

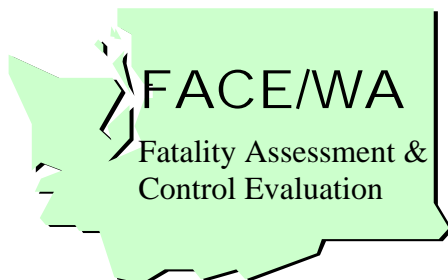
Temporary Construction Worker Dies After Falling from a Scaffold Plank in Washington State

FATALITY INVESTIGATION REPORT



Investigation: # 02WA01901
SHARP Report: # 52-16-2007

Release Date: June 25, 2007



WA FACE Program/SHARP
PO Box 44330
Olympia, WA 98504-4330
(888) 667-4277
<http://www.lni.wa.gov/safety/research/face>

Temporary Construction Worker Dies After Falling from a Scaffold Plank in Washington State

Investigation: #02WA01901

Release Date: June 25, 2007

SHARP Report: #52-16-2007

SUMMARY

In April of 2002, a 43-year-old male temporary laborer was fatally injured when he fell from a scaffold plank. The victim had been hired through a temporary labor service to work one day for a roofing contractor as additional help on a roofing job in a residential neighborhood. The victim was working with a crew of six laborers and a supervisor on a roof tear-off at a home in western Washington State. The workers were removing old roofing material and hand-carrying the debris in metal trash cans from the roof, and dumping the debris into a truck located adjacent to the roof. The roofing contractor used a ladder-jack scaffold plank as a walking platform for the workers to use while carrying the debris from the roof to the truck. The victim was hand-carrying an armful of debris across the plank to the truck, when he fell approximately 9 feet to an asphalt driveway below. He was unconscious and unresponsive with an obvious serious head wound suffered from the fall. Medical assistance was called and he was transported to an area trauma center where he died of his injuries several days later.

To prevent similar occurrences in the future, the Washington State Fatality Assessment & Control Evaluation (FACE) investigative team concluded that employers engaged in roofing work, or similar operations, should follow these guidelines:

- **Employers are responsible for assessing hazards and implementing fall prevention and protection measures before starting a job, and for re-evaluating the hazards and protection measures during the course of the roofing work.**

- **Jobs should be designed to minimize fall exposures. An alternate method could be used to eliminate the need for walking between the roof and debris truck.**
- **Conduct pre-job safety meetings to discuss site safety & health issues and to review potential fall hazards and appropriate fall prevention measures.**
- **Provide employees with fall hazard assessment training by a competent person.**
- **Temporary employment service agencies should work with secondary employers to ensure that specific job descriptions, training criteria, and hazard analyses have been completed for each job assigned to temporary employees.**
- **Employers should provide appropriate fall protection equipment for all workers who may be exposed to a fall hazard.**

INTRODUCTION

In April of 2002, the Washington State FACE Program was notified by the WISHA* (Washington Industrial Safety & Health Act) Services Division of the death of a 43-year-old male temporary laborer. The Washington Fatality Assessment & Control Evaluation (FACE) Principal Investigator and the Field Investigator met with the regional WISHA representative who was investigating the case.

After reviewing the case with WISHA, the WA FACE team traveled with the WISHA representative to the incident site which was a residential area located in western Washington State.

The WISHA representative helped pinpoint the incident location, some of the specific site details and defined the position of the people and equipment involved in the incident. Photographs, incident reports, police and other investigation reports, and news articles were also reviewed as part of the FACE evaluation of the fatal fall incident.

The Field Investigator was not able locate a representative of the roofing contractor who had hired the victim through a temporary agency. Calls were made to the last known phone number for the company and internet searches were made to try find the roofing contractor, but with no positive result. Checking the on-line Washington State Contractor Registry showed that the roofing contractor's license had expired sometime shortly after the incident.

