UNITED STATES OF AMERICA
OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION

SECRETARY OF LABOR, Complainant, v. SIGNET CONSTRUCTION, LLC, Respondent.	DOCKET NO. 23-0339

Appearances:

Jeffrey Leake, Esq. & Alicia Truman, Esq., U.S. Department of Labor, Office of the Solicitor
For Complainant

Travis Vance, Esq., Patrick Dennison, Esq., & Micah Dickie, Esq., Fisher & Phillips, LLP
For Respondent

Before: Administrative Law Judge Brian A. Duncan

DECISION AND ORDER

BACKGROUND

In September of 2022, Respondent, Signet Construction, LLC ("Signet") was in the process of constructing a large dairy barn for a company called Blooming Valley Dairy ("Blooming Valley Barn" or "Barn") in rural South Dakota. (Tr. 13, 61, 66-68, 72, 251; Exs. C-12; C-23, at 00:00 to 01:30; C-25, at 6). Fully constructed, the Barn would cover approximately 60,000 square feet divided over three main areas: a "holding" area where the dairy cows would enter the Barn and be "staged" or lined up for milking; a "central parlor" where approximately 130 cows would be milked around a milking carousel; and, finally an office for the Blooming Valley employees working onsite. (Tr. 68, 72-73, 78, 105, 108, 417-20, 430, 479, 664, 737, 743-44, 746, 750-51, 756; Exs. C-7, at 1; C-12; C-14; C-23, at 04:00 to 04:40; C-25, at 5 to 9; R-28).

As part of the Barn's design, Signet had to set and install dozens of 138-foot, 5,000-pound wooden trusses on top of the Barn's walls to form the foundation for the Barn's roof and ceiling. (Tr. 109, 155, 321, 466, 728-29; Exs. C-9, at 7; C-25, at 6, 13 & 34; R-28, at 13 to 16). Each truss had to be attached to a "spreader bar," hoisted by a crane, and placed across the span of two walls before Signet could anchor the truss in place. (Tr. 83, 89, 119, 269, 365, 452-53, 485-87, 609-10, 729-30; Exs. C-9; C-14, at 8 & 12; C-15; C-25, at 34 & 35; R-1; R-23, at 16). As trusses were set and anchored within the structure of the Barn, Signet's employees could install various types of "bracing," for example wooden boards connecting two or more trusses, to keep the trusses in place and maintain the overall structure of the Barn. (Tr. 114, 218, 324-25, 338, 463, 477, 479, 504, 592-94, 662-63, 724; Exs. C-5, at 93 (defining "bracing"); C-25, at 11, 12, 19 & 20; R-23, at 5; *see, e.g.*, C-5, at 17, 20, 22, 25, 28, 29 & 39; C-12; C-25, at 27, 29, 30, 32 & 33). On top of the trusses, Signet installed metal sheathing to form the Barn's roof. (Tr. 74, 495, 738-39; Exs. C-12, at 1, 2, 4, 5 & 7; C-23, at 00:18 to 01:03, 02:18 to 02:22, 04:25 to 04:45; C-25, at 10).

By September 12, 2022, the date of the accident giving rise to this case, the trusses for the western, holding area of the Barn had been fully installed, braced, and sheathed, and Signet's workers had begun installing the trusses for the middle, parlor area of the Barn. (Tr. 72-73, 256, 430, 463, 479, 716, 726, 729, 735-37; Exs. C-12, at 1, 2, 4, 5 & 7; C-23, at 03:25 to 04:05; C-25, at 8 to 10; R-23, at 3). In the early evening of September 12, after the Signet workers had spent the day installing additional trusses, nearly all of the trusses in the parlor area suddenly collapsed. (Tr. 67, 338, 483-84, 730-31; Exs. C-12; C-14; C-23; C-25, at 4, 5, 10 to 12; C-31, at 1, 4 to 6; R-13). As a result of this collapse, nine Signet employees who had been working in the vicinity were injured, some severely. (Tr. 67, 70, 108-10; Exs. C-25, at 4 & 10; R-13).

The following day, the United States Occupational Safety and Health Administration ("OSHA") sent a Compliance Safety and Health Officer ("CSHO") and one of its Assistant Area Directors ("AAD") to investigate the Barn's collapse. (Tr. 61-62, 94-95). The CSHO and AAD met with representatives from three companies, including Blooming Valley, the project management firm for the Barn: United Development ("United"), and Signet. (Tr. 63, 67, 69-70, 109-10). Because of the Barn's massive size and the instability of its structure following the collapse, the OSHA representatives did not conduct a physical inspection of the collapsed portion of the Barn. (Tr. 14, 94-96). However, they captured drone footage of the Barn and the parlor area. (Tr. 14, 94-96; Exs. C-12; C-23). Complainant's expert witness, Dr. Alan Lu, conducted a second inspection of the worksite on September 16, 2022. (Tr. 130-31, 252, 291-92; C-25, at 4). Following its investigation of the Barn collapse, OSHA issued a two-item serious *Citation and Notification of Penalty* ("Citation") to Respondent.

Item 1 of the Citation alleged that Signet had committed four instances of a violation of the Section 5(a)(1) of the Occupational Safety and Health Act of 1970, 29 U.S.C. § 651 *et seq*. ("the Act"), a section commonly referred to as the General Duty Clause, by: (a) failing to install the wood trusses with appropriate temporary or permanent bracing; (b) repairing trusses onsite without consulting the truss design engineers; (c) improperly storing trusses on an uneven surface and allowing them to warp; and (d) incorrectly locating a spreader bar when hoisting trusses.

Item 2 of the Citation alleged that Respondent had violated 29 C.F.R. § 1926.21(b)(2) by failing to train its employees in the safe erection of wood trusses to include the development of a temporary bracing plan and on the interpretation of engineer notes on engineer drawings.

The Citation proposed a penalty of $15,625 for Item 1 and a penalty of $13,394 for Item 2, for a total proposed penalty of $29,019. Respondent timely contested the Citation, which brought

the matter before the United States Occupational Safety and Health Review Commission ("Commission") for adjudication pursuant to Section 10(c) of the Act.

A trial was conducted in Sioux Falls, South Dakota from July 16-18, 2024. Eight witnesses testified at trial: (1) CSHO David Bertrand; (2) David Mensing, the vice president for engineering at the firm that designed the Barn; (3) Dr. Alan Lu, Complainant's expert witness on certain construction practices;[1] (4) Michael Zuhlke, executive vice president of Signet; (5) Joseph Shoenfeld, the owner and president of Signet; (6) Matthew Gardiner, Signet's expert witness on trusses and causes of truss collapse;[2] (7) Duane Boice, Signet's expert witness on wood truss installation and collapse investigations;[3] and (8) Domingo Cardenas, a crew leader for Signet. Both parties timely submitted post-trial briefs for the Court's consideration.

In accordance with Commission Rule 90(a)(1), 29 C.F.R. § 2200.90(a)(1), the Court now issues this *Decision and Order* setting forth its findings of fact and conclusions of law. Having carefully reviewed the record and considered the parties' arguments, the Court AFFIRMS Instance (a) of Item 1 of the Citation and ASSESSES a penalty of $15,625. All other instances of Item 1 are VACATED. Item 2 of the Citation is also VACATED.

JURISDICTION & STIPULATIONS

The parties stipulated that the Commission has jurisdiction over this proceeding pursuant to Section 10(c) of the Act. (Tr. 12-13). The parties also stipulated that, at all times relevant to this proceeding, Respondent was an employer engaged in a business affecting interstate commerce

[1] More specifically, the Court recognized Dr. Lu "for his expertise in construction practices that lead to structural collapse and construction practices that can prevent structural collapse." (Tr. 313; Ex. C-24).

[2] More specifically, the Court accepted Mr. Gardiner as "an expert in forensic engineering, regarding structural collapses, possible causes of truss collapses … and acceptable rigging practices [for trusses]" as well as "construction of trusses." (Tr. 587; R-35). The Court declined to recognize Mr. Gardiner as an expert in wood defects or the chemical composition of wood. (Tr. 586-87; Exs. C-36 & 37).

[3] (Tr. 667; Ex. C-33).

within the meaning of Sections 3(3) and 3(5) of the Act, 29 U.S.C. § 652(5). (Tr. 13); *see also Slingluff v. Occupational Safety & Health Review Comm'n*, 425 F.3d 861, 866-67 (10th Cir. 2005) (holding that, in the aggregate, construction activities affect interstate commerce). The Court therefore finds it has jurisdiction over this matter.

Prior to trial, in addition to stipulating to 1) the Commission's jurisdiction and 2) Respondent's status as a covered employer, the parties also stipulated to the following five additional points of law and fact:

3) The Citation and Notification of Penalty underlying this proceeding was issued on February 24, 2023.

4) The Citation relates to the September 12, 2022 collapse of a commercial dairy barn, the Blooming Valley Dairy barn, located at 45240 146th Street, Summit, South Dakota.

5) Respondent timely filed its Notice of Contest on March 1, 2023.

6) United Development, LLC hired Signet to construct the Blooming Valley Dairy barn, including the installation of roof trusses.

7) Energy Panels Structures developed the structural design for the Blooming Valley Dairy barn. EPS manufactured roof trusses based on the final prints approved by Alpine, an ITW company.

8) The parties stipulate to the authenticity of videos, photos derived from videos, and photos, of the Blooming Valley Dairy barn that were taken from a drone that was piloted by OSHA Assistant Area Director Jason Mundt during the inspection, and the testimony of AAD Mundt is not necessary to establish a foundation for their admission.

(Tr. 13-14).

Additionally, during the trial, the parties stipulated that: 9) "if the other required elements of the [violations] are proven[,] that the conditions could have resulted in serious injuries"[4] (Tr.

[4] As to the alleged violations of the General Duty Clause, the Court understands this stipulation to mean that the Secretary has established the element that "the hazard was causing or likely to cause death or serious physical harm." *Henkels & McCoy, Inc.*, No. 18-1864, 2022 WL 3012701, at *2 (OSHRC, July 21, 2022), *appeal docketed*, No. 22-

129-30); and 10) that if any of the violations are proven, the penalty for the violations was "calculated appropriately pursuant to OSHA's procedures concerning penalty calculation." (Tr. 175).

FACTUAL BACKGROUND[5]

Signet Construction

Signet is a construction company which, at the time relevant here, employed approximately 250 people and operated in approximately ten states. (Tr. 501). Throughout its operation, Signet has been contracted for a wide variety of construction projects including framing projects for assisted living homes, hotels, dorms, and military housing. (Tr. 523). Signet has also been contracted to construct many types of buildings involved in animal husbandry such as hog barns, poultry facilities, cattle and dairy barns, and at least one goat barn. (Tr. 523).

Trusses & Truss Bracing

Many of Signet's construction projects involve the installation of wooden trusses, including trusses as narrow as 30 or 40 feet but also many projects involving long-span trusses, i.e., trusses over 60 feet in length.[6] (Tr. 523-24). The Court will therefore describe the general properties of wooden trusses and the concept of "bracing" trusses as they are installed in a structure.

13133 (11th Cir. Sept. 19, 2022). As to the alleged violation of 29 C.F.R. § 1926.21(b)(2), the Court understands this stipulation to establish that the violation was properly characterized as serious. *See Oberdorfer Indus., Inc.*, 20 BNA OSHC 1321, 1330 (No. 97-0469, 2003) (consol.) ("Under Section 17(k) of the Act, a violation is serious if there is 'a substantial probability that death or serious physical harm could result' from the violation."). Respondent disputes neither of these understandings in its post-trial brief.

[5] After a careful review of the record, the Court bases its factual findings on the evidence it has found credible, probative, and reliable. To the extent there is evidence in the record contrary to an explicit factual finding, the Court does not credit that evidence.

[6] Mr. Schoenfeld, Respondent's owner and president, recalled one of Signet's projects in Nebraska that involved the installation of 48,000 long-span trusses over two and half years. (Tr. 524).

Trusses

As a general matter, a wooden truss, including the ones designed for this Barn, consists of three main components: a "top chord," a "bottom chord," and diagonal "web members" connected to the top and bottom chords by metal connector plates. (Tr. 86-87, 89-90, 93, 319, 331, 457; Exs. C-5, at 98;[7] C-8; C-12, at 3 & 7; C-17; C-23, at 09:05 to 10:05; C-25, at 13, 14, 43, 59 & 60; R-23, at 4; R-28, at 1 & 14; *see also, e.g.*, Ex. C-2, at 4; C-4, at i,[8] 6 & 7; C-3, at 33 & 36; C-5, at 7; R-26, at 11). Trusses are installed as the foundation for both the roof and ceiling of a given structure. The top chord, i.e., the upper edge of the truss, which is typically vaulted to some degree, eventually creates the base for the structure's roof. (Tr. 80-81, 319, 463; Exs. C-3, at 33 & 36; C-4, at 7; C-5, at 97; C-25, at 8 & 13; R-18, at 14; *see also, e.g.*, Ex. C-5, at 32, 44, 35, 40, 64 & 82 (various diagrams and photographs of installed trusses)). The bottom chord, i.e., the lower edge of the truss, which can be straight or inclined, eventually forms the base for the structure's ceiling. (Tr. 319; Exs. C-4, at 6; C-5, at 98; C-25, at 8, 13 & 19; R-18, at 14; *see also, e.g.*, Ex. C-5, at 35, 39, 49, 64 & 86 (various diagrams and photographs of installed trusses)). Meanwhile, the web members connect the top and bottom chords of the truss to "create the internal triangular framework" which "provides inherent stability and strength." (Ex. C-25, at 13 n.6; *see also* Tr. 319-21; Exs. C-4, at 7 & 8; C-5, at 98).

[7] Ex. C-5, the Structural Building Components Association's "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses," has two sets of page numbers: those of the document itself and those added for purposes of submitting it as an exhibit in this proceeding. When citing to this exhibit, the Court will cite to the page numbers of the document itself.

[8] Ex C-4, the Truss Plate Institute's "National Design Standard for Metal Plate Connected Wood Truss Construction," has two sets of page numbers: those of the document itself and those added for purposes of submitting it as an exhibit in this proceeding. When citing to this exhibit, the Court will cite to the page numbers of the document itself.

Long-Span Trusses

In the construction industry, any truss over 60 feet in length is considered a "long-span" truss. (Tr. 322, 481, 524, 741; Exs. C-4, at 11; C-5, at 21, 31, 33, 34, 44 & 49; C-25, at 13, 20, 22, 24, 34, 47 & 50; C-27, at 3 to 6; R-23, at 3 & 5). Again, each of the trusses at issue in this case was 138 feet long. Because of their length and the inherent pliability of wood, long-span wooden trusses have much less rigidity than shorter trusses and are thus more prone to buckling, bending, and twisting.[9] (Tr. 323-25, 334-35, 467, 481-82, 510-11, 608-09, 697; C-27, at 8; R-23, at 14 to 16). Consequently, long-span trusses require special safety measures at many stages of construction and installation including during their storage, hoisting, and bracing. (Tr. 84-85, 156, 318-19, 322, 335-37, 364-66, 451-54, 629-30, 697-98, 740-41; Exs. C-2, at 2 (upper left corner), 3 (upper left corner), 4 (top right corner); C-4, at 11; C-5, at 7, 9, 19, 22, 32, 33, 37 & 96; C-25, at 34 to 37 & 47; C-27, at 3 to 8).

Truss Bracing

Central to one of the violations alleged in this case is the concept of "bracing" long-span wooden trusses as they are set and installed in a structure. As a general matter, bracing consists of installing additional materials on and between the trusses or between other bracing elements to increase the stability of the overall structure. (Tr. 114, 218, 324-25, 338, 463, 477, 479, 504, 592-94, 662-63, 724; Ex. C-5, at 93 ("Bracing" defined as "[p]roviding stability against unintended movement or motion"); C-25, at 11, 12, 19 & 20; R-23, at 5). For wooden trusses, bracing typically involves adding wood boards between trusses or between other bracing elements but can also include the use of metal pipes, "clips," "hangers," or roof sheathing. (Tr. 81, 218, 336-37, 452, 463, 482, 496, 505, 724, 727-28; *see e.g.*, Exs. C-2 (various examples of bracing elements

[9] Indeed, two of the expert witnesses in this case likened unbraced, long-span wooden trusses to "a wet noodle" and "wet spaghetti." (Tr. 663; Ex. C-25, at 34).

throughout); C-5, at 17, 20, 22, 25, 28, 29 & 39; C-12; C-25, at 27, 29, 30, 32 & 33). Without adequate bracing, trusses, especially long-span trusses, can bend, twist, buckle, tilt, or fall over, and thus pose crushing and struck-by hazards to employees working in the vicinity of the trusses. (Tr. 318-19, 323, 335, 338, 477, 592-96, 662-63, 724; Exs. C-2, at 1 (top left corner), 2 (same), 3 (same) & 4 (same); C-5, at 2, 12, 14, 18, 19, 32, 37 & 38; C-25, at 19, 20, 46 & 47; R-23, at 5 & 6).

Types of Bracing

Temporary v. Permanent Bracing

As a general matter, truss bracing can be either temporary or permanent, each of which serves distinct functions. (Tr. 478, 491; Exs. C-5, at 17 to 36 (detailing temporary bracing methods), 37 to 52 (detailing permanent bracing methods), 96 & 98; C-25, at 19 & 20; R-23, at 5). Temporary bracing is used during the installation of trusses to maintain stability of the trusses and safeguard the workers installing them, but, as its name suggests, this bracing may later be removed from the structure. (Tr. 211, 324-25, 477-78, 495, 693-94; Exs. C-5, at 38 & 98; C-25, at 19 & 20; R-23, at 5). On the other hand, permanent bracing adds long-term stability to the trusses and stability to the structure as a whole and is therefore meant to be a fixed part of the finished structure. (Tr. 324-25, 339, 349, 445-46, 478-79, 503-04; Exs. C-5, at 38 & 96; C-25, at 19 & 20; R-23, at 5). Although their general purposes may differ, many types of bracing are used in both the temporary and the permanent bracing system for a given structure; indeed, some elements installed as temporary bracing may be incorporated into the structure's permanent bracing system. (Tr. 113, 152, 218, 324-25, 327, 339-40, 374-75, 398, 478, 662-63, 692; Exs. C-2, at 1 to 3; C-5, at 38; C-27, at 2).

