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IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION THREE

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| PAUL P. LACH,<br><br>Plaintiff and Appellant,<br><br>v.<br><br>STATE OF CALIFORNIA,<br><br>Defendant and Respondent. | B234968<br><br>(Los Angeles County<br>Super. Ct. No. PC044474) |

APPEAL from a judgment of the Superior Court of Los Angeles County, Burt S. Pines, Judge. Affirmed.

C. Brent Scott for Plaintiff and Appellant.

Ronald W. Beals, Chief Counsel, Linda Cohen Harrel, Deputy Chief Counsel, Matthew S. Lipinski and Yuan Chang, Deputy Attorneys, for Defendant and Respondent.

Plaintiff and appellant Paul Lach appeals from the judgment in favor of defendant and respondent State of California (Caltrans) in this wrongful death action alleging the dangerous condition of public property. The decedent, Lach's wife, suffered fatal injuries when the motorcycle she was riding left the lane and collided with the center median barrier of highway I-5. Caltrans asserted the affirmative defense of design immunity for its design of the median barrier. In a bench trial, the trial court concluded Caltrans had established that substantial evidence supported the reasonableness of the design of the median barrier. After the presentation of the evidence in a subsequent jury trial, the trial court granted Caltrans's motion for directed verdict on the remaining elements of design immunity and on Lach's further allegations of changed conditions defeating the design immunity defense. Lach appeals, arguing the trial court erred both in its conclusion in the bench trial and in granting the directed verdict in the jury trial. We affirm.

## *FACTUAL AND PROCEDURAL BACKGROUND*

### 1. *The Median Barrier*

Before we discuss the factual and procedural background of this case, it is helpful to set forth the relevant terminology and describe the elements of the median barrier with which plaintiff's decedent collided. Preliminarily, we note that, although in lay conversation, "median barrier" is often used interchangeably with "guardrail,"[1] the two terms, in fact, refer to two distinct roadside safety features. Median barrier is

[1] Indeed, Lach's complaint alleged that his wife collided with "the guard rail." It is undisputed, however, that she collided with median barrier.

placed only in the center median between lanes of traffic travelling in different directions. The primary purpose of median barrier is to prevent cross-median accidents. In contrast, guardrail is normally, but not always, placed on the outside of the flow of traffic. The primary purpose of guardrail is to shield an object or feature, when a decision has been made that the risks of a guardrail are preferable to the risks of a driver encountering the feature on the other side of it. For example, guardrail can shield cars from drop-offs or bridges. From a design point of view, guardrail is closer to the ground than median barrier. Additionally, guardrail and median barrier are subject to different crash test criteria.

At the time the instant median barrier was constructed, there were two types of median barrier approved for use in California, concrete median barrier and so-called thrie-beam median barrier. The approved concrete median barrier was known as Type 50 concrete barrier, which is "garden-variety concrete barrier" 32 inches high. A variant of Type 50 barrier, also approved for use, was Type 50W barrier; this is Type 50 concrete barrier with an 18-inch pipe under it, for drainage collection. It is substantially more expensive than Type 50 concrete barrier.

Thrie-beam median barrier, which was used in this case, is a metal beam barrier which looks somewhat similar to a metal beam guardrail.[2] It consists of the rail itself, which is 32 inches high, held up by posts. The posts may be made of steel or wood.

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[2] Standard metal beam guardrail is a corrugated metal rail which has two bumps in it, facing the road. From a side view, the pattern in the metal looks somewhat like a capital letter "W" turned on its side. This type of guardrail is called "W-beam." While W-beam guardrail has two bumps in it facing the road, thrie-beam rail has three bumps facing the road. This is why it is called "thrie-beam."

As we will discuss, the posts for the median barrier at issue were made of steel. The steel posts used in California are I-beams.[3] The thrie-beam rail is not attached directly to the posts, but is instead bolted to "blocks," which are themselves bolted to the posts. "Blocks" are not necessarily block-shaped;[4] in fact, when steel blocks are used, the blocks are themselves lengths of I-beam. Wood blocks can also be used in thrie-beam barriers.[5] Thus, in a simple thrie-beam barrier, the barrier elements, viewed in order from the center median toward the traffic flow, are: post, block, rail.

While a median barrier can be created with the use of one thrie-beam barrier in each direction of traffic flow, it is also possible to create double thrie-beam barrier. Double thrie beam barrier uses a single set of posts to support barriers on both sides. Thus, in a double thrie-beam barrier, the barrier elements are: rail, block, post, block, rail.

The usefulness of a median barrier depends on it being at a uniform height of 32 inches above the road. When the median area is not flat, and one direction of travel is higher than the other (a condition called superelevation), the median barrier rails of a double thrie-beam barrier must be attached at different heights relative to the post. Thus, when a double thrie-beam barrier is used in a condition of superelevation, the

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[3] An I-beam is so called because, from the side, it looks like a capital letter "I", with a web in the middle and a flange on each end.

[4] The term "block" is a shortened form of "blockout," as the blocks push the rail out a distance from the posts.

[5] Subsequent to the construction of the median barrier in this case, blocks made of a recycled plastic were also approved.

blocks are at different heights – the block on the low side is placed at a lower height than the post, while the block on the high side is placed at a higher height than the post. This is known as a "sawtooth" configuration. Assuming a maximum height differential between a block and a post of 6 inches,[6] a sawtooth double thrie-beam configuration, from low side to high side, consists of the following elements: rail, block, post (six inches higher), block (additional six inches higher), rail.

2. *The Accident*

On June 29, 2008, Lach and his wife were riding their motorcycles northbound on I-5. They were riding at a speed in excess of 65 miles per hour, in the lane closest to the median. Lach's wife was on the left-hand side of the lane, while Lach was behind her, on the right-hand side of the same lane. At this point, the highway curved gently to the right, but Lach's wife continued forward, out of her lane, into the median. The median barrier installed at this location was a double thrie-beam barrier in sawtooth configuration, with steel posts and steel blocks. Lach and his wife were travelling on the elevated side of the road. Although Lach did not witness the collision, evidence indicates that the left side of Lach's wife's helmet struck the rail. At that point, she was thrown from her motorcycle onto the top of the barrier, and she struck several of the steel posts and blocks, as her momentum continued to propel her forward, in the direction of travel. Eventually, she dropped from the barrier and came to rest on the southbound side of the median. She was pronounced dead at the scene.

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[6] Caltrans submitted evidence that a maximum of 6 inches of cantilever is permitted according to its own documents.

No full autopsy was performed. A forensic pathologist with the L.A. County Coroner's Office determined the cause of death, from an external examination, to have been a liver laceration, caused by blunt force trauma. Lach's wife suffered numerous fractures and other blunt force injuries, but the liver laceration was fatal in and of itself.

3. *The Pleadings and Motions*

On January 15, 2009, Lach filed a form complaint against Caltrans, seeking to recover for the wrongful death of his wife. He alleged a single cause of action for dangerous condition of public property.[7] Lach alleged that "the design of the center metal guard rail was not proper which created a foreseeable and substantial risk of injury." He alleged that his wife died "due to blunt trauma caused by the protruding steel posts," which were "two (2) to three (3) inches above the guard rail."

Caltrans answered, raising several affirmative defenses, including design immunity. Although Caltrans never moved for summary judgment on the issue of design immunity, it ultimately sought a hearing on design immunity prior to trial. In opposition to Caltrans's motion, Lach asserted that, even if Caltrans successfully established design immunity, the immunity was lost due to changed conditions.

