

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROOFR, INC.,
Petitioner

v.

PICTOMETRY INTERNATIONAL CORP.,¹
Patent Owner

Case IPR2023-00436
U.S. Patent No. 9,183,538

PATENT OWNER’S PRELIMINARY RESPONSE

Mail Stop “PATENT BOARD”

Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

¹ The case caption on the Notice of Filing Date, Paper 4, identifies Patent Owner as Picometry International Corp. Patent Owner is Pictometry International Corp.

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PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
2001	<i>Intentionally Left Blank</i>
2002	Certified Prosecution History of U.S. Patent No. 9,183,538
2003	<i>Intentionally Left Blank</i>
2004	<i>Intentionally Left Blank</i>
2005	<i>Intentionally Left Blank</i>
2006	<i>Intentionally Left Blank</i>
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2009	<i>Intentionally Left Blank</i>
2010	<i>Intentionally Left Blank</i>
2011	<i>Intentionally Left Blank</i>
2012	<i>Intentionally Left Blank</i>
2013	<i>Intentionally Left Blank</i>
2014	Microsoft Word Comparison Petition to Cummings Declaration
2015	U.S. Application Publication 2010/0179787 to Pershing et al.
2016	U.S. Patent No. 8,145,578 to Pershing et al.
2017	Microsoft Word Comparison Pershing-789 to Pershing-787
2018	U.S. Application Publication 2010/0296693 to Thornberry et al.
2019	U.S. Application Publication 2013/0155109 to Schultz et al.
2020	Excerpt from Merriam-Webster's Collegiate Dictionary, Eleventh Edition, 2008 (definition of predominant)

I. INTRODUCTION

The Board should deny institution of *inter partes* review of claims 1-18 of U.S. Patent No. 9,183,538 (“the ’538 patent”) under Section 325(d) and on the merits. Petitioner, Roofr, Inc., (“Petitioner”) cobbled together four obviousness Grounds based on previously considered art that invokes and strongly favors exercising discretion under Section 325(d). Notwithstanding Petitioner’s reuse of this previously considered art, the art fails to disclose key elements of the challenged claims. Amplifying these shortcomings, Petitioner attempts to buttress its unavailing positions with a cut-and-paste Expert Declaration that mirrors the Petition and includes absolutely no corroborating support, particularly on key issues. As such, the Expert’s opinions should be given little to no weight and cannot save what is a fatally flawed Petition that appears to have been hastily prepared.

Regarding Section 325(d), Petitioner does not even attempt to grapple with the adverse facts that the teachings of both primary references were considered during prosecution and the secondary references are substantially the same as and cumulative with teachings considered. Petitioner’s only analysis is a single, perfunctory sentence: “None of the prior art in this petition was substantively addressed by either the examiner or applicant during prosecution of the ’538 patent.” Pet., 18. But Section 325(d) and *Advanced Bionics* do not require

previously considered art to have been applied or discussed during prosecution in order to invoke the Board’s discretion, which Petitioner knew or should have known because it discusses *Advanced Bionics* in other IPR petitions it contemporaneously filed against other Pictometry patents.²

The facts and Petitioner’s disregard for the Board’s precedent strongly favors denial under Section 325(d). Specifically, the Petition relies on four references: Pershing-789, Bailey, Kennedy, and Abhyanker. Both primary references—Pershing-789 and Kennedy—were considered during the original examination, a fact not identified in the Petition. Specifically, a republished patent application corresponding to Pershing-789 was cited by the Examiner and listed on the face of the ’538 patent. As to Kennedy, the Applicant cited this reference in an Information Disclosure Statement (“IDS”), which the Examiner initialed as being considered. Additionally, the secondary references—Bailey and Abhyanker—are substantially the same as and cumulative with art that was considered by the Examiner during original prosecution.

The art is thus the same or substantially the same under *Advanced Bionics*

² *Roofr Inc. v. Pictometry Int’l Corp.*, IPR2023-00435, Paper 5, 18-19 (P.T.A.B. Feb. 9, 2023); *Roofr Inc. v. Eagle View Technologies, Inc.*, IPR2023-00437, Paper 5, 17 (P.T.A.B. Feb. 9, 2023).

Part 1, and Petitioner does not even mention Part 2. Accordingly, this is a quintessential case for discretionary denial under Section 325(d).

Turning to the merits, Petitioner's obviousness Grounds fail for at least two reasons. First, Petitioner fails to demonstrate a reasonable likelihood that the art discloses the claimed "predominant pitch," which is a key claim element that was identified by the Examiner when allowing the claims. Second, Petitioner fails to demonstrate a reasonable likelihood that the art discloses the claimed "footprint," which also appears in each of the independent claims and was a key claim element during prosecution. Compounding these deficiencies, the opinions of Petitioner's expert, Mr. Cummings, are entitled to no weight and thus do not cure any of the Petition's fatal flaws. Mr. Cummings merely repeats *verbatim* the arguments advanced in the Petition with no corroborating references, which is inadequate to support the Petition's obviousness challenges under Federal Circuit and Board precedent.

In sum, the Petition falls far short of satisfying the threshold for institution, and thus Board should deny institution of review.

II. THE '538 PATENT

A. Overview

The '538 patent is generally directed to computer-implemented systems and methods for estimating roof measurements based on image analysis. *See* EX1001, 1:10-25, 3:21-23. This technology improves upon and overcomes limitations and inefficiencies with conventional approaches, typically performed by contractors, for performing roof and material estimates and generating handwritten reports. *Id.*, 1:10-34. The '538 patent describes the process in which “property owners approaching a major roofing project may... contact one or more contractors for a site visit... in order to make a determination on material needs” and prepare an estimate for the project. *Id.*, 1:10-16. With this approach, the “time and energy for providing such an estimate becomes laborious.” *Id.*, 1:16-17. Several factors—including the availability of personnel of the roofing contractors, size of the roof, weather and traffic conditions, and the distance between the roofing contractor and the site of the estimate—impact contractors’ ability to provide timely estimates. *Id.*, 1:16-18.

Relevant here, the '538 patent generally describes a practical application of computer-based image analysis that includes determining an estimated roofing area based on the predominant pitch and the footprint of the roof, and generating a roof report for determination of the amount of materials needed for a construction

project. EX1001, Abstract; *see also* EX1001: 3:21-23, 9:1-6, FIG. 8. The technology described and claimed in the '538 patent increases the “speed at which an estimate can be prepared,” “reduce[s] labor and fuel costs associated with on-site visits,” and enhances safety by avoiding the need for manual measurements atop of roof. *See* EX1001, 1:32-34. As discussed below, Petitioner fails to demonstrate that the applied references teach or suggest image analysis that determines an estimated roof area based on the roof properties of “predominant pitch” and “footprint.”

B. Prosecution History³

The application that issued as the '538 patent was filed March 19, 2012, and included 13 claims (“prosecution claims”). EX2002, 1, 34-37. The '538 patent does not claim priority to any earlier applications.

