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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AFFORDABLE WIRE MANAGEMENT, LLC,
Petitioner,

v.

CAMBRIDGE COUNTY ASSOCIATION
FOR THE BLIND AND HANDICAPPED, INC.,
Patent Owner.

Case No. IPR2024-00139
U.S. Patent No. 10,177,551

**PETITIONER'S REPLY
TO PATENT OWNER'S RESPONSE**

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1001	U.S. Patent No. 10,177,551 to Smith et al.
1002	Declaration of Dr. Beik and CV.
1003	U.S. Patent No. 10,003,298 to Grushkowitz et al. (“Grushkowitz”).
1004	U.S. Patent No. 3,001,749 to Petersen (“Petersen”).
1005	CAB Cable Rings and Saddles for Solar PV Arrays Website, Wayback Machine (February 4, 2015) (“CAB Website”).
1006	Cable Management in Solar PV Arrays: A Review of Requirements in the National Electrical Code and how CAB Cable Rings and Saddles Meet These Requirements, September 18, 2014 (“CAB Whitepaper”).
1007	National Fire Protection Association, “The National Electrical Code,” 2008 Edition.
1008	Zipse, “History of Grounding/Earthing Practices In The United States,” IEEE (PCIC-2017-25), 2017.
1009	U.S. Patent No. 231,552 to Finney.
1010	U.S. Patent No. 916,306 to Hall.
1011	U.S. Patent No. 2,201,472 to Browder.
1012	Mulqueen, “A Natural History of the Wooden Utility Pole,” California Public Utilities Commission, Policy and Planning Division, July, 2017.
1013	Water and Power Associates, “Early Power Distribution” available at < https://waterandpower.org/museum/Early_Power_Distribution.html >
1014	U.S. Patent No. 1,464,535 to McGivern.
1015	U.S. Patent No. 1,401,998 to Manz.
1016	U.S. Patent No. 1,448,141 to Manz.
1017	U.S. Patent No. 2,917,259 to Hill.
1018	U.S. Patent No. 3,042,351 to Du Bois.
1019	U.S. Patent No. 3,363,048 to Vaughn.
1020	U.S. Patent No. 1,754,924 to Williams.
1021	U.S. Patent No. 1,766,873 to Birch.

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1022	Seo, Hun Chul, et al. “Applicability of Messenger Wire for Purpose of Lightning Protection.” <i>Journal of Electrical Engineering and Technology</i> , vol. 11, no. 1, 2016, pp. 167–174.
1023	Southwire, “Triplex Service Drop, Aluminum Conductors. Polyethylene or Crosslinked Polyethylene Insulation,” 2003.
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1025	U.S. Patent Application Publication No. 2001/0038738 to Akasaka.
1026	Affidavit of Nathaniel E Frank-White – Authentication of EX1005 and EX1006.
1027	MacLean “Pole Line Hardware Catalog” was issued in May of 2010 (“MacLean”).
1028	IEEE Green Book 142, IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems, 2007.
1029	Jung, et al., “An In-depth Analysis for Optimal Cable Tray Support Span,” Sustainable Marine Structures, Volume 02, Issue 01, January 2020.
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1031	National Electrical Safety Code, “National Electrical Safety Code Committee, Accredited Standards Committee C2 – Interpretation Section 23 Clearances,” July 31, 2001.
1032	National Fire Protection Association, “Volume II 1959 Advance Reports Proposed National Electrical Code,” 1959.
1033	Texas Department of Transportation, Fort Worth District, “Traffic Signal Support Structures Timber Pole Assemblies,” September, 2012.
1034	State of Tennessee Department of Transportation, “Span Wire and Messenger Cable Details,” July 29, 2004.
1035	Jacoby, “PV Array Wire Management, Securing, Supporting and Protecting Conductors within the PV Array,” SolarPro, Issue 6.2, Feb./Mar. 2013.
1036	United States Department of Agriculture, Rural Utilities Service, “Bulletin 1724E-153, RD-GD-2001-39: Electrical Distribution Line Guys and Anchors.” April 25, 2001.

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1037	U.S. Patent 10,177,551 File History
1038	Declaration of Andrew H. DeVoogd In Support of Motion for Pro Hac Vice Admission
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1045	Smith Ex. – 2018 NECA Showstopper Awards
1046	October 10, 2024, Deposition Transcript of William Brooks, PE
1047	October 11, 2024, Deposition Transcript of Mitchel Bowman
1048	Putnam Ex. - Capital Dynamics and First Solar power on 280-MWac California Flats Solar Project, Solar Power World Online, available at https://www.solarpowerworldonline.com/2019/05/capital-dynamics-and-first-solar-power-on-california-flats-solar-project/
1049	Putnam Ex. Patents, Cambria County Association for the Blind and Handicapped, available at https://www.cabproducts.com/patents/
1050	Putnam Ex. Area nonprofit helps the blind & disabled -- & nets millions in the process, Daily American, available at https://www.dailyamerican.com/story/news/local/2017/10/06/area-nonprofit-helps-the-blind-disabled-nets-millions-in-the-process/116245386/
1051	Putnam Ex. Company Brochure, Cambria County Association for the Blind and Handicapped, available at https://7b950756.flowpaper.com/CABImageBrochure/#page=1
1052	Declaration of Joshua Weiner
1053	Joshua Weiner Curriculum Vitae