Though not an exhaustive list by any means, a general description of three types of bracing is sufficient to understand the issues and arguments raised in this case:

Lateral Bracing

Generally, lateral bracing is a "structural member installed at right angles to a chord or Web member of a Truss …." (Ex. C-5, at 95). Top chord lateral bracing, also known as "purlins," runs perpendicularly between the top chords of the trusses and provides lateral bracing to the trusses to ensure the trusses remain upright instead of moving from "side to side." (Tr. 81, 218, 328-30, 374-75, 592-93, 595, 663, 716; Exs. C-5, at 39, 95, 96 & 98). Similarly, bottom chord lateral bracing runs perpendicularly between the bottom chords of the trusses and serves a similar function to purlins. (Tr. 331-32, 375, 594-95, 663; Exs. C-5, at 40, 93 & 95). Finally, lateral bracing may also be installed between the web members of the trusses. (Tr. 374, 410, 593-94; Exs. C-5, at 95; C-25, at 15 & 25; R-18, at 10 to 12 & 14).

Diagonal Bracing

Diagonal bracing is bracing installed at an approximately 45-degree angle, either between trusses or between other types of bracing, such as temporary diagonal bracing installed between two purlins or two bottom chord lateral braces.[10] (Tr. 199-200, 330, 333-34, 407, 482-83, 596, 736, 758; Exs. C-2 (various examples); C-5, at 24 to 27, 39 to 44 & 94; C-25, at 47; R-28, at 10 (figure 5) & 11 (figure 5)). Generally speaking, diagonal bracing prevents trusses, particularly long-span trusses, from buckling, warping, or twisting. (Tr. 334-35, 596; Exs. C-2, at 2 (point 6); C-5, at 26, 39 to 44, 94; C-25, at 41, 47 & 48). For wooden trusses, wood boards are typically used for both temporary and permanent diagonal bracing. (Tr. 758-59; Exs. C-5, at 10, 14, 25, 41 to 44; C-25, at 59 & 60; R-28, at 11 & 14). However, metal sheathing installed across the top

[10] This type of bracing is sometimes referred to as "X," "V," or "W" bracing because of the shape it makes when installed. (Tr. 330, 333-34, 595; Ex. C-25, at 47).

chords of the trusses can also serve a similar function as, or even a substitute for, other diagonal bracing if it is installed immediately after setting the trusses. (Tr. 80, 216-17, 255, 336-37, 354-55, 424-25, 429-32, 463, 506-07, 737; Exs. C-2, at 2 (top left box & points 5 & 8), 3 (leftmost column); C-5, at x, 20, 22, 28, 29, 39).

Attic Cross-Bracing

Attic cross-bracing, a sub-category of diagonal bracing sometimes referred to as "X" bracing, can also be installed in the attic area of the trusses, i.e., the space created between the top and bottom chords. (Tr. 114, 339, 482, 736; Exs. C-5, at 94; R-28, at 10 & 11). For this type of bracing, metal clips or hangers are affixed to the top and bottom chords of two trusses. (Tr. 482, 496; Exs. C-5, at 94; C-25, at 22 & 33; R-28, at 10 & 11). Two boards are then attached to these clips, running between the top chord of one truss and the bottom chord of the other (and vice versa) to form an "X" shape between the two trusses.[11] (Tr. 114, 339, 482, 736; Ex. C-5, at 94; R-28, at 10 & 11).

Bracing Plans

Engineered Bracing Plans

In some instances, a design professional, like an architect or an engineer, will design a temporary or permanent bracing plan for a given structure to direct the type and location of the bracing to be used. (Tr. 114, 151, 155, 178-81, 201, 215-16, 211, 254, 398-99, 447, 477, 503-06,

[11] At trial, Dr. Lu described another type of cross-bracing known as "T" bracing, describing it first as "something [that] like goes from the … top chord of one truss and to the bottom chord of the other truss to make it a legal triangle frame to [in]crease the stability of those two trusses." (Tr. 339). He revisited this subject shortly thereafter, stating that T-bracing is "[m]etal (unintelligible) like … nailed to the bottom chord of [the] trusses, some additional lumber pieces perpendicular upward to the bottom chord" and agreed with Complainant's attorney that they "sort of cross each other in a way." (Tr. 341). The Court notes that the permanent bracing plans for the Barn clearly equate the "X" style cross bracing with "attic cross bracing," which comports with the definition supplied by the industry guide in evidence. (*Compare* Ex. C-5, at 94 (definition of "cross bracing"), *with* Ex. R-28, at 10 & 11 (lower left corners)). However, the permanent bracing plan also contains a detailed diagram for "endwall T-bracing," which may be what Dr. Lu was describing during this portion of his testimony. (Ex. R-28, at 10 & 11).

627-28, 694, 699-700; Exs. C-2, at 2 (top left corner) & 3 (top left corner); C-4, at 31 & 32; C-5, at 37 & 96; C-25, at 25; C-31, at 3; R-23, at 3; R-28, at 1, 10 & 11).

The BCSI Guide

In other instances, however, truss installers do not enlist a design professional to develop a temporary or permanent bracing plan. On those occasions, one guide recognized in the construction industry on the subject of truss-bracing is the "Building Component Safety Information [("BCSI")] Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses" ("BCSI Guide" or just "Guide"), a document published by the Structural Building Components Association. (Ex. C-5, at iii; *see also* Tr. 162-63, 180-81, 200, 325-26, 450, 477-79, 504, 508-09, 627-28, 739-40; Exs. C-2, at 1; C-25, at 21 & 22; R-23, at 2; R-28, at 1). The BCSI Guide is extensive, over 100 pages long, and covers many topics including the handling, hoisting, installing, restraining, and bracing of trusses. (Ex. C-5, at v & vi). Given the Guide's length and its density of information, the Court will not attempt to lay out every relevant portion of the document. However, the Court will highlight a few portions implicated by the issues and arguments raised in this case, particularly the introductory portion of the Guide as well as four chapters that relate to the recommended practices of storing, rigging/hoisting, and bracing trusses.[12]

Introduction

The "Introduction" portion of the BCSI Guide notes that it is meant to implement policies developed to "promote handling, installing, restraining and bracing guidelines for Metal Plate Connected Wood Trusses that are simple, safe, proven methods consistent with accepted framing construction practices in the field." (*Id.* at vii). The Guide goes on to state:

[12] As the Court details further below, these Chapters relate to the summary sheets that were included with the design plans for the Barn.

> The methods and procedures in BCSI are intended to ensure that the overall construction techniques employed will put floor and roof Trusses in place safely. These recommendations for handling, installing, restraining and [b]racing Trusses are based upon the collective experience of leading personnel involved in Truss design, manufacturing and installation, but must, due to the nature of responsibilities involved, be presented only as a guide for use by a qualified Building Designer and/or Contractor. These recommendations are not intended to be interpreted as superior to the Building Designer's design specification for handling, installing, restraining and Bracing Trusses, nor are they intended to preclude the use of other equivalent methods for restraining/Bracing and providing stability for the walls, columns, floors, roofs and all the interrelated Structural Building Components as determined by the Contractor.

(*Id.*).

Chapter B1

Chapter B1 of the BCSI Guide is entitled "Guide for Handling Installing, Restraining & Bracing of Trusses." Several parts of this chapter emphasize the necessity and importance of temporary and permanent diagonal bracing as part of a structure's bracing system. (Ex. C-5, at 2, 3, 12 to 14). Another section of this chapter relates to the storage of trusses. (*Id.* at 4). Other portions of this Chapter address the hoisting of trusses using a crane and a "spreader bar."[13] (*Id.* at 3, 4 & 6 to 9). Notably, the Guide lays out different procedures for long-span trusses and those under 60 feet in length. (*Id.* at 7 & 9). Yet another portion of this chapter addresses the types of temporary bracing that should be used when installing trusses, repeatedly emphasizing the need for temporary diagonal bracing when installing trusses. (*Id.* at 12 to 14). For example, the Guide states: "It is critical to install Lateral Restraint and Diagonal Bracing for the Top Chord and Web Member Plane immediately to prevent out-of-plane buckling of the Truss." (*Id.* at 12). This chapter also briefly addresses methods of permanent bracing. (*Id.* at 2 & 3).

[13] The Guide defines a "spreader bar" as a "specifically designed lifting device that enables the lifting cables to hang straight or toe-in to their points of Connection so as not to induce buckling forces in the Truss being lifted." (*Id.* at 97). Below, the Court provides more detail on the nature and functionality of the spreader bar used by Signet in lifting the trusses for the Blooming Valley Barn.

Chapter B2

Chapter B2 of the Guide is entitled "Truss Installation & Temporary Restraint/Bracing." As its name suggests, this chapter contains more detailed prescriptions for the use of temporary bracing when installing trusses. Throughout this chapter, the Guide emphasizes the necessity of using temporary diagonal bracing. For example, the first page of this chapter admonishes: "**DO NOT** fail to install Diagonal Bracing." (*Id.* at 17). Elsewhere, this chapter of the Guide addresses structural sheathing as a means of diagonal bracing. For example, Step 5 of the Guide's summary of eight steps in installing and bracing trusses states: "Install Top Chord Diagonal Bracing. Alternately, Structural Sheathing correctly applied at this stage will act as Diagonal Bracing for the Top Chord and adequately brace the first five Trusses." (*Id.* at 20). At other points, this chapter revisits structural sheathing, directing truss installers to "[a]pply Structural Sheathing early and often. Do not wait until all Trusses are set to apply Structural Sheathing." (*Id.* at 28). Particular to long-span trusses, this chapter of the Guide states that "applying Structural Sheathing immediately is the preferred method." (*Id.* at 22).

Chapter B3

Chapter B3 of the Guide is entitled "Permanent Restraint/Bracing of Chords & Web Members." As its name suggests, this chapter of the Guide provides more detailed instructions on permanent bracing for installed trusses. One page of this chapter is directed at diagonal restraint in the top chords of trusses and notes that "[t]he Purlins alone will not adequately brace or prevent buckling of the Top Chord and must themselves be braced." (Ex. C-5, at 39). To this end, the Guide states "Permanent Bracing for the Top Chords of Trusses is typically provided by attaching

Structural Sheathing, or wood or metal structural Purlins that are properly braced." (*Id.*). It also notes that "[t]he sheathing and attachment requirements … are provided on the Construction Documents prepared by the Building Designer …." (*Id.*). This Chapter also contains a section on permanent continuous lateral bracing on the web members of trusses. (*Id.* at 41 to 44).

Chapter B10

Finally, Chapter B10 of the Guide, entitled "Post Frame Truss Installation, Restraint & Bracing," contains much of the same recommendations and admonitions recounted above on the subjects of temporary and permanent bracing (*Id.* at 73, 77 to 84), storage (*Id.* at 75), and rigging and hoisting (*Id.* at 76).

Signet's Training & Policies on Truss Bracing

Complainant has alleged deficiencies in Respondent's instruction and training with regard to the "development of a temporary bracing plan" and "the interpretation of engineer notes on engineering drawings." *Citation and Notification of Penalty* at 8. The record establishes that Signet provided training to its employees on both subjects, largely consisting of on-the-job training. (Tr. 145, 465, 474-77, 526-27, 719, 723-25). As described by Mr. Zuhlke, Signet's Executive Vice President:

> [If] we're hiring somebody … new they would be going to the site and they would start … at the bottom. Maybe, it's carrying lumber. Maybe it's … the right[-]hand man to one of the other guys. That guy would be training them on all aspects … whatever their specialty is. Some of the guys are better at framing walls. Some are better at trusses … [S]o a new employee or somebody new would start there. And just kind of work their way up … [I]t's just a progression. They learn as they move up[,] as they learn.

(Tr. 476-77). This method of on-the-job training applied to both the bracing of trusses during construction and the reading of engineering plans and blueprints. (Tr. 145, 465, 474-77, 719, 723-25). Additionally, some of Signet's employees received training from a structural engineer using

a model on the "importance of permanent bracing [for wood trusses] and why it's required."[14] (Tr. 477; *see also* Tr. 465).

As a matter of company policy, Signet favors the use of permanent bracing over temporary bracing when installing trusses, sometimes entirely foregoing the use of temporary bracing when it has enough employees to do so. (Tr. 445-46, 448, 462-64, 477-81, 488, 503-07, 735-37, 742-59). According to Mr. Schoenfeld, "we don't over use [sic] temporary bracing because we have the ability to put enough people on our jobs so that we use every brace that the engineer designs for the permanent bracing which is bigger and better." (Tr. 505). Mr. Schoenfeld went on to detail that Signet favors the permanent bracing plans designed by an engineer because "[w]e know what those require. And … anything that had to do with the potential temporary bracing would be if you couldn't reach to that point and you're trying to get the trusses up in the air that's where those would mostly come into play." (Tr. 505). Mr. Zuhlke went a step further, detailing a generic bracing scenario as follows:

> Typically on a building that is just the walls it would include the ground bracing that's done at the gable end of the building.[15] Usually we run those every four foot on center across the back of the gable wall.
>
> And then we would set the first truss against that for support. That is your support you would set the first four or five trusses [against]. Then you would install all the

[14] Additional training materials, apparently provided to the CSHO in response to his document request to Signet, were also admitted at trial. (Tr. 139-40; Ex. C-21; R-11). These materials include: portions of Signet's safety manual addressing fall protection, hazard communication, hazardous chemicals, and personal protective equipment (Ex. C-21, at 2 to 35); training certificates for some of Signet's supervisors for OSHA 30 courses and training on rigging and boom lifts (*Id.* at 36 to 43); a variety of safety meeting topics in English and in Spanish (*Id.* at 44 to 53); OSHA 300 logs (*Id.* at 54 to 60); and a single written disciplinary notice labeled "Record of Conversation Form." (*Id.* at 61 to 63). These materials were only cursorily addressed at trial, and none of them relate to the deficiencies in Respondent's training as alleged in the Citation, i.e., the development of temporary bracing plans and the reading of engineering notes. Signet also submitted its entire safety program, which only Mr. Zuhlke cursorily addressed. (Tr. 468-69, 492-93; R-11). The Court will therefore not address these additional safety materials at any further length.

[15] Some of the temporary "pipe bracing" installed every eight to twelve feet on the walls of the Barn can be seen in a video taken by an unidentified Signet employee following the collapse of the Barn. (Ex. R-13, at 0:07; *see also* Tr. 452, 463, 727, 743). Complainant's expert witness, Dr. Lu, also discussed an example of diagonal bracing installed on the "aerial wall frame" of an unrelated building in an OSHA investigative report. (Tr. 393; Ex. R-26, at 24 (figure 24)).

> permanent bracing and then from that point move forward. And as you move forward every four or five trusses you install permanent bracing.

(Tr. 446). Mr. Zuhlke punctuated Signet's preference for permanent bracing over temporary, stating that "it's been a constant on us for years that we just do all the permanent bracing as we go. It's always been know[n] if you do that you don't have much to worry about because it's all incorporated [in the permanent bracing]." (Tr. 478).

The Blooming Valley Barn Project

The Barn

At some time prior to the events at issue in this case, Blooming Valley Dairy contracted with United to manage the construction of the Barn on a plot of land in rural South Dakota. (Tr. 13, 61, 66-68, 72, 251; Exs. C-23, at 00:00 to 00:08; C-25, at 6). In turn, Signet was contracted by United in 2022 "to construct the Blooming Valley Dairy [B]arn, including the installation of roof trusses." (Tr. 13-14). Fully constructed, the Barn would be massive, measuring approximately 440 feet long by 130 feet wide and thus totaling over 57,000 square feet in area. (Tr. 321; Exs. C-25, at 6; R-28, at 2, 6; *see also* Ex. C-23, at 04:00 to 04:40).

As designed, the Barn was divided into three main areas, situated geographically from west to east, as follows: on the west side, the holding area where the dairy cows would enter the Barn and be staged, i.e., lined up for milking (Tr. 68, 72-73, 78, 105, 419-20, 430, 479, 664, 737, 743-44, 746, 756; Exs. C-12, at 1, 4, 5 & 7; C-14, at 12; C-23, at 01:50 to 02:00, 04:30; C-25, at 5 to 9 & 11; R-28, at 2, 3, 6, 7, 10 & 14); in the middle, the central parlor area where approximately 130 cows would be milked around a milking carousel (Tr. 68, 73, 78, 105, 108, 417-20, 664, 737, 743-44, 750-51; Exs. C-7, at 1; C-12; C-14; C-23, at 01:20, 04:30 to 01:30; C-25, at 5 to 9 & 11; R-28, at 4, 6, 8, 11 & 14); and, on the east side, an office for Blooming Valley employees to work in once the Barn was operational. (Tr. 78, 743-44, 750, 756; Exs. C-7, at 1; C-12, at 3, 7 & 8; C-23,

at 01:40, 04:30; C-25, at 5 to 7; R-28, at 5, 6, 9, 11 to 13). The Barn's roof was to be constructed using 138-foot wooden trusses, each weighing approximately 5,000 pounds, installed at a height of 18 feet between the span of the north and south walls of the Barn. (Tr. 109, 155, 321, 466, 728-29; Exs. C-9, at 7; C-25, at 6, 13, 34; R-28, at 13 to 16).

EPS & the Barn's Bracing Plans

The Blooming Valley Barn was designed by an engineering company called Energy Panel Services ("EPS"), which created and supplied several construction and design plans to Signet.[16] (Tr. 14, 150-51, 157-58, 178-79, 183, 327, 339-40, 411, 441-45, 505, 745-46; Exs. C-2, C-11, R-28). One of these plans was a permanent bracing plan for the Barn's trusses in all three of the main areas of the barn. (Tr. 178-80, 327, 339-40, 351, 398-99, 411; Exs. C-25, at 14, 15 & 25; R-28, at 11 to 15).

Permanent Bracing Plan

EPS's permanent bracing plan called for, in relevant part, the following types of bracing in the Barn:

- 72 purlins, spaced two feet apart, running perpendicularly along the top chords of the trusses throughout the entire length of the Barn. (Tr. 398-99; C-25, at 14, 25, 53 & 59; C-27, at 2 & 3; C-31, at 2; R-28, at 10 to 14).

