

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROOFR INC.,
Petitioner

v.

PICTOMETRY INTERNATIONAL CORP.,
Patent Owner

IPR2023-00435
Patent 10,648,800

PETITION FOR *INTER PARTES* REVIEW

[CORRECTED]

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LIST OF EXHIBITS

Exhibit	Description
Ex. 1001	U.S. Patent No. 10,648,800 (“’800 patent”)
Ex. 1002	File History of the ’800 patent
Ex. 1003	Expert Declaration of Tony Cummings
Ex. 1004	U.S. Pat. Pub. No. 2008/0262789 A1 (“Pershing-789”)
Ex. 1005	U.S. Pat. Pub. No. 2007/0220174 A1 (“Abhyanker”)
Ex. 1006	U.S. Pat. Pub. No. 2008/0231700 A1 (“Schultz”)
Ex. 1007	<i>Airborne Digital Imaging Technology: A New Overview</i> , Petrie et al., <i>The Photogrammetric Record</i> 11(119): 203-225 (September 2007) (“Petrie”)
Ex. 1008	<i>Pictometry: aerial photography on steroids</i> , LET Staff, <i>Law Enforcement Technology</i> (July 2002) (“Pictometry”)
Ex. 1009	U.S. Pat. Pub. No. 2009/0304227 A1 (“Kennedy”)
Ex. 1010	<i>Roofer: Steep Roofing Inventory Procedures And Inspection And Distress Manual For Asphalt Shingle Roofs</i> , David M. Bailey, U.S. Army Corps of Engineers, CERL Tech. Rept. (December 1999) (“Bailey”)
Ex. 1011	04/17/2008 Drawings From File History of Pershing-789
Ex. 1012	Declaration of Sylvia Hall-Ellis

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

No.	Ground for Challenge
1	Pershing-789 And Abhyanker Render Obvious Claims 1-17 Of The '800 Patent
2	Pershing-789, Abhyanker And Pictometry Render Obvious Claims 9 And 14 Of The '800 Patent
3	Kennedy And Abhyanker Render Obvious Claims 1-17 Of The '800 Patent

LIST OF CHALLENGED CLAIMS

Claim
Claim 1a: A process, comprising:
Claim 1b: receiving first location data;
Claim 1c: providing visual access to a first image corresponding to the first location data, the first image including a roof structure of a building;
Claim 1d: providing a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;
Claim 1e: receive a designation of the building roof structure within the first image;
Claim 1f: responsive to receiving the designation of the building roof structure location, providing a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and
Claim 1g: subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.
Claim 2: The process of claim 1, further comprising providing visual access to one or more outline drawing corresponding to the roof structure of the building.
Claim 3: The process of claim 2, further comprising providing one or more length dimension on the outline drawing.
Claim 4: The process of claim 3, wherein the length dimension is one or more of a perimeter of the roof structure, a length of a ridge of the roof structure, a total length of ridges of the roof structure, a length of a valley of the roof structure, a total length of valleys of the roof structure, a length of a flashing of the roof structure, and a total length of flashings of the roof structure.
Claim 5: The process of claim 2, further comprising providing one or more area dimension on the outline drawing.

Claim
Claim 6: The process of claim 2, further comprising providing one or more pitch dimension on the outline drawing.
Claim 7: The process of claim 2, further comprising providing one or more indicator of pitch direction on the outline drawing.
Claim 8: The process of claim 2, further comprising providing one or more non-dimensional attribute of the roof structure on the outline drawing.
Claim 9: The process of claim 2, further comprising, providing visual access to a nadir image from an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super- imposed on the nadir image.
Claim 10: The process of claim 1, wherein the first image is taken from an overhead view with respect to the roof structure of the building.
Claim 11a: A non-transitory computer memory storing computer logic, that when executed by computer hardware causes the computer hardware to:
Claim 11b: receive first location data generally corresponding to a geographic location of a building;
Claim 11c: provide visual access to a first image corresponding to the first location data, the first image including a roof structure of the building;
Claim 11d: provide a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;
Claim 11e: receive the designation of the building roof structure location;
Claim 11f: responsive to receiving the designation of the building roof structure location, provide a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and

Claim
Claim 11g: subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.
Claim 12: The non-transitory computer memory of claim 11, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide visual access to one or more outline drawing corresponding to the roof structure of the building.
Claim 13: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide at least one length dimension on the outline drawing.
Claim 14: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide visual access to a nadir image of an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super-imposed on the nadir image.
Claim 15: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide one or more area dimension on the outline drawing.
Claim 16: The non-transitory computer memory of claim 11, wherein the first image is taken from an overhead view with respect to the roof of the building.
Claim 17a: A method, comprising:
Claim 17b: receiving, by a user, visual access to a first image of a region corresponding to first location data, the first image including a roof structure of a building;
Claim 17c: signaling, by the user, a designation from the user of a building roof structure location within the first image, wherein the building roof structure location is a geo-graphic position of the building roof structure and is different than the first location data;
Claim 17d: signaling, by the user, user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and

Claim
Claim 17e: subsequent to signaling the user-acceptance confirming the designation of the building roof structure location, receiving a report for the building roof structure; and
Claim 17f: repairing or constructing a roof designated by the building roof structure location.

I. INTRODUCTION

For many decades, roofers used age-old measurement techniques to generate estimates for roof repair and replacement. These techniques include estimated dimensions such as length, roof area and roof pitch which allow roofers to approximate the size of a roof and, consequently, the amount of materials needed for a given project. The '800 patent claims nothing more than applying these well-known measurement techniques to aerial images of roofs stored on a computer, rather than sending workers to make estimates by hand.

But even the computer automation recited in the '800 patent claims is not new. The prior art disclosed such automation before the '800 invention. For example, Pershing-789, published on October 23, 2008, expressly discloses generating roofing estimates using such aerial imagery. As described below, the prior art expressly teaches each and every element recited in the challenged claims. Accordingly, claims 1-17 of the '800 patent should be found unpatentable.

II. LEVEL OF SKILL IN THE ART

A person of ordinary skill in the art at the time of the alleged invention would have bachelor's degree in architecture or an equivalent with at least five years of experience performing roof estimation. This level of skill is approximate, and more experience would compensate for less formal education, and vice versa. Ex. 1003 at ¶ 1-7.

III. CLAIM CONSTRUCTION

Petitioner submits that express interpretations of the challenged claims of the '800 patent are not necessary, as the challenged claims are rendered unpatentable by the cited art under any reasonable interpretation of the claims. Petitioner takes no position in this petition as to whether the claims are indefinite, and no statements herein should be interpreted to mean that the terms are definite. Ex. 1003 at ¶ 15.

IV. OVERVIEW OF THE '800 PATENT

The '800 patent is generally directed towards a “system and process for roof measurement” using an image of a roof. Ex. 1003 at ¶¶ 16-21; Ex. 1001 at Abstract. The challenged claims generally recite: (1) receiving a location; (2) providing an image of the location; (3) providing an input for a user to select a roof within the image; (4) receiving the user selection; (5) providing

an input for the user to confirm the selection; and (6) providing a “report” for the selected roof. Ex. 1001 at claim 1.

The specification of the ’800 patent includes exemplary flow charts describing the alleged invention. *Id.* at 1:66-2:4. For example, Figure 3 embodies the steps recited in claim 1.

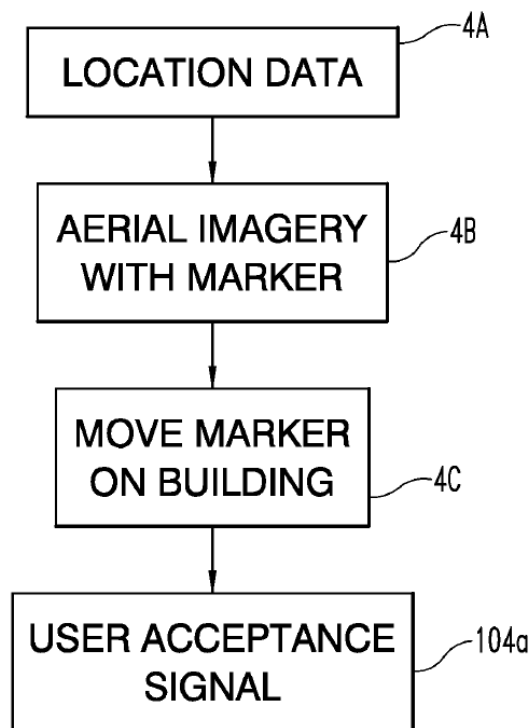
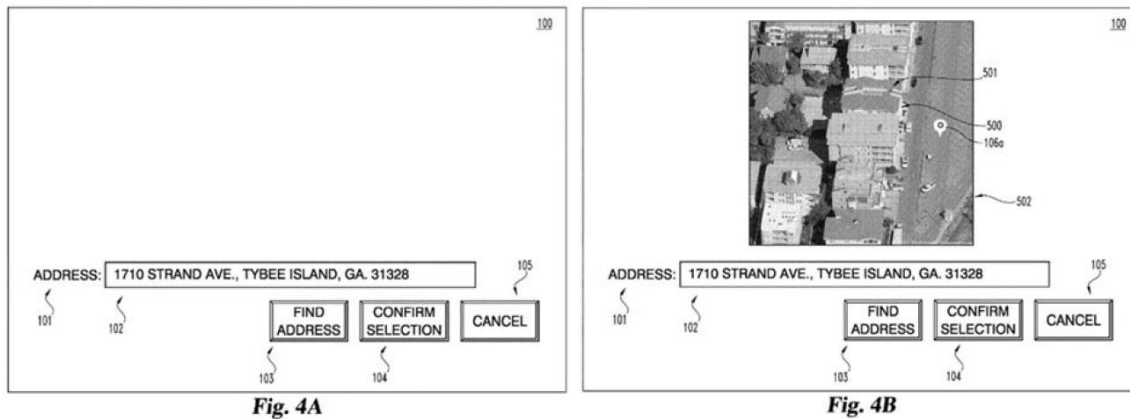


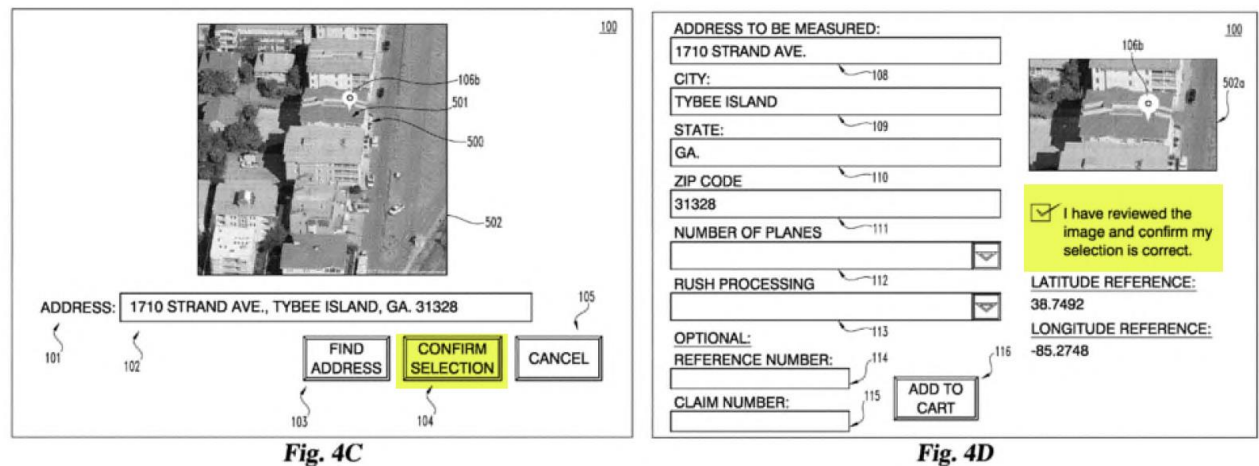
Fig. 3

Ex. 1001 at Fig. 3. At the first step “location data . . . is entered.” *Id.* at 11:39. Then, corresponding “[a]erial imagery with a marker is provided.” *Id.* at 11:39-40. These steps are shown in Figs. 4A and 4B:



Ex. 1001 at Figs. 4A-B. As shown in the figure above, the location may be the address of a house or a building with a roof to be measured.

Next, a “person moves the marker on the image of the building.” *Id.* at 11:40-41. Then, a user signals “acceptance of that marker position”—in other words, the user confirms their selection. *Id.* at 11:41-42. These steps are shown in Figs. 4C and 4D, highlighted below:



Id. at Figs. 4C-D. Finally, a “report” may be delivered (*id.* at 7:35-39) including “one or more pages or screen shots, or both, made available to a

user including aerial imagery and/or data from such imagery.” *Id.* at 4:36-39. According to the specification, these steps may all be performed using routine computer processes (*e.g.*, mouse clicks or check boxes). *Id.* at 3:12-15, 10:19-22.

V. PROSECUTION OF THE ’800 PATENT

The application that led to the ’800 patent was filed on February 1, 2019. The Examiner issued a Notice of Allowance less than a year later, on January 10, 2020, without issuing a single rejection. Ex. 1002; Ex. 1003 at ¶ 22.

VI. PRIORITY DATE OF THE ’800 PATENT

The earliest application to which the ’800 patent claims priority is U.S. Pat. No. 8,401,222 filed on May 22, 2009. As discussed in the next section, all of the references relied upon in the Grounds in this petition qualifies as prior art if the ’800 patent is given a priority date of May 22, 2009. Ex. 1003 at ¶ 23.

VII. PRIOR ART

A. Pershing-789

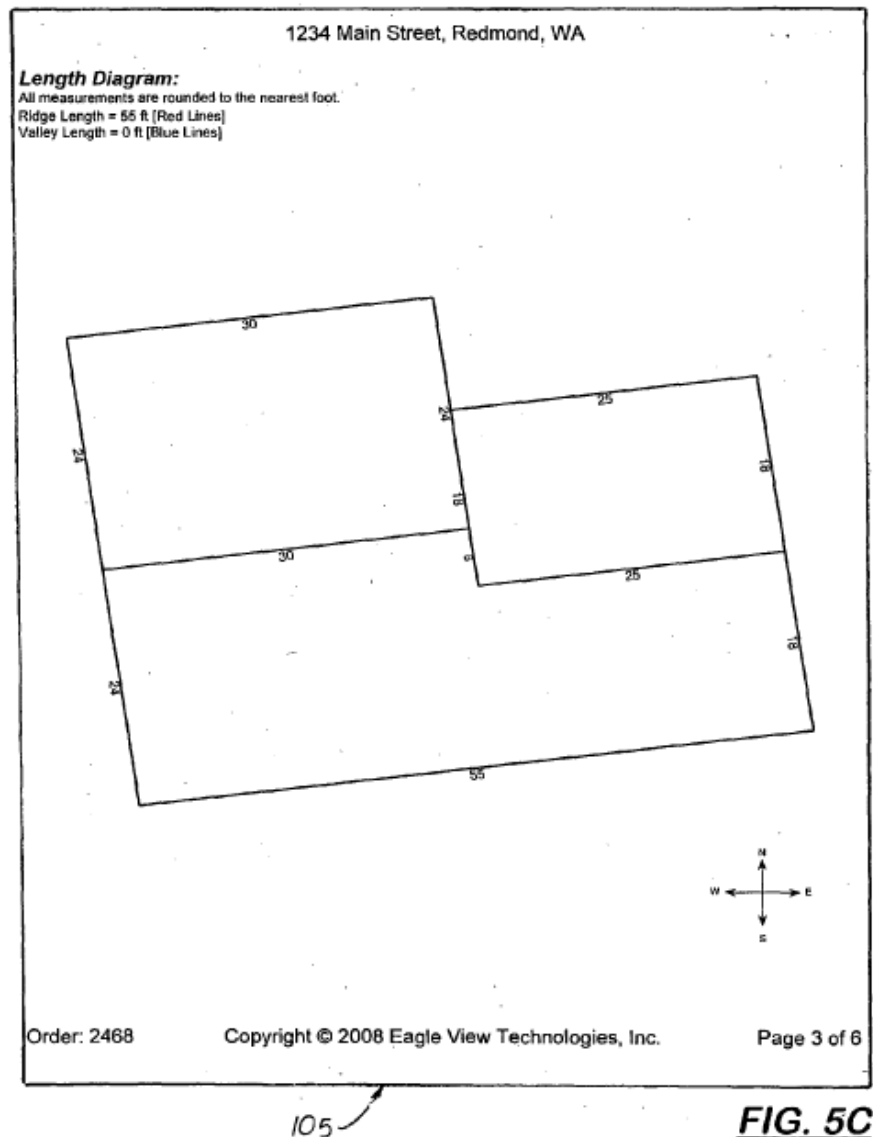
U.S. Pat. Pub. No. 2008/0262789 A1 (“Pershing-789”) is a U.S. Patent Publication published on October 23, 2008. Accordingly, Pershing-789 qualifies as prior art to the ’800 patent under pre-AIA § 102(a). Pershing-789

discloses a “system that allows the remote measurement of the size, geometry, pitch and orientation of the roof...and then uses the information to provide an estimate to repair or replace the roof, or to install equipment thereon.” Ex. 1004 at Abstract, [0003]; Ex. 1003 at ¶¶ 24-26.

Pershing-789 discloses receiving first location data, such as an address (Ex. 1004 at [0011]), and displaying an aerial image of the address in question to enable roof measurement:

The software program 50 is linked to *an aerial image file database 52 that contains aerial images files 54* of various building 92 in a region. The aerial image files 54 may be taken any available means, such as an aircraft, balloon, a satellite, etc. *As shown in FIG. 3, the image files 54* typically include at least one a top plan view 65 and a perspective view 66 of the building 92.

Id. at [0022] (emphasis added). Pershing-789 discloses, after taking measurements of the roof in question, generating a report: “From these determinations, the overall shape, slopes and square footage of the roof sections are determined and a **report** is produced.” Ex. 1004 at [0012] (emphasis added). An exemplary report is shown in Figure 5C:



Ex. 1004 at Fig. 5C; *id.* at [0038].

B. Abhyanker

U.S. Pat. Pub. No. 2007/0220174 A1 (“Abhyanker”) is a U.S. Patent Publication published on September 20, 2007. Accordingly, Abhyanker qualifies as prior art to the ’800 patent under pre-AIA § 102(b). Abhyanker discloses a system that allows “*marker placement in a mapping*

environment.” Ex. 1005 at Abstract (emphasis added). Abhyanker discloses that its mapping environment may include, *e.g.*, “**aerial photography** over neighborhoods and/or places in a terrestrial environment (*e.g.*, the Earth).” Ex. 1004 at [0005] (emphasis added). Abhyanker teaches a “marker” (*e.g.*, a pushpin, an indicator, a pointer, a pin, etc.) may be placed on a landmark in the aerial image by an algorithm. *Id.* at [0004].

Abhyanker notes that, in some cases, an algorithm may not correctly place the marker. Abhyanker explains that the algorithm may mistakenly “place [a] marker nearby, but not precisely on, a correct rooftop” or other landmark. *Id.* at [0005]. This glitch may cause problems because, for example, a misplaced marker may result in incorrect driving directions and would result in customer disappointment. *Id.*

Abhyanker teaches remedying marker misplacement by allowing a user to “drag and drop” a marker to a corrected location:

Furthermore, the method may include applying a **drag and drop** algorithm that enables the user to sequentially and/or concurrently relocate markers in the mapping environment, iteratively performing additional verifications when any particular marker has been previously moved[.]

Ex. 1005 at [0011] (emphasis added). Abhyanker further teaches that, once the marker has been placed by a user, the user may “lock” the location of a marker, confirming its placement:

The locking module 220 may process a marker ***locking request*** when the particular user claims the wiki profile associated with the address data. In addition, the locking module 220 may enable the user(s) to control the future relocation of the marker in the mapping environment.

Id. at [0064] (emphasis added); Ex. 1003 at ¶¶ 27-30.

C. Pictometry

Pictometry: aerial photography on steroids, LET Staff, Law Enforcement Technology (July 2002) (“Pictometry”) is a printed publication published on July 2002. Accordingly, Pictometry qualifies as prior art to the ’800 patent under pre-AIA § 102(b). Ex. 1003 at ¶ 31.

Pictometry is a printed publication. As set forth in the accompanying declaration of Dr. Hall-Ellis, Pictometry qualifies as a printed publication because it was published in July 2002 and publicly available on or shortly after July 18, 2002 at the University of Wisconsin – Madison Libraries. Specifically, Dr. Hall-Ellis personally obtained a copy of Pictometry from the University of Wisconsin, examined its date stamp and further verified through its MARC records that it was available no later than July 18, 2002. Ex. 1012

at ¶¶ 59-65. As a publication of the journal titled *Law Enforcement Technology* from the University of Wisconsin – Madison Libraries, Pictometry is inherently reliable and trustworthy. Indeed, Pictometry was made available on the U.S. Department of Justice, Office of Justice Programs (OJP) website. *See, e.g., Ericsson Inc. v. Intellectual Ventures I LLC*, IPR 2014-00527, Paper 41 at 11-12 (PTAB May 18, 2015) (“[a]llowing IPR petitioners to rely on” publication dates from well-known sources “serves the interests of justice”).