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1054	UL 2703 Standard Scope Summary, available at https://www.shopulstandards.com/ProductDetail.aspx?UniqueKey=29007
1055	“Photovoltaic Module Grounding: Issues and Recommendations” White Paper prepared by BEW Engineering (April 2012)
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1058	Images of SnakeTray mock-up at SPG Solar’s facility in Novato, CA, dated 2011
1059	“Solar Snake Tray Announces New Cable Tray that Attaches to Messenger Wire Rope for Solar Installations,” Snake Tray, available at https://www.snaketray.com/solar-snake-tray-announces-new-cable-tray-that-attaches-to-messenger-wire-rope-for-solar-installations/
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1063	“Solar Market Insight Report 2018 Year In Review,” Solar Energy Industries Association, available at https://seia.org/research-resources/solar-market-insight-report-2018-year-review/
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1065	“Utility-Scale Solar: Technology Trends, 2007-2023,” Berkeley Lab, available at https://emp.lbl.gov/technology-trends
1066	October 1, 2024 Deposition Transcript of Edward C. Kern, Jr., Ph.D.
1067	October 3, 2024, Deposition Transcript of Jonathan D. Putnam, Ph.D.
1068	October 8, 2024, Deposition Transcript of Joseph William Novak, P.E., MSE, MBA, S.P.

Exhibit	Description
1069	U.S. Patent No. 10,461,518



I. INTRODUCTION

CAB's arguments hinge on an incorrect construction that requires the "multi-function line" be an "equipment grounding conductor" ("EGC") and not a cable tray. Under the correct construction, all claim elements are disclosed by the prior art. Acknowledging the strength of Petitioner's invalidity positions, CAB resorts to a 'secondary considerations' argument. But this argument provides zero nexus to the claims and deserves no weight.

The Board should find all challenged claims of US 10,177,551 (the "Patent" or "'551 Patent") unpatentable for at least the following reasons:

- (1) **Claim Construction:** Unlike the Board's construction in the Institution Decision, CAB proposes constructions which improperly incorporates limitations into the claims that are absent from the intrinsic record.
- (2) **Motivation-to-Combine:** There is a strong motivation to combine the Website and the Whitepaper based on explicit teachings, regulation compliance, and common sense.
- (3) **No Secondary Considerations:** CAB fails to show nexus between the claims and the evidence.

II. CAB IMPERMISSIBLY INJECTS NEW AND IMPROPER LIMITATIONS INTO THE CLAIMS

CAB distorts the commonly understood term “grounding,” improperly manipulates the well understood phrase “tension member” and injects an intent element into the claims. These constructions are wrong.

A. Multi-Function Line is Not Required to be an EGC

1. The Patent Never Refers to EGC

CAB proposes an explicit construction of multi-function line—“a tension member that supports current wires and/or cable hangers, as a messenger wire, and which provides a current path, as a *grounding conductor*”—but its application improperly narrows the construction by confining “grounding conductor” to one specific type of grounding conductor – an EGC. POR, 24; 10 (“[the multi-function line] serves as an EGC”); 11 (“sufficiently conductive to serve as an EGC”); 12 (“the multi-function line is an EGC”). But the intrinsic record is devoid of any references to EGCs. At any rate, “grounding conductor” is a broad term under the NEC that is not confined to EGCs. EX1007, 31 (“Grounding Conductor” definition). This is a transparent attempt to avoid invalidating prior art presented in the Petition under the plain and ordinary meaning of “grounding conductor.”

The Board’s construction aligns with Petitioner’s—that is: a conductive tension member that supports current wires and/or cable hangers, consistent with

inventor lexicography. EX1001, 2:37-40; Paper 21 at 6-10. The inventor did not include the term “conductor” in his definition, but the plain and ordinary meaning of “conductor” is consistent with the lexicography because only a “conductive” multi-function line can serve a grounding function. EX1007, 31.

2. CAB’s Construction is Erroneous Because Claim 1 Would Contradict Dependent Claim 12

Limiting “multi-function line” to an EGC would render claim 1 incompatible with dependent claim 12, a legally-impermissible result. Claim 12 recites “said multi-function line includes strands selected from the group consisting of: ... galvanized strands,” which a POSITA would understand to be galvanized steel strands. *See* EX1001, 9:12-15. But Dr. Phinney testified that galvanized steel cannot be used as an EGC. EX1041, 129:12-130:18. Accordingly, it would be nonsensical to confine “multi-function line” to an EGC—as CAB suggests—when galvanized steel cannot be used for an EGC according to CAB.

3. CAB convolutes the Patent’s use of the term “grounding”

To read “EGC” into the term “grounding,” CAB manufactures a distinction between “grounded” and “grounding.” Per claim 1, specification, NEC, and CAB Whitepaper, the proper construction of “grounding” does not implicate an EGC. The claim self-defines grounding—a conductor (multi-function line) coupled to and in electrical communication with a conductive mounting assembly. EX1001, Claim 1.

Claim 1 makes no mention of, nor requires “EGCs,” or “effective ground fault current paths.” See POR, 9.