[16] In addition to the design plans for the Barn, several truss design plans from a company called Alpine were admitted into evidence. (Tr. 23; Ex. C-3). EPS used these truss design plans to design and build the trusses, which EPS then delivered to the Barn worksite. (Tr. 14, 157-58; Tr. 183-84, 251; Ex. C-3, at 1).

Although the CSHO initially stated these plans were delivered to the Barn worksite as part of EPS's construction package, he later admitted he could "not confirm that." (Tr. 160). There is no other evidence in the record to suggest Signet had access to these plans or otherwise used them when setting and installing the trusses in the Barn. Moreover, the plans themselves disclaim any relation to the setting and installation of trusses. As to temporary bracing, the plans make clear that "these drawings are only for the permanent lateral support of the truss members to reduce buckling lengths, and do not apply to and may not be relied upon for the temporary stability of the truss components during their installation." (Ex. C-3, at 2). The plans echo this sentiment for permanent bracing, stating: "These drawings do not depict or specify installation/erection bracing, wind bracing, portal bracing or similar building stability bracing which are parts of the overall building design to be specified, designed and detailed by the Building Designer." (*Id.*). To the extent these plans address any specific bracing requirements, they merely refer back to the BCSI Guide or engineered bracing plans. (*Id.*). Nothing in these plans addresses the issue of storage, hoisting, or repair of trusses.

For these reasons, the Court places little weight on these documents as to what Signet's obligations may have been on the Blooming Valley worksite regarding any of the instances alleged for the violation of the General Duty Clause.

- 12 lateral braces, spaced ten feet apart, running perpendicularly along the bottom chords of the trusses throughout the entire length of the Barn. (Tr. 398-99; Exs. C-25, at 14, 15, 25, 52, 53, 54, 59 & 60; C-27, at 2 & 3; R-28, at 10 to 14).

- Diagonal bracing between the top and bottom chords of adjacent trusses, spaced approximately twenty feet apart throughout the entire length of the Barn.[17] (Tr. 754, 758; Exs. C-25, at 15, 25, 27, 52 to 54, 59 & 60; C-27, at 3; R-28, at 10 to 14).

- Continuous lateral bracing running perpendicularly between certain web members of the trusses throughout the length of the Barn. (Tr. 409-10, 593-94, 727-28, 754; Exs. C-25, at 15, 25, 27, 30, 52 to 54, 59 & 60; C-27, at 2 & 3; R-28, at 10 to 14).

- Several rows of eight attic cross braces, with the braces themselves spaced approximately fifteen feet apart and the rows of braces spaced 32 feet apart, installed throughout the length of the Barn. (Tr. 340; Exs. C-25, at 15, 25 to 27, 31, 32, 52 & 54; C-31, at 2; R-28, at 10 to 14).

- Metal roof sheathing installed over the purlins on the top chords of the trusses. (Tr. 79, 216, 218, 254-55, 336, 354-55, 478-79, 506-07; Exs. C-25, at 19, 42 ("Analysis 2"), 44, 46; R-28, at 12 to 14).

The design plans note that "Until the building is completely erected in accordance with construction documents, the trusses are unstable and may present a safety hazard." (Ex. R-28, at 10).

Temporary Bracing Plan

EPS did not design a temporary bracing plan for the Barn (Tr. 93-94, 180, 201, 254, 259-60, 399, 447); rather, as the plans themselves state: "CONTRACTOR," in this case Signet, "SHALL BE RESPONSIBLE FOR ALL TEMPORARY SHORING AND BRACING." (Ex. R-28, at 1 (capitalization in original)); Tr. 93-94, 180; Ex. C-5, at i). To fulfill this obligation, the plans further directed Signet to "REFER TO THE BCSI … MANUAL FOR WOOD TRUSS

[17] Based on the Court's reading of the permanent bracing plans, the location and length of this diagonal bracing appears to have varied between the three main areas of the Barn. (Ex. R-28, at 10 & 11).

TEMPORARY BRACING REQUIREMENTS." (Ex. R-28, at 1 (capitalization in original)); *see also* Tr. 162-63, 180-81, 448, 627-28; Exs. C-2, C-5, C-11, at 4).

Jobsite Package & BCSI Sheets

EPS delivered the Barn's design plans to the worksite as part of a "jobsite package." (Tr. 180; Exs. C-2; C-11; R-28, at 1). As explained by Mr. Mensing: "Every time we ship out materials to the jobsite or loads of trusses there is a package that we provide with a printed set of plans, general information on parts of our building package as well as the BCSI sheets that we[] refer to." (Tr. 181-82; Exs. C-2; C-11; R-28, at 1). Numbering four in total, the BCSI summary sheets included in EPS's jobsite package cover a variety of topics on the handling, hoisting, installing, restraining, and bracing of trusses. (*See generally* Ex. C-2). The sheets are written in both English and Spanish and are dense with information, instructions, warnings, diagrams, and charts concerning these subjects.[18] (*Id.*). The Court therefore will not detail every instruction or warning contained in these sheets but instead will set forth some examples that are relevant to the Citation items.

Bracing

Sheet B2 contains the following introductory warning and notices:

> **WARNING!** Spans over 60' require more complex temporary installation restraint/bracing. Consult a registered design professional.
>
> …

[18] As noted in the BCSI Guide: "Each Summary Sheet condenses the information contained in the corresponding section of this book into a few pages that emphasize the main points using graphical representation of the text as fully as possible. The goal is to provide clear, concise information or jobsite users so they can implement the handling, installing, restraining and [b]racing concepts contained herein more easily." (Ex. C-5, at vii). Correspondingly, Sheet B1 is entitled "Guide for Handling, Installing, Restraining, and Bracing of Trusses," Sheet B2 is entitled "Truss Installation & Temporary Restraint/Bracing," Sheet B3 is entitled "Permanent Restraint/Bracing of Chords & Web Members," and Sheet B10 is entitled "Post Frame Truss Installation, Restraint, & Bracing." (Ex. C-2, at 1 to 4; *see also* Ex. C-5, at 1, 17, 37 & 73).

> **DANGER!** Disregarding handling, installing, restraining and bracing safety recommendations is the principal cause of truss erection/installation accidents.
>
> …
>
> **NOTICE** Lateral restraint is NOT adequate without diagonal bracing.
>
> …
>
> Always diagonally brace for safety!

(Ex. C-2, at 2 (page 1; upper left corner)). This sheet then goes on to lay out detailed instructions on various types of lateral and diagonal bracing. Of particular note, under step eight of the instructions on "ensur[ing] trusses are properly diagonally braced," this sheet states: "Apply structural sheathing early and often. DO NOT wait until all trusses are set to apply structural sheathing." *Id.* (page 5; bottom left corner). Similarly, Sheet B3 notes "Structural Sheathing on [the] Top Chord Plane" as part of the permanent bracing system of installed trusses. *Id.* at 3 (lower left corner). This sheet also has instructions on continuous lateral bracing in the web members of the trusses. *Id.* (second column).

Sheet B10 sets forth two methods of permanently bracing the top chords, either with "[s]tructural sheathing (e.g., plywood, OSB, metal decking, etc.) attached directly to the top chord" or "[w]ood or metal structural purlins that are properly braced," either by "[i]nstalling bracing on the top chord plane" or "[a]ttaching structural sheathing directly to the purlins." *Id.* at 5 (box 8).

Storage

Sheet B10 contains the following warning related to truss storage: "**DO NOT** unload trusses on rough terrain or uneven surfaces that could cause damage to the truss." (Ex. C-2, at 4). This sheet goes on to state that "[t]russes may be unloaded directly on the ground at the time of delivery or stored temporarily in contact with the ground after delivery" but also that "[i]f trusses are to be stored horizontally for more than one week, place blocking of sufficient height beneath

the stack of trusses … to minimize lateral bending and to lessen moisture gain from the ground." *Id.*

Hoisting

Sheet B1 recommends that, for hoisting trusses up to and over 60 feet, truss installers should use a "[s]preader bar or stiffback [l]ocate[d] above mid-height" that is two thirds to three fourths the length of the truss and attached a maximum of 10 feet of center. (Ex. C-2, at 1 (second column)).

Repair

Sheet B1 contains the following admonition on the field repair of trusses: "Do not cut, alter, or drill any structural member of a truss unless specifically permitted by the Truss Design Drawing." (Ex. C-2, at 1 (lower right corner)).

Signet's Storage of the Trusses Onsite

In addition to designing the trusses for the Barn, EPS manufactured the trusses offsite and then delivered them to the worksite. (Tr. 150, 183, 466; Exs. R-28, at 13 to 16). However, EPS delivered the trusses to the worksite in halves, "already nailed together, but each half ha[d] to be slid together and then pre-assembled on site [by Signet at] the center section because they're too big to haul on a trailer." (Tr. 466; *see also* Tr. 86-87, 208). When fully assembled, the trusses measured 138 feet wide, with a "clean span," i.e., "the distance between the two supports," of 130 feet, and weighed approximately 5,000 pounds. (Tr. 109, 155, 321, 466, 728-29; Exs. C-9, at 7; C-25, at 6, 13, 34; R-28, at 13 to 16). Once assembled, Signet stacked the trusses in small piles on a stretch of concrete running along the north wall of the Barn. (Tr. 84, 364, 466-67, 632; Exs. C-8, at 1, 2 & 4; C-16; C-25, at 37; R-23, at 15). The stacking of the trusses in this manner caused some minor bending or "warping" at various points in their 138-foot length. (Tr. 84-85, 209, 364,

467, 481-82, 608-609, 632; Exs. C-8, at 1, 2 & 4; C-16; C-25, at 37; R-23, at 15). As can be seen in some of the photographs of the stacked trusses, this bending was particularly apparent where the two halves of the truss were joined, i.e., the center of the finished trusses, "because of th[e] lamination in the middle center section … [where] they're four ply thick in the middle compared to two on each side." (Tr. 467; Ex. C-16, at 2 & 3; Ex. C-25, at 37; R-23, at 14 & 15).

Signet's Rigging & Hoisting of the Trusses

Before being installed, the trusses needed to be lifted into the air and properly positioned between the north and south walls, which would then support the truss on either end. (Tr. 221-22, 349, 375, 445-46, 452, 486-87, 726-27, 733; Exs. C-12; C-15; C-23, at 04:31; C-25, at 34 & 35; R-23, at 16; R-28, at 10 to 15). To facilitate lifting the trusses, Signet was responsible for providing a "spreader bar," a long metal bar with chains attached to it. (Tr. 119, 269, 365, 452-53, 485-87, 610, 729-30; Exs. C-9; C-14, at 8; C-15; C-25, at 34 & 35; R-23, at 16). The spreader bar provided by Signet was of its own design, with five chains running above and below the bar itself: one chain centered on the bar, one chain on each end, and two additional chains located between the center and end chains, but situated nearer to the end chains.[19] (Tr. 487, 611, 729-30; Exs. C-9; C-15; C-25, at 34 & 35; R-23, at 16). Prior to lifting a truss, Signet needed to attach it to the spreader bar by hooking the bottom row of chains at five points along the top chord of the truss, a process

[19] Mr. Zuhlke explained that he "designed that spreader bar just for these 138 trusses …" (Tr. 486). He went on to explain why the design of the bar differed from the diagrams for trusses over 60 feet provided in the BCSI Guide:

> The way that the BCSI shows using a bar if you common sensely [sic] think about the size of the bar that is needed, you know, this bar is long, right? But you would have to have a bar that's going to be, what two foot thick tall to span that truss.
>
> And then how you hook it to that truss. And then … I don't want that big bar coming up and over my people and my people are right there in the scissor lift handing out boards.
>
> That's the last thing I want is some big bar swinging back and hitting them and killing them. This way I keep the chains and the bar above them. And the chains there were the chains they can unhook and as the bar is lifting they just let go of the chain.

(Tr. 486-87).

referred to as "rigging" the truss. (Tr. 119, 152, 221, 318, 486-87, 610-11, 729-30; Exs. C-14, at 8 & 12; C-15; C-25, at 34 & 35; R-23, at 16). After rigging a truss, the chains in the top row were gathered to a central point and hooked to a crane so that the truss could be hoisted and positioned in the Barn.[20] (Tr. 83, 89, 609; Exs. C-14, at 12; C-25, at 34 & 35; R-1; R-23, at 16).

Construction of the Barn

Signet's Crew Leaders

Signet sent at least three crew leaders, a "senior crew lead" named Juan Chavez, Mr. Cardenas, and a third individual named Jose Cruz Trejo, to the Blooming Valley worksite. (Tr. 73, 144, 146, 472-73, 480, 503, 525, 719, 726, 728; Ex. C-21, at 36 to 42). In various combinations,[21] these crew leaders supervised approximately eleven workers as they constructed the Barn. (Tr. 70, 144, 146, 255-56, 719, 725-26, 735-38). The crew leaders also tended to other aspects of the project, like acquiring materials, reading blueprints, determining bracing requirements, and coordinating with United's superintendent, who had an office onsite. (Tr. 719, 725-28, 735-36, 739, 757-58). Additionally, Mr. Zuhlke visited the Blooming Valley worksite two or three times during the first few weeks of the Barn's construction. (Tr. 441).

Installation of Trusses in the Holdings & Parlor Areas

The precise timeline for the construction of the Barn is not entirely clear from the record.[22] However, sometime prior to Signet beginning construction of the parlor area where the collapse

[20] Although Signet was responsible for providing the spreader bar and rigging the trusses, it subcontracted with a crane operator called "Weather Guard" to actually hoist and position the trusses. (Tr. 83; Exs. C-25, at 6; R-1).

[21] For example, Messrs. Chavez and Cardenas oversaw some aspects of the construction of the Barn's holding area while Messrs. Chavez and Cruz were the only crew leaders present at the time of the collapse. (Tr. 73, 143, 146, 728).

[22] The most clearly laid out timeline for the series of events leading up to the Barn's collapse is included in Dr. Lu's expert report, which cites only "information OSHA received" and an "OSHA interview with Signet" as the bases for its timeline. (Ex. C-25, at 10). The CSHO offered some testimony at the hearing, which differed in some respects from Dr. Lu's timeline. For example, Dr. Lu's report states that the workers installed metal sheathing over the weekend after installing the first set of trusses while the CSHO testified that this occurred on Friday. *Compare* Ex. C-25, at 10, *with* Tr. 74. In light of the fact that an exact timeline is not particularly material in this case, the Court will set forth in general terms the events occurring between the start of the construction of the Barn's holding area and

occurred, its employees had, by all accounts, finished, sheathed, and fully braced the western, holding area of the Barn.[23] (Tr. 430, 463, 479, 716, 726, 735-37; Exs. C-12, at 4; C-23, at 03:25 to 04:05; C-25, at 8 & 9). Signet then began constructing the parlor and office areas of the Barn by framing and erecting the walls for these areas. (Tr. 72; Exs. C-25, at 8 to 10). Starting on Friday, September 9, 2022, once the walls for the parlor area had been erected, Signet's workers began installing the 138-foot trusses in the parlor area, with one truss being installed approximately every two feet. (Tr. 408; Exs. C-12, at 1, 2, 4, 5 & 7; C-25, at 10; R-23, at 3). By the end of the day, the workers had installed approximately 20 trusses in an easterly direction from the finished holding area. (Tr. 72-73, 256; Exs. C-12, at 1, 2, 4, 5 & 7; C-25, at 10).

Presumably,[24] in accordance with Signet's established practice for bracing trusses, the workers also installed at least some of the permanent bracing for this span of trusses, including some metal sheathing in the westernmost parlor area. (Tr. 72-74, 445-46, 462-64, 477-79, 488, 503-06, 678, 726-27, 733, 738, 757-58; Ex. C-25, at 10). However, Signet ran out of the roof "flashing" that needed to be installed between the panels of the sheathing. (Tr. 74, 79, 495-96, 737-38). Thus, the workers could only install the metal sheathing across a portion of either side of the trusses in the northwest and southwest corners of the parlor area, leaving a large gap in the

September 12, when the collapse occurred, adding in more precise dates or times when the record reasonably supports their addition.

[23] As Mr. Zuhlke explained: "[W]e always do that holding area first and get it all structurally sound before we hook on to it. That whole roof system is one whole system clear through. But I like to keep it in sections, get one section good and secure and be able to tie into a secure section of that building." (Tr. 463; *see also* Tr. 504 ("So we already had a lot of our stability for the trusses that collapsed were already in place with a stable structure to tie into."); 742-73). Dr. Lu also described the holding area as "fully braced." (Tr. 430). The Secretary has alleged no deficiencies in the holding area of the Barn.

[24] Rather than resorting to guesswork as to when each element (be it truss or bracing) was installed over the course of the four-day period implicated here, the Court instead recounts below the state of the parlor area and any permanent bracing at the time of the Barn's collapse.

center of these trusses unsheathed. (Tr. 74, 495, 738-39; Exs. C-12, at 1, 2, 4, 5, & 7; C-23, at 00:18 to 01:03, 02:18 to 02:22, 04:25 to 04:45; C-25, at 10).

Signet resumed installing trusses in the parlor area on September 12, 2022. (Tr. 729; Exs. C-25, at 10; R-23, at 3). Thirteen Signet employees were at the worksite that day, including two of its crew leaders, Mr. Cardenas and Mr. Trejo. (Tr. 70, 73, 143-47, 223, 255-56, 728). Over the course of the day, the Signet crew installed additional trusses and some additional permanent bracing in the parlor area. (Tr. 113, 199, 205-06, 327, 330-32, 339-41, 374, 398, 408, 410, 478, 482, 505, 592-94, 619, 663, 727-28, 733, 747, 755-56; Exs. C-12, at 1 to 4 & 7; C-23, at 02:15 to 02:32, 04:40 to 05:00; C-17; C-25, at 10, 25 to 33, 42 to 44, 56 & 57; C-27, at 1 & 2; C-31, at 2 & 5; R-23, at 3 & 5; R-28, at 11 & 14).

A Truss Repair

At some point in the process of installing the trusses in the parlor area, someone "repaired" one of the metal connector plates on the bottom chord of a truss by nailing a small two-by-four on either side of the chord. (Tr. 132-34, 253, 366, 404, 455, 457-58, 608, 633; Exs. C-17; C-25, at 38 & 39). No one from Signet contacted Alpine, the truss designer, nor EPS, the truss manufacturer, prior to making this repair. (Tr. 132, 184, 366-67, 454-58, 634; Ex. C-25, at 38).