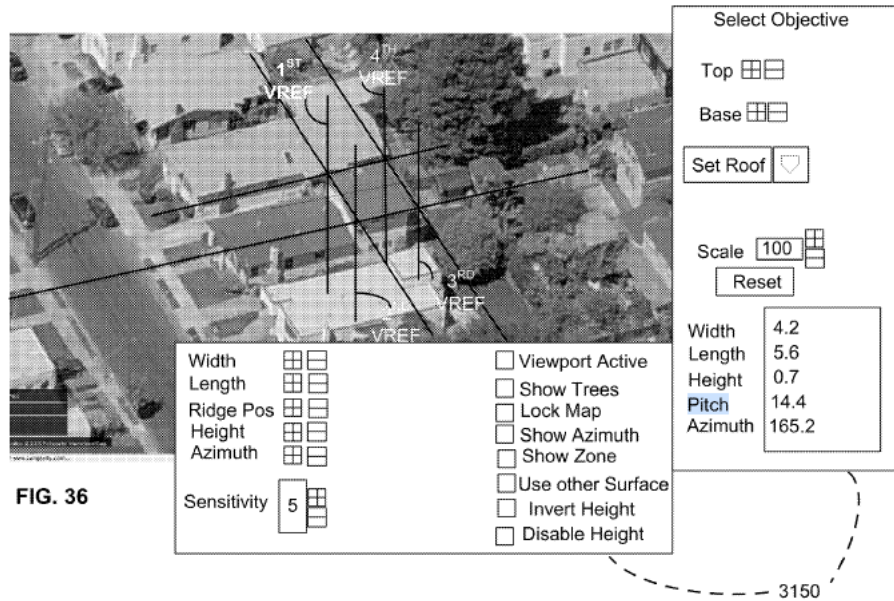
Pictometry is also authentic. As noted above, Dr. Hall-Ellis obtained a copy from the University of Wisconsin—this is the **same** copy relied upon in this petition. Dr. Hall-Ellis confirmed the authenticity of this reference by comparing the attached copy to the version she obtained from the University of Wisconsin. Dr. Hall-Ellis confirmed that Pictometry is complete, with no pages missing and no alterations. Ex. 1012 at ¶ 56. It is also located in a place “a copy of this journal would likely be.” *Id.*

Pictometry discloses a program that allows users to annotate aerial photographs. *See, generally* Ex. 1008. Pictometry teaches that a variety of aerial photographs can be taken, and that users can “zoom, measur[e]...and annotate[e]” these images. *Id.* at 115. Pictometry teaches a “distance tool”

which allows a user to measure things contained within the image. *Id.* at 116. Pictometry specifically teaches drawing lines around a “parcel” to learn the square footage and area of a region. *Id.* Pictometry’s tool can also be used for “measuring angles.” *Id.* at 116.

D. Kennedy

U.S. Pat. Pub. No. 2009/0304227 A1 (“Kennedy”) is a U.S. Patent Publication published on December 10, 2009 claiming priority to provisional applications filed February 1, 2008 and April 22, 2008. Ex. 1003 at ¶¶ 32-35. Accordingly, Kennedy qualifies as prior art to the ’800 patent under pre-AIA § 102(e). Kennedy teaches a computer implemented method for generating a roof estimate. Kennedy teaches a “roof estimating software program.” Ex. 1009 at Abstract. Kennedy teaches displaying an aerial image of a building having a roof comprising a plurality of planar roof sections that each have a corresponding pitch. Kennedy teaches that some embodiments of the system “include a sizing tool for determining the size, geometry, and pitch of the roof sections of a building being displayed.” Ex. 1009 at Abstract. This is shown, for example, in Figure 36:



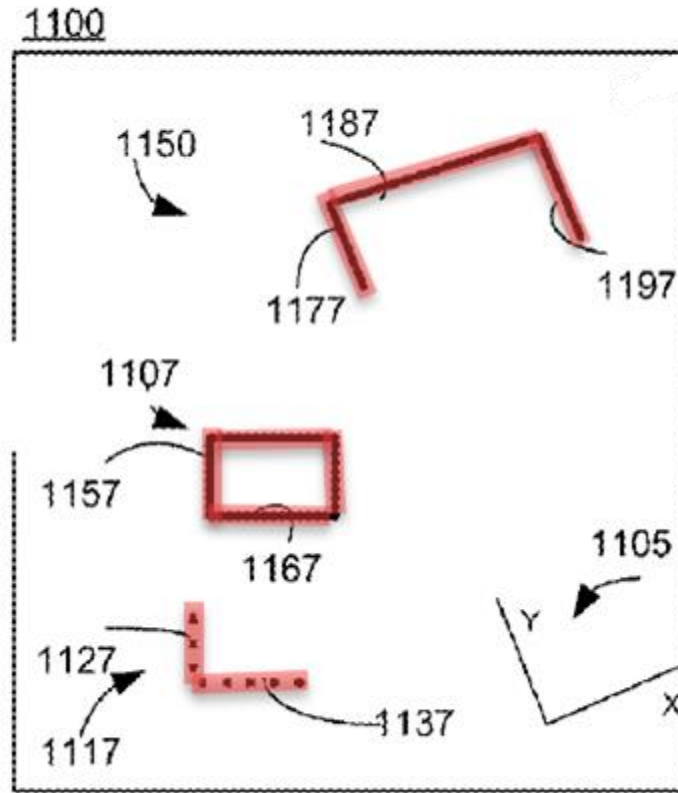
Id. at Fig. 36. Kennedy discloses a sizing subsystem with a “sizing tool” that can be used to determine pitch:

In one embodiment of the invention, a graphical user interface (best illustrated in FIGS. 8-9) cooperates with sizing subsystem 500 of system 100 to implement a sizing tool enabling user 107 to **determine surface dimensions and pitch of a surface, for example a roof 191 of a house appearing in the retrieved image 153**. Thus there is no need to physically visit the installation site to make measurements and perform sizing calculations.

Id. at [0058] (emphasis added).

In one embodiment, Kennedy’s “sizing subsystem” includes an **“interactive measuring tool...for use in sizing surfaces such as roof of house 600 in Fig. 6.”** *Id.* at [0105] (emphasis added). The sizing tool is shown, for example, in Figure 11:

FIG. 11



Id. at Fig. 11 (annotated). Kennedy explains that its measuring tool is “rotatable and scalable by a user 507 to align at least two sides of the tool an image [sic] of an object to be measured, for example a roof surface to be measured.” *Id.* at [0105]. Kennedy further explains that “an orientation of measuring tool with respect to axes 670 [the x/y/z axis] is determined.” *Id.* at [0108].

Kennedy makes clear that the sizing tool is “superimposed” over an aerial image. *Id.* at [0110] (“To size surface 1215 user 507 superimposes

sizing tool, in this example tool 1117 (illustrated in Fig. 11) of at least a portion of image 1215...in some embodiments, information defining an orientation of shape 1215 with respect to a reference axis 1211 is generated by comparing orientation of adjusted tool 1107 to reference axis 1211.”).

Kennedy discloses that the measuring tool can be used to determine the pitch of a roof. *Id.* at [0116] (“...measuring tool 1107 [can be] used to measure displacement of a ridge of roof 650 from base 635. The displacement information is used by modeling unit 591 (Fig. 5) to determine ***pitch of roof*** 600.”) (emphasis added).

E. Bailey

Roofer: Steep Roofing Inventory Procedures And Inspection And Distress Manual For Asphalt Shingle Roofs, David M. Bailey, U.S. Army Corps of Engineers, CERL Tech. Rept. (December 1999) (“Bailey”) is a printed publication published December 1999. Accordingly, Bailey qualifies as prior art to the ’800 patent under pre-AIA § 102(b).

Bailey is a printed publication. As set forth in the accompanying declaration of Dr. Hall-Ellis, Bailey qualifies as a printed publication because it was published in December 1999 and publicly available on or shortly after July 24, 2000. Specifically, Petitioner’s librarian expert, Dr. Hall-Ellis,

verified that Bailey was available first by confirming its availability at the U.S. Army Corps of Engineers headquarters Library—her research confirmed Bailey was made part of the OCLC bibliographic database on July 24, 2000. Dr. Hall-Ellis also verified that Bailey was available by at least January 29, 2001 at the University of Wisconsin – Madison Libraries. Ex. 1012 at ¶ 67. Dr. Hall-Ellis further confirmed Bailey’s availability by downloading Bailey’s corresponding MARC records. Ex. 1012 at ¶¶ 67-71. Moreover, a publication of the U.S. Army Corps of Engineers, Bailey is inherently reliable and trustworthy. *See, e.g., Ericsson Inc. v. Intellectual Ventures I LLC*, IPR 2014-00527, Paper 41 at 11-12 (PTAB May 18, 2015) (“[a]llowing IPR petitioners to rely on” publication dates from well-known sources “serves the interests of justice”).

Bailey is also authentic. As noted above, Dr. Hall-Ellis obtained a copy from the University of Wisconsin—this is the **same** copy relied upon in this petition. Dr. Ellis confirmed the authenticity of this reference by comparing the attached copy to the version she obtained from the University of Wisconsin. Ex. 1012 at ¶ 66. Dr. Hall-Ellis found Ex. 1010 to be complete, with no pages missing, the text on each page flowing seamlessly and “no visible alternations” creating “no suspicion about its authenticity.”

Additionally, pursuant to FRE § 901(b)(8), Ex. 1010 qualifies as an “ancient document,” and is, for this additional reason, authentic.

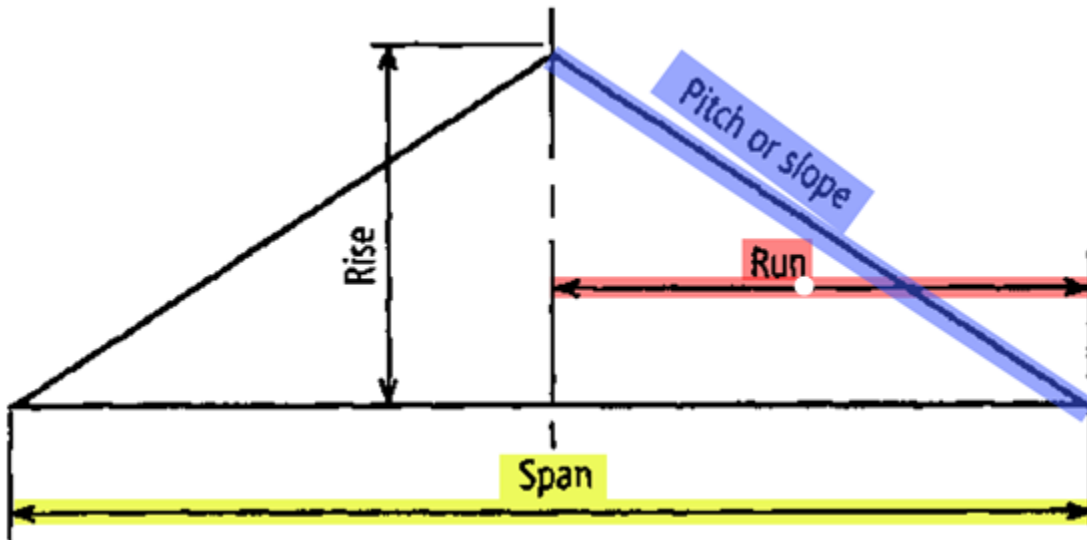
Bailey discloses steep roofing inventory procedures and inspection techniques. Bailey generally teaches methods for collecting data about a roof, including the “***predominant slope***” of the roof:

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).

Ex. 1010 at 17 (emphasis added); *see also id.* at 15 (showing a “primary” slope at entry line 33).

Bailey explains that “slope” and “pitch” are equivalents, both describing the “degree of incline” of a roof. Ex. 1006 at 134 (“The degree of incline a roof possess is usually expressed as its ‘***pitch***’ or ‘***slope***.’”) (emphasis added).

Bailey explains that pitch uses the entire span of the roof (*i.e.*, the entire length of the base of the roof) to express this incline, and slope uses the run of the roof (*i.e.*, half the length of the base of the roof), but, as shown in Figure 14 of Bailey, both pitch and slope represent the ***same thing***—the degree of incline of the roof:



Id. at Fig. 14 (annotated), 134-35.

As Bailey further explains, pitch and slope are interchangeable for purposes of area calculations: “Whether a particular roof incline is expressed in pitch or slope, ***the results of area calculations will be the same.***” *Id.* at 134 (emphasis added).

Bailey explains that finding the “predominant slope [*i.e.*, pitch]” for a “roof section” means any roofing area of 10,000 square feet or less—for example, Bailey teaches that “all exposed roof areas on the building shown in Figure 2 would comprise ***one roof section***” (*id.*):

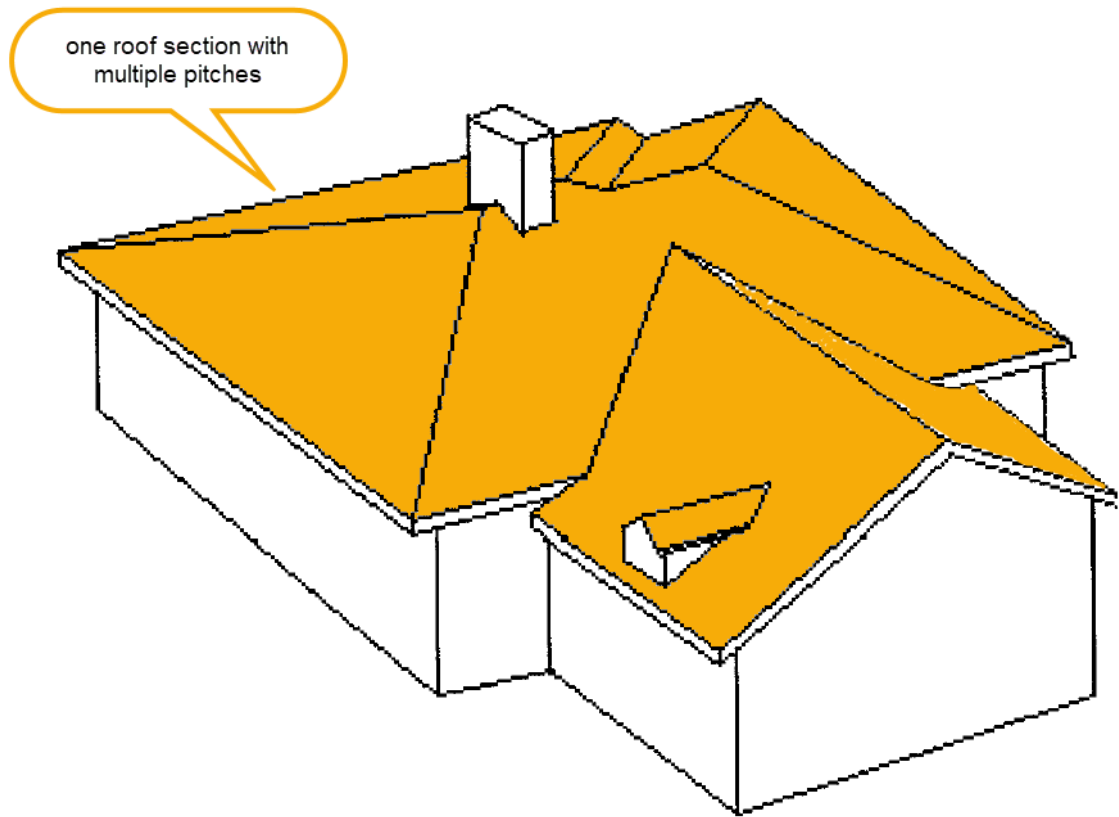


Figure 2. Example of a building roof comprising a roof section.

Id. at Fig. 2 (annotated). Thus, Bailey teaches finding the “predominant slope [pitch]” for, *e.g.*, an entire residential roof, like that shown in Figure 2.

VIII. DISCRETIONARY FACTORS

As discussed in detail below, the Board should not exercise its discretion to deny this IPR petition.

A. The Prior Art Was Not Considered During Prosecution

The Board uses a two-part framework to analyze denial under § 325(d). *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*,

IPR2019-01469, Paper 6 at 7 (PTAB Feb. 13, 2020) (precedential). For the first prong, the Board considers the prosecution of the patent, and any post-issuance proceedings. *Id.* at 7-8. As to the second prong, the Board provides examples of “material errors,” including whether the office overlooked a specific teaching of the relevant prior art or an error of law, such as misconstruing a claim term. *Id.* at n. 9. If the first prong is not met, the Board does not need to address the second prong. *Godbersen-Smith Constr. Co. v. Guntert & Zimmerman Const. Div., Inc.*, IPR2021-00050, Paper 24 at 21 (PTAB May 7, 2021).

The first prong is not met here. None of the prior art in this petition was substantively addressed by either the Examiner or Applicant during prosecution of the ’800 patent. In fact, neither the Examiner nor applicant addressed **any** prior art of record at all—the Examiner allowed the claims without issuing a single rejection. While Pershing-789, relied on in this petition, is listed on the face of the ’800 patent, this does not implicate § 325(d). The Board has routinely held that § 325(d) denial is not warranted based on the mere citation of a reference without any substantive analysis. *See, e.g., Digital Check Corp. d/b/a ST Imaging v. E-Imagedata Corp.*, IPR2017-00178, Paper 6 at 12-13 (P.T.A.B. April 25, 2017) (instituting

where: “The evidence supports Patent Owner’s assertion that [the prior art references] were cited in an IDS and the Examiner considered both references. But there is no indication in the record that the Examiner rejected any claims based on either reference or that the Examiner or applicant substantively discussed either reference during prosecution[.]”).

In any case, this petition also relies on Abhyankar, Pictometry, Kennedy and Bailey which were not cited during prosecution of the ’800 patent. As discussed below, these references teach each and every element of the challenged claims.

Accordingly, Section 325(d) concerns are not implicated here, because this petition relies on different prior art and presents new arguments (including arguments based on Abhyankar) never-before presented to the PTO. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, Paper 6 at 7 (PTAB Feb. 13, 2020) (considering 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.); *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 28 (PTAB Dec. 15, 2017) (informative) (finding that a cited reference was cumulative when the same base reference was substantively

evaluated during prosecution). As such § 325(d) does not counsel in favor of a discretionary denial. Therefore, the Board does not have to address the second prong of the analysis.

B. The *General Plastic* Factors Do Not Apply

This is the first post-grant proceeding brought against the '800 patent. Accordingly, this is not a “follow-on” petition, and the *General Plastics* factors do not apply, let alone counsel against institution. *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, Case IPR2016-01357 at 8-11 (Paper 19) (Precedential) (setting forth seven factors directed towards “follow-on” petitions).

C. Institution Should Not Be Denied Under *Fintiv*

Discretionary denial under § 314 is analyzed under the *Fintiv* factors, and those factors weigh in favor of institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential).

1. Sotera Stipulation

Petitioner stipulates that, if this IPR proceeding is instituted, Petitioner will not pursue in the in the district court litigation any grounds it brought **or**

could have brought here.¹ See 35 U.S.C. § 315(e)(2). This waiver eliminates any overlap in invalidity grounds between the district court litigation and an IPR instituted based on this Petition, and thus mitigates any concerns of duplicative efforts or prejudice to Patent Owner. See *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential). As noted by the Director, “the PTAB ***will not*** discretionarily deny institution in view of parallel district court litigation where a petition presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.” *USPTO Interim Procedure for Discretionary Denials in AIA Post-Grant Proceeding with Parallel District Court Litigation*, at 3 (June 21, 2022) (emphasis added).

¹ This stipulation is not intended, and should not be construed, to limit Petitioner’s ability to assert invalidity of the asserted claim of the ’800 patent in the district court litigation on any other ground (i.e., invalidity under §§ 101, 112), regardless of whether *inter partes* review is instituted.

2. A FWD Will Issue Before Any Trial

A schedule has not yet been issued in the corresponding district court litigation. No trial date has been set. This petition is being filed on January 3, 2022. Thus, the approximate date of the PTAB hearing would be June 2024, whereas the trial date for the district court case (which has not been set) will likely not be until 2025. Accordingly, the PTAB trial will pre-date the district court trial, perhaps by many months.

Even if the trial occurs shortly before the PTAB hearing, the PTAB has held that such close proximity of a district court trial date weighs in favor of institution. *See, e.g., MediaTek Inc. et al. v. Nippon Telegraph and Telephone Corp.*, IPR2020-01607, Paper 12 at 14 (PTAB April 2, 2021).

3. The Merits of the Petition Support Institution

As discussed in more detail below, the prior art teaches every element of the challenged claims. Accordingly, the challenged claims should be held unpatentable. The merits of the petition weigh strongly in favor of institution. Likewise, as noted by the Director, “the PTAB **will not** rely on the *Fintiv* factors to discretionarily deny institution . . . where a petition presents compelling evidence of unpatentability.” *USPTO Interim Procedure for Discretionary Denials*, at 2 (emphasis added).

