**BEFORE THE**
**STATE OF CALIFORNIA**
**OCCUPATIONAL SAFETY AND HEALTH**
**APPEALS BOARD**

| In the Matter of the Appeal of: | Inspection No. |
|---|---|
| **TUTOR PERINI CORPORATION AND O & G INDUSTRIES, INC.**<br>**dba TUTOR PERINI/O & G A JOINT VENTURE**<br>**1801 CENTURY PARK EAST, SUITE 500**<br>**LOS ANGELES, CA 90067**<br><br>**Employer** | **1486176**<br><br>**DECISION** |

## Statement of the Case

Tutor Perini Corporation and O & G Industries, Inc. (Employer) is a construction company. Beginning July 31, 2020, the Division of Occupational Safety and Health (the Division), through Associate Safety Engineer Sterling Wainscott (Wainscott), conducted an inspection arising from a construction site injury at 2001 Century Park East in Los Angeles, California (the site).

On January 13, 2021, the Division issued two citations to Employer alleging two violations of California Code of Regulations, title 8.[1] Citation 1 alleges Employer failed to give prompt consideration to all safety suggestions. Citation 2 alleges Employer failed to ensure equipment was designed to sustain anticipated loads. Employer filed timely appeals of the citations, contesting the existence of the violations.

This matter was heard by Rheeah Yoo Avelar, Administrative Law Judge (ALJ) for the California Occupational Safety and Health Appeals Board (Appeals Board) on June 6, July 25, and July 26, 2023. ALJ Avelar conducted the hearing with the parties and witnesses appearing remotely via the Zoom video platform. David Donnell, of Donnell, Melgoza & Scates LLP, represented Employer. Lisa Wong, Staff Counsel, represented the Division. At the time of hearing, the parties settled Citation 1, stipulating to a reclassification from a General to a Regulatory violation. Thus, only Citation 2 remained at issue. The matter was submitted on February 28, 2023.

[1] Unless otherwise specified, all references are to sections of California Code of Regulations, title 8.

## Issues

1. Did Employer violate section 3328, subdivision (a)?

## Findings of Fact

1. Employer was constructing a temporary steel tube consisting of eight rings, each ring comprised of six curved rectangular segments, the smallest of which was called the key segment.

2. Employer designed and used a two-rail track system called a temporary segment feeder (TSF) that allowed employees to push and guide all of these steel ring segments to their point of installation.

3. The TSF was designed to sustain over 8,000 pounds of weight, and each key segment weighed 1,250 pounds.

4. The Division offered no recognized engineering principles relating to the TSF.

5. The steel tunnel served only to launch the tunnel boring machine (TBM) that permits installation of the permanent tunnel, which consisted of over 4,000 concrete rings, each comprised of six curved segments: four parallelogram-like (parallelogrammical) segments, and two trapezoidal segments called the key and counterkey segments.

6. The concrete segments used their own transportation system, and the TSF never carried concrete segments.

7. The Division did not show that the manufacturer's recommendations were not available.

8. The Division did not measure the distance between the TSF's rails or the length of a steel key segment arc.

9. Clinton Thompson (Thompson), an employee of Employer, was removing a key segment from the rails at the end of the TSF at the time of his injury.

## Analysis

### 1. Did Employer violate section 3328, subdivision (a)?

Citation 2 alleges a Serious violation of section 3328, subdivision (a), which requires:

(a) All machinery and equipment:
(1) shall be designed or engineered to safely sustain all reasonably anticipated loads in accordance with recognized engineering principles; and
(2) shall not be used or operated under conditions of speeds, stresses, loads, or environmental conditions that are contrary to the manufacturer's recommendations or, where such recommendations are not available, the engineered design.

In Citation 2, as amended, the Division alleges:

Prior to and during the course of the investigation, in the BR Tunnel in the Constellation Launch Box, the employer failed to ensure that the temporary segment feeder that was used and operated was designed to safely sustain all reasonably anticipated loads, including but not limited to steel segment keys. As a result, on or about July 21, 2020, an employee suffered serious crushing injuries when a steel segment key partially dropped off the temporary segment feeder.