State of the Parlor Area at the time of the Collapse

Installed Trusses & Bracing

In sum, from the start of construction until the time of the Barn's collapse, the record establishes that Signet had installed the following elements in the parlor area:

- Proceeding in an easterly direction, approximately 60 trusses, nearly reaching the wall dividing the parlor area from the Barn's office.[25] (Tr. 72-

[25] The parlor area of the Barn was to measure approximately 130 feet long when completed, with trusses installed approximately every two feet. (Tr. 408; Exs. C-25, at 6; R-28, at 4). As can be seen in the aerial photos of the collapsed parlor area, the last few trusses installed in the parlor area prior to the collapse fell eastward against the wall dividing the parlor area from the Barn's office, indicating to the Court that the Signet workers had not quite reached

73; Exs. C-12, C-14, at 7, 9 to 12; C-23, at 04:30 to 04:45; C-25, at 10, 56 & 57; R-23, at 3);

- Perpendicularly across the top chords of this span of trusses, approximately 70 wooden purlins, spaced approximately two feet apart from each other in accordance with the Barn's permanent bracing plan. (Tr. 81, 113, 199, 218, 327, 374-75, 398, 410, 478, 482, 592-94, 727-28; Exs. C-12, C-23, at 11:40 to 11:50; C-25, at 25, 28, 29 & 43; C-27, at 2; C-31, at 2 & 5; R-23, at 3 & 6; R-28, at 11 & 14);

- Perpendicularly across the bottom chords of this span of trusses, approximately 12 lateral braces, spaced approximately 11 feet apart, in accordance with the Barn's permanent bracing plan.[26] (Tr. 205-06, 330-32, 375, 408, 505, 619, 663, 727-28; Exs. C-17, C-25, at 14, 15, 25 & 29; C-27, at 1 & 2; R-23, at 3 & 5, R-28, at 11 & 14; *see also, e.g.*, Ex. C-25, at 60);

- Some of the attic cross bracing provided for in the Barn's permanent bracing plan. (Tr. 339-41, 410, 747, 755-56; Exs. C-25, at 15, 25, 26, 32, 33, 42 & 52; R-28, at 11);

- Some of the diagonal and continuous lateral bracing between the chords and web members of the trusses provided for in the Barn's permanent bracing plan. (Tr. 482-83, 727-28, 736, 743; Exs. C-25, at 12, 25, 27, 29 & 30; R-28, at 11 & 14);

- Some panels of metal roof sheathing in the northwest and southwest corners of the parlor area. (Tr. 74, 495, 738-39; Exs. C-12, at 1, 2, 4, 5 & 7; C-23, at 00:18 to 01:03, 02:18 to 02:22, 04:25 to 04:45; C-25, at 10).

Omissions in Bracing

However, the record also demonstrates the following omissions in the temporary or permanent bracing of the parlor area at the time of the Barn's collapse:

---

that wall at the time of the collapse. (Tr. 416; Ex. C-12, at 2, 3, 7 & 8). From other images of the collapsed parlor area, it appears roughly one eighth of the north wall did not have trusses installed on it at the time of the collapse. (*E.g.*, Ex. C-23, at 00:12, 04:41).

[26] Because the collapsed parlor area posed a continuing risk at the time of their inspections, neither the CSHO nor Complainant's expert witness, Dr. Lu, were able to physically enter the collapsed site to inspect the underside of all the trusses. (Tr. 95, 200-01, 421-22). However, Dr. Lu did observe some lateral bracing in the areas he was able to see during his inspection and accordingly gave Signet "credit" for this bracing in his modeling of the collapse without having been able to verify that this bracing was in fact installed throughout the entire parlor area. (Tr. 205-06, 332, 408; Exs. C-17). Mr. Boice, the only other witness to document his inspection of the collapse, only generally discussed the topic of bottom chord lateral bracing but did not state it was present in the Barn at the time of its collapse. (Tr. 663). In his report, Mr. Boice only describes the installation of the purlins and some cross bracing but does not mention whether or not he observed bottom chord lateral bracing. (Ex. C-31, at 2).

- Temporary diagonal bracing had not been installed between the lateral bracing in the top or bottom chords of the trusses. (Tr. 112-14, 119, 199-200, 326-30, 445-46, 463-64, 477-79, 488, 496, 505-06, 678, 698, 716, 758-59; Exs. C-12, C-14, at 6; C-23, at 11:40 to 11:50; C-25, at 25 & 47; C-27, at 5; *see also, e.g.*, Tr. 333-37, 359-60; Exs. C-2, at 1 (third column) & 2 (upper left corner); C-5, at 29, 32, 34, 37 to 40; C-25, at 42 & 47; C-27, at 3).

- In at least two locations in the parlor area, Signet had not installed attic cross bracing that was otherwise provided for in the Barn's permanent bracing plan. (Tr. 340-41, 354; Exs. C-25, at 26, 27, 31, 32 & 52; C-28; R-28, at 10 & 11; *see also* Tr. 757-58).

- Following his inspection of the collapsed Barn, Dr. Lu concluded that "[m]any diagonal bracing and continuous lateral bracing on the web at the center of the trusses … were found to be missing." (Ex. C-25, at 25). Particularly, he observed a lack of "diagonal and continuous lateral bracing" on the web members of the last five trusses to be installed as well as on the "web members at [the] center of trusses in other areas." (*Id.* at 12, 25, 27, 29 & 30; *see also* Ex. R-28, at 11).

- Dr. Lu further identified a "few" points in the parlor area where "truss ties," i.e., metal ties "installed between the truss and the wall where you're supporting the beams to connect the truss and to tie the truss onto the top of the wall," should have been installed but were missing. (Tr. 348-50, 406-07, 433; Ex. C-25, at 38 to 40).

- As the Court previously detailed, because Signet had run out of roof flashing, the majority of the parlor area was left unsheathed. (Tr. 74, 79, 495-96, 737-39; Exs. C-12, at 1, 2, 4, 5 & 7; C-23, at 00:18 to 01:03, 02:18 to 02:22, 04:25 to 04:45; C-25, at 10).

The Barn's Collapse

In the early evening of September 12, 2022, while Signet was setting a truss near the eastern end of the parlor area, nearly all of the trusses in the parlor area suddenly collapsed. (Tr. 67, 338, 483-84, 730-31; Exs. C-12, C-14; C-23; C-25, at 4, 5, 10 to 12; C-31, at 1, 4 to 6; R-13). The collapse originated in the northwestern portion of the parlor area, in the vicinity of the incomplete metal sheathing installed there, and cascaded eastward until the final five trusses in the parlor area tipped over eastward toward the office wall. (Tr. 111-12, 183, 341-43, 417-18, 426-27, 730-31;

Exs. C-23, at 00:10 to 00:30, 01:15 to 01:40, 05:00, 06:05 to 07:15, C-25, at 10 to 12, 25 & 30; C-31, at 6). Although both parties presented theories on the cause of the Barn's collapse, the Court leaves that issue undecided for purposes of this case.[27]

At the time of the collapse, at least nine Signet workers were working inside the parlor area of the Barn, including some working on scissor lifts near the easternmost trusses. (Tr. 67, 70, 100-01, 108-10, 483-84; Exs. C-23, at 01:25 to 01:35, 08:10 to 08:30, 09:17 to 09:38; C-25, at 10; R-13). Two Signet crew leaders, Mr. Cardenas and Mr. Trejo, were present during the Barn's collapse, though they were not working inside the parlor area.[28] (Tr. 73, 145-47, 728, 730-31). Nine Signet employees were injured as a result of the collapse, sustaining various broken limbs and other struck-by injuries to their heads, neck, back, and extremities. (Tr. 67, 70, 108-10; Exs. C-25, at 4 & 10; R-13). One employee was hospitalized for months with a severe head injury after attempting to jump from a scissor lift during the collapse. (Tr. 110).

[27] Briefly: Complainant's expert witness concluded that the "root cause for the truss collapse during construction is the absence of adequate bracing in the trusses installed in the central parlor area, leading to instability in the as-built truss frame system." (Ex. C-25, at 45). Signet's expert witnesses both concluded that the collapse occurred because of a failure in the bottom chord of one or more trusses, possibly due to poor quality wood. (Exs. R-23, at 5 & 6; C-31, at 1 & 2).

However, at trial, both parties agreed that causation was not at issue in this case (Tr. 43, 307-08), and with good reason, given that the Commission has repeatedly held that, although the existence of an accident may be evidence of a violation, an employer's liability under the Act is not determined by the cause of the accident. *See, e.g.*, *Midwest Equip Co.*, No. 19-0723, 2022 WL 1277649, at *3 (OSHRC, April 15, 2022); *Am. Wrecking Corp.*, 19 BNA OSHC 1703, 1707 n.4 (No. 96-1330, 2001) (consolidated) ("Determining whether the standard was violated is not dependent on the cause of the accident."), *aff'd in relevant part*, 351 F.3d 1254 (D.C. Cir. 2003).

The Court therefore expresses no view on the any of the expert witnesses' methods of determining, or theories on, the cause of the Barn's collapse. The Court cites to the experts' testimonies and reports only for the purpose of any background information or factual assertions the witness may have made therein. Although portions of the witnesses' testimonies and reports cited may incidentally contain assertions or conclusions on the cause of the collapse, the Court does not cite them for that purpose or to otherwise endorse any theory on the cause of the Barn's collapse.

[28] Mr. Trejo and Mr. Cardenas both appear to have been working outside the south wall of the Barn at the time of its collapse. (Tr. 145, 730-31).

OSHA's Investigation & Citation

Following a "media referral" the day after the collapse,[29] OSHA sent CSHO Bertrand and AAD Jason Mundt to investigate the incident. (Tr. 61-62, 94-95). The OSHA inspectors spoke with a representative of Blooming Valley named Josh TeVelde, United's superintendent Neil Bennett, and Mr. Zuhlke on behalf of Signet and learned that nine employees were injured in the collapse, all of them Signet's. (Tr. 63, 67, 69-70, 109-10). Along with the Blooming Valley, United, and Signet representatives and other individuals,[30] the OSHA inspectors conducted a walkaround inspection of the worksite. (Tr. 63, 70-71, 107). During this walkaround inspection, the OSHA representatives observed: 1) a stack of trusses being stored on a stretch of concrete on the north side of the Barn (Tr. 83-84, 131, 209; Exs. C-8, at 1, 2 & 4; C-16); and 2) a truss with a spreader bar attached, which was being positioned in the parlor area at the time of the Barn's collapse. (Tr. 87-89, 119-20, 268-69; Exs. C-9; C-14, at 7, 8 & 12; C-15). Ultimately, the OSHA inspectors determined that the collapse site was too unstable for them to enter and physically inspect the trusses, so instead AAD Mundt took extensive aerial footage of the collapse using a drone. (Tr. 14, 94-96; Exs. C-12, C-23).

Following his physical inspection of the worksite, CSHO Bertrand contacted Dr. Alan Lu from OSHA's Office of Engineering Services to help investigate the Barn's collapse. (Tr. 130, 290-91; Ex. C-25, at 1). Dr. Lu and CSHO Bertrand visited the collapsed Barn on September 16, 2022, and took additional photographs and videos of the site. (Tr. 130-31, 252, 291-92; C-25, at 4). During his inspection, Dr. Lu extensively documented his observations as to what bracing had

[29] CSHO Bertrand explained that another CSHO saw a report of the collapse on his news feed and referred the matter upward to the OSHA Area Director. (Tr. 62).

[30] Mr. Mensing from EPS was also present for this walkaround inspection. (Tr. 106-07, 183). Additionally, Mr. Boice's expert report indicates that he met with Mr. Tevelde, Mr. Zuhlke, and Mr. Bennett as well as "two OSHA officials" while conducting his own parallel inspection of the Barn with Mr. Schoenfeld. (Ex. C-31, at 1; *see also* Tr. 516, 667-68, 680-81).

and had not been installed in the parlor area at the time of the collapse. (Tr. 291-92, 326-30, 332-33, 338-41, 354-56, 374-76, 398-99; Ex. C-25, at 23 to 33, 43 & 44; C-27, at 1 & 2). Dr. Lu also observed the above-described repair that had been made to bottom chord of one of the trusses. (Tr. 366; Ex. C-25, at 38 & 39). When he later contacted the truss's manufacturer, Alpine, he learned that no one from Signet had contacted Alpine prior to making this repair. (Tr. 366). Finally, Dr. Lu observed the stack of trusses on the north side of the Barn, which he believed had caused "out-of-line bending" and other damage to the trusses. (Tr. 363-65; Ex. C-25, at 37).

After OSHA's physical inspections of the Barn worksite, additional interviews with Signet employees who had been onsite at the time of the collapse, and Dr. Lu's review of the inspection materials, OSHA ultimately concluded Signet had violated the General Duty Clause by failing to protect its employees from struck-by and crushing hazards on four separate instances by: 1) setting and installing the trusses in the Barn without proper temporary bracing or permanent bracing as required by the design engineer's plans; 2) repairing trusses without consulting a truss design engineer; 3) storing trusses on an uneven surface and allowing them to warp; and 4) hoisting trusses using an incorrectly located spreader bar. OSHA also concluded Signet had violated 29 C.F.R. § 1926.21(b)(2) by failing to ensure designated site personnel were trained in the safe erection of wood trusses to include development of a temporary bracing plan and the interpretation of engineer notes on engineering drawings. As a result of these conclusions, OSHA issued the two-item serious Citation to Respondent, proposing a total penalty of $29,019.

DISCUSSION

Citation 1, Item 1

Item 1 of the Citation alleges a violation of the General Duty Clause, 29 U.S.C. § 654(a), which states: "Each employer … shall furnish to each of his employees employment and a place

of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees …."

To establish a violation of the general duty clause, Complainant must prove that: (1) a condition or activity in the workplace presented a hazard; (2) the employer or industry recognized the hazard; (3) the hazard was likely to cause death or serious physical harm; and (4) a feasible and effective means existed to eliminate or materially reduce the hazard. *See Waldon Healthcare Ctr.*, 16 BNA OSHC 1052, 1058 (No. 89-2804, 1993). Complainant must also prove employee exposure to the hazard and that Respondent knew, or with the exercise of reasonable diligence, could have known, of the violative condition. *Tampa Shipyards*, *Inc.* 15 BNA OSHC 1533, 1535 (Nos. 86-360, 86-469, 1992); *Grossman Steel & Aluminum Corp.*, 6 BNA OSHC 2020, 2022 (No. 76-2834, 1978).

Complainant has the burden of establishing each element of his case by a preponderance of the evidence. *See Hartford Roofing Co.*, 17 BNA OSHC 1361, 1365 (No. 92-3855, 1995). "Preponderance of the evidence" has been defined as:

> The greater weight of the evidence, not necessarily established by the greater number of witnesses testifying to a fact but by evidence that has the most convincing force; superior evidentiary weight that, though not sufficient to free the mind wholly from all reasonable doubt, is still sufficient to incline a fair and impartial mind to one side of the issue rather than the other.

Preponderance of the Evidence, BLACK'S LAW DICTIONARY (12th ed. 2024).

Citation 1, Item 1 alleged four instances of a serious violation of the General Duty Clause as follows:

> OSH ACT of 1970 Section 5(a)(1): The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to structural collapse, struck by, and crushing hazards:
>
> (a) Signet Construction, LLC at 45240 146th Street, Summit, SD 57266: On or about and at time prior to September 12, 2022, the employer did not ensure that

employees were protected from struck-by and crushing hazards while setting the 138-foot-long roof trusses on a commercial property without proper temporary installation of a restraint/bracing system designed by a Registered Design Professional Engineer or permanent installed web bracing required by the design engineer's plans. Employees working on, near, and underneath the truss systems were injured as a result of the structural collapse of the roof structure during truss setting operations.

(b) Signet Construction, LLC at 45240 146th Street, Summit, SD 57266: On or about and at time prior to September 12, 2022, the employer did not ensure that employees were protected from struck-by and crushing hazards in that damaged trusses were repaired on site without consultation with truss design engineers. Employees working on, near, and underneath the truss systems were injured as a result of the structural collapse of the roof structure during truss setting operations.

(c) Signet Construction, LLC at 45240 146th Street, Summit, SD 57266: On or about and times prior to September 12, 2022, the employer did not ensure that employees were protected from struck-by and crushing hazards in that trusses were not properly stored. Trusses were placed on an uneven surface and allowed to warp. Employees working on, near, and underneath the truss systems were injured as a result of the structural collapse of the roof structure during truss setting operations.

(d) Signet Construction, LLC at 45240 146th Street, Summit, SD 57266: On or about and at time prior to September 12, 2022, the employer did not correctly locate a spreader bar on the trusses and then hoisted the 138-foot-long trusses in accordance with the Building Component Safety Information ("BCSI") manual. The trusses were prone to be overstressed during rigging due to out-of-plane buckling (i.e., twisting and bending), likely damaging the wood trusses and resulting in an unsafe condition.

Citation & Notification of Penalty at 6.

The Citation also provided the following as a feasible means to abate the conditions alleged in Item 1:

> Among other methods, feasible and acceptable methods to correct this hazard are to ensure that all work is conducted in accordance with design criteria established by the Truss Plate Institute – ANSI/TPI 1-2014 and to refer to the Building Component Safety Information ("BCSI") manual for wood truss temporary bracing requirements.

Id.

On the merits of the four General Duty Clause instances alleged in the Citation, the Court finds, as explained below, Complainant established a violation of the General Duty Clause with regard to Instance (a) of Item 1 of the Citation, AFFIRMS that portion of the Citation, and ASSESSES the proposed penalty of $15,625. With regard to all other alleged instances, the Court finds Complainant has failed to carry her burden of proof on one or more elements of the violations and therefore VACATES those instances.[31]

Preliminary Arguments

Before addressing the elements of the General Duty Clause violations, Respondent advances several preliminary arguments, as follows: 1) Complainant is attempting to make the advisory guidelines set forth in the ANSI/TPI standard and the BCSI Guide referenced in the Citation mandatory by way of the General Duty Clause violations alleged here; 2) the ANSI/TPI standard referenced in the Citation does not apply to truss installers like Signet;[32] 3) a "hazard alert" letter issued to an employer shows Complainant's inconsistent positions on the mandatory nature of the ANSI/TPI standard and BCSI Guide; and 4) the Court should not give any deference to a construction of the Act that would "require adherence to unincorporated ANSI and BCSI recommendations." Resp't's Br. 21 & 22. Based on each of the above, Respondent argues that "Citation 1, Item 1 should be vacated as improperly seeking to require adherence to recommendations irrespective of [Complainant's] burden of proof for a [General Duty Clause] citation item." Resp't's Br. 22. The Court addresses each of these arguments in turn.