The specification’s treatment of “grounded” and “grounding” is also inconsistent with CAB’s arguments. EX1001, 2:6-10; 8:30-34; 11:8-18. The Patent teaches that grounding is the interconnection of conductive components to earth, i.e., a conductor *becomes* a grounding conductor by coupling the conductor to a pile in the earth, resulting in a “grounding system.” EX1001, 2:6-10; 8:30-34 (using a pile as a grounding electrode); 11:8-18. The NEC confirms this teaching. EX1007, 31 (“**Grounding conductor.** A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode[.]”; “**Grounding Electrode.** A conducting object through which a direct connection to earth is established.”; “**Ground.** The earth.”; “**Grounded (grounding).** Connected (connecting) to ground or to a conductive body that extends the ground connection.” (emphases in original)). CAB’s expert, Dr. Phinney agrees. EX1041, 68:21-69:8.

Outside of its litigation-driven positions, CAB also agrees. The CAB Whitepaper states, “[t]he electrical industry [...] is heavily focused on **grounding** ... metallic parts.” EX1006, 14. The Whitepaper addresses this concern through use of a “grounded” messenger, keeping the system “at or near ground potential,” i.e.,

grounding concerns are assuaged because the system itself is grounded. *Id.* CAB’s position that “grounded,” and “grounding” are distinct has no merit.

B. Correct Construction of “Tension Member”

CAB improperly injects a “stranded” limitation into the meaning of “tension member” to exclude cable trays. The prosecution history teaches that “tension member” is not limited to cables/wires. *See* EX1037, 173 (“a construct ... such as, **but not limited to**, a chain or a cable.”); *Id.*, 141 (“[prior art] does not include any cables, wires or **any other tension member.**”); *Id.*, 142 (“[prior art] never discloses a wire, cable, or **any other tension member.**”). Dr. Beik confirmed that POSITAs would understand these statements to mean “tension member” includes cable tray, which **Dr. Phinney concedes was the only other widely used cable-support.** EX2004, 81:16-22; 82:15-23; EX1041, 88:16-89:21.

Additionally, the Examiner did not confine the meaning of “tension member” to cable/wire by allowing the claims over Korman. Rather, the claims were allowed because Korman’s ground pin 60 solely serves a grounding function—it is not under tension, and does not serve a support function. EX1037, 131; 141-142 (Applicant arguing that *Korman*’s “electrical plug” is not under tension, and that the ground pin is supported by the solar panel frame, not the “plug”); EX2004, 375:3-13. Even under CAB’s improper insertion of the “substantially flexible” limitation, which

requires a tension member be drawn taut, cable tray is substantially flexible because (as Dr. Phinney agrees) its material composition causes it to be drawn taut. This too is confirmed by Grushkowitz' teaching that cable trays change size due to temperature changes. EX1003, 10:23-26. Dr. Phinney explained that such change determines if a tension member will "sag," "droop," or become more taut. EX1041 24:5-22; 21:8-20; 25:16-19; 27:8-16; 34:17-22; 38:5-7.

C. CAB should not be permitted to inject an intent element

CAB attempts to shoehorn an intent element into the claim construction analysis, arguing the phrase "structured to" means a particular component must be "intended" to perform a certain verb. POR, 33. This confuses, rather than clarifies the scope of the claims, and must be rejected. *United Servs. Auto. Ass'n v. PNC Bank N.A.*, No. 2:20-CV-00319-JRG, 2021 U.S. Dist. LEXIS 224395, at *57 (E.D. Tex. Nov. 22, 2021) (introducing a "goal" into a construction is unclear, "and would tend to confuse rather than clarify the scope of the claims."); *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1353 (Fed. Cir. 2001) (refusing "to assign a meaning to a patent claim that depends on [a] state of mind[.]").

III. THE CAB PRIOR ART PROVIDES A STRONG MOTIVATION TO COMBINE AND EXPECTATION OF SUCCESS

Dr. Beik explained a POSITA would modify CAB's Website system with its Whitepaper's "grounded steel messenger," to achieve an NEC complaint, grounding

system—a simple combination given the overlapping componentry and POSITA’s knowledge. Petition, §IX(A), (B)(1)-(2); EX1002 ¶¶120-121. Beyond common sense, there are three independent reasons to combine these references: (1) the CAB Website instructs viewers to use the Whitepaper’s teachings; (2) the Whitepaper provides safe grounding instructions; and (3) NEC-compliance.

A. CAB Website provides explicit motivation to combine

Patent claims are “proved obvious if **the prior art**, the problem’s nature, or **the knowledge of a person having ordinary skill in the art** reveals some motivation or **suggestion** to combine the prior art teachings.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 405, 127 S. Ct. 1727, 1734 (2007). Well beyond a “suggestion,” the CAB Website explicitly **instructs** visitors “Click here to read this important White Paper” regarding NEC compliance. EX1005, 4-5. The Whitepaper is part of the Website itself and teaches a POSITA to use a grounded messenger in combination with the Website’s assembly. *Id.*

B. CAB Whitepaper provides explicit motivation to combine

The CAB Whitepaper separately provides combination motivation with the CAB Website’s components because it (1) explains how to comply with the NEC and (2) addresses industry concerns with grounding. EX1005, 4; EX1006, 14. The CAB Whitepaper teaches that by employing a “grounded steel messenger,” the assembly “stay[s] at or near ground potential,” that is, NEC-complaint and grounded.

Id. Accordingly, a POSITA would modify the assembly disclosed in the CAB Website by taking the Whitepaper’s grounded messenger, to achieve an NEC-compliant, grounded system. Petition, §IX(A), (B)(1)-(2); EX1002 ¶¶120-121.

