

**United States Court of Appeals  
for the Federal Circuit**

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**STEVE NEVILLE, SUBSTRUCTURE SUPPORT,  
INC., TDP SUPPORT, INC.,**  
*Plaintiffs-Appellants*

v.

**FOUNDATION CONSTRUCTORS, INC.,  
FOUNDATION PILE, INC.,**  
*Defendants-Appellees*

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2020-1132

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Appeal from the United States District Court for the  
Central District of California in No. 5:17-cv-02507-AG-  
AGR, Judge Andrew J. Guilford.

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Decided: August 27, 2020

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JOEL KAUTH, KPPB LLP, Anaheim, CA, for plaintiffs-  
appellants. Also represented by MARK YEH.

TYSON K. HOTTINGER, Maschoff Brennan, Irvine, CA,  
for defendants-appellees. Also represented by JARED J.  
BRAITHWAITE, Salt Lake City, UT; ROBERT PARRISH  
FREEMAN, JR., Park City, UT.

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Before LOURIE, O'MALLEY, and CHEN, *Circuit Judges*.

CHEN, *Circuit Judge*.

Plaintiff-appellants Steve Neville, Substructure Support, Inc., and TDP Support, Inc. (collectively, “Substructure”) appeal the district court’s ruling of summary judgment that certain accused products of Foundation Constructors, Inc. and Foundation Pile, Inc. (“Foundation”) do not infringe claims 1, 2, 4, 6–9, 16–20, 22–30, 32, and 33 of U.S. Patent No. 7,914,236 and claims 1–6, 25–29, 31, and 39 of U.S. Patent No. 9,284,708. We affirm.

#### BACKGROUND

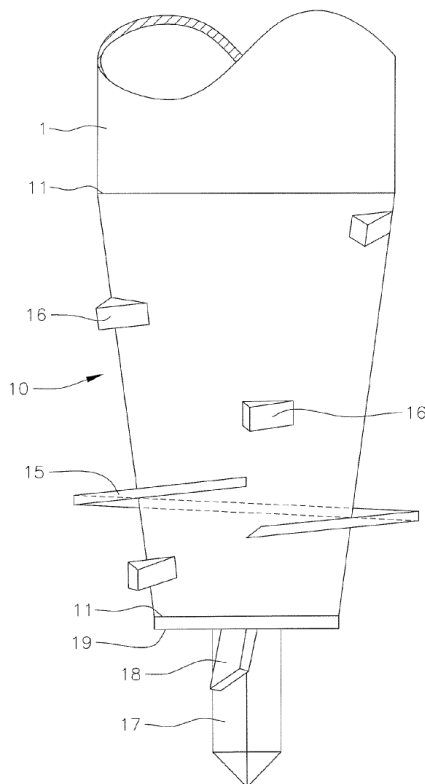
The ’708 patent and its parent ’236 patent relate to foundation piles, which are tubular structures placed into the ground to provide stability for the foundations built over them. Such foundation piles can be driven into the ground through direct application of force (similar to a hammer and nail), or through rotational torque (like a screwdriver and screw). The claimed inventions are directed to the latter, screw-type, foundation pile. The specification explains that rotational torque is applied through a “helical flight” at the tip of the foundation pile, which “draws the pile into a soil bed” and is depicted in the figures as a structure similar to the helical structure of a screw. ’236 patent at col. 4 ll. 3–6, Fig. 1.

The tip of the foundation pile, or pile tip, contains an end plate—a “bottom surface” that “caps off the end of the conical body of the pile tip [], closing it off from the soil in which it is to be placed.” *Id.* at col. 4 ll. 26–28, col. 6 ll. 57–59. The surface of the end plate exerts forces “on the surrounding soil bed as it is driven into the soil.” *Id.* at col. 7 ll. 28–35; *see also id.* at Fig. 7 (illustrating “force vectors” depicted as arrows from end plate 79 to the surrounding soil). “Likewise, the surrounding soil bed exerts reaction forces on the pile tip [] in response” to the end plate. *Id.* at col. 7 ll. 35–37. But because the reactionary forces from the surrounding soil “are not of as great a magnitude” as with prior pile systems, “the disturbance to the soil surrounding