The Division has the burden of proving an alleged violation by a preponderance of the evidence. (*Guy F. Atkinson Construction, LLC*, Cal/OSHA App. 1332867, Decision After Reconsideration (Jul. 13, 2022).) "'Preponderance of the evidence' is usually defined in terms of probability of truth, or of evidence that[,] when weighed with that opposed to it, has more convincing force and greater probability of truth with consideration of both direct and circumstantial evidence and all reasonable inferences to be drawn from both kinds of evidence." (*Sacramento County Water Agency Department of Water Resources,* Cal/OSHA App. 1237932, Decision After Reconsideration (May 21, 2020).)

*Application*

Subdivisions (a) through (h) of section 3328 protect employees against the hazards of improper design, use, maintenance and repair of machinery and equipment. (*Carris Reels of California*, Cal/OSHA App. 95-1456, Decision After Reconsideration (Dec. 6, 2000).) This safety order is found under General Industry Safety Orders, and, by its own terms, applies to all equipment. It is undisputed that the TSF is equipment and thus subject to the regulation.

*Violation*

Subdivisions (a)(1) and (a)(2) of section 3328 are written in the conjunctive, requiring employers to satisfy both conditions. The Division may thus establish a violation by showing Employer failed to satisfy any one of the conditions. (*HHS Construction,* Cal/OSHA App 12-0492, Decision After Reconsideration (Feb. 26, 2015).) Each subdivision is examined separately below.

*(1) Did Employer fail to design or engineer its temporary segment feeder to safely sustain steel key segments in accordance with recognized engineering principles?*

Employer was at an early stage of Metro Rail tunnel construction. Undisputed testimonial evidence established that boring a tunnel requires first making a large temporary steel tube to accommodate a tunnel boring machine (TBM). This steel tube was constructed of several components. The tube was made of eight rings. Each ring was divided into six segments. Employer's Project Manager, Anton Hupfauf (Hupfauf), a professional engineer licensed in California, testified that his engineering department designed a customized two-rail track, the temporary segment feeder (TSF), to move these curved steel segments.

There is no dispute that travel of the key segments on the TSF was anticipated. Hupfauf testified that the TSF was designed to safely sustain the weight of the heaviest segment of this steel tube, which was 4,000 pounds. (Hearing Transcript Volume (TR Vol) II 218; TR Vol III 22.) He estimated that the TSF's failure weight was 8,000 pounds, adding that it could probably sustain even more than that before failing. Wainscott provided undisputed testimony that the key segments at issue weighed 1,250 pounds.

In contrast, the Division asserted that the rails of the TSF were set too wide to safely sustain key segments. Wainscott alleged that key segments were narrower than the other ring segments and unstable on the TSF's rails. The injured employee, Thompson, and his coworker Benjamin Beckum (Beckum) both testified that a crew of at least four used tools such as prybars, a come-along, and a chainfall, to move and guide steel segments on the TSF. Wainscott testified that he took no measurements of any key segments in relation to the other segments or the TSF's rails. Nonetheless, the Division concluded that the TSF could not "sustain" the key segments.

The parties' interpretations of "sustain" and "load" differ. Employer interprets "sustain" as to resist, and "load" as force. The Division interprets "sustain" as a term of portage and "load" as an object with the attributes of spatial dimension. (TR Vol I 158.) In construing a particular clause, it must be read in harmony with other clauses and in context of the statutory framework as a whole.

(*Papich Construction Company, Inc.*, Cal/OSHA App. 1204848, Decision after Reconsideration (Oct. 18, 2019).) The safety order is provided here in its entirety for ease of reference:

