

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Owens Corning Corporation,
Petitioner

v.

CertainTeed Corporation,
Patent Owner

Patent No. 8,409,689

Issued: April 2, 2013

Filed: May 2, 2012

Inventors: Husnu M. Kalkanoglu and Stephen A. Koch

Title: SHINGLE WITH REINFORCEMENT LAYER

Inter Partes Review No. 2014-01402

PETITION FOR INTER PARTES REVIEW

TABLE OF CONTENTS

I. Compliance with Requirements of an *Inter Partes* Review Petition1

 A. Certification that the Patent May Be Contested via *Inter Partes* Review by the Petitioner1

 B. Fee for Inter Partes Review (§ 42.15(a)).....1

 C. Mandatory Notices (37 CFR § 42.8(b))1

 1. Real Party in Interest (§ 42.8(b)(1)).....1

 2. Other Proceedings (§ 42.8(b)(2)).....2

 3. Lead and Backup Lead Counsel (§ 42.8(b)(3))2

 4. Service on Petitioner2

 D. Proof of Service (§§ 42.6(e) and 42.105(a))2

II. Identification of Claims Being Challenged (§ 42.104(b)).....2

III. Relevant Information Concerning the Contested Patent3

 A. Background of the Technology3

 1. The Basic Asphalt Shingle Coated on Both Sides with Asphalt and Granules Had Been Known for Decades.....3

 2. The Prior Art Disclosed a Generally Longitudinal Second Thickness Layer For Reinforcement in the Nailing Zone7

 3. The Prior Art Taught Thin Reinforcement Material.....10

 4. Laminated Shingles Including Multiple Reinforcement Layers Were Known12

 B. General Overview Of The '689 Patent.....15

 1. The '689 Patent Recognizes the Basic Asphalt Shingle Was Known.....15

 2. Only a Rear Exterior Surface Reinforcement Layer Is Disclosed in the '689 Patent15

 3. The Reinforcement Layer Is “Adhered” to the Surface in All the Claims17

4.	The Reinforcing Layer Provides Strength and Stability.....	18
C.	Prosecution History and Effective Filing Date of the '689 Patent.....	18
1.	Prosecution of the '689 Patent	18
2.	Prosecution of Related Patent Applications.....	19
a)	U.S. Appl. No. 10/871,911	19
b)	U.S. Appl. No. 12/857,868	20
3.	Effective Filing Date of the Claims	23
D.	Person of Ordinary skill	23
E.	Construction of Terms Used in the Claims	23
1.	Elements (a)-(d) of Claim 1	24
2.	“said shingle”	24
3.	“adhered to an exterior surface of said shingle”	27
4.	“reinforcement . . . layer”	31
5.	“substantially thinner”	31
IV.	Precise Reasons for Relief Requested	32
A.	Claims 1–13 Are Unpatentable Over Venrick 1939	32
1.	Venrick 1939 Renders Obvious Claim 1	32
2.	Venrick 1939 Renders Obvious Claim 3	37
3.	Venrick 1939 Renders Obvious Claim 4	37
4.	Venrick 1939 Renders Obvious Claim 9	38
5.	Venrick 1939 Renders Obvious Claims 2, 8, and 13.....	38
6.	Venrick 1939 Renders Obvious Claim 6	39
7.	Venrick 1939 Renders Obvious Claims 7 and 12.....	39
8.	Venrick 1939 Renders Obvious Claim 5	40
9.	Venrick 1939 Renders Obvious Claim 10	40
10.	Venrick 1939 Renders Obvious Claim 11	40
B.	Claims 1–13 Are Unpatentable Over Venrick 1939 in View of Frankoski 1998	41

1.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 1	41
2.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 3	46
3.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 4	46
4.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 9	47
5.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claims 2, 8 and 13	47
6.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 6	48
7.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 7 and Claim 12.....	49
8.	Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 5	49
9.	Venrick 1939 In View Of Frankoski 1998 Renders Obvious Claim 10	49
10.	Venrick 1939 In View Of Frankoski 1998 Renders Obvious Claim 11	50
C.	Claims 1–13 Are Unpatentable Over Venrick 1939 in View of Kiik 2001	50
1.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 1	50
2.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 3	55
3.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 4	55
4.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 9	56
5.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claims 2, 8, and 13.....	56

6.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 6	56
7.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claims 7 and 12.....	57
8.	Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 5	57
9.	Venrick 1939 In View of Kiik 2001 Renders Obvious Claim 10.....	58
10.	Venrick 1939 In View of Kiik 2001 Renders Obvious Claim 11	58
D.	Secondary Considerations Do Not Weigh In Favor of Nonobviousness.....	59
V.	CONCLUSION.....	60

Attachment A. Proof of Service of the Petition

Attachment B. List of Evidence and Exhibits Relied Upon in Petition

I. Compliance with Requirements of an *Inter Partes* Review Petition

A. Certification that the Patent May Be Contested via *Inter Partes* Review by the Petitioner

Petitioner certifies it is not barred or estopped from requesting *inter partes* review of U.S. Patent No. 8,409,689 (“the ’689 patent”) (Ex. 1036). Neither Petitioner, nor any party in privity with Petitioner: (i) has filed a civil action challenging the validity of any claim of the ’689 patent; or (ii) has been served a complaint alleging infringement of the ’689 patent more than one year prior to the present date. Also, the ’689 patent has not been the subject of a prior *inter partes* review or a finally concluded district court litigation involving Petitioner.

Petitioner also certifies this petition for *inter partes* review is filed in compliance with 35 U.S.C. § 315(b). Petitioner Owens Corning was served a complaint alleging infringement of the ’689 patent on April 22, 2014 resulting in Civ. A. No. 1:14-cv-00510-SLR (D. Del.). *See* Ex. 1045 (Complaint).

B. Fee for *Inter Partes* Review (§ 42.15(a))

The Director is authorized to charge Deposit Account No. 50-1597.

C. Mandatory Notices (37 CFR § 42.8(b))

1. Real Party in Interest (§ 42.8(b)(1))

The real party in interest is Owens Corning, located at One Owens Corning Parkway, Toledo, OH 43659.

2. Other Proceedings (§ 42.8(b)(2))

The '689 patent is the subject of litigation in the District of Delaware (Civ. A. No. 1:14-cv-00510-SLR), which names Owens Corning as defendant. Patents related to the '689 patent, by continuation, are the subject of petitions for *inter partes* review filed concurrently herewith (IPR Nos. 2014-01397, 2014-01401, 2014-01403, -01404).

3. Lead and Backup Lead Counsel (§ 42.8(b)(3))

<u>Lead Counsel</u> Jeffrey P. Kushan Reg. No. 43,401 jkushan@sidley.com (202) 736-8914	<u>Backup Lead Counsel</u> Peter S. Choi Reg. No. 54,033 peter.choi@sidley.com (202) 736-8076
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4. Service on Petitioner

Service on Petitioner may be made by mail or hand delivery to: Sidley Austin LLP, 1501 K Street, N.W., Washington, D.C. 20005. The fax number for Petitioner's counsel is (202) 736-8711.

D. Proof of Service (§§ 42.6(e) and 42.105(a))

Proof of service of this petition is provided in **Attachment A**.

II. Identification of Claims Being Challenged (§ 42.104(b))

Claims 1–13 of the '689 patent are unpatentable. Specifically:

- (1) Claims 1–13 would have been obvious under § 103 based on Venrick 1939.
- (2) Claims 1–13 would have been obvious under § 103 based on Venrick

1939 in view of Frankoski 1998.

- (3) Claims 1–13 would have been obvious under § 103 based on Venrick 1939 in view of Kiik 2001.

Petitioner’s proposed claim construction, the evidence relied upon, and precise reasons why the claims are unpatentable are provided below. A list of evidence relied upon in support of this petition is set forth in **Attachment B**.

III. Relevant Information Concerning the Contested Patent

A. Background of the Technology

1. The Basic Asphalt Shingle Coated on Both Sides with Asphalt and Granules Had Been Known for Decades

Asphalt shingles have been used to cover roofs since the late-1800s. *See, e.g.*, Ex. 1005, Cash, “Asphalt Roofing Shingles,” Proc. 11th Conf. Roofing Tech. (1995) (Cash 1995), at 1; Ex. 1003 (Bryson Decl.), at ¶ 46. By the mid-1990s, three styles predominated: (1) the individual shingle; (2) the strip shingle (with or without tabs), and (3) the laminated shingle. Ex. 1005 (Cash 1995), Figs. 10–12; Ex. 1003 (Bryson Decl.), at ¶¶ 46-47.

Asphalt waterproofs the shingle. Ex. 1007, Noone, “Asphalt-Shingles – A Century of Success and Improvement,” Proc. 11th Conf. Roofing Tech. (1993) (Noone 1993), at 2; Ex. 1003 (Bryson Decl.), at ¶ 48. In general, making an asphalt shingle involves passing a base mat through a coater, where layers of hot asphalt are applied to the top and back surfaces. Ex. 1007 (Noone 1993), at 2; Ex.

1003 (Bryson Decl.), at ¶ 48. Colored or non-colored granules are then dropped on the front surface and other granular materials are applied to the back. Ex. 1007 (Noone 1993), at 2, 5; Ex. 1003 (Bryson Decl.), at ¶ 48. The granular material on the front adds color and texture. Finely ground talc and sand or other granular materials are added on the back to prevent sticking during storage and shipment. Ex. 1007 (Noone 1993), at 2, 5-6; Ex. 1003 (Bryson Decl.), at ¶ 48.

The basic steps for making an asphalt shingle, including coating both sides of the base mat (*i.e.*, substrate) with asphalt and applying granular material on both sides, have remained the same for decades. Ex. 1003 (Bryson Decl.), at ¶¶ 49-50. U.S. Patent No. 2,099,131 to Miller (issued in 1937) (Miller 1937) (Ex. 1008) states, for example:

It has heretofore been common practice to manufacture prepared roofing by saturating a suitable absorbant fabric, such as roofing felt, with a liquid bituminous material, e.g., asphalt, coating both sides of the saturated fabric with a bituminous material, surfacing the bituminous coating on one side of the fabric with mineral grit, such as crushed slate, and applying mica, soapstone, or other anti-stick material to the coating on the other side of the fabric.

Id. at 4, col. 1:13–24 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶ 50.

A typical shingle includes a plurality of tabs (*i.e.*, flaps) that extend downwardly from a headlap area. *Id.* at ¶¶ 56-57. Each asphalt shingle has a nailing zone or fastening zone for attachment to a roof. *Id.* As shown below in the

(d) a longitudinal fastening zone between right and left shingle edges generally intermediate said upper and lower edges. Ex. 1036 ('689 patent), at col. 6:56-7:5.

These elements describe nothing more than the basic asphalt shingle, or what was “common practice” since at least the 1930s and what had been applied to laminated shingles for decades. Ex. 1003 (Bryson Decl.), at ¶¶ 59-68. The '689 patent acknowledges that these components of the “basic” laminated asphalt shingle were known. Ex. 1036 ('689 patent), at col. 3:3-6; Ex. 1003 (Bryson Decl.), at ¶¶ 59-68.