The FACE team next tried to contact the victim's "primary" employer, the temporary employment agency, to discuss the elements of the incident and to discuss the temporary agency's perspective of the case and to review their safety program. Interviews were conducted with a temporary agency representative (the corporate safety manager). The FACE team reviewed the temporary agency's safety & health program, and their company safety criteria. Aspects related to the fall fatality were discussed and some specific aspects of the incident were reviewed.

* The OSHA State Plan program in Washington State.

The incident site was a single family residence located in a fairly densely populated suburban community in western Washington State. There were no commercial buildings or businesses located in the area. The street where the single family home was located was a secondary street within that residential area, and most of the traffic that would flow through the area would consist of local traffic only. The incident site residence was situated on a hillside. From street level, you would look down to the residence. In order to access the residence you would need to drive down a fairly steep-sloped driveway. Once down the driveway, the slope leveled-off into a flat area that extended to a detached garage at the end of the driveway.

The driveway and the garage were located slightly above the residence along this hillside location. In order to access the main entrance to the residence, you need to go down a few steps from the driveway to get to the front door. When standing on the driveway looking at the residence, you could almost look directly at the lower edge of the roofline at that point (Please refer to photos in the Appendix for views of the incident area).

The roofing contractor parked the truck that they were using for roofing debris along the flat area of the driveway, in front of the garage and adjacent to the house. On the date of the incident, the roofing company owner-operator, two direct-hire employees (roofing company workers) and four temporary agency laborers made up the work crew that were to perform the roof tear-off of the old roofing materials and help prep it for a new roof installation.

The weather that morning was clear, mild and dry, and was not considered a factor in the incident. The work plan for the day was to do the roof tear-off and then prep the roof so that it could be re-roofed on the following day. The contractor had performed this type of work many times, and had indicated that this job was fairly routine, even when taking into consideration the topography involved with this job.

The roofing contractor set-up a scaffolding plank from the roof of the residence to the debris truck. The plank was to be used by the workers as a walking-surface/ramp to travel back and forth from the roof carrying the roof debris to the truck. The walking-surface plank/ramp had no protective side-rails or guardrails attached nor where there any available for this type of manufactured plank.

The ramp or walking-surface plank was a manufactured scaffold plank. It was a Stinson® plank, from the Stinson manufacturing company. Stinson makes and sells a variety of scaffolds, loading ramps, ladder jacks, fall arrest equipment, ladders and ladder accessory products. The Stinson® scaffold plank was an aluminum, channeled plank with a wood surface. It measured 14 inches in width by 19 feet 6 inches in length. It weighed 61 pounds and was rated to hold 500 pounds.

The roofing owner-operator had contacted an area temporary employment agency, requesting to hire four temporary laborers to work on the roofing project. Between 8:00 and 8:30 AM that morning, four temporary agency workers/laborers arrived at the work site. The roofing contractor owner very briefly reviewed the scope of the job with the workers. The crew then shortly after this brief meeting, started to work on the roof tear-off.

Ladders were set on the lower (i.e., downhill) sections of the residence for access onto the roof, but at the front entrance, on the up-hill side of the house the work-crew got onto the roof by climbing the railing that led to the residence front entrance (see photo 1). The crew began the roof tear-off, removing the old concrete tile roofing shingles and roofing felt, and dumping the debris into the dump truck. The workers, using the ramp/walking-surface plank, would either hand carry the old roofing material or use metal trash cans to move the roofing debris to the dump truck.

The roofing contractor involved in this incident was a small business owner-operator. He employed only one or two full to part-time direct-hire employees during the year. He would fill in other worker/labor needs by hiring from area temporary agencies, such as the contractor did with this roofing job. The contractor was a hands-on business owner. He was not only running and operating the business, but he also acted as the site supervisor and worked directly along side the other workers on the roofing jobs. The roofing contractor had been in business for over 15 years.

The contractor previously worked for other roofing companies off and on since 1979, and was very experienced with work in the roofing industry. Because the roofing company was a small business, the owner-operator was the person who took on the responsibilities of the operations safety processes. WISHA (now DOSH) interviews with the roofing company owner indicated that the owner was not very knowledgeable about even general health and safety processes and had only basic knowledge about WAC (Washington Administrative Code) rules

for the construction industry. The roofing contractor did not have an Accident Prevention Plan or a Safety Manual defining safety and health guidelines for the company roofing operation. There was no documentation and apparently the roofing company did not conduct any safety training for its employees.

