

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

COLUMBIA INSURANCE CO. and
MITEK INC.,

Plaintiff,

v.

SIMPSON STRONG-TIE
COMPANY INC.,

Defendant.

Civil Action No. 3:19-CV-04683-TSH

EXPERT REPORT OF NATHAN HOFFMANN, PE

February 14, 2025

Columbia EX2076
Simpson Strong-Tie Company Inc. v. Columbia Insurance Company
PGR2024-00050

I. INTRODUCTION, EXPERIENCE, AND QUALIFICATIONS

1. I am a licensed Professional Engineer with nearly twenty years of experience focused on structural engineering. I have been working in structural engineering since June 2006. I became a licensed Professional Engineer (PE) in December of 2010. I am currently licensed in nine states.

2. I am an employee of Sandman Structural Engineers (Sandman), which is based in Moorhead, Minnesota. Sandman offers structural engineering services to architects, developers, contractors, fabricators, and property owners and is collectively licensed in all fifty states of the United States and in five provinces in Canada. I am currently a member of the Core Leadership team of Sandman and the Practice Area Leader for the Housing and Hospitality team at Sandman. Our team focuses and specializes in high-density housing projects. As the Practice Area Leader for Housing and Hospitality, I am responsible for and oversee nearly all projects at Sandman relating to Multi-Family, Hotels, Student Housing, Mixed-Use, Senior Living, and Modular Construction. Prior to becoming the Practice Area Leader for Housing and Hospitality in 2022, I was in multiple roles, such as Team Leader, Lead Engineer, and Project Engineer. These earlier roles involved specific design and detailing of these projects. My overall focus on high-density projects goes back to 2012.

3. Multi-family construction is the process of building housing for more than one family or household. Multi-family projects include apartment or condominium complexes, townhomes, duplexes, and mixed-use buildings that combine multi-family dwellings with retail, parking, and/or restaurants in a single building.

4. The Housing and Hospitality team that I oversee, designs, details, and issues Structural Construction Documents (described in more detail below) for approximately one

hundred multi-family projects per year. These projects range from buildings with 4 units to buildings with over 200 units. My team also issues Structural Construction Documents for approximately twelve to fifteen hotel projects a year.

5. In the course of my work as a structural engineer over the last nineteen years, I have worked with numerous architects, engineers, developers, and contractors on hundreds, if not thousands, of construction projects, most of which involved the construction of multi-family buildings. These projects have been located in multiple state jurisdictions, and so my work has involved multiple regions, building code and regulatory requirements, construction practices and varying sizes of projects.

6. In the course of my work as a structural engineer over the last nineteen years, I have had the responsibility to issue Structural Construction Documents specifying structural connectors and other proprietary building products (as explained below) sold by Simpson Strong-Tie (Simpson), as well as structural connectors and other proprietary building products sold by MiTek. As also explained below, the overwhelming majority of the structural connector products that I and my team have specified have been Simpson products. For this reason, I am especially knowledgeable about Simpson and its catalog of building products, but I have also gained knowledge of MiTek and its catalog of building products as certain contractors and vendors that we work with have expressed a preference for MiTek and requested substitution of MiTek products for specified Simpson products (as explained below).

7. I am a member of the following professional organizations: (a) Construction Specifications Institute (Treasurer of Red River Valley Chapter); and (b) American Wood Council.

8. I have authored the following publications in the last ten years: (a) “Detailing and Best Practices for Developing the Lateral Load Paths” (available on the Woodworks website at https://www.woodworks.org/wp-content/uploads/presentation_slides-Hoffmann-Final.pdf); and (b) “Roles and Responsibilities: Structural Design of Modular Projects” (available on the Woodworks website at <https://www.woodworks.org/resources/roles-and-responsibilities-structural-design-of-modular-projects/>).

9. A copy of my resume is provided as Exhibit A.

10. I have not previously acted as an expert in any legal proceedings.

11. I am being compensated at the rate of \$334.50 per hour for the time I spend in connection with the proceeding. My compensation is not dependent in any way on the substance of my opinions or on the outcome of this proceeding.

II. SUMMARY OF OPINIONS

12. I have been retained by Simpson to provide expert opinions in this matter based on my experience, expertise, and specialized knowledge working as a structural engineer that has specified joist hangers for two-hour fire-resistive wall assemblies in the design and construction of multi-family buildings in the United States. Specifically, I have been asked to provide an opinion regarding the following topics:

- An overview of the process of specifying structural connectors and other proprietary building products, including Simpson and MiTek joist hangers for two-hour fire-resistive wall assemblies, in multi-family building projects in the United States;

- The key factors that contribute to structural engineers' preference for Simpson's proprietary building products in multi-family building projects in the United States; and
- My experience specifying Simpson and MiTek joist hangers for two-hour fire-resistive wall assemblies in the design and construction of multi-family buildings in the United States.

III. MATERIALS CONSIDERED

13. I have reviewed Plaintiffs' Amended Complaint and Simpson's Amended Answer and Counterclaim. I have also reviewed Simpson's website at strongtie.com, and MiTek's website at mitek-us.com. I have also reviewed the examples from Structural Construction Documents prepared by Sandman identified in my report below.