the pile [] is minimized as the pile [] is sunk into the soil bed.” *Id.* at col. 7 ll. 35–44. As a result, the invention’s pile tip converts rotational torque into a downward force applied to the soil by the surface of the end plate in a way that minimizes “disturbance to the soil surrounding the pile,” with the result that the “surrounding soil [is] packed tighter and therefore provide[s] a more solid support for the pile [], leading to greater ultimate load capacities.” *Id.* at col. 7 ll. 35–48.

Some embodiments provide an attachment that protrudes from the surface of the end plate to help “break up the soil.” *Id.* at col. 7 ll. 4–27 (describing the addition of cutting teeth, a point shaft, or an “extended shaft thinner in diameter than the end plate” which “extend[s] out axially from the end plate”); *see also id.* at Figs. 1, 4–6. Fig. 1 below illustrates a pile tip 10 including both an end plate 19 and protruding attachments (i.e., point shaft 17 and cutter teeth 18). As previously explained, point shaft 17 and cutter teeth 18 break up the underlying soil while downward force is applied through helical flight 15 and the surface of end plate 19.

FIG. 1



*Id.* at Fig. 1.

The parties dispute the construction of two claim limitations relating to the “end plate,” which separate the claims at issue into two groups.

The first set of claims require an “end plate having a substantially flat surface disposed perpendicular to the centerline of the tubular pile.” Claim 1 of the ’236 patent is representative:

1. A screw pile substructure support system, comprising:
  - a tubular pile having a centerline and a first diameter, wherein the tubular pile comprises a first

cylindrical section and a second cylindrical section attached by a weld;

a substantially conically shaped pile tip sharing a centerline with the tubular pile, the substantially conically shaped pile tip having a first end and a second end, the first end being connected to the tubular pile and having a second diameter;

a helical flight attached to an exterior surface of the substantially conically shaped pile tip, wherein the helical flight extends along the exterior surface for a distance of at least one third of a circumference of the substantially conically shaped pile tip; and

*an end plate fixedly attached to the second end of the pile tip, the end plate having a substantially flat surface disposed perpendicular to the centerline of the tubular pile;*

wherein the first diameter is substantially similar to the second diameter.

'236 patent at claim 1 (emphasis added).

The second set of claims require “at least one protrusion extending outwardly from the end plate.” Claim 1 of the '708 patent is representative:

1. A screw pile substructure support system comprising:

a tubular pile having a centerline and a substantially constant diameter throughout a length of the tubular pile; and

a pile tip comprising:

a tapered portion comprising a first end having a first diameter and a second end having a second diameter, wherein the first diameter is greater than the second diameter and about equal to the

diameter of the tubular pile, and wherein the first end is attached to the tubular pile;

a first helical flight attached to and extending along an exterior surface of the tapered portion;

an end plate closing the second end of the tapered portion; and

*at least one protrusion extending outwardly from the end plate.*

'708 patent at claim 1 (emphasis added).

The district court granted summary judgment of non-infringement as to accused products having Foundation's ED2M and ED3 pile tips, concluding that these accused products did not include any "end plate" to a pile tip as claimed. J.A. 14. In particular, the district court found that the accused ED2M and ED3 pile tips "lack (1) an end plate having a substantially flat surface and (2) an end plate with at least one protrusion extending outwardly from it." *Id.* The ED2M and ED3 pile tips are substantially the same for the purposes of this appeal and will be referred to jointly as the ED2M/ED3 pile tip.<sup>1</sup>

The parties' claim construction disputes are best illustrated by reference to the accused ED2M/ED3 pile tip. As shown in an annotated photograph provided by Substructure's expert, Substructure alleges that a horizontal slice of the accused pile tip is the claimed "end plate":

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<sup>1</sup> The ED2M and ED3 pile tips differ only with respect to the widths of the helical flights on the exterior of the pile tip. J.A. 2457.