C. Regulations further motivate A POSITA to combine

Dr. Phinney testified that all electricians must correctly answer an “astronomical” number of NEC questions to pass the Professional Engineering Exam. EX1041, 44:4-22. This is for good reason—the NEC discloses proper grounding techniques to prevent electrocution. EX1002, ¶35; EX1007, 4. A clear motivation to combine is shown when there is a need to comply with regulations. *Metso Mins., Inc. v. Powerscreen Int’l Distribution*, 526 F. App’x 988, 997 (Fed. Cir. 2013) (finding “a clear motivation to combine” when “there was a motivation to create a [solution] that could [solve the problem] ... and, at the same time, comply with **road permit regulations**”). Here, NEC regulations motivate one to confirm grounding. EX1041, 47:10-18 (Dr. Phinney agreeing the NEC must be consulted when working on PV systems). While the CAB Website illustrates an assembly, a POSITA would need to ensure NEC-compliance, which a POSITA could do by modifying the assembly with the Whitepaper’s grounded messenger. EX2004, 103:9-104:14.

IV. A POSITA COMBINING THE CAB WEBSITE AND WHITEPAPER WOULD HAVE A REASONABLE EXPECTATION OF SUCCESS

Dr. Phinney agrees that at least as early as 2008, the NEC instructed using messenger wire as a grounding conductor. EX1041, 61:18-63:2; 63:21-64:4 (“...a messenger wire can be used as an equipment grounding conduct under NEC Section 396.30(C)? A: ... yes[.]”); 68:11-17. POSITAs also knew when a messenger is used as the EGC, a separate conductor is not necessary. EX1002, ¶199. Confirming the messenger is grounded and NEC-compliant via the Whitepaper and combining that teaching with CAB Website’s assembly is an easy and obvious solution that a POSITA would expect to work. *Id.*, ¶¶121, 126, 199, 224.

V. IT IS UNDISPUTED THAT UNDER THE CORRECT CLAIM CONSTRUCTION EACH GROUND RENDERS THE CHALLENGED CLAIMS OBVIOUS

The inventor defined “multi-function line” as a conductive tension member that supports current wires and/or cable hangers—that is a messenger wire that does not require a separate grounding conductor. *Supra*, §II(A) *quoting* Paper 21 at 8. CAB does not dispute that under this correct construction, Grounds I-V render the claims obvious.

A. Ground I: Grushkowitz in view of a POSITA’s knowledge, renders obvious the claims

CAB does not dispute that (1) Grushkowitz discloses a grounding system or (2) if “tension member” is given its plain and ordinary meaning, Ground I renders the claims obvious. CAB only disputes that trays are “tension members,” which is incorrect. §II(B), *supra*.

B. Ground II and V: The CAB Website and CAB Whitepaper in view of a POSITA’s knowledge, render obvious the claims under a correct construction of multi-function line

CAB does not dispute that if “grounding” is given its plain and ordinary meaning, such that a “multi-function line” is not required to be an “EGC,” Grounds II & V render the claims obvious.

C. Grounds III and IV: Petersen in view of a POSITA's knowledge, renders obvious the claims under a correct construction

Petersen renders the claims obvious. CAB agrees that “messenger” means a component that provides mechanical support, and that current-carrying cable must be supported between piles. EX1041, 51:9-16; EX1043, 31:6-12; POR, 6-7; EX1001, 1:55-56. Petersen’s use of the phrase “neutral messenger” therefore discloses to POSITAs a cable/wire used to support current wires. Petition, 73.

CAB does not dispute that the phrase “ground clamp” teaches to a POSITA a clamp used for grounding. Consistent with Dr. Beik’s opinion regarding Petersen’s “ground clamp means” (EX1002, ¶¶170-171), when asked if [REDACTED]

[REDACTED], Dr. Phinney testified

[REDACTED]
EX1041, 93:17-94-11.

CAB’s attempt to overcome Petersen based on wooden poles is a red herring. POR, 56. Petersen is silent on pole composition, and the Patent’s “conductive piles” includes **wooden poles** with a grounding conductor fixed thereto. EX1004, *passim*; EX1001, 8:36-40; EX1041, 74:14-75:4. Dr. Phinney also testified that use of wooden poles with a grounding conductor fixed thereto was a “common” practice. EX1041, 76:10-14. So, even if Petersen employs wooden piles, the Patent discloses such an arrangement.

VI. THE CHALLENGED CLAIMS ARE OBVIOUS UNDER CAB'S ERRONEOUS CLAIM CONSTRUCTION

Even under CAB's incorrect construction of "multi-function line," Grounds II-V render obvious the claims. §II(A)(1).

A. Ground II and V: Even under CAB's erroneous constructions, the CAB Website and CAB Whitepaper in view of a POSITA's knowledge, render obvious the claims

1. It was obvious to use a messenger as an EGC

CAB ignores that the combinations of Grounds II and V includes fundamental POSITA knowledge, that is the NEC. Grounds II and V are based on this knowledge. The CAB Website support assembly does not depict a separate grounding conductor, which CAB agrees would stand out to a POSITA as problematic from a code-compliance perspective. POR, 41. However, the Whitepaper's instruction of NEC grounding and bonding compliance via a grounded messenger triggers foundational POSITA knowledge. Petition, §IX(B)(1); EX1002, ¶¶37 (discussing NEC compliance for safety), 49 (NEC permits using messenger wire **as EGC**), 61 (addressing concern for NEC compliance of CAB Website and Whitepaper components). Specifically, the Website in view of the Whitepaper would indicate to a POSITA that the system must be following NEC 396.30(C) where the code lays out how to use a messenger as an EGC.