To the basic laminated asphalt shingle, claim 1 of the '689 patent adds and describes a “reinforcement second thickness layer”:

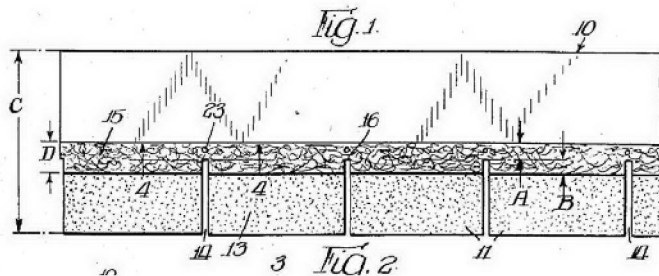
and an at least partially externally visible generally longitudinal reinforcement second thickness layer of a substantially thinner dimension than said first thickness layer, adhered to an exterior surface of said shingle and extending at least substantially between right and left edges of the shingle; and said reinforcement layer extending at least lower than the fastening zone, toward the lower edge of the shingle or at least partially into the fastening zone toward the upper edge of the shingle.

Ex. 1036 ('689 patent), at col. 7:6-16; *see also id.* col. 3:16-17 (“the shingle 20 is similar to that of the [prior art] shingle 10 of FIG.1, but with a reinforcement layer”). Reinforcement layers having the claimed features were known in the prior art. Ex. 1003 (Bryson Decl.), at ¶¶ 69-120.

2. The Prior Art Disclosed a Generally Longitudinal Second Thickness Layer For Reinforcement in the Nailing Zone

U.S. Patent No. 2,161,440 to Venrick (Venrick 1939) describes a “reinforcing strip” for “strengthening” to “reduce ... tear,” and to “provide a ***reinforced*** area for nailing the shingle to the roof.” Ex. 1013 (Venrick 1939), at 3, col. 1:1:40–46 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶¶ 93-97.

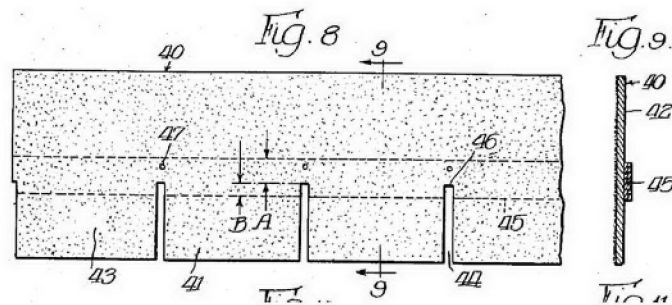
The Venrick 1939 strip, which may be made of, *inter alia*, felt, metal, or “layers of roofing tape,” Ex. 1013 (Venrick 1939), at 4, col. 2:2:74–75, also functions to add “rigidity” to “resist[] the action of the wind.” *Id.* at 5, col. 3:1:1-9; Ex. 1003 (Bryson Decl.), at ¶ 94. “[I]mproved resistance to failure upon bending” is also a function of the reinforcement layer in the ’689 patent. Ex. 1036 (’689 patent), col. 5:54-55; Ex. 1003 (Bryson Decl.), at ¶ 94. The reinforcing strip is shown in Fig. 1 of Venrick 1939 as 15 on the front surface of a shingle.



Ex. 1003 (Bryson Decl.), at ¶ 95. Venrick 1939 also teaches that the reinforcement strip can be placed on the “undersurface,” or rear. Ex. 1013 (Venrick 1939), at 4, col. 2:60–63, *see also* Figs. 8-14; Ex. 1003 (Bryson Decl.), at ¶ 96. Also, the strip is preferably “cemented” onto the granule surfacing, Ex. 1013

(Venrick 1939), at 4, col. 1:32-37, and overlaps with the nailing zone to “give greater nailing strength,” *Id.* at 4, col. 2:2:11-23; Ex. 1003 (Bryson Decl.), at ¶ 96.

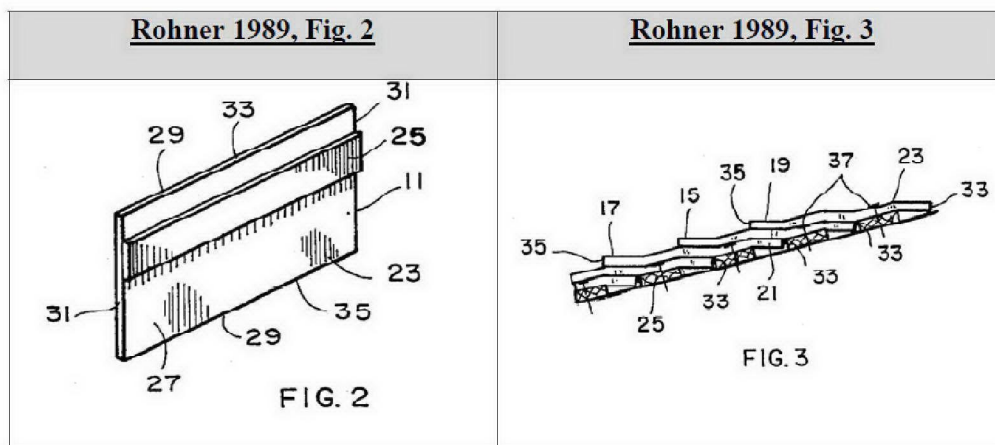
Figs. 8 and 9 of Venrick 1939 show the reinforcement strip 45 as a visible component that is adhered to the exterior rear surface of the shingle and extending at least partially into the zone having nailing holes 47. Ex. 1013 (Venrick 1939); Ex. 1003 (Bryson Decl.), at ¶ 97. It extends at least partially into the zone having nailing holes 47, and as shown by the hashed lines, it also extends at least partially lower than the nailing zone (*i.e.*, into the tab portion toward the lower edge of the shingle). *Id.* It also extends toward the upper edge into the headlap area. *Id.* The reinforcement strip clearly forms a second thickness layer. *Id.* The strip is also generally longitudinal. *Id.*



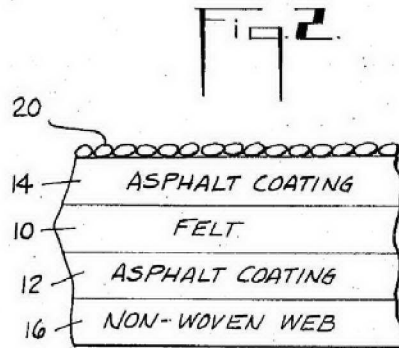
It was known in the art that nailing through multiple layers of shingle material provided strength and contributed to roofing integrity. *Id.* at ¶ 98. *E.g.*, U.S. Patent No. 6,145,265 (Malarkey) (Ex. 1011), at col. 1:60–62 (“[N]ailing through a double layer of material provides strength, which is essential for roofing integrity in windy conditions.”). Because the nailing zone was generally

longitudinal, *see* ARMA Manual 1997 (Ex. 1009), at Fig. 10, it would only make sense to make the reinforcement layer generally longitudinal while extending it at least partially into the nailing zone. Ex. 1003 (Bryson Decl.), at ¶ 98. This is what Venrick 1939 teaches. *See* Ex. 1013 (Venrick 1939), at 5, col. 1:50-54 (“The shingles are nailed preferably ... where the raised median strip is.”); Ex. 1003 (Bryson Decl.), at ¶ 98.

Examples of reinforcing layers affixed to the rear surface abound. U.S. Patent No. 4,875,321 (Rohner 1989) (Ex. 1015) discloses a “backing strip” (Fig. 2, 25) that can be made of “light-weight ... material” to “provide a stiffer shingle which grips the nails.” *Id.* at col. 1:55–59; Ex. 1003 (Bryson Decl.), at ¶ 103. Fig. 2 exemplifies a shingle with a reinforcing backing layer 25. Fig. 3 confirms that the rear facing reinforcing layer 25 extends at least partially into the nailing zone 37. Ex. 1015 (Rohner 1989); Ex. 1003 (Bryson Decl.), at ¶¶ 103-104.



The Rohner 1989 “backing strip” forms a second thickness layer on the rear,

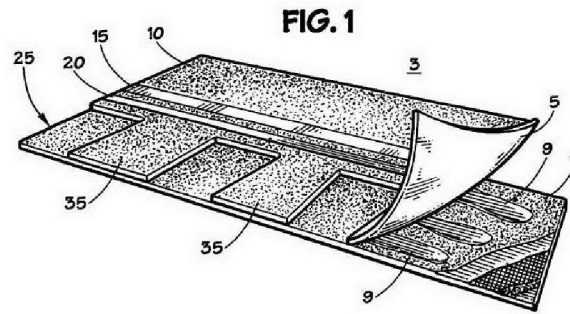


A purpose of the web is “adding reinforcement ... and providing additional tear strength.” Ex. 1014 (Olszyk 1974), at col. 4:17–27 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶ 100. The thickness of the web is on the order of 1/1000th of an inch. Ex. 1014 (Olszyk 1974), at col. 3:59-60 (“a thickness of between 10 mils or less to about 30 mils.”); Ex. 1003 (Bryson Decl.), at ¶ 101.

U.S. Patent Publ. No. 2001/0055680 to Kiik (Kiik 2001) (Ex. 1018) discloses an asphalt roof shingle having a “backing material” that can be made of woven polyester and latex fiber bound by latex. *Id.* at [0004]; Ex. 1003 (Bryson Decl.), at ¶ 110. The exemplary backing materials have a thickness of 13-23 1/1000th of an inch. Ex. 1018 (Kiik 2001), at [Table 1]; Ex. 1003 (Bryson Decl.), at ¶ 110. Data in Kiik 2001 shows that the reinforced shingles exhibited improved tear strength and nail pull strength. Ex. 1018 (Kiik 2001), at Table I and II; Ex. 1003 (Bryson Decl.), at ¶ 113. Thus, like Venrick 1939 and Olszyk 1974, Kiik 2001 showed that thin material could be affixed to the back of an asphalt shingle to provide reinforcing properties. Ex. 1003 (Bryson Decl.), at ¶ 113.

reference Frankoski 1998 and says that the “basic” asphalt shingle can be made according to its teachings. Ex. 1036 (’689 patent), at col. 3:3-6.

Frankoski 1998 (Ex. 1010) also discloses a laminated shingle. Ex. 1003 (Bryson Decl.), at ¶ 71. This is shown in Figure 1 of Frankoski 1998 (Ex. 1010).



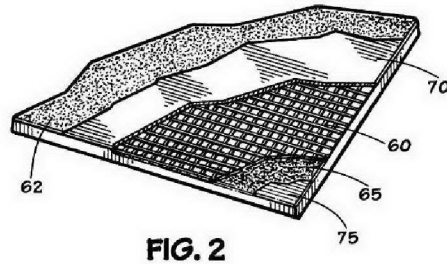
The shingle comprises an upper layer 5 and a lower layer 7, which are glued together with a sealant 9. Ex. 1003 (Bryson Decl.), at ¶ 72. The upper layer includes a headlap area 10 and a number of tabs 35. *Id.* The lower layer is longitudinal, and extends between the right and left edges. *Id.*

It was widely known that gluing an extra shingle layer to the back surface of what was essentially a single layer strip shingle, as in a laminated shingle, provided reinforcement by enabling a roofer to nail through two, rather than one, layer of material. *Id.* at ¶ 76. U.S. Patent No. 6,145,265 issued to Malarkey et al.

(Malarkey 2000) (Ex. 1011) explains this common sense principle by noting that “nailing through a double layer of material provides strength.” *Id.* at col. 1:54-62 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶ 76. Laminated shingles, which by the late 1990s and early 2000s were among the most popular shingles made and

sold, therefore utilized a second thickness layer of material that were recognized to add reinforcement. *Id.* at ¶¶ 51-52, 76.