IV. OPINIONS AND BASES

A. Overview Of The Process Of Specifying And Purchasing Structural Connectors And Other Proprietary Building Products

14. Based on my expertise, industry experience, and specialized knowledge, I provide the following general overview of the typical process of specifying and purchasing structural connectors and other proprietary building products, including Simpson and MiTek joist hangers for two-hour fire-resistive wall assemblies, in multi-family building projects in the United States.

Typical Multi-Family Project Construction Process

15. A typical multi-family project construction involves several key participants: the owner or client, architect, structural engineer, general contractor ("GC"), sub-contractor, testing and inspection agency, building official, and other consultants like landscape architects and interior designers. The owner ensures the project is financed and defines its needs and goals. The primary design professional, usually an architect, coordinates all designs and communication

between the contractor and the design team. On some projects a structural engineer or another professional may also take this role. The contractor manages subcontractors, construction scheduling, and communicates progress and issues to the architect and owner. Subcontractors handle material purchases, skilled labor, and equipment. The testing and inspection agency conducts required tests and inspections. The building official reviews and approves construction requiring permits, inspects the work, and issues an occupancy permit once completed.

16. For a multi-family building construction project, the governing jurisdiction (such as the city or county) commonly requires a structural engineer of record (SEOR) who is responsible for overseeing the structural design and often the construction phases of a structure. Other structural engineers and design professionals may act under the supervision of the SEOR. The structural engineer sizes the components necessary to construct the structure by calculations that compare the capacities of the components to the demands placed on them by applied loads as mandated by the governing building code. The structural engineer will then consult a wood construction connector catalog produced by a specific manufacturer, or similar design resource such as a manufacturer's website, to select the appropriate connector based on the connector's geometry as necessary to coordinate with the connection geometry, the rated load capacity of the connector as necessary to resist the calculated loadings, and the connectors material and finish as necessary for its expected exposure to weather or other environmental influences. The information provided in the wood construction connector website and catalog is generally based on information provided in an Evaluation Report (ER), which is a document published by the International Code Council ("ICC") that verifies that new building products comply with code requirements. Engineers rely on ERs for the appropriate specification of a wood construction connector.

17. The SEOR provides engineering services in the form of stamped and sealed documents (such as reports or construction drawings) and is only permitted to stamp and seal documents prepared under his or her direct control and supervision. These are often referred to as “Structural Construction Documents.” The SEOR does not have responsibility over manufacturing, purchasing, and/or installation of pre-engineered structural products. Nor does the SEOR typically have any responsibility to observe the installation of the pre-engineered structural products.

What Is A Structural Connector?

18. Pre-engineered structural products are products that have been designed to be used in distinct applications with similar conditions for various projects. Pre-engineered products allow the SEOR or other engineer to specify a structural component with limited design supervision, as the manufacturer typically provides descriptions of the properties of the product as well as strength and sometimes stiffness values for the engineer to reference. ERs incorporating this information are frequently prepared to facilitate assessment of a product’s code compliance. Manufacturers of pre-engineered structural products commonly also provide design guidance for the usage of the product, which allows the engineer to confidently assess the appropriateness and adequacy of its usage once the engineer determines the design criteria needed for the structural component.

19. Structural connectors as manufactured by Simpson Strong-Tie and MiTek are pre-engineered structural products that are the focus of this report. For the purpose of this report, the following generalized building project will be referred to – a wood framed multi-story multi-unit

residential building. This type of building, due to its relative complexity, always requires the involvement of a structural engineer.

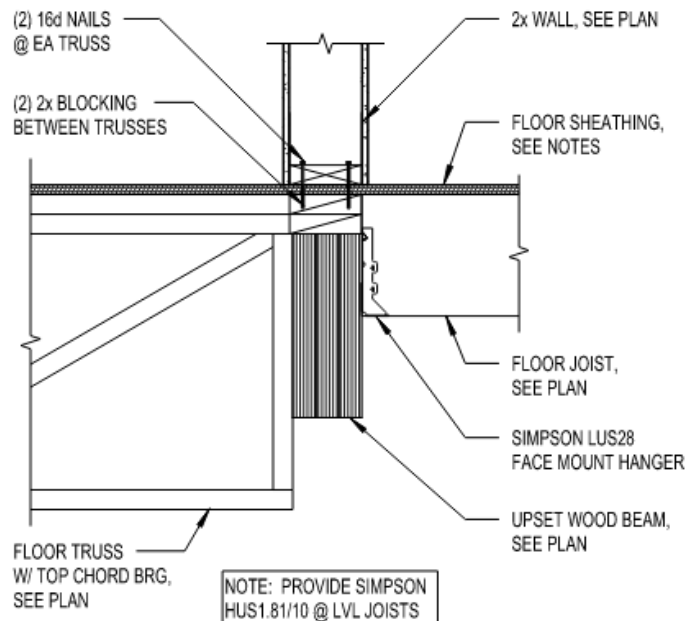
20. A joist hanger is one type of structural connector. A joist hanger is designed to connect a wood framing member to another framing member or wall. There are many types and sizes based on framing geometry and loading demand.