A public entity claiming design immunity "must establish three elements: (1) a causal relationship between the plan or design and the accident; (2) discretionary approval of the plan or design prior to construction; and (3) substantial evidence supporting the reasonableness of the plan or design." (*Cornette v. Department of Transportation* (2001) 26 Cal.4th 63, 66.) The third element, the existence of

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[7] Lach did not check the boxes to allege negligence or willful failure to warn.

substantial evidence supporting the reasonableness of the plan or design, must be tried by the court, not the jury. (*Ibid.*) The trial court in this case decided, therefore, to hold a bench trial on the third element of design immunity, before proceeding to a jury trial on the allegations of dangerous condition, the remaining elements of design immunity, and the issue of whether the immunity was lost by changed conditions.

4. *The Bench Trial on Substantial Evidence of Reasonableness of Design*

At the bench trial, Caltrans had the burden to introduce substantial evidence that its design of the median barrier was reasonable. To do so, it was necessary to identify those portions of the median barrier's design which Lach was challenging as unreasonable.[8] Lach did not challenge the decision to install a median barrier at the location; he conceded that a median barrier of some type was warranted at this location. However, Lach challenged the following decisions regarding the design of the median barrier: (1) the decision to use thrie-beam rather than concrete; (2) the decision to use a double thrie-beam barrier, rather than two separate thrie-beam barriers; (3) the decision to use a sawtooth barrier configuration; (4) the decision to use steel posts, rather than wood posts; and (5) the decision to use steel blocks rather than wood blocks. Lach also challenged an additional element of the thrie-beam design as unreasonable, the amount by which the height of the blocks exceeded the height of the rail. We will refer to this as the "block/rail differential." The evidence indicated that the block/rail

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[8] We assume this particular question was answered in discovery. However, as the relevant discovery responses were not provided as part of the record on appeal, we infer Lach's contentions from the evidence he introduced.

differential in this case was as high as 1 5/16 inches.[9] Lach argued that a lower block/rail differential, or even no block/rail differential, would have been appropriate.[10] In addition to arguing that the block/rail differential was an improper design element, Lach also argued that the thrie-beam barrier was negligently constructed, in that the block/rail differential of 1 5/16 inches was purportedly higher than the block/rail differential permitted in Caltrans's own documents.

After hearing all of the evidence, the trial court concluded that Caltrans introduced substantial evidence that each of these six design elements was reasonable, thus establishing the third element of design immunity. As to negligent construction, the court concluded that any disparity between the block/rail differential identified in Caltrans's plans and the block/rail differential actually constructed was, in fact, part of the design.

Caltrans had also introduced substantial undisputed evidence of the second element of design immunity, that the design was approved in advance by a public

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[9] At the subsequent jury trial, but not the bench trial, Lach introduced evidence that the block/rail differential on the southbound (lower) side of the median barrier was as high as 1 9/16 inches. However, Lach's biomechanical engineer expert, who testified to the mechanics of Lach's wife's impact with the barrier, testified that, based on the physical evidence, he did not believe that she interacted with the blocks on the lower side. Thus the increased block/rail differential on the southbound side of the median barrier is irrelevant.

[10] We have significant doubts as to whether Lach could have ever established that the 1 5/16 inch block/rail differential caused his wife's death, when it is rather more likely that she was killed by the 6 inch block/post differential created by the sawtooth design. Lach's only evidence that the 1 5/16 inch block/rail differential may have caused the fatal injury was evidence that the human liver sits approximately 1 inch below the ribcage and that Lach's wife's jacket was 1/4 inch thick.

employee with discretion to do so. Because of this, and because the parties had stipulated that the design had caused Lach's wife's injuries (the first element of design immunity), the trial court indicated its *tentative* intent to rule in favor of Caltrans on those two remaining elements of the design immunity defense. After further argument, however, the court was convinced that these elements must be tried to a jury. The case then proceeded to a jury trial on dangerous condition, the remaining elements of design immunity, and the loss of design immunity due to changed conditions.

5. *The Jury Trial*

A jury trial was held, where Caltrans introduced evidence of the remaining elements of design immunity. As to the issue of whether a public employee with discretion to approve the design had so approved it, Lach did not challenge that the employees who purportedly approved the design had approved it and had possessed the discretion to do so.[11] Instead, Lach argued that there was no evidence that the individuals who approved the design had considered the risks the design posed to motorcyclists. Without such consideration, Lach argued, there can be no immunity, as immunity applies only to design decisions which were actually made.

As to changed conditions, Lach introduced evidence of certain changes which had taken place since this median barrier was initially approved in 1989. Specifically,

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[11] Lach suggested that Caltrans should have obtained the testimony of the actual individuals who had approved the design, but did not pose any challenge to the evidence that Caltrans introduced from other individuals indicating that this project was properly approved. In this regard, we note that it is *not* the case that discretionary approval can only be established with testimony from the individuals actually involved in the design and approval of the project. (*Alvarez v. State of California* (1999) 79 Cal.App.4th 720, 730-731.)

Lach relied on: (1) an increase in traffic volume on this stretch of the highway; (2) an increase in the speed limit; and (3) an increase in the height and engine capacity of motorcycles using the highway. Moreover, Lach introduced evidence that (4) the state's standard plans for thrie-beam median barriers had changed, and no longer provided for the use of steel blocks. He also introduced evidence that (5) some thrie-beam barriers had been replaced by concrete at other locations. Finally, Lach attempted to introduce evidence of (6) research studies which indicated that barriers with flat surfaces, such as concrete, were less likely to injure motorcyclists than barriers with uneven surfaces, such as sawtooth thrie-beam barriers.

It is important to recognize that, in both Lach's argument against design immunity and his argument for changed conditions, Lach's focus was not on anything specific to the median barrier on I-5 where his wife was killed. Instead, Lach was concerned with proving that thrie-beam barriers in general, and sawtooth thrie-beam barriers with steel posts and blocks in particular, presented a known danger to motorcyclists which Caltrans should have, but failed to, take into account.[12]

At the conclusion of the evidence, Caltrans moved for a directed verdict. After hearing argument, the trial court granted the motion, concluding that Caltrans had established design immunity as a matter of law, and that Lach had failed to raise

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[12] Indeed, at one point, the trial court asked Lach's counsel if he was arguing that the state should have removed all steel blocks from guardrails and median barriers throughout California and replaced them with plastic. Counsel responded, "Absolutely, if it meant the saving of one person's life." He continued, "If it means taking these barriers – these steel blocks out, your honor, that's absolutely why we're here."

a triable issue of fact as to changed conditions sufficient to terminate design immunity. Judgment was entered in favor of Caltrans. Lach filed a timely notice of appeal.[13]

## *CONTENTIONS ON APPEAL*

Lach contends that the trial court erred in both the bench trial and the jury trial. As to the bench trial, Lach contends: (1) the trial court was unfamiliar with court procedures, was easily confused, and made several prejudicial rulings against him; (2) the trial court abused its discretion in issuing tentative rulings on issues which were not before it in the bench trial; (3) the trial court erred in concluding that the block/rail differential was part of the approved design; and (4) the trial court erred in finding substantial evidence of the reasonableness of the design of the thrie-beam median barrier. As to the jury trial, Lach contends: (5) the trial court continued to be easily confused, made further prejudicial rulings against him, and assisted Caltrans with objections; (6) the trial court erred in concluding that Lach did not establish a triable issue of fact of dangerous condition of public property;[14] (7) the trial court erred in concluding that the first two elements of design immunity (causation and discretionary approval) were established as a matter of law; and (8) the trial court erred in concluding that Lach did not raise a triable issue of fact as to changed conditions. We conclude that several of these challenges have been waived by Lach's failure to provide an adequate record and proper briefing. As to those which remain, there was no error.