The Office issued the first Office Action on the merits on April 16, 2014, which included non-final rejections under Sections 101, 102, and 103. EX2002, 79-90. Specifically, the Examiner applied Como (US 2002/00897332) and Thornberry (US 2010/0296693) (“Thornberry-693”) in view of Como to reject all the prosecution claims under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a)

³ Patent Owner provided and cites to the Certified Prosecution History of the '538 patent (EX2002), which includes the NPL cited during prosecution.

respectively. *Id.*, 82-88. Relevant here, the Examiner relied on Thornberry-693 for the limitation regarding “determining an estimated roofing area based on the predominant pitch and the footprint of the roof.” *Id.*, 83-84.

In response to the April 16, 2014 Office Action, the Applicant amended the independent prosecution claims and submitted new claims 14-18, with claim 14 being independent. EX2002, 96-110. In the same response, filed on August 15, 2014, the Applicant also explained that the combination of Como and Thornberry-693 fails to disclose the claimed “predominant pitch” feature. *Id.*, 107-09. Subsequently, on October 20, 2014, the Applicant filed an Information Disclosure Statement (IDS) disclosing a number of references including Kennedy (US 2009/0304227 A1).

The Office issued the second Office Action on the merits on November 28, 2014, which included final rejections under Sections 101 and 102. EX2002, 2444-51. Relevant here, the Examiner applied Thornberry-693 to reject the new prosecution claims 14-18, submitted in the Applicant’s August 15, 2014 response, under 35 U.S.C. § 102(b). *Id.*, 2447-8. This rejection was premised on the “data provided and data received [being] non-functional descriptive material.” *Id.* The Examiner expressly found, however, “that the prior art of record fails to teach ‘predominant pitch’ as explained in paragraphs [0076] to [0078] and Fig. 7 of the applicant’s specification.” *Id.*, 2448. The Examiner also considered the October 20,

2014 IDS, which disclosed, among other references, Kennedy, in preparing the November 28, 2014 Office Action. *Id.*, 2451-61.

In response to the November 28, 2014 Office Action, the Applicant amended independent prosecution claim 14 with respect to “determining...an estimated roofing area...by analyzing one or more image showing the roof” to address the non-functional descriptive material issue, and explained that Thornberry-693 fails to disclose this limitation. EX2002, 2538-59. The Applicant also submitted a Request for Continued Examination along with the response on May 27, 2015. *Id.*, 2537.

Subsequently, the Office issued a Notice of Allowance, allowing prosecution claims 1-18 (which issued as claims 1-18 of the ‘538 patent). EX2002, 2568-77. The Examiner considered several additional references in allowing the claims including Pershing-789 (listed in the Examiner’s Notice of Cited References as US Pub. No. 2010/0179787 (“Pershing-787”)). *Id.*, 2579. In allowing the claims, the Examiner explained that the prior art of record – which includes Pershing-789 and Kennedy – “neither alone nor in combination” disclose the allowable features recited in the independent claim, including “determine an estimated roofing area of the roof based on the predominant pitch and the footprint of the roof.” *Id.*, 2576.

**III. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY
THE PETITION UNDER § 325(d) AND *ADVANCED BIONICS***

The Director has the discretion to deny instituting a petition where “the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). The Board in *Advanced Bionics*⁴ “restat[ed] the framework in [§ 325(d)’s] statutory language” as a “two-part framework,” and clarified how the six, non-exhaustive *Becton, Dickinson*⁵ factors fit within the two-part framework. *Advanced Bionics*, 7-11. The policy undergirding the *Advanced Bionics* “framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Id.*, 9.

The first part of the *Advanced Bionics* framework considers “whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office,” *Advanced Bionics*, 8, which encapsulates *Becton, Dickinson* factors (a), (b), and (d), *id.*, 9-10. Critically, *Advanced Bionics* instructs that “[p]reviously

⁴ *Advanced Bionics v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6 (P.T.A.B. Feb. 13, 2020) (precedential).

⁵ *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017) (precedential: § III.C.5, first paragraph).

presented art includes art made of record by the Examiner, and art provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS), in the prosecution history of the challenged patent.” *Id.*, 7-8. Following this guidance, Board panels have routinely held that art made of record by either the Examiner or applicant during prosecution but not applied in a rejection is sufficient to satisfy the first part of the *Advanced Bionics* framework. *See, e.g., Ivantis, Inc. v. Sight Sciences, Inc.*, IPR2022-01529, Paper 16, 17 n.8 (P.T.A.B. Mar. 21, 2023) (explaining that “there is no requirement that [the] Examiner needs to rely on a reference in a rejection during prosecution in order for the reference to be ‘considered’ during prosecution” and citing *Advanced Bionics*); *Boragen, Inc. v. Syngenta Participations AG*, IPR2020-00124, Paper 16, 21-22 (P.T.A.B. May 5, 2020) (denying petition under § 325(d) and explaining that “a rejection applying a reference that is later relied upon by a petitioner is not a prerequisite to a finding that such reference was already presented to the Office under § 325(d).”).

Under the second part of the *Advanced Bionics* framework, “if either condition of [the] first part of the framework is satisfied, [the Board determines] whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics*, 8; *see id.*, 10-11 (explaining that the second part of the test involves *Becton, Dickinson* factors (c), (e), and (f)). Examples of material error include “misapprehending or overlooking

specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims” and “an error of law, such as misconstruing a claim term, where the construction impacts patentability of the challenged claims.” *Id.*, 8-9, n.9.

The petitioner carries the burden of demonstrating material error: “If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review.” *Id.*, 8-9; *see also Becton, Dickinson*, 17-18 (explaining that factor (e) asks “whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art”); *Microsoft Corp. v. AlmondNet, Inc.*, IPR2022-01319, Paper 9, 11 (P.T.A.B. Jan. 30, 2023) (denying institution under § 325(d) where Petitioner did not sufficiently address whether the Office materially erred); *Microsoft*, IPR2022-01319, Paper 14 (P.T.A.B. Apr. 23, 2023) (denying Petitioner’s rehearing request of decision denying institution). Notably, “[i]f reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability. At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Advanced Bionics*, 9.

Petitioner’s entire argument for § 325(d) is that “[n]one of the prior art in

th[e] petition was substantively addressed by either the examiner or applicant during prosecution of the '538 patent.” Pet., 18. Petitioner does not apply the *Advanced Bionics* framework. *Id.* Applying the *Advanced Bionics* framework, the Board should deny institution under § 325(d). Part one is satisfied because the Petition relies on the same or substantially the same (cumulative) art that was considered by the Office during original prosecution. As for part two, Petitioner does not even attempt to show material error. *Id.*

A. The Petition presents the same or substantially the same art that was previously considered by the Office.

The corrected Petition advances the following four obviousness Grounds in which Pershing-789 and Kennedy are applied as primary references and Bailey and Abhyanker are applied as secondary or tertiary references:

GROUND OF CHALLENGE (37 C.F.R. § 42.204(b)(2))

No.	Ground for Challenge
1	Pershing-789 And Bailey Render Obvious Claims 1-5 And 8-13 Of The '538 Patent
2	Pershing-789, Bailey And Abhyanker Render Obvious Claims 6-7 And 14-18 Of The '538 Patent
3	Kennedy And Bailey Render Obvious Claims 1-5 And 8-13 Of The '538 Patent
4	Kennedy, Bailey And Abhyanker Render Obvious Claims 6-7 And 14-18 Of The '538 Patent

Pet., v.