Fig. 2 of Frankoski 1998 (Ex. 1010) also shows a scrim layer 60 in the laminated shingle. Ex. 1003 (Bryson Decl.), at ¶¶ 77-78.



Scrim is thin material that can be made from any number of different fabrics, synthetic, or composite materials. *Id.* The scrim layer “provides a superior strength and nail pull-through resistance to withstand, for example, hurricane force winds.” Ex. 1010 (Frankoski 1998), at col. 3:20–24; Ex. 1003 (Bryson Decl.), at ¶ 78. Frankoski 1998 states that the reinforcing scrim preferably extends the entire length of the shingle. *Id.* at col. 5:27–28. This would be understood to mean the reinforcing scrim is generally longitudinal given that most shingles were longer than they were wide. Ex. 1003 (Bryson Decl.), at ¶¶ 78-81. Frankoski 1998 also explicitly states that the scrim should “coincide with at least a portion of the nail zone.” Ex. 1010, at col. 5:38-39; Ex. 1003 (Bryson Decl.), at ¶ 81.

As discussed *infra* at § III.C.2., the Patent Owner distinguished the alleged invention over Frankoski 1998 by arguing that the reinforcing layer of the alleged

invention is not “embedded” within the shingle as the scrim 60 is in Frankoski 1998, and that it instead is affixed to the exterior, rear surface of the shingle. At the time these arguments were made, neither Venrick 1939, Rohner 1989, nor Sieling 1999 (each discussed above) were before the Patent Office. *See generally*, Ex. 1003 (Bryson Decl.) §§ III.F.-III.H.

B. General Overview Of The '689 Patent

The '689 patent issued on April 2, 2013, to inventors Kalkanoglu and Koch. The title of the '689 patent is “Shingle With Reinforcement Layer.” Ex. 1036 ('689 patent), at col. 1:1.

1. The '689 Patent Recognizes the Basic Asphalt Shingle Was Known

The '689 patent acknowledges that the basic components of an asphalt shingle were known in the prior art. Ex. 1036 ('689 patent), at col. 2:49–3:6. Referring to Fig. 1, the '689 patent describes the “prior art shingle” as being made of a mat covered with asphalt on “each exposed surface” with “granular material” on the upper exposed surface to withstand weather and “smaller granules” on the “undersurface.” *Id.* at col. 2:49–59. The '689 patent states that the “basic” prior art shingle can be made by the methods disclosed in, among other references, Frankoski 1998. *Id.* at col. 3:3-6; Ex. 1003 (Bryson Decl.), at ¶ 70.

2. Only a Rear Exterior Surface Reinforcement Layer Is Disclosed in the '689 Patent

The person of ordinary skill would understand that the reinforcement layer

disclosed in the '689 patent is affixed to the rear surface of the asphalt shingle, and nowhere else. Ex. 1003 (Bryson Decl.), at ¶ 192.

The specification states: the “present invention is directed toward providing a shingle, wherein a separate, *exterior reinforcement layer* is provided *outside the rear surface of the shingle*...” Ex. 1036 ('689 patent), at col. 1:51–53 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶¶ 137, 177, 192.

The figures in the '689 patent show the reinforcement layer to be located on the rear. Ex. 1003 (Bryson Decl.), at ¶¶ 138-143, 177, 192. Fig. 2 shows the prior art shingle with “a reinforcement layer applied to the rear surface thereof, in accordance with the present invention.” Ex. 1036 ('389 patent), at col. 2:17-19 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶¶ 139, 177, 192. Figure 3 also shows the “rear surface” of the shingle. *Id.* at ¶¶ 141, 177, 192.

Indeed, the specification consistently emphasizes that the reinforcement layer is located on the “rear surface.” *See, e.g.*, Ex. 1036 ('689 patent), at Figs. 4 and 4A (reinforcement layer 29 on rear surface of shingle); col. 1:52–53 (“reinforcement layer is provided *outside the rear surface*”); col. 3:17–20 (“a reinforcement layer . . . *added on the rear* 21 of the shingle”); col. 4:11–12 (“the scrim **46 applied to the undersurface**”); col. 5:50–6:50 (extolling performance of “scrim reinforcement embedded *on their rear sides*,” a “polyester mat reinforcement layer *on their rear surfaces*,” a heavier “reinforcement layer *on the*

rear surface,” “fiber-glass scrim *on the rear surface*,” and “reinforcement material that is *applied to the rear*”) (emphasis added). Ex. 1003 (Bryson Decl.), at ¶¶ 143, 177, 192. Not once is there any indication that the reinforcement layer can be placed elsewhere. *Id.*

Moreover, the specification describes only one method for making the described shingle, and this method places the reinforcement layer on the rear. Ex. 1036 ('689 patent), at col. 3:61-4:1; Ex. 1003 (Bryson Decl.), at ¶¶ 144, 177, 192. Placement on the rear is also described to be critical to performance. Ex. 1003 (Bryson Decl.), at ¶¶ 145, 177, 192. Figure 4 of the '689 patent illustrates that “the scrim 46 *applied to the undersurface of the shingle* 41 will tend to resist upward bending of the shingle tab portion 44, largely because of the resistance to such bending that is provided by the reinforcement layer 29, 39 as shown in Figs. 2 and 3 which will resist stretching and thereby inhibit bending.” Ex. 1036 ('689 patent), at col. 4:8-16 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶¶ 145-147, 177, 192.

3. The Reinforcement Layer Is “Adhered” to the Surface in All the Claims

The specification draws a distinction between a reinforcement layer that is “adhered” to the shingle and one that is “embedded”: “the reinforcement layers” are “*either embedded* in the asphaltic layer on the rear of the shingle *or adhered* to the rear of the shingle....” Ex. 1036 ('689 patent), col. 3:63–64 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶¶ 149-151, 177, 192.

The claims of the '689 patent all require a reinforcement layer that is “adhered” to the shingle. Ex. 1036 ('689 patent), at col.6:55–8:63. As explained *infra* at § III.C.2., during prosecution of related applications, the Patent Owner distinguished Frankoski 1998 on the basis that it disclosed an “embedded” reinforcement layer, as opposed to one applied to an external, rear surface of the shingle. *See infra*, at § III.C.2.

4. The Reinforcing Layer Provides Strength and Stability

The function of the reinforcement layer described in the '689 patent is to provide additional strength and stability to the shingle. Ex. 1003 (Bryson Decl.), at ¶¶ 154-160, 177, 192. As discussed, the purpose of the alleged invention is to, among other things, provide “improved resistance to damage due to wind uplift.” Ex. 1036 ('689 patent), at col. 5:58-60. Another purpose of the reinforcement layer is to “resist tearing.” *Id.* at col. 4:33-34. Results from “bending tests” and “[n]ail pull tests” are presented to illustrate the qualities of shingles made according to the claimed invention. *Id.* at col. 4:59-6:35.

C. Prosecution History and Effective Filing Date of the '689 Patent

1. Prosecution of the '689 Patent

The '689 patent issued on April 2, 2013, from U.S. Application No. 13/462,159, which was filed on May 2, 2012. Ex. 1036 ('689 patent). No prior art rejections were made. Venrick 1939 was not before the Patent Office during prosecution of the '159 application. Ex. 1003 (Bryson Decl.), at ¶¶ 277-280.

2. Prosecution of Related Patent Applications

The '159 application that resulted in the issuance of the '689 patent is related, by continuation, to a number of other applications filed both before and after the issuance of the '689 patent. Frankoski 1998 played a prominent role during the prosecution of several of these applications. The Patent Owner first sought to supplement the specification by incorporating Fig. 1 of Frankoski 1998 into the disclosure, claiming that the new figure reflected the “preferred” embodiment of the alleged invention. But when the claims were rejected in view of Frankoski 1998, the Patent Owner then went to great lengths to distinguish the alleged invention from the Frankoski 1998 reference. The Patent Owner’s actions shed important light on the nature and scope of the alleged invention.

a) U.S. Appl. No. 10/871,911

U.S. Application No. 10/871, 911 was filed on June 18, 2004. Ex. 1027 ('794 patent), at 1. It issued on October 10, 2006, as U.S. Patent No. 7,118,794. *Id.*; Ex. 1003 (Bryson Decl.), at ¶ 234.

All the pending claims were rejected in an Office Action dated June 1, 2005. Ex. 1024 ('911 Appl. File Wrapper), at 52. Among other things, the claims were rejected as being anticipated by, or obvious in view of, Frankoski 1998. In response to the rejection, the Patent Owner amended claim 1 to require that the claimed wind resistant layer be on the “rear surface of said shingle,” and argued

that Frankoski 1998 did not anticipate or render obvious the claims: “Frankoski does not disclose a scrim on an outer surface of the shingle,” whereas “the scrim of the instant invention is on the rear surface of the shingle, having a front surface thereof adhered to the asphaltic material on the rear surface of the shingle, and the rear surface of the scrim being uncoated, to resist upward lift via wind.” *Id.* at 67-71 (emphasis added).

The Patent Owner stated: “The invention of Frankoski is directed to how one makes a substrate; it has nothing to do with applying a layer of scrim on to the rear surface of a shingle to resist wind lift-up.” *Id.* at 72. The Examiner was apparently persuaded by the Patent Owner’s arguments. The rejections based on Frankoski 1998 were withdrawn, and the application subsequently allowed to issue. *See id.* at 119.

b) U.S. Appl. No. 12/857,868

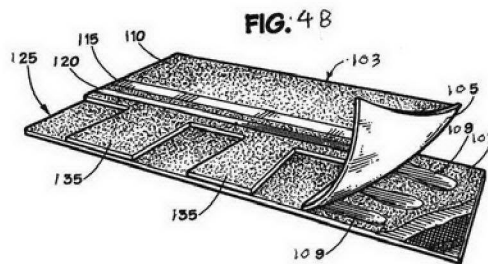
U.S. Appl. No. 12/857,868, filed on August 17, 2010 claims to be a continuation of the ’506 application. Ex. 1034 (’243 patent), at 1. It issued on May 8, 2012, as U.S. Patent No. 8,173,243. *Id.*; Ex. 1003 (Bryson Decl.), at ¶¶ 244-245.

The original application was filed with eleven claims. Ex. 1029 (’868 Appl. File Wrapper), at 19-22. As filed, the abstract read as follows:

A laminated shingle and a method of making it is provided in which *the rear surface of the shingle* is provided with an attached

reinforcement layer through which fasteners may be applied when the shingle is applied to a roof. *Id.* at 23 (emphasis added).

In a preliminary amendment, new Fig. 4B was added. *Id.* at 52. The stated purpose: to “incorporate subject matter ... incorporated by reference in the specification.” *Id.* at 50. New Fig. 4B was presented as a photocopy of Fig. 1 from Frankoski 1998, with hand-written annotations increasing the item numbers by 100. Ex. 1003 (Bryson Decl.), at ¶¶ 247-248:



A new description corresponding to Fig. 4B was also added to the specification. Ex. 1034 (’243 patent), at col. 4:40–49; *see* Ex. 1029 (’868 Appl. File Wrapper), at 50-51. This passage is identical to Frankoski 1998 except for the re-numbering of the items. Ex. 1003 (Bryson Decl.), at ¶252.

In the amended excerpt, the Patent Owner stated that Fig. 4B showed “[t]he preferred laminated roofing shingle” “in accordance with the present invention.” *See* Ex. 1029 (’868 Appl. File Wrapper), at 51; Ex. 1034 (’243 patent), at col. 4:40-41 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶ 253. This material is the only description of a laminated shingle in the specification.