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[13] As we will discuss, Lach filed a record on appeal which was inadequate. By letter, we requested Lach, through his counsel, to supplement the record with the necessary documents. Lach did not do so.

[14] As discussed below, the trial court did not, in fact, reach this conclusion.

## *DISCUSSION*

1. *Bench Trial – The Trial Court Did Not Act Improperly In Any Way*

Lach states his first issue on appeal as follows: "Was the *new* trial judge unfamiliar with civil court procedures and rules of evidence as well as confused and mislead by [Caltrans] that design immunity was a complete defense to all of [Lach's] claims which led to several actions and prejudicial rulings in favor of [Caltrans] and contrary to law?" Lach's statement of the facts related to this issue is four pages long, and recounts, with little context and no argument, several statements made by the court and counsel during the bench trial. Thereafter, Lach's legal argument related to this issue consists of one and one-half pages of assertions of trial court incompetence or error, with no citation to relevant authority.[15] California Rules of Court, rule 8.204(a)(1)(B) provides that a brief must support each point by argument and, if possible, citation to authority. Lach has done neither. We therefore treat these claims of error as waived. (*Nelson v. Avondale Homeowners Assn.* (2009) 172 Cal.App.4th 857, 862.)

Were we to consider Lach's arguments on the merits, we would conclude that they are wholly baseless. Lach takes many statements by the trial court out of context, in an attempt to demonstrate that the trial court was out of its depth and did not understand the applicable law or procedures. Reviewing these statements in the context

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[15] Lach's sole citation to authority is a quotation from CACI No. 100, which directs jurors to not let bias, sympathy, prejudice, or public opinion influence their verdict. Lach suggests that judges should not do so either, a premise with which we do not disagree. He cites to no authority, however, regarding judicial bias.

of the entire record, however, indicates that the trial court was careful, conscientious, and constantly researching the law in order to make proper rulings. One example should suffice. Lach states that, "to the end of the court trial, the trial judge remained confused and stated 'I have to say, this is the first time I've encountered this issue. I apologize for not being able to easily answer it.' " We consider the context of this statement, which Lach fails to discuss. Caltrans had argued that the trial court could determine all three elements of design immunity in the bench trial; Lach had argued that the elements of causation and discretionary approval were for the jury. The court had sought and obtained written briefs on the issue, and the parties had argued the issue at great length. Thereafter, the court indicated a position, in line with the position Lach had argued, that the first two elements were jury issues. Caltrans's counsel continued to argue the point, and, after considering and rejecting these additional arguments, the court stated, "Look, I think we've gone as far as we can on this. I have to say, this is the first time I've encountered this issue. I apologize for not being able to easily answer it, but as – you both have good arguments, and I'm just trying to make the best decision I can, which accounts for my ambivalence all through this process." The court then confirmed its view that the issues were for the jury. In short, the trial court was not, as Lach characterizes it, "confused." Instead, the court, which had not only *resolved* the issue but had done so *in Lach's favor*, was simply indicating that it was a difficult issue which had required an unusual amount of argument.

2. *Bench Trial – The Tentative Rulings Were Not Error*

In a related argument, Lach takes the position that the trial court erred by issuing tentative rulings on the issues of causation and discretionary approval in the bench trial, although Lach concedes that the court ultimately concluded that the issues were for the jury to resolve. As the court ultimately concluded the issues were for the jury, its tentative ruling to the contrary was of no effect, and can therefore be no basis for an appeal.

To the extent Lach argues the trial court erred in *receiving evidence* on these two issues at the bench trial, Lach has waived the issue. As to the first issue, causation, *Lach's counsel* attempted to elicit testimony that the design of the median barrier caused the decedent's death. When Caltrans objected on the basis of relevance, the trial court initially agreed with Caltrans's position that causation was not an issue for the bench trial. However, Lach argued that he would like to put on his evidence of causation, and the court ultimately relented. As to the issue of discretionary approval, Lach did not object to Caltrans's evidence on the issue as irrelevant, and he therefore cannot raise the relevance objection on appeal. (Evid. Code, § 353, subd. (a).)

3. *Bench Trial – Trial Court Did Not Err in Concluding Lach's Negligent Construction Claim was Subject to Design Immunity*

At the bench trial, Lach's traffic engineering expert, Edward Ruzak, testified that the median barrier did not conform to Caltrans's plans in its block/rail differential. He conceded that this was the only way in which the median barrier allegedly did not conform to the Caltrans's plans. The trial court ultimately considered this challenge to

the median barrier to be one of design, not one of negligent construction. On the evidence, this was appropriate.

We begin with the governing plans. In any Caltrans construction project, the contract documents include the project plans, the standard plans, and the standard specifications. The project plans are specific to the project being constructed; the standard plans set forth uniform details for a particular type of improvement (in this case, a thrie-beam median barrier) to be used throughout the state; the standard specifications are general terms which are implied in all Caltrans contract documents.

In this case, the project plans refer to standard plan A77-F, Caltrans's standard plan for thrie-beam barriers. That plan specifically provides for a 1 inch block/rail differential.[16] As the block/rail differential in this particular median barrier was as high as 1 5/16 inches, the trial court was required to consider whether the 5/16 inch disparity was the result of negligent construction of the median barrier out of conformity with the plans, or, instead, a change within design tolerances.

Lach's evidence that the disparity was not within design tolerances was based on the standard plan. Lach noted that, at several places on the standard plan,

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[16] Ruzak agreed that a schematic under the "general notes" section of A77-F provides for the 1 inch differential. However, noting that a small schematic for sawtooth installations does not specifically indicate any block/rail differential, Ruzak took the position that the standard plan provided that there should be *no block/rail differential* on a sawtooth installation. We have reviewed the standard plan itself, as well as Caltrans's undisputed evidence that crash testing demonstrated the need for a block/rail differential of at least 1/2 inch in order to retain the barrier's integrity in a crash. In light of this evidence, we conclude that Ruzak's testimony that the standard plans provide for the block and rail to be flush in a sawtooth installation to be baseless and unworthy of belief.

a measurement was indicated along with a tolerance.[17] Ruzak testified that if tolerances are permitted, they are normally indicated on the standard plan. As no tolerance was indicated on the 1-inch block/rail differential, Lach took the position that the 1 5/16-inch differential as built was not permitted by the plans, and was therefore the result of negligent construction. Caltrans's evidence, however, completely defeated this argument.

Caltrans's witnesses testified that, as a general engineering principle, when no tolerance is provided, the tolerance is generally assumed to be 50% of the unit designation.[18] As the block/rail differential was measured in inches; this provided for a tolerance of plus or minus 1/2 inch. Moreover, the standard specifications, which govern any Caltrans construction project, provide that the resident engineer on a project is the "sole judge as to whether the work or materials deviate from the plans and specifications, and his decision as to any allowable deviations therefrom shall be final." Indeed, Ruzak *conceded*, on cross-examination, that the resident engineer on a project possesses the authority to determine the allowable deviation from the plans when the plans do not specify any tolerances. As the resident engineer on this median barrier

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[17] For example, one measurement indicated "± 1/16."

