for a fall arrest system that would not interfere with the operation of the crane.

- Personal Fall Arrest Systems – GREATER HAZARD:
  Due to the nature of the cranes that are used to move the pieces, entanglement with any devices used to offer an overhead anchor point would pose a greater hazard to the employee

than those offered by this fall protection plan. Additionally, the extra traffic by fork lifts that would be required to move the necessary equipment would pose more of a risk.

- Mobile Fall Protection Systems – INFEASIBLE:
  Mobile fall protection systems cannot be utilized due to the nature of the work, attaching or detaching rigging from the product piece. The piece is secured by a large lifting beam (strongback), typically more than fifty feet long, approximately three to four feet wide and the accompanying chains, wire rope slings and rolling blocks, all placed to maintain the product piece in the loading position. Mobile fall protection devices would have to be moved to a position under the crane. The attachment point would be near or close to the edge because the lifting beam is on the centerline of the product being placed for shipment. Any movement of another piece of equipment in close proximity to the crane poses a great danger of obstructing the crane and potentially damaging the rigging.

  The mobile equipment would also need to be positioned so that it is likely too close to the crane wheels, or placed under the boom structure, creating potential obstruction situations. The movement of a mobile fall protection system also requires a means of transport, either positioned by fork truck or pulled by truck. Vehicular traffic then creates another hazard to employees.

- Warning Line System – INFEASIBLE:
  Due to the engineered design requirements for attachment (lifting) points, there is no feasible way to reach the rigging attachment points while maintaining six feet distance from the edge of the piece. Typical product widths are between 3 and 12 feet. Additionally, the time it would take to access the top of a piece and install a warning line system would exceed the amount of time that it takes an employee to perform the tasks covered under this fall protection plan. This would lead to more time of exposure to the same fall hazard.

- Safety Monitor System – GREATER HAZARD:
  Due to the limited surface area of the precast pieces, the addition of another employee on the same surface would unnecessarily increase the total time in which an employee was exposed to a fall hazard.

Fall Exposure Controls

OSHA's standard 1910.28(b)(1)(ii) states that when the employer can demonstrate that it is not feasible or creates a greater hazard to use guardrail, safety net, or personal fall protection systems on residential roofs, the employer must develop and implement a fall protection plan that meets the requirements of 29 CFR 1926.502(k) and training that meets the requirements of 29 CFR 1926.503(a) and (c).

In applying this variance for residential roofs to precast products on rolling stock or motor vehicles for rigging tasks, this fall protection plan meeting the requirements of 29 CFR 1926.502(k) will be followed.

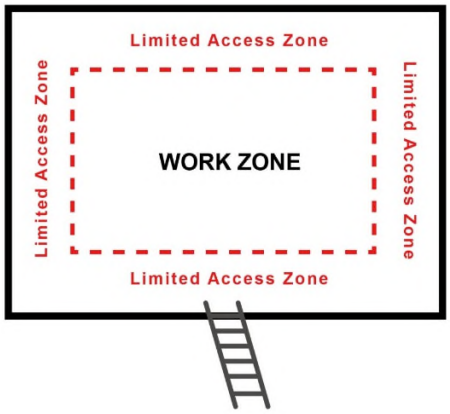
This fall protection plan has been prepared by qualified people and is developed specifically for our company's facility where the loading/unloading of precast concrete products is being performed. This plan will be maintained up to date and any changes to the fall protection plan will be approved by the Qualified Person. A copy of this fall protection plan with all approved changes will be maintained on site at all times. Additionally, the implementation of this fall protection plan will be under the supervision of a Competent Person.

In the event that an employee falls, or some other related serious incident occurs, (e.g., a near miss) the company will investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training). If changes are made they will be implemented to prevent similar types of falls or incidents. These changes will be approved by the Qualified Person.

The Work Zone is designated as the area within the corner lifting device attachment points of the product. The Limited Access Zone is designated as the area outside of the Work Zone, extending to the edge of the product. Designated Employees are trained to access the product and pass through the Limited Access Zone to the Work Zone. All rigging detaching tasks are to be completed within the Work Zone.

