

channels measuring 4 feet wide or less (depending upon the presence or absence of reinforcing steel), 50 inches deep and 60 feet long (Tr. 17, 48-49, 93, 100, 118; Exhs. C-1, C-4, C-6). The channels would eventually be filled with concrete after the formwork was done to close off the ends of the channels.

The focus of the compliance officer's attention at the construction site and the subject of the citation concern S & F's formwork activities at the channels, where the carpenters were erecting the form structures, including the supporting shores and braces. The U-shaped channels were composed of a concrete base which, apparently, was the surface of a supporting beam.¹ Depending upon the erection stage of the formwork, the sides of the channel were enclosed either by plywood forms (Exh. C-3) or by a network of reinforcing steel (Exh. C-4). In the case at hand, one side was open except for a series of jacks running along the side of the channel providing vertical support for the flat form structures that were in place in preparation for the placement of the concrete at the plaza level of the garage (Exh. C-1).

The Secretary alleges that the construction site presented three hazardous conditions calling for some form of fall protection: Here is how the Secretary described her case in the citation:

Employees were exposed to serious fall hazards while walking and/or working at the bottoms of the beam bottoms, where the open sides were not provided with midrails and toeboards to prevent a fall of nine foot [sic], five inches to the mezzanine level below. The open ends of the beam bottom formwork were not provided with standard guardrails to prevent falls from the beam bottom to the ground level, some thirty feet below.

The first disputed work area was one "open side" of a channel where a line of widely spaced jacks provided vertical support for the horizontal slabs of formwork that had been installed to hold the concrete to be poured for the open plaza deck. It is to be noted that the citation alleges that "the open sides were [sic] not provided with *midrails* and *toeboards* to prevent a fall."

¹The citation and the testimony of the witnesses refer to the temporary working surface of the beam--the work station in dispute--in the following unusual style: "working at the bottoms of the beam bottoms." Presumably this is a term of art derived from the entire contour of the beams in question. Unfortunately, we cannot be certain because the photographic evidence discloses only a partial view of the beams and the testimony of the witnesses does not inform us. Consequently, reference to the phrase "bottom of the beam bottom" is omitted whenever possible in order to avoid the confusion its use would engender.

Under § 1926.502, the principal requirements for a guardrail system are a top rail and a midrail:

§ 1926.502 Fall protection systems criteria and practices.

* * * *

(b) *Guardrail systems.* Guardrail systems and their use shall comply with the following provisions:

(1) Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

* * * *

(2) Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high.

It is undisputed that S & F's carpenters and laborers worked on the surface of the concrete beam during the course of erecting the form structures (Tr. 18-20). The compliance officer testified that the adjacent horizontal slabs of formwork with its supporting steel or aluminum member provided fall protection equivalent to a top rail because the structure had a vertical height of approximately 42 inches (Tr. 24, 49-50; Exh. C-1). As for the midrails and toeboards, S & F does not contend and the evidence does not suggest that the series of vertical jacks supporting the horizontal slabs of formwork provide any fall protection equivalent to a midrail or toeboard. The fall distance was 9½ feet (Tr. 17).

Edward Moura, S & F's carpenter foreman, testified that at the urging of the compliance officer during the inspection, he had carpenters install midrails and toeboards along the open side of the concrete beam by attaching boards to the vertical jacks with wires. The guardrails remained in place for about two hours, the time required to complete the reinforcing steel work and enclose the channel with forms for casting the concrete (Tr. 103-04).

S & F contends that its work involved "leading edge construction" (Tr. 115):

[T]his is clearly leading edge construction, because you can see an extensive guardrail system established on the perimeters of the building.

You can see that other safety precautions have been put in place. That this is a useless exercise in terms of protecting individuals, because, as one person is installing these mid-rails, somebody's coming right behind him and removing them and putting the panels into place.

This argument mischaracterizes the timing of the sequence of events by approximately two hours, according to its own witness. This argument also suggests that no safety precautions need to be taken when constructing a leading edge. This notion appears to derive some support from the somewhat misleading language appearing in § 1926.500(b) which defines the term as follows:

Leading edge means the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. *A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.* (Emphasis added.)

If we look no further, perhaps we might agree with S & F's argument; however, at the very least, we would first have to ascertain the meaning of the phrase "not actively and continuously under construction." But such an inquiry would distract us from the standards that set the requirements for the protection of employees who are exposed to fall hazards while constructing leading edges, as well as for those employees who are working on the same level as a leading edge, but are not actually engaged in constructing the leading edge:

§ 1926.501(b)

(2) *Leading edges.* (i) Each employee who is constructing a leading edge 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (K) of § 1926.502.²

²Paragraph (K) of § 1926.502 allows the employer to use a "fall protection plan" for employees engaged in leading edge work. The plan includes the use of safety monitoring systems on leading edges and
(continued...)