IX. GROUND 1: PERSHING-789 AND ABHYANKER RENDER OBVIOUS CLAIMS 1-17 OF THE '800 PATENT

Pershing-789 expressly teaches the bulk of the claim elements recited in the '800 patent, including a software system for locating a customer's roof at a specific geographic location, analyzing roof dimensions to estimate the materials needed to repair or replace the customer's roof and generating a report for a customer. A POSITA would have been motivated by the teachings of Abhyanker to allow users of Pershing-789's roofing system the option to specifically designate the geographic position of a roof to be analyzed using a marker, and to include a subsequent user confirmation option to ensure the correct roof is being analyzed. Ex. 1003 at ¶ 43.

A. Motivation To Combine Pershing-789 and Abhyanker

There are a variety of reasons a POSITA would be motivated to apply these teachings from Abhyanker to Pershing-789. Ex. 1003 at ¶¶ 44-46. For example, 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*. Abhyanker's teachings expressly address this motivation. Abhyanker discloses that automated systems used to pinpoint geographic locations (like Pershing-789's) are not always 100% accurate, and mistakes will result in user disappointment. Ex. 1005 at [0004]-[0005]. That

is especially true here: if Pershing-789's system inadvertently marked a neighboring roof (or a roof with the same address in a different state or town), the resulting materials estimate would be incorrect. This would cost both the user and the service provider time and money (and would potentially cost the software provider business). Thus, it would have been obvious to include Abhyanker's teachings of allowing a user to place a "marker" on the roof in question and to affirmatively "confirm" the right selection was made. This accuracy check would **save money**, **save time** and **avoid customer losses**.

In addition, applying Abhyanker's teachings to Pershing-789's system would also **add convenience** to a user. For example, if a user inadvertently input a neighbor's address it would be convenient to allow the user to apply a drag-and-drop feature, like that taught by Abhyanker, to correct this error by simply sliding the marker to the correct location. This would also add to the convenience for users who may have difficulties typing or reading smaller print in the form fields in a screen—dragging a colored "marker" would assist such users in marking the right roof.

In addition, a POSITA would have been motivated to combine the teachings of Pershing-789 and Abhyanker because they are in the **same field of endeavor** as the '800 patent. Both Pershing-789 and the '800 patent are

directed towards systems that locate and measure roof dimensions. Ex. 1001 at Abstract; Ex. 1004 at Abstract. Similarly, Abhyanker is broadly directed towards accurate placement of markers in a “mapping environment,” like the ones used in the Pershing-789 and ’800 patent systems. Ex. 1005 at Abstract, [0012]. Further, Pershing-789, Abhyanker and the ’800 patent all user ***similar techniques to solve the same problems***. As discussed below, Pershing-789 uses the same techniques to locate roofs and measure their dimensions as the ’800 patent, and Abhyanker uses the same techniques to ensure accurate roof location. A POSITA would also have a ***reasonable expectation of success*** in including the teachings of Abhyanker in Pershing-789. Abhyanker’s teachings confirm that user confirmation options in “mapping environments” such as Pershing-789’s were well known, and Pershing-789 specifically teaches that its system can be used in the same context—locating roofs. Ex. 1005 at [0012]. Accordingly, Abhyanker itself would motivate a POSTIA to apply its teachings of user confirmation steps to improve Pershing-789’s system.

B. Claim 1

1. Claim 1a: A process, comprising:

Pershing-789 discloses a process. In particular, Pershing-789 discloses a “system that allows the remote measurement of the size, geometry, pitch and orientation of the roof...and then uses the information to provide an estimate to repair or replace the roof, or to install equipment thereon.” Ex. 1004 at Abstract; *see also id.* at [0003] (describing “systems and methods for estimating construction projects”), [0015], [0034] (describing a “process”); Ex. 1003 at ¶ 47.

2. Claim 1b: receiving first location data;

Pershing-789 discloses receiving first location data, such as an address:

During use, the ***physical address or location information*** of the building ***is inputted into the program*** which then presents aerial images of roof sections on the building at the specific address location.

Ex. 1004 at [0011] (emphasis added), *see also id.* at Abstract, [0012]-[0014], [0022]-[0023]; Ex. 1003 at ¶¶ 48-49.

3. **Claim 1c: providing visual access to a first image corresponding to the first location data, the first image including a roof structure of a building;**

Pershing-789 teaches providing visual access to a first image corresponding to the first location data by displaying an image of the input location:

During use, the physical address or location information of the building is inputted into the program which then ***presents aerial images of roof sections on the building at the specific address location.***

Ex. 1004 at [0011] (emphasis added).

For example, a first image corresponding to the first location data is shown in Figure 3:

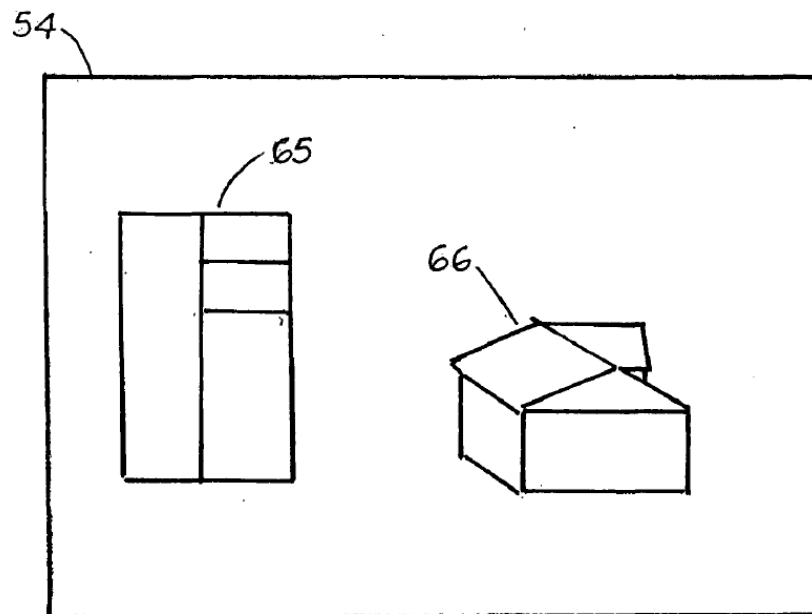


FIG. 3

Ex. 1004 at Fig. 3; *see also* Figs. 4, 5A-F. Pershing-789 explains that this hand-sketched drawing in Figure 3 is meant to represent ***actual aerial images of a building*** stored in its system's database:

The software program 50 is linked to ***an aerial image file database 52 that contains aerial images files 54*** of various building 92 in a region. The aerial image files 54 may be taken any available means, such as an aircraft, balloon, a satellite, etc. ***As shown in FIG. 3, the image files 54*** typically include at least one a top plan view 65 and a perspective view 66 of the building 92.

Id. at [0022] (emphasis added); *see also* [0011]-[0014], [0023]-[0028]. Accordingly, Pershing-789 discloses displaying an actual aerial photo of a building.

Pershing-789's disclosure that actual aerial images are used in Figure 3A is consistent with its disclosure that the same aerial images of customer roofs are included in its report, such as the exemplary reports shown in Figures 5A-B:

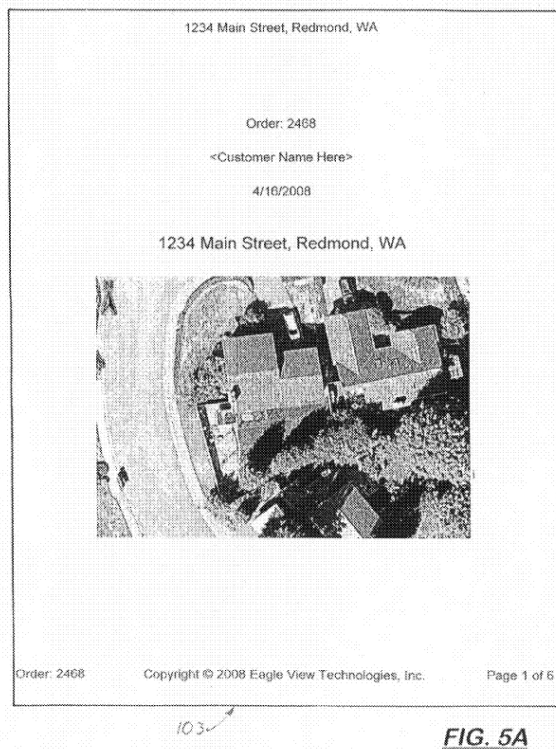


FIG. 5A

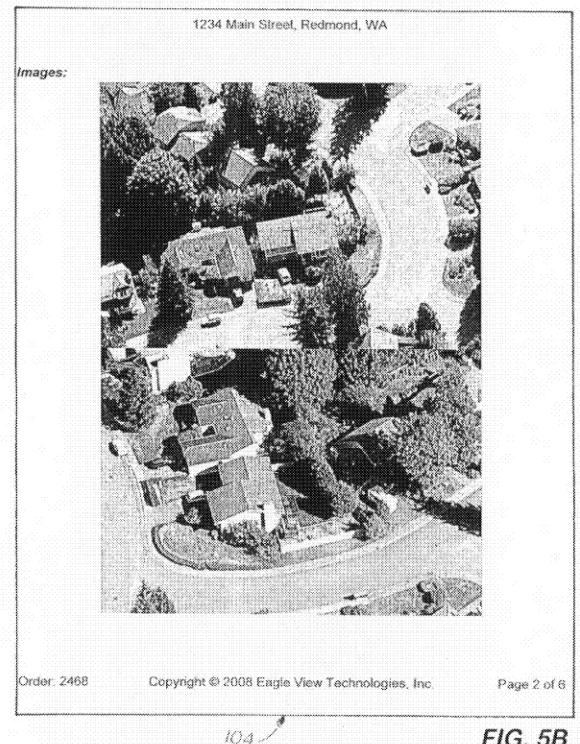


FIG. 5B

Id. at Figs. 5A-B.

Further, as shown in Figure 3 (and Figures 5A-B), Pershing-789's image includes a roof structure of a building as part of its "**top plan view**" of the building. *Id.*; Ex. 1003 at ¶¶ 51-55.

4. **Claim 1d: providing a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;**

Abhyanker teaches providing a first computer input capable of signaling a designation from a user of a building roof structure location within

the first image as required by the first part of claim 1d. In particular, Abhyanker's "first computer input" is its digital "marker" which the user may drag and drop on an aerial image of a roof, thereby "signaling a designation from a user of a building roof structure location within the first image" as required by the claim. Ex. 1003 at ¶¶ 56-60.

For example, Abhyanker discloses a system that allows "marker placement in a mapping environment." Ex. 1005 at Abstract. Abhyanker discloses that its mapping environment may include, *e.g.*, "aerial photography over neighborhoods and/or places in a terrestrial environment (*e.g.*, the Earth)." Ex. 1004 at [0004]. Abhyanker teaches a "marker" (*e.g.*, a pushpin, an indicator, a pointer, a pin, etc.) may be placed on a landmark in the aerial image by an algorithm. *Id.*

In addition, Abhyanker also teaches that the building roof structure location is a "geographic position of the building roof structure and is ***different*** than the first location data" as required by the claims. For example, Abhyanker teaches that a user may drag and drop this marker anywhere in the image. *Id.* at [0004]. Thus, the user may use Abhyanker's drag-and-drop feature to designate a location that is ***different*** from the first location data (the

first location data being the original location of Pershing-789’s “marker” before it was dragged-and-dropped by the user) as required by the claims.

Abhyanker notes that it may be necessary to drag and drop a marker to a different location because, in some cases, an algorithm may “place marker nearby, but not precisely on, a correct rooftop” or other landmark. *Id.* at [0005]. A misplaced marker would result in customer dissatisfaction. *Id.* Abhyanker thus teaches remedying marker misplacement by allowing a user to “drag and drop” a marker to a corrected location:

Furthermore, the method may include applying a ***drag and drop*** algorithm that enables the user to sequentially and/or concurrently relocate markers in the mapping environment, iteratively performing additional verifications when any particular marker has been previously moved[.]

Ex. 1005 at [0011] (emphasis added). Thus, a user has freedom to relocate a marker anywhere desired within the aerial image, including a location that is ***different*** from the original address entered by a user (which may have been entered in error or misplaced by the algorithm) as required by the claims.

5. Claim 1e: receive a designation of the building roof structure within the first image;

As discussed with respect to claim 1d, Abhyanker teaches receiving a designation of the building roof structure within a first image. Abhyanker

teaches that a user may drag-and-drop a marker to the desired location, which may include the roof of a building in an aerial photo in the first image. The selection of a roof location using the “drag and drop” feature is the claimed “designation of the building roof structure within the first image.” Ex. 1003 at ¶ 61.

6. **Claim 1f: responsive to receiving the designation of the building roof structure location, providing a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and**

Abhyanker teaches this limitation. Ex. 1003 at ¶¶ 62-66. First, Abhyander teaches “responsive to receiving the designation of the building roof structure location, providing a second computer input capable of signaling user-acceptance of the building roof structure location within the first image.” As discussed above, Abhyanker teaches that a user may “drag and drop” a marker to choose a location:

Furthermore, the method may include applying a ***drag and drop*** algorithm that enables the user to sequentially and/or concurrently relocate markers in the mapping environment, iteratively performing additional verifications when any particular marker has been previously moved[.]

Ex. 1005 at [0011] (emphasis added). Thus, a user has freedom to relocate a marker anywhere desired within the aerial image, including a location that is different from the original address entered by a user.

Abhyanker also discloses that “**additional verifications** may be iteratively performed when any particular marker has been previously moved[.]” *Id.* at [0053] (emphasis added). Abhyanker’s additional verifications are the claimed “second computer input capable of signaling user-acceptance of the building roof structure location within the first image.” For example, Abhyanker teaches a user may “lock” the location of a marker, preventing unauthorized future relocation:

The locking module 220 may process a marker **locking request** when the particular user claims the wiki profile associated with the address data. In addition, the locking module 220 may enable the user(s) to control the future relocation of the marker in the mapping environment.

Id. at [0064] (emphasis added). Abhyanker’s additional verifications, such as locking the marker position, are the claimed “second computer input capable of signaling user-acceptance of the building roof structure location” within the image required by the challenged claims.

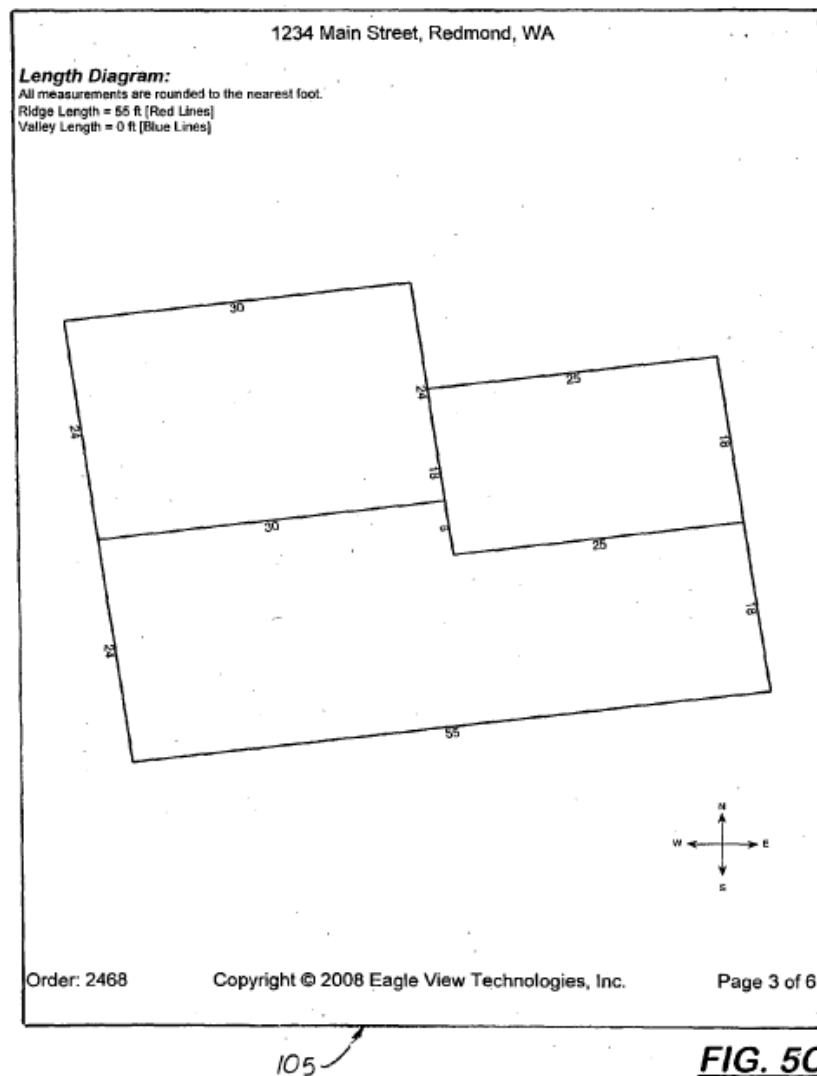
Abhyanker also discloses “wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the

building roof structure location” as recited in the claims. Abhyanker’s “additional verification,” such as its “locking request,” is the claimed “affirmative step” which “confirms designations of the building roof structure location” as recited in the claims. *Id.* at [0064].

7. Claim 1g: subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.

Pershing-789 discloses “providing a report for the building roof structure.” Ex. 1003 at ¶¶ 67-69. For example, after taking measurements of the roof in question, Pershing-789 generates a report: “From these determinations, the overall shape, slopes and square footage of the roof sections are determined and a **report** is produced.” Ex. 1004 at [0012] (emphasis added). Because the roofing report is generated **after** the measurements are taken, this means that the roofing report is also generated “subsequent to receiving the user-acceptance confirming the designation of the building roof structure location” as required by the claims—indeed, measurements cannot be taken and reported before a roof location is selected in the first instance.

An exemplary report is shown in Figure 5C:

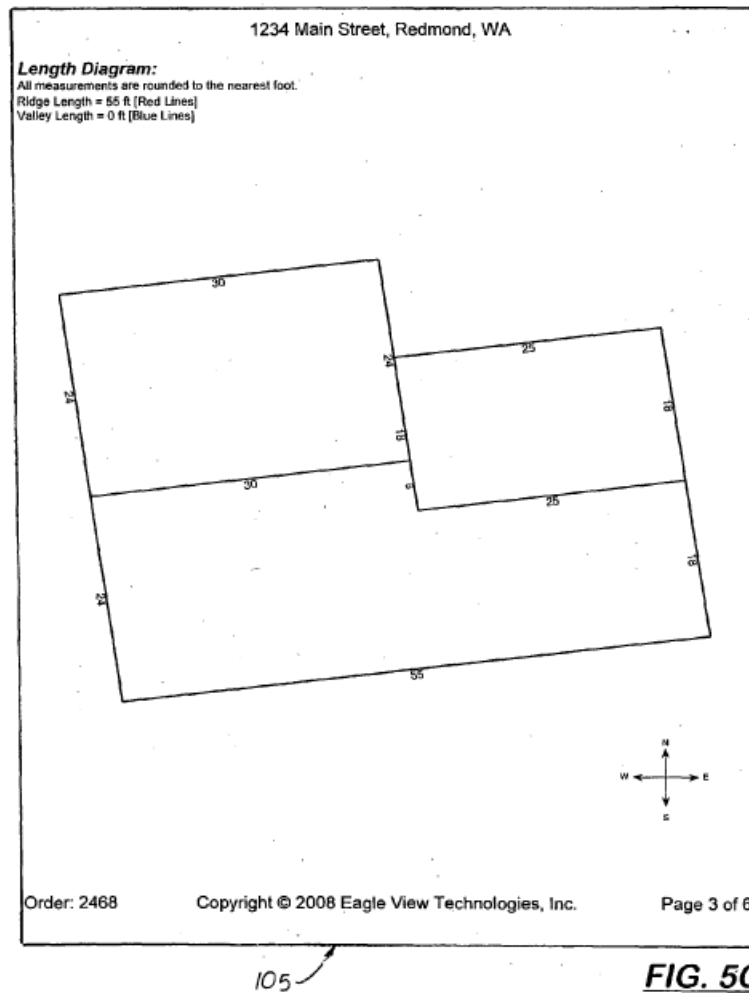


Ex. 1004 at Fig. 5C; *id.* at [0038] (“FIG. 5C is the third page 105 of the **report** which shows a line drawing of the building showing ridge and valley lines, dimensions and a compass indicator.”)(emphasis added).

C. Claim 2: The process of claim 1, further comprising providing visual access to one or more outline drawing corresponding to the roof structure of the building.