[31] Because the Court affirms Instance (a), the instance that was largely the focus of the parties at trial and remains so in their post-trial briefs, the Court does not see the need to address every element of Instances (b), (c), or (d). Rather, the Court will address only those deficiencies in the Secretary's case that are necessary to explain its bases for vacating these remaining instances.

[32] The Court agrees with this argument insofar as it relates to the abatement element of Complainant's prima facie case and addresses it below in analyzing that element for Instance (a) of Item 1.

Mandatory v. Advisory Industry Standards

The first and most substantive of Respondent's general arguments against Item 1 proceeds as follows: The Citation, by citing to the ANSI/TPI 1-2014 standard and BCSI Guide, is attempting to make these documents, which are only advisory in nature, mandatory standards by way of the General Duty Clause. Resp't's Br. 20. Respondent goes on to argue that Complainant "cannot use its 'gap filling' authority under the general duty clause to somehow create a greater right to force external recommendations than it has to enforce its own recommendations." *Id.* Citing several Commission and one circuit court case, Respondent argues that any "should" language in the ANSI/TPI 1-2014 standard and BCSI Guide is purely advisory and cannot form the basis for a General Duty Clause violation. *Id.*

Respondent's argument fails on its first premise because Complainant has not cited either of the industry standards referenced in the Citation as the basis for Respondent's violation of the General Duty Clause. Rather, she has cited these standards and their instructions on various aspects of handling and installing trusses as feasible means of abating the hazards alleged in the Citation. *See generally Science Applications Int'l Corp.*, No. 14-1668, 2020 WL 1941193, at *7-11 (OSHRC, April 16, 2020) (discussing the general requirement of the Secretary to set forth a feasible means of abatement for a General Duty Clause violation). Even if Complainant proves that implementing measures from one or both of these standards would feasibly and materially reduce the hazards alleged, Respondent is "not required to adopt the abatement method suggested by the Secretary, even one found feasible by the Commission; it may satisfy its duty to comply with the standard by using any feasible method that is appropriate to abate the violation." *Cyprus Mines Corp.*, 11 BNA OSHC 1063, 1066 (No. 76-616, 1982); *see also Brown & Root, Inc.*, 8 BNA OSHC 2140, 2144 (No. 76-1296, 1980) ("[A]n employer may defend against a section 5(a)(1)

citation by asserting that it was using a method of abatement other than the one suggested by the Secretary."); *Roadsafe Traffic Sys., Inc.*, No. 18-0758, 2021 WL 5994023, at *9 n.10 (OSHRC, Dec. 10, 2021) (noting that even where the Secretary established her proposed method "is a feasible and effective means of abatement, it is not necessarily the only method RoadSafe could use to materially reduce the cited fall hazard.") (View of Commissioner Laihow).

The cases Respondent has cited, though containing some language seemingly in support of its position, do not dictate a different result. Some legal context is necessary to understand why. These cases relate to section 6(a) of the Act. When Congress passed the Act in 1970, the Secretary was given a two-year window to "by rule[,] promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard" under section 6(a) of the Act ("6(a) standards"). *See* 29 U.S.C. § 655(a); *Simplex Time Recorder Co.*, 12 BNA OSHC 1591, 1593 (No. 82-12, 1985), *aff'd in part*, 766 F.2d 575 (D.C. Cir. 1985). The Act allowed the Secretary to promulgate 6(a) standards "without regard to the notice and comment rulemaking procedures otherwise prescribed by section 6(b) and the Administrative Procedure Act, 5 U.S.C. § 553 …" *Simplex Time Recorder Co.*, 12 BNA OSHC at 1593. Meanwhile, health and safety standards promulgated under section 6(b) of the Act required the Secretary to engage in more typical notice-and-comment rulemaking. *Id.*; 29 U.S.C. § 655(b).

Because 6(a) standards lack typical notice-and-comment input, federal courts and the Commission have held that the Secretary could not make a "substantive change" to an industry standard when promulgating it under section 6(a). *See, e.g.*, *Diebold, Inc. v. Marshall*, 585 F.2d 1327, 1332 (6th Cir. 1978) (section 6(a) "required adoption of 'established Federal' and 'national consensus' standards without substantive modification, and … the Secretary may not enforceably construe a [(6(a)] standard to impose requirements which the standard's source did not impose");

George C. Christopher & Sons, Inc., 10 BNA OSHC 1436, 1443 (No. 76-647, 1982) (holding that the Secretary may not make a "substantive change" to the national standards when promulgating it as a standard under section 6(a)). For example, *Usery v. Kennecott Copper Corp.*, 577 F.2d 1113 (10th Cir. 1977), cited by Respondent, is a case of this variety wherein the Tenth Circuit held that the Secretary "did not comply with the statute by reason of his failure to adopt the ANSI standard verbatim or by failure to follow the appropriate due process procedure [of notice-and-comment rulemaking under section 6(b)]." *Id.* at 1117. Such cases, therefore, relate to specific, court-imposed rulemaking requirements for standards promulgated under 6(a) of the Act; they do not address whether Complainant can reference industry standards in setting forth a feasible means of abatement for a violation of the General Duty Clause.[33]

At other times when promulgating 6(a) standards, the Secretary did not adopt specific language from an industry standard into OSHA's regulations; rather, she merely incorporated the entire industry standard by reference. *See, e.g.*, *William B. Hopke Co.*, 12 BNA OSHC 2158, 2158 (No. 81-206, 1986) (standard stating "Signaling directions by flagmen shall conform to [ANSI] D. 6.1-1971, Manual on Uniform Traffic Control Devices for Streets and Highways"); *Brown & Root, Inc.*, *Power Plant Div.*, 9 BNA OSHC 1027, 1028 (No. 76-2938, 1980) ("The standard states that 'The employer *shall* comply with Power Crane and Shovel Association Mobile Hydraulic Crane

[33] Respondent cites one case, *Cargill, Inc.*, No. 78-4482, 1980 WL 10234 (OSHRCALJ, May 27, 1980), where a Commission ALJ rejected the use of an industry standard in a General Duty Clause case, reasoning that "[i]f the Secretary cannot make a private advisory standard mandatory by adopting it as one of his own, he surely cannot make it mandatory by declaring that it sets minimum level of employer conduct under a general duty clause charge." *Id.* at *8. Of course, as an unreviewed ALJ decision, *Cargill* is of no precedential value and is not binding on this Court. *See Hartwell Excavating Co.*, 4 BNA OSHC 1263, 1264 (No. 3841, 1976). As the judge himself noted, the Secretary was not seeking to have the industry standard set the standard of conduct for the employer but rather sought to have the standard considered as evidence of industry recognition of the alleged hazard. *Cargill*, *Inc.* 1980 WL 10234, at *8. Nonetheless, the judge rejected consideration of the standard based on the reasoning set forth above. *Id*. Moreover, as a matter of internal inconsistency, the judge recognized that "voluntary, private industry standards may be relevant in establishing that an industry 'recognizes' a hazard" but then rejected the Secretary's use of the standard for just that purpose. *Id.* at *7-8.

Standard No. 2.'" (emphasis in original)). When adjudicating violations brought under specific provisions of the incorporated industry standards, the Commission was sometimes confronted with a situation where the cited provisions read as advisory, for example using "should," while the Secretary had used mandatory language, such as "shall," in her regulation. *See, e.g.*, *Brown & Root, Inc., Power Plant Div.*, 9 BNA OSHC at 1028-29. In those cases, the Commission held that an employer could not be held in violation of a non-mandatory provision of an industry standard incorporated by reference into OSHA's regulations. *See Brown & Root, Inc., Power Plant Div.*, 9 BNA OSHC at 1029; *see also William B. Hopke Co.*, 12 BNA OSHC at 2159 ("[B]oth the commission and the courts ha[ve] issued numerous decisions holding that an ANSI standard which uses 'should' remains advisory even after being adopted as an OSHA standard.").

These cases do not support Respondent's argument because neither the ANSI/TPI standard nor the BCSI Guide have been incorporated by reference into OSHA's regulations. Moreover, Complainant is not attempting to establish a violation of the Act under any specific provision or provisions of these standards.[34] *Cf. William B. Hopke Co.*, 12 BNA OSHC at 2158 (alleging a violation of 29 C.F.R. § 1926.201(a)(2) by way of "Paragraph 6E-4 of the [incorporated] ANSI standard"); *Brown & Root, Inc., Power Plant Div.*, 9 BNA OSHC at 1028 (alleging a violation of 29 C.F.R. § 1926.550(a)(17) by way of a violation of "section 8.3.3. of the [incorporated] Power Crane and Shovel Association Mobile Hydraulic Crane Standard No. 2"). As the Court previously set out, citing these standards as *a* feasible means of abating recognized hazards does not mandate compliance with the standards' terms; Respondent remains free to abate the alleged hazards in any

[34] The Court notes that even if these cases were somehow applicable to the circumstances of this case, neither the entire ANSI/TPI standard nor the BCSI Guide is entirely couched in advisory or non-mandatory language. *See, e.g.*, Ex. C-4, at 13 ¶ 2.3.4.5 ("The Contractor shall ensure that the Building support conditions are of sufficient strength and stability …" (emphasis added)); Ex. C-5, at 69 ("Girder Truss plies shall be completely and securely attached together per the Connection requirements provided in the Truss Design Drawing … (emphasis added)).

manner it deems prudent. *Cyprus Mines Corp.*, 11 BNA OSHC at 1066; *Brown & Root, Inc.*, 8 BNA OSHC at 2144.

The Court therefore rejects Respondent's argument that Complainant is attempting to impose industry standards by way of the General Duty Clause. *See The Duriron Co., Inc.*, 11 BNA OSHC 1405, 1407 n.2 (No. 77-2847, 1983), *aff'd*, 750 F.2d 28 (6th Cir. 1984) ("The Secretary did not attempt to enforce the recommended NIOSH standard [by way of the General Duty Clause]. Rather, the Secretary used the recommended standard as general evidence of the hazard and industry recognition of the hazard. This is permissible.").

Hazard Alert Letter

Respondent also points to a "no-violation" or "hazard alert" letter issued from OSHA's Denver Area Office to an employer located in Loveland, Colorado. (Tr. 238-40; Ex. R-2). As explained by CSHO Bertrand, a letter of this type might be "given to an employer when there was something significant enough to do an investigation. There wasn't a fault finding, but yet we did not cite." (Tr. 238). The letter may "recommend that abatement type actions are taken." (Tr. 238). Here, the letter references a truss collapse involving the employer's workers and suggests that the methods from the ANSI/TPI standard and BCSI Guide "may be feasible for your operations." (Ex. R-2, at 1).

Considered alongside counsel's reasons for proffering the letter at trial, Respondent seemingly invokes this letter to demonstrate that OSHA does not consider the cited abatement methods under the ANSI/TPI standard or BCSI Guide to be mandatory, or else to establish OSHA's "inconsistent positions" on the issue.[35] (Tr. 235-37). The Court places no weight on this

[35] To the extent Respondent is arguing that it is inconsistent to cite Signet but not the employer referenced in the letter despite some similarities between the two cases, the Court would not vacate the Citation on that basis. The Commission has long held that Complainant has "broad prosecutorial discretion in deciding whom to prosecute for violations of the Act." *Vergona Crane Co.*, 15 BNA OSHC 1782, 1788 (No. 88-1745, 1992), quoting *DeKalb Forge*

letter in establishing either proposition. As the Court previously laid out in detail, Complainant cannot make her proposed methods of abatement mandatory, either by referencing them in the abatement portion of the Citation or even by establishing that they are a feasible means of abatement at trial, and Respondent remains free to institute alternative methods to abate the hazards alleged. *Cyprus Mines Corp.*, 11 BNA OSHC at 1066; *Brown & Root, Inc.*, 8 BNA OSHC at 2144.

Loper Bright

Finally, Respondent cites to the Supreme Court's recent decision in *Loper Bright Enterprises v. Raimondo*, 603 U.S. 369 (2024), in which the Court overturned its previous holding in *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 832 (1984) that a court should defer to an agency's interpretation of an ambiguous statute so long as its interpretation is reasonable. On this point, Respondent argues as follows: "[A]ny portion of [Complainant's] case for Citation 1, Item 1 regarding the interpretation of [the General Duty Clause] to require adherence to unincorporated ANSI and BCSI recommendations is not reasonable and should not be given any deference." Resp't's Br. 22. Complainant has not asked for deference on any allegedly ambiguous portion of the General Duty Clause, or any other portion of the Act, and the Court therefore finds no reason to further address Respondent's argument in this regard.

Having addressed Respondent's preliminary arguments, the Court turns to the merits of each of the instances of the General Duty Clause alleged in Item 1 of the Citation.

Co., 13 BNA OSHC 1146, 1153 (No. 83-299, 1987). Absent a claim of "selective prosecution" grounded in Constitutional equal protection, an argument Respondent has not raised here, the Court will not second-guess Complainant's "broad prosecutorial discretion." *Vergona Crane Co.*, 15 BNA OSHC at 1788; *see also Erie Coke Corp.*, 15 BNA OSHC 1561, 1569 (No. 88-611, 1992), *aff'd in part*, 998 F.2d 134 (3d Cir. 1993) ("[T]he Secretary's exercise of her discretion not to issue a citation for a particular condition … does not immunize an employer from being cited for the same or a similar condition in a future enforcement action.").

Instance (a) – Lack of Temporary or Permanent Bracing

The Conditions Presented a Hazard

Under the General Duty Clause, "hazards must be defined in a way that apprises the employer of its obligations, and identifies conditions or practices over which the employer can reasonably be expected to exercise control." *Pelron Corp.*, 12 BNA OSHC 1833, 1835 (No. 82-388, 1986) (citing *Davey Tree*, 11 BNA OSHC 1898, 1899 (No. 77-2350, 1984)). To determine if Complainant has established the existence of a hazard, the Commission "analyze[s] each element of the alleged violation with respect to the conditions set forth in the citation, not in terms of the incident or the design defect." *Henkels & McCoy, Inc.*, No. 18-1864, 2022 WL 3012701, at *2 (OSHRC, July 21, 2022). "There is no mathematical test to determine whether employees are exposed to a hazard under the general duty clause. Rather, the existence of a hazard is established if the hazardous incident can occur under other than a freakish or utterly implausible concurrence of circumstances." *Waldon Healthcare Ctr.*, 16 BNA OSHC at 1060 (citing *Nat'l Realty & Constr. Co. v. OSHRC*, 489 F.2d 1257, 1265 n.33 (D.C. Cir. 1973)).

Here, the Citation alleges struck-by and crushing hazards while installing the 138-foot-long trusses without proper temporary bracing or permanent bracing installed according to the engineer's design plans. In arguing against a finding of a hazard for Instance (a), Respondent argues that "testimony is conflicting between the Parties' experts on whether lack of temporary bracing constitutes a hazard, and therefore [Complainant] failed to meet her burden." Resp't's Br. 22. Although this argument is true so far as it goes,[36] it glosses over the Citation's actual allegation that it was a lack of adequate temporary *or* permanent bracing that created a hazard to

[36] *Compare, e.g.,* Tr. 318-19 (opining that lack of temporary bracing on long-span wooden trusses contributes to a possible collapse), Tr. 338 (same), *with* Tr. 612 (opining that the permanent bracing installed by Signet in the Barn at the time of the collapse was sufficient and conformed with industry standards), 691-93 (opining that temporary bracing is unnecessary when permanent bracing can be installed).

Respondent's employees. *See Omissions in Bracing*, *supra*, p. 27-28. On this point, a significant amount of evidence from both parties establishes that trusses, especially long-span wooden trusses like those at issue here, installed without *either* temporary *or* permanent bracing are subject to twisting, bending, buckling, tilting, falling over, or even possible collapse. (Tr. 318-19, 323, 335, 338, 477, 592-96, 662-63, 724; Exs. C-2, at 1 (top left corner), 2 (same), 3 (same) & 4 (same); C-5, at 2, 12, 14, 18, 19, 32, 37 & 38; C-25, at 19, 20 & 47; R-23, at 5 & 6). The Court therefore finds employees installing trusses without adequate temporary *or* permanent bracing, would be subjected to the struck-by and crushing hazards alleged in the Citation "under other than a freakish or utterly implausible concurrence of circumstances." *Waldon Healthcare Ctr.*, 16 BNA OSHC at 1060.

Complainant has established the existence of the hazard alleged in Instance (a) of Item 1 of the Citation.

Respondent and its Industry Recognized the Hazards

Complainant can establish hazard recognition either "by proof that a hazard is recognized as such by the employer or by general understanding in the employer's industry." *Integra Health Mgmt., Inc.*, No. 13-1124, 2019 WL 1142920, at *7 (OSHRC, Mar. 4, 2019). The record establishes both types of hazard recognition here.

Employer Recognition

Signet's supervisors recognized that some form of bracing was needed when installing trusses to address the associated hazards. (Tr. 445-48, 463-64, 477-81, 488, 503-06, 724). All three supervisors were also familiar with the BCSI Guide, either the full Guide or the summary sheets, both of which contain warnings and admonitions on the instability of erected trusses and

thus the importance of bracing trusses during their installation. (Tr. 450-52, 477, 490-91, 504, 508-09, 739-41; Exs. C-2 (throughout); C-5, at i, 2, 3, 10 to 14, 17 to 52).