The temporary employment agency, the victim's primary employer, had been in business for a little more than 12 years at the time of the incident. The temporary agency is a multinational provider of temporary employees for manual, light industrial and skilled construction jobs. The victim had been contracted via a local office close to the roofing work site.

The corporate and regional offices of the temporary agency provide oversight for the local office health and safety processes and training, and assign responsibilities and guidance to the local office staff. When a new employee signs with the agency, a local staff member provides a general safety orientation to the new employee. The local office also provides for interaction with the secondary employer regarding health and safety issues and review of the type of work and exposures the temporary worker that will be involved with on the job.

The secondary employer (the roofing contractor) involved in the incident had a regular working relationship with the temporary agency to hire laborers. The temporary agency had records and signed documents showing that the victim had participated in the agency's basic health and safety training prior to entering employment with the roofing contractor. Specific training related to the employee's job and the roofing contractor's safety process was to be conducted by the roofing contractor.

On the date of the incident, it was noted that the contractor did not conduct or review any safety practices related to the roof tear-off nor did they discuss any fall prevention/protection measures. At approximately 1:40 PM, in April 2002, one of the temporary agency employees (the victim) fell from the ramp/walking-surface, while carrying an armful of debris from the roof to the dump truck.

INVESTIGATION

In April of 2002, on a Monday morning, a small roofing contractor was preparing for that day's roofing project. The owner-operator and two employees drove to the job site, which was located in a suburban residential community in western Washington State.

The roofing company owner-operator and two direct-hire employees (roofing company workers) arrived at the work zone shortly between 7:30 and 8:00 AM in the morning. The incident work site was a single-family residence located off of a secondary street. The contractor planned to perform a roof tear-off (i.e., removing the old roof) that day and prepare the house to be re-roofed on the following day.

The weather and environmental conditions for that spring morning were good. It was a dry, warm, sunny day, and generally a good day to be working on a roof in western Washington State. The house and property were situated on a fairly steep hill, but was reasonably accessible for work on the roof.

The contractor backed his truck down the work site residence steep driveway to a flat area in front of the homeowner's garage. Because of the property's location on a hillside, the driveway and thus the truck were on the up-slope side of the property. When you stood on the driveway you needed to walk down steps to get to the front entrance. Also when standing on the driveway and looking toward the house, one was looking at the residence roof edge.

The roofing company truck was a 1983 Chevrolet dump truck with high panel sides. The truck would be used to collect the roofing debris from roof tear-off. The truck was parked parallel to the house and the top panels of the truck were close to being at the same height as the roof peak.

The contractor took out a Stinson® scaffold plank from the back of the truck and then placed one end of the plank on the top of the back left side panel of the dump truck, and the other end was placed on the residence roof. This manufactured scaffold plank was a key causal factor in this incident. The plank was very narrow and not intended for this type of application. It had unprotected sides, i.e. no guardrails and this particular plank was not designed to have rails attached to the plank.

An unusual aspect related to the placement of the plank for this job was that it was set on an upward slope or an up-hill angle from the roof to the truck. It was

estimated that the plank was at an approximate 12° angle going up from the roof to the truck. The roofing contractor stated that he set up the walking-surface because he could not park the truck close enough for the workers to throw the debris into the truck from the roof.

The upward angle was created partially due to the topography of the property and the relationship of the elevated driveway to the residence located on a hillside. The angle of the plank was also dictated by the length of the plank. Because of the length of the plank, it had to be positioned lower on the roof in order for it to reach the side of the dump truck. This forced the plank to be positioned in an upward angle from the roof to the truck. (see photo 1).

At around 8:30 AM four temporary employment agency workers/laborers arrived at the work site. They had been hired earlier by the roofing contractor to work on the roofing project. The seven-person work crew, which included the owner/operator, the two roofing company employees and the four temporary agency workers, met briefly to review the job.