Pershing-789 provides “visual access to an outline drawing corresponding to the roof structure of a building” as required by the

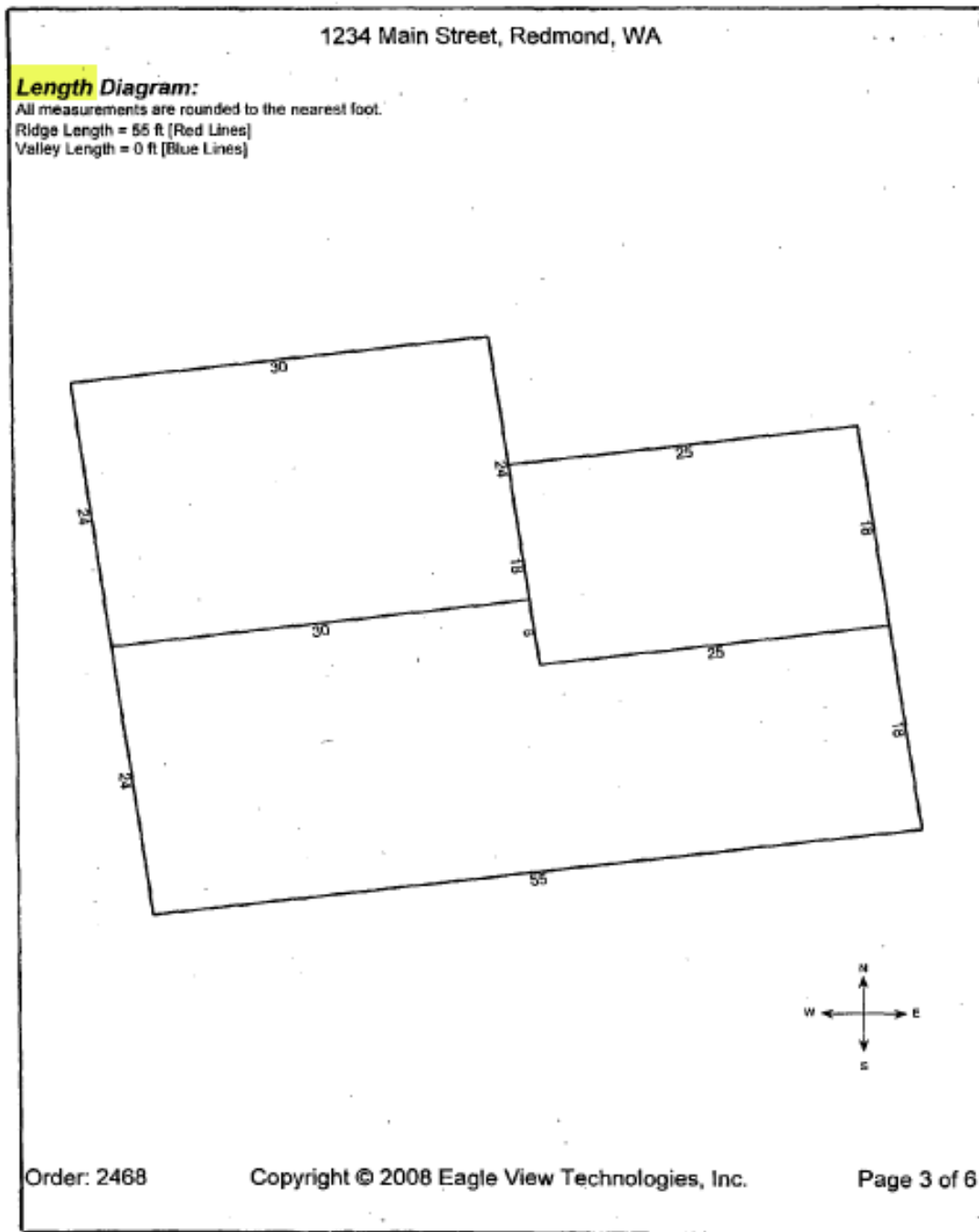
challenged claims. Ex. 1003 at ¶¶ 70-71. For example, Pershing-789 discloses a drawing of a roof structure ***outline*** as part of its report in Figure 5C:



Ex. 1004 at Fig. 5C. Persing-789 discloses: “FIG. 5C is the third page 105 of the report which ***shows a line drawing*** of the building showing ridge and valley lines, dimensions and a compass indicator.” Ex. 1004 at [0038] (emphasis added).

D. Claim 3: The process of claim 2, further comprising providing one or more length dimension on the outline drawing

Pershing-789 discloses providing one or more length dimension on the outline drawing. Ex. 1002 at ¶¶ 72-74. For example, Pershing-789 discloses a drawing as part of its report in Figure 5C, which includes “length” dimensions:

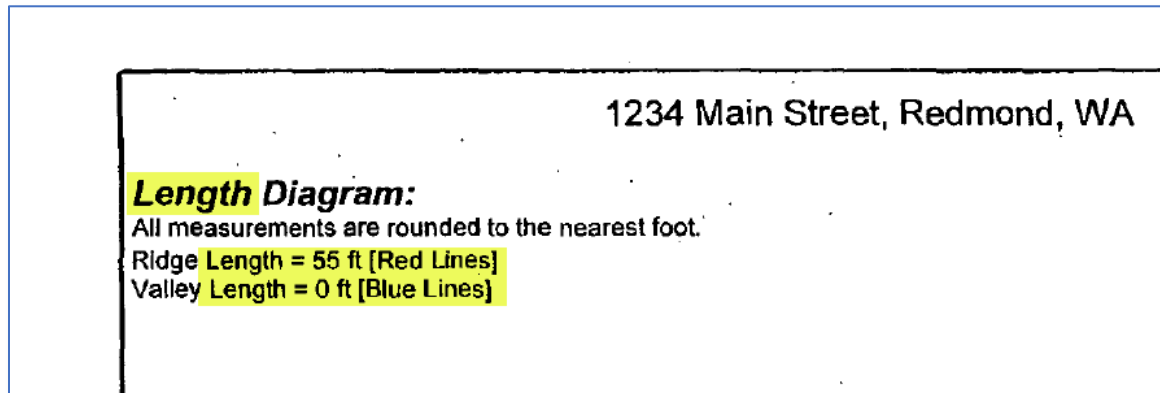


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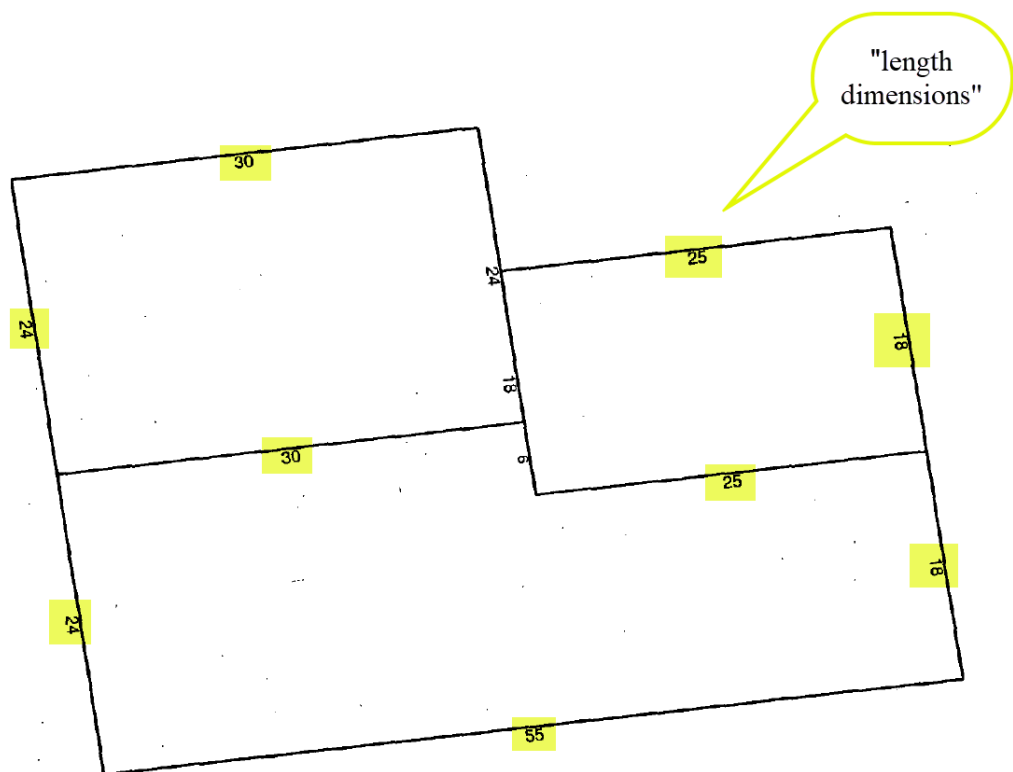
FIG. 5C

Ex. 1004 at Fig. 5C. Persing-789 discloses: “FIG. 5C is the third page
105 of the report which *shows a line drawing* of the building showing ridge

and valley lines, **dimensions** and a compass indicator.” Ex. 1004 at [0038] (emphasis added). As shown in this close-up of Fig. 5C, these “dimensions” expressly include length (in feet):



Id. at Fig. 5C (annotated—close-up). Another closeup of Fig. 5C shows that this report includes various length measurements across the roof:

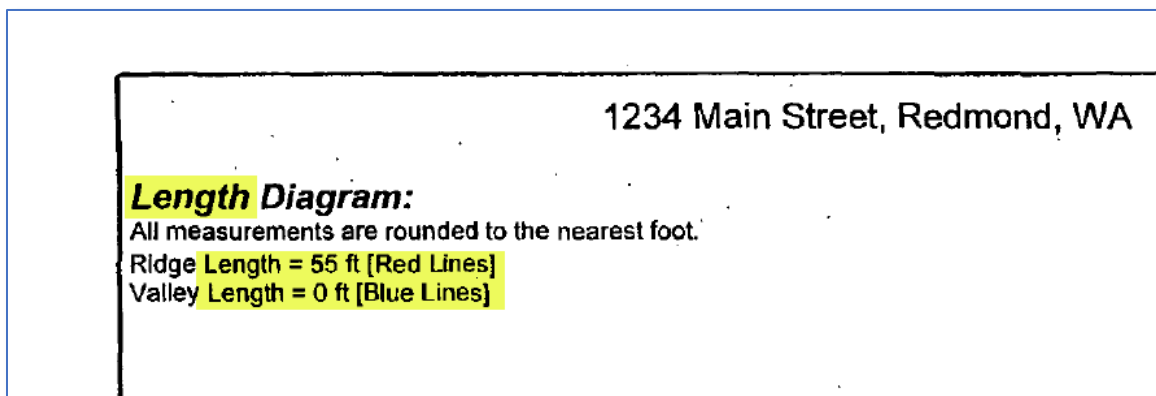


Id. (annotated—close-up).

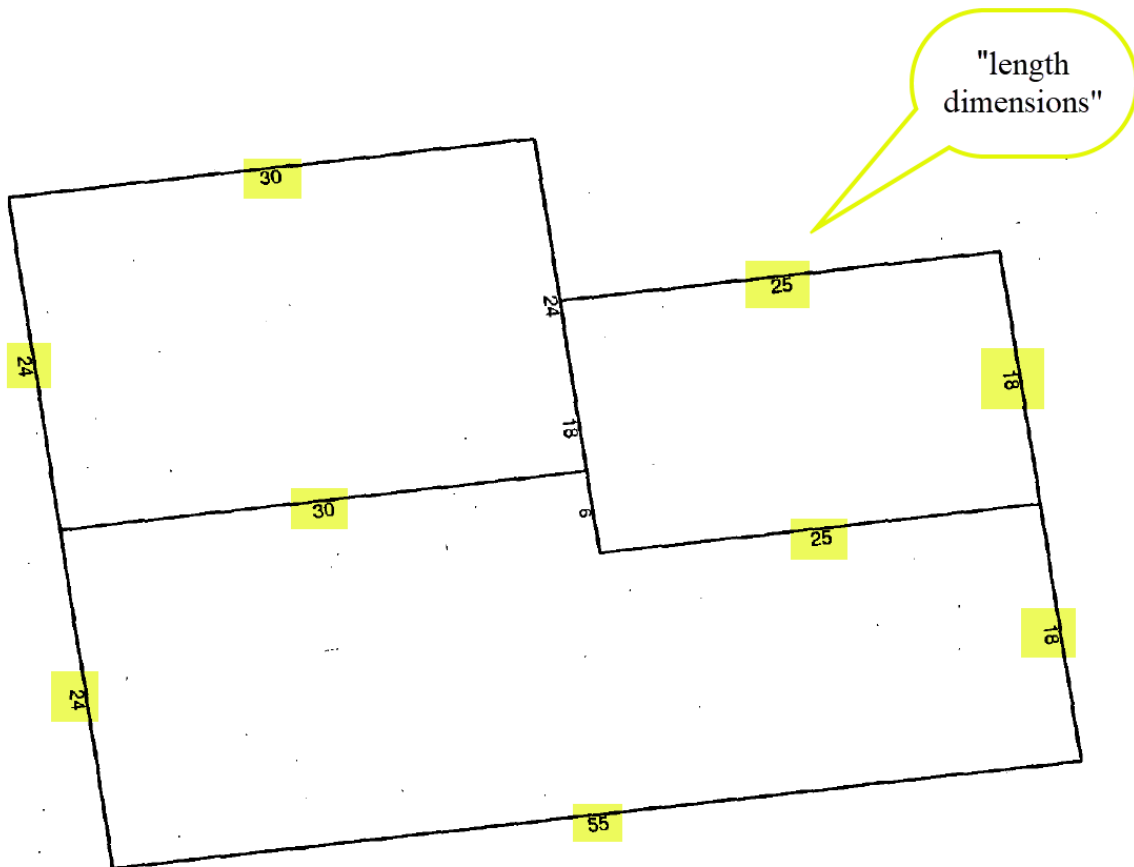
- E. **Claim 4: The process of claim 3, wherein the length dimension is one or more of a perimeter of the roof structure, a length of a ridge of the roof structure, a total length of ridges of the roof structure, a length of a valley of the roof structure, a total length of valleys of the roof structure, a length of a flashing of the roof structure, and a total length of flashings of the roof structure.**

As discussed with respect to claim 3, Pershing-789 discloses: “FIG. 5C is the third page 105 of the report which ***shows a line drawing*** of the building showing ridge and valley lines, ***dimensions*** and a compass indicator.” Ex. 1004 at [0038] (emphasis added). The length dimensions show, *e.g.*, the roof “***perimeter***” as well as “***ridge and valley lines***” (i.e., dimensions of ridges and valleys) as required by the claims. *Id.*

Pershing-789’s Fig. 5C shows the total length of both ridges and valleys in the roof structure.



Id. at Fig. 5C (annotated). Pershing-789's Fig. 5C also shows lengths of valleys and ridges of the roof structure:



Id. (annotated). Accordingly, Pershing-789 discloses this limitation.²

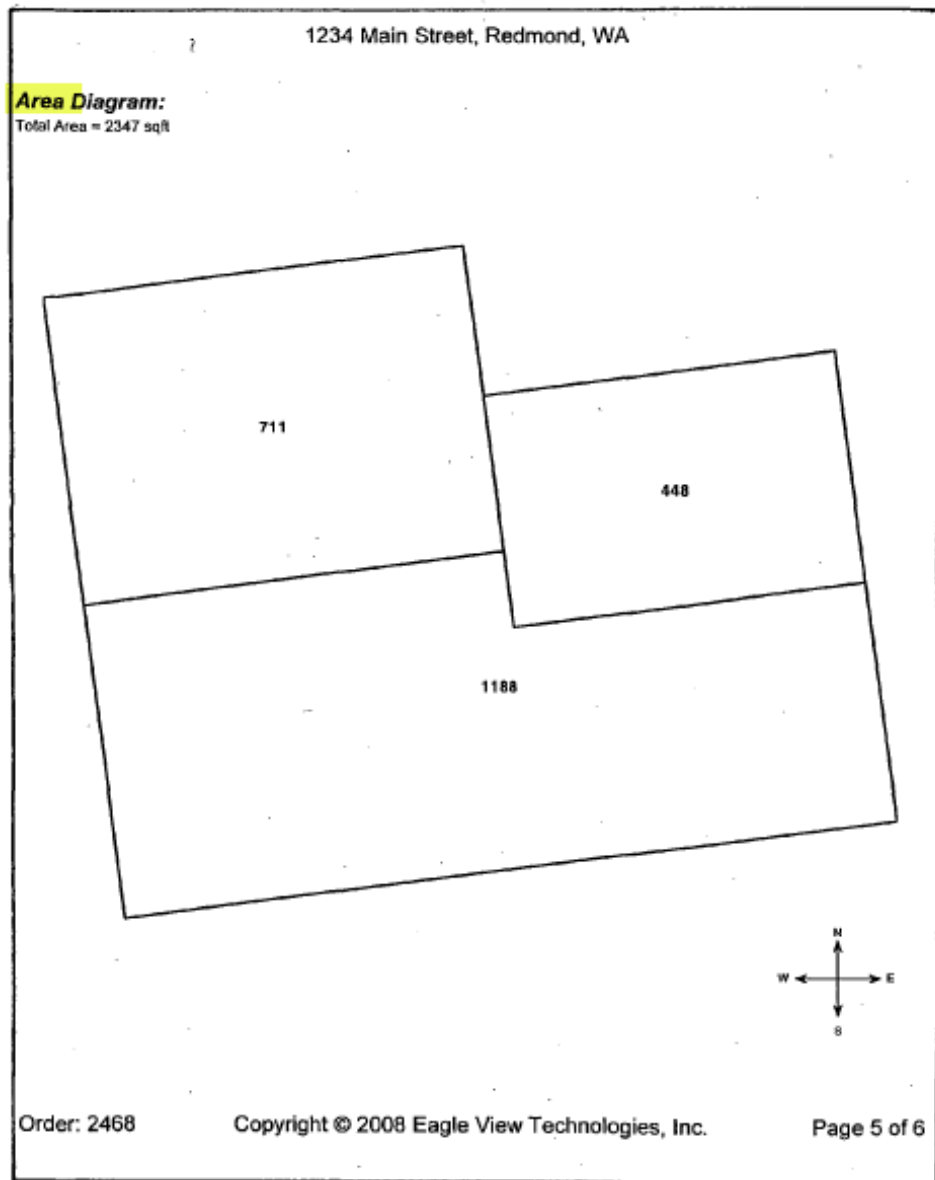
Ex. 1003 at ¶¶ 75-78.

² The claims only require **one of** “a perimeter of the roof structure, a length of a ridge of the roof structure, a total length of ridges of the roof structure, a length of a valley of the roof structure, a total length of valleys of the roof structure, a length of a flashing of the roof structure, and a total length of

F. Claim 5: The process of claim 2, further comprising providing one or more area dimension on the outline drawing.

Pershing-789 further teaches showing “area” dimensions in its outline drawing, for example, in Figure 5E:

flashings of the roof structure.” Ex. 1001 at claim 4. As shown above, Pershing-789 discloses multiple dimensions recited in the claim.