> a) All machinery and equipment:
>  (1) shall be designed or engineered to safely sustain all reasonably anticipated loads in accordance with recognized engineering principles; and
>  (2) shall not be used or operated under conditions of speeds, stresses, loads, or environmental conditions that are contrary to the manufacturer's recommendations or, where such recommendations are not available, the engineered design.
> (b) Machinery and equipment in service shall be inspected and maintained as recommended by the manufacturer where such recommendations are available.
> (c) Machinery and equipment with defective parts which create a hazard shall not be used.
> (d) Machinery and equipment designed for a fixed location shall be restrained so as to prevent walking or moving from its location.
> (e) Machinery and equipment components shall be designed and secured or covered (or both) to minimize hazards caused by breakage, release of mechanical energy (e.g., broken springs), or loosening and/or falling unless the employer can demonstrate that to do so would be inconsistent with the manufacturer's recommendations or would otherwise impair employee safety.
> (f) Any modifications shall be in accordance with (a) and with good engineering practice.
> (g) Machinery and equipment in service shall be maintained in a safe operating condition.
> (h) Only qualified persons shall be permitted to maintain or repair machinery and equipment.

Section 3328 encompasses all machines and equipment, with considerable discussion regarding mechanical integrity. The Division did not offer support for the application of its particular interpretation, or the exclusion of Employer's interpretation. The Division also did not explain how its interpretation is compatible with concurrent enforcement of the other subdivisions.

Only where there is ambiguity, the statute's legislative history and the wider historical circumstances of its enactment may be considered to determine legislative intent and provide clarity. (*Chevron U.S.A. Inc*., Cal/OSHA App. 13-0655, Decision After Reconsideration (Oct. 20, 2015).) Legislative history shows that, before an amendment to section 3328, subdivision (a), became effective in 2016, the original safety order required only that:

> (a) Machinery and equipment shall be of adequate design and shall not be used or operated under conditions of speeds, stresses, or loads which endanger employees.

The 2016 amendment substantially changed subdivision (a), splitting it into two subdivisions, (a)(1) and (a)(2), provided again for reference, with amendments in bold:

> (a) All machinery and equipment:
> (1) **shall be designed or engineered to safely sustain all reasonably anticipated loads in accordance with recognized engineering principles**; and
> (2) shall not be used or operated under conditions of speeds, stresses, loads, or environmental conditions **that are contrary to the manufacturer's recommendations or, where such recommendations are not available, the engineered design.**

The Occupational Safety and Health Standards Board's Initial Statement of Reasons (ISOR) for the amendment of section 3328, subdivision (a), issued for the public hearing of August 10, 2015, provides historical reference. The ISOR denotes that the amendment "replaces the term 'adequate design' with regulatory text that clarifies that equipment, by its inherent design, shall safely withstand all anticipated loads." The ISOR, the internal statutory framework, and prior amendments to the safety order reinforce the significance of manufacturers' recommendations and engineering principles.[2]

These considerations support an interpretation consistent with advancing uniform predictable standards and discouraging idiosyncratic labile standards. Wainscott proposed an alternate design for the TSF, but the mere existence of an alternate design could not be the basis of a violation for a safety order that permits any design that conforms to recognized engineering principles. To establish a violation, the Division needed to produce engineering standards, yet it presented no evidence to show which engineering principles the TSF violated.

With insufficient information to determine whether the TSF's design or engineering was in accordance with recognized engineering principles to safely sustain a key segment, Employer cannot be found to have violated section 3328, subdivision (a)(1).

*(2) Did Employer use its temporary segment feeder under load conditions that were contrary to the manufacturer's recommendations or its engineered design?*

Wainscott testified that the citation concerned the TSF's load conditions, and not its speed, stress, or environmental conditions. The Division must thus show that Employer's use of the TSF to transport steel key segments was contrary to 1.) its manufacturer's recommendations or, 2.) where such recommendations are not available, its engineered design.

[2] Section 3328, subdivision (e), was amended in 2011 to include standards related to the manufacturer's recommendations.

*Employer's use*

There is no dispute that Employer used the TSF to transport steel key segments to their points of installation.

*Manufacturer's recommendations*

The Division did not produce the manufacturer's recommendations for the TSF and thus did not, and could not, show that Employer created a load condition contrary to a recommendation. The Division also failed to provide evidence of efforts to acquire manufacturer's recommendations from Employer or otherwise show that no recommendations were available. Nevertheless, the Division asserted that the TSF's rails were spaced too widely to transport key segments. Wainscott proposed that a third rail in the center would have supported the bottom of the key segment, essentially suggesting that Employer loaded the TSF contrary to its engineered design.