Respondent's only argument against its own recognition of the hazard again only addresses whether it recognized lack of temporary bracing as a hazard. Resp't's Br. 23 ("Signet determined, per industry practice, that temporary bracing was generally not required for the Project given the initial temporary pipe bracing for the parlor area and then because the holding area was being built onto the finished parlor area."). However, although they might have disputed what type of bracing, temporary or permanent, needed to be used when installing the trusses, Signet's supervisors all recognized that *some* form of bracing was required. (Tr. 445-48, 463-64, 477-81, 488, 503-06, 724).

Taken together, the Court finds this evidence establishes Signet's recognition that inadequately braced trusses posed a hazard to its employees. *See Beverly Enters, Inc.*, 19 BNA OSHC 1161, 1186 (No. 91-3144, 2000) (consolidated) ("While an employer's safety precautions alone do not establish that the employer believed that those precautions were necessary for compliance with the Act, precautions taken by an employer can be used to establish hazard recognition in conjunction with other evidence.") (citation omitted); *Waldon Healthcare Ctr.*, 16 BNA OSHC at 1061 ("Commission precedent establishes that precautions taken by an employer can be used to establish recognition in conjunction with other evidence.")).

Industry Recognition

The Court also finds industry recognition of the hazard. According to Complainant's expert witness Dr. Lu, long-span wooden trusses, like those installed in the Barn, are "very flexible [and] easy to bend sideway or buckle, [which is] a sudden change [in] the shape of a structural component." (Tr. 323). In his opinion, the flexibility of long-span trusses requires employers to

use both temporary and permanent bracing at during and after installing the trusses to ensure adequate stability of the trusses and the final structure and avoid the possibility of a collapse. (Tr. 324-25, 334-35, 38; Ex. C-25, at 19 ("Metal plate connected wood trusses require both temporary and permanent bracing to ensure stability during various phases of construction and throughout the life of the structure.")).

Although Respondent's expert witnesses disagreed with certain aspects of Dr. Lu's opinion on the use of temporary bracing, both witnesses nonetheless recognized that inadequately braced trusses posed a hazard to workers and thus needed to be braced in some fashion during and after their installation. As Mr. Boice colorfully explained, a truss as long as the ones being installed in the Barn has "about as much rigidity as a wet noodle if you don't brace it." (Tr. 663). Thus, "it's absolutely essential that they put the top chord bracing on to guard against tipping, and any of the webs that are in compression need to have a brace or they could buckle … [A]nd then the … bottom course of chords, has to be aligned …." (Tr. 663; *see also* Ex. C-31, at 3 (Mr. Boice's report recommending a "detailed temporary and permanent truss bracing plan" following the Barn's collapse)). Mr. Gardiner also detailed the various twisting, bending, and gravitational forces that need to be addressed in an unbraced truss and how various types of bracing are meant to address those forces and keep trusses stable during and after installation. (Tr. 592-96).

The Court further notes that all three of Signet's supervisors, with decades of collective industry experience in construction, recognized the hazards posed when installing trusses and the need for some form of bracing. (Tr. 445-48, 463-64, 477-81, 488, 503-06, 724). Finally, the BCSI Guide and summary sheets contained numerous warnings on the hazards associated with

installing trusses and the need for adequate temporary and permanent bracing.[37] (*E.g.*, Exs. C-2 (throughout); C-5, at i, 2, 3, 10 to 14, 17 to 52).

Based on all of the above, and further noting that Respondent has not addressed industry recognition of the hazard, the Court finds Complainant has established industry recognition of the hazard. *See Kokosing Constr. Co.*, 17 BNA OSHC 1869, 1873-74 (No. 92-2596, 1996) (relying on industry standards and expert testimony to establish industry recognition of the hazard); *Duriron Co.*, 11 BNA OSHC at 1407 n.2 (relying on expert testimony and noting an industry standard in determining industry recognition of the hazard); *Cargill, Inc.*, 10 BNA OSHC 1398, 1400 (No. 78-5707, 1982) (relying on industry documents to establish hazard recognition)

The Hazards were Likely to Cause Death or Serious Physical Harm

To determine whether a hazard is "causing or are likely to cause death or serious physical harm" under the General Duty Clause, the Commission does not look to the likelihood of an accident or injury occurring, but whether, if an accident occurs, the results are likely to cause death or serious harm. *Beverly Enters., Inc.*, 19 BNA OSHC at 1188; *Waldon Healthcare Ctr.*, 16 BNA OSHC at 1060.

Here, the parties stipulated at trial that "if the other required elements of the [violations] are proven that the conditions could have resulted in serious injuries." (Tr. 129-30; *see also* note 4, *supra*). The Court accepts the parties' stipulation and finds this element of the General Duty Clause established. *See Armstrong Utils. Inc.*, No. 18-0034, 2021 WL 4592200, at *2 n.2 (OSHRC, Sept. 24, 2021) (finding it was "plain error" to not accept the parties' stipulation).

[37] As just one of many examples, Chapter B1 of the BCSI Guide contains the following warning:

> **WARNING** The consequences of improper handling, erecting, installing, restraining and Bracing [of trusses] can result in a collapse of the structure, which … can result in serious injury and/or loss of life. The majority of Truss accidents occur during Truss installation and not as a result of improper design or manufacture.

(Ex. C-5, at 2; *see also* Ex. C-2, at 1 (top left corner, containing a similar warning)).

Respondent's Employees were Exposed to the Hazard

Though not explicitly an element of the general duty clause, the Commission has held that "[i]mplicit in the above elements is the necessity for establishing employee exposure to the cited hazardous condition." *Grossman Steel & Aluminum Corp.*, 6 BNA OSHC at 2022. Complainant "may prove employee exposure to a hazard by showing that, during the course of their assigned working duties, their personal comfort activities on the job, or their normal ingress-egress to and from their assigned workplaces, employees have been in a zone of danger or that it is reasonably predictable that they will be in a zone of danger." *RGM Constr. Co.*, 17 BNA OSHC 1229, 1234 (No. 91-2107, 1995).

Here, the Court finds no reasonable dispute that Respondent's employees were exposed to the struck-by and crushing hazards alleged in the Citation while working to install the long-span trusses in the parlor area of the Barn. (Tr. 67, 70, 100-01, 108-10, 483-84; Ex. R-13). Neither party addresses this element of the violation. Complainant has established employee exposure.

Feasible and Effective Means of Eliminating or Materially Reducing the Hazard

To establish this element of the violation, Complainant must "specify the proposed abatement measures and demonstrate both that the measures are capable of being put into effect and that they would be effective in materially reducing the incidence of the hazard." *Arcadian Corp.*, 20 BNA OSHC 2001, 2011 (No. 93-0628, 2004), quoting *Beverly Enters., Inc.*, 19 BNA at 1190. "Feasible means of abatement are established if conscientious experts, familiar with the industry would prescribe those means and methods to eliminate or materially reduce the recognized hazard." *Arcadian Corp.*, 20 BNA OSHC at 2011, quoting *Pepperidge Farm, Inc.*, 17 BNA OSHC 1993, 2032 (No. 89-0265, 1997). Complainant must show its proposed measures are "both economically and technologically capable of being done." *U.S. Postal Serv.*, No. 16-1713,

2023 WL 2263313, at *7 (OSHRC, Feb. 17, 2023), quoting *Beverly Enters.*, 19 BNA OSHC at 1191. "Where an employer has undertaken measures to address a hazard alleged under the general duty clause, the Secretary must show that such measures were inadequate." *A.H. Sturgill Roofing, Inc.*, No. 13-0224, 2019 WL 1099857, at *8 (OSHRC, Feb. 28, 2019); *see also SeaWorld of Fla., LLC v. Perez*, 748 F.3d 1202, 1215 (D.C. Cir. 2014) (where "an employer has existing safety procedures, the burden is on the Secretary to show that those procedures are inadequate.").

Here, Item 1 of the Citation alleges the following as feasible means of abatement:

> Among other methods, feasible and acceptable methods to correct this hazard are to ensure that all work is conducted in accordance with design criteria established by the Truss Plate Institute – ANSI/TPI 1-2014 and to refer to the Building Component Safety Information ("BCSI") manual for wood truss temporary bracing requirements.

The Court discusses each of these abatement methods in turn.

The ANSI/TPI standard is inapplicable to Signet's activities

As an initial matter, the Court finds that any reliance Complainant may have on the ANSI/TPI standard referenced in the Citation is misplaced. As TPI, the developer of the standard, states in its Foreword, the standard "establishes methods of design and construction for wood trusses," not the installation of trusses. (Ex. C-4, at i). Moreover, by its own terms, this standard was primarily "developed for use by professional engineer and architects involved in the design of metal-plate-connected wood trusses" but may also "serve the truss manufacturer, and aid building officials, approved quality assurance agencies, and building engineers or architects of record." (*Id.*). Nowhere does the standard say it is aimed at truss installers like Signet. Further still, the standard specifically states that it "establishes the minimum requirements for the design and construction of metal-plate-connected wood Trusses." (*Id.* at 1 ¶ 1.3.1).

The ANSI/TPI standard only briefly discusses the bracing of trusses, particularly long-span

trusses of 60 feet or greater, by directing that the owner of the building "shall contract with any Registered Design Professional for the design of the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing" as well as a "Special Inspector" to ensure that any such bracing is "installed in accordance with the approved Construction Documents and the approved Truss Submittal Package." (*Id.* at 11 ¶ 2.3.1.6.1 & .2; *see also id.* at 9 ¶ 2.2 (glossary of defined terms)). To the extent the standard discusses any specific bracing requirements, it often refers back to the BCSI Guide rather than provide any detailed instructions of its own. *See, e.g.*, *id.* at 9 ¶ 2.2; 12 ¶¶ 2.3.3.1.1, 2.3.3.2.

For the above reasons, the Court places no weight on this standard in establishing a feasible means of abatement on the bracing of trusses.[38] *Cf. Mo. Basin Well Serv., Inc.*, 26 BNA OSHC 2314, 2320-21 (No. 13-1817, 2018) (finding a proposed industry standard did not establish a feasible means of abatement where it did "not appear to have been intended to address the circumstances at issue here").

Temporary diagonal bracing would materially reduce the hazard

As to the BCSI Guide, Complainant has demonstrated that its method of using temporary diagonal top and bottom chord bracing would have materially reduced the struck-by and crushing hazards posed when erecting the long-span wooden trusses in the Barn. At many points, the Guide emphasizes the importance of installing diagonal bracing. (Ex. C-5, at 2, 3, 12 to 14, 17, 20, 39). For example, in Chapter B1 the Guide states: "It is critical to install Lateral Restraint and Diagonal Bracing for the Top Chord and Web Member Plane immediately to prevent out-of-plane buckling

[38] The Court notes that, except for pointing out that the ANSI/TPI standard "incorporates the BCSI Guide as a referenced standard and refers users to the BCSI Guide," Complainant does not rely on this document in its briefing for this element of the violation either. Complainant's Br. 44. As to the other instances of the General Duty Clause alleged in Item 1 of the Citation, the Court does not reach the feasible means of abatement element of those instances. However, the Court notes that Complainant has not relied on the ANSI/TPI standard in arguing for feasible means of abatement for those instances. Complainant's Br. 46 & 47.

of the Truss." (Ex. C-5, at 12). At another point, it emphasizes "**DO NOT** fail to install Diagonal Bracing." (*Id.* at 17). Elsewhere still, it notes that "[t]he Purlins alone will not adequately brace of prevent buckling of the Top Chord and must themselves be braced." (*Id.* at 39).

At trial and in his expert report, Complainant's expert, Dr. Lu, explained the reasoning behind the BCSI Guide's emphasis on temporary diagonal bracing. Namely, diagonal bracing installed between top and bottom chord lateral bracing prevents the potential twisting, bending, or buckling of trusses in the same direction that lateral bracing alone cannot prevent. (Tr. 318-19, 325, 334-35, 338; Ex. C-25, at 47 & 48). This is especially so with long-span wooden trusses, like those being installed in the Barn. (Tr. 335).

For their part, Respondent's expert witnesses did not believe that a lack of temporary bracing led to the collapse of the Barn. (Tr. 671-73; Exs. C-31, at 2; R-23, at 5 & 6). However, as the Court previously noted, the cause of the accident is not at issue in this case. *See* note 27, *supra*. Mr. Gardiner did not specifically refute Dr. Lu' assertion, corroborated by the BCSI Guide's instructions, regarding the efficacy of temporary diagonal bracing when installing long-span trusses. In fact, he noted in his expert report that "[t]emporary truss bracing is used to provide temporary stability to trusses during the erection." (Ex. R-23, at 5). Mr. Boice briefly stated at trial that "the purlins … do[] not need diagonal bracing … because it's tied into that holding barn. The holding barn holds everything." (Tr. 716). Mr. Boice never offered a further explanation for this statement,[39] and the Court finds it does not undermine Dr. Lu's opinion, backed by the BCSI Guide, on the general efficacy of temporary diagonal bracing in handling and installing long-span

[39] Some testimony was elicited at trial regarding "free-standing" buildings or structures, and there was some suggestion that bracing requirements may be different for such structures. (Tr. 192-93, 392-94, 407, 419-20, 597; Exs. C-25, at 47; R-26, at 24). In his opening statement, Respondent's attorney suggested this issue might be raised in this case (Tr. 26), and Mr. Boice's statement may have been related to that point. However, neither party has advanced an argument one way or the other on the issue in their post-trial briefs, and the Court reaches no conclusion based on the scattershot evidence in the record.

wooden trusses. Additionally, the Court notes that Mr. Boice's expert report, written shortly after the Barn's collapse, recommended that a temporary bracing plan be developed for the Barn. (Ex. C-31, at 3).

The Court therefore finds that Complainant has demonstrated a feasible means of abatement because "conscientious experts, familiar with the industry would prescribe those means and methods to eliminate or materially reduce the recognized hazard." *Arcadian Corp.*, 20 BNA OSHC at 2011, quoting *Pepperidge Farm, Inc.*, 17 BNA OSHC at 2032.

Complainant has demonstrated technological and economic feasibility

The Secretary has also established that the use of temporary diagonal chord bracing is both technologically and economically feasible.

As to technological feasibility, many temporary bracing elements are similar to permanent bracing elements, for instance, wooden boards or metal clips or hangers. (Tr. 81, 218, 336-37, 452, 463, 482, 496, 505, 724; *see, e.g.*, Exs. C-2 (various examples of bracing elements throughout); C-5, at 17, 20, 22, 25, 28, 29 & 39; C-12; C-25, at 27, 29, 30, 32 & 33). Moreover, many temporary bracing elements often become part of the permanent bracing of a structure. (Tr. 113, 152, 218, 324-25, 327, 339-40, 374-75, 398, 478, 662-63, 692; Exs. C-2, at 1 to 3; C-5, at 38; C-27, at 2).

The record establishes that Signet's supervisors are familiar with and capable of installing both temporary and permanent bracing elements, even if Signet generally favors permanent bracing over temporary. (Tr. 445-48, 450-52, 462-64, 477-79, 480-81, 488, 490-91, 503-06, 508-09, 724-28, 734-37, 739-59). Respondent offers no contrary argument and presented no contrary evidence at trial that temporary diagonal bracing would be infeasible. The Court thus finds the proposed abatement technologically feasible. *Cf. SeaWorld of Fla.*, 748 F.3d at 1215 (proposed

abatement measures feasible where cited employer "implemented many of [them] on its own"); *Science Applications Int'l Corp.*, 2020 WL 1941193, at *8 (finding a measure feasible where it was implemented within a month of the accident leading to the citation).

For similar reasons, the Court finds the proposed abatement measure is economically feasible, and again Respondent has offered no evidence to the contrary. Indeed, in response to Complainant's request for documents on the issue of economic infeasibility, Respondent stated "it had identified no documents relevant to the issue of economic feasibility." Joint Status Report Regarding Mot. to Compel (OSHRC Docket No. 23-0339, March 4, 2014); *see also* Order Granting Complainant's Mot. to Compel Discovery Responses (OSHRC Docket No. 23-0339, March 12, 2024) (stating same). The Court agrees with Complainant that the "deficiencies in [Respondent's] response should be taken as establishing that there was no such evidence, not that the Secretary failed to carry her burden." *N. Landing Line Co.*, 19 BNA OSHC 1465, 1473 (No. 96-0721, 2001). Absent any evidence that "the cost of compliance would jeopardize [Signet's] long-term profitability and competitiveness," the Court finds the abatement measure economically feasible. *U.S. Postal Serv.*, 2023 WL 2263313, at *7, quoting *Waldon Healthcare Ctr.*, 16 BNA OSHC at 1063.

Signet's existing safety measures were inadequate

Complainant has also demonstrated that Respondent's existing measures to address the hazards associated with installing long-span wooden trusses were inadequate. At trial, Signet's employees all emphasized that, rather than installing temporary diagonal bracing, Signet's preferred method was to put in all permanent bracing as the trusses were set and anchored. (Tr. 445-46, 448, 462-64, 477-81, 488, 503-07, 735-37, 742-59). Here, however, despite installing approximately 60 trusses in the parlor area, spanning nearly its entire length, Respondent did not

install all of the bracing called for in EPS's permanent bracing plan for the Barn. (Tr. 72-73; Exs. C-12; C-14, at 7, 9 to 12; C-23, at 04:30 to 04:45; C-25, at 10, 56 & 57; R-23 at 3; *see also Omissions in Bracing*, *supra*, p. 27-28). As Dr. Lu's inspection of the Barn demonstrated, and as Mr. Cardenas's testimony corroborated, not all of the attic cross-bracing provided for in the Barn's permanent bracing plan was installed in the parlor area. (Tr. 340-41, 354, 757-58; Exs. C-25, at 26, 27, 31, 32 & 52; C-28; R-28, at 10 & 11). Dr. Lu also found that "[m]any diagonal bracing and continuous lateral bracing on the web and center of the trusses … were found to be missing."[40] (Ex. C-25, at 25). Particularly, he observed a lack of "diagonal and continuous lateral bracing" on the web members of the last five trusses to be installed as well as on the "web members at [the] center of the trusses in other area." (*Id.* at 12, 25, 27, 29 & 30; *see also* R-28, at 11). Finally, because it had run out of roof flashing, Signet could not install metal sheathing over the majority of the trusses in the parlor area of the Barn, which could have provided additional temporary or permanent support for the trusses.[41] (Tr. 74, 79, 495-96, 737-39; Exs. C-12, at 1, 2, 4, 5 & 7; C-

[40] For his part, one of Respondent's experts, Mr. Gardiner, reached the opposite conclusion, stating in his report that "permanent diagonal, top chord and bottom chord bracing had been installed [in the parlor area] per the erection drawings." (Ex. R-23, at 5). Mr. Gardiner, who did not physically inspect the collapsed Barn before authoring his report, cited Mr. Boice's expert report for his conclusion. (*Id.*; *see also* Tr. 581). However, nowhere in Mr. Boice's expert report does he mention diagonal bracing, only "cross bracing" and purlins. (Ex. C-31, at 2; *see also* Tr. 698). In the same paragraph of his report where Mr. Gardiner stated permanent diagonal bracing had been installed in the parlor area, Mr. Gardiner also cited to a photograph of an aerial view of the collapsed Barn and went on to state "as can be seen in **Figure 1** above, Signet did install permanent bracing in all trusses except the last five trusses erected." (Ex. C-23, at 5 (bold in original)). However, Mr. Gardiner's report does not point to any specific part of this image, which depicts an immense area of nearly indiscernible debris, to support his conclusion. The Court thus finds Mr. Gardiner's conclusion on the existence of diagonal bracing in the parlor area to be unsupported by the evidence he cited for that proposition. The Court therefore credits Dr. Lu's account of the matter.