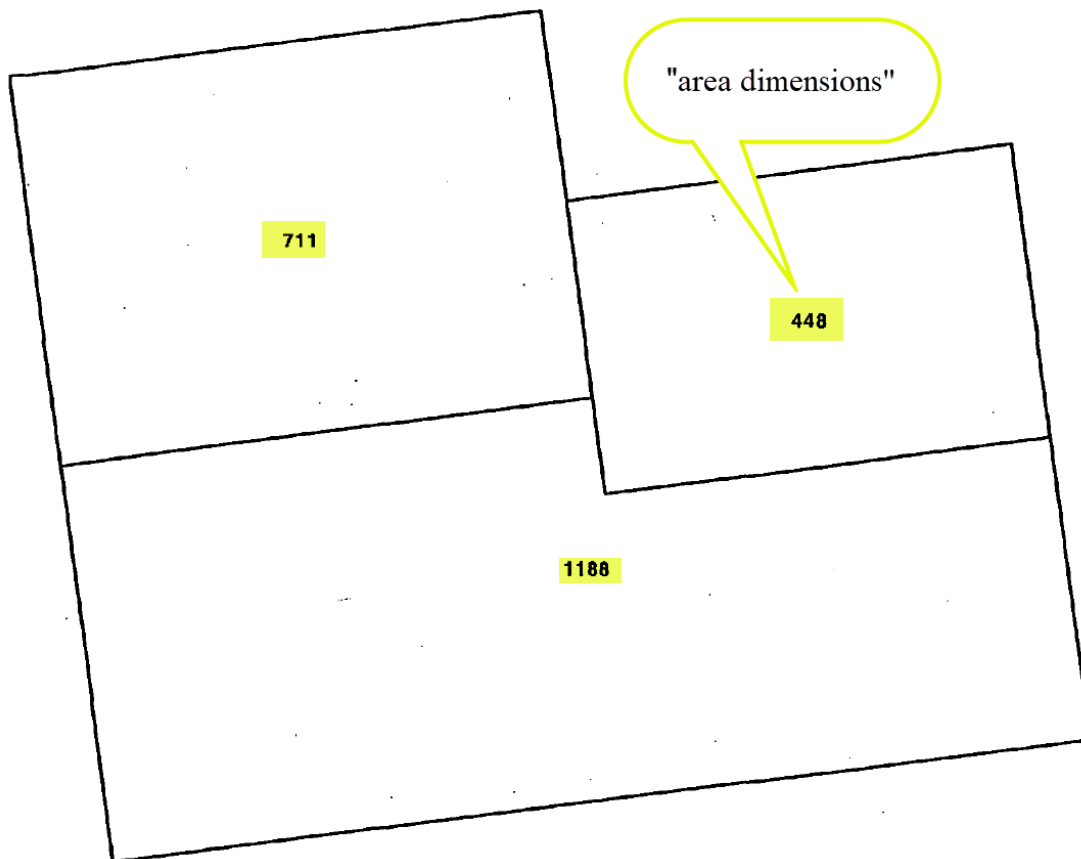


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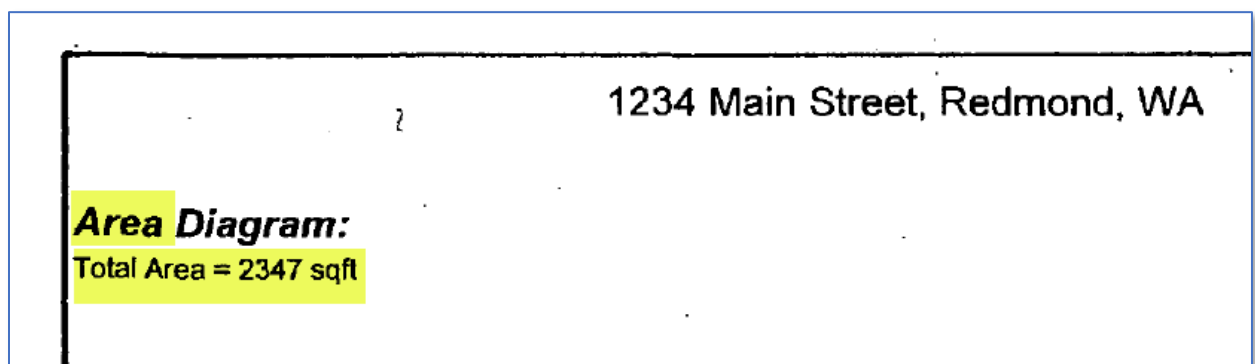
FIG. 5E

Ex. 1004 at Fig. 5E (annotated). Pershing-789 explains that, “FIG. 5E is an illustration of the fifth page 107 of the report showing the square footage of each roof section along with the total square foot *area* value.” *Id.* at [0028]

(emphasis added). A closeup of Fig. 5E shows the area of different roof segments:



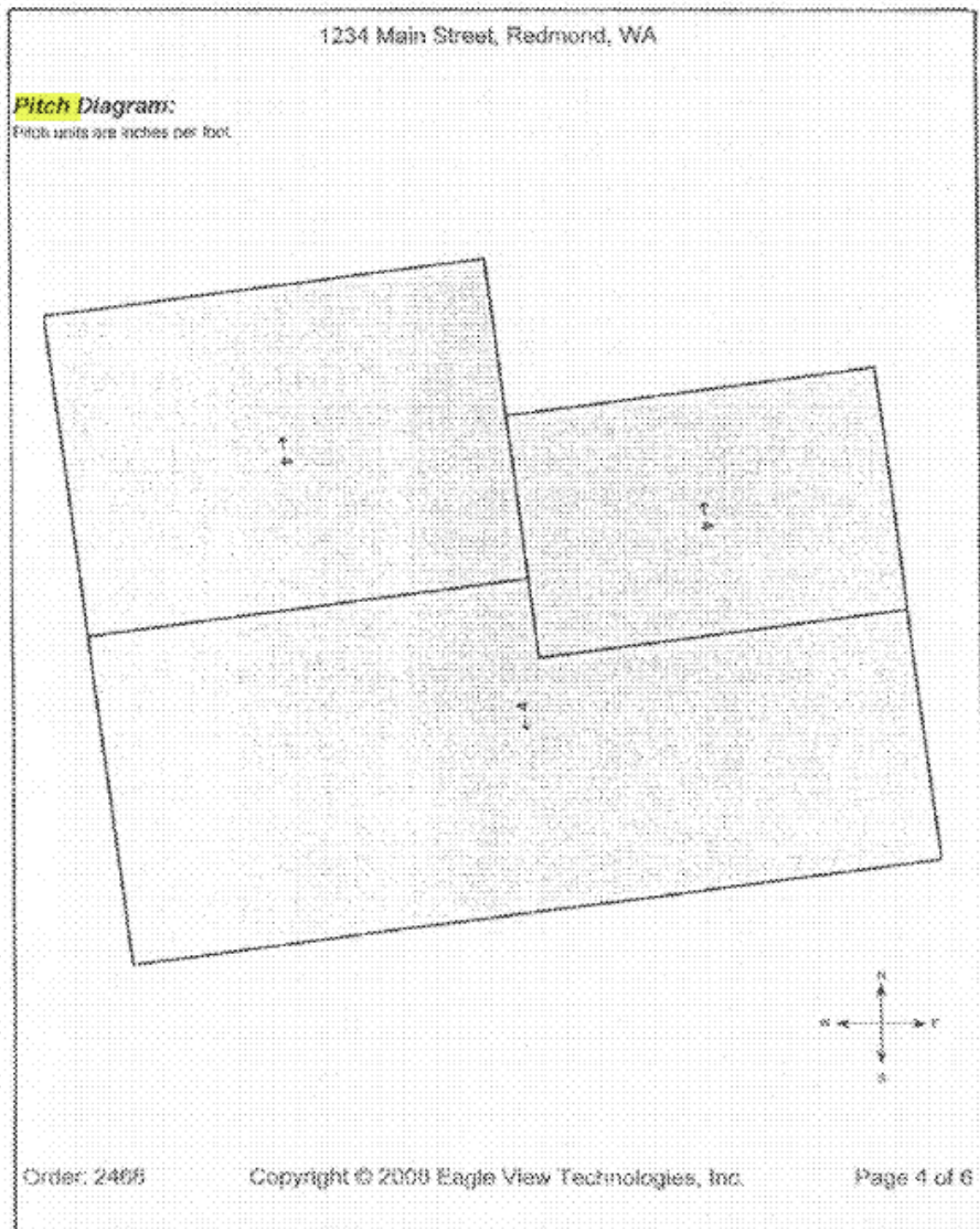
Id. at Fig. 5E (annotated—close-up). Likewise, another closeup of the figure shows the total area calculation:



Id. (annotated—close-up); Ex. 1003 at 79-81.

G. Claim 6: The process of claim 2, further comprising providing one or more pitch dimension on the outline drawing.

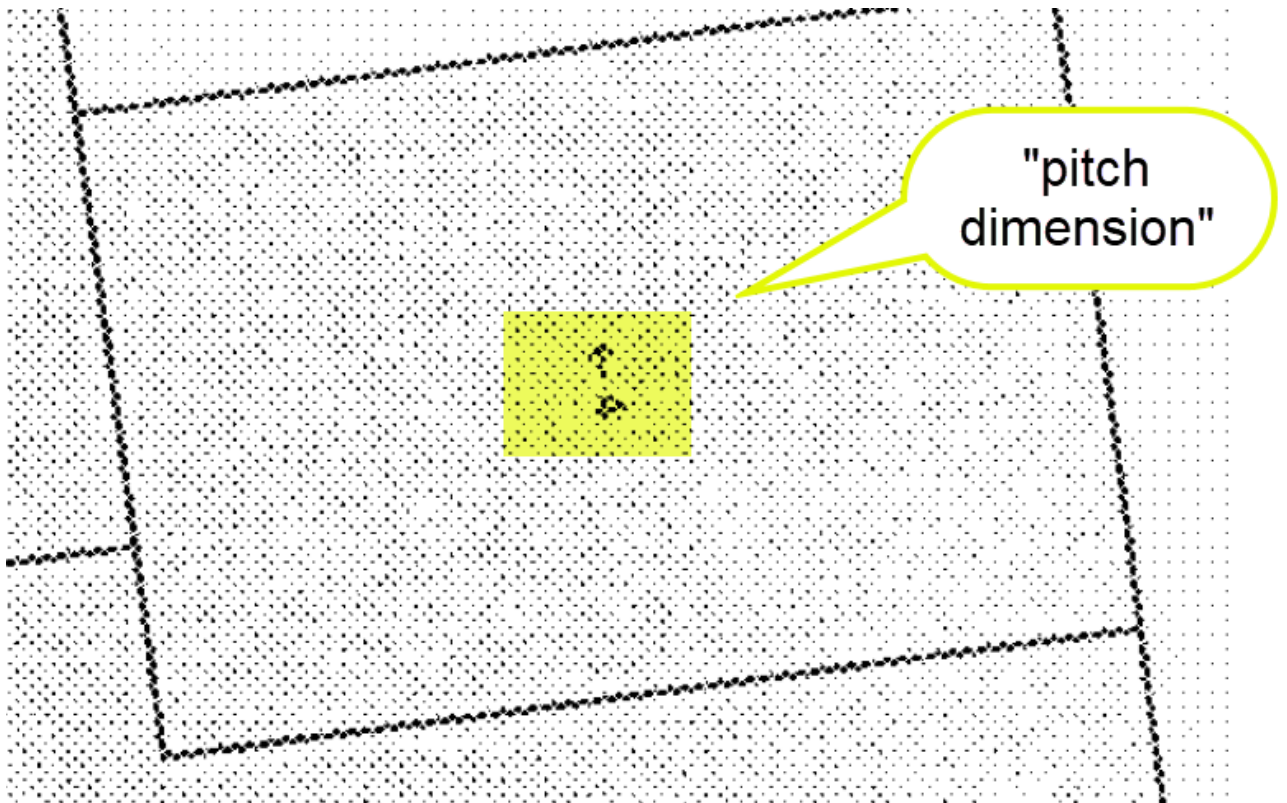
Pershing-789 further teaches showing “pitch” dimensions in its outline drawing, for example, in Figure 5D:



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FIG. 5D

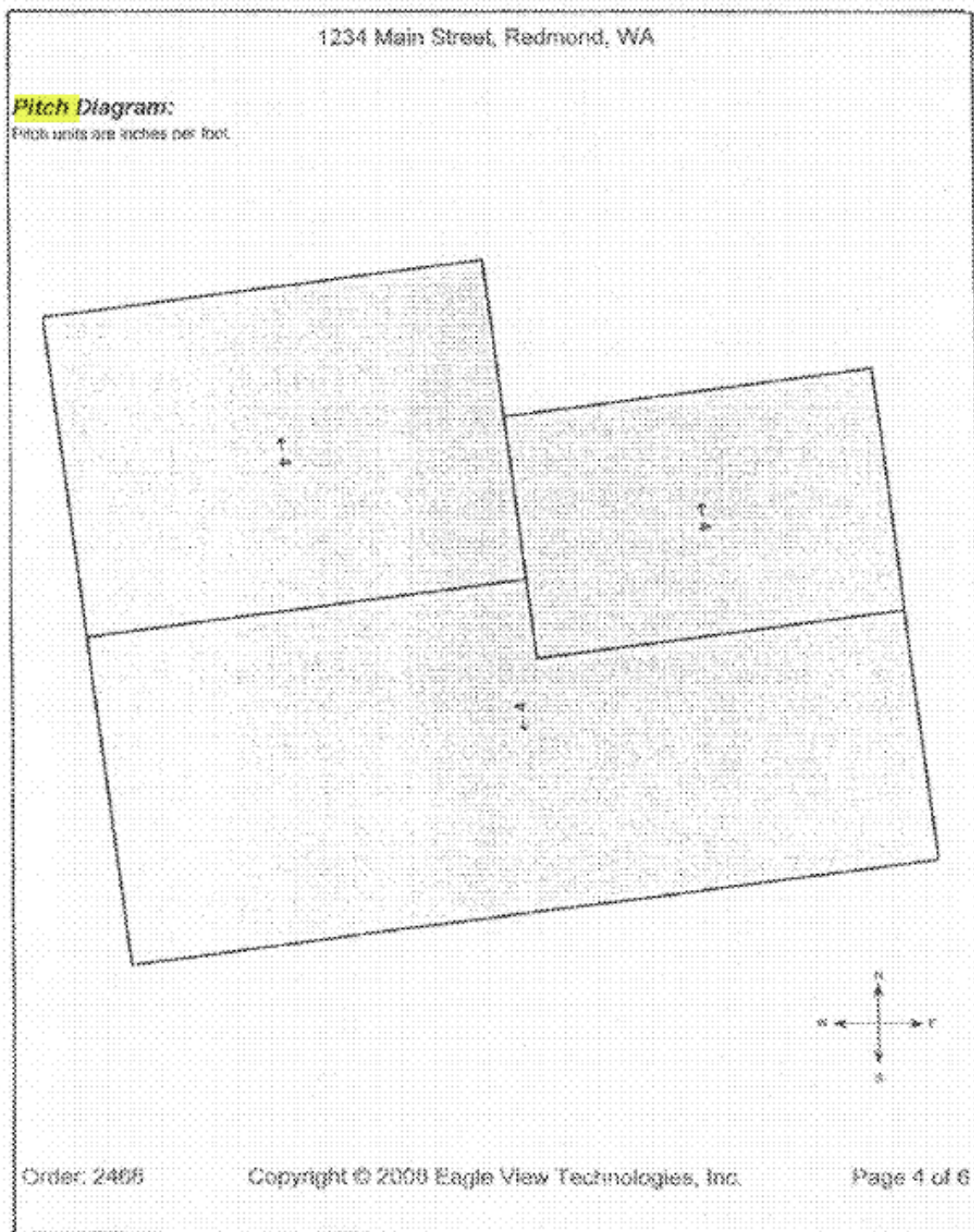
Ex. 1004 at Fig. 5D (annotated). Pershing-789 explains that, “FIG. 5D is an illustration of the fourth page 106 of the report showing the ***pitch angle*** of each roof section along with a compass indicator.” *Id.* at [0028] (emphasis added). This is shown in the closeup of Fig. 5D below:



Id. at Fig. 5D (annotated—close up) (showing a pitch value of “4”); Ex. 1003 at ¶¶ 82-83.

H. Claim 7: The process of claim 2, further comprising providing one or more indicator of pitch direction on the outline drawing.

Pershing-789 further teaches showing “pitch direction” in its outline drawing, for example, in Figure 5D (Ex. 1003 at ¶¶ 84-89):

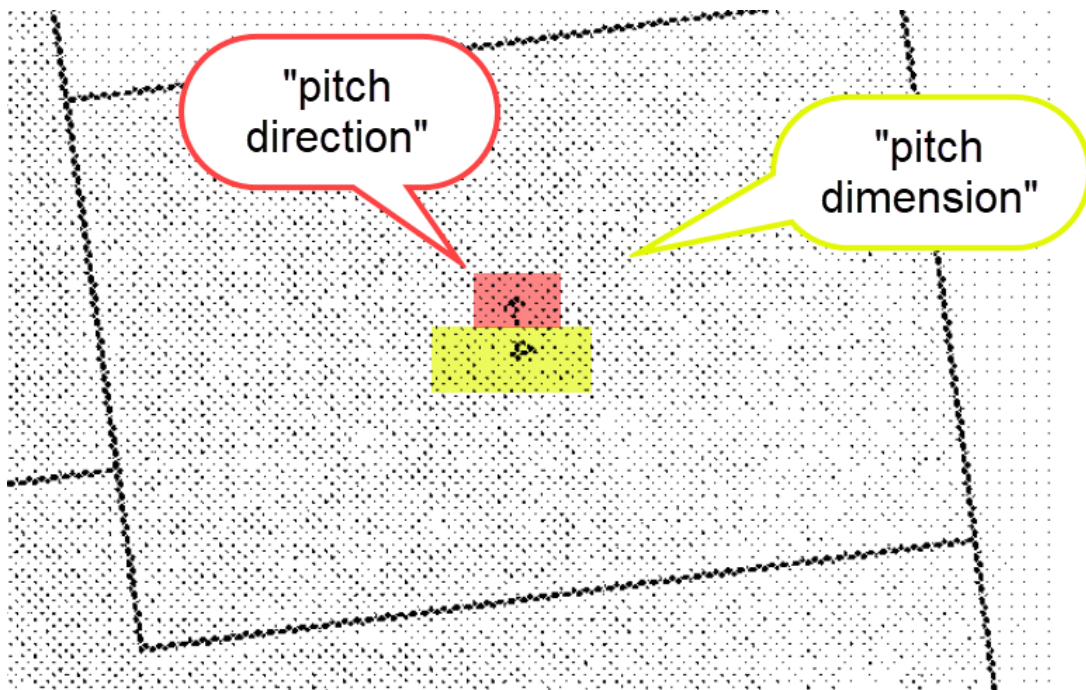


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FIG. 5D

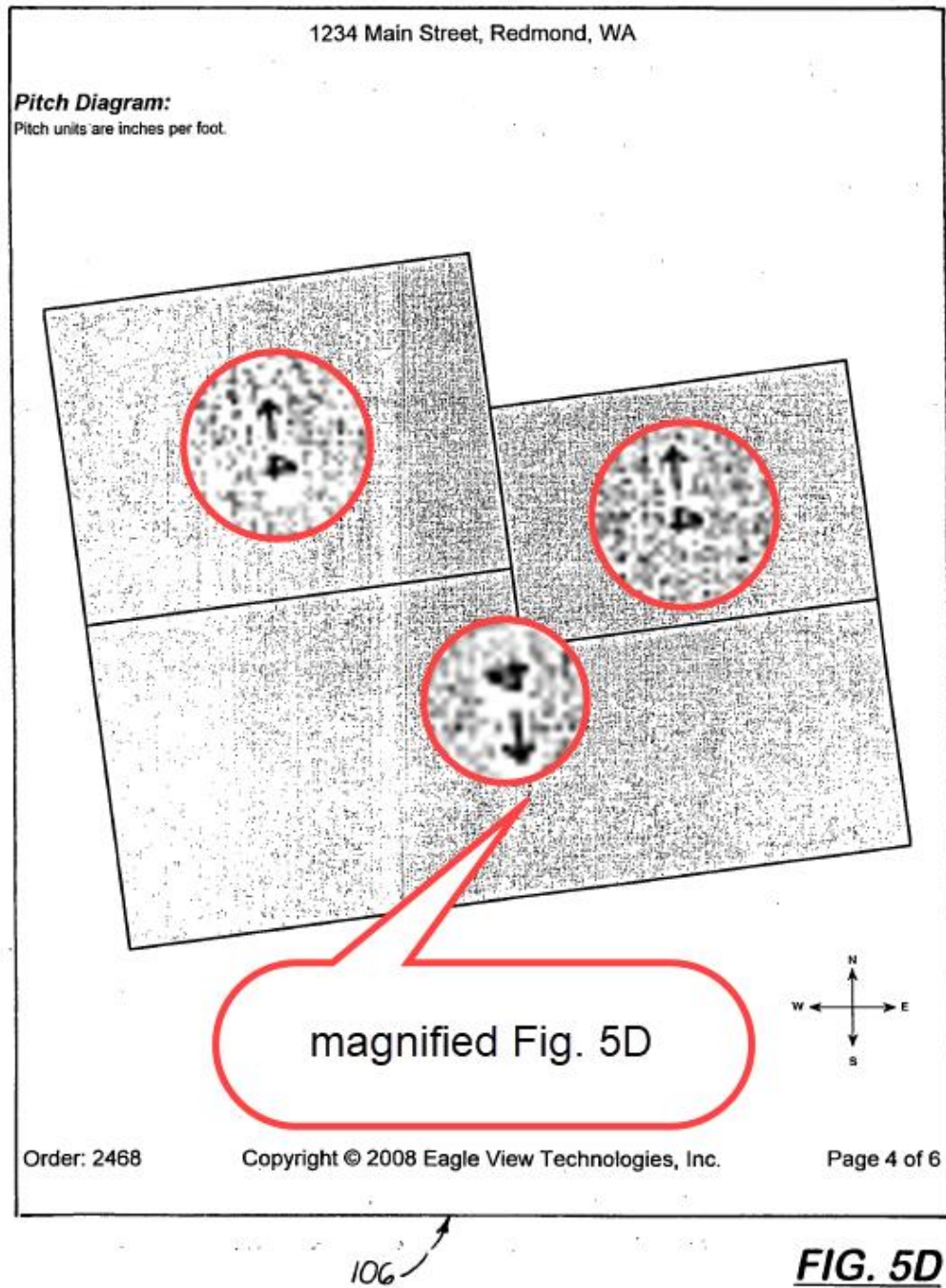
Id. 1004 at Fig. 5D (annotated). Pershing-789 explains that, “FIG. 5D is an illustration of the fourth page 106 of the report showing the ***pitch angle*** of each roof section along with a compass indicator.” *Id.* at [0028] (emphasis added).

Pershing-789’s Fig. 5D also includes arrows pointing to the “direction” of the pitch in addition to the value of the pitch:



Id. at Fig. 5D (annotated—close-up).