The crew's job was to remove the old roof and associated roofing material (i.e., roofing felt), and deposit the debris into the dump truck. The old roof material that was to be removed was a concrete-formed shake, so it was relatively heavy. The roofing contractor had several 30-gallon metal trash cans brought to the roof for use in handling the debris.

The workers were to use the trash cans to load the roofing debris in and then carry the trash cans across the ramp/walking surface, and dump the material into the back of the dump truck, then go back to the roof to collect more debris. The workers estimated that each trash can load weighed between 30 to 50 pounds per load of debris taken to the truck. Some of the workers used the metal trash cans, or as an alternative, hand carried roofing debris to the dump truck.

The roof tear-off progressed during the day, with the roofing contractor-owner and the two direct-hire roofing employees replacing roof sheathing and flashing as needed on areas where the old roofing material had been torn off. The operation was progressing at a steady pace, when sometime around 1:40 pm one of the temporary agency workers grabbed a handful of the roofing debris and proceeded to get onto the ramp/walking-surface, walking toward the dump truck.

The victim walked up the scaffold plank and somewhere near the highest point on the plank, near the dump truck, the victim fell approximately 9 feet to the concrete driveway.

The victim suffered a serious head injury as a result of the fall from the narrow scaffold plank. No one saw the victim fall, but several heard the victim briefly cry out and they then heard him strike the driveway. The company owner and the workers rushed to see how the victim was doing. They found the victim curled in a fetal position with an obvious serious head wound.

The victim was unconscious and was having trouble breathing. Several of the workers were going to try moving him and change his position, but the owner warned against moving the victim. They called 911. An emergency rescue team arrived at the scene in an estimated ten minutes time. The victim was transported to a hospital trauma center where he died two days later from his injuries.

CAUSE OF DEATH

The medical examiner listed the cause of death as cerebral contusions and acute epidural hematoma due to, or as a consequence of, blunt force injury of the head and neck.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Employers are responsible for assessing hazards and implementing fall prevention/protection measures before starting a job.

All of the hazards of the work site should be reviewed and evaluated prior to the start of any job. Since this job consisted of a roof tear-off, followed by the installation of a new roof, much of the hazards discussion should have been centered around the fall hazards associated with debris removal and the subsequent activities related to the new roof installation.

Safety reviews should start at the pre-job planning stage. Hazard assessments and hazard reviews should continue even after the job has started. There should be some additional safety reviews of the job site as the work progresses. All work-site hazards should be reviewed to include each facet of the job, and further evaluated to ensure that the job can be accomplished as safely as possible.

Conducting pre-job hazard reviews, effectively training employees in potential job hazards, taking steps to remove hazards via fall protection methods that were identified in the pre-job hazard reviews, should be basic elements in a safety and health process. The hazard assessment should define: the work areas, the hazards of the work being performed, potential emergency situations, and hazard prevention methods related to the roofing job. The hazard assessment should be coupled with implementation of safety measures and appropriate protective equipment.

Periodic job site hazard assessments that look for additional hazards, and then the application of corrective action to address the identified hazards, round out the site safety and health process.

In combination, these actions and activities can go a long way to establish a solid safety and health process that will help reduce the risk of injury to employees on the job.

Recommendation #2: Jobs should be designed to minimize fall exposures. An alternate method could be used to eliminate the need for walking between the roof and debris truck.

The contractor was very comfortable with working at heights and working from roofs. He did not consider the activities related to the roof work to be done that day to be hazardous since he had done this same type of job many times over the years. The roofing contractor, in this incident, had set up the work site much the same way he always had done it in the past. He positioned a ladder-jack scaffold plank to use as a walking surface/ramp that extended from the roof of the single family home to the high-side dump truck being used to collect the roofing debris.