[18] We note that, in *Wyckoff v. State of California* (2001) 90 Cal.App.4th 45, 53, similar testimony was presented. In that case, the testimony indicated that when a length of, for example, "46 feet" is used, this implies that the length as constructed can be between 45.5 feet and 46.49 feet. (*Ibid.*) In other words, the length of the item *as constructed* is a length which, when rounded off to the last significant figure provided in the plans, is equal to the number provided in the plans. Thus, a block/rail differential of 1.49 inches is equal to 1 inch, when rounded to the nearest inch. (Had the plans provided for a block/rail differential of 1.0 inches, the permitted discrepancy presumably would have been only .049 of an inch.)

project approved the project as constructed according to the plans, the 1 5/16 inch block/rail differential was, in fact, part of the approved design. Thus, it was subject to the design immunity defense, assuming the elements of that defense were properly established.

4. *Bench Trial – There was Substantial Evidence that the Design was Reasonable in Every Respect*

Lach's final challenge arising from the bench trial is an argument that the trial court erred in concluding that substantial evidence existed that the design was reasonable. Preliminarily, we conclude this argument is waived by Lach's failure to provide an adequate record on appeal. Lach provided a complete reporter's transcript of the court trial, but failed to provide copies of many of Caltrans's exhibits which were admitted into evidence.[19] By letter of July 17, 2012, this court informed Lach that it is the appellant's burden to provide an adequate record, and that, to the extent the record is inadequate, we make all reasonable inferences in favor of the judgment. We indicated that Lach could augment the record with the missing exhibits by July 27, 2012. He failed to do so. We therefore make all reasonable inferences in favor of the judgment (*Amato v. Mercury Casualty Co.* (1993) 18 Cal.App.4th 1784, 1794; *Rossiter v. Benoit* (1979) 88 Cal.App.3d 706, 712) and assume that the missing exhibits constituted substantial evidence of reasonableness of design.

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[19] The admitted exhibits which are not part of the record include: ex. 104, pp. 13-16; ex. 105, pp. 1, 8; ex. 116; ex. 118; ex. 120; ex. 121, pp. 1-4; ex. 129; ex. 130; ex. 133; ex. 135-A-1; ex. 136; ex. 137; ex. 139; ex. 142, pp. 1, 5, 18; ex. 148, pp. 1, 66.

In any event, we conclude that Caltrans introduced substantial, if not overwhelming, evidence of the reasonableness of the median barrier design. As discussed above, substantial evidence of the reasonableness of the design is the third element of the affirmative defense of design immunity. (*Cornette v. Department of Transportation, supra*, 26 Cal.4th 63, 66.) "The rationale for design immunity is to prevent a jury from second-guessing the decision of a public entity by reviewing the identical questions of risk that had previously been considered by the government officers who adopted or approved the plan or design. [Citation.] ' " '[T]o permit reexamination in tort litigation of particular discretionary decisions where reasonable men may differ as to how the discretion should be exercised would create too great a danger of impolitic interference with the freedom of decision-making by those public officials in whom the function of making such decisions has been vested.' " [Citation.]' [Citation.]" (*Id*. at p. 69.) " '[A]s long as reasonable minds can differ concerning whether a design should have been approved, then the governmental entity must be granted immunity. The statute does not require that property be perfectly designed, only that it be given a design which is reasonable under the circumstances.' [Citation.]" (*Grenier v. City of Irwindale* (1997) 57 Cal.App.4th 931, 941.)

"The task for the trial court is to apply the deferential substantial evidence standard to determine whether any reasonable State official could have approved the challenged design. [Citation.] If the record contains the requisite substantial evidence, the immunity applies, even if the plaintiff has presented evidence that the design was defective. [Citation.] In order to be considered substantial, the evidence must be of

solid value, which reasonably inspires confidence." (*Arreola v. County of Monterey* (2002) 99 Cal.App.4th 722, 757.) "Generally, a civil engineer's opinion regarding reasonableness is substantial evidence sufficient to satisfy this element. [Citation.] Approval of the plan by competent professionals can, in and of itself, constitute substantial evidence of reasonableness. [Citation.] That a plaintiff's expert may disagree does not create a triable issue of fact. [Citations.]"[20] (*Grenier v. City of Irwindale, supra,* 57 Cal.App.4th at p. 941.)

As an overall matter, Caltrans's expert, Richard Ryan, a civil engineer who had previously worked for Caltrans, testified in great detail, and concluded that the design of the median barrier was entirely reasonable. In addition, we briefly consider the evidence of reasonableness of each specific challenged element of the design.

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[20] Lach relies on Government Code section 835.4, subdivision (a) which provides, in part, "The reasonableness of the act or omission that created the condition shall be determined by weighing the probability and gravity of potential injury to persons and property foreseeably exposed to the risk of injury against the practicability and cost of taking alternative action that would not create the risk of injury or of protecting against the risk of injury." That definition of reasonableness, however, applies to Government Code section 835.4, which provides that a governmental entity is not liable for injury caused by a *condition* of its property if the public entity establishes that the act or omission *that created the condition* was reasonable. We are not concerned with that section here. Lach's complaint was based on the *design* of the median barrier; Caltrans's affirmative defense was based on design immunity. The section governing design immunity, Government Code section 830.6, provides for design immunity when the design was approved in advance and "the trial or appellate court determines that there is any substantial evidence upon the basis of which (a) a reasonable public employee could have adopted the plan or design or the standards therefor or (b) a reasonable legislative body or other body or employee could have approved the plan or design or the standards therefor."

a. *Thrie-Beam Barrier Rather Than Concrete*

There was substantial evidence that the decision to use thrie-beam barrier rather than concrete median barrier was a reasonable decision based on cost.[21] In 1988, the project was proposed to be built with a concrete median barrier. It required the use of Type 50W concrete barrier at the estimated cost of $5,550,000 In 1989, the project was changed to provide for thrie-beam barrier, at an estimated cost of $2,370,000. This was chosen because the concrete barrier had become "economically unfeasible."

b. *Double Thrie-Beam Barrier*

The was substantial evidence that the decision to use a double thrie-beam barrier, rather than two separate thrie-beam barriers, was a reasonable decision. Whenever a median barrier of any type is installed, it is done so with the knowledge that the barrier will *increase* accidents. While the median barrier will decrease or eliminate cross-median accidents, it will increase single-vehicle accidents impacting the median barrier, as the barrier will decrease the amount of space in which a vehicle leaving the road can safely run out.[22] The installation of two thrie-beam barriers would not only be more costly than a double thrie-beam barrier, but it would increase the number of accidents by further decreasing the safe space in which a vehicle could run out before impacting a barrier.

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[21] Concrete and thrie-beam barriers are each appropriate for different widths of median. The instant median has a width for which either concrete or thrie-beam was permissible.