2. “Mock-up” or not, the CAB Website and Whitepaper teach a multi-function line

The CAB Website, as a printed publication, discloses teachings to a POSITA regardless of whether the underlying system is operational.¹ What is important is what the Website teaches POSITAs, not whether the printed publication is of an operational system. CAB criticizes the Websites depiction of “wire rope.” POR, 41. Wire rope, a cable-like stranded tension member with a metallurgical composition taught by the Patent (steel, alloy) is nearly, if not fully, synonymous with messenger. EX1043, 31:6-12; EX2061, ¶16; EX1041, 48:17-20; 49:19-21 (“there’s sort of a layer of marketing names or use names on top of physical characteristics that distinguish wires.”); 50:6-19. Even under a flawed construction, the Patent teaches that “wire rope” can serve as a grounding conductor, despite CAB’s argument otherwise.

While the Patent does not address if wire rope is “sufficiently conductive,” it teaches that steel (or any other material that “conducts electricity, but with some resistance”) can be used as a multi-function line. EX1001, 8:62-64 (“steel multi-function line”); Claim 12 (“partially conductive” strands); 8:23-26. The CAB

¹ The CAB Website photos are of an operational solar plant. EX1043, 49:12-50:13; EX2061, ¶¶14, 18.

Whitepaper’s steel messenger could not “remain at or near ground potential,” unless it is “sufficiently conductive” for stray current to pass through it to ground. EX1006, 8. Therefore, the “wire rope” in the CAB Website, consistent with the Patent, would be “sufficiently conductive,” to serve as a “grounding conductor.”

Even taking as true CAB and Dr. Phinney’s contention that steel is insufficient to serve as an EGC, it *still* would have been obvious for a POSITA to use a messenger as the EGC because the **NEC instructs proper messenger-compositions when used as an EGC**: “Where the messenger is used as an equipment grounding conductor, it shall comply with the requirements of 250.32(B), **250.118**, 250.184(B)(8), and 250.186(D).” EX1007, 241. Dr. Phinney explains that 250.118 teaches appropriate compositional make ups of EGCs—the same provision cited in 396.30(C). *Id.*; EX2064, ¶159.

Despite CAB’s argument otherwise, the solar industry has not foreclosed on running a messenger parallel to PV panels. Dr. Phinney testified that the NEC allows this practice, and when solar panels are properly bonded, stray current regularly passes in a parallel direction. EX1041, 133:7-9; 134:21-135:16. It was also not uncommon for wire runs to run in parallel with a PV array. *See* EX2020, 3 (cable run parallel to PV panels); *see also*, EX1052, ¶56.

3. CAB's other arguments are unsupported

CAB raises a number of other arguments that are easily disproved. First, CAB claims that “a POSITA viewing the CAB Website would not even be thinking about a grounding system,” ignoring that each Dr. Phinney, Dr. Beik, and Mr. Brooks state the opposite. POR, 36; EX2064, ¶39 (grounding “practices are important and required per NEC because they protect personnel from electrical shock hazards”); EX1006, 14 (“[t]he electrical industry [is] heavily focused on grounding and bonding”); EX1002, ¶35.

Next, CAB argues that the references fail to show proper bonding, even though this is a “fundamental concept.” EX2064, ¶59. Indeed, Dr. Phinney testified that authorities having jurisdiction (“AHJs”) inspect for proper bonding—a process that generally requires identifying metal components in an assembly and ensuring each is listed for bonding. EX1041, 77:2-7; 79:10-80:9. The Whitepaper similarly describes inspections of system bonding by AHJs. EX1006, 14. CAB's bonding argument misses the mark—POSITAs understand that the Whitepaper's grounded messenger implies a properly bonded system, and that modifying the Website assembly with the grounded messenger results in a grounding system. Petition, 56.

Finally, CAB claims that “the use of a messenger wire to serve as a grounding conductor ... was not even known.” POR, 41-43. Dr. Beik explained that “the NEC

specifically provides for messenger wires to be simultaneously used as both structural support for conductors and as the equipment grounding conductor itself.” EX1002, ¶49; Petition, 11; *see also supra*, §§III(C), IV (detailing known dual usage of messenger wire). Dr. Phinney concurred that the NEC teaches this practice. EX1041, 63:3-64:22.

4. The Claims are directed to systems that do not use a separate “grounding electrode”

CAB argues the CAB Website’s earth-driven piles are not NEC complaint and that separate “grounding electrodes” are necessary for grounding. POR, 3, 13. The NEC directly contradicts this assertion, providing that metal structural members like piles may be used as grounding electrodes, a method Dr. Phinney agrees is code-complaint. EX1007, 31, 108-109 (250.42(A)(2)); EX1041, 70:6-9. Unsurprisingly, the Patent teaches both this method as well as using separate grounding electrodes. EX1001, 7:54-62 (with a “ground rod”); 8:29-34 (conductive piles are “grounded” without a “ground rod”); EX1041, 71:17-21. A POSITA would understand that the CAB Website’s assembly uses the piles as grounding electrodes because the NEC permits it. EX1002, ¶37; EX2004, 57:24-58:1; *see also* EX1052, ¶31.