*Engineered design*

The Division did not provide any manufacturer's recommendations to evaluate the TSF, and so it now becomes necessary to consider the TSF's engineered design. Both parties presented a printed computer-aided design that Hupfauf's department produced depicting a prototype TSF and sample segment. (Exhibit N.) The Division focused on the distance between the TSF's pairs of rollers and the width of a key segment. (Exhibit N Mod 1.) However, the Division produced no engineering design principles. Nor did the Division measure the TSF, the arc length of a steel key segment, or the arcs of any regular steel segments. The Division provided no reliable evidence to determine whether loading key segments on the TSF was contrary to its engineered design.

Testimonial and photographic evidence established that the TSF was a track consisting of two rails. The rails were parallel, and each tilted at a slight angle towards the center of the track. Sets of metal rollers (rollers) welded to the top of each rail at intervals in pairs reduced horizontal friction, allowing employees to slide segments on the track. The rollers were Hilman rollers, a rotating loop of approximately 14 individually spinning cylinders. (Exhibit 8.) The five-inch-long cylinders lay flat six across at a time, like a conveyor belt, and their rolling surfaces revolved endlessly in a loop. (Exhibit 21.) In this configuration, the track cradled the steel segments which traveled on them like boats, keels gliding.

Hufpauf's testimony established that the completed steel tube was 40 feet long and roughly 18 feet in diameter, with 12-inch-thick walls. It was divided into eight, five-foot-long rings. Each of the eight rings was comprised of six rectangular curved segments: five of the segments were of similar arc lengths, but the arc of the sixth, the key segment, was smaller. (TR Vol III 43.) He did not know the lengths of all the different arcs but confirmed that the key segment arcs were less

than five feet in length. He testified that all the steel segments, including key segments, were of rectangular profile. (TR Vol III 31; Exhibits 6 and K.)

Hupfauf testified that the steel tube was a temporary structure used only to launch the TBM. Thereafter, both the steel tube and TSF were removed. The TBM's forward progression allowed installation of permanent concrete ring segments behind it, approximately 4,000 rings for tunnel completion. Each concrete ring was comprised of six segments. Unlike the rectangular steel segments, the six concrete segments were irregular: four regular segments were parallelogrammical, and two, smaller, key and counterkey segments were trapezoidal. He testified that these concrete segments travelled on a conveyance system which could only be installed after TSF removal. He confirmed that the TSF never carried any concrete segments. (TR Vol III 31, 34-50.)

*Load conditions*

Testimonial evidence established that moving steel key segments on the TSF required the coordination of several employees on a crew. The crew used assistive tools: an employee operated a chainfall that was hooked on the segment with tension at all times to keep it aloft, while another used a come-along and up to four others used prybars to respectively pull, push, and guide it forward as it slid on the rollers of the TSF. (TR Vol II 168-169.)

Thompson and Beckum both testified that key segments moved on the TSF precariously because of their smaller dimensions. Their arcs did not reach all the way across to completely overlap both rails. The edges of a centered key segment rested on approximately one half the width of each pair of rollers, leaving approximately two to three inches of rollers exposed on each side. They also described constant difficulty in keeping key segments centered because of their tendency to slide numerous directions on the rollers, which Thompson described as so slippery that a push of a foot could displace a segment. This habit of sliding off-centerline required the coordination of multiple prybars to guide the key segments back to proper orientation on the rollers.

Beckum testified that, at the time of Thompson's injury, the crew was unloading a key segment from the end of the TSF. Thompson used a prybar to guide a key segment on a roller while the segment was already being lowered and two-thirds off the TSF. (TR Vol II 137.) Thompson testified that he found the segment to be too heavy, requiring the use of the chainfall, so he did not proceed. He testified that he was still holding his prybar when he turned his head to avoid blowtorch sparks from above. At that moment, he felt a jolt, resulting in his hand injury. He did not remember more.