On beams, columns and floor planks, the width of the surface may limit the ability of the Designated Employee to establish a Work Zone and a Limited Access Zone. In these instances, the Designated Employee will maintain as much distance between themselves and the edge as possible while on top of the precast concrete piece, and face the wider dimension of the surface.

The attached JHA's describe the tasks, potential hazards and recommended actions to perform the work safely. Employees are exposed to falls at the placement of the first product piece and thus this fall protection plan is in effect at the outset of the work.



Plan View-Flat Panel with means of access, Limited Access Zone and Work Zone

Training

Only individuals with the appropriate experience, skills, and training will be authorized as designated employees. All employees that will be working as designated employees under this fall protection plan will be trained and instructed by a Competent Person in the following areas:

- Recognition of the fall hazards in the work area;
- Avoidance of fall hazards using established work practices which have been specified by a Job Hazard Analysis, and made known to the employees;
- Recognition of unsafe practices or working conditions that could lead to a fall, such as windy conditions; and
- The role of employees in this fall protection plan.

Retraining - When the Competent Person has reason to believe that any designated employee does not have the understanding and skill required to compete tasks according to this plan, the designated employee will be retrained. Circumstances where retraining is required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete;
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete; and
- Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Fall Protection Plan Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The Competent Person, as well as individuals in management, reserves the right to issue disciplinary warnings to employees for failure to follow the guidelines of this program. The form of the discipline will be the responsibility of the management and will comply with the company's discipline policy, up to and including termination.

Developed By:

Job Hazard Analysis (DRAFT TEMPLATE)
Double Tees on Rolling Stock and Motor Vehicles

Date Developed:	Conducted by:	Date Revised:
Location:	Area:	Revised by:

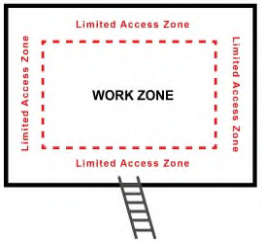
Certification of Hazard Assessment (Management)

Print:	Sign:	Date:

Personal Protective Equipment

Required at all times: Hard hat, safety glasses, high visibility shirt or safety vest, hand protection and safety footwear
Task specific: Gloves, hearing protection when appropriate

Task ID	Task Description	Potential Hazards	Recommended Actions
1	Assess worksite conditions	Weather	Perform any steps that are required to mitigate weather effects
		Lighting	Provide lighting if necessary
		Slips, trips, falls	Ensure that walking surfaces are clear of hazards
2	Offset load to set dunnage	Crush hazard	When setting dunnage on trailer have load positioned so the operation can be completed without working under the suspended load
3	Set up ladder for access	Defective ladder	Inspect ladder according to manufacturer instructions
		Ladder instability	Ensure level ground condition Place ladder at 4:1 angle Select proper ladder foot pad position (soft or hard surface) Extend ladder at least three feet above landing surface Secure or stabilize to prevent accidental displacement
		Strain	Get assistance to carry ladder Position body to place ladder
4	Climb ladder	Tip over	Maintain body position with belt buckle between rails
		Slip from rungs	Soles of footwear will be in good condition Clean soles of mud, snow, etc.
		Fall	Maintain three points of contact and face the ladder Do not carry any items, dunnage will be moved with the load, not by hand

5	Access top of piece	Slips, trips, falls	Pause prior to leaving the ladder and survey top of piece for debris, dunnage and slack slings Identify any blockout, angle iron attachment and haunches Plan the path of travel to the furthest attachment point Do not travel along a blockout if walkway is less than 28" wide Be aware of changes of elevation
6	Identify Limited Access Zone and Working Zone	Fall	Identify Limited Access Zone as the space beyond the lifter locations to the edge of the piece Identify Work Zone as the area within the lifter locations Perform all work from within the Work Zone Position the body to face the nearest edge at all times; never turn your back to the edge or step backwards 
7	Detach rigging and taglines	Laceration Fall Strain Trip	Be aware of broken wire and burrs on hardware before placing hands Position the body to face the nearest edge at all times; never turn your back to the edge Bend at the knees when stooping to attach rigging Walk to other attachment points staying aware of surface hazards, working back towards ladder
8	Descend from top of piece	Fall	Determine best side of the ladder to access Maintain body position with belt buckle between rails Maintain three points of contact and face the ladder Do not carry items Ensure ladder is secured
9	Remove ladder	Strain Trip	Position body to remove ladder from vertical position Get assistance to carry ladder Survey path of travel to ladder storage location