The plank was used to facilitate moving the roof tear-off debris from the roof to the dump truck. The problem with this setup was that they used a narrow, unguarded scaffold plank to travel and carry debris from the roof to the dump truck, exposing the worker to a fall hazard during each trip. The manufacture of the ladder-jack scaffold plank had not intended it to be used as a ramp, but had designed it to be a part of a ladder-jack scaffold system. The use of the scaffold plank as a walking surface/ramp in this case probably contributed in the death of the temporary laborer. This was the wrong tool for the job. An appropriate ramp would be designed with proper guardrails, walking width, weight-bearing capacity, and method of securement.

To prevent deaths and serious injuries due to falls from elevation, employers/contractors should use a variety of preventive measures to help ensure the safety of their workers. In this incident a small bucket loader could have been rented by the roofer and positioned so that the bucket extended to the edge of the roof to collect debris removed from the roof tear-off. Then when the bucket was full it could dump the contents into the back of the dump truck. In some instances, with the right topography and access to the building, the roofing contractor could use a chute extending from the roof into the debris truck. The workers would then dump the roof debris directly down the chute into the truck.

Still another possibility to consider, especially if the above options were not available, would be to position a debris hopper or container at a strategic location or locations for workers to dump the old roofing debris and materials into. The hoppers could then be moved using appropriate lift equipment and loaded into the dump truck.

In each of these alternative methods, the workers fall exposure from a very narrow, unguarded plank could have been eliminated. Other fall protection and prevention methods may need to be used by the employer to deal with proper protection from a fall from the roof.

Recommendation #3: Conduct pre-job safety meetings to discuss job safety & health issues, and in particular, review potential fall hazards and appropriate fall prevention control measures.

Employers should initiate and conduct safety meetings (i.e., tailgate/toolbox meetings) with crew members at each project site. The safety meeting should be site-specific and should be focused on the project and the activities for that day.

This would be a good time to review a safety checklist to help ensure that specific safety elements are not missed during the meeting. It is also a good time to clarify safety requirements, identify new and existing hazards, and determine if the pre-plan safety precautions meet actual needs. This is also a time to plan, review and establish fall prevention, fall protection practices, and processes that are in place for the job.

Fall protection and prevention should be emphasized during the safety meetings. Key elements of fall hazards related to the job and the types of fall protection and prevention controls that are in place to deal with the hazard situations should be discussed. A modest investment of taking the time for health & safety training and education, can often help employers minimize serious injury, reduce workers comp claims, reduce down time, and bring in a return of better production and profits for the business owner.

Recommendation # 4: Provide employees with fall hazard assessment training by a competent person.

The roofing company involved in this incident had no formal safety program. In the typical temporary agency-contracting employer relationship, the secondary

employer is generally responsible for industry and site specific safety and health training. Employers need to ensure that all employees are trained by a competent person to recognize and avoid hazardous work conditions, and that they follow appropriate practices to be able to perform their job safely.

Employers should develop and implement a safety program that not only helps protect workers on the job but helps them recognize and effectively deal with the hazards of the workplace. Fall hazards encountered in the roofing business are especially critical. The roofing contractor had no standard operating procedures for any of the tasks performed

Workers, who use work platforms, scaffolds, etc., as part of their job, and who might be exposed to fall hazards, should be trained in specific safe work procedures, and trained in the use of fall protection equipment pertaining to their job. It is important that the individual conducting the training (the competent person) be properly trained and knowledgeable in conducting hazard evaluations and especially hazard evaluations specific to roofing work and fall hazards, and also be knowledgeable about fall prevention and protection methods related to the roofing industry. The employer needs to instruct each employee to recognize unsafe conditions and use appropriate practices and safety equipment to control or eliminate the hazards of the job.

Recommendation #5: Temporary employment service agencies should work with secondary employers to ensure that specific job descriptions, training criteria, and hazard analyses have been completed for each job assigned to temporary employees.

In this fatal incident, the victim worked under a co-employer relationship: the temporary employment agency (the primary employer) and the roofing contractor (the secondary employer). Only one of the employers, the temporary employment agency, had a formalized safety process in place that included some basic safety training components that were required by every employee to review before beginning work with the agency, and prior to working for a secondary employer. The roofing contractor in this incident, had no safety and health programs or processes in place for their workers.