1. Pershing-789 and Kennedy were both considered by the Examiner.

The teachings of primary references Pershing-789 and Kennedy were considered by the Examiner during prosecution. Petitioner implies that to have been considered, the prior art must have been “substantively addressed,” Pet., 18, but this is not what is required under the *Advanced Bionics* framework. *Advanced Bionics*, 8 (considering “whether the same or substantially the same art *previously was presented to the Office*”).

Pershing-789—the primary reference in Petitioner’s Grounds 1-2—is the same (or at the very least substantially the same) as Pershing-787 (EX2015), also to Pershing et al., which was cited by the Examiner with the Notice of Allowance, and is listed on the face of the ’538 patent. EX2002, 2579 (PTO-892 Notice of References Cited); EX1001, (56). In fact, Pershing-787 is simply a republication of Pershing-789, with the only difference being the claims. *See* EX2015, (43), (65); EX2016, (65) (U.S. Patent 8,145,578, listing both Pershing-789 and Pershing-787 as prior publications). The drawings and specification are identical. *Compare* EX1004, *with* EX2015; *see* EX2017. The precedential *Advanced Bionics* decision clearly instructs that “[p]reviously presented art includes art made of record by the Examiner,” *Advanced Bionics*, 7-8, such as the Examiner’s citation of Pershing-787 during prosecution of the ’538 patent. *See also Ivantis*, 17 n.8; *Boragen*, 21-22.

The Applicant cited Kennedy in an Information Disclosure Statement (“IDS”), EX2002, 119-128, which the Examiner initialed as being considered, EX2002, 2452-2461; *see also* EX1001 (56) (listing Kennedy in the References Cited section on the face of the ’538 patent). Citation of a reference to the Office on an IDS satisfies Part 1 of the *Advanced Bionics* framework. *Advanced Bionics*, 7-8.

Petitioner does not even acknowledge that Kennedy and the Pershing-787 republication of Pershing-789 are listed on the face of the patent. Rather, Petitioner relies solely on its misconception that art must be “substantively addressed” during prosecution in order for *Advanced Bionics* to apply. Pet., 18.

2. The teachings of Bailey and Abhyanker upon which Petitioner relies are substantially the same as art that was considered by the Examiner during prosecution.

The teachings of secondary references Bailey and Abhyanker upon which Petitioner relies are cumulative with art considered during prosecution. In short, Bailey’s teachings are substantially the same as NPL art reviewed and cited by the Examiner in the same Office Action where he expressly found that the “prior art of record fails to teach ‘predominant pitch’” as claimed. EX2002, 2448, 2451. But Petitioner did not provide a certified copy of the ’538 patent’s prosecution history that includes the relevant NPL, and thus overlooked the NPL considered by the Examiner. *Compare* EX1002 (Petitioner’s copy of the prosecution history), *with*

EX2002 (certified copy of the prosecution history). Abhyanker's relevant teachings are substantially the same as teachings in Thornberry-693 (EX2018) applied against the claims during prosecution. Petitioner does not even address Thornberry in its § 325(d) arguments. *See* Pet., 18.

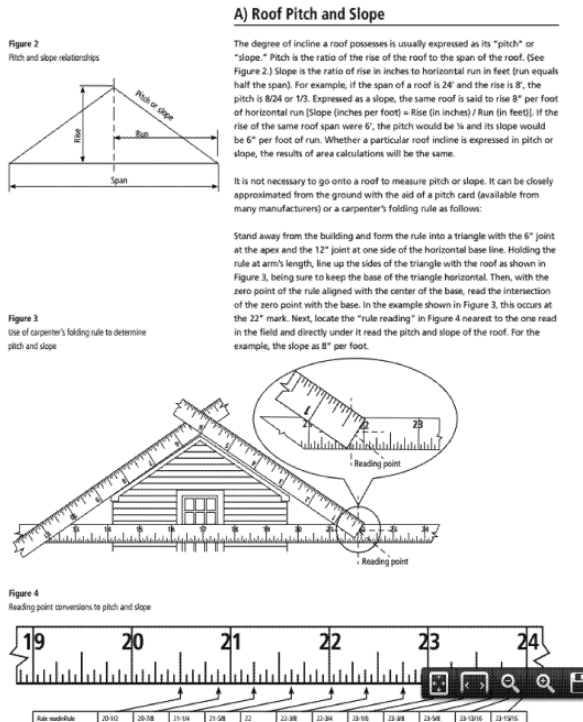
Bailey: Petitioner relies on Bailey in each of Grounds 1-4, for its disclosure that one piece of “collected inventory data” about roof sections is “predominant slope”⁶ and that “‘slope’ and ‘pitch’ are equivalents, both describing the ‘degree of incline’ of a roof.” Pet., 10-14; EX1010, 12, 134-135. Bailey's discussion of “predominant slope” is limited to a single recitation in describing section 33 of the “Roof Section Identification Worksheet” report. EX1010, 12-17; *id.*, 17 (“*Section 33 - Slope*. The predominant slope of the roof section....”). Bailey does not include further explanation of the meaning of “predominant slope.” The discussion of slope and pitch relied upon in the Petition is in Bailey's Appendix B, which is an “estimation procedure ... reprinted courtesy of the Asphalt Roofing Manufacturers Association” (“ARMA”). EX1010, 5, 133-135. The Examiner already considered identical disclosures during prosecution.