Specification of Structural Connectors And Other Proprietary Building Products

21. Each structural connector that is specified will be included in a set of Structural Construction Documents via a specific callout utilizing the designation provided in the selected manufacturer's catalog. Usually, a specification will be made to utilize the selected manufacturer's connectors, or an approved equal.

22. When specifying a connector, the engineer references manufacturer-provided data for geometry, thickness of steel utilized in the part (gauge), finish, capacity, stiffness, required fasteners and may directly reference proprietary ERs, which typically include key allowable capacities or methods on how to calculate them.

23. An example of a specification of a structural connector in Structural Construction Documents from a project in which I was the SEOR is shown below:



16 FRAMING DETAIL
S402 1" = 1'-0"

Purchase And Installation Of Specified Structural Connectors

24. In some instances, a contractor may seek to substitute a specified connector for one made by another connector manufacturer. For example, if a Simpson structural connector is specified in the Structural Construction Documents, a contractor may request substitution of a corresponding MiTek structural connector. The contractor may reference a manufacturer's ER in justifying their request for a substitution, in which case the SEOR will review the ER to ensure it meets the strength and stiffness demands that the design requires and will approve or reject the request accordingly. Alternatively, where an ER is not available, the contractor and their pre-engineered product supplier may provide test results or other substantiating data.

25. In my experience, substitutions of specified structural connectors are often requested by contractors because the contractor believes the proposed connector is less expensive than the specified connector, the contractor has a relationship with a dealer that supplies construction products that only offers structural connectors from the proposed manufacturer, and/or the contractor prefers the particular proposed connector for some other reason.

26. It is important to note that the contractor may not deviate from the approved Structural Construction Documents, and the structural connectors specified in those documents, unless written approval is provided by the SEOR. This is true even when the contractor prefers to use a connector other than the specified one and believes the proposed connector is superior to the one the SEOR has specified based on the contractor's interpretation of an ER or other data. In the case where a substantial change is engendered via substitution, a resubmittal to the governing jurisdiction will be necessary.

B. Key Factors Contributing To Structural Engineers' Preference For Simpson's Proprietary Building Products

27. As noted above, during my career the overwhelming majority of the structural connector products that I and my team have specified have been Simpson products. I have always specified Simpson structural connectors and other Simpson proprietary building products on all of the projects (with one exception discussed below).

28. In my experience working with owners, architects, builders, and other structural engineers, Simpson has consistently been the preferred brand of structural connectors and other proprietary building products.

29. In my experience, contractors sometimes request substitution of the specified Simpson structural connectors (as discussed above), but the great majority of the projects that I have worked on are built with Simpson products.

30. Based on my expertise, industry experience, and specialized knowledge, it is my opinion that there are several key factors that contribute to structural engineers' preference for Simpson's products as compared to competitive products, including those manufactured by MiTek. These factors include Simpson's high product quality; Simpson's comprehensive product portfolio; Simpson's focus on code compliance, documentation, and testing for its products; the engineering and technical support that Simpson provides for its products; Simpson's innovative and efficient product designs; Simpson's high brand standards and market reputation; business practices that demonstrate a focus on customer service; Simpson's relationships with industry stakeholders; Simpson's extensive distribution network and product availability; and the customer training and education that Simpson provides. I discuss these factors in more detail below:

31. Simpson has had a long-standing presence in the construction industry, and it enjoys strong brand recognition. Simpson has demonstrated a commitment to manufacturing high quality products and providing customer support. Simpson also places emphasis on simplifying installation, resulting in "value-engineered" solutions that optimize labor and material use, yielding cost savings at the project level.

32. Simpson has distinguished itself by offering direct engineering support throughout the entire project lifecycle. Its trained engineers and field representatives are available to assist with product selection, jobsite training, and code compliance, giving customers an extra layer of expertise. Simpson provides in-depth test results that validate its

products' strength, resilience and compliance with relevant codes. This transparency builds confidence among specifiers and end-users, knowing they can verify claims through reliable data.

33. Simpson offers a broad selection of structural connector products, which enables engineers to choose tailored solutions for diverse applications. The breadth of product offerings facilitates streamlining the design process and ensuring optimal performance and code compliance. In addition, Simpson produces complementary products—such as adhesives, fasteners, and anchors— that are designed to work together. This system-based strategy simplifies procurement, reduces incompatibility risks, and ensures optimized performance across a project's structural components.

34. Through periodic new product offerings, Simpson has shown that it invests substantially in research and development to refine existing products and create new ones that address emerging challenges—such as higher wind or seismic loads. Simpson proactively aligns new products with the latest market demands to provide forward-thinking structural solutions. In addition, Simpson actively solicits and incorporates feedback from engineers, builders, and end-users to refine product lines to meet real-world construction needs.

35. Simpson provides clearly written technical guides, application notes, and product manuals, which facilitates the design and installation process. For example, detailed online guides, engineering tools, and other