In an office action dated October 15, 2010, all the pending claims were rejected in view of Frankoski 1998. Ex. 1029 ('868 Appl. File Wrapper), at 57. In the rejection, the Examiner indicated that the scrim 60 in Frankoski 1998 satisfied the “reinforcement second thickness layer” limitation required by the claims. *Id.* at 60-62; Ex. 1003 (Bryson Decl.), at ¶ 255.

In response, the Patent Owner argued that the claimed reinforcement layer is located “on ‘said rear surface of said posterior layer of said shingle,’” whereas the reinforcement layer of Frankoski 1998 is shown “as being above the mat layer.” Ex. 1029 ('868 Appl. File Wrapper), at 84 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶¶ 256-57.

The Patent Owner also argued that the reinforcement layer of Frankoski 1998 is embedded in the shingle: “While in Frankoski et al, the scrim may be either above or below the mat, *it is nevertheless embedded in the shingle layer.*” Ex. 1029 ('868 Appl. File Wrapper), at 84 (emphasis added); Ex. 1003 (Bryson Decl.), at ¶ 258. The Patent Owner also argued that the position of the reinforcement layer on the rear surface of the shingle was critical: “the scrim appears on the rear of the posterior layer of the shingle and it is because of this that such provides the favorable force bending characteristics for the shingle shown in Fig. 4, that resist upward lifting due to wind conditions. This is different than applying a scrim inwardly of the shingle...” Ex. 1029 ('868 Appl. File Wrapper),

at 84-85; Ex. 1003 (Bryson Decl.), at ¶ 259 (emphasis added).

When these arguments proved unsuccessful, the Patent Owner appealed the rejections. *Id.* at 117. In the summary of the subject matter in the appeal brief, the Patent Owner stated: “A reinforcement layer is *on the rear surface* of the shingle.” *Id.* at 125-26 (emphasis added). Ultimately, without any decision on the appeal, the Examiner allowed the claims and the application issued as the ’243 patent. *Id.* at 180; Ex. 1003 (Bryson Decl.), at ¶¶ 266-267.

3. Effective Filing Date of the Claims

For the purposes of this proceeding, Petitioner will assume that the effective filing date of claims 1–13 of the ’689 patent is not earlier than November 6, 2002, the earliest filing date of any application to which the ’689 patent claims priority. Ex. 1003 (Bryson Decl.), at ¶ 45.

D. Person of Ordinary skill

The person of ordinary skill has a bachelor’s degree, and potentially some advanced schooling, in chemistry, engineering (such as chemical, civil, or mechanical engineering), materials science, physical science, or a related discipline, and approximately 3–5 years of additional training and experience in the field of roofing materials and asphalt shingles. *Id.* at ¶ 44.

E. Construction of Terms Used in the Claims

In an IPR, claims must be given their broadest reasonable construction in light of the specification. *See* 37 CFR 42.100(b); M.P.E.P. § 2111.01.

1. Elements (a)-(d) of Claim 1

As discussed *supra* at § III.A.1., the preamble and elements (a)-(d) of claim 1 describe nothing more than the “basic” prior art laminated asphalt shingle, made by methods considered “common practice” since at least the 1930s and known for decades for laminated shingles. And as discussed, *supra* at § III.A.1., the ’689 patent itself acknowledges that the basic asphalt shingle was known. Ex. 1036 (’689 patent), at col. 2:49-3:7; Ex. 1003 (Bryson Decl.), at ¶¶ 59-68. The preamble and elements (a)-(d) therefore encompass nothing more than a laminated asphalt shingle having a posterior layer made of (i) a base layer of mat having front and rear surfaces, (ii) a coating of asphaltic material on both front and rear surfaces of the mat, and (iii) a coating of granular material on the asphaltic material on both front and rear surfaces, which together form a first thickness layer. *Id.* at ¶ 333.

2. “said shingle”

Claim 1 uses the term “shingle” repeatedly. “Shingle” is used, for example, in the preamble to describe the claimed product as a whole. “Shingle” also appears twice in the limitation of claim 1 describing the location where the “reinforcement second thickness layer” is “adhered.” Ex. 1036 (’689 patent), at col. 7:6-12; Ex. 1003 (Bryson Decl.), at ¶¶ 294, 334.

The use of the term “shingle” to describe both (1) the claimed product as a whole and (2) the location where a component of the claimed product is adhered is

internally inconsistent and raises questions as to claim scope. Ex. 1003 (Bryson Decl.), at ¶¶ 295, 334. For example, if the “reinforcement second thickness layer” is one component of the claimed “shingle,” while at the same time being adhered to the same “said shingle,” then one possibility, based on the literal reading of the claim, is that the “reinforcement second thickness layer” is adhered to itself. *Id.* But this obviously makes no sense. *Id.*

This logical inconsistency is resolved only if, for the purposes of this proceeding, different meanings are assigned to the term “shingle” depending on the context. In the preamble, the term “shingle” clearly refers to the claimed product as a whole, which includes a “reinforcement second thickness layer.” *Id.* at ¶¶ 297, 334. But in the limitation describing the attachment of the reinforcement layer, the “said shingle” cannot already include a “reinforcement second thickness layer” because the limitation states that the “reinforcement second thickness layer” is “adhered to an exterior surface of said shingle.” *Id.* at ¶¶ 298, 334.

To make any sense of this otherwise illogical claim, the “said shingle” in the reinforcement layer element, *i.e.*, the “adhered to an exterior surface of said shingle” requirement, should be interpreted to mean the “first thickness layer” identified in element (c). Claim 1 requires a distinct “first thickness layer” and a distinct “reinforcement second thickness layer.” *Id.* at ¶¶ 299, 334. The “first thickness layer” comprises “a base layer of mat,” “a coating of asphaltic material

on both front and rear surfaces of the mat,” and “coatings of granular material on both front and rear surfaces.” *Id.* at ¶¶ 300, 334. Because of the requirement for distinct first and second thickness layers, the only location to which the “reinforcement second thickness layer” may be adhered is the outside exterior surface (*i.e.*, “coatings of granular material”) of the first thickness layer. *Id.* at ¶¶ 300, 334.

Adhering the “reinforcement second thickness layer” to any other recited claim element (*e.g.*, the “base layer of mat”) would amount to inserting the “reinforcement second thickness layer” within the “first thickness layer” thereby violating the claim requirement for distinct first and second thickness layers. *Id.* at ¶¶ 300, 334. Further, as discussed *supra* at § III.C.2., during prosecution of related applications, Patent Owner repeatedly emphasized that the reinforcement layer of the alleged invention was not “embedded” within the shingle, and instead positioned on the outside surface of the shingle. The requirement that the “second reinforcement layer” be adhered to the “exterior surface” is consistent with this understanding because there is only one “exterior surface” described in the claim, *i.e.*, the granular surface of the “first thickness layer.”

This understanding is also supported by the specification itself, which states that, when the reinforcing layer is “adhered,” this is done by means of “an additional post-applied thin layer of asphaltic or non-asphaltic adhesive.” Ex. 1036

(’689 patent), at col. 3:64-66; Ex. 1003 (Bryson Decl.), at ¶¶ 300, 334. “Post-applied” would be understood to refer to a manufacturing step downstream of the steps in which asphalt and granular material are applied to the mat. Ex. 1003 (Bryson Decl.), at ¶¶ 301, 334. Figs. 2A, 4 and 4A are in accord as each shows the reinforcement layer as a distinct thickness layer. *Id.*

Thus, the meaning of the term “said shingle” to refer to the location where the “second reinforcement layer” is “adhered” must be “first thickness layer,” such that the requirement for the “reinforcement second thickness layer” to be “adhered to an exterior surface of said shingle” means that it must be adhered to the exterior surface of the first thickness layer, as discussed further below. *Id.* at ¶¶ 301-302, 334.

This construction is necessary to preserve the claim’s requirement for distinct first and second thickness layers notwithstanding the usage of the term “shingle” in the preamble to mean the finished product as a whole and would apply not only to the use term “said shingle” in claim 1, but also anywhere else where a description is being made of where or how the “second reinforcement thickness layer” is “adhered.” *Id.*

3. “adhered to an exterior surface of said shingle”

Claim 1 requires that the “reinforcement second thickness layer” be “adhered to an exterior surface of said shingle.” The specification of the ’689

patent describes how the “reinforcement second thickness layer” is attached. *Id.*

Specifically, the patent states that the reinforcement layer is:

either embedded in the asphaltic layer on the rear of the shingle **or adhered** to the rear of the shingle by an additional post-applied thin layer of asphaltic or non-asphaltic adhesive. The reinforcement layer 29, 39, will be adhered to the rear surface 21, 31 of the shingles of this invention, by means of any suitable adhesive, such as a bitumen or the like, or any other adhesive.

Ex. 1036 ('689 patent), at col. 3:63-4:2 (emphasis added).

A clear distinction is being drawn between an “embedded” layer and one that is “adhered.” Ex. 1003 (Bryson Decl.), at ¶¶ 305, 332, 334. In fact, as discussed *supra* at § III.C.2., the inventors distinguished Frankoski 1998 on the basis that Frankoski 1998 disclosed an “embedded” reinforcement layer whereas the claimed invention did not. *See supra*, at § III.C.2.

In general, the term “embedded” means that something is fixed into a surrounding mass, usually by mechanical or physical means. *See, e.g.*, Ex. 1039 American Heritage Dictionary, 4th Ed. (2000) (American Heritage 2000), at 4 (defining “embed” as “[t]o fix firmly in a surrounding mass”); Ex. 1003 (Bryson Decl.), at ¶¶ 306, 332, 334. In the asphalt roofing industry, embedded material is mechanically affixed into surrounding material, such as asphalt. Ex. 1003 (Bryson Decl.), at ¶ 306. In other words, physical contact and overlap between the materials results in attachment. *Id.*

“Adhered” generally means stuck together as if by glue or cement. *See, e.g.*, Ex. 1039 (American Heritage 2000), at 21 (defining “adhere” as “[t]o stick fast by or as if by suction or glue”); Ex. 1003 (Bryson Decl.), at ¶¶ 307, 332, 334. Unlike “embedded” material, when materials are said to be “adhered,” attachment generally occurs via chemical interactions between the two materials, or between each of the materials and a separate adhesive, particularly in a context, such as in the ’689 patent, where a clear distinction is being drawn between “adhered” and “embedded.” Ex. 1003 (Bryson Decl.), at ¶ 307.

While no examples of “embedded” material are described in the patent, the patent does describe how the reinforcing layer is “adhered” to the shingle. *Id.* at ¶¶ 308, 332, 334. Specifically, the ’689 patent states that the reinforcement layer is adhered by an “additional” thin layer of asphalt or non-asphaltic adhesive. Ex. 1036 (’689 patent), at col. 3:64-66. In other words, additional material is used as an adhesive. Ex. 1003 (Bryson Decl.), at ¶¶ 308, 332, 334. The specification states that the adhesive is “post-applied,” meaning that it is applied at some point after shingle has been made, *i.e.*, after the mat has been coated with asphalt and covered with granular material. *Id.* at ¶¶ 309, 332, 334.

Further, the person of ordinary skill would understand that the “reinforcement second thickness layer” is “adhered” to the rear surface of the “said shingle,” *i.e.*, the “first thickness layer.” Ex. 1003 (Bryson Decl.), at ¶¶ 310, 332,

334. As discussed above, the clear focus of the invention is a reinforcing layer that is attached to the rear surface. *See supra*, at § III.B. Not only does the specification describe the location of the reinforcement layer in the “present invention” as being on the rear surface, but the specification states that this location is critical to performance. *Id.* The prosecution history confirms that the reinforcement layer must be on the rear surface. *See supra*, at § III.C.