In the November 28, 2014, Final Rejection, the Examiner expressly found

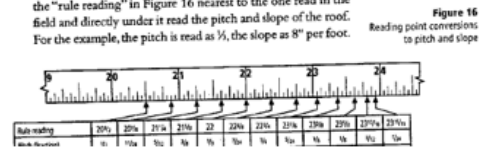
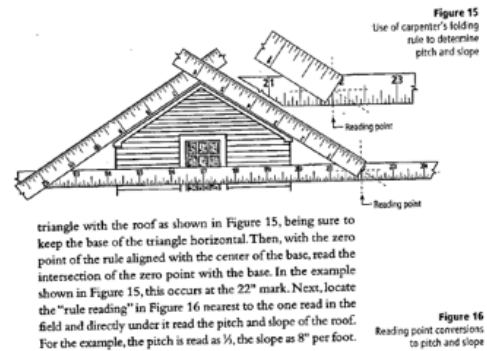
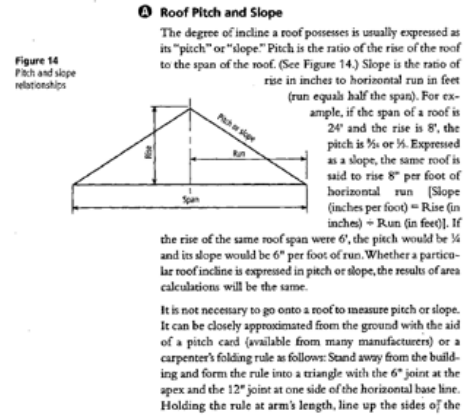
⁶ As discussed below in Section IV.B, Patent Owner disputes Petitioner's position that Bailey teaches the claimed “predominant pitch.”

that “the prior art of record fails to teach ‘predominant pitch’ as explained in paragraphs [0076] to [0078] and Fig. 7 of the applicant’s specification.” EX2002, 2448. With the same Office Action, the Examiner provided a Notice of References Cited (PTO-892) citing an EagleView iPhone Application Guide (“EagleView Guide”). EX2002, 2451; *see id.*, 2506-2534 (EagleView Guide). EagleView Guide shows a “Completed Orders” report screen, which includes “details [of an order] ... in a grouped table view,” including “Predominant Pitch.” EX2002, 2515. Bailey and EagleView Guide both include predominant slope/pitch as an entry on a report. And the Examiner already considered this teaching of EagleView Guide in determining that the “prior art of record fails to teach ‘predominant pitch’” as claimed. EX2002, 2448.

The Examiner also considered the estimation procedure provided in Bailey’s Appendix B. As part of the Examiner’s search strategy and results related to the same November 28, 2014, Office Action, the Examiner reviewed a portion of a roof estimation procedure that is identical to that in Bailey’s Appendix B. *Compare* EX2002, 2470, *with* EX1010, 134-135. A side-by-side comparison of this section from the file history and from Bailey, reproduced below, illustrates that they are identical.



EX2002, 2470



EX1010, 134-135.

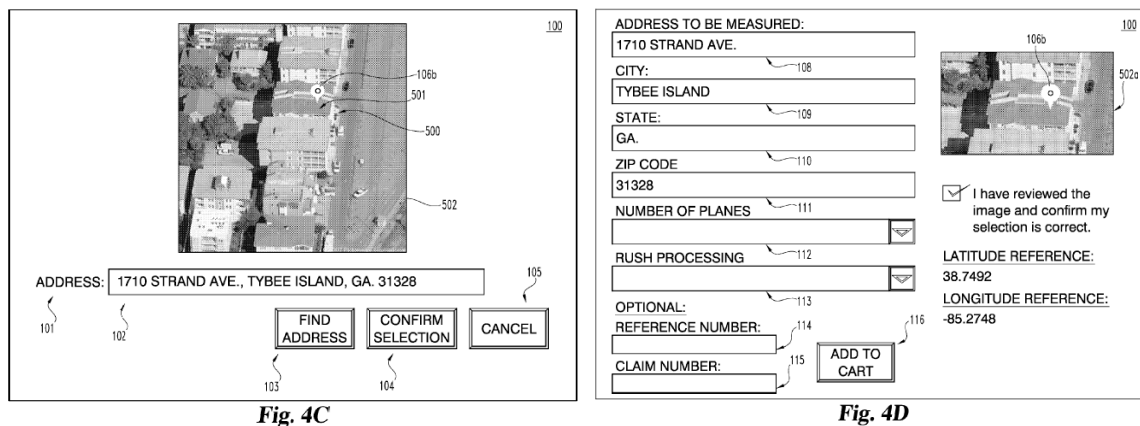
Bailey's relevant teachings are thus substantially the same as and cumulative with teachings that were cited and considered by the Examiner during prosecution, satisfying step one of the *Advanced Bionics* framework. Petitioner failed to provide a complete, certified copy of the '538 patent's prosecution history, and does not address the NPL included therein.

Abhyanker: Petitioner relies, in Grounds 2 and 4, on Abhyanker.

Abhyanker is asserted in combination with the other references for its alleged teaching of "various user input[s]," such as "specifically designat[ing] the

geographic position of a roof to be analyzed using a marker” and “a subsequent user confirmation option to ensure the correct roof is being analyzed.” Pet., 54-55. Specifically, Petitioner relies on Abhyanker’s teaching that “a user may ‘drag and drop’ a marker to choose a location,” Pet., 58 (citing EX1005, ¶11), and that “additional verifications may be ... performed” such as “locking,” EX1005, ¶¶53, 64 (cited at Pet., 58). The relevant teachings of Abhyanker are substantially the same as and cumulative with teachings of Thornberry-693, which the Examiner applied against the claims during prosecution. EX2002, 79-89 (April 16, 2014, Office Action).

During prosecution, the Examiner pointed to Figures 4C and 4D of Thornberry-693, reproduced below. EX2002, 85 (rejecting claims 6 and 7).



EX2018, FIGs. 4C, 4D

As described in Thornberry-693, “FIG. 4C is a computer screen shot like FIG. 4B [(i.e. a computer screen shot depicting imagery and a marker based on an address)] with the marker moved over a selected building.” EX2018, ¶¶9-10.

Thornberry-693 describes that “the customer or other user may be allowed to move the marker (by click and dragging via computer mouse, arrows, or otherwise) to a final location 106b as depicted in FIG. 4C. Such final location is on top of the building 500 and such movement more precisely identifies the location of the building roof structure 501 to be measured.” EX2018, ¶123. “FIG. 4D is a computer screen shot and/or reporting confirming selection of a building.” EX2018, ¶11. Thornberry-693, thus, includes teachings substantially the same as Abhyanker’s teaching to drag and drop a marker to choose a location and to provide for additional verifications.

Thornberry-693 even provides similar motivation as that provided by Petitioner for adding Abhyanker to the combination of Pershing-789 and Bailey. Petitioner contends that “allowing a user to designate a geographic position of a roof and to subsequently confirm that the roof location is correct would promote the *accuracy of the system*,” Pet., 55 (emphasis added), and points to Abhyanker’s teachings that “the algorithm may place markers nearby, but not precisely on, a correct rooftop,” and that “users may be disappointed when seeing the marker inaccurately placed.” EX1005, ¶5. Thornberry-693 likewise teaches that, by allowing a user to move a marker and provide confirmation it is correct, “the end user/customer will be sure that when placing an order, the vendor is measuring the correct roof structure as opposed to, for example, measuring the nearby roof

structure due to mistake/miscommunication.” EX2018, ¶123.

Abhyanker’s teachings are thus substantially the same as and cumulative with teachings that were applied by the Examiner during prosecution, satisfying step one of the *Advanced Bionics* framework.

The table below summarizes how each of Petitioner’s applied references are the same or substantially the same as art that was previously considered, and demonstrates that step one of the *Advanced Bionics* framework is satisfied.