The citation alleges that a key segment partially dropped from the rollers, but Wainscott confirmed in testimony that the key segment did not fall. Beckum testified that the segment at

issue was at the end of its journey on the TSF. The crew was in fact removing it from the TSF, by sliding it off and lowering it to the ground. Beckum explained that the chainfall was attached tightly to a segment, to catch any swing or movement, but removal from the TSF required loosening the chainfall. The slack allowed a segment to extend past the TSF rails to be set down for placement. (TR Vol II 179-180.) Thompson testified that there was slack in the chainfall right before his injury. Beckum saw that Thompson's hand placement on his prybar made it vulnerable to getting caught between the prybar and the rail.

The Division provided no measurements or engineering tolerances to evaluate the travel, placement, and removal of key segments. It did not explain how the use of assistive tools to convey or unload key segments, or the slipperiness between the rollers and segments created load conditions contrary to the TSF's engineered design.

Of greatest concern, the Division undergirded its entire position with a reliance on the incorrect belief that steel key segments resembled concrete key segments. Wainscott testified that both steel and concrete key segments were identical, trapezoidal, and that he based all of his measurement estimates on concrete key segment measurements. (TR Vol I 37-39, 105, 166-167, 181.) The Division interlaced this fundamental error throughout, distorting employee-witness responses to conform to this underlying misconception, asking Thompson and Beckum numerous times to confirm whether key segments were "trapezoid," "oblong," "tapered," or "one end shorter than the other opposite end," and whether its short or long sides were on the rollers.[3] (TR Vol II 143-144.) However, the Division's own photographic evidence shows that all steel segments were rectangular. (Exhibit 6.)

The Division's unsupported premise and extrapolations do not support a finding that Employer operated the TSF under load conditions contrary to its engineered design. The Division presented no recognized engineering principles. It did not produce any manufacturer's recommendations, or show they were unavailable prior to assessing the TSF's engineered design. The Division took no measurements, failed to identify any impermissible limits, and entirely misconceptualized steel key segment dimensions. Further, the Division provided no proof that rollers or assistive tools rendered the key segments unsuitable for loading on the TSF or their use indicated TSF design faults rather than design features. For the foregoing reasons, the Division did not establish a violation of section 3328.

[3] All concrete segments were parallelogrammical or trapezoidal. All steel segments were rectangular. Concrete segments could only be installed **after the TSF was removed**. (TR Vol II 71, 83, 150.) The Division imposed incorrect geometric concepts on the witnesses and obliged the ALJ to repeat and reinforce these errors for the first two days of a three-day hearing. (TR Vol II 71, 88, 90, 94, 148.) Thompson and Beckum's discussions of angled ends and uneven sides are attributed to the Division's relentless conflation of steel and concrete segments. However, Thompson and Beckum did not fully adopt the Division's misconception. They independently continued to describe equidistant roller exposure on the TSF for key segments, or disregard references to tapered shapes. (TR Vol II 43, 74-75, 140, 148-149.)

## Conclusion

The parties settled Citation 1, stipulating to a change of classification. The parties did not provide a stipulated penalty to reflect the reclassification. Section 336, subdivision (a)(1), provides that the minimum penalty of $500.00 shall be assessed for a Regulatory citation, with adjustments for Size, Good Faith, and History. The Division's penalty adjustment factors on its proposed penalty worksheet indicate fifteen percent credit for Good Faith and ten percent credit for History. The penalty for Citation 1, Item 1, is thus reduced by 25 percent or $125.00, to a final reduced penalty of $375.00.

The Division did not provide sufficient evidence to meet its burden to establish a violation of Citation 2. Employer's appeal of Citation 2 is granted.

## Orders

Citation 1 is affirmed per the stipulation of the parties. The penalty for Citation 1, Item 1, shall be assessed as set forth in the Summary Table.

Citation 2 and its associated penalty are vacated, as reflected in the Summary Table.

Dated: 03/22/2024

Rheeah Yoo Avelar
Administrative Law Judge

The attached decision was issued on the date indicated therein. If you are dissatisfied with the decision, you have thirty days from the date of service of the decision in which to petition for reconsideration. Your petition for reconsideration must fully comply with the requirements of Labor Code sections 6616, 6617, 6618 and 6619, and with California Code of Regulations, title 8, section 390.1. **For further information, call: (916) 274-5751.**