Petitioner recognizes that claim 2 of the '689 patent requires that the “reinforcement second thickness layer” of claim 1 be “adhered to the rear surface of the posterior layer.” Ex. 1036 ('689 patent), at col. 7:17-19. But the doctrine of claim differentiation cannot overcome a contrary construction dictated by the written description and prosecution history. *E.g., Microsoft Corp. v. Proxyconn, Inc.*, Case IPR2012-00026, 2013 WL 6327750, at *3 (PTAB Feb. 25, 2013) (“Petitioner’s claim differentiation argument is inconsistent with the specification and the figures showing three signals and is therefore unavailing”). Here, the specification and prosecution clearly compel a construction that requires the “reinforcement second thickness layer” of claim 1 to be adhered to the rear.

Thus, the broadest reasonable construction of “adhered to an exterior surface of said shingle” is “attached to the rear exterior surface of the first thickness layer by means of glue, cement, or some other chemical interaction between one or more materials.”

4. “reinforcement . . . layer”

The broadest reasonable construction of “reinforcement layer” is a layer of material that provides the shingle with support or strength so as to, for example, resist bending under wind conditions, resist tearing, or resist nail pull. Ex. 1003 (Bryson Decl.), at ¶¶ 312, 334.

5. “substantially thinner”

The term “substantially thinner” is used to describe the “reinforcement second thickness layer,” but is not defined in the patent and does not carry with it a generally understood meaning in the field. *Id.* at ¶¶ 313, 334. Therefore, this term fails to “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129-30 (2014). While claim 5 of the ’689 patent specifically requires that the “reinforcement layer” be made of woven or nonwoven thin fabric, plastic film, paper, parchment, foil, or scrim,” these materials can vary in thickness. *Id.* at ¶¶ 314-315, 334. Thus, these examples shed no light on what the term “substantially thinner” means. *Id.*

The figures in the ’689 patent confuse things further. *Id.* at ¶¶ 316, 334. For example, Fig. 4A shows that the reinforcement material 46 has a thickness that is substantial enough to cause a hump in the shingle when attached to a roof 40. *Id.* Fig. 2A shows the reinforcing layer 29 is nearly as thick as the main part of the

shingle. *Id.* For the purpose of this proceeding, Petitioners will ignore this ambiguity and assume that material made from woven or nonwoven thin fabric, plastic film, paper, parchment, foil, scrim, “or the like,” which the person of ordinary skill would understand could be made to have a thickness smaller than a base shingle mat, meets the “substantially thinner” limitation. *Id.* at ¶¶ 317, 334.

IV. Precise Reasons for Relief Requested

A. Claims 1–13 Are Unpatentable Over Venrick 1939

U.S. Patent No. 2,161,440 to Venrick (Venrick 1939) (Ex. 1013) issued on June 6, 1939 and is prior art under 35 U.S.C. § 102(b).

1. Venrick 1939 Renders Obvious Claim 1

The preamble of claim 1 and elements (a)-(d) describe nothing more than the commonly known and widely used laminated shingle. Ex. 1003 (Bryson Decl.), ¶¶ 62, 64; *see supra* at § III.A.4. The ’689 patent acknowledges that these components and features were known in the prior art. Ex. 1036 (’689 patent), at col. 2:49-3:2; Ex. 1003 (Bryson Decl.), at ¶¶ 622-627.

Venrick 1939 discloses these basic asphalt shingle components. *Id.* at ¶¶ 341-344. Venrick 1939 (Ex. 1013) discloses a “fabricated shingle strip consisting of a base of fibrous material to which asphalt or similar plastic material is applied and which is surfaced with comminuted or granular material.” *Id.* at 3, col. 1:1–7. The base mat in Venrick 1939 would have been understood to have a front surface

and a rear surface, a width defined by upper and lower edges, and a length defined by right and left edges. Ex. 1003 (Bryson Decl.), ¶ 341. The disclosed shingle would also be understood to be coated with asphalt on both sides and surfaced with granular material on both sides, which was “common practice” since the 1930s. Ex. 1013 (Venrick 1939), at 3, col. 2:47–51; Ex. 1008 (Miller 1937), at 4, col. 1:13-24; Ex. 1003 (Bryson Decl.), at ¶ 343.

Venrick 1939 (Ex. 1013) discloses a nailing zone that includes a number of “nail openings” 23 in Fig. 1 that extend longitudinally between the right and left edges of the shingle and between or intermediate the upper and lower edges of the shingle. Ex. 1003 (Bryson Decl.), at ¶ 344. The nailing zone is also shown by the “nail openings” 47 in Fig. 8. *Id.*

Venrick 1939 also discloses the “reinforcement second thickness layer” required by the last two limitations of claim 1. Fig. 1 of Venrick 1939 shows the reinforcing strip on the front of the shingle. Its overall location is nearly identical to the location of the reinforcement layer disclosed in the ’689 patent at, for example, Fig. 2, except that, in the ’689 patent, the strip is on the rear. Ex. 1003 (Bryson Decl.), at ¶¶ 348, 628.

Decl.), at ¶ 354, 628. Roofing tape has a thickness that is generally much thinner than the thickness of the asphalt and granule covered mat. *Id.* at ¶ 355, 628.

Notably, Fig. 9 of Venrick 1939 (Ex. 1013) shows the reinforcement strip 45 to have thickness on the same order as the reinforcement layer 29 shown in Fig. 2A of the patent. Ex. 1003 (Bryson Decl.), at ¶¶ 356, 628.

Venrick 1939 (Ex. 1013) also contemplates that the reinforcing strip is applied to an exterior surface of the shingle after the manufacture of the shingle using an adhesive such as cement. *Id.* at 4, col. 1:34–37 (“it is preferable to apply the strip 15 to the shingle *after* manufacture and thus said strip will be suitably cemented to the granule surfacing 13.”) (emphasis added). Indeed, attachment in a “post-applied” fashion is preferred. *Id.* Venrick 1939 therefore shows that the reinforcing strip is a “second” thickness layer that is adhered to the first thickness layer, *i.e.*, the layer made of the base mat and asphalt/granule coatings. Ex. 1003 (Bryson Decl.), at ¶ 358.

The last limitation of claim 1 requires that the reinforcement layer extend “at least partially lower than the fastening zone, toward the lower edge of the shingle or at least partially into the fastening zone toward the upper edge of the shingle.” As shown by the hashed lines, Figures 8 and 9 of Venrick 1939 (Ex. 1013) illustrate a reinforcement layer 45 that meets both of these alternative requirements because the shown reinforcement layer extends downward past the fastening zone

into the tab portion of the shingle (*i.e.*, towards the lower edge). *Id.* at ¶ 629. The reinforcement layer also extends upwards (*i.e.*, into the headlap area) at least partially into the fastening zone. *Id.*; Ex. 1013 (Venrick 1939), at Fig. 8 and 9.

Venrick 1939 therefore discloses all the elements of claim 1 except for the laminated shingle limitation of the preamble. *Id.* at ¶ 630. It was well known at the time of the invention that shingles could be laminated, *i.e.*, that two layers of basic shingle material could be adhered together to create a laminated shingle. *See, e.g.*, Ex. 1005 (Cash 1995), at Fig. 12; Ex. 1003 (Bryson Decl.), at ¶ 631. In fact, the '689 patent concedes that laminated shingles were prior art by citing references, including Malarkey 2000, that describe laminated shingles. Ex. 1036 ('689 patent) at col. 3:3-6.

Venrick 1939 notes that the invention is not limited to the specific shingle embodiments. Ex. 1013 (Venrick 1939), at 5, col. 1:57-64. The person of ordinary skill would readily understand that the elements, including a reinforcing layer, disclosed in Venrick 1939 would have applicability and the same beneficial results when used in all types of shingles, including laminated shingles. Ex. 1003 (Bryson Decl.), at ¶ 632.

The back or “posterior” layer of many laminated shingles would have been understood to include elements (a)-(d) of claim 1. *Id.* at ¶ 633. It would have been obvious to a person of ordinary skill to use the reinforcing layer in Venrick 1939

on a laminated shingle and attach it to the rear surface of the shingle in the manner described in Venrick 1939. *Id.* This would have been considered nothing more than an obvious design choice given the popularity of laminated shingles in the late 1990s and early 2000s. *Id.* Adhering the Venrick 1939 reinforcing layer to the back or posterior layer of a laminated shingle as a second thickness layer using an adhesive such as cement would have been routine and recognized to have the same benefits as that disclosed in Venrick 1939. *Id.* at ¶ 633. Thus, Venrick 1939 renders obvious claim 1.

2. Venrick 1939 Renders Obvious Claim 3

Claim 3 is dependent on claim 1 and largely tracks the limitations of claim 1 except that claim 3 does not require the reinforcement layer to extend “toward the lower edge of the shingle” or “toward the upper edge of the shingle.” Claim 3 is broader than claim 1 and is obvious for the same reasons as claim 1. Ex. 1003 (Bryson Decl.), at ¶ 637.

3. Venrick 1939 Renders Obvious Claim 4

Claim 4 is dependent on claim 1 and requires “fasteners applied through the fastening zone will pass through the reinforcement layer.” Venrick 1939 discloses a reinforcement layer that at least partially extends into the longitudinal nailing zone of the shingle. *Id.* at ¶ 638. Nails applied through the fastening zone would therefore necessarily pass through the reinforcement layer. *Id.* Venrick 1939

explicitly states that the “shingles are nailed preferably about one inch above the upper ends of the tab defining openings and where the raised median strip is [located].” *Id.*; Ex. 1013 (Venrick 1939), at 5, col. 1:51-56. Venrick 1939 renders obvious claim 4. Ex. 1003 (Bryson Decl.), at ¶ 638.

4. Venrick 1939 Renders Obvious Claim 9

Claim 9 is directed to a method of making a shingle that is substantially identical to the shingle claimed in claim 3, except that claim 9 states that the reinforcing layer is adhered “against the outer surface of the granular material.” Claim 9 also adds the limitation of claim 4. The outer surface of the granular material is nothing more than the outer surface of the “first thickness layer.” *See supra* at § III.A.2.; Ex. 1003 (Bryson Decl.), at ¶ 643. Therefore, Venrick 1939 renders obvious claim 9 for the same reasons it renders obvious claims 3 and 4.

5. Venrick 1939 Renders Obvious Claims 2, 8, and 13

Claims 2, 8, and 13 are dependent on claim 1, 3, and 9, respectively, and require that the reinforcement layer be “adhered to the rear surface of the posterior layer.” The “posterior layer” would be understood to be the lower layer of the laminated shingle. *Id.* at ¶ 635. As discussed above *supra* at § III.A.2., Venrick 1939 discloses a reinforcement layer that is adhered to the rear surface of the first thickness layer. It would have been obvious to adhere a reinforcing layer on the posterior or lower layer of a laminated shingle for the reasons discussed *supra* at

§ III.A.4. *Id.* at ¶ 635. Venrick 1939 renders obvious claims 2, 8, and 13.