Reference	The same or substantially the same under § 325(d)?
Pershing-789	Yes, Pershing-787 (a republication of Pershing-789) cited by Examiner in Notice of Allowance
Kennedy	Yes, cited by Applicant in IDS, and marked as considered by the Examiner with November 2014 Office Action
Bailey	Yes, relied upon teachings (i.e., “predominant slope” and that pitch/slope both describe roof incline) cumulative with (at least) teachings in EagleView Guide and ARMA roof estimation procedure, each of which was considered during prosecution
Abhyanker	Yes, relied upon teachings (i.e., “drag and drop” marker and verifications) cumulative with (at least) teachings of Thornberry-693, applied in April 2014 Office Action

Additionally, not only are the individual references applied in the Petition the same or substantially the same as those previously considered, the prosecution

history demonstrates that the *combinations* advanced in the Petition are cumulative with the combined teachings of the references that the Examiner considered. In the Notice of Allowance, the Examiner stated that “[t]he prior art of record neither alone *nor in combination* anticipates nor renders obvious” certain elements recited in the independent claims. EX2002, 2576 (emphasis added). The prior art of record includes Pershing-789 (as Pershing-787), Kennedy, EagleView Guide, ARMA roof estimation procedure, and Thornberry-693. The Examiner thus considered combinations of Pershing-787, Kennedy, EagleView Guide, ARMA roof estimation procedure, and Thornberry-693, which, for the reasons discussed above, form cumulative combinations with those Petitioner advanced in Grounds 1-4 of the Petition.

* * *

In sum, notwithstanding Petitioner’s misapplication of *Advanced Bionics*, the first part of the *Advanced Bionics* test is plainly met. Pershing-789, as well as the relevant teachings of Bailey and Abhyanker, are substantially the same as and cumulative to art that was cited by the Examiner during prosecution. And Kennedy also was considered by the Examiner during prosecution.

B. Petitioner does not address part two and thus fails to identify any material error in the Office’s prior evaluation of the art.

Petitioner’s arguments under § 325(d) do not acknowledge or address the second part of the *Advanced Bionics* framework. Pet., 18. Petitioner’s entire

§ 325(d) argument is that “[n]one of the prior art in th[e] petition was substantively addressed by either the examiner or applicant during prosecution of the ’538 patent.” *Id.* As shown in Section III.A, each of the asserted prior art references is either the same or substantially the same as art previously presented to the Office. Petitioner’s failure to address the second part of *Advanced Bionics* is fatal to the Petition. *Advanced Bionics*, 8-9 (“If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute inter partes review.”); *Microsoft*, IPR2022-01319, Paper 9, 11 (denying institution and explaining that “Petitioner’s assertion that the prior art references in the Petition ‘were not substantively considered during the prosecution of the [the challenged patent], or in the prior CBM challenge,’ without further explanation, is insufficient”); *Microsoft*, IPR2022-01319, Paper 14, 5 (denying Petitioner’s rehearing request of decision denying institution; rejecting Petitioner’s argument that “the only way Petitioner could have demonstrated Office ‘error’ was by showing that [the asserted reference] renders the challenged claims unpatentable.”).

In sum, the Board should deny institution under § 325(d) because the first part of the *Advanced Bionics* framework is satisfied and Petitioner fails to identify material error (or even address the second part of the framework).

**IV. PETITIONER FAILS TO DEMONSTRATE A REASONABLE
LIKELIHOOD THE CLAIMS WOULD HAVE BEEN OBVIOUS**

“Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.” *Graham v. John Deere Co. of Kansas City*, 383 US 1, 17 (1966). “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements.” *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). And “conclusory expert testimony is inadequate to support an obviousness determination” *TQ Delta, LLC v. Cisco Systems, Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15-16 (P.T.A.B. Aug. 24, 2022) (precedential) (declining to credit to expert testimony that “merely repeats, verbatim, the conclusory assertion for which it is offered to support.”); 37 C.F.R. § 42.65(a).

The Board should deny institution on the merits because the Petition’s obviousness Grounds fail to demonstrate a reasonable likelihood of prevailing for at least two reasons: (1) Petitioner fails to demonstrate that either Pershing-789 (Grounds 1 and 2) or Kennedy (Grounds 3 and 4) discloses determining the claimed “footprint” of the roof, as recited in independent Claim Elements 1c, 13f, and 14c; and (2) Petitioner fails to demonstrate that Bailey discloses the claimed “predominant pitch,” as recited in independent Claim Elements 1c, 13f, and 14c.

Compounding these deficiencies, Mr. Cummings's opinions are entitled to no weight because they repeat *verbatim* the Petition, and thus they cannot save the Petition's conclusory and fatally flawed arguments.

A. Petitioner fails to demonstrate that either Pershing-789 or Kennedy discloses determining the claimed “footprint.”

Independent claims 1, 13, and 14 require determining the “footprint” of a roof by analyzing or using one or more images of the roof. Specifically, Elements 1c and 13f recite: “*determine a footprint and predominant pitch of the roof by analyzing one or more image showing the roof.*” EX1001, 15:25-27, 16:46-47 (emphasis added). And Element 14c recites: “determining and providing . . . an estimated roofing area based at least on a predominant pitch and a footprint of the roof by analyzing one or more image showing the roof, *the footprint of the roof determined at least in part using at least one image of the roof.*” EX1001, 16:62-67 (emphasis added).