J.A. 1269.<sup>2</sup> Substructure’s expert testified that this highlighted region of the accused pile tip is an “end plate” having two “substantially flat surfaces”—a first surface “fac[ing] the interior of the pile tip” and a second surface “that interfaces with the point shaft.” *Id.* Substructure’s expert further testified that the point shaft is a “protrusion” extending outwardly from the alleged end plate of the

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<sup>2</sup> In some instances, it appears that the top of the ED2M/ED3 pile tips is “cut off” and replaced with a “more aggressive fishtail.” J.A. 15.

accused pile tip. *Id.* at 1256 (referring to the point shaft as a fishtail-shaped protrusion).

The district court reasoned that, contrary to Substructure’s infringement theory, the plain meaning of “end plate having a substantially flat surface” did not encompass “an interior surface facing into the rest of the pile tip.” J.A. 15. Examining the intrinsic record, the district court concluded that “the patent applicant intended the ‘substantially flat surface’ of the end plate to refer to the side of the end plate facing outward.” *Id.* at 15–16. The district court explained that “[t]his is apparent from each of the patent figures, as well as from how Plaintiff used the phrase ‘substantially flat surface’ to distinguish the pending claims in the application leading to the ’236 patent from certain prior art references.” *Id.* at 16.

As to the claims to a protrusion extending outwardly from the end plate, the district court reasoned that “[b]ecause the end piece of the ED2M/ED3 pile tip is a single, conically-shaped piece, there is not a demarcation of where an ‘end plate’ should end and the ‘protrusion’ should begin.” *Id.* at 17. The district court thus rejected Plaintiff’s interpretations that the “end plate” can be “fully interior to another portion of the pile tip” and that the “protrusion” can be “a component that fully surrounds and is exterior to the item it is purportedly ‘protruding’ from.” *Id.* at 17–18.

Substructure appeals the district court’s grant of summary judgment of noninfringement, and we have jurisdiction under 28 U.S.C. § 1295(a)(1).

#### DISCUSSION

We review the district court’s grant of summary judgment according to the law of the regional circuit. *Phil-In-sul Corp. v. Airlite Plastics Co.*, 854 F.3d 1344, 1353 (Fed. Cir. 2017). In the Ninth Circuit, “summary judgment is reviewed de novo.” *Brunozzi v. Cable Comms’ns, Inc.*, 851 F.3d 990, 995 (9th Cir. 2017). “Summary judgment is



appropriate when, viewing the evidence in the light most favorable to the nonmoving party, there is no genuine dispute as to any material fact.” *Zetwick v. Cty. of Yolo*, 850 F.3d 436, 440 (9th Cir. 2017) (citation omitted).

“[T]he ultimate issue of the proper construction of a claim should be treated as a question of law.” *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 328–29 (2015). We review any “subsidiary factual findings [on extrinsic evidence] under the ‘clearly erroneous’ standard.” *Id.* “[W]hen the district court reviews only evidence intrinsic to the patent (the patent claims and specifications, along with the patent’s prosecution history), the judge’s determination will amount solely to a determination of law, and the Court of Appeals will review that construction de novo.” *Id.* at 841.

On appeal, Substructure argues that that the district court’s ruling of noninfringement must be overturned because it incorrectly construed the claims. Specifically, Substructure challenges the district court’s construction of the “end plate having a substantially flat surface,” ’236 patent at claim 1, and also the “protrusion extending outwardly from the end plate.” ’708 patent at claim 1. We address each in turn.

#### I. END PLATE HAVING A SUBSTANTIALLY FLAT SURFACE

We agree with the district court that, read in light of the specification, the phrase “substantially flat surface disposed perpendicular to the centerline of the tubular pile” does not refer to any interior-facing surface. The claim recites a “substantially conically shaped pile tip,” with a “first end” attached to a “tubular pile” and an “end plate fixedly attached to the second end of the pile tip.” ’236 patent at claim 1. The claim further recites “the end plate having a substantially flat surface disposed perpendicular to the centerline of the tubular pile.” *Id.* As suggested by the word “end,” the relevant surface of the end plate is the external one at the second end of the pile tip.