The published version of Figure 5D is a scanned image, which makes the directional arrows somewhat difficult to see. The file history of Pershing-789 includes a cleaner version of the same Figure 5D, reproduced below, which more clearly shows the directional pitch arrows:

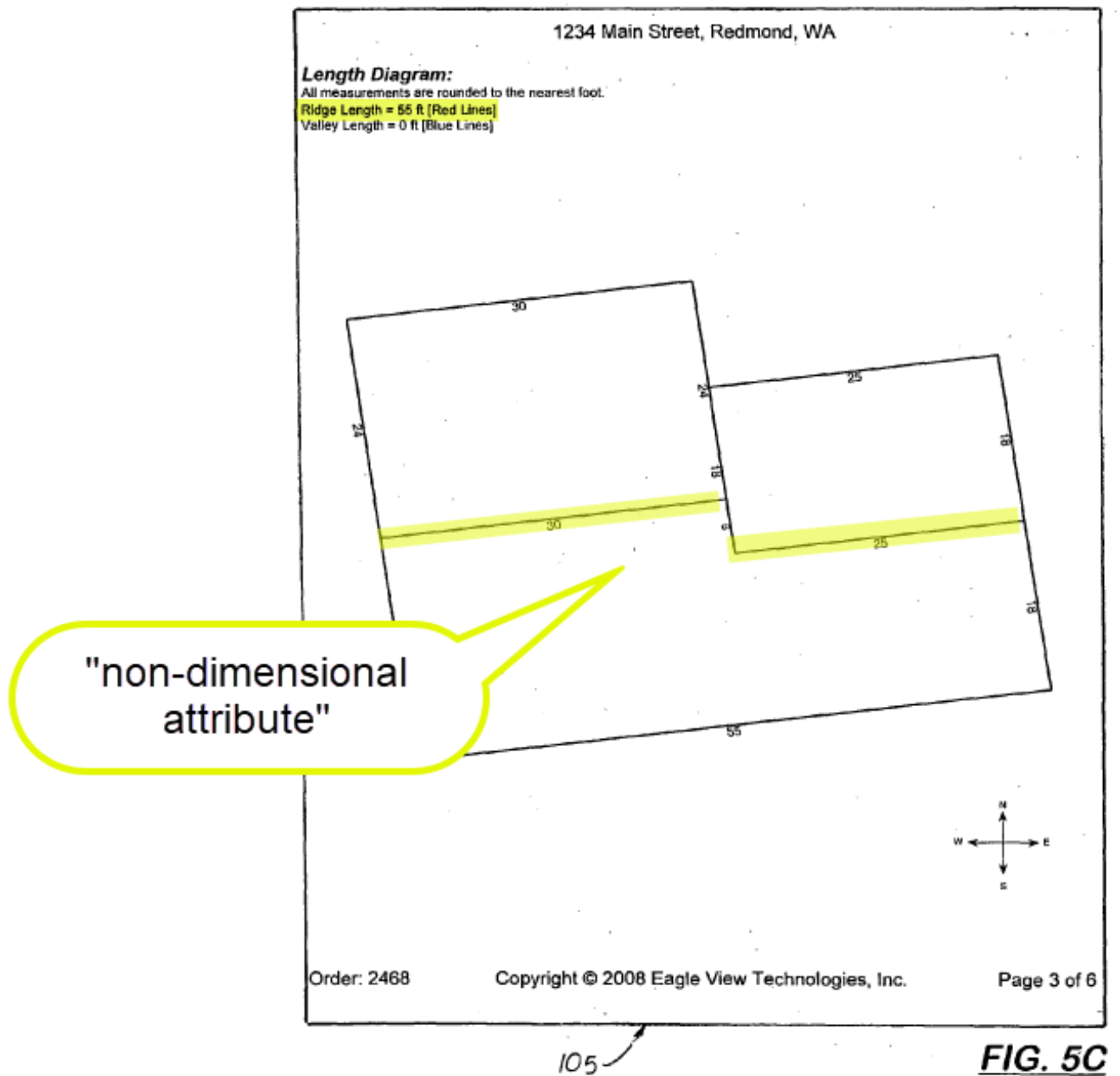


Ex. 1011 at 7, Fig. 5D as submitted 04/17/2008 (annotated using the “magnifying glass” feature in Snagit). These arrows show the “pitch direction.”

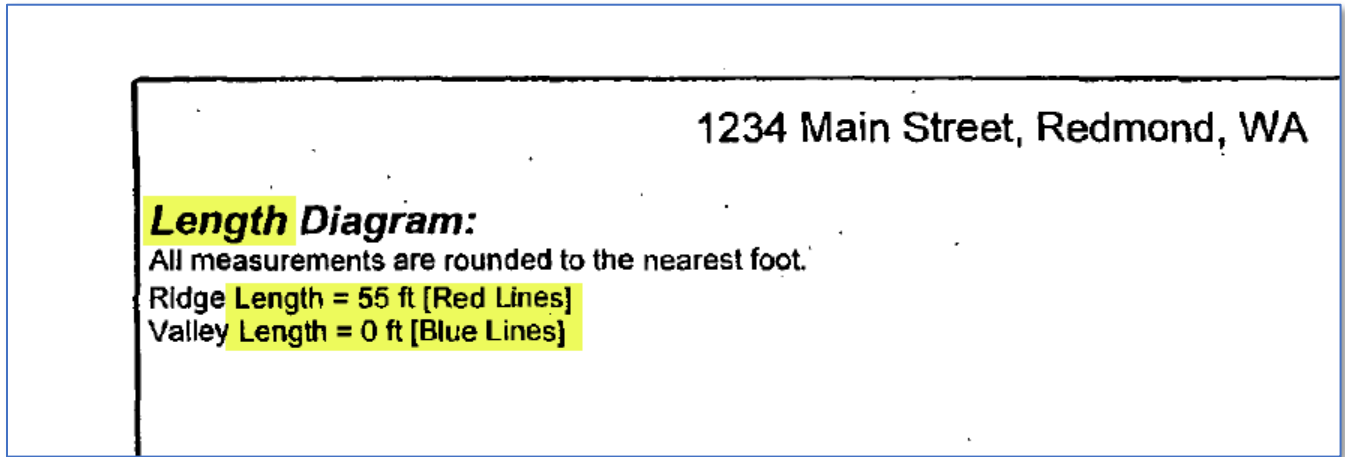
I. Claim 8: The process of claim 2, further comprising providing one or more non-dimensional attribute of the roof structure on the outline drawing.

The '800 patent teaches that a “non-dimensional attribute” may include at least a “linear ridge.” Ex. 1001 at 6:26-31 (“FIG. 6. also depicts an optional table and/or fields showing the *non-dimensional attributes* at **507** and the total values for them at **508**. *This can include* the area of roofing **509**, the *linear ridge feet* **510**, linear valley feet **511**, starter/perimeter linear feet **512**, step flashing **513**, and/or others.”) (emphasis added); *see also* Ex. 1003 at ¶¶ 89-91.

Pershing-789 discloses a “linear ridge” length in feet (as well as the “linear valley feet” and “area of roofing”), for example, in Figure 5C:



Ex. 1004 at Fig. 5C. A closeup of Fig. 5C confirms this measurement is in “feet”:



Id. at Fig. 5C (annotated).

- J. **Claim 9:** The process of claim 2, further comprising, providing visual access to a nadir image from an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super- imposed on the nadir image.

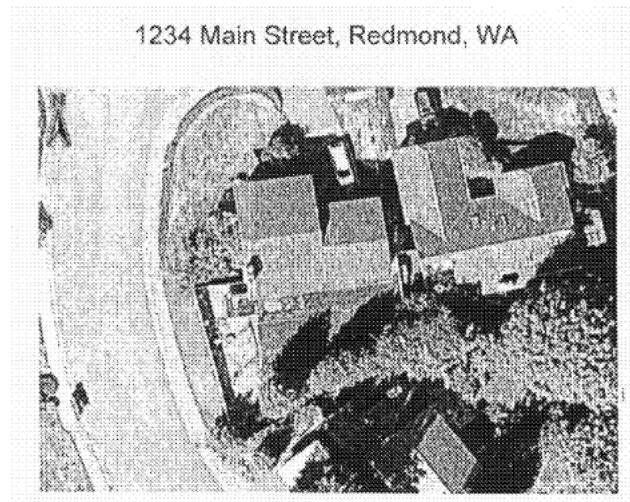
Pershing-789 teaches “providing visual access to a nadir image from an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super- imposed on the nadir image.” Ex. 1003 at ¶¶ 92-98. As discussed above, Pershing-789 teaches obtaining an aerial image from an image database corresponding to location coordinates of a building roof structure location. See claim 1.

The ’800 patent specification does not define a “nadir image.” However, as explained by Mr. Cummings, POSITA would have understood the *plain and ordinary meaning* of “nadir image” to be an aerial image taken from above. This is consistent with the disclosures of the ’800 patent, which

consistently show aerial images taken from above. Ex. 1001 at Figs. 4B-D, 5A-C, 6. This is also consistent the usage of “nadir image” in the prior art. See, e.g., Ex. 1006 at [0006] (“The input image used to create an ortho-rectified image is a **nadir image**—that is, an image captured with the **camera pointing straight down.**”) (emphasis added); Ex. 1007 at 216 (describing aerial photography from a plane: “This allows [the camera] to be pointed obliquely to the side of the aircraft to acquire imagery in a stand-off mode as well as in **the vertical (nadir) orientation.**”) (emphasis added).³ Thus, Pershing-789’s aerial image database discloses the claimed “nadir image.”

Indeed, Pershing-789 includes several figures showing an overhead view of the roof structure of a building, the claimed “nadir image”—for example, Fig. 5A, below:

³ Petitioner does not rely on Exhibits 1006 and 1007 as part of the proposed combination. Instead, these exhibits are relied upon to confirm a POSITA’s understanding of the ordinary meaning of “nadir image” as an overhead image.



Ex. 1004 at Fig. 5A (annotated) (showing overhead view of a roof); *see also* Fig. 5B (showing an overhead image of a roof).

As discussed above, Pershing-789 also teaches generating outline drawings. Pershing-789 further teaches that such dimensional outline drawings may be generated *on the nadir image itself* using Pershing-789's calibration module:

Like the software program **50** loaded into the roof contractor's computer **72** in the previous embodiment the software program **50'** is also able to *retrieve aerial images of houses* from a database **52'** containing aerial images files **54'** of houses located in the region served by the roof company **70**. An optional *calibration module 56' may be provided which enables the entity 105 to determine the angles and linear dimensions of various roof sections on the house 92.*

Ex. 1004 at [0025].

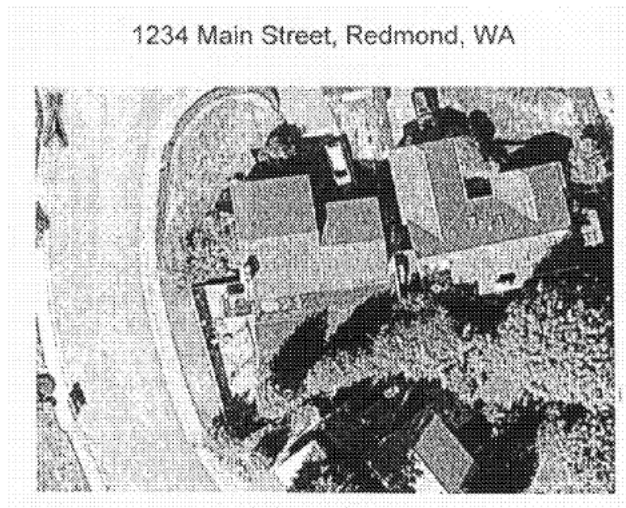
Pershing-789 teaches that, for example, the calibration module may calculate the physical length of features *in an aerial photo* using “distance in pixels between two points” that is “converted into physical length”:

Once the images of the roof section of the building are obtained, at least one of the images needs to be calibrated. During calibration, *the distance in pixels between two points on the image is converted into a physical length*. This calibration information is *typically presented as a scale marker on the image* itself, or as additional information supplied by the image database provider along with the requested image.

Id. at [0032]. This “scale marker” depicting “physical length” between pixels constitutes an outline drawing that is super-imposed on the nadir image.

K. Claim 10 The process of claim 1, wherein the first image is taken from an overhead view with respect to the roof structure of the building.

As discussed with respect to claim 9, Pershing-789 teaches a first image is taken from an overhead view with respect to the roof structure of the building, for example, as shown in Figure 5A:



Ex. 1004 at Fig. 5A (annotated) (showing overhead view of a roof); *see also* Fig. 5B (showing an overhead image of a roof); Ex. 1003 at ¶¶ 99-100.

L. Claim 11

- 1. Claim 11a: A non-transitory computer memory storing computer logic, that when executed by computer hardware causes the computer hardware to:**

Pershing-789 teaches non-transitory computer memory storing computer logic. Ex. 1003 at ¶¶ 101-2. For example, Pershing-789 teaches that its system runs its roof estimating software “loaded into its working memory”:

The roof company uses a local computer with an estimating ***software program loaded into its working memory*** to access an image file database located on the computer or on a remote server connected via a wide area network to the local computer.

Ex. 1004 at [0012]; *see also id.* at [0024], [0025], [0027], [0039].

Pershing-789’s disclosure in no way limits the type of memory where the

software program is stored, merely referring to any “working memory” in a system. Accordingly, Pershing-789’s disclosures encompass non-transitory memory.

2. Claim 11b receive first location data generally corresponding to a geographic location of a building;

As discussed with respect to claim 1, Pershing-789 teaches receiving first location data generally corresponding to the geographic location of a building. *See, supra*, claim 1; Ex. 1003 at ¶ 103. For example, Pershing-789 teaches:

During use, the ***physical address or location information*** of the building is inputted into the program which then presents aerial images of roof sections on the ***building*** at the specific address location.

Ex. 1004 at [0011] (emphasis added).

3. Claim 11c provide visual access to a first image corresponding to the first location data, the first image including a roof structure of the building;

See claim 1c; Ex. 1003 at ¶ 104.

4. Claim 11d provide a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;

See claim 1d; Ex. 1003 at ¶ 105.

5. **Claim 11e receive the designation of the building roof structure location;**

See claim 1e; Ex. 1003 at ¶ 106.

6. **Claim 11f responsive to receiving the designation of the building roof structure location, provide a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and**

See claim 1f; Ex. 1003 at ¶ 107.

7. **Claim 11g subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.**

See claim 1g; Ex. 1003 at ¶ 108.

- M. **Claim 12: The non-transitory computer memory of claim 11, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide visual access to one or more outline drawing corresponding to the roof structure of the building.**

See claim 2; Ex. 1003 at ¶ 109.

- N. **Claim 13: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide at least one length dimension on the outline drawing.**

See claims 1, 3; Ex. 1003 at ¶ 110.

- O. Claim 14: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide visual access to a nadir image of an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super-imposed on the nadir image.**

See claim 9; Ex. 1003 at ¶ 111.

- P. Claim 15: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide one or more area dimension on the outline drawing.**

See claim 5; Ex. 1003 at ¶ 112.

- Q. Claim 16 The non-transitory computer memory of claim 11, wherein the first image is taken from an overhead view with respect to the roof of the building.**

See claim 10; Ex. 1003 at ¶ 113.

- R. Claim 17**

- 1. Claim 17a A method, comprising:**

As discussed with respect to claim 1, Pershing-789 discloses a method.

See claim 1; Ex. 1003 at ¶ 114.

- 2. Claim 17b receiving, by a user, visual access to a first image of a region corresponding to first location data, the first image including a roof structure of a building;**

As discussed with respect to claim 1, Pershing-789 discloses receiving, by a user, visual access to a first image of a region corresponding to first location data, the first image including a roof structure of a building. See

claim 1. For example, a user is able to see a first image of a region corresponding to a building address, which includes a roof structure of a building. *Id.*; Ex. 1003 at ¶ 115.

3. **Claim 17c signaling, by the user, a designation from the user of a building roof structure location within the first image, wherein the building roof structure location is a geo-graphic position of the building roof structure and is different than the first location data;**

See claim 1d-e; Ex. 1003 at ¶ 116.

4. **Claim 17d signaling, by the user, user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and**

See claim 1f; Ex. 1003 at ¶ 117.

5. **Claim 17e subsequent to signaling the user-acceptance confirming the designation of the building roof structure location, receiving a report for the building roof structure; and**

See claim 1g; Ex. 1003 at ¶ 118.

6. **Claim 17f repairing or constructing a roof designated by the building roof structure location.**

Pershing-789 teaches that its system is designed to create cost estimates for repair or replacement of roofing structures: “The information can then be used to prepare a cost estimate for the repair or replacement of the roof or installation of roof equipment.” Ex. 1004 at Abstract. Pershing-789’s system

also expressly relies on roofing “contractors.” *See, e.g., id.* at [0017], [0018]. Thus, a POSITA reading Pershing-789 would understand that its disclosures teach ***repairing or replacing a roof*** once a report is generated.

At a minimum, it would have been obvious to actually repair or construct a roof at the desired location. The ***entire purpose*** of Pershing-789’s system is to provide a customer with an estimate for repair/replacement in conjunction with contractors—it would make no sense to generate such a report and then not actually allow the contractor to perform the repair/replacement. Such a read would render the teachings of Pershing-789 completely useless, as a customer has no use for a roof estimate report other than to engage with a contractor for the repair/replacement of a roof. Ex. 1003 at ¶¶ 119-20.

X. GROUND 2: PERSHING-789, ABHYANKER AND PICTOMETRY RENDER OBVIOUS CLAIMS 9 AND 14

A. Claims 9 and 14

To the extent Patent Owner argues that Pershing-789 does not disclose an “outline drawing is superimposed on the nadir image,” as required by claims 9 and 14, Pictometry teaches this limitation. Pictometry discloses a program that allows users to annotate aerial photographs. *See, generally* Ex. 1008. Pictometry teaches that a variety of aerial photographs can be taken,

and that users can “zoom, measur[e]...and annotate[e]” these images. *Id.* at 115. Pictometry teaches a “distance tool” which allows a user to measure various attributes contained within an image. *Id.* at 116. Pictometry specifically teaches drawing lines around a “parcel” to learn the square footage and area of a region. *Id.* Pictometry’s tool can also be used for “measuring angles.” *Id.* at 116. Thus, Pictometry expressly teaches superimposing drawings on a nadir image, and specifically teaches drawing the same types of measurements taught by Pershing-789 (length, pitch, area). Accordingly, a POSITA would have been motivated to use an “outline drawing is superimposed on the nadir image” in Pershing-789’s system based on the teachings of Bailey. Ex. 1003 at ¶ 121.

B. Motivation To Combine

A POSITA would have been motivated to incorporate Pictometry’s drawing annotation option into Pershing-789 for a variety of reasons. Ex. 1003 at ¶¶ 122-26. Pictometry teaches that the annotation feature is an “**indispensable** tool.” *Id.* at 115 (emphasis added). A POSITA would, thus, have been motivated to utilize Pictometry’s indispensable annotation feature in similar systems, like Pershing-789’s system.

Likewise, Pictometry expressly discloses that its annotation tool can be used to “analyze any house [or] building.” *Id.* at 114. A POSITA reading Pictometry would have, thus, been motivated to use Pictometry’s annotation tool in Pershing-789’s system to analyze the roof of a house or building.

A POSITA would have also been motivated to use Pictometry’s annotation tool in Pershing-789’s system because doing so would allow roofers and customers to see the house being analyzed. This would ***promote accuracy***, since users could confirm that the correct house was being measured.

Likewise, a POSITA would be motivated to use Pictometry’s annotation tool because it would provide roofers and customers ***greater flexibility*** related to which aspects of the home to measure. Showing annotations on a nadir image would also improve ***precision*** because users could ensure that the measurements were properly aligned with the building.

Petitioner has already explained why a POSITA would have been motivated to combine the teachings of Pershing-789 and Abhyanker. A POSITA would be further motivated to incorporate Pictometry’s annotation feature for similar reasons. Like Pershing-789 and Abhyanker, Pictometry is in the ***same field of endeavor*** as the ’800 patent. Pictometry is broadly

directed towards accurate measurements of structure, including buildings, in aerial images. Ex. 1008 at 114. Further, Pershing-789, Abhyanker, Pictometry and the '800 patent all use *similar techniques to solve the same problems*. As discussed above, Pictometry uses the same techniques to locate roofs (e.g., input an address) and measure their dimensions (e.g., annotations) as the '800 patent. A POSITA would also have a *reasonable expectation of success* in including the teachings of Pictometry in Pershing-789's system. Pictometry itself discloses that its annotation feature can be used in a system for measuring attributes of buildings. Ex. 1008 at 114. For the foregoing reasons, a POSITA would be motivated to use Pictometry's teachings of annotations to improve Pershing-789's system.

XI. GROUND 3: KENNEDY, ABHYANKER AND BAILEY RENDER OBVIOUS CLAIMS 1-17 OF THE '800 PATENT

As discussed below, the combination of Kennedy and Abhyanker renders obvious the challenged claims. Kennedy expressly teaches the bulk of the claim elements recited in the '800 patent, including a software system for locating a customer's roof at a specific geographic location and analyzing roof dimensions. A POSITA would have been motivated by the teachings of Abhyanker to allow users of Kennedy's roofing system the option to specifically designate the geographic position of a roof to be analyzed using a

marker, and to include a subsequent user confirmation option to ensure the correct roof is being analyzed. Ex. 1003 at ¶ 127.