Developed By:

OPTIMUM SAFETY MANAGEMENT

PCI Precast/Prestressed Concrete Institute

Job Hazard Analysis (DRAFT TEMPLATE)
Wall Panels on Rolling Stock and Motor Vehicles - Flat

Date Developed:	Conducted by:	Date Revised:
Location:	Area:	Revised by:

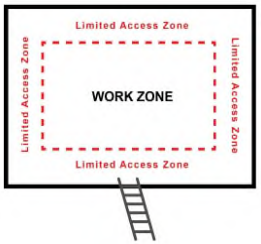
Certification of Hazard Assessment (Management)

Print:	Sign:	Date:

Personal Protective Equipment

Required at all times: Hard hat, safety glasses, high visibility shirt or safety vest, hand protection and safety footwear
Task specific: Gloves, hearing protection if appropriate

Task ID	Task Description	Potential Hazards	Recommended Actions
1	Assess worksite conditions	Weather	Perform any steps that are required to mitigate weather effects
		Lighting	Provide lighting if necessary
		Slips, trips, falls	Ensure that walking surfaces are clear of hazards
2	Offset load to set dunnage	Crush hazard	When setting dunnage on trailer have load positioned so the operation can be completed without working under the suspended load
3	Set up ladder for access OR access trailer from rear of spotter tractor	Defective ladder	Inspect ladder according to manufacturer instructions
		Ladder instability	Ensure level ground condition Place ladder at 4:1 angle Select proper ladder foot pad position (soft or hard surface) Extend ladder at least three feet above landing surface Secure or stabilize to prevent accidental displacement
		Strain	Get assistance to carry ladder Position body to place ladder
4	Climb ladder	Tip over	Maintain body position with belt buckle between rails
		Slip from rungs	Soles of footwear will be in good condition Clean soles of mud, snow, etc.
		Fall	Maintain three points of contact and face the ladder Do not carry any items

5	Access top of piece or trailer	Surface hazards	Pause prior to leaving the ladder and survey top of piece for debris, dunnage and slack slings Identify any blockout, angle iron attachment and haunches Plan the path of travel to the furthest attachment point Do not travel along a blockout if walkway is less than 28" wide Be aware of changes of elevation
6	Identify Limited Access Zone and Working Zone	Fall	Identify Limited Access Zone as the space beyond the lifter locations to the edge of the piece Identify Work Zone as the area within the lifter locations Perform all work from within the Work Zone Position the body to face the nearest edge at all times; never turn your back to the edge or back up 
7	Detach rigging and taglines	Laceration Fall Strain Trip	Be aware of broken wire and burrs on hardware before placing hands Position the body to face the nearest edge at all times; never turn your back to the edge Bend at the knees when stooping to attach rigging Walk to other attachment points staying aware of surface hazards, working back towards ladder
8	Descend from top of piece	Fall	Determine best side of the ladder to access Ensure bottom is secured Maintain body position with belt buckle between rails Maintain three points of contact and face the ladder Do not carry items
9	Remove ladder	Strain Trip	Position body to remove ladder from vertical position Get assistance to carry ladder Survey path of travel to ladder storage location

Developed By:

Job Hazard Analysis (DRAFT TEMPLATE)
Beams & Columns on Rolling Stock and Motor Vehicles

Date Developed:	Conducted by:	Date Revised:
Location:	Area:	Revised by:

Certification of Hazard Assessment (Management)

Print:	Sign:	Date:

Personal Protective Equipment

Required at all times: Hard hat, safety glasses, high visibility shirt or safety vest, hand protection and safety footwear
Task specific: Gloves, hearing protection when appropriate