6. Venrick 1939 Renders Obvious Claim 6

Claim 6 is dependent on claim 3 and requires that the reinforcement layer be “adhered to the lower surface of the shingle by an additional post-applied thin layer of asphaltic or non-asphaltic adhesive.” Based on the specification and claim 3, the “lower surface” of the shingle is the same thing as the rear surface of the posterior layer. Ex. 1036 (’689 patent), at col. 1:43-50; Ex. 1003 (Bryson Decl.), at ¶ 640. For the reasons explained above, Venrick 1939 renders obvious a laminated shingle with a reinforcing layer adhered to the back surface. *Id.* Venrick 1939 contemplates that the reinforcement layer may be applied to the shingle “after manufacture” (*i.e.*, “post-applied”) and that the reinforcement layer be applied with cement. *Id.*; Ex. 1013 (Venrick 1939), at 4, col. 1:34-37. Venrick 1939 renders obvious claim 6. Ex. 1003 (Bryson Decl.), at ¶ 640.

7. Venrick 1939 Renders Obvious Claims 7 and 12

Claims 7 and 12 are dependent on claims 3 and 9, respectively, and require that the reinforcement layer be “exposed and uncovered on the rear surface of the shingle.” This must mean that the reinforcement layer is exposed and uncovered prior to application of the shingle on the roof as this is the only construction that makes sense. Ex. 1003 (Bryson Decl.), at ¶ 641. As discussed *supra* at § III.A.2., Venrick 1939 discloses a reinforcement layer affixed to the rear exterior surface of

the shingle, which would necessarily be exposed and uncovered prior to application to the roof. *Id.*; Ex. 1013 (Venrick 1939), at Figs. 9, 10, 11. Venrick 1939 therefore renders obvious claim 7 and claim 12. Ex. 1003 (Bryson Decl.), at ¶¶ 641, 647.

8. Venrick 1939 Renders Obvious Claim 5

Venrick 1939 discloses a reinforcement layer that is made of roofing tape, which was understood to be made of, among other things, paper—one of the materials listed in claim 5. *See* Ex. 1013 (Venrick 1939), at 4, col. 2:75; *see also* Ex. 1040 (Finley 1925), at 2, col. 2:69-70, 2:90; Ex. 1003 (Bryson Decl.), at ¶ 639. Venrick 1939 renders obvious claim 5.

9. Venrick 1939 Renders Obvious Claim 10

Claim 10 covers nothing more than conventional features of a laminated shingle, *see supra* at § III.A.4. Laminated shingles exhibiting these features were known and common as evidenced by Fig. 2 of Bettoli 1975 (Ex. 1042), Fig. 10 of Cash 1995 (Ex. 1005) and ARMA Manual 1997 (Ex. 1009) at p. 12, Table 1. Not only are shingles with the described characteristics shown in Figs. 1, 2, 6, 8, and 10 of Venrick 1939, a shingle having the described features is also shown in Fig. 1 of the patent (Ex. 1036), which the patent describes as “prior art.” Ex. 1003 (Bryson Decl.), at ¶ 644. Venrick 1939 renders obvious claim 10.

10. Venrick 1939 Renders Obvious Claim 11

The only difference between claim 11 and claim 10 is that the tab portion of

claim 11 comprises a single tab rather than a plurality. *Id.* at ¶ 645. Single tab shingles were well known, and were considered to be one of the basic types of shingle shape. *See* Ex. 1005 (Cash 1995), at 1; Ex. 1003 (Bryson Decl.), at ¶ 646. Venrick 1939 notes that the examples disclosed in the reference are nonlimiting. Ex. 1013 (Venrick 1939), at 5, col. 1:57-64. The person of ordinary skill would readily understand that the reinforcing layer disclosed in Venrick 1939 would have applicability in all types of shingles, including the most common types of shingles such as laminated shingles, single tab shingles, and strip shingles. Ex. 1003 (Bryson Decl.), at ¶ 646. Venrick 1939 therefore renders obvious claim 11.

B. Claims 1–13 Are Unpatentable Over Venrick 1939 in View of Frankoski 1998

U.S. Patent No. 5,882,943 to Frankoski (Frankoski 1998) (Ex. 1010) issued on October 20, 1998 and is prior art under 35 U.S.C. § 102(b). The '689 patent refers to the laminated asphalt shingles described in Frankoski 1998 as the “basic” “prior art” shingle and incorporates by reference the disclosure of Frankoski 1998 to describe a “preferred” embodiment. Ex. 1036 ('689 patent), at col. 3:3-6.

1. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 1

Venrick 1939 discloses all the elements of claim 1 except the laminated shingle limitation. Frankoski 1998 discloses the “basic” “prior art” laminated asphalt shingle, which the '689 patent acknowledges meets all the limitations of

the preamble of claim 1, as well as elements (a)-(c). Ex. 1003 (Bryson Decl.), at ¶ 650; Ex. 1036 ('689 patent), at col. 3:3-6.

Venrick 1939 and Frankoski 1998 also disclose element (d) of claim 1, which is another component of the basic prior art asphalt shingle. Venrick 1939 shows that the nailing zone (*i.e.*, fastening zone) is between the right and left edges of the shingle and generally intermediate of the upper and lower edges. *See supra*, at § IV.A.1. The nailing zone in Frankoski 1998 is located in the same general location. Ex. 1003 (Bryson Decl.), at ¶ 656.

As discussed, laminated shingles, which have been known for decades, are made of a generally longitudinal second thickness layer adhered with glue to a first thickness layer, that extends at least partially into the nailing zone. *Id.* at ¶ 657. Unlike the “reinforcement second thickness layer” of claim 1, however, the second thickness layer of a laminated shingle is generally the same thickness as the first thickness layer. *Id.*

Frankoski 1998 also discloses, as part of the posterior or lower layer, a reinforcing scrim layer that is a component of the laminated asphalt shingle and preferably extends the entire length, from the right to left edges of the shingle. *See, e.g.*, Ex. 1010 (Frankoski 1998), at col. 4:66-5:26. Frankoski 1998 also teaches that the reinforcing scrim could be placed in any order relative to the other materials comprising the posterior layer. *Id.* at 3:39-45. Venrick 1939 discloses a

reinforcing layer that is adhered to the rear exterior surface of the shingle as a second thickness layer. *Supra*, at § IV.A.1; Ex. 1003 (Bryson Decl.), at ¶¶ 96, 650. This layer is externally visible and extends substantially between the right and left edges of the shingle. Ex. 1013 (Venrick 1939), at Figs. 9, 11, 13.

Given that the purpose of the scrim layer in Frankoski 1998 is reinforcement and recognizing that the materials disclosed in Venrick 1939 are old, the person of ordinary skill would have found it obvious to modify the asphalt shingle disclosed in Venrick 1939 by using the newer scrim material disclosed in Frankoski 1998 in place of the materials described in Venrick 1939. Ex. 1003 (Bryson Decl.), at ¶ 659. *See also generally* Ex. 1016 (Sieling 1999).

The person of ordinary skill would have been motivated to make such a change with the understanding that the scrim material disclosed in Frankoski 1998 is lighter and just as strong (if not stronger) than the materials disclosed in Venrick 1939. Ex. 1003 (Bryson Decl.), at ¶ 661. *See Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157 (Fed. Cir. 2007) (“adaption of an old idea” “in order to gain the commonly understood benefits of such adaption” is obvious). Frankoski 1998 expressly contemplates that the scrim layer can be positioned in any number of locations within the shingle. Ex. 1003 (Bryson Decl.), at ¶ 668; Ex. 1010 at col. 3:39-45.

The person of ordinary skill would have recognized that the scrim material

disclosed in Frankoski 1998 would be much thinner than the asphalt and granule coated mat material that would make up the shingle. *Id.* at ¶ 662. As in Venrick 1939 and other prior art such as Rohner 1989 and Sieling 1999, *see supra* at § III.A.2., the person of ordinary skill would recognize that the scrim material of Frankoski 1998 could be attached to the rear exterior surface of the shingle as a second thickness layer. *Id.* To accomplish this, the person of ordinary skill would also understand that the scrim material could be adhered using for example, a cement, such as that which is disclosed in Venrick 1939. *Id.*; Ex. 1013, at 4, col.1:32-37.

The last limitation of claim 1 requires that the reinforcement layer extends “at least partially lower than the fastening zone, toward the lower edge of the shingle or at least partially into the fastening zone toward the upper edge of the shingle.” As shown by the hashed lines, Figures 8 and 9 of Venrick 1939 (Ex. 1013) illustrate a reinforcement layer 45 that meets both of these alternative requirements because it extends downward past the fastening zone into the tab portion of the shingle and it extends at least partially into the fastening zone towards the upper edge of the shingle. Ex. 1013 (Venrick 1939), at Figs. 8 and 9. Venrick 1939 explicitly states that the “shingles are nailed preferably about one inch above the upper ends of the tab defining openings and where the raised median strip is” *Id.* at 5, col. 1:51-53. Frankoski 1998 likewise discloses a

scrim layer of varying sizes that can “coincide with at least a portion of the nail zone for the shingle and also extend into the shingle tab zone portions to provide added strength and increase the overall performance characteristics of the shingle.” Ex. 1010 (Frankoski 1998), at col. 5:29-42. In fact, such a configuration would be obvious if one of the purposes of the reinforcing layer is increasing nail pull strength, as described in both Venrick 1939 and Frankoski 1998. Ex. 1003 (Bryson Decl.), at ¶ 664.

Further, given the popularity of laminated shingles in late 1990s and early 2000s, it would have been obvious to a person of ordinary skill to use the reinforcing layer on a laminated shingle in the manner described in Venrick 1939 and Frankoski 1998. *Id.* at ¶¶ 665-666. This would have been considered nothing more than an obvious design choice given the popularity of laminated shingles in the late 1990s and early 2000s. Ex. 1003 (Bryson Decl.), at ¶ 667.

The back or “posterior” layer of many laminated shingles would have been understood to include elements (a)-(d) of claim 1. *Id.* at ¶ 668. Adhering the Venrick 1939 and Frankoski 1998 reinforcing layer to back or posterior layer of a laminated shingle as a second thickness layer using an adhesive such as cement would have been recognized to have the same benefits as that disclosed in Venrick 1939 and Frankoski 1998. *Id.* at ¶ 669; *see also supra* at § III.A.2. (discussion of Rohner 1989 and Sieling 1999). Venrick 1939 in view of Frankoski 1998

therefore renders obvious claim 1.

2. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 3

Claim 3 is nearly identical to claim 1 except that claim 3 does not require the reinforcement layer to extend “toward the lower edge of the shingle” or “toward the upper edge of the shingle.” *Id.* at ¶ 672. Claim 3 is broader than claim 1. *Id.* Claim 3 is obvious for the same reasons claim 1 is obvious. *Id.*

3. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 4

Claim 4 is dependent on claim 1 and specifies that “fasteners applied through the fastening zone will pass through the reinforcement layer.” As discussed, Venrick 1939 discloses a reinforcement layer that at least partially extends into the longitudinal nailing zone of the shingle. *See supra*, at § III.A.2.; Ex. 1003 (Bryson Decl.), at ¶ 673. Nails applied through the fastening zone would therefore necessarily pass through the reinforcement layer. *Id.* In fact, Venrick 1939 explicitly states that the “shingles are nailed ... where the raised median strip is [located].” Ex. 1013 (Venrick 1939), at 5, col. 1:51-56. Frankoski 1998 also states that the scrim will “coincide with at least a portion of the nail zone for the shingle and also extend into the shingle tab zone portions to provide added strength.” Ex. 1010 (Frankoski 1998), at col. 5:29-42. Indeed, the reinforcing benefits of nailing through multiple layers was well known. Ex. 1003 (Bryson

Decl.), at ¶ 675. Venrick 1939 in view of Frankoski 1998 renders obvious this claim for the same reasons these references render obvious claim 1.

4. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 9

Claim 9 is directed to a method of making a shingle that is substantially identical to the shingle claimed in claim 3, except that claim 9 further states that the reinforcing layer is adhered “against the outer surface of the granular material.” Claim 9 also adds the limitation of claim 4. *Id.* at ¶ 680. The outer surface of the granular material is nothing more than the outer surface of the “first thickness layer.” *See supra* at § III.D.2. Venrick 1939 in view of Frankoski 1998 renders obvious the method disclosed in claim 9 for the same reasons the references render obvious claims 3 and 4. *Id.*

5. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claims 2, 8 and 13

Claims 2, 8, and 13 are dependent on claims 1, 3, and 9, respectively, and require the reinforcement layer be “adhered to the rear surface of the posterior layer.” The “posterior layer” would be understood to be the lower layer of the laminated shingle. *Id.* at ¶ 670. As discussed above at § III.A.2 and § III.A.4., Venrick 1939 discloses a reinforcement layer that is adhered to the rear surface of the shingle and Frankoski 1998 discloses a scrim as part of the posterior layer of a laminated shingle. Furthermore, it would have been obvious to adhere a

reinforcing layer on the posterior or back layer of a laminated shingle because this is what Venrick 1939 discloses. *Id.* at ¶ 670; *see also supra* at § III.A.2.

(discussion of Rohner 1989 and Sieling 1999). Thus, Venrick 1939 in view of Frankoski 1998 renders obvious claims 2, 8, and 13. *Id.* at ¶¶ 670, 679, 686.

6. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 6

Claim 6 is dependent on claim 3 and requires that the reinforcement layer be “adhered to the lower surface of the shingle by an additional post-applied thin layer of asphaltic or non-asphaltic adhesive.” The “lower surface” of the shingle is the same thing as the rear surface. *Id.* at ¶ 677. Furthermore, Venrick 1939 contemplates that the reinforcement layer be applied to the shingle “after manufacture” and that the reinforcement layer be applied with cement. *Id.*; Ex. 1013 (Venrick 1939), at 4, col. 1:34-37. For the reasons explained above with respect to claim 1, the person of ordinary skill would have found it obvious to use the scrim material of Frankoski 1998 in place of the reinforcement material described in Venrick 1939 and would have found it likewise obvious to adhere the scrim material onto the rear exterior surface of the shingle using an adhesive such as cement. Ex. 1003 (Bryson Decl.), at ¶ 677. Venrick 1939 in view of Frankoski 1998 renders obvious claim 6. *Id.*

7. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 7 and Claim 12

Claim 7 and claim 12 are dependent on claims 3 and 9, respectively, and require the reinforcement layer to be “exposed and uncovered on the rear surface of the shingle.” As discussed, Venrick 1939 discloses a reinforcement layer that is affixed to the rear exterior surface of the shingle, which would necessarily be exposed and uncovered. *See* Ex. 1003 (Bryson Decl.), at ¶¶ 678, 685; *supra* at § III.A.2. Venrick 1939 in view of Frankoski 1998 therefore renders obvious claim 7 and claim 12. *Id.*

8. Venrick 1939 in View of Frankoski 1998 Renders Obvious Claim 5

Venrick 1939 discloses a reinforcement layer that is made of roofing tape. Ex. 1013 (Venrick 1939), at 4, col. 2:73-5, col. 1:1. Roofing tape was understood to be made of, among other things, paper. Ex. 1003 (Bryson Decl.), at ¶ 676. Frankoski 1998 discloses a reinforcement layer that is made of scrim. *Id.* Paper and scrim are two materials disclosed in claim 5. *Id.* Venrick 1939 in view of Frankoski 1998 therefore renders obvious claim 5. *Id.*

9. Venrick 1939 In View Of Frankoski 1998 Renders Obvious Claim 10

This claim covers nothing more than conventional features of a laminated shingle, as discussed above at § III.A.4. and § IV.A.9. The figures in Venrick 1939 and Frankoski 1998 each disclose shingles having the described

configurations. *Id.* at ¶ 681. Venrick 1939 in view of Frankoski 1998 therefore renders obvious claim 10.

10. Venrick 1939 In View Of Frankoski 1998 Renders Obvious Claim 11

The only difference between claim 11 and claim 10 is that the tab portion of claim 11 comprises a single tab rather than a plurality. *Id.* at ¶ 682. Single tab shingles were well known, and were considered to be one of the basic types of shingle shape. *Id.*; Ex. 1005 (Cash 1995), at 1. The person of ordinary skill would readily understand that the reinforcing layer disclosed in Venrick 1939 and Frankoski 1998 would apply and have the same beneficial results when used in all types of shingles, including single tab shingles, and would have been motivated to utilize the reinforcing layer disclosed in Venrick 1939 and Frankoski 1998 with single tab shingles in order to achieve the benefits of the reinforcing layer disclosed in these references. *Id.* at ¶ 684. Venrick 1939 in view of Frankoski 1998 therefore renders obvious claim 11.

C. Claims 1–13 Are Unpatentable Over Venrick 1939 in View of Kiik 2001

U.S. Patent Publication No. 2001/0055680 to Kiik (Kiik 2001) (Ex. 1018) published on December 27, 2001. Kiik 2001 is prior art under 35 U.S.C § 102(a).

1. Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 1

As discussed above, Venrick 1939 discloses the basic asphalt shingle. Ex.

1003 (Bryson Decl.), at ¶ 688. Kiik 2001 also discloses the basic asphalt shingle.

Id. Venrick 1939 and Kiik 2001 each disclose elements (a)-(d) of claim 1. *Id.*

Kiik 2001 (Ex. 1018) discloses a “backing material” made of, among other things, polyester fibers, nylon fibers, rayon fibers, acrylic fibers, polyolefin fibers, polypropylene fibers and recycled plastics fibers. Ex. 1018 (Kiik 2001), at [0004]; Ex. 1003 (Bryson Decl.), at ¶ 689. The backing material in Kiik 2001 is “adhered to the face of the back of the shingle.” Ex. 1018 (Kiik 2001), at [0007]. The purpose of the backing material in Kiik 2001 is reinforcement, *i.e.*, to provide the shingle with “better tear strength,” “pass impact tests despite their light product weight,” and provide “increased nail holding ability.” *Id.* at [0009]; Ex. 1003 (Bryson Decl.), at ¶ 690.

Venrick 1939, like other prior art such as Rohner 1989 and Sieling 1999 (discussed above), discloses a reinforcing layer that is adhered to the rear exterior surface of the shingle as a second thickness layer. *See supra* at § III.A.2.; Ex. 1003 (Bryson Decl.), at ¶ 692. Given that the purpose of the backing material in Kiik 2001 is reinforcement, the person of ordinary skill would have found it obvious to modify the asphalt shingle disclosed in Venrick 1939 by using the backing material disclosed in Kiik 2001. *Id.*

Recognizing that the materials disclosed in Venrick 1939 are old, and that newer more state of the art materials have since been developed, the person of

ordinary skill would have been motivated to make such a change with the understanding that the backing material disclosed in Kiik 2001 is lighter and just as strong (if not stronger) than the materials disclosed in Venrick 1939. *Id.* at ¶ 693. This would have been considered nothing more than an obvious design choice.

The person of ordinary skill would also recognize that the backing material disclosed in Kiik 2001 is much thinner than the asphalt and granule coated mat material that would make up the shingle. *Id.* at ¶ 649. In fact, the exemplified backing material in Kiik 2001 was made of polyester fiber and had a thickness on the order of 1/1000th of an inch. Ex. 1018 (Kiik 2001), at [Table 1].

As in Venrick 1939 the other prior art cited *supra* at § III.A.2., the person of ordinary skill would recognize that the backing material of Kiik 2001 could be attached to the rear exterior surface of a shingle as a second thickness layer. Ex. 1003 (Bryson Decl.), at ¶ 695. To accomplish this, the person of ordinary skill would understand that the backing material of Kiik 2001 could be adhered to the rear surface using, for example, a cement, which is disclosed in Venrick 1939. *Id.*; Ex. 1013, at 4, col.1:32-37. The person of ordinary skill would have considered this to be routine and would have reasonably expected the thin backing material of Kiik 2001 to function as reinforcing material given the data in the Kiik 2001 reference showing that the thin material improved the strength of the asphalt shingle and other prior art such as Venrick 1939, Olszyk 1974, Johnson 1996,

Frankoski 1999, and Miller 1999 (each discussed above), which showed that thin material could be used as reinforcement material for asphalt shingles. Ex. 1003 (Bryson Decl.), at ¶ 696.

The reinforcing layer in Venrick 1939, adhered to the rear surface, is externally visible and extends substantially between the right and left edges of the shingle. *Id.* at ¶ 692. Given that the purpose of the backing material in Kiik 2001 is reinforcement, it would have been obvious to modify the reinforcing layer disclosed in Venrick 1939 by using the backing material disclosed in Kiik 2001 in place of the materials described in Venrick 1939. *Id.*

Claim 1 also requires that the “reinforcement second thickness layer” extend “at least partially lower than the fastening zone, toward the lower edge of the shingle or at least partially into the fastening zone toward the upper edge of the shingle.” As shown by the hashed lines, Figures 8 and 9 of Venrick 1939 (Ex. 1013) illustrate a reinforcement layer 45 that meets both of these alternative requirements because it extends downward past the fastening zone into the tab portion of the shingle. *Id.* at ¶ 697. The reinforcing layer also extends at least partially into the fastening zone towards the upper edge of the shingle. *See supra* at § IV.A.1. Similarly, the backing layer of Kiik 2001 necessarily overlaps with the fastening zone and “may provide partial or full coverage,” thereby meeting both of these alternative requirements. Ex. 1018 (Kiik 2001), at [0010].

It was well known at the time of the invention that shingles could be laminated, *i.e.*, that two layers of basic shingle material could be adhered together to create a laminated shingle. *Id.* at ¶ 698; *supra* at § III.A.4. In fact, the '689 patent concedes that laminated shingles were prior art by citing references, including Malarkey 2000, that describe laminated shingles. *Id.*

Venrick 1939 notes that the disclosed invention is not limited to a particular embodiment. Ex. 1013 (Venrick 1939), at 5, col. 1:57-64. Kiik 2001 also states that the disclosed backing material “may be applied to various types of roofing products.” Ex. 1018 (Kiik 2001), at [0016]. In fact, the examples in Kiik 2001 use the backing material on a “standard laminated shingle product sold by Elk.” *Id.* at [0014]. The person of ordinary skill would therefore readily understand that the elements, including a reinforcing layer, disclosed in Venrick 1939 and Kiik 2001 apply and have the same beneficial results when used in all types of shingles, including laminated shingles. Ex. 1003 (Bryson Decl.), at ¶ 700.

The back or “posterior” layer of many laminated shingles would have been understood to include elements (a)-(d) of claim 1. *Id.* at ¶ 701. It would have been obvious to a person of ordinary skill to use the reinforcing layer in Kiik 2001 on a laminated shingle in the manner described in Venrick 1939. *Id.* Adhering the Kiik 2001 reinforcing layer to back or posterior layer of a laminated shingle as a second thickness layer using an adhesive such as cement would have been

recognized to have the same benefits as that disclosed in Venrick 1939 and Kiik 2001. *Id.*; *see also supra* at § III.A.2. (discussion of Rohner 1989 and Sieling 1999). Venrick 1939 in view of Kiik 2001 renders obvious claim 1.

2. Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 3

Claim 3 is nearly identical to claim 1 except that claim 3 does not require the reinforcement layer to extend “toward the lower edge of the shingle” or “toward the upper edge of the shingle.” *Id.* at ¶ 704. Claim 3 is therefore broader than claim 1. *Id.* Venrick 1939 renders obvious claim 3.

3. Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 4

Claim 4 is dependent on claim 1 and specifies that “fasteners applied through the fastening zone will pass through the reinforcement layer.” Venrick 1939 discloses a reinforcement layer that at least partially extends into the longitudinal nailing zone of the shingle. *Id.* at ¶ 705. Nails applied through the fastening zone would therefore necessarily pass through the reinforcement layer. *Id.* Venrick 1939 explicitly states that the “shingles are nailed ... where the raised median strip is [located].” Ex. 1013 (Venrick 1939), at 5, col. 1:51–56. The nail pull data in Kiik 2001, discussed above, confirms that nails applied to the shingle passed through the “backing material” in Kiik 2001. Ex. 1003 (Bryson Decl.), at ¶ 706. Venrick 1939 in view of Kiik 2001 renders obvious this claim.

4. Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 9

Claim 9 is directed to a method of making a shingle that is substantially identical to the shingle claimed in claim 3, except that claim 9 states that the reinforcing layer is adhered “against the outer surface of the granular material.” *Id.* at ¶ 712. Claim 9 also adds the limitation of claim 4. *Id.* The outer surface of the granular material is nothing more than the outer surface of the “first thickness layer.” *See supra* at § III.D.2. Venrick 1939 in view of Kiik 2001 renders obvious claim 9 for the same reasons the references render obvious claims 3 and 4. *Id.*

5. Venrick 1939 in View of Kiik 2001 Renders Obvious Claims 2, 8, and 13

Claims 2, 8, and 13 are dependent on claims 1, 3, and 9, respectively, and require the reinforcement layer to be “adhered to the rear surface of the posterior layer.” The “posterior layer” is the lower layer of the laminated shingle. *Id.* at ¶¶ 702, 711. Venrick 1939 discloses a reinforcement layer that is adhered to the rear surface. *Id.* at ¶ 702. Kiik 2001 also discloses a reinforcement layer that is affixed to the rear surface. *Supra* at § IV.C.1. Venrick 1939 in view of Kiik 2001 renders obvious claims 2, 8, and 13. *Id.* at ¶¶ 702, 711, 718.

6. Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 6

Claim 6 is dependent on claim 3 and requires that the reinforcement layer be “adhered to the lower surface of the shingle by an additional post-applied thin layer

of asphaltic or non-asphaltic adhesive.” The “lower surface” of the shingle is the the rear surface. *Id.* at ¶ 709. Venrick 1939 contemplates that the reinforcement layer be applied to the shingle “after manufacture” and that the reinforcement layer be applied with cement. *Id.*; Ex. 1013 (Venrick 1939), at 4, col. 1:34–37. The person of ordinary skill would have found it obvious to use the backing material of Kiik 2001 in place of the reinforcement material described in Venrick 1939 and would have found it likewise obvious to adhere the material onto the rear exterior surface of a laminated using an adhesive such as cement as described *supra* at § IV.C.1. Venrick 1939 in view of Kiik 2001 therefore renders obvious claim 6. Ex. 1003 (Bryson Decl.), at ¶ 709.

7. Venrick 1939 in View of Kiik 2001 Renders Obvious Claims 7 and 12

Claim 7 and claim 12 are dependent on claims 3 and 9, respectively, and require that the reinforcement layer be “exposed and uncovered on the rear surface of the shingle.” Venrick 1939 and Kiik 2001 both disclose a reinforcement layer that is affixed to the rear exterior surface, which would necessarily be exposed and uncovered. *Supra* at § IV.C.1. Venrick 1939 in view of Kiik 2001 renders obvious claim 7 and claim 12. *Id.* at ¶¶ 710, 717.

8. Venrick 1939 in View of Kiik 2001 Renders Obvious Claim 5

Venrick 1939 discloses a reinforcement layer that is made of roofing tape

which was made of, among other things, paper. *Id.* at ¶ 708; Ex. 1013 (Venrick 1939), at 4, col. 2:73-5, col. 1:1. Kiik discloses exemplary materials, such as a woven polyester mat, which a person of ordinary skill would understand to be a thin fabric. *Id.* at p. 2 [0006]; Ex. 1003 (Bryson Decl.), at ¶ 708. Venrick 1939 in view of Kiik 2001 renders obvious claim 5.

9. Venrick 1939 In View of Kiik 2001 Renders Obvious Claim 10

This claim covers nothing more than conventional features of a laminated shingle, as discussed above at § III.A.4. and § IV.A.9. *Id.* at ¶ 713. Venrick 1939 in view of Kiik 2001 renders obvious claim 10.

10. Venrick 1939 In View of Kiik 2001 Renders Obvious Claim 11

The only difference between claim 11 and claim 10 is that the tab portion of claim 11 comprises a single tab rather than a plurality. *Id.* at ¶ 714. As discussed *supra* at § IV.A.10., single tab shingles were well known, and were considered to be one of the basic types of shingle shape. The person of ordinary skill would readily understand that the reinforcing layer disclosed in Venrick 1999 and Kiik 2001 would have applicability and the same beneficial results when used in all types of shingles, including single tab laminated shingles and be motivated to apply the reinforcing layer in Venrick 1939 and Kiik 2001 to such shingles. Ex. 1003 (Bryson Decl.), at ¶ 716. Venrick 1939 in view of Kiik 2001 renders obvious

claim 11.

D. Secondary Considerations Do Not Weigh In Favor of Nonobviousness

To the extent that the Patent Owner argues that the commercial success of Petitioner's products bear on the question of the obviousness of the claims of the '689 patent, Petitioner responds as follows: Petitioner's products do not have a nexus to the claims of the '689 patent because the products fall outside the scope of the claims. Ex. 1003 (Bryson Decl.), at ¶ 948. Among other reasons, the claims require that the "second reinforcement thickness layer" be attached to the "first thickness layer," *i.e.*, the layer comprising the base mat coated with asphalt and granules. But any reinforcement layer on Petitioner's products is attached directly to the asphalt as opposed to the "first thickness layer." *Id.* at ¶ 949.

Even if Petitioner's products were covered by the claims of the '689 patent (and they are not), their commercial success is not attributable to the subject matter of the claims. A variety of different factors drive the decision to purchase a particular shingle. *Id.* at ¶ 950. These factors include cost, color, shape, ease of installation, warranty, and dollars spent marketing the product. To the extent consumers purchase Petitioner's products, those sales would be driven by all of these factors. *Id.*

In fact, the primary reason why consumers purchase Petitioner's product is because it is an asphalt shingle. *Id.* at ¶ 951. The basic asphalt shingle, however,

has been known for decades. Even if it is alleged that Petitioner’s products include a “reinforcement second thickness layer” that meets all the limitations of the claims, this feature was also known for decades. *Id.* Thus, for this reason, and the additional reasons explained above, any commercial success enjoyed by Petitioner’s products are not relevant to the nonobviousness of the claims of the ’689 patent. *Gnosis S.P.A. v. South Alabama Med. Sci. Found.*, IPR2013-00116, Paper No. 68, at 32-42 (PTAB June 20, 2014) (“[A] showing of nexus ... involves establishing that novel elements in the claim, not prior-art elements, account for the objective evidence put forward to show nonobviousness.”). Ultimately, the Patent Owner bears the burden of proving secondary considerations. If Patent Owner sets forth evidence, Petitioner reserves the right to respond with additional evidence and argument.

V. CONCLUSION

For the foregoing reasons, the Petitioner respectfully requests that Trial be instituted and that claims 1–13 of the ’689 patent be canceled.

Dated: August 29, 2014

Respectfully Submitted,

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**PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 7,781,046**

**Attachment A:
Proof of Service of the Petition**

CERTIFICATE OF SERVICE

I hereby certify that on this 29th day of August 2014, a copy of this
PETITION FOR INTER PARTIES REVIEW has been served in its entirety by
Federal Express on the following counsel of record for patent owner:

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PETITION FOR INTER PARTES REVIEW

OF U.S. PATENT NO. 7,781,046

Attachment B:

List of Evidence and Exhibits Relied Upon in Petition

Appendix B

Exhibit #	Reference Name
1001	U.S. Patent No. 7,781,046
1002	U.S. Patent No. 7,781,046 File Wrapper (U.S. Application No. 12/422,506) (filed April 13, 2009)
1003	Declaration of Michael L. Bryson
1004	Curriculum Vitae of Michael L. Bryson
1005	Cash, <i>Asphalt Roofing Shingles</i> , Proc. 11 th Conf. Roofing Tech. 1-9 (Sept. 21–22, 1995)
1006	U.S. Patent No. 3,998,685
1007	Noone et al., <i>Asphalt-Shingles – A Century of Success and Improvement</i> , Proc. 11 th Conf. Roofing Tech. 23-33 (Apr. 22–23, 1993)
1008	U.S. Patent No. 2,099,131
1009	<i>ARMA Residential Roofing Manual</i> (1997)
1010	U.S. Patent No. 5,822,943
1011	U.S. Patent No. 6,145,265
1012	U.S. Patent No. 2,197,972
1013	U.S. Patent No. 2,161,440
1014	U.S. Patent No. 3,813,280
1015	U.S. Patent No. 4,875,321
1016	U.S. Patent No. 5,860,263
1017	U.S. Patent No. 6,228,785
1018	U.S. Patent Publication No. 2001/0055680
1019	U.S. Patent No. 6,341,462

Exhibit #	Reference Name
1020	U.S. Patent No. 5,577,361
1021	U.S. Patent No. 6,397,556
1022	U.S. Patent No. 5,571,596
1023	U.S. Application No. 11/421,893 (filed on June 2, 2006)
1024	U.S. Application No. 10/871,911 (filed on June 18, 2004)
1025	U.S. Application No. 10/288,747 (filed on November 6, 2002)
1026	U.S. Patent No. 6,758,019
1027	U.S. Patent No. 7,118,794
1028	U.S. Patent No. 7,537,820
1029	U.S. Application No. 12,857,868 (filed on August 17, 2010)
1030	U.S. Application No. 13/291,234 (filed on November 8, 2011)
1031	U.S. Application No. 13/462,159 (filed on May 2, 2012)
1032	U.S. Application No. 13/788,029 (filed on March 7, 2013)
1033	U.S. Application No. 13/855,820 (filed on April 3, 2013)
1034	U.S. Patent No. 8,173,243
1035	U.S. Patent No. 8,383,228
1036	U.S. Patent No. 8,409,689
1037	U.S. Patent No. 8,592,025
1038	U.S. Patent No. 8,615,968
1039	The American Heritage Dictionary of the English Language, 4th Ed. (2000), pp. 21, 583, 1472

Exhibit #	Reference Name
1040	U.S. Patent No. 1,524,090
1041	U.S. Patent No. 5,052,162
1042	U.S. Patent No. 3,921,358
1043	Consumer Reports Rating the Supermarkets – Shingles and siding , pp. 26-30 (Aug. 1997)
1044	ASTM, Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules (D 3462-02) (published March 2002), pp. 161-165
1045	Complaint, <i>CertainTeed Corp. v. Owens Corning</i> , Civ. A. No. 1:14-cv-00510-SLR (D. Del.)