NOTE: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with § 1926.502(K) for a particular workplace situation, in lieu of implementing any of those systems.

(ii) Each employee on a walking/working surface 6 feet (1.8 m) or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

The approximately two-hour time lapse between the erection of the guardrail system and its removal for the placement of successive formwork is not so insignificant as to render fall protection unnecessary, as S & F claims.

The remaining disputed work areas involve two alleged open ends of the channels. Because of the complex shape the garage structure had at the time of the OSHA inspection, both parties relied heavily on the photographic evidence during examination of the witnesses. The compliance officer, referring to photographic Exhibit C-3, testified that one of S & F's employees is shown inside the channel standing on the surface of a concrete beam, not far from the end of the beam which was open, exposing the employee to a fall of some 13 to 16 feet (Tr. 32-33).

On cross-examination, the compliance officer acknowledged that the channel end was partially obstructed by vertical steel bars, but he maintained that there was an 18-inch opening (approximately) through which the employee could have fallen despite the presence of the reinforcing steel (Tr. 63-66). S & F's foreman did not provide any contradictory testimony regarding the 18-inch opening (Tr. 93-95). In fact, at the close of the hearing, counsel for S & F stated that the width of the channels was reduced from 4 feet to 18 inches once the reinforcing steel was in place (Tr. 118).

²(...continued)

the use of control zone systems to limit the number of employees exposed to the hazard at leading edges.

The second open-end condition is depicted in photographic Exhibit C-4. Here, the full reinforcing steel paraphernalia is shown on one side of a channel containing a carpenter standing on the concrete beam and facing the partially open end of the channel. Unlike the previously discussed condition, this channel end had two additional barriers or obstructions, one vertical and the other horizontal. When questioned regarding the vertical object shown in the photograph, the compliance officer stated he didn't know what it was; he speculated that it might be merely a "shadow" (Tr. 82). On the other hand, S & F's foreman gave positive testimony that the object was a jack which supported a 38-inch-high aluminum beam (Tr. 98-101).

While the evidence is not sufficient to clearly establish the width of the opening, certainly it was not more than 18 inches, most likely some 4 inches less, taking into account the width of the jack and the space between the side of the channel and the jack. The presence of the 38-inch-high horizontal beam was equivalent to a top rail. The only thing missing to satisfy the technical requirements of "guardrail systems" pursuant to § 1926.502(b) was a midrail.

It should be noted that while the citation specifically refers to "toeboards" as a protective measure for guarding the open side of the channel in addition to a midrail, neither party spent much time during the hearing discussing toeboards. As previously stated, the 501(b)(1) standard, which S & F has been accused of violating, calls for the use of either guardrail systems or safety net systems or personal fall arrest systems. This case was tried only on the use of guardrails.

As noted above, the criteria for "guardrail systems" appear at 502(b). Toeboard is not listed among the specifications for guardrail systems; however, it is prescribed as a means of "protection from falling objects" under § 1926.501:

(c) *Protection from falling objects.* When an employee is exposed to falling objects, the employer shall have each employee wear a hard hat and shall implement one of the following measures:

(1) Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels;...

and under § 1926.502:

(j) *Protection from falling objects.* Falling object protection shall comply with the following provisions:

(1) Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

The regulation defines “toeboard” as “a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.” 29 C.F.R. § 1926.500(b). The phrase “provide protection from falls for personnel” is marred by a measure of ambiguity when read with the language that precedes it. Does the phrase refer to protection for personnel from falling objects, or does it refer to protection for personnel to prevent them from falling? Since we are unable to find a standard that requires the use of a toeboard to prevent employees from falling, it would appear that toeboard is a device that is required to be used only to protect employees from falling objects.

The Secretary has proven her case with respect to S & F’s failure to provide midrail protection at the open side of the channel and failure to provide a top rail and midrail for the 18-inch-wide opening at the end of the channel. The Secretary has failed to prove her case regarding the second open-end condition. That opening was less than 18 inches wide and had a horizontal barrier equivalent to a top rail. The photograph depicting the condition compels one to believe that the only way the bulky-clad employee shown in the photo could have fallen through the opening was by pushing and squeezing herself through. This allegation of the citation has no merit.

The fall distance posed by the open side of the channel was 9½ feet, the open end presented a fall hazard of 13 to 16 feet. If an accident had occurred in either situation, serious injury was a substantially probable consequence. Bearing in mind the penalty criteria of section 17(j) of the OSH Act, 29 U.S.C. § 666(j), the \$2,500 penalty proposed by the Secretary is modified to \$1,000.

Based upon the foregoing findings and conclusions, it is **ORDERED** that the citation is affirmed to the extent indicated, and a penalty of \$1,000 is assessed.

RICHARD DeBENEDETTO
Judge, OSHRC

Dated: _____
Boston, MA