[22] This trade-off is acceptable because cross-median accidents have a much higher fatality rate than accidents in which a vehicle hits the median barrier.

c. *Sawtooth Configuration*

There was substantial evidence that the decision to use a sawtooth barrier configuration was reasonable. Indeed, once it was determined that a double thrie-beam barrier would be used, the sawtooth installation was necessary in areas of superelevation, as a thrie-beam barrier must be approximately 32 inches above the ground in order to properly function.[23]

d. *Steel Posts*

There was substantial evidence that the decision to use steel posts, rather than wood posts, was a reasonable decision based on price, availability, and utility. Posts in a sawtooth configuration must be taller and stronger than posts usually used in thrie-beam barrier. Wood posts at the necessary length are very expensive, very heavy, and "very difficult to deal with."[24] Steel posts are therefore typically used in sawtooth installations.

e. *Steel Blocks*

There was substantial evidence that the decision to use steel blocks rather than wood blocks was reasonable. The governing standard specifications provided that wood blocks were to be used with wood posts and steel blocks were to be used with steel

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[23] If the thrie-beam barrier is too high off the ground, vehicles would go under it in an accident.

[24] Indeed, while Ruzak testified that, if two separate thrie-beam barriers had been used, wood posts could have been on the northbound (high) side, he conceded that "[s]teel is better," and testified that he did not actually study whether wood would have been strong enough in a post tall enough to reach the northbound lanes.

posts. This was the state of the art at the time, as it was believed that wood posts would shear off steel blocks in an impact.[25]

f. *Block/Rail Differential*

The decision to allow a block/rail differential of as much as 1 5/16 inches was reasonable. It is difficult, if not impossible, to construct a thrie-beam median barrier in California without some variance in the block/rail differential.[26] A block/rail differential of 1 5/16 inches was within general engineering tolerances of plus or minus 1/2 inch. Moreover, federal standards for thrie-beam barrier provide for a block/rail differential of 1 1/4 inch. Clearly, a block/rail differential a mere 1/16 of an inch above the federal standard is reasonable.

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[25] When a block, of any type, is attached to a steel I-beam post, it is attached to the flange, with two bolts, one on either side of the end of the web. It was thought, at the time, that attaching a wood block to a steel post with two bolts would put too much strain on the block in an impact, resulting with the block cracking or shearing off. When a wood block is attached to a wood post, however, it could be connected with a bolt through the center of the wood block and post.

[26] This is so because the metal posts and blocks come from the factory pre-cut, with the bolt holes set to take into account a 1 inch block/rail differential. When inserting posts in the ground, it is not always possible to reach the exact depth necessary with precision, nor to keep the posts plumb. In attempting to attach a 13-foot long rail element to a set of posts which do not have the pre-drilled block holes at precisely the same height off the ground, it is not always possible to retain a 1 inch block/rail differential. Indeed, the standard plans provide for the mounting holes in steel posts and blocks to be somewhat larger than the bolts in order to allow for some flexibility in the installation. This sometimes results in a block/rail differential over 1 inch. In response to the suggestion that blocks which protruded more than 1 inch over the rail could be re-drilled with new bolt holes or have their excessive height cut down in the field after installation, Caltrans witnesses noted that the standard specifications prevent modifying the blocks in that manner in the field. This is so because cutting the blocks in the field would ruin the corrosion protection of the galvanized steel blocks.

g. *Consideration of Motorcyclists*

To the extent Lach argues that it was unreasonable for Caltrans to design this barrier without considering the specific risks it posed to motorcyclists, there was substantial evidence that Caltrans's decisions were reasonable in this regard. Caltrans introduced evidence that, at the time this median barrier was constructed, neither state nor federal standards required crash testing of median barriers with motorcycles. Caltrans introduced evidence that the state of the art at the time was to not consider the risks the design of any *particular* median barrier posed to motorcyclists, on the theory that there was a high risk of death to a motorcyclist impacting *any* median barrier at freeway speeds, regardless of design. While Ryan testified that he was aware of certain motorcycle crash test studies which had concluded smooth barriers presented less of a risk to motorcyclists than jagged ones, Ryan indicated that these studies were at slower speeds than freeway speeds. Ryan testified, instead, to an Australian study which established that there was a 100 percent likelihood of death for a motorcyclist hitting any barrier in excess of 50 miles per hour.

In sum, Caltrans introduced substantial evidence that the design of the median barrier at issue was reasonable in all respects. The trial court did not err in finding this element of design immunity established.

5. *Jury Trial – The Trial Court Did Not Act Improperly In Any Way*

As with the bench trial, Lach makes a general contention of trial court impropriety in the jury trial. Lach expresses this issue as follows: "Did the *new* trial judge continue to be confused and misled by [Caltrans] that design immunity was

a complete defense to all of [Lach's] claims which led to several additional actions and prejudicial rulings in favor of [Caltrans] and contrary to law?" Lach's statement of the facts with respect to this contention encompasses four and one-half pages in his brief, superficially discussing multiple statements and rulings of the trial court, including: (1) the denial of Lach's motion to exclude one of Caltrans's experts; (2) the denial of Lach's motion to disqualify Caltrans's counsel; (3) the trial court's "assist[ing]" Caltrans's counsel with objections; (4) the trial court's granting of Caltrans's motion to limit testimony regarding the motorcycle crash test studies Lach's accident reconstruction expert claimed he relied upon; (5) the trial court's granting of Caltrans's motion to limit Ruzak's expert testimony to the opinions he proferred during discovery; (6) the trial court's mistaken reference to a "CACI" jury instruction as a "CAL CRIM" instruction; (7) the trial court's denial of Lach's motion to reconsider its ruling from the bench trial that substantial evidence of reasonableness existed; (8) the trial court's denial of Lach's motion, after the parties had rested and the court heard argument on Caltrans's motion for directed verdict, to reopen his case to introduce testimony from a previously undisclosed expert witness; and (9) the trial court's denial of Lach's motion for mistrial.

Lach's legal argument on these issues includes only the most superficial citation to, and discussion of, legal authority. In addition to citing to the standard of review for motions for a directed verdict, a case holding that conflicting declarations from experts can establish a triable issue of fact, and a reference to the statutes pursuant to which Lach moved for a mistrial, Lach's *only* citation to authority in this entire section of legal

argument is an assertion that his expert's testimony (and crash test documents) were excluded "contrary to California Evidence Code §§ 721, 802, 804." (Underlining omitted.) Lach includes no discussion of these statutes or their applicability to the trial court's orders, nor does he even acknowledge that the trial court's orders excluding the evidence identified additional grounds, including Evidence Code section 352. As to the other seven alleged erroneous rulings or statements, Lach does not include or discuss *any* authority providing a legal basis for concluding these rulings or statements constitute reversible error. Having failed entirely in his burden to support his arguments with argument and citations to authority, we consider all of these contentions waived.[27] (Cal. Rules of Court, rule 8.204(a)(1)(B); *Nelson v. Avondale Homeowners Assn., supra*, 172 Cal.App.4th at p. 862.)

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[27] We note, however, that we have reviewed the entire record and see no error in the trial court's rulings, nor any bias in the court's actions. Indeed, although Lach asserts that the court assisted Caltrans's counsel with objections, he fails to recognize that the court assisted his own counsel with objections several times. At one point, in response to a question defense counsel asked a witness, Lach's counsel stated, "I'm going to object, your honor." The court stated, "Sustained." Lach's counsel continued, "It's leading and exceeds the scope of direct examination also." The court stated, "Overruled on that basis, but sustained." As to the issue of the exclusion of the motorcycle crash test studies, the trial court did not abuse its discretion in excluding the studies under Evidence Code section 352. (*People v. Lightsey* (2012) 54 Cal.4th 668, 714 [a trial court's ruling under Evidence Code section 352 is reviewed for abuse of discretion].) The studies, in general, related to motorcycles crashing into posts and guardrails, but not median barriers, and certainly not sawtooth median barriers. Several were at speeds below freeway speeds. Moreover, as we discuss below, a change in the state of *knowledge* regarding motorcycle crash tests does not constitute a change in *physical conditions* necessary to justify a loss of design immunity due to changed conditions. As such, the trial court did not err in concluding that the admission of the studies had a high likelihood of confusing the jury and consuming an undue amount of time in comparison to their minimal probative value.