[41] The Court notes a great deal of evidence suggesting that metal roof sheathing can, in some circumstances, serve as a substitute for other types of temporary or permanent diagonal bracing on the top chords of the trusses. (Tr. 80, 216-17, 255, 336-37, 354-55, 424-25, 429-32, 463, 506-07, 737; Exs. C-2, at 2 (top left box & points 5 & 8, 3 (leftmost column); C-5, at x, 20, 22, 28, 29, 39). For example, according to the chapter of the BCSI Guide on temporary bracing, sheathing can act as top chord diagonal bracing for at least for the first five trusses installed. (Ex. C-5, at 20). This chapter goes on to instruct truss installers to "[a]pply Structural Sheathing early and often. Do not wait until all Trusses are set to apply Structural Sheathing." (*Id.* at 28). This chapter also suggests that "applying the Structural Sheathing is the preferred method" for long-span trusses. The chapter of the BCSI Guide on permanent bracing also states that "Permanent Bracing for the Top Chords of the Trusses is typically provided by attaching Structural Sheathing ..." (*Id.* at 39). Dr. Lu's expert report also refers to sheathing as part of a building's "permanent bracing and other structural elements." (Ex. C-25, at 19). Mr. Zuhlke suggested at one point that he considered the sheathing

23, at 00:18 to 01:03, 02:18 to 02:22, 04:44; C-25, at 10).

All of these missing elements should have been installed as permanent bracing under EPS's bracing plan for the Barn. (Tr. 79, 216, 218, 254-55, 336, 340, 354-55, 398-99, 409-10, 478-79, 506-07, 593-94, 727-28, 754; Exs. C-25, at 14, 15, 19, 25, 27, 31, 32, 42, 44, 46, 52, 53, 54, 59 & 60; C-27, at 1 to 3; C-31, at 2; R-28 at 11 to 14). And all of the permanent bracing set forth in EPS's plan needed to be installed for the trusses to be considered fully stable. (Tr. 324, 478-79, 503-06, 592-94, 663; Exs. C-2, at 3 (throughout but particularly first column); C-5, at 2, 3 & 38 C-25, at 19 & 20 ("Permanent bracing … is designed to provide ongoing stability, resist loads, and maintain the structural integrity of the truss system throughout its service life."); R-23, at 5; R-28, at 10 ("Until the building is completed erected in accordance with the construction documents, the trusses are unstable and may present a safety hazard.")).

Thus, the Court need not decide whether, as a general matter, Signet's practice of installing all permanent bracing in lieu of using temporary diagonal bracing is sufficient to abate the hazards associated with installing long-span trusses.[42] It suffices to say that, in this case, where numerous bracing deficiencies and omissions existed for the trusses that were installed, Complainant has established that Signet's method of abating the alleged hazards was inadequate. *See Cyprus Mines Corp.*, 11 BNA OSHC at 1066 (abatement methods utilized by an employer must by "appropriate

to be "part of the structural design of the building. It's not actually part of the permanent bracing." (Tr. 446).

Here, even if metal sheathing could have served as temporary diagonal bracing to the trusses in the parlor area, Signet failed to install the sheathing in the majority of the parlor area of the Barn, despite installing approximately 60 trusses there. (Tr. 74, 79, 495-96, 737-39; Exs. C-12, at 1, 2, 4, 5 & 7; C-23, at 00:18 to 01:03, 02:18 to 02:22, 04:44; C-25, at 10). In the absence of any other temporary diagonal bracing, it therefore failed to use adequate diagonal bracing on most of the trusses.

[42] In this regard, the expert witnesses reached no consensus on this question, with Mr. Boice offering arguably contradictory conclusions between his trial testimony and expert report. *Compare* Ex. C-25, at 15 to 17 (concluding that Respondent was required to use temporary bracing in the Barn), *with* Tr. 612 (opining that Signet's use of only permanent bracing conformed with industry standards), *with* Tr. 692-93 (opining that "there's no magic to temporary bracing if you're putting in permanent bracing"), *with* Ex. C-31, at 3 (recommending a "detailed temporary and permanent bracing plan" be developed for the Barn).

to abate the violation"); *see also Nat'l Realty & Constr. Co.*, 489 F.2d at 1266-67 (describing an employer's duty to abate recognized hazards under the General Duty Clause).

For these reasons, Complainant has established the feasible means of abatement element of the violation.

Respondent had Knowledge of the Hazardous Conditions

In addition to proving that Respondent, or its industry, recognized the hazard, Complainant must also prove that Respondent knew or, with the exercise of reasonable diligence, could have known of the presence of the violative condition. *Pride Oil Well Svc.*, 15 BNA OSHC 1809, 1814 (No. 87-692, 1992). Complainant need not show Respondent knew the conditions were hazardous or violated the Act; rather, he need only show Respondent had actual or constructive knowledge of the conditions giving rise to the hazard. *Phoenix Roofing, Inc.*, 17 BNA OSHC 1076, 1079 (No. 90-2148, 1995). A supervisor's knowledge of the condition can be imputed to the employer. *Access Equip. Sys., Inc.*, 18 BNA OSHC 1718, 1726 (No. 95-1449, 1999).

Two of Signet's crew leaders were onsite the day of the Barn's collapse: Mr. Cardenas and Mr. Trejo. (Tr. 70, 73, 143-47, 223, 255-56, 728). Respondent itself has characterized Mr. Cardenas as a supervisor (Resp't's Br. 26), and the Court finds sufficient evidence to support that characterization. (Tr. 144, 146, 473, 480, 719, 726, 728-30); *see also Tampa Shipyards, Inc.*, 15 BNA OSHC at 1538 n.10 (employee was supervisor where he was "responsible to higher supervision for the progress and execution of the work"); *Mercer Well Serv.*, 5 BNA OSHC 1893, 1894 (No. 76-2337, 1977) (crew chief was supervisor for purposes of the Act where he maintained contact with designated supervisor to relay orders to crew and report problems to that supervisor).

The record demonstrates that Mr. Cardenas directed Signet's other employees on where to install bracing in the Barn and what type of bracing to install. (Tr. 723-729, 736). Mr. Cardenas

testified at length at trial about what permanent bracing had been installed in the parlor area of the Barn and acknowledged that only some of the attic cross-bracing provided for in the permanent bracing plan had been installed at the time of the Barn's collapse. (Tr. 733-36, 742-58; Ex. R-28, at 11). He also knew that Signet, in accordance with its established practice, was not using temporary diagonal bracing on the top chord of any of the trusses being installed in the Barn, including in the parlor area, and that Signet was unable to install metal sheathing at a pace keeping up with their truss installation due to a lack of roof flashing. (Tr. 737-39, 758-59). Mr. Cardenas thus had actual knowledge of the conditions giving rise to the hazard, i.e., lack of adequate temporary or permanent bracing. *Phoenix Roofing, Inc.*, 17 BNA OSHC at 1079. His knowledge is imputed to Respondent. *Access Equip. Sys., Inc.*, 18 BNA OSHC at 1726.

Against this conclusion, Respondent argues that "there is no evidence in the record on how long any improper bracing or lack of adequate bracing existed at the Worksite at the time of the Collapse." Resp't's Br. 26. Respondent goes on to argue that "[t]here is no evidence of where Cardenas was during the Project, how often he observed the bracing being done, the sequence of bracing for the holding [sic] area, or to what extent he knew the sequence being installed." *Id.*

The Court finds Respondent's assertions are flatly contradicted by the various parts of Mr. Cardenas's testimony cited above. (Tr. 723-731, 733-39, 742-59). However, to the extent there is any doubt that Mr. Cardenas had actual knowledge of the violative condition, the Court finds either of Signet's crew leaders who were onsite and monitoring the progression of the work could have discovered the violative condition with reasonable diligence given that the bracing being installed in the Barn "would have been readily apparent to a [Signet] supervisor." *Capform Inc.*, 16 BNA OSHC 2040, 2045 (No. 91-1613, 1994); *see also* (Tr. 729-31 (Mr. Cardenas describing his activities on the date of the collapse including monitoring progression of the work)).

Respondent therefore had constructive knowledge of the violative condition. *See Am. Airlines, Inc.*, 17 BNA OSHC 1552, 1555 (No. 93-1817, 1996) (consol.) (finding constructive knowledge where the violative "conditions were in plain view and … supervisory personnel were present throughout work operations").

The Court finds Respondent had actual and constructive knowledge of the violation alleged in the Instance (a).

Complainant having established all elements of a General Duty Clause violation with regard to Item 1, Instance (a) of the Citation, the Court AFFIRMS the violation.

Instance (b) – Improper Repair of a Truss

Item 1, Instance (b) of the Citation alleges that Respondent committed a violation of the General Duty Clause "in that damaged trusses were repaired on site without consultation with truss design engineers." In her post-trial brief, Complainant, in a single paragraph, points to Dr. Lu's testimony and expert report and the BCSI Guide's instructions on the repair of trusses and argues that "[a]n unauthorized repair of a critical member of a truss could jeopardize the safety or integrity or structural adequacy of the entire truss." Complainant's Br. 37. Respondent argues that there is insufficient evidence to conclude that the single field repair contributed to the Barn's collapse or constituted a recognized hazard to employees. Resp't's Br. 23. The Court agrees with Respondent as to its latter point.

On the repair itself, Complainant established that someone, presumably a Signet employee,[43] repaired a portion of the bottom chord of a single truss in the parlor area of the Barn and that no one contacted Alpine, the truss designer, or EPS, the truss manufacturer, prior to making this repair. (Tr. 132-34, 184, 253, 366-67, 404, 454-58, 608, 633-34; Exs. C-17; C-25, at

[43] The Court notes that Respondent has not contested that a Signet employee made the field repair at issue. However, the Court also notes the lack of any direct evidence of this fact.

38 & 39). This repair consisted of nailing two pieces of wood on either side of the chord where a metal connector plate normally would have been. (Tr. 132-34, 253, 366, 404, 455, 457-58, 608, 633; Exs. C-17; C-25, at 38 & 39). Neither the CSHO nor Dr. Lu identified any other truss repairs when inspecting the Barn worksite. (Tr. 253, 404).

Single Truss Repair was not a Recognized Hazard

Complainant has not produced sufficient evidence for the Court to conclude that Signet's failure to obtain an engineer's approval for this single repair exposed its employees to the struck or crush-by hazards alleged in the Citation. Although Dr. Lu opined that the repair of a truss without an engineer's approval can cause a truss or truss system to shift weight in unintended ways, he did not meaningfully explain how a single, small truss repair could jeopardize the structural integrity of an entire truss system. (Tr. 367-68, 404-05; Ex. C-25, at 38). On the other hand, as Mr. Gardiner pointed out, the photograph of the repaired truss clearly depicts that the repair was still intact following the Barn's collapse, further undermining the assertion that it constituted a recognized hazard to employees working in the vicinity of the trusses prior to the Barn's collapse. (Tr. 608; Ex. R-23, at 14).

Moreover, Mr. Zuhlke explained, notwithstanding the BCSI Guide's broader requirement to obtain a "Repair Detail" *prior* to any truss repair,[44] Signet had some level of authorization to perform minor, temporary truss repairs in the field, so long as an engineer's approval was eventually obtained. (Tr. 454-58). Mr. Gardiner bolstered this point, opining that the repair identified by Complainant is "just a standard repair you'll see in half the houses across America" that can be done by any qualified person. (Tr. 634).

[44] As highlighted in Dr. Lu's report, the BCSI Guide states: "Do not attempt to repair the Truss without a Repair Detail from the Building Designer, Truss Designer or Truss Manufacturer." (Exs. C-5, at 55; C-25, at 38). "Repair Detail" is defined as a "written, graphic, or pictorial depiction of the required fix to an altered or damaged Truss or part." (Ex. C-5, at 96).

The Court therefore finds Complainant has failed to establish the existence of a recognized hazard with regard to the single truss repair identified.

Respondent had no Knowledge of the Hazardous Condition

The Court also finds that, even if the field repair constituted a recognized hazard, Complainant has failed to establish Respondent's knowledge of the hazardous condition. As the Court previously detailed in analyzing Instance (a) of Item 1 of the Citation, both Mr. Cardenas and Mr. Trejo were supervisors for purposes of imputing knowledge to Respondent. There is no evidence that either individual had actual knowledge of the field repair at issue. Thus, Complainant can only establish this element of the violation by demonstrating that one or more of the supervisors had constructive knowledge of the violative condition. *Pride Oil Well Svc.*, 15 BNA OSHC at 1814.

The single truss repair at issue was the only one identified by the Complainant in the parlor area of the Barn, an area encompassing thousands of square feet. (Tr. 253, 404, Exs. C-17; R-28, at 2 & 4). As previously noted, the repair covered only a small portion of the bottom chord of a single 138-foot truss. (Tr. 132-34, 253, 366, 404, 455, 457-58, 608, 633; Exs. C-17; C-25, at 38 & 39). Prior to the Barn's collapse, there were approximately sixty 138-foot trusses installed in the parlor area of the Barn, elevated more than 18 feet above the ground. (Tr. 72-73; Exs. C-12; C-14, at 7, 9 to 12; C-23 at 04:30 to 04:45; C-25, at 9, 10, 56 & 57; R-23, at 3; R-28, at 14). There is no evidence as to when exactly this truss repair was made, how long it existed prior to the Barn's collapse, or that any of Signet's supervisors were in the area where the repair was made.

Under these circumstances, the Court does not find the lone truss repair identified by Complainant was in "plain view" because the record fails to establish that it would have been "readily apparent to anyone who looked" at the underside of the installed trusses. *See Hamilton*

Fixture, 16 BNA OSHC 1073, 1087 (No. 88-1720, 1993), *aff'd*, 28 F.3d 1213 (6th Cir. 1994), quoting *Simplex Time Recorder Co.*, 766 F.2d at 589. Nor does the Court find that Signet's supervisors onsite could have otherwise discovered the repair with the exercise of reasonable diligence. *See LJC Dismantling Corp.*, 24 BNA OSHC 1478, 1480-81 (No. 08-1318, 2014) (finding no constructive knowledge where a 36-inch gap was in plain view but there was no evidence as to how long this condition existed); *Cranesville Block Co.*, 23 BNA OSHC 1977, 1986 (No. 08-0316, 2012) (consol.) (constructive knowledge not established where hazardous condition was in plain view but no evidence of how long it existed or whether supervisors were in the area of the condition); *cf. KS Energy Servs. Inc.*, 22 BNA OSHC 1261, 1267-68 (No. 06-1416, 2008) (finding constructive knowledge where large street signs were in plain view of a supervisor on an "unchanged" quarter-mile stretch of road).

Complainant has failed to establish that the lone truss repair alleged in Instance (b) of Item 1 of the Citation represented a hazardous condition and further failed to establish that, even if it did, Respondent had actual or constructive knowledge of the condition. The Court therefore VACATES Instance (b) of Item 1 of the Citation.

Instance (c) – Improper Storage of Trusses

Item 1, Instance (c) of the Citation alleges that Respondent committed a violation of the General Duty Clause "in that trusses were not properly stored" because the "[t]russes were placed on an uneven surface and allowed to warp." In her post-trial brief, Complainant, in a single paragraph, points to Dr. Lu's testimony and expert report and the BCSI Guide's instructions on the storage of trusses and argues that Respondent's stacking of the trusses at the Barn worksite posed a hazard to its employees. Complainant's Br. 36. Respondent argues that the evidence is insufficient to demonstrate that these trusses presented a hazard at all and further that the evidence

is insufficient to establish a recognized hazard because there is no evidence that the trusses actually warped from stacking. Resp't's Br. 24. The Court again agrees with Respondent that Complainant has failed to demonstrate that Signet's storage of the trusses represented a recognized hazard to its employees.

Complainant's photographs of the stacked trusses show them being stored on a level stretch of concrete north of the Barn. (Tr. 84, 364, 466-67, 632; Exs. C-8, at 1, 2 & 4; C-16). The majority of the length of the trusses is on this stretch of concrete, with a small portion, perhaps less than ten percent of the trusses' length, overflowing onto the ground next to the concrete. (Exs. C-8, at 1, 2 & 4; C-16). It does not appear from the photographs that the ground next to the stretch of concrete is much lower than a few inches from the stretch of concrete, and thus no significant bending or warping can be seen in this portion of the trusses. (Exs. C-8, at 1, 2 & 4; C-16).

Granted, some significant bending can be seen in the middle of the trusses. (Tr. 467; Exs. C-16, at 2 & 3; C-25, at 37; R-23, at 14 & 15). However, as Mr. Zuhlke explained, this was due to the heavier lamination of the trusses in their center, being "four ply thick in the middle compared to two on each side." (Tr. 467; *see also* Ex. R-23, at 15). Complainant has therefore not shown that this incidental bending was the result of the trusses being improperly stored on an uneven surface. Indeed, as Respondent's expert witness Mr. Gardiner pointed out, given the inherent pliability of long-span wooden trusses, some bending or twisting is inevitable during their storage and installation. (Tr. 608-09, 632; Ex. R-23, at 14 & 15; *see also* Tr. 323-25, 333-34, 467, 481-82, 510-11, 663, 697; Exs. C-25, at 34; C-27, at 5).