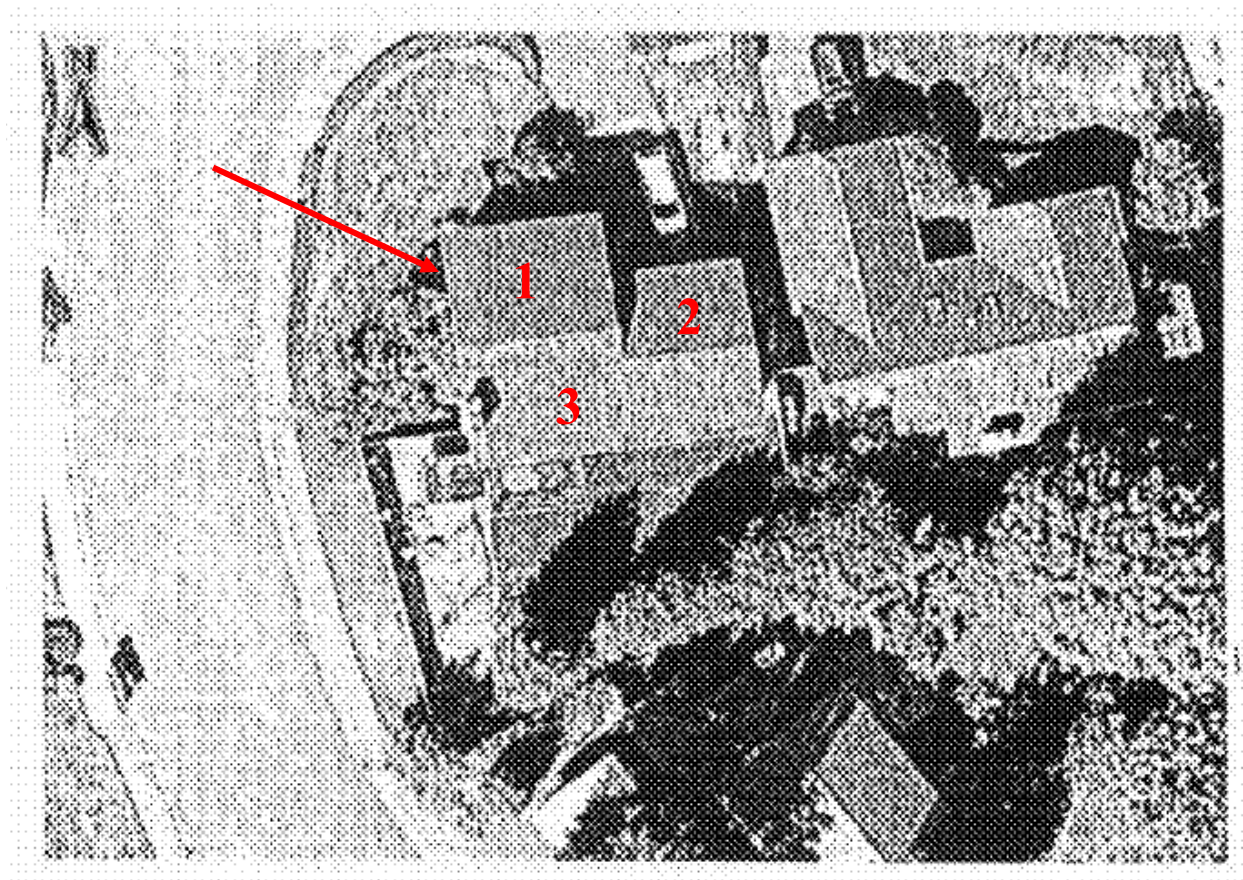
The specification and claims of the '538 patent demonstrate that the “footprint” of the roof is a factor used to compute the estimated area (surface area) of a pitched roof, but that the footprint and the estimated area of a pitched roof are different properties of the roof. The specification teaches that “[t]he footprint may provide a two-dimensional boundary and/or outline of the roof,” EX1001, 12:8-9, and may be determined by evaluating images to identify “edges” and “line segments” that define the boundary of the roof, EX1001, 11:64-12:7. Like a

footprint in the snow, the footprint of a pitched roof provides a projection on the ground of the outline of the roof but does not indicate the topography or surface area of the pitched roof itself. *See* EX2019, ¶¶7-9 (Pictometry application describing the footprint or “hat-print” of a roof).

The specification also teaches using “the predominant pitch and outer dimensions provided by the footprint” to determine “an estimated area of the roof.” EX1001, 12:36-39, FIG 6 (showing separate steps for determining the footprint (192), the predominant pitch (194), and the estimated area (196)). Consistent with these teachings, each independent claim recites using the “footprint” and “predominant pitch” to determine “an estimated roofing area.” EX1001, 15:27-28 (Element 1d), 16:48-49 (Element 13g), 16:62-65 (part of Element 14c).

Pershing-789: Petitioner alleges in Grounds 1 and 2 that Pershing-789 teaches determining the footprint of the roof. Pet., 28-30 (addressing Element 1c), 53 (addressing Element 13c by referring to claim 1), 59 (addressing Element 14c by referring to claim 1). Specifically, Petitioner alleges that Figure 5E of Pershing-789 demonstrates that Pershing-789 teaches determining a roof’s footprint. Pet., 27-30. Mr. Cummings repeats *verbatim* Petitioner’s arguments without providing any further support or analysis, EX1003, ¶¶50-55, and thus the Board should not credit his opinions. *TQ Delta*, 942 F.3d at 1359; *Xerox*, IPR2022-00624, Paper 9, 15-16; 37 C.F.R. § 42.65(a).

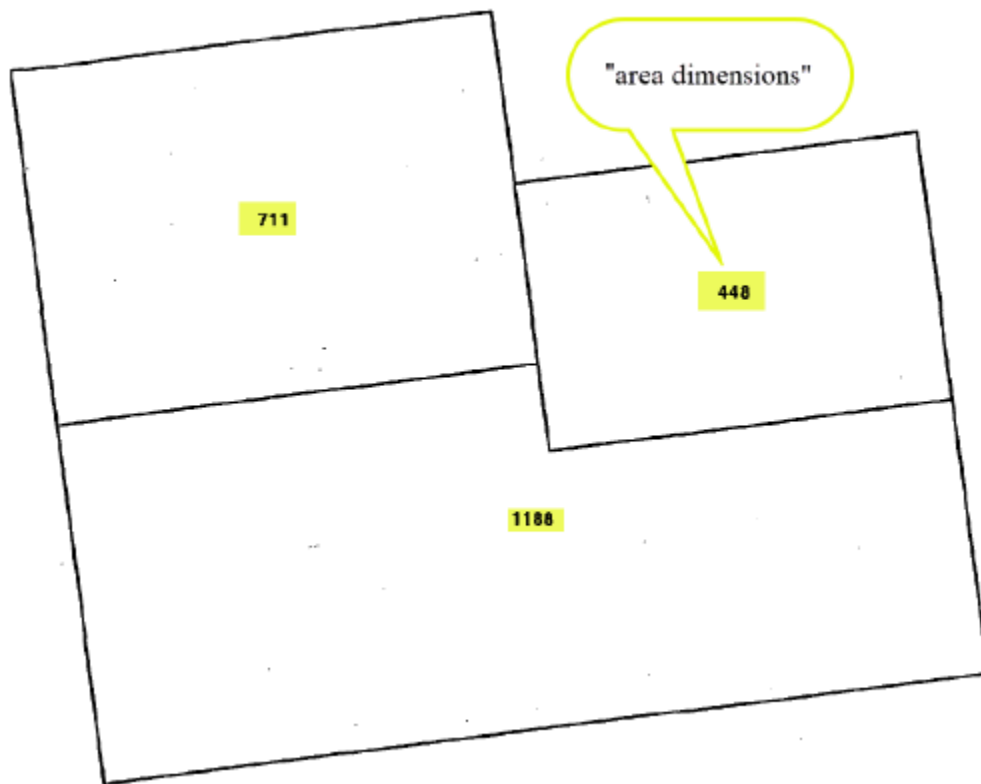
Petitioner's arguments fail because Petitioner and Mr. Cummings confuse and conflate (1) the footprint of a pitched roof, defined by its outline or boundary, and (2) the total square footage (or surface area) of the pitched roof, which is shown in Figure 5E of Pershing-789. Pershing-789 discloses that "FIG. 5E is an illustration of the fifth page" of the example roofing report shown in Figures 5A-5F. EX1004, ¶28. As shown in Figure 5A of Pershing-789 (reproduced in-part and annotated below), the subject roof is a pitched roof having three sections.