6. *Jury Trial – The Trial Court Did Not Grant a Directed Verdict on the Issue of Dangerous Condition*

In order to prevail on his complaint, Lach was required to establish that the median barrier constituted a dangerous condition of property. Design immunity, on the other hand, was an affirmative defense pleaded by Caltrans. The trial court granted Caltrans's motion for directed verdict on the basis that Caltrans had established, as a matter of law, the elements of design immunity. On appeal, Lach argues that he had raised a triable issue of fact as to dangerous condition, so the court erred in granting Caltrans's motion for directed verdict. The argument is meritless. The court concluded that Caltrans established its affirmative defense of design immunity as a matter of law; as such, it provided a complete defense *even if* Lach could establish a dangerous condition. As such, whether Lach established a triable issue of fact of dangerous condition is immaterial.

7. *Jury Trial – The First Two Elements of Design Immunity Were Established as a Matter of Law*

The first two elements of design immunity are: (1) a causal relationship between the plan or design and the accident; and (2) discretionary approval of the plan or design prior to construction. (*Cornette v. Department of Transportation, supra,* 26 Cal.4th at p. 66.) The trial court granted a directed verdict on the issue of design immunity, concluding that these two elements were established as a matter of law (and the third element had been established in the bench trial). Lach contends this was error.

" 'A directed verdict may be granted only when, disregarding conflicting evidence, giving the evidence of the party against whom the motion is directed all the

value to which it is legally entitled, and indulging every legitimate inference from such evidence in favor of that party, the court nonetheless determines there is no evidence of sufficient substantiality to support the claim or defense of the party opposing the motion, or a verdict in favor of that party. [Citations.]' [Citation.] On appeal, we decide de novo whether sufficient evidence was presented to withstand a directed verdict. [Citation.]" (*Bonfigli v. Strachan* (2011) 192 Cal.App.4th 1302, 1315.) The first two elements of design immunity can be resolved by the court as an issue of law on a motion for directed verdict, when there is no sufficient evidence to the contrary. (See *Cornette v. Department of Transportation, supra,* 26 Cal.4th at p. 75.)

a. *Causation*

As to the issue of causation, Lach argues that a triable issue of fact existed because *Caltrans* introduced evidence that Lach's wife's death might not have been caused by the design of the median barrier. Indeed, Caltrans introduced evidence that the initial impact of Lach's wife's helmet against the barrier rail was a "severe" impact with sufficient force to have caused a potentially fatal cervical spine injury. Such an injury would not have been identified by the forensic pathologist because he did not perform a complete autopsy. As such an injury would have been caused by impact with any median barrier, regardless of design, Caltrans's evidence supported the conclusion that the design of the median barrier *did not cause* Lach's wife's death.

Lach's argument is technically correct. However, Lach overlooks the fact that if the design of the median barrier did not cause his wife's death, Lach would be unable to recover for dangerous condition of public property, as the only basis for liability Lach

pleaded was that the negligent design of the median barrier caused Lach's wife's death. In other words, the evidentiary dispute over causation is a non-issue. If the design of the barrier did not cause Lach's wife's death, Lach could not recover for wrongful death; if the design of the barrier did cause her death, the first element of design immunity is established.

b. *Discretionary Approval*

We turn to the issue of discretionary approval. This " 'simply means approval in advance of construction by the legislative body or officer exercising discretionary authority.' [Citation.] A detailed plan, drawn up by a competent engineering firm, and approved by a [government] engineer in the exercise of his or her discretionary authority, is persuasive authority of the element of prior approval." (*Grenier v. City of Irwindale, supra,* 57 Cal.App.4th at p. 940.)

Discretionary approval need not be established with testimony of the individual who approved the project. (*Alvarez v. State of California, supra,* 79 Cal.App.4th at pp. 730-731.) A former employee may testify to the entity's "discretionary approval custom and practice" even if the employee was not involved in the approval process at the time the challenged plan was approved. (*Id*. at p. 732.) Moreover, " '[a] signature is presumed to be genuine and authorized if it purports to be the signature, affixed in his official capacity, of [¶] . . . [a] public employee of any public entity in the United States.' (Evid. Code, § 1453.) Given this presumption, the signatures of the various Caltrans engineers, affixed in their official capacity as employees of the State, furnishes 'evidence sufficient to sustain a finding' that the writings were what the State claimed

them to be. (Evid. Code, § 1400, subd. (a).) Thus, the plans themselves provide evidence that the Project design was given the requisite discretionary approval prior to construction." (*Alvarez v. State of California, supra*, 79 Cal.App.4th at pp. 728-729.)

Caltrans introduced the testimony of Ryan, a former Caltrans employee, as to the Caltrans approval practices at the time this median barrier was approved. Caltrans also introduced evidence of discretionary approval of the project at every stage. Exhibit 119 is the Supplemental Project Report for the construction of the median barrier. It is signed, under the words "Approved By" by Court Burrell, Deputy District Director, Office of Project Development, with an "Approval Date" of July 28, 1989. Ryan testified that Burrell, as the holder of that position, possessed the discretionary authority to approve the project report. Exhibit 120 consists of the Project Plans for the construction of the median barrier. The plans are signed by Albert Yu, a registered civil engineer, with a "plan approval date" of June 18, 1990. Ryan testified that Yu, as a registered civil engineer, possessed the discretionary authority to approve these plans.[28] Finally, the project plans themselves incorporated standard plan A77-F, the state's standard plan for thrie-beam barriers. Exhibit 132[29] is the then-applicable version of the state's standard plans. Standard plan sheet A77-F was signed by C.D. Bartell, Chief, Division of Traffic Engineering with an approval date of January 4,

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[28] The plans also indicate approval, on April 19, 1991, of the plans "as-built," by "A. Morelan," a resident engineer, who approved that the work was built according to the plans.

[29] The tag on the exhibit erroneously indicates that it was Exhibit 133.

1988. Ryan testified that Bartell, as holder of that position, had the discretionary authority to approve the standard plan.[30] Lach presented no evidence to the contrary.