B. Grounds III and IV: Even under CAB’s erroneous construction, Petersen in view of a POSITA’s knowledge renders obvious the claims

Petersen renders obvious the challenged claims. Petersen discloses a “neutral messenger” in direct contact with a “ground clamp.” *Supra*, §V(C). A “neutral messenger” must be sufficiently conductive to serve as system neutral. For a “multi-function line,” the Patent teaches use of any material that “conducts electricity” even “with some resistance or wherein electricity does not pass through all portions of the element[.]” EX1001, 8:23-26. Therefore, even under CAB’s flawed construction of “multi-function line,” Petersen’s “neutral messenger” functions as a grounding conductor. *Supra*, §V(C).

VII. CAB FAILS TO ESTABLISH SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS BECAUSE IT FAILS TO SHOW NEXUS

CAB’s secondary considerations evidence should be afforded little weight because CAB did not establish a nexus to the alleged invention. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). CAB fails to prove that the evidence is attributable to the merits of the invention, not “prior art features in isolation or unclaimed features” at least because the “integrated system” has unclaimed features and is covered by other patents. *Id.*, 1378. CAB’s evidence cannot outweigh Petitioner’s strong obviousness case. *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1344 (Fed. Cir. 2013).

A. No Technical Nexus: CAB’s Conclusory Statements Fail to Show that Any Product Practices, Much Less is Extensive, with Claim 1

CAB’s nexus failure begins with its reliance on a cursory claim chart allegedly mapping a small **subset** of products to claim 1. EX2064, A1-A7. Even considering Dr. Phinney’s opinions, CAB fails to show any product or combination of products practice, much less are coextensive with, claim 1.

1. CAB does not sell an “integrated system” and Dr. Phinney never analyzed whether the fraction of parts he identified are representative

CAB does not sell an “integrated system”—a litigation-motivated term. Instead, CAB sells numerous components, some of which, together, *may* comprise wire management systems, but not always a complete “system.” See EX2044; EX2046; EX2056. CAB sometimes sells these components with other non-practicing components. See EX2044, Appendix 2.2; EX2056. Without a factual basis, CAB and Dr. Phinney define the “integrated system” as broad categories of products: “custom manufactured copper-clad messenger wire,” “mid-pier kits,” “end-pier kits,” and “cable hangers of various configurations.” EX2064 ¶296. Dr. Phinney only identifies four part numbers for each category. EX2064 ¶304. He does not explain why other CAB components combine to form a practicing system, nor how any are “representative” of entire categories of such components. See *e.g., id.*,

n10 (“all grounding messenger wires ... meet the definition of the claimed multi-function line.”); A3-A5.

This is a critical failure of proof. Within the broad categories of the alleged “integrated system” are products with different characteristics and part numbers. *See* EX2046; EX2056. CAB provided no evidence those products practice claim 1, but nonetheless attributes them to CAB’s secondary considerations evidence. *See* POR 65-66; EX2044.

2. No presumption of nexus can exist because CAB contends that its products are covered by multiple patents

CAB’s patent marking website proves that the “integrated system” is not coextensive with the challenged claims because the allegedly practicing products practice multiple other patents. EX1049, 6 (three utility patents cover CAB-9605, two utility patents covering CAB-9705). These other patents have differing limitations from the ’551 claims, such as cable hangers, installation receiving assemblies, installation source assemblies, and transmission assemblies. *See* EX1069, Claim 1. CAB does not acknowledge these patents nor explain whether they “generally cover the same invention” or cover unclaimed elements of the products. *See Fox Factory*, 944 F.3d at 1377.

3. Dr. Phinney’s claim chart fails to demonstrate that CAB’s products practice claim 1

Dr. Phinney’s chart is conclusory and fails to identify specific CAB products. First, he points to components he admits are not recited in the claims—cable hangers, and end-pier kits. *See, e.g.*, EX2064, A1-A7, ¶304; EX1041, 118:10-18. Worse, his chart fails to identify the products therein, leaving the Board to guess whether, for example, the messenger depicted is CAB-9605, CAB-1011, CAB-1010, or another part number. EX2064, A1-A7; EX2054; EX2053; EX2046. Moreover, there is no evidence that CAB-9607 (end-pier kit) is included or depicted in the chart. EX2064, A1-A7. Further, claim 1 requires “conductive piles” (“[a] grounding system ... including ... conductive piles[.]”) but CAB has never sold piles, so the “integrated system” misses a key claim limitation. EX1001, claim 1; EX1043, 107:7-8. Undeterred, Dr. Phinney includes piles in his claim chart. EX2064, A1-A7. There is no nexus.

4. The “Integrated System” is not coextensive

Mr. Smith states CAB’s “integrated system” obviates the need for grounding splices yet claim 1’s system employs grounding splices. EX2061, ¶68; EX1001, *compare* claim 1 to claim 9 (“[t]he grounding system of claim 1 wherein said multi-function line assembly **does not include any grounding splices.**”). If the “integrated

system” does not require splices, it cannot practice nor be coextensive with claim 1 on this basis alone.

Moreover, CAB emphasizes the significance of “the proper diameter and material,” and a “composition ... [that] allow[s] for sufficient strength and conductivity” in its custom messenger. EX2061, ¶¶66, 69-70. Conversely, the Patent is agnostic about diameter and permits a myriad of messenger-compositions, including galvanized steel. EX1001, 8:62-64 (benefits of a “steel multi-function line 35.”). Mr. Smith, however, determined the “integrated system” could not use a galvanized steel messenger. EX2061, ¶69. Any value proposition of the custom messenger comes from its diameter, and specific, custom composition—notable, unclaimed features.