A. Motivation To Combine Kennedy and Abhyanker

There are a variety of reasons a POSITA would be motivated to apply these teachings from Abhyanker to Kennedy. Ex. 1003 at ¶¶ 128-30. For example, 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***. Abhyanker’s teachings expressly address this motivation. Abhyanker discloses that automated systems used to pinpoint geographic locations (like Kennedy’s) are not always 100% accurate, and mistakes will result in user disappointment. Ex. 1005 at [0004]-[0005]. That is especially true here: if Kennedy’s system inadvertently marked a neighboring roof (or a roof with the same address in a different state or town), the resulting calculations would be irrelevant. This would cost both the user and the service provider time and money (and would potentially cost the software provider business). Thus, it would have been obvious to include Abhyanker’s teachings of allowing a user to place a “marker” on the roof in question and to affirmatively “confirm” the right selection was made. This accuracy check would ***save money, save time*** and ***avoid customer losses***.

In addition, applying Abhyanker’s teachings to Kennedy’s system would also ***add convenience*** to a user. For example, if a user inadvertently input a neighbor’s address it would be convenient to allow the user to apply a drag-and-drop feature, like that taught by Abhyanker, to correct this error by simply sliding the marker to the correct location. This would also add to the convenience for users who may have difficulties typing or reading smaller print in the form fields in a screen—dragging a colored “marker” would assist such users in marking the right roof.

In addition, a POSITA would have been motivated to combine the teachings of Kennedy and Abhyanker because they are in the ***same field of endeavor*** as the ’800 patent. Both Kennedy and the ’800 patent are directed towards systems that locate and measure roof dimensions. Ex. 1001 at Abstract; Ex. 1009 at Abstract, [00784], [0075]. Similarly, Abhyanker is broadly directed towards accurate placement of markers in a “mapping environment,” like the ones used in the Kennedy and ’800 patent systems. Ex. 1005 at Abstract, [0012]. Further, Kennedy, Abhyanker and the ’800 patent all use ***similar techniques to solve the same problems***. As discussed below, Kennedy uses the same techniques to locate roofs and measure their dimensions as the ’800 patent, and Abhyanker uses the same techniques to

ensure accurate roof placement. A POSITA would also have a ***reasonable expectation of success*** in including the teachings of Abhyanker in Kennedy. Abhyanker’s teachings confirm that user confirmation options in “mapping environments” such as Kennedy’s were well known, and Abhyanker specifically teaches that its system can be used in the same context—locating roofs. Ex. 1005 at [0012]. Accordingly, Abhyanker itself would motivate a POSITA to apply its teachings of user confirmation steps to improve Kennedy’s system.

B. Motivation To Combine Kennedy, Abhyanker and Bailey

A POSITA would have been further motivated by the teachings of Bailey to use the roof estimates calculated by Kennedy and Abhyanker to generate a report and to actually repair or construct the roof in question. A POSITA would have been so motivated for a variety of reasons. Ex. 1003 at ¶¶ 131-34.

Bailey generates a report based on roof attributes, including pitch. Ex. 1010 at 15. Bailey’s roof report collects the same types of roof attributes as Kennedy’s system (area, pitch, length). Ex. 1010 at 11-22, Ex. 1009 at [0072], [0081]-[0087]. Thus, a POSITA considering Kennedy’s system for collecting

roof data would be motivated by Bailey to generate a report reflecting that data.

Bailey also discloses instructions for collecting data that can be used to inform roof inspectors about, *e.g.*, the “needed level of **repair**.” Ex. 1010 at 1 (emphasis added). Bailey’s report teaches the manual method for collecting the **same** roof data as Kennedy’s automated system, including length, slope (*i.e.*, “pitch”) and area. *Id.* at 11-22. Thus, a POSITA viewing Bailey would have been motivated to apply the data collected by Kennedy’s system to repair a roof, as taught by Bailey. Indeed, Kennedy already discloses using contractors to “**maintain**” structures mounted on a roof, *e.g.*, solar panels. Ex. 1009 at [00784], [0075]. Thus, Kennedy’s teachings already contemplate using its system to facilitate repairs. Thus, it would have been a natural fit to apply Kennedy’s roof estimation to the repairs contemplated by Bailey.

In addition, a POSITA would have been motivated to combine the teachings of Kennedy and Bailey, because they are in the **same field of endeavor** as the ’800 patent. Like Kennedy and the ’800 patent, Bailey is also aimed at taking roof dimensions. Ex. 1001 at Abstract; Ex. 1009 at Abstract, [00784], [0075]; Ex. 1010 at Abstract. Further, Kennedy and Bailey and the ’800 patent all use **similar techniques to solve the same problems**. As

discussed above, Kennedy uses the same techniques to locate roofs and measure their dimensions as the '800 patent, and Bailey teaches using the type of roof data collected by Kennedy for repairs or replacement. A POSITA would also have a ***reasonable expectation of success*** in including the teachings of Bailey in Kennedy. Indeed, Bailey's teachings of using roof estimates for repair/replacement would have been easily implemented in Kennedy, at least because Kennedy already calculates the same type of roof dimensions (Ex. 1010 at Abstract), includes options to hire contractors to build structures on a roof (*id.* at [0074], [0075]) and even contemplates using contractors for maintenance (*id.*). Accordingly, a POSITA would have had a reasonable expectation of success in using.

C. Claim 1

1. Claim 1a: A process, comprising:

Kennedy teaches a process. Kennedy teaches a “roof estimating software program.” Ex. 1009 at Abstract. Kennedy teaches using its system's roof estimation to prepare a “quote” for customers. Ex. 1009 at ¶¶ 164, 169.

For example, Kennedy teaches:

A system according to one embodiment of the invention remotely determines the measurements of a roof. An exemplary system comprises a computer including an input means, a display means and a working memory. An aerial image file database

contains a plurality of aerial images of roofs of buildings in a selected region. A roof estimating software program receives location information of a building in the selected region and then presents the aerial image files showing roof sections of building located at the location information. Some embodiments of the system include a sizing tool for determining the size, geometry, and pitch of the roof sections of a building being displayed.

Id. at Abstract; *see also id.* at [0169] (“In one embodiment of the invention a quote for the displayed system is provided in association with the image of the system.”); Ex. 1003 at ¶¶ 135-36.

2. Claim 1b: receiving first location data;

Kennedy teaches that its user interface is configured to receive “user information, for example, ***site location information from a user***[.]” Ex. 1009 at [0053]-[0054] (emphasis added); Ex. 1003 at ¶ 137.

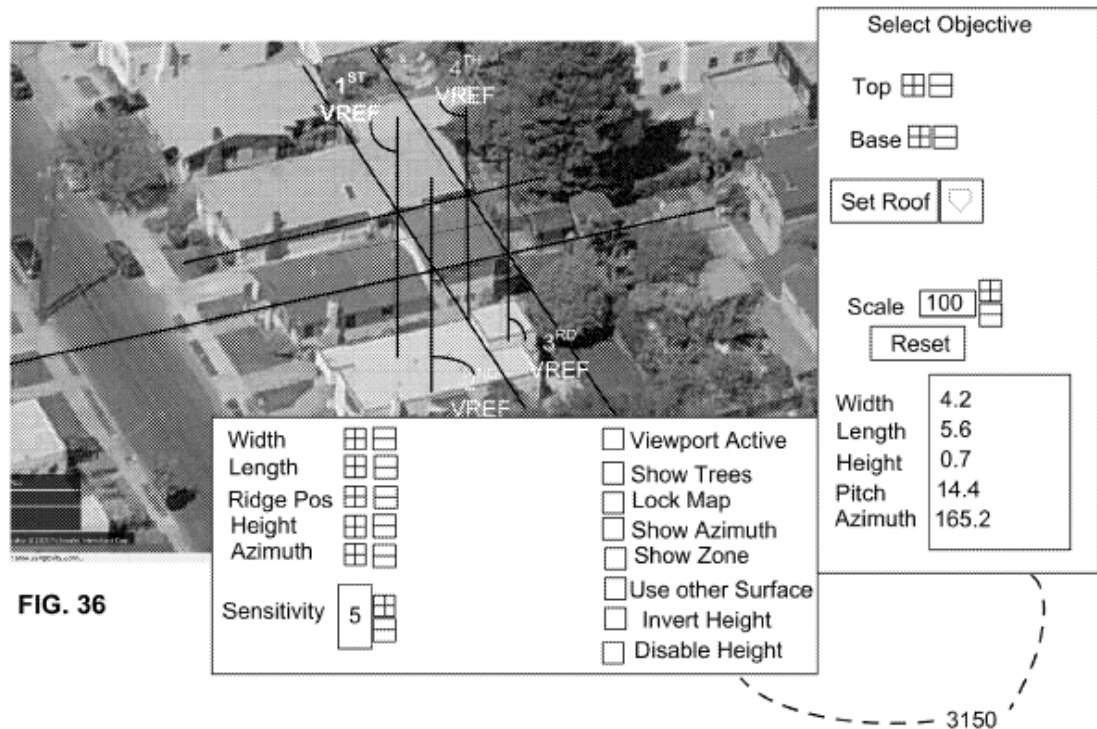
3. Claim 1c: providing visual access to a first image corresponding to the first location data, the first image including a roof structure of a building;

Kennedy teaches providing visual access to a first image corresponding to the first location data, the first image including a roof structure of a building:

[S]ystem 100 uses the location information received from user system 106 to ***retrieve an image*** 153 of the location (or site) from a geophysical database 109. In response to receiving the location information, system 100 provides an image corresponding to the location, for example ***an image of a roof of a house 391 for display on screen*** 380 of display device 108 of a user system 106.

Ex. 1009 at [0056] (emphasis added).

This is shown, for example, in Figure 36:



Id. at Fig. 36; Ex. 1003 at ¶ 138.

4. **Claim 1d: providing a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;**

As discussed with respect to Ground 1, Abhyanker teaches this limitation. See Ground 1, claim 1d; Ex. 1003 at ¶ 139.

5. Claim 1e: receive a designation of the building roof structure within the first image;

As discussed with respect to Ground 1, Abhyanker teaches this limitation. See Ground 1, claim 1e; Ex. 1003 at ¶ 140.

6. Claim 1f: responsive to receiving the designation of the building roof structure location, providing a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and

As discussed with respect to Ground 1, Abhyanker teaches this limitation. See Ground 1, claim 1f; Ex. 1003 at ¶ 141.

7. Claim 1g: subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.

As discussed with respect to Ground 1, Abhyanker teaches “receiving the user-acceptance confirming the designation of the building roof structure location.” See Ground 1, claim 1g. Further, Bailey teaches “providing a report for the building roof structure.” Ex. 1010 at 11-22 (disclosing a “report”); Ex. 1003 at ¶ 142.

D. Claim 2: The process of claim 1, further comprising providing visual access to one or more outline drawing corresponding to the roof structure of the building.

Kennedy expressly discloses a “sizing tool” that is superimposed on an aerial image to determine “surface dimensions” of a roof:

In one embodiment of the invention, a graphical user interface (best illustrated in FIGS. 8-9) cooperates with sizing subsystem 500 of system 100 to implement a sizing tool enabling user 107 to determine surface dimensions and pitch of a surface, for example a roof 191 of a house appearing in the retrieved image 153. Thus there is no need to physically visit the installation site to make measurements and perform sizing calculations.

Id. at [0058]; see also *id.* at [0110] (“**To size surface 1215 user 507 superimposes sizing tool**, in this example tool 1117 (illustrated in Fig. 11) of at least a portion of image 1215...in some embodiments, information defining an orientation of shape 1215 with respect to a reference axis 1211 is generated by comparing orientation of adjusted tool 1107 to reference axis 1211.”) (emphasis added). Kennedy discloses “**generating length and width measurements** for a generally rectangular planar installation surface such as a side of a roof.” *Id.* at [0082] (emphasis added); see also [0109], Fig. 12.

Thus, Kennedy teaches the claimed outline drawing, including drawing length dimensions around the perimeter of roofing sections in an aerial image. Ex. 1003 at ¶¶ 143-45.

E. Claim 3: The process of claim 2, further comprising providing one or more length dimension on the outline drawing

As discussed with respect to claim 2, Kennedy discloses providing one or more length dimensions in the outline drawing as shown, for example, in Figure 12:

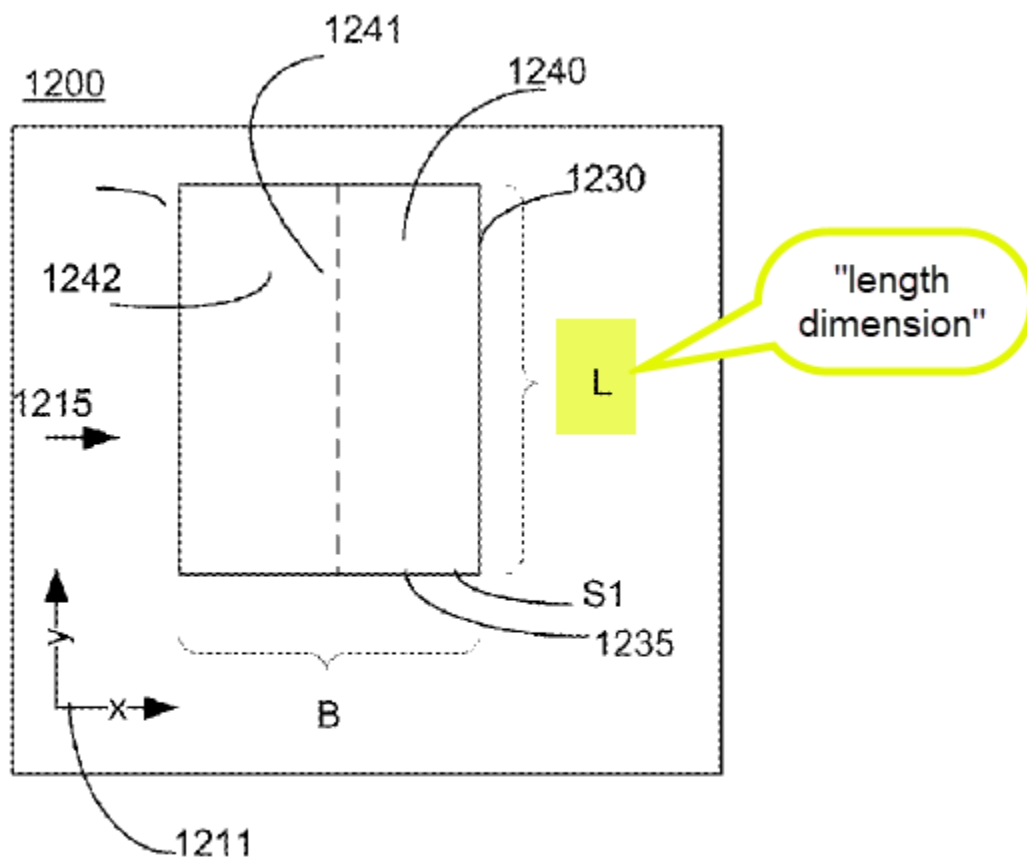


FIG. 12

Id. at Fig. 12 (annotated); *see also* [0109]-[0113]; Ex. 1003 at ¶ 146.

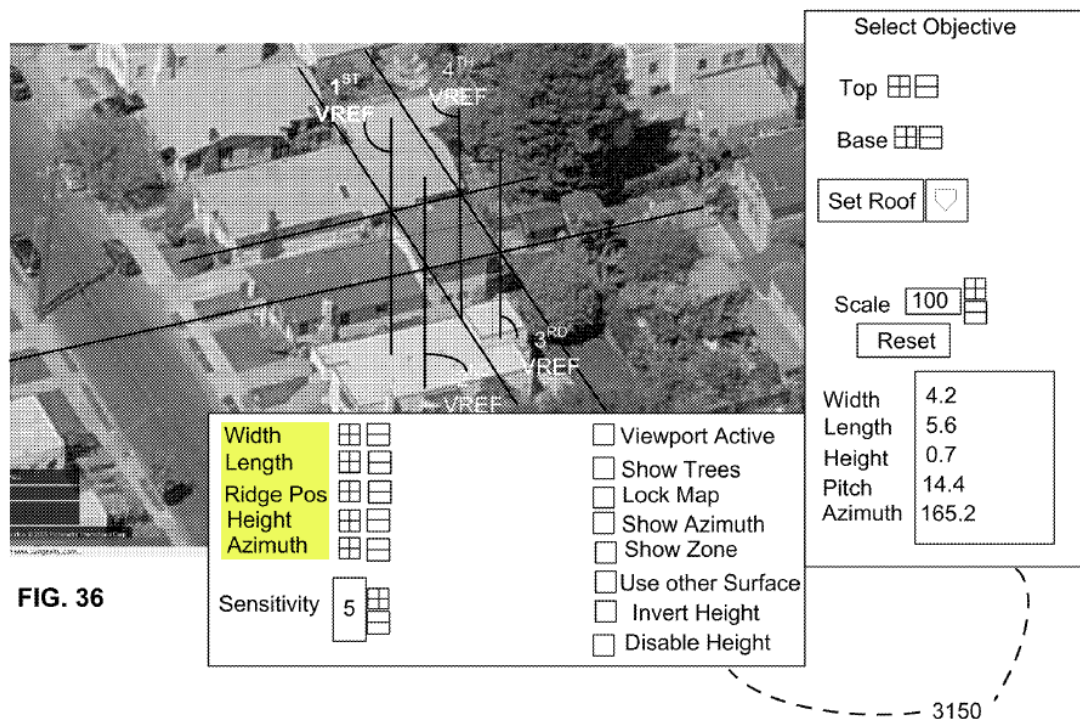
- F. Claim 4: The process of claim 3, wherein the length dimension is one or more of a perimeter of the roof structure, a length of a ridge of the roof structure, a total length of ridges of the roof structure, a length of a valley of the roof structure, a total length of valleys of the roof structure, a length of a flashing of the roof structure, and a total length of flashings of the roof structure.**

As discussed with respect to claim 3, Kennedy's length dimension includes, at least, the length of a ridge or valley of a roof structure. *Id.* at [0109] (“The imaged surface shape 1215 is defined by a length L (at 1230), a base B (indicated at 1235) and a ridge line 1241.”), [0110] (“In that manner user 507 generates measurements which describe shape 1215 by length and base measurements.”); Ex. 1003 at ¶ 147.

- G. Claim 5: The process of claim 2, further comprising providing one or more area dimension on the outline drawing.**

Kennedy renders obvious this limitation. Kennedy teaches measuring the area dimension of a roof: “Referring now to FIG. 6, in order to *measure an installation surface area*, such as a *roof 640 area* of house 600 in FIG. 6, user 507 *positions measuring tool 1150 over an image of roof 600* in alignment with a side of the image of roof 600.” Ex. 1009 at [0106] (emphasis added). Thus, Kennedy teaches an “outline drawing” of “area dimensions” via its disclosure of its sizing tool superimposed on an aerial image of a roof for measuring area dimensions.

It would have been obvious to include area dimensions on the outline drawing. Indeed, Kennedy already teaches including a variety of dimensions on its outline drawings, such as width, length, height, pitch, azimuth and ridge position as shown, *e.g.*, in Fig. 36:

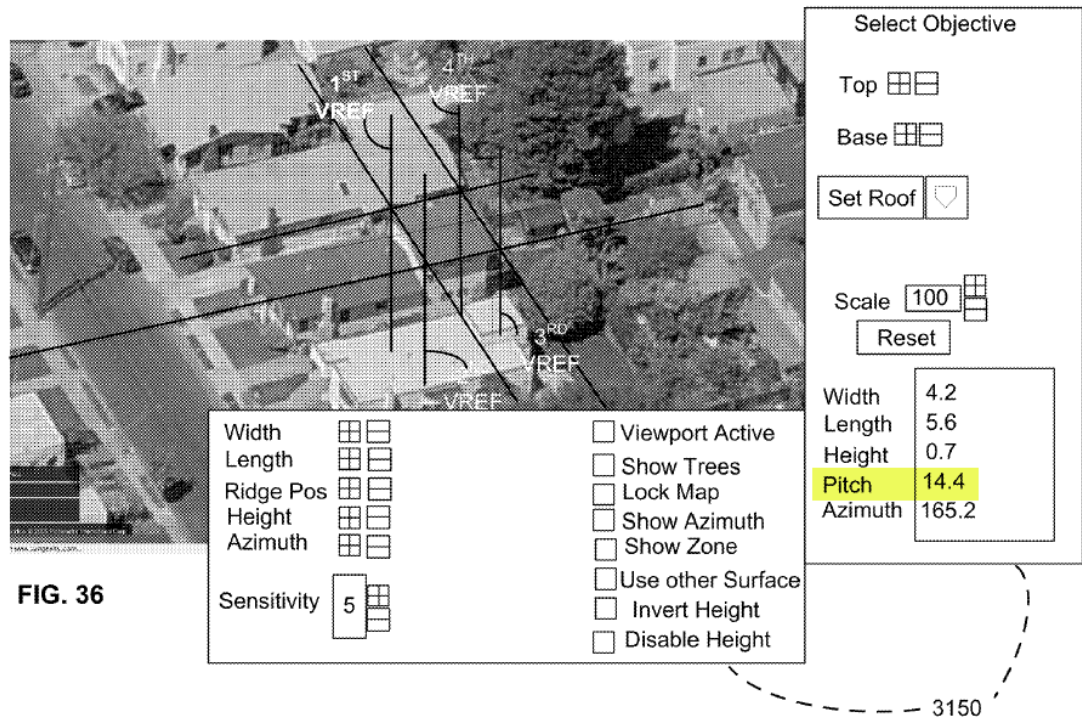


Id. at Fig. 36 (annotated). A POSITA would have been motivated to also include Kennedy's calculation of area in the image to provide a complete data set for the user. Indeed, Kennedy's disclosures are primarily geared towards calculating surface area, *e.g.*, to determine the size of possible solar cell installations. *Id.* at Abstract. Thus, Kennedy's calculation of surface area

would be a critical measurement, and a POSITA would have been motivated to include it in Kennedy's outline drawing to make it readily available to a user. Adding an area value would be a simple modification at least because Kennedy's images already include both length and width—thus, no additional data collection would be required. Ex. 1003 at ¶ 148-50.