Although there were positive elements associated with the temporary agency training process, there also were some weaknesses in that they did not provide the support and the knowledge of the safety & health issues involved in the

roofing job needed for the victim. It is recommended that each employer work closely with the other organization in order to establish and develop more defined and specific job descriptions and duties and match them with hazard assessments performed by the joint employers. Every time a temporary employ starts a new job, a certain amount of education and training is needed regardless of how skilled or unskilled the employ might be. Even with skilled employees, refresher training is an important part of an effective safety and health process.

The employer might also have some special or specific safety & health requirements that they need to review with new employees before they work within their operations. The temporary employment agency is responsible to conduct at a minimum fundamental training and education dealing with health and safety basics. The contracting employer is responsible for the site-specific training related to the job and especially specific training related to roofing operation, and fall prevention and protection.

Several studies have indicated that the frequency and severity rates for on-the-job injuries are much higher for temporary workers (Seixas et al., 2006; Saha et al., 2005; Saha et al., 2004). This points to the need for additional attention and focus on the safety and health of temporary workers. To help address this situation, the temporary employment agency and the contracting employer need to specifically discuss and address the hazards of the industry workplace. This will in turn help both employers reduce injuries and in particular more serious injuries to both the full-time, part-time and temporary employees working in the roofing industry.

Recommendation #6: Employers should provide appropriate fall protection equipment for all workers who may be exposed to a fall hazard.

Employers should provide appropriate fall protection equipment for all workers exposed to fall hazards, and should provide worker training in the proper use of this equipment. Once this training is provided, employers should initiate measures to ensure the fall protection equipment is worn and worn properly.

In this incident, fall protection was not made available to the contractor's employees or temporary agency employees, nor were other protective measures put into place to deal with fall hazards associated with this roofing project, either when working on or when accessing the roof. The risk of falls from elevation should always be minimized to the greatest extent possible. Most jobs have

certain inherent hazards related to them. For the roofing industry, falls from elevation are the most significant hazard and contribute to some of the highest workers' compensation costs and injury rates in the construction industry.

The lack of fall protection and prevention were key contributing factors related to this incident and helped lead to the unfortunate fatal injuries sustained from a fall off of a scaffold plank by a temporary laborer employed by this small roofing company. This was certainly a tragic and preventable fatality.

ACKNOWLEDGMENTS

In conducting this fatality investigation, the Washington State FACE investigation team requested that the contents of this report be reviewed by key representatives from the labor and business communities involved and Washington State and Federal worker safety agencies, prior to its publication.

Though we are not able to acknowledge specific individuals for their invaluable input into this document, we would like to recognize the following for their help and support to the FACE process:

- DOSH Compliance Operations
- DOSH Enforcement
- Federal Face Program Management (NIOSH)
- Safety & Health Assessment & Research for Prevention (SHARP)
- Washington State Attorney General's Office

REFERENCES

Saha A, Kulkarni P, Chaudhuri R and Saiyed H, (2005), "Occupational Injuries: Is Job Security a Factor?", *Indian J Med Sci*, 59(9), pp. 375-81.

Saha A, Ramnath T, Chaudhuri R and Saiyed H, (2004), "An Accident-risk Assessment Study of Temporary Piece-rated Workers," *Ind Health*, 42(2), pp. 240-245.

Seixas N, Camp J, Blecker H and Tseng J, (2006), *Final Report: Occupational Health and Safety Experience of Day Laborers in Seattle, WA*, University of Washington, Department of Environmental and Occupational Health Sciences.

APPENDIX: SITE PHOTOGRAPHS



Photo 1: The job site after the incident, showing the plank from the roof to the edge of the truck bed.



Photo 2: A view of the plank and roof at the incident site from the truck bed.



Photo 3: A view of the ramp and truck involved in the incident from the ground.



Photo 4: A view of the residence where the incident occurred from below, on the opposite side of the house from the truck and plank.