The specification reinforces the view that the invention is directed to the exterior surface of the end plate as being “substantially flat,” through which the pile tip applies force to the underlying soil. The specification is silent as to any interior surface of the end plate. Nor does Substructure point to any part of the specification that suggests that the shape of the end plate’s interior surface serves any purpose. Instead, the specification describes the end plate in the context of the exterior surface of the pile tip structure as a whole. *Id.* at col. 6 ll. 57–59 (“An end plate 49 is provided as a bottom surface to the conical body of the pile tip 40.”). Moreover, the specification explains, by reference to the end plate depicted as having a flat exterior surface in Figs. 7 and 8, that the pile tip converts rotational torque into a downward force applied to the soil by the surface of the end plate in a way that minimizes “disturbance to the soil surrounding the pile,” such that the “surrounding soil [is] packed tighter and therefore provide[s] a more solid support for the pile [], leading to greater ultimate load capacities.” *Id.* at col. 7 ll. 28–48.

Substructure argues that the specification “implicitly teaches” that an end plate having a substantially flat surface perpendicular to the tubular pile could be fully interior to another portion of the pile tip. Appellant’s Opening Br. at 41–42. In particular, Substructure points to the specification’s disclosure that the pile tip, including the end plate, “could be cast as a single unit.” *Id.* at col. 4 ll. 53–59. To the contrary, that the end plate and the remaining portions of the pile tip could be cast as an integral unit emphasizes that the only relevant surface of the end plate is the exterior-facing one. The claimed surface cannot be an imaginary one, yet Substructure’s infringement theory would permit Substructure to point to an imaginary slice of a solid cast pile tip as the claimed “end plate having a substantially flat surface.” Under Substructure’s logic, that same pile tip would simultaneously infringe claims reciting an end plate with a curved surface, simply because one could

imagine an interior curved surface within the solid material of the pile tip.

The prosecution history likewise confirms that the substantially flat surface of the end plate does not refer to some arbitrary interior surface. The end plate limitation was added during prosecution of the '236 patent to overcome rejections based on U.S. Patent Publication No. 2004/0076479 (Camilleri) and Japanese Patent No. 5-106223 (JP '223). J.A. 432–34. The patent examiner had determined that both Camilleri and JP '223 disclosed “a substantially conically shaped pile tip.” J.A. 422. As the applicant explained, the amendment was in response to the examiner’s “suggest[ion] that a limitation including an end plate extending perpendicularly to the longitudinal axis of the pile would potentially [overcome] the prior art of record.” J.A. at 432. The applicant’s explanation of the mutual understanding reached with the patent examiner reinforces that the introduction of the end plate, with its substantially flat surface, was intended to distinguish the “substantially conically shaped pile tip(s)” of the prior art.

Substructure argues that the JP '223 and Camilleri pile tips have hollow interiors, drawing a distinction between pile tips having hollow interiors and solid interiors. Effectively, Substructure takes the position that the claimed end plate with a substantially flat surface is present in all cone-shaped pile tips that are solid, but not cone-shaped pile tips that are hollow. But Substructure fails to identify anything in the claims, specification, or prosecution history suggesting that the end plate limitation delineates between solid and hollow pile tips; nor do we see any. Moreover, Substructure’s alleged distinction rings hollow in light of the applicant’s later assertion during prosecution that U.S. Patent No. 108,814 (“Moseley”), which discloses a “pile with *solid* conical point,” J.A. 932 (emphasis added),

“does not appear [to] teach[] an end plate disposed at an end of a pile tip having a conical portion.” J.A. 511–12.<sup>3</sup>