H. Claim 6: The process of claim 2, further comprising providing one or more pitch dimension on the outline drawing.

Kennedy discloses that the measuring tool can be used to determine the pitch of a roof. *Id.* at [0116] (“...measuring tool 1107 [can be] used to measure displacement of a ridge of roof 650 from base 635. The displacement information is used by modeling unit 591 (Fig. 5) to determine ***pitch*** of roof 600.”) (emphasis added). Kennedy expressly teaches including the “pitch” dimension on its outline drawing, *e.g.*, in Fig. 36:

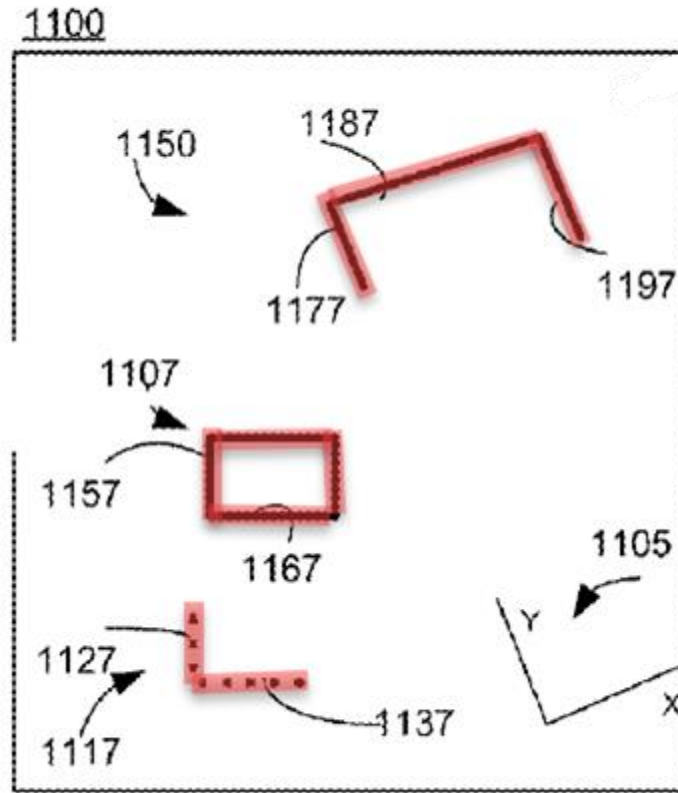


Id. at Fig. 36 (annotated); Ex. 1003 at ¶ 151.

I. Claim 7: The process of claim 2, further comprising providing one or more indicator of pitch direction on the outline drawing.

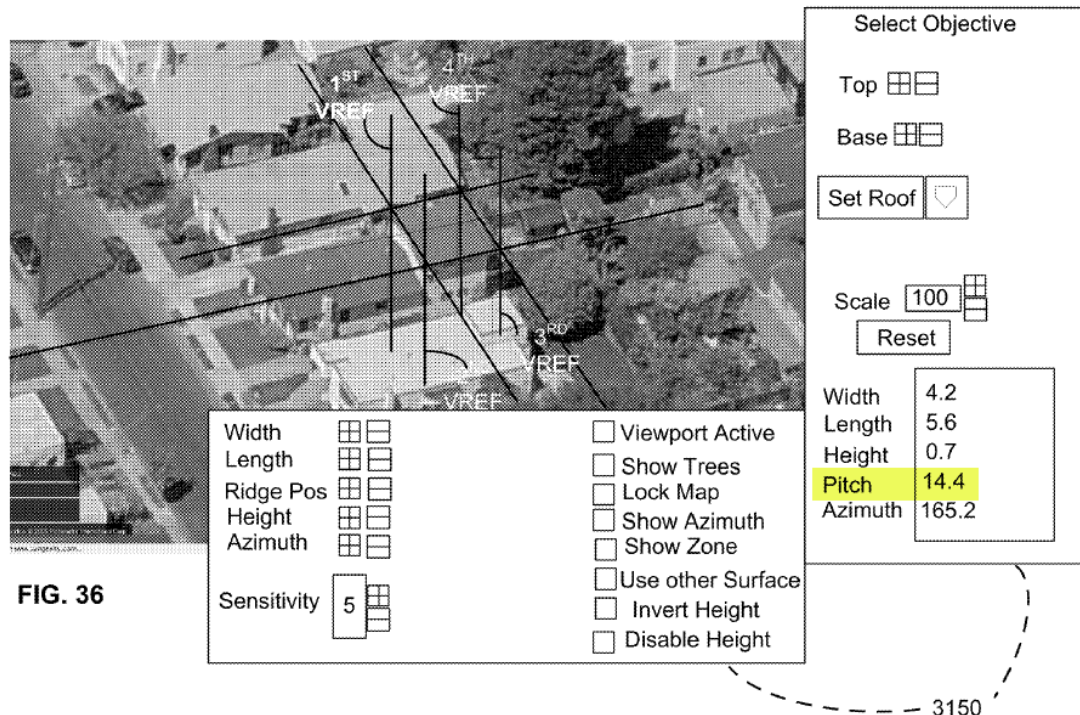
Kennedy’s “sizing subsystem” includes an “interactive measuring tool for use in sizing surfaces such as roof of house 600 in Fig. 6. *Id.* at [0105]. The sizing tool is shown, for example, in Figure 11—this sizing tool (also called a “measuring tool”):

FIG. 11



Id. at Fig. 11 (annotated). Kennedy explains that its measuring tool is “rotatable and scalable by a user 507 to align at least two sides of the tool an image [sic] of an object to be measured, for example a roof surface to be measured.” *Id.* at [0105]. Kennedy further explains that “an orientation of measuring tool with respect to axes 670 [the x/y/z axis] is determined.” *Id.* at [0108]. Thus, Kennedy teaches computing pitch direction.

Kennedy expressly teaches including the “pitch” dimension on its outline drawing, *e.g.*, in Fig. 36:



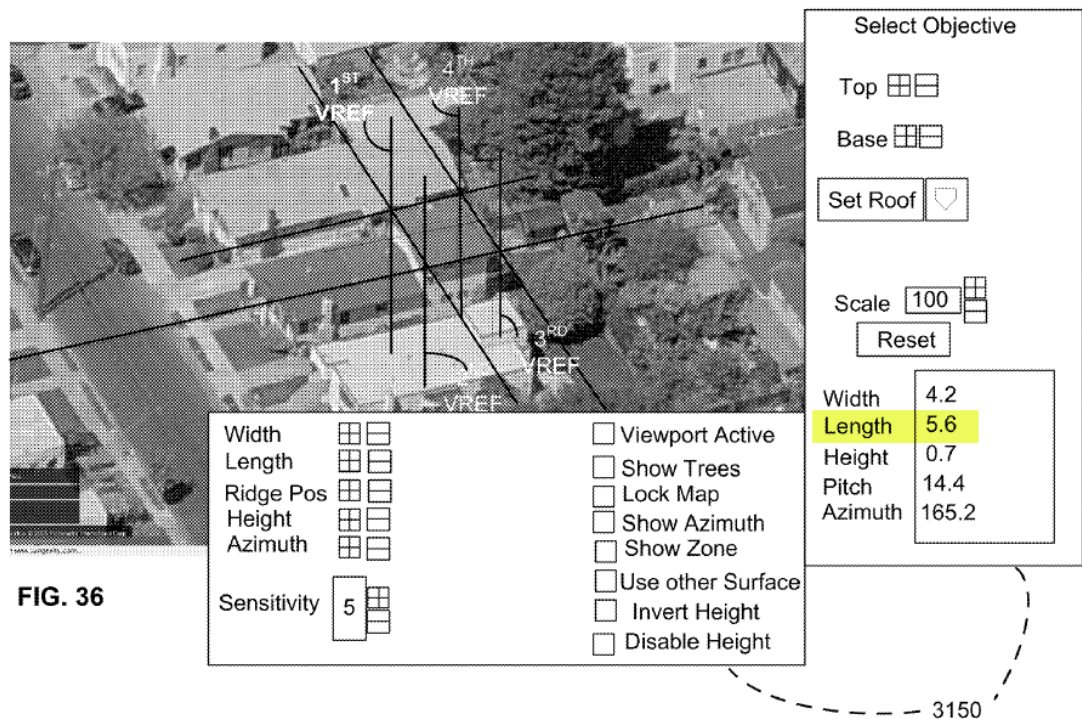
Id. at Fig. 36 (annotated). A POSITA would have been motivated to also include Kennedy’s calculation of pitch direction in the image to provide a complete data set for the user. Indeed, Kennedy’s disclosures already teach computing pitch direction, and, thus no additional calculations would be required. Ex. 1003 at ¶ 152-55.

J. Claim 8: The process of claim 2, further comprising providing one or more non-dimensional attribute of the roof structure on the outline drawing.

The ’800 patent teaches that a “non-dimensional attribute” may include at least a “linear ridge.” Ex. 1001 at 6:26-31 (“FIG. 6. also depicts an optional

table and/or fields showing the ***non-dimensional attributes*** at **507** and the total values for them at **508**. ***This can include*** the area of roofing **509**, the ***linear ridge feet*** **510**, linear valley feet **511**, starter/perimeter linear feet **512**, step flashing **513**, and/or others.”) (emphasis added).

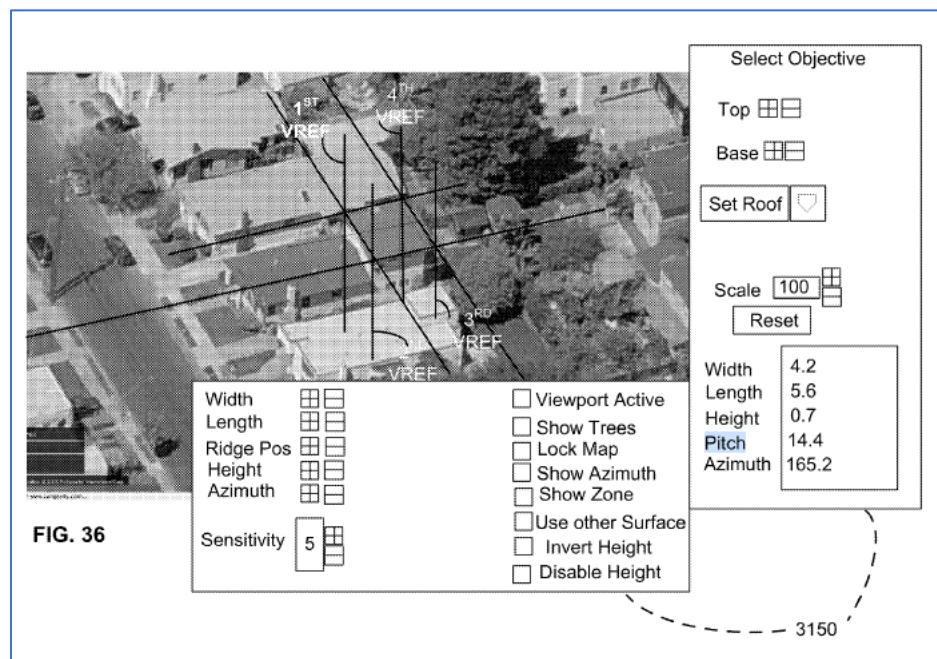
As discussed with respect to claims 3 and 4, Kennedy teaches providing at least the area of the roofing and length of a linear ridge or valley. See claims 3, 4, *supra*. Kennedy further teaches displaying length on its outline drawing:



Id. at Fig. 36. Kennedy does not restrict the length value and, thus, its disclosure of displaying a length value encompasses displaying ridge length. Ex. 1003 at ¶¶ 156-58.

K. Claim 9: The process of claim 2, further comprising, providing visual access to a nadir image from an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super-imposed on the nadir image.

Kennedy teaches that some embodiments of the system “include a sizing tool for determining the size, geometry, and *pitch of the roof sections of a building being displayed.*” Ex. 1009 at Abstract. This is shown, for example, in Figure 36, which shows a nadir image a roof:



Id. at Fig. 36.

Kennedy makes clear that the sizing tool is “superimposed” over an aerial image. *Id.* at [0110] (“To size surface 1215 user 507 superimposes sizing tool, in this example tool 1117 (illustrated in Fig. 11) of at least a portion of image 1215...in some embodiments, information defining an orientation of shape 1215 with respect to a reference axis 1211 is generated by comparing orientation of adjusted tool 1107 to reference axis 1211.” *Id.*; Ex. 1003 at ¶¶ 159-60.

L. Claim 10 The process of claim 1, wherein the first image is taken from an overhead view with respect to the roof structure of the building.

As discussed with respect to claim 9, Kennedy discloses a first image that is taken from an overhead view. Ex. 1003 at ¶ 161.

M. Claim 11

1. Claim 11a: A non-transitory computer memory storing computer logic, that when executed by computer hardware causes the computer hardware to:

Kennedy teaches:

For example a commercially available processor or computer system adapted in accordance with the teachings herein implements system 100 including at least one of subsystems 110, 2000, 3000, 3100, 500 and/or 200. For example, one of ordinary skill in the art will recognize upon reading this specification, that commercially available **processors, memory modules**, input/output ports and other commercially available hardware components are suitable for use in constructing embodiments of

system 100. These may be assembled as taught in this specification to arrive at the various embodiments.

Id. at [0051] (emphasis added); Ex. 1003 at ¶ 162.

2. **Claim 11b receive first location data generally corresponding to a geographic location of a building;**

See claim 1; Ex. 1003 at ¶ 163.

3. **Claim 11c provide visual access to a first image corresponding to the first location data, the first image including a roof structure of the building;**

See claim 1c; Ex. 1003 at ¶ 164.

4. **Claim 11d provide a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;**

See claim 1d; Ex. 1003 at ¶ 165.

5. **Claim 11e receive the designation of the building roof structure location;**

See claim 1e; Ex. 1003 at ¶ 166.

6. **Claim 11f responsive to receiving the designation of the building roof structure location, provide a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and**

See claim 1f; Ex. 1003 at ¶ 167.

- 7. Claim 11g subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.**

See claim 1g; Ex. 1003 at ¶ 168.

- N. Claim 12: The non-transitory computer memory of claim 11, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide visual access to one or more outline drawing corresponding to the roof structure of the building.**

See claim 2; Ex. 1003 at ¶ 169.

- O. Claim 13: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide at least one length dimension on the outline drawing.**

See claims 1, 3; Ex. 1003 at ¶ 170.

- P. Claim 14: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide visual access to a nadir image of an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super-imposed on the nadir image.**

See claim 9; Ex. 1003 at ¶ 171.

- Q. Claim 15: The non-transitory computer memory of claim 12, wherein said computer logic when executed by computer hardware causes the computer hardware to: provide one or more area dimension on the outline drawing.**

See claim 5; Ex. 1003 at ¶ 172.

- R. Claim 16 The non-transitory computer memory of claim 11, wherein the first image is taken from an overhead view with respect to the roof of the building.**

See claim 10; Ex. 1003 at ¶ 173.

S. Claim 17

1. Claim 17a A method, comprising:

Kennedy teaches a method. See claim 1; see also Ex. 1009 at [002]

(“The present invention relates generally to *methods*.”) (emphasis added); Ex. 1003 at ¶ 174.

2. Claim 17b receiving, by a user, visual access to a first image of a region corresponding to first location data, the first image including a roof structure of a building;

See claim 1; Ex. 1003 at ¶ 174.

3. Claim 17c signaling, by the user, a designation from the user of a building roof structure location within the first image, wherein the building roof structure location is a geo-graphic position of the building roof structure and is different than the first location data;

See claim 1d-e; Ex. 1003 at ¶ 176.

4. Claim 17d signaling, by the user, user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and

See claim 1f; Ex. 1003 at ¶ 177.

5. **Claim 17e subsequent to signaling the user-acceptance confirming the designation of the building roof structure location, receiving a report for the building roof structure; and**

See claim 1g; Ex. 1003 at ¶ 178.

6. **Claim 17f repairing or constructing a roof designated by the building roof structure location.**

Bailey teaches instructions for collecting data that can be used to inform roof inspectors about, *e.g.*, the “needed level of ***repair***.” Ex. 1010 at 1 (emphasis added). Bailey teaches collecting the same types of data as Kennedy’s system, including length, slope (*i.e.*, “pitch”) and area. *Id.* at 12-22. It would have been obvious to apply the data collected by Kennedy’s system to repair a roof, as required by the claims. Indeed, Kennedy already discloses using contractors to “***maintain***” structures mounted on a roof, *e.g.*, solar panels. Ex. 1009 at [00784], [0075]; Ex. 1003 at ¶ 179.

XII. SECONDARY CONSIDERATIONS DO NOT SUPPORT A FINDING OF NON-OBVIOUSNESS

At this stage of these proceedings, Petitioners have no burden to identify and rebut secondary considerations. Rather, Patent Owner must first present a *prima facie* case for such consideration, which Petitioners should then have the chance to rebut. *Sega of Am., Inc. v. Uniloc USA, Inc.*, IPR2015-01453, at *10 (Mar. 10, 2015). For that reason, the Board typically rejects

arguments against institution based on objective indicia, so that the Petitioners can have a fair opportunity to address any secondary indicia evidence on reply. *Petroleum Geo-Services Inc. v. WesternGeco LLC*, IPR2015-01478, at *22 (Mar. 17, 2015); Ex. 1003, ¶ 119.

XII. MANDATORY DISCLOSURES

Pursuant 37 C.F.R. § 42.8(a)(1), the following mandatory notices are provided as part of this Petition.

A. Real Party in Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies ROOFR INC. is the real party-in-interest.

B. Related Matters

Petitioner is not aware of any other related matters before the Patent Office with respect to the '800 patent.

The '800 patent has been asserted by Patent Owner in *Pictometry Int'l Corp. v. Roofr Inc.*, No. 1:21-cv-01852-RGA (D. Del.) against Petitioner.

C. Lead and Back-Up Counsel (37 C.F.R. § 42.8(b)(3)) and Service Information (37 C.F.R. § 42.8(b)(3)-(4))

Petitioner provides the following counsel and service information. Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney accompanies this Petition. Petitioner agrees to accept electronic service at the email addresses below.

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D. Payment of Fees (37 C.F.R. § 42.15(a))

The undersigned authorizes the Office to charge the fee required for this Petition for *Inter Partes* Review to Deposit Account No. 50-5708. Any additional fees that might be due are also authorized.

E. Grounds for Standing (37 C.F.R. § 42.104(a))

Petitioner respectfully requests *inter partes* review (“IPR”) of Claims 1-17 (“Challenged Claims”) of the ’800 patent (Ex. 1001), which is indicated as assigned to PICTOMETRY INTERNATIONAL CORP. (“Patent Owner” or “Pictometry”).

Petitioner certifies that the ’800 Patent is available for *inter partes* review and Petitioner is not barred or estopped from requesting review of the Challenged Claims on the grounds identified in this Petition.

Date: January 3, 2023

By: /s/ Jim Glass
James M. Glass (Reg. No. 46,729)
Sean T. Gloth (Reg. No. 75,316)

IPR2023-00436
Patent 9,183,538

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Counsel for Petitioner

CERTIFICATE OF LENGTH (37 C.F.R. §§ 42.24(D))

The undersigned hereby certifies that, according to the word-processing system used to prepare the foregoing document, this document has 13,868 words and thus complies with the applicable word limit.

Date: January 3, 2023

By: /s/ Sean Gloth

Sean T. Gloth

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CERTIFICATE OF SERVICE (37 C.F.R. §§ 42.6(E), 42.105(A))

The undersigned hereby certifies that on February 9, 2023 a copy of this corrected petition and supporting exhibits were served on counsel of record at the mailing address below via Priority Mail Express mail, and a courtesy copy was served via email on litigation counsel at the email addresses below:

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