EX1004, FIG. 5A (reproduced in-part and annotated).

As shown in Petitioner's annotated version (reproduced below), Figure 5E of

Pershing-789 depicts the roof's three sections, labeled 711 (1st section), 448 (2nd section), and 1186 (3rd section). Pet., 28. And Pershing-789 discloses that "FIG. 5E . . . show[s] the square footage of each roof section along with the total square foot area value." EX1004, ¶28; *see* Pet., 29-30.



Pet., 30.

The square footage of each section and corresponding total area shown in Figure 5E of Pershing-789 is not the same as and does not indicate the footprint of Pershing-789's example roof. That is, Pershing-789's Figure 5E shows the total surface area of the example roof. EX1004, ¶28, FIG. 5E. But because the roof is pitched, the roof's total surface area is not the same as and does not indicate the

roof's footprint, which is the roof's outline or boundary projected on the ground.

EX1001, 12:8-9; *see also* EX2019, ¶¶7-9; EX1013, 462 (defining “roof pitch” and explaining that “[m]ore roofing material is required to cover the increased roof area when the slope or pitch is great”).

Petitioner's and Mr. Cummings's analysis on this point is conclusory, failing to explain how the surface area of the roof shown in Figure 5E of Pershing-789 allegedly demonstrates that Pershing-789 teaches determining the footprint of the roof. And, in addition to merely repeating the attorney argument in the Petition, that Mr. Cummings confuses basic roof properties further demonstrates that his opinions are not credible. Accordingly, the Board should find that Petitioner fails to demonstrate a reasonable likelihood that Pershing-789 teaches determining a footprint of a roof, and should deny institution of Grounds 1-2.

Kennedy: Petitioner's and Mr. Cummings's analysis of Kennedy in Grounds 3-4 is equally conclusory. Here, Petitioner alleges that Kennedy teaches determining the footprint of a roof, relying only on Kennedy's description of using a “sizing tool” to measure the length and width of a roof. Pet., 64-65, 82, 86-87. Mr. Cummings again repeats *verbatim* Petitioner's arguments, EX1003, ¶¶136-137, 176, 189, and thus his opinions are not entitled to weight.

Specifically, Petitioner and Mr. Cummings point to Kennedy's teachings related to using a “sizing tool” to measure the length and width (or base) of a roof

or a portion of a roof. Pet., 64-65 (citing EX1009, ¶¶58, 82, 109-110, FIG. 12). But as shown in Figure 12, the length (L) and width/base (B) are merely two sides of the example roof shown in Figure 12, and two sides alone do not define the boundary or outline of a roof. This is particularly true for more complex roofs than Figure 12, such as those shown in Figures 7, 8, and 10 of Kennedy.

Bottom line, the claims require *determining* the footprint of the roof, not merely taking measurements that might be used to determine a footprint. Petitioner fails to point to any teaching in Kennedy of making the specific determination required by the claims. And Petitioner does not allege that Kennedy renders obvious making this determination. *See* Pet., 64-65; *Magnum Oil Tools*, 829 F.3d at 1381 (“[T]he Board must base its decision on arguments that were advanced by a party.”). Accordingly, the Board should find that Petitioner fails to demonstrate a reasonable likelihood that Kennedy teaches determining a footprint of a roof, and should deny institution of Grounds 3-4.

B. Petitioner fails to demonstrate that Bailey discloses the claimed “predominant pitch.”

Independent claims 1, 13, and 14 require estimating roofing area using a roof’s “predominant pitch” and footprint via image analysis. Specifically, independent claims 1 and 13 recite:

[1c / 13f] determine a footprint and predominant pitch of the roof by analyzing one or more image showing the roof;

[1d / 13g] determine an estimated roofing area [of the roof] based on the predominant pitch and the footprint of the roof.

EX1001, 15:25-28, 16:46-49.

Independent claim 14 recites:

[14c] determining and providing, with the computer processor, an estimated roofing area based at least on a predominant pitch and a footprint of the roof by analyzing one or more image showing the roof, the footprint of the roof determined at least in part using at least one image of the roof.

EX1001, 16:62-67.

The '538 patent teaches that “[t]he predominant pitch may be a weighted average of individual pitch factors for two or more portions of the roof,” and provides an example computation of a hypothetical roof having two portions.

EX1001, 12:11-39, FIG. 6 (step 194). Both the Examiner during prosecution and Petitioner here interpret the “predominant pitch” consistent with this teaching.

During prosecution, the claimed “predominant pitch” played a central role. In response to the first Office Action, the Applicant distinguished the primary Thornberry-693 reference by arguing that “[n]owhere does Thornberry disclose using predominant pitch to calculate area.” EX2002, 109. In the next Office Action, the Examiner stated he agreed with the Applicant that the claims are distinct from Thornberry-693 and explained that he interpreted “predominant

pitch” consistent with the term’s description in the specification:

The Examiner agrees that the prior art of record fails to teach “predominant pitch” as explained in paragraphs [0076] to [0078] and Fig. 7 of the applicant’s specification. Predominant pitch as explained by the remarks and specification is completely different than a pitch and involves a weighted average of individual pitch factors for two or more portions of a roof according to the formulas and description in the abovementioned paragraphs.

EX2002, 2448. In the Notice of Allowance, the Examiner also identified the “predominant pitch” as a feature that led to allowance. EX2002, 2576.

Here, Petitioner expressly interprets the term “predominant pitch” consistent with the ’538 patent’s specification and the Examiner’s interpretation: “. . . the claimed ‘predominant pitch’ measurement—*i.e.*, a weighted average of roof pitch values” Pet., 1; *see also* Pet., 5 (acknowledging the Examiner’s interpretation during prosecution).

In an IPR petition, the petitioner must identify “[h]ow the challenged claim is to be construed” and “[h]ow the *construed claim* is unpatentable.” 37 C.F.R. § 42.104(b)(3)-(4) (emphasis added). Here, the Petition is fatally flawed and should be denied because Petitioner plainly states on the first page of its Petition how it interprets “predominant pitch”—as “a weighted average of roof pitch values”—but fails to demonstrate that Bailey (the only reference it relies on for this feature) teaches a “predominant pitch” under Petitioner’s own interpretation.

In all four Grounds, Petitioner relies solely on Bailey as allegedly teaching the claimed “predominant pitch.” Pet., 20, 31-34, 61, 66. Specifically, Petitioner identifies a single instance in which Bailey uses in passing the term “predominant *slope*,” and argues without support or corroborating evidence that Bailey’s single use of “predominant slope” teaches and has the same meaning as the “predominant pitch” recited in the independent claim of the ’538 patent. Pet., 11-12, 31-34. Mr. Cummings merely repeats Petitioner’s arguments without providing any further support or analysis. EX1003, ¶¶30-36, 57-63. In the relied upon disclosure, Bailey uses the term “predominant slope” in a sentence fragment without providing any definition or explanation of the term:

Section 33 - Slope. The predominant slope of the roof section. The roof plan will generally indicate the slope (e.g., 4 in. in 12). If the slope is not noted on the roof plan, the section drawings may indicate the slope. If such information is not available, field measurement will be required (use the method in Appendix B).