For the above reasons, we agree with the district court that the claimed “substantially flat surface” of the end plate does not refer to “an interior surface facing into the rest of the pile tip.” J.A. 15. To the extent that Substructure contends there is a substantially flat surface that is interior, but facing outward away from the tubular pile, the district court correctly noted that Substructure cannot manufacture a factual dispute by drawing imaginary lines through the accused pile tip to create an “end plate” and “substantially flat surface” where none exist. *Id.* at 16 (explaining that Substructure’s expert, Dr. Decker, “has not shown that there is indeed a substantially flat surface of an end plate somewhere interior to the ‘fish-tail protrusion,’ beyond his own annotations of pictures showing only the exterior of the pile tips”). Although Substructure urges that, even under the district court’s construction, the “circumferential walls” of the accused pile tip are an “exterior” surface, Substructure does not contend that the circular circumference of the pile tip is a “substantially flat surface.” Appellant’s Opening Br. at 42–43. Thus, the district court correctly determined that the accused ED2M/ED3 pile tip does not include the claimed “end plate having a substantially flat surface.”

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<sup>3</sup> Substructure also argues that Foundation waived its prosecution history arguments by failing to raise them before the district court. But the district court’s claim construction relied in part on “how Plaintiff used the phrase ‘substantially flat surface’ to distinguish the pending claims in the application leading to the [’236] Patent from certain prior art references.” J.A. 16. We decline Substructure’s invitation to disregard the basis for the district court’s ruling.

## II. PROTRUSION FROM THE END PLATE

We also agree with the district court that the accused ED2M/ED3 pile tip does not include “at least one protrusion extending outwardly from the end plate.” ’708 patent at claim 1. As the district court explained, “[b]ecause the end piece of the ED2M/ED3 pile tip is a single, conically-shaped piece, there is not a demarcation of where an ‘end plate’ should end and a ‘protrusion’ should begin.” J.A. 17. We agree with the district court that the plain meaning of the claim, which requires that the “protrusion” is “extending outwardly” from the “end plate,” does not extend to a structure in which the alleged “end plate” is an indistinguishable part of the alleged “protrusion”; an object cannot protrude from itself. “A claim construction that renders asserted claims facially nonsensical cannot be correct.” *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1255 (Fed. Cir. 2010) (quotation and citation omitted). While the “protrusion” and “end plate” structures must be connected in some fashion, the use of these “two terms in a claim requires that they connote different meanings.” *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1333 n.3 (Fed. Cir. 2006). Under Substructure’s view, there is no meaningful difference between the “protrusion” and “end plate,” since any object could be arbitrarily partitioned into a portion labeled as an “end plate” and a remaining “protrusion.”

Nothing in the specification remotely suggests that, contrary to the plain meaning of a “protrusion” and “extending outwardly,” the protrusion could be an indistinguishable part of the end plate from which it protrudes. The only structures in the specification that could be described as protruding from an end plate are distinct from any “end plate” consistent with the plain meaning of the term. *See* ’708 patent at Fig. 1 (depicting point shaft 17 and cutter teeth 18 extending from the flat surface of end plate 19), Fig. 4 (depicting cutter teeth 48 extending from end plate 49), Fig. 4A, Fig. 5; *see also id.* at col. 6 ll. 2–6

(describing Fig. 4A as illustrating “an extended shaft thinner in diameter than the end plate 49 and extending out axially from the end plate 49 in place of a point shaft”).

Substructure argues that the specification’s disclosure that the pile tip “could be cast as a single unit” supports its reading of the claimed “protrusion” and “end plate.” *Id.* at col. 4 ll. 53–59. But regardless of whether the joint between the end plate and the protrusion is a weld or a seamless transition made by casting the two structures together, that does not expand the plain meaning of the claim, which continues to require a “protrusion extending outwardly from the end plate.” *Id.* at claim 1. Thus, the district court correctly ruled that the “single, conically-shaped” end piece of the accused pile tips does not meet the claimed “protrusion extending outwardly from the end plate.” J.A. 17.

#### CONCLUSION

We have considered Substructure’s remaining arguments and find them unpersuasive. For the reasons stated above, we affirm the district court’s claim constructions and ruling at summary judgment of noninfringement as to the ED2M/ED3 pile tip.

**AFFIRMED**