B. No Commercial Success: CAB’s Methodology is Unreliable and Fails to Show Nexus

CAB relies on Dr. Putnam to allege the “integrated system” is commercially successful. But, as explained by economic expert, Minh Doan, his analysis fails to show a nexus between the evidence and the patents because he uses an irrelevant market comparator, includes non-practicing sales, and arbitrarily splits sales

between the '551 and '291 patents.² EX1061 ¶¶39-72. Each of these deficiencies alone render CAB's evidence of commercial success implausible. *Id.*

1. Irrelevant market comparator

Dr. Putnam claims to juxtapose CAB's sales growth to PV industry growth, but he does not use market share or industry revenue. EX1061 ¶46. Instead, he compares CAB's sales (of both "standard system" and "integrated system" components) to net-new PV capacity. EX2044 ¶¶46-52. Without explanation or analysis, Dr. Putnam then *equates* net-new PV capacity with sales, concluding that "industry sales growth" averaged 24.2% per year. *Id.* ¶49.

As explained by Ms. Doan, this is not a reasonable or reliable assumption because it ignores factors that could affect CAB's sales growth such as increased needs for cable management depending on the types and numbers of trackers. EX1061, ¶¶50-54. This failure to evaluate CAB's sales against a relevant metric or

² Dr. Putnam contends that the "integrated system" "embodies the claims of the '291 patent" and includes sales attributable to the "standard system" in his commercial success opinion, despite Dr. Phinney never analyzing the standard system. EX2044, ¶60, EX1041, 119:9-15.

profits renders his excess sales analysis of little evidentiary value. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1300-01 (Fed. Cir. 2012); EX1061, ¶¶42-65.

Dr. Putnam's comparator also fails because it compares *all* CAB sales against only net-new PV capacity in the U.S., ignoring CAB's [REDACTED]. EX2044, ¶47; EX2036, 24. EX2061, ¶54. In his discussion of how it is "impossible to allocate the gains" in sales between two different patents, Dr. Putnam relies on sales data that includes numerous [REDACTED]. EX2044, ¶¶61-62 *citing* EX2056; *see* EX2056, 1-7 [REDACTED]

[REDACTED] Absent corroborating market share data, CAB's [REDACTED] is useless to compare against [REDACTED]. *Chemours Co. FC, LLC v. Daikin Indus. Ltd.*, 4 F.4th 1370, 1378 (Fed. Cir. 2021); EX1061 ¶54.

Further, this comparator fails by ignoring that new capacity is sometimes not realized until several years after components were purchased. EX1061, ¶54; EX1046, 34:18-35:4. Finally, Dr. Putnam includes component [REDACTED] [REDACTED]. EX1061, ¶54.

2. CAB and Dr. Putnam fail to disaggregate non-practicing sales

Dr. Putnam admits it is "impossible to know how much CAB's sales expanded as a result of adding the technology claimed in the '551 patent" negating any

reliability of Dr. Putnam’s conclusion “there is strong evidence that ties CAB’s sales growth to both patents at issue,” never mind to the Patent standing alone. EX2044 ¶¶61, 10; EX1061, ¶¶64-65. Dr. Putnam, relying on Dr. Phinney’s overbroad “representative” conclusion, has no basis to conclude which products or combination thereof practice, but still includes all sales. *See* §VII(A); EX2046; EX2056. Dr. Putnam’s analysis significantly overinflates sales attributable to the Patent because he captures sales of products Dr. Phinney did not address, such as products sold before the release of the so-called “integrated system.” EX1061, ¶¶57-58.

Further, CAB, Dr. Putnam, and Mr. Smith say that galvanized steel messengers (like CAB-9466) do not practice the alleged invention, yet Dr. Putnam includes these sales in his calculations. *See* EX2044, Appendix 2.2; EX2061, ¶69. EX2056 shows that some sales, even after the release of the so-called “integrated system,” *cannot* practice the alleged invention because they comprise non-practicing galvanized steel messengers. *See* EX2056, 5 ([REDACTED]

[REDACTED]); EX1061, ¶58. Dr. Putnam should have excluded sales of components used in combination with non-practicing messengers, as such sales form non-practicing systems, even under Dr. Phinney’s overbroad “representative” conclusion. EX1061,

¶58. Instead, he includes such sales thereby inflating sales attributable to the Patent.³

Id., ¶¶57-58. His findings are entitled to little weight.

CAB's patent marking website lists the patents CAB believes cover its products. EX1049. According to CAB, the **Patent does not cover** any mid-pier, end-pier kit, nor the hanger lumped into the "integrated system." *Id.* Sales attributable to these products therefore cannot establish nexus. *See Merck & Cie v. Gnosis S.p.A.*, 808 F.3d 829, 837 (Fed. Cir. 2015); EX1061, ¶59.

3. CAB and Dr. Putnam fail to attribute sales to the claimed features

Dr. Putnam admits that it is *impossible* to "decompose" the drivers of sales between the '291 and '551 patents, so he assigns an arbitrary 50% figure to each instead of assigning the true sales share. EX2044 ¶¶57-64; EX1067, 186:19-190:7; EX2061, ¶¶63-72. He admits this approach "is problematic from a statistical point of view," but still uses this approach to conclude that both patents are driving excess

³ CAB possesses [REDACTED]

[REDACTED]. *See* EX2056; EX1067, 213:1-217:11.