EX1010, 17.

Petitioner’s argument fails for three reasons. First, Petitioner does not point to any express disclosure in Bailey of computing a weighted average of roof pitch values but rather relies solely on Bailey’s mention of “predominant slope” in the sentence fragment: “The *predominant slope* of the roof section.” Pet., 29 (quoting and emphasizing Bailey but mistakenly citing “Ex. 1006 at 17”). Petitioner,

however, neither alleges nor demonstrates that the term “predominant slope” or “predominant pitch” is a term of art that has a well-established meaning in the field such that a POSITA would have understood that Bailey’s mention of “predominant slope” teaches a weighted average of roof pitch values. Petitioner does not, for example, point to Bailey, other references, or any relevant dictionary to establish that “predominant slope” or “predominant pitch” had an established meaning in the art. Indeed, the excerpts of the RSMMeans Illustrate Construction Dictionary that Petitioner submitted includes a number of definitions of “roof” or “roofing” terms, including “roof pitch,” but does not include “predominant pitch.” EX1013, 462. That Petitioner fails to provide similar corroborating evidence for the key claim term at the crux of the dispute undermines any notion that “predominant pitch” had a well-established meaning in the art consistent with the term’s use in the claims.

Rather, the only evidence Petitioner presents to supports its position is Mr. Cummings’s declaration. But Mr. Cummings, who holds himself out as an expert in architecture and testifies that he has conducted roof estimates, EX1003, ¶4, does not explain, let alone demonstrate with corroborating support, that “predominant slope” or “predominate pitch” is a term of art that had an established meaning consistent with its use the ’538 patent’s specification and claims. As mentioned, Mr. Cummings merely repeats Petitioner’s conclusory arguments, and thus his opinions are not entitled to weight. *TQ Delta*, 942 F.3d at 1359; *Xerox*, IPR2022-

00624, Paper 9, 15-16; 37 C.F.R. § 42.65(a). Petitioner thus fails to demonstrate that Bailey’s “predominant slope” has the same meaning and teaches the claimed “predominant pitch” under Petitioner’s interpretation of “predominant pitch.”

Second, Petitioner’s argument mischaracterizes Bailey. Petitioner alleges that page 17 of “Bailey expressly teaches calculating the ‘predominant slope’ of the roof.” Pet., 29 (emphasis removed). But Bailey does not expressly teach performing a *calculation* to determine a predominant slope. Rather, Bailey indicates that “[t]he roof plan will generally indicate the slope,” but, if not, “field measurement will be required (use the method in Appendix B).” EX1010, 16. Appendix B of Bailey does not even use the term “predominant slope,” let alone describe any calculation for a predominant slope or pitch. EX1010, 133-37.

Third, and relatedly, Bailey’s teachings as a whole demonstrate that Bailey did not intend “predominant slope” to mean a weighted average of roof pitch values. For example, the dictionary definition of “predominant” is “being most frequent or common.” EX2020, 3. Bailey appears to use the terms “predominant” and “primary” interchangeably, suggesting that Bailey’s use of the word “predominant” in “predominant slope” is consistent with the common dictionary definition of “predominant.” *Compare* EX1010, 17 (providing an example slope of “4 in. in 12”), *with id.*, 15 (describing example roof inspection sheets that include an entry “SLOPE (primary)” : 4 IN 12”). Moreover, Bailey provides definitions of

common industry terms, like “pitch” and “slope,” but does not provide any definition of “predominant slope,” EX1010, 134, further suggesting that Bailey used the terms “predominant” and “primary” according to their common usage.

Bailey also provides teachings indicating that it did not contemplate calculating a weighted average of roof pitch values. For example, in describing calculating the area of a complicated roof, Bailey discloses that roof areas having different slopes should be calculated separately and then those calculation should be combined: “Because the actual area is a function of the slope, calculations must be grouped in terms of roof slope and *those of different slopes are not combined until the true roof areas have been determined.*” EX1010, 135 (emphasis added). This disclosure further undermines Petitioner’s position that Bailey teaches calculating a weighted average of roof pitch values.

In sum, Petitioner fails to demonstrate that Bailey teaches the claimed “predominant pitch” recited in the independent claims, and thus the Board should deny institution on the merits.

C. Mr. Cummings’s opinions are entitled to no weight because they repeat *verbatim* the Petition’s conclusory arguments.

Mr. Cumming’s opinions do not save Petitioner’s challenges because his opinions are equally conclusory, merely repeating *verbatim* the Petition’s arguments. The key substantive sections of Mr. Cummings’s declaration repeat *verbatim* Petitioner’s conclusory arguments presented in the Petition, and thus are

not entitled to any weight. EX2014. As explained above, Mr. Cummings’s opinions alleging that Pershing-789 and Kennedy disclose the claimed “footprint” repeat *verbatim* the Petition. *Compare* Pet., 27-30, with EX1003, ¶¶50-55; *compare* Pet., 64-65, with EX1003, ¶¶136-137. Likewise, Mr. Cummings’s opinions alleging that Bailey discloses the claimed “predominant pitch” also repeat *verbatim* the Petition. *Compare* Pet., 11-12, 31-34, with EX1003, ¶¶30-36, 57-63. The same is true of Mr. Cummings’s opinions on motivation to combine. *Compare* Pet., 20-25 (Pershing-789 and Bailey), with EX1003, ¶¶43-47 (same); *compare* Pet., 61-62 (Kennedy and Bailey), with EX1003, ¶¶129-131 (same); *compare* Pet., 54-57, 83-86 (adding Abhyanker), with EX1003, ¶¶110-114, 180-184 (same).

Mr. Cummings’s Declaration is the quintessential cut-and-paste copy of attorney argument that *Xerox* instructs should be given no weight.

V. CONCLUSION

The Board should deny institution under Section 325(d) and because Petitioner fails to show that the references teach several key claim elements. Compounding these deficiencies, the opinions of Petitioner's expert are entitled to no weight and thus do not cure any of the Petition's fatal flaws.

Respectfully submitted,

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION,
TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS**

1. This Patent Owner's Preliminary Response complies with the type-volume limitation of 14,000 words, comprising 7,161 words, excluding the parts exempted by 37 C.F.R. § 42.24(a)(1).

2. This Patent Owner's Preliminary Response complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2016 in 14 point Times New Roman.

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CERTIFICATION OF SERVICE

The undersigned hereby certifies that true and correct copies of the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** and **EXHIBITS 2002** and **2014-2020** were served electronically via e-mail on May 9, 2023, in their entireties on the following counsel for Petitioner:

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