Lach argues, however, that unless the decisionmakers *took into account* the risk the decision posed to motorcyclists, the discretionary approval element cannot be established in this case. Design immunity "does not immunize decisions which were not made." (*Grenier v. City of Irwindale, supra,* 57 Cal.App.4th at p. 940.) Lach argues that this authority requires proof that the decisionmaker considered (and rejected) the specific risks that the design of the median barrier posed to motorcyclists; otherwise, it cannot be said that the design of the median barrier, with its attendant risks to motorcyclists, was a decision which was truly made. We disagree. Caselaw discussing the requirement that the decision must have been made requires that the "*injury-producing feature* must have been a part of the plan approved by the governmental entity." (*Id.,* at p. 941 (emphasis added); *Levin v. State of California* (1983) 146 Cal.App.3d 410, 418) Thus, for example, in *Levin v. State of California, supra,* 146 Cal.App.3d at pp. 416-418, the dangerous condition was the absence of a guardrail. There was no evidence that the individual who had discretionary authority to approve the plan had exercised his discretion to approve the plan without a guardrail despite applicable guardrail standards which warranted a guardrail for that plan. Similarly, in *Cameron v. State of California* (1972) 7 Cal.3d 318, 323-326, the

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[30] While Caltrans did not specifically introduce evidence regarding the discretionary approval of its standard *specifications*, Lach does not attempt to argue that this failure of proof defeats Caltrans's claim for design immunity to the limited extent the design features were compelled by the standard specifications.

dangerous condition of the road was an inconsistently banked S-curve, while the approved plans contain no design for, or mention of, the banking of the curve. The inquiry focuses on whether the particular injury-producing feature was considered, not whether a particular risk was.

As applied to this case, the immunity applies because the injury-producing feature was the double-thrie-beam barrier with steel posts and steel blocks in a sawtooth installation, with a block/rail differential of between 1 and 1 5/16 inches; each of these elements was a part of the approved plans. That is all that is necessary for this element of design immunity.

8. *Jury Trial – The Trial Court Did Not Err in Granting A Directed Verdict on the Issue of Changed Conditions*

Design immunity, once obtained, does not continue in perpetuity. (*Cornette v. Department of Transportation, supra*, 26 Cal.4th at p. 66.) "To demonstrate loss of design immunity a plaintiff must . . . establish three elements: (1) the plan or design has become dangerous because of a change in physical conditions; (2) the public entity had actual or constructive notice of the dangerous condition thus created; and (3) the public entity had a reasonable time to obtain the funds and carry out the necessary remedial work to bring the property back into conformity with a reasonable design or plan, or the public entity, unable to remedy the condition due to practical impossibility or lack of funds, had not reasonably attempted to provide adequate warnings. (Citations.)" (*Ibid.*) Although the trial court granted a directed verdict in favor of Caltrans based on Lach's failure to establish a triable issue of fact as to the first two elements, we need address

only the first: that the plan or design had become dangerous because of a change in physical conditions.

Initially, there was a dispute in the law regarding whether a plaintiff could establish a loss of design immunity without establishing a change in *physical* conditions. (Compare *Bane v. State of California* (1989) 208 Cal.App.3d 860, 871 [if the design has become dangerous without a change in physical conditions, design immunity may be lost] with *Grenier v. City of Irwindale, supra*, 57 Cal.App.4th at p. 945 [changed physical conditions are a prerequisite to the loss of design immunity].) However, the *Bane* court subsequently reconsidered the issue and concluded that "changed physical conditions are necessary to defeat design immunity."[31] (*Alvarez v. State of California, supra,* 79 Cal.App.4th at p. 724.) Thus, it can no longer be disputed that a plaintiff must establish changed physical conditions in order to defeat design immunity. We note, however, that the requirement is not for a plaintiff to establish changed physical conditions in the abstract. A plaintiff must establish changed physical conditions which caused the initial design to become dangerous.

As the trial court granted a directed verdict on this issue, we must consider whether Lach introduced evidence of sufficient substantiality to support the claim of changed physical conditions. Lach relied on six purported changes in physical conditions: (1) an increase in traffic volume; (2) an increase in the speed limit; (3) an increase in the height and engine capacity of motorcycles; (4) a change in Caltrans's

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[31] Although the *Bane* court reversed itself in *Alvarez* in 1999, Lach relied on *Bane* before the trial court as late as 2011. He no longer does so.

standard plans; (5) Caltrans's replacement of some thrie-beam barriers with concrete at other locations; and (6) a change in the state of research. As we now discuss, Lach failed to introduce substantial evidence which would establish that any of these purported changes constituted a change in physical conditions rendering the median barrier dangerous.

a. *Increase in Traffic Volume*

As to an increase in traffic volume, it was undisputed that the average daily traffic volume for this stretch of highway, when the project was initially approved, was 48,000 vehicles, and that the average daily volume, at the time of the accident in 2008, was 68,000 vehicles. However, it was also undisputed that when the project was initially approved, the plan report indicated the projected average daily traffic in 2010 to be 65,000 vehicles, and the plan was approved with this increased future traffic in mind. Moreover, Caltrans introduced undisputed evidence that the design capacity of the highway itself was at least 200,000 vehicles per day. Thus, the increase in traffic had no effect on the functionality or dangerousness of the median barrier, and Lach introduced no evidence to the contrary. (See *Wyckoff v. State of California, supra,* 90 Cal.App.4th at p. 60 [an increase in traffic volume which does not exceed the design capacity does not establish a changed condition].)

b. *Increase in Speed Limit*

As to the increase in speed limit, it was undisputed that the original speed limit on this stretch of I-5 was 65 miles per hour. This was changed to 55 miles per hour in 1974, (before the median barrier was built), and returned to 65 miles per hour in 1995

(after the median barrier was built). However, Caltrans introduced evidence that that *operating speed* of I-5 was not substantially impacted by the change in speed limit, as traffic was operating at or near 65 miles per hour both before and after the change. Indeed, Caltrans introduced evidence that, statewide on rural freeways,[32] the increase in speed limit resulted in an increase in operating speed of approximately 0.3 miles per hour. It therefore had no effect on the functionality or dangerousness of the median barrier, and Lach introduced no evidence to the contrary. (See *Wyckoff v. State of California, supra,* 90 Cal.App.4th at p. 60 [an increase in speed limit which does not cause an increase in accident rates does not establish a changed condition].)

c. *Increase in Height and Engine Capacity of Motorcycles*

While Lach introduced some evidence that the height and engine capacity of motorcycles had increased, in general, between 1989 and 2008, Lach introduced *no* evidence that this increase affected the functionality or dangerousness of the median barrier. Lach suggested that if the median barrier had been higher, Lach's wife might not have been thrown to the top of it, but introduced no evidence that being thrown to the top of the barrier was a risk that was increased by the increased height and/or power of motorcycles.

d. *Change in Caltrans's Standard Plans*

It was undisputed that, in 1999, Caltrans modified its standard plans for thrie-beam barriers to eliminate the use of steel blocks, and provide solely for the use of

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[32] It is undisputed that the section of freeway where the injury occurred was rural.

wood blocks. In 2002, a second modification allowed the use of recycled plastic blocks.[33]

But case authority establishes that changes in standard plans alone do not establish changed physical conditions. In *Dole Citrus v. State of California* (1997) 60 Cal.App.4th 486, 491-492, the plaintiff relied on a change in state policies and a new statute, in order to establish changed physical conditions. The trial court granted summary judgment to the defendant state, and the appellate court affirmed, concluding there was no triable issue of fact as to changed physical conditions. (*Id*. at p. 493.) The court stated, "[W]e do not agree with the concept that changes in the state's design manual, which regularly seek to improve design standards for new construction, support the conclusion or somehow constitute an admission that the superseded design standards were defective. It is just as likely that the previous designs were quite adequate for their intended purpose and that the new standards only represent an attempt to improve the design. After all, an old mousetrap may still work effectively even after someone invents a better one." (*Ibid.*)

This rationale is particularly applicable in the instant case, as the evidence was undisputed that the modifications to Caltrans's standard plans had nothing to do with the safety of thrie-beam barriers or the safety of motorcyclists. Instead, the change came about in the following manner. The federal government had conducted crash tests

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[33] The design of the wood and plastic blocks changed from the design previously used. The wood or plastic block had two notches on the side facing the post, so that it could slide over the flange of a metal I-beam.

with *guardrails* using steel blocks.[34] The steel blocks did not perform well in certain respects in those crash tests, and the federal government therefore decided to preclude the use of steel blocks in its approved design for guardrails. California followed the federal government's lead,[35] and, as a conservative measure, removed steel blocks from its design for thrie-beam barriers as well. There was no indication that the steel blocks in thrie-beam median barrier caused the same problems discovered by the federal government in crash testing guardrail. In fact, the federal government changed its standards to preclude steel blocks *only* in guardrail; it continued to permit steel blocks in thrie-beam median barrier. Indeed, the federal government continued to approve the use of steel blocks in thrie-beam barrier at least through the date of the accident in this case.