Moreover, CAB has no insight into whether products it sold through distributors are practicing. EX1043, 139:5-140:10. It is impossible to determine the extent of non-practicing sales made through distributors. *See* EX1061, ¶56.

sales. EX2044, ¶64. As Ms. Doan explains, Dr. Putnam’s opinions deserve little weight, at least because many of the components included by Dr. Putnam are marked by CAB with other patents. *See Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1289 (Fed. Cir. 2010); *Fox Factory*, 944 F.3d, 1366. EX1061, ¶¶66-69.

C. No Cost Savings

As explained by Ms. Doan, Dr. Putnam’s allegation that the “integrated system” provided “cost savings” to customers is unreliable. EX1061, ¶¶73-82. First, he fails to account for savings attributable to different products CAB marks as Patent-practicing. *Id.*, ¶75; *supra*, §§VII(A), (B)(2). Second, he relies on cost-savings [REDACTED] EX2044, ¶¶34-35 (citing [REDACTED] and [REDACTED] EX1061, ¶¶76-81. Finally, he overstates the savings [REDACTED] [REDACTED] [REDACTED]. EX2044, ¶36 (citing EX2049)⁴; EX1061, ¶82.

⁴ Dr. Putnam determines, without explanation, that the [REDACTED] discussed in EX2049 [REDACTED] despite Mr. Smith having never heard of such a system. EX1043, 166:18-167:3.

D. No Industry Praise: No Nexus to the Alleged Inventions

CAB relies on “awards” to demonstrate industry praise of the invention but does not link such awards “to the patented invention.” *Geo M. Martin Co. v. Alliance Mach. Sys. Int’l LLC*, 618 F.3d 1294, 1305 (Fed. Cir. 2010). For example, EX2021, EX2022, EX2025 and EX2024⁵ concern CAB’s “copper composite messenger,” which as discussed §VII(A), *supra*, is one single component of the alleged “integrated system,”⁶ not the “system” identified by Dr. Phinney, nor the “patented invention.” Further, EX2023, concerns CAB’s “multi-carrier hangers” with “thick plastisol coating” to provide a “tight grip”—all unclaimed features. EX2023, 2; EX1041, 118:10-18. EX2026 and EX2027 are single pages awarded for “solar leadership” in “wire management,” not the “integrated system.” EX2026; EX2027. This is insufficient to link the award to the alleged invention. Further, Mr. Smith admits some of these “awards” were only given to those who paid to be an exhibitor

⁵ POR cites to EX2034, the CV of Bill Brooks, presumably intending to cite to EX2024. POR, 67.

⁶ CAB states the “invention’s novelty is not ... the claimed multi-function line ... it is the **entirety of the claimed grounding system.**” POR, 16.

at the award-giving tradeshow, or by publishers CAB paid to advertise with. EX1043, 131:10-12; 136:6-9.

CAB's reliance on anecdotal declarant testimony fails to link the alleged praise to the patented invention. *See, e.g.*, EX2059 ¶55 (praising an alternative to trenching, not the "integrated grounding system"). For example, Mr. Bowman cites the improvement of no longer needing grounding jumpers, but claim 1 covers systems which include splices/jumpers, and otherwise generally praises CAB as a company. *See* EX2028 ¶53; *supra*, §VII(A)(4). This does not establish nexus between the praise and the challenged claims.

E. No "Long Felt" Need

CAB did not resolve a "long-felt need." CAB's "standard system" was not widely adopted 2016. EX2061, ¶57. CAB contends this was the first time a messenger needed a separate grounding conductor. POR, 6, 7. A year later, in 2017, CAB sold its first integrated system. EX2061, ¶76. Taking CAB's claim it solved a need as true, the need was felt for one year, too brief a span to overcome the strong case of obviousness presented in the Petition. *See Adapt Pharma Operations Ltd. v. Teva Pharms. USA, Inc.*, 25 F.4th 1354, 1376 (Fed. Cir. 2022) (three-year "need" not so long felt that it overcomes a strong case of obviousness). Further, the alleged "need" was already "solved" and available under NEC 39.6.30(C) (using a

messenger as the EGC) as early as 2008. EX1007, 241. *Newell Cos. Inc., v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988) (“[O]nce another supplied the key element, there was no long-felt need or, indeed, a problem to be solved[.]”).

F. No Skepticism: Record Evidence Shows General Industry Caution, Routine Engineering, and Immediate Acceptance

CAB’s evidence of “skepticism” rests solely on Mr. Smith merely recounting the development process of the alleged “integrated system.” POR, 69, *citing* EX2061 ¶¶66. This is plainly insufficient, especially given testimony from Messrs. Novak and Bowman immediately praising the “new” offering. EX2059, ¶¶60, 62 (dubbing it “particularly impressive”); EX2028, ¶¶53-54 (“it was a no-brainer to use the CAB integrated grounding system” and immediately recommending it to customers).

VIII. CONCLUSION

For any of the foregoing reasons, the Board should find claims 1-19 of the ’551 Patent unpatentable.

Dated: November 1, 2024

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Petitioner hereby certifies, in reliance on the word count of the word-processing system (Microsoft Office Word 2010) used to prepare this preliminary response, that the number of words in this paper is 5598. This word count excludes the tables of contents, tables of authorities, certificate of word count, certificate of service, and table of exhibits.

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