Task ID	Task Description	Potential Hazards	Recommended Actions
1	Assess worksite conditions	Weather	Perform any steps that are required to mitigate weather effects
		Lighting	Provide lighting if necessary
		Slips, trips, falls	Ensure that walking surfaces are clear of hazards
2	Offset load to set dunnage	Crush hazard	When setting dunnage on trailer have load positioned so the operation can be completed without working under the suspended load
3	Set up ladder for access OR access trailer form rear of spotter tractor	Defective ladder	Inspect ladder according to manufacturer instructions
		Ladder instability	Utilize manufactured trailer ladder if possible. If not; Ensure level ground condition Place ladder at 4:1 angle Select proper ladder foot pad position (soft or hard surface) Extend ladder at least three feet above landing surface Secure or stabilize to prevent accidental displacement
		Strain	Position body to place ladder Get assistance to carry ladder
4	Climb ladder	Tip over	Maintain body position with belt buckle between rails
		Slip from rungs	Soles of footwear will be in good condition Clean soles of mud, snow, etc.
		Fall	Maintain three points of contact and face the ladder Do not carry any items

5	Access top of piece	Slips, trips and falls	Pause prior to leaving the ladder and survey top of piece for debris, dunnage and slack slings Identify any blockout, angle iron attachment and haunches Plan the path of travel to the furthest attachment point Be aware of changes of elevation
6	Detach rigging and taglines	Laceration Fall Strain Trip	Be aware of broken wire and burrs on hardware before placing hands Position the body to face the widest dimension of the surface at all times Bend at the knees when stooping to attach rigging Walk to other attachment points staying aware of surface hazards, working back towards ladder and always moving in a forward direction
7	Descend from top of trailer	Fall	Determine best side to access ladder Maintain body position with belt buckle between rails Maintain three points of contact Do not carry items Secure or stabilize to prevent accidental displacement
8	Remove ladder	Strain Trip	Position body to remove ladder from vertical position Get assistance to carry ladder Survey path of travel to ladder storage location

Developed By:

Job Hazard Analysis (DRAFT TEMPLATE)
Floor Planks on Rolling Stock and Motor Vehicles

Date Developed:	Conducted by:	Date Revised:
Location:	Area:	Revised by:

Certification of Hazard Assessment (Management)

Print:	Sign:	Date:

Personal Protective Equipment

Required at all times: Hard hat, safety glasses, high visibility shirt or safety vest, hand protection and safety footwear
Task specific: Gloves, hearing protection when appropriate

Task ID	Task Description	Potential Hazards	Recommended Actions
1	Assess worksite conditions	Weather	Perform any steps that are required to mitigate weather effects
		Lighting	Provide lighting if necessary
		Slips, trips, falls	Ensure that walking surfaces are clear of hazards
2	Offset load to set dunnage	Crush hazard	When setting dunnage on trailer have load positioned so the operation can be completed without working under the suspended load
3	Set up ladder for access OR access trailer form rear of spotter tractor	Defective ladder	Inspect ladder according to manufacturer instructions
		Ladder instability	Utilize manufactured trailer ladder if possible. If not; Ensure level ground condition Place ladder at 4:1 angle Select proper ladder foot pad position (soft or hard surface) Extend ladder at least three feet above landing surface Secure or stabilize to prevent accidental displacement
		Strain	Position body to place ladder Get assistance to carry ladder
4	Climb ladder	Tip over	Maintain body position with belt buckle between rails
		Slip from rungs	Soles of footwear will be in good condition Clean soles of mud, snow, etc.
		Fall	Maintain three points of contact and face the ladder Do not carry any items

5	Access top of piece	Slips, trips and falls	Pause prior to leaving the ladder and survey top of piece for debris, dunnage and slack slings Identify any blockout, angle iron attachment and haunches Plan the path of travel to the furthest attachment point Be aware of changes of elevation
6	Detach rigging and taglines	Laceration Fall Strain Trip	Be aware of broken wire and burrs on hardware before placing hands Position the body to face the widest dimension of the surface at all times Bend at the knees when stooping to attach rigging Walk to other attachment points staying aware of surface hazards, working back towards ladder and always moving in a forward direction
7	Descend from top of trailer	Fall	Determine best side to access ladder Maintain body position with belt buckle between rails Maintain three points of contact Do not carry items Secure or stabilize to prevent accidental displacement
8	Remove ladder	Strain Trip	Position body to remove ladder from vertical position Get assistance to carry ladder Survey path of travel to ladder storage location