Thus, although Caltrans had changed its standard plans to preclude the use of steel blocks in thrie-beam median barrier, there is nothing about the circumstances of the change from which it can be inferred that the use of steel blocks in thrie-beam median barrier had become dangerous.

e. *Replacement of Some Thrie-Beam Barrier with Concrete*

It is undisputed that, after the construction of the median barrier at issue in this case, Caltrans replaced some thrie-beam barriers with concrete barriers at other

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[34] The details of those crash tests are not in the record before us. However, it is clear that they did not involve motorcycles.

[35] A state is required to be in substantial compliance with federal highway standards in order to obtain federal highway funds for its projects.

locations in the state.[36] Preliminarily, we fail to see how altering the median barriers in *other* locations results in a changed physical condition at the accident site.[37] In any event, the undisputed evidence indicated that metal beam barriers were removed and replaced with concrete barriers only in situations where there was a change in construction, such as adding a carpool lane to the freeway, which *narrowed* the median. Thrie-beam barrier is not appropriate for narrow medians. Thrie-beam barrier is flexible, in a crash situation, and can redirect a vehicle back toward traffic lanes. When the median is narrow and there is no room for redirection, a rigid barrier, such as concrete, is called for. Thus, it is apparent that when changes to a roadway narrow the median, the roadway changes constitute a changed physical condition which could render the use of a previously-acceptable thrie-beam median barrier dangerous; replacement of the thrie-beam barrier with concrete is therefore necessary. That changed physical conditions on these roadways required replacing their thrie-beam median barriers with concrete is no evidence that the thrie-beam barrier *in this case* should similarly have been replaced, when there is no suggestion that the median area was similarly narrowed.

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[36] To say this was undisputed is to give Lach the benefit of any doubt. While one witness testified to the replacement of some thrie-beam median barriers with concrete, Ruzak, Lach's own expert, testified that the only situations he knew in which concrete median barriers replaced metal median barriers involved "the old metal beam barrier" which was "more like a guardrail," and not thrie-beam.

[37] It appears that this evidence, if relevant at all, would be more relevant to the issue of whether Caltrans had *notice* of a dangerous condition arising from a change in physical conditions.

f. *Changes in the State of Research*

Lach introduced into evidence excerpts from the 2002 Roadsign Design Guide issued by AASHTO, the American Association of State Highway Transportation Officials.[38] Ruzak testified that by 2002, AASHTO changed their guidelines regarding "this type of barrier" based on research reports and crash testing. Ruzak testified that, upon reviewing the 2002 AASHTO Roadsign Design Guide, he inferred from it that "the concrete shape is better than metal guardrail in terms of reducing the fatalities for motorcycles." However, Ruzak conceded that, in the very same AASHTO design guide, thrie-beam barriers with steel posts and steel blocks were still approved as acceptable.[39]

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[38] The trial court admitted into evidence only pages 10 and 15 from the 2002 AASHTO Roadside Design Guide. Lach has included in the record on appeal pages 11 and 12 of this document, yet makes no argument that the trial court erred in sustaining Caltrans's objections to these pages.

[39] Although the relevant portion of the AASHTO design guide was not admitted into evidence, we quote it here at length: "There have been numerous instances nationwide where roadside barriers have contributed to the severity of crashes involving motorcycles. Most commonly, motorcyclists have been seriously injured or killed after impacting some types of open-faced traffic barriers, particularly after contacting the edges of steel guardrail posts or the tops of these posts where they project above the rail element. Some European countries have attempted to address this concern at locations having both high motorcycle use and a high number of crashes by adding a lower rubrail to the design or by padding the posts with expanded foam. *However, no systematic approach toward this issue has been developed because of the random nature of motorcycle crashes and the questionable effectiveness of modifications to existing barriers. Based on the experience of other countries and the lack of any cost-effective countermeasures or barrier designs, there appears to be little basis for developing guardrails designed for motorcyclists.* There is some suggestion that a smooth, solid-faced barrier such as a concrete safety shape is least likely to cause traumatic injuries to cyclists upon contact." (Emphasis added.) While Lach perceives this evidence as putting Caltrans on notice that its thrie-beam median barriers were

Lach takes the position that the 2002 AASHTO Roadsign Design Guide, and other documentary evidence which was excluded by the trial court, demonstrated (or would have demonstrated) that, long before the accident in this case, researchers were coming to the conclusion that metal thrie-beam median barriers were more dangerous to motorcyclists than concrete median barriers were. While we question Lach's characterization of the contents of the documents, it is Lach's legal theory which fails. Simply put, a change in the state of *knowledge* is not a change in *physical conditions*, which is necessary to defeat design immunity. That the roadside barrier design community might have concluded that a previously acceptable roadside barrier design was, in fact, dangerous is not a changed physical condition. Nor would it be a changed physical condition if the roadside barrier design community concluded that a previously acceptable roadside barrier design was, in fact, less safe than a new, previously unknown, barrier design. These are simply changes in the way a previously acceptable design is viewed. Without a change in physical conditions, there is no loss of design immunity for the previously acceptable design.

g. *No Increase in Accident Rate*

While we have concluded that none of the alleged changed conditions constitute a changed physical condition, we also note that the evidence was undisputed that there

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unsafe for motorcyclists and should be replaced by concrete barriers, we disagree. While the last sentence indicates there is "some suggestion" that concrete is preferable, the italicized portion demonstrates that research is in its infancy and no effective, or cost-effective, approach has yet been discovered. Indeed, the trial court did not err in excluding this evidence under Evidence Code section 352; the language is inconclusive at best.

was no increase in the accident rate, which would reflect an increase in dangerousness. In the 10 1/2 years prior to Lach's wife's accident,[40] there were no reported accidents of a motorcycle striking the median barrier anywhere on the 13 miles of median barrier comprising this project. In the 5 years prior to the accident, in the 1/2-mile surrounding the accident site, there were only two accidents involving the median, which involved property damage only.[41] Thus it is apparent that there was no increase in dangerousness after the construction of the median barrier.

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[40] Data was not available prior to January 1, 1998.

[41] This was interpreted to mean that the median barrier was serving its purpose of preventing cross-median accidents.

## *DISPOSITION*

The judgment is affirmed. Caltrans shall recover its costs on appeal.

***NOT TO BE PUBLISHED IN THE OFFICIAL REPORTS***

CROSKEY, Acting P. J.

WE CONCUR:

KITCHING, J.

ALDRICH, J.