However, even assuming this bending in the middle of the trusses was significant enough to damage the trusses, Complainant presented no evidence that Signet's storage of the trusses contributed to the struck or crush-by hazard as alleged in the Citation because there is insufficient

evidence to conclude that any trusses stored in this manner were installed in the Barn. *See Well Sols. Inc.*, 17 BNA OSHC 1211, 1213 (No. 91-340, 1995) (detailing what the Secretary must demonstrate when the cited hazard is a condition or practice that contributes to the increased likelihood of an existing hazard), citing *Pelron Corp.,* 12 BNA OSHC at 1835.

Neither the prescriptions in the BCSI Guide nor Dr. Lu's testimony, both cited by Complainant in her post-trial brief, sway the Court's conclusion. As to the BCSI Guide, it specifically contemplates that "[t]russes may be unloaded directly on the ground at the time of delivery or stored temporarily in contact with the ground after delivery." (Ex. C-5, at 4 & 75). The Guide's prescription to place blocking under the trusses only applies if the trusses "are to be stored horizontally for more than one week," a condition precedent that may not have even applied to the trusses being stored at the Barn worksite.[45] (*Id.*) Moreover, the figures in the Guide cautioning against storing trusses on an uneven surface depict trusses being stored severely out-of-plane, not minimally as the ones at the Barn worksite were. (*Id.* at 75); *see also Quick Transp. of Ark., LLC*, No. 14-0844, 2019 WL 1466256, at *5 (OSHRC, Mar. 27, 2019) (finding an industry standard did not establish a recognized hazard where it was not clear that it applied to the circumstances at the worksite).

As to Dr. Lu's opinion on the stored trusses, his expert report concluded that Signet's storage of the trusses "likely damage[ed] the truss lumber and plates," but it cites no basis for this conclusion. (Ex. C-25, at 37). No such damage is evident in the photographs of the stored trusses (Exs. C-8, at 1, 2 & 4; C-16), and nothing in Dr. Lu's trial testimony suggested that he observed

[45] As Respondent points out, no direct evidence was provided at trial on the issue of how long the trusses had been stored in the manner depicted in Complainant's photographs. Resp't's Br. 24. CSHO Bertrand explicitly stated that he did not know how long the trusses had been stacked and stored at this location. (Tr. 209). Mr. Zuhlke explained generally that, after being delivered by EPS, the trusses were constructed onsite and then stored outside the Barn until they were installed but did not detail a timeline for this process. (Tr. 466-67).

any actual damage to the trusses' lumber or plates or that he even inspected the stack of trusses for such damage.[46] (Tr. 363-65). And, as Mr. Gardiner set out in his expert report, such damage would be evident from the state of the metal connector plates, which "will simply pull out" if too much stress is placed on the joints of the trusses. (Ex. R-23, at 15; *see also* Tr. 608-09).

For these reasons, Complainant has failed to demonstrate that Signet's storage of the trusses constituted a recognized hazard. *See K.E.R. Enters., Inc.*, 23 BNA OSHC 2241, 2242-43 (No. 08-1225, 2019) (finding no violation of the General Duty Clause where "the Secretary's evidence [was] insufficient to establish that the cited conditions created a recognized hazard"). The Court therefore VACATES instance (c) of Item 1 of the Citation.

Instance (d) – Improper Use of a Spreader Bar

Item 1, Instance (d) of the Citation alleges that Respondent committed a violation of the General Duty Clause because it "did not correctly locate a spreader bar on the trusses and then hoisted the 138-foot-long trusses in accordance with the [BCSI Guide]." The Citation further alleges that as a result, the "trusses were prone to be overstressed during rigging due to out-of-plane buckling (i.e., twisting and bending), likely damaging the wood trusses and resulting in an unsafe condition." In her post-trial brief, Complainant, in a single paragraph, points to Dr. Lu's testimony and expert report and the BCSI Guide's instructions on the repair of trusses and essentially reiterates the allegations in the Citation that Respondent incorrectly rigged trusses to the spreader bar, potentially causing the trusses to buckle, twist, or bend, and thereby damaging the trusses. Complainant's Br. 37. Respondent argues that there is insufficient evidence to conclude that its method of rigging and hoisting the trusses impacted or damaged the trusses and that its method of rigging the trusses was in fact superior to the method prescribed by the BCSI

[46] For his part, the CSHO admitted that no testing was done on the trusses to determine if they had in fact been "warped or impacted" from the way they were stored. (Tr. 253-54).

Guide. Resp't's Br. 25. The Court agrees that Complainant has failed to demonstrate that Signet's method of rigging and hoisting the trusses constituted a recognized hazard.

Complainant's argument largely relies on Dr. Lu's expert opinion and report. Dr. Lu offered minimal testimony on this subject at trial, mostly reiterating the views he expressed in his report. (Tr. 365-66). His report, in turn, relied on photographs of the truss that was being hoisted at the time of the Barn's collapse and the recommendations in the BCSI Guide. (Ex. C-25, 34 to 36). Dr. Lu's report points to one of the photographs of the hoisted truss in support of his conclusion that a "[s]lack rigging cable allowed the truss to bend out of shape." (Ex. C-25, at 34 & 35). The photograph supporting this proposition was one given to CSHO Bertrand by emergency service personnel and was taken "during the rescue operation" following the Barn's collapse. (Tr. 120). The Court does not find this photograph, taken under atypical circumstances and in the midst of what the Court must assume was still the chaotic scene of a recent accident, to be indicative of how the trusses or spreader bar normally looked when hoisting trusses into the Barn.

The only other photographs of the spreader bar actually being used to hoist a truss are ones taken immediately following the Barn's collapse, which only partially depict the truss being hoisted by the crane at that time. (Tr. 244, 386, 483, 732-33; Exs. C-13; C-14, at 7, 8 & 12). Recognizing the incompleteness of these photographs, the Court does not observe the slack in the middle-left chain that Dr. Lu relied on in forming his opinion. (Ex. C-14, at 8 & 12).

Based on these considerations, the Court does not find the photographic evidence to be reliable or indicative of Signet's actual hoisting methods and does not accept Dr. Lu's opinion based on this evidence. *See U.S. v. Rodriguez*, 581 F.3d 775, 795 (8th Cir. 2009) ("[T]he factual basis of an expert opinion goes to the credibility of the testimony … Questions of an expert's

credibility and the weight accorded to his testimony are ultimately for the trier of fact to determine.") (quoting *Arkwright Mut. Ins. Co. v. Gwinner Oil, Inc.*, 125 F.3d 1176, 1183 (8th Cir. 1997)); *U.S. v. 14.38 Acres of Land*, 80 F.3d 1074, 1077 (5th Cir. 1996) ("the bases and sources of an expert's opinion affect the weight to be assigned to that opinion" (quoting *Viterbo v. Dow Chemical Co.*, 826 F.2d 420, 422 (5th Cir. 1987)); *see also S. Ohio Co. v. Dir., Off. of Workers' Comp. Progs., U.S. Dep't of Labor*, 128 F.4th 809, 818 (6th Cir. 2025) ("The ALJ, as trier of fact, was not required to accept such an [expert] opinion when it was contradicted by other evidence in the record.").

As to the BCSI Guide's procedures for long-span trusses, the Court acknowledges that it prescribes the use of spreader bar attached to the top chords and web members "above mid-height" and bisecting the truss and that this was not the method by which Signet had been rigging the trusses to its own spreader bar. (Exs. C-5, at 21; C-25, at 35 & 36). However, Mr. Gardiner countered that, in his expert opinion, Signet's method was superior to the BCSI Guide's because the inward angle of the five chains helped to maintain the trusses linear pattern. (Tr. 610-11, 631-32; *see also* Tr. 485-87 (Mr. Zuhlke's explanation for the origin of Signet's hoisting and rigging setup for long-span trusses)). Mr. Gardiner further noted in his expert report that none of OSHA's photographs of the truss, including a closer photograph of the truss once it was lowered to the ground, depict the truss being out-of-plane or any damage to the truss' metal connectors or web members. (Ex. R-23, at 16).

After weighing the minimal evidence presented on this issue, the Court finds the Secretary has failed to meet her burden of proof to demonstrate, by a preponderance of the evidence, that Signet's method for rigging and hoisting trusses at the Barn worksite posed a hazard to its employees. The Court therefore VACATES Instance (d) of Item 1 of the Citation.

Citation 1, Item 2

Item 2 of the Citation alleges a serious violation of 29 C.F.R. § 1926.21(b)(2), which states: "The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury."

Item 2 alleges a single instance of a violation of 29 C.F.R. § 1926.21(b)(2) as follows:

> 29 CFR 1926.21(b)(2): The employer did not instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his/her environment to control or eliminate any hazards or other exposure to illness or injury:
>
> (a) Signet Construction, LLC at 45240 146th Street, Summit, SD 57266: On or about and at times prior to September 12, 2022, the employer did not ensure a training program was developed and implemented to ensure designated site personnel were trained in the safe erection of wood trusses to include the development of a temporary bracing plan and the interpretation of engineer notes on engineering drawings. This condition exposed employees to a structural collapse which caused struck by and fall hazard injuries at heights of greater than six feet.

Citation and Notification of Penalty at 8.

> In order to establish a violation of an occupational safety or health standard, the Secretary has the burden of proving: (a) the applicability of the cited standard, (b) the employer's noncompliance with the standard's terms, (c) employee access to the violative conditions, and (d) the employer's actual or constructive knowledge of the violation (i.e., the employer either knew, or with the exercise of reasonable diligence could have known, of the violative conditions).

Atl. Battery Co., Inc., No. 90-1747, 1994 WL 682922, at *6 (OSHRC, Dec. 5, 1994). As with a violation of the General Duty Clause, Complainant bears the burden of proof of establishing each element of a violation by a preponderance of the evidence. *See Hartford Roofing Co.*, 17 BNA OSHC at 1365.

The Cited Standard Applied

Section 1926.21(b)(2) is housed under Part 1926 of OSHA's health and safety regulations related to construction, which apply to "every employment and place of employment of every employee engaged in construction work." 29 C.F.R. § 1910.12(a); *see generally Ryder Transp. Servs.*, 24 BNA OSHC 2061, 2062-63 (No. 10-0551, 2014) (discussing what constitutes "construction work"). Meanwhile, the cited standard, by its own terms, requires an "employer" to provide certain types of instructions to its employees.

Here, the parties have stipulated that Respondent is an "employer" covered by the Act and that Respondent was hired by United to construct the Blooming Valley Barn. (Tr. 13-14). The record further establishes that Respondent was engaged in construction activities on the Barn at the time of the alleged violation. (Tr. 13-14). Finally, Respondent has not contested the applicability of this standard to its activities related to the Barn.

The Court finds the standard applies.

Complainant Failed to Prove Noncompliance

"Under § 1926.21(b)(2), an employer must instruct its employees in the recognition and avoidance of those hazards of which a reasonably prudent employer would have been aware." *Capform, Inc.*, 19 BNA OSHC 1374, 1376 (No. 99-0322, 2001), *aff'd*, 34 F. App'x 152 (5th Cir. 2002) (table), quoting *Pressure Concrete Constr. Co.*, 15 BNA OSHC 2011, 2015 (No. 90-1106, 1993. "[T]he reasonably prudent employer test is, and has consistently been, used to determine whether an employer has failed to comply with § 1926.21(b)(2) – that is, to assess the adequacy of the content of the instructions at issue." *Bardav, Inc.*, 24 BNA OSHC 2105, 2112 (No. 10-1055, 2014).

The Citation alleges that Respondent "did not ensure a training program was developed and implemented to ensure designated site personnel were trained in the safe erection of wood trusses to include development of a temporary bracing plan and the interpretation of engineer notes on engineering drawings." *Citation and Notification of Penalty* at 8. At trial, Respondent established that it provides both types of training to its employees, largely consisting of on-the-job training. (Tr. 145, 465, 474-77, 526-27, 719, 723-25). Additionally, some Signet employees received training on "the importance of permanent bracing [for wood trusses] and why it's required." (Tr. 477; *see also* Tr. 465).

"If the employer rebuts the allegation of a training violation by showing that is has provided the type of training at issue, the burden to the Secretary to show some deficiency in the training provided." *N & N Contractors, Inc.*, 18 BNA OSHC 2121, 2126-27 (No. 96-0606, 2000), quoting *Am. Sterilizer Co.*, 18 BNA OSHC 1082, 1086 (No. 91-2494, 1997), *aff'd*, 255 F.3d 122 (4th Cir. 2001). The Court finds Complainant has failed to meet her burden in this case.

As to temporary bracing, Complainant argues that "employees should have some training that addresses adequate bracing so that they understand when a building is not adequately braced, recognize that they are working in a hazardous environment, and install temporary bracing in order to avoid the hazard of structural collapse." Complainant's Br. 55 & 56. Complainant points out that employees were instructed not to follow the BCSI Guide's recommendations on temporary bracing methods and to install permanent bracing instead. Complainant's Br. 54 & 55.

The Court finds that, although the record establishes that Signet favored permanent bracing and instructed its employees to install it in lieu of temporary bracing on the Barn, its employees were nonetheless familiar with the use and function of temporary bracing. All three Signet supervisors who testified at trial, including Signet's president and vice president, were familiar

with the BCSI Guide or the BCSI summary sheets and how they related to temporary bracing methods. (Tr. 448, 450, 463-64, 477-79, 490-91, 504-06, 508-09, 739-41); *cf. Paul Betty*, 9 BNA OSHC 1379, 1383 (No. 76-4271, 1981) (employee was inadequately trained where he had only a "general awareness of the cited standards' requirements"). Mr. Cardenas, who was overseeing the construction of the parlor area of the Barn, knew temporary bracing was an option when installing wood trusses, even if he generally followed Signet's preference for permanent bracing. (Tr. 724, 737). The Court does not find that Complainant has sufficiently demonstrated that Signet's instruction to its employees to install permanent over temporary bracing represented a deficiency in its training on temporary bracing or that a reasonably prudent employer would have necessarily instructed its employees to act otherwise.[47] *See Bardav, Inc.*, 24 BNA OSHC at 2112; *N & N Contractors, Inc.*, 18 BNA OSHC at 2126-27.

Complainant points to no specific alleged deficiencies in Respondent's training on the "interpretation of engineer notes on engineering drawings" as alleged in the Citation. At trial, CSHO Bertrand only cursorily addressed this allegation: first, stating in a conclusory fashion that he believed Signet's managers needed more training on reading engineering notes (Tr. 170); and later stating only that Messrs. Cardenas and Trejo "missed the engineering notes on the front page"

[47] The Court acknowledges possible tension with this finding and its conclusion that Respondent violated the General Duty Clause for failing to adequately brace the trusses in the parlor area, as alleged in Item 1, Instance (a). However, as the Court noted in reaching its conclusion on Instance (a), it is unnecessary to decide whether, as a general matter, Signet's preferred method of installing all permanent bracing instead of temporary bracing is sufficient to abate the hazards associated with installing long-span trusses because the record here shows that Signet did *not* install all of the permanent bracing called for in the Barn's permanent bracing plan. In other words, it well may be that Signet's preferred method is sufficient to abate the hazards associated with installing long-span wooden trusses and that a reasonably prudent employer could instruct its employees to follow Signet's preferred method. The Court again notes the conflicting opinions on this question from the three expert witnesses presented in this case. *Compare* Ex. C-25, at 15 to 17 (concluding that Respondent was required to use temporary bracing in the Barn), *with* Tr. 612 (opining that Signet's use of permanent bracing conformed with industry standards), *with* Tr. 692-93 (opining that "there's no magic to temporary bracing if you're putting in permanent bracing"), *with* Ex. C-31, at 3 (recommending a "detailed temporary and permanent bracing plan" be developed for the Barn). However, the Court again finds it unnecessary to resolve this question in adjudicating the issues raised for the alleged training violation; Complainant has simply failed to meet her burden of proof on the issue.

without any further detail. (Tr. 259). Against this scant evidence of any alleged deficiency on Respondent's training in reading engineering notes, the Court notes that Mr. Cardenas offered a fair amount of testimony on his ability to read and interpret blueprints and site plans and determine bracing requirements. (Tr. 719, 724-25, 728, 739-40). Moreover, after clearing an initial confusion with the orientation of the plans, Mr. Cardenas demonstrated his ability to read EPS's permanent bracing plan for the parlor area of the Barn. (Tr. 755-59; Ex. R-28, at 11).

Respondent established that it provided training on the subjects referenced in the Citation, and Complainant has failed to meet her burden of proof in demonstrating any alleged deficiencies in that training. Accordingly, the Court vacates Item 2 of the Citation.

PENALTY

At trial, the parties stipulated that, if any of the violations were proven, the penalty was "calculated appropriately pursuant to OSHA's procedures concerning penalty calculation."[48] (Tr. 175). The Court accepts the parties' stipulation and assesses Item 1's proposed penalty of $15,625 for Respondent's violation of Instance (a).

ORDER

Based upon the foregoing Findings of Fact and Conclusions of Law, it is ORDERED that:

1. Instance (a) of Item 1 of the Citation is AFFIRMED and a penalty of $15,625 is ASSESSED;
2. Instances (b), (c), and (d) of Item 1 of the Citation are VACATED; and

[48] *See* 29 U.S.C. § 666(j) (setting forth the factors to be considered in imposing a civil penalty under the Act); "Field Operations Manual (FOM)," OSHA Directive CPL 02-00-164, Ch. 6 ¶ III (eff. Apr. 14, 2020) (implementing the factors set forth in 29 U.S.C. § 666(j) to propose penalties for citations); *but see Valdak Corp.*, 17 BNA OSHC 1135, 1138 (No. 93-0293, 1995) (noting that, under the Act, it is the Commission and its judges that ultimately have the discretion to determine the penalty for a violation of the Act so long as "due consideration" is given to the statutory factors).

3. Item 2 of the Citation is VACATED.

/s/ Brian A. Duncan

Judge Brian A. Duncan
U.S. Occupational Safety and Health Review Commission

Date: May 13, 2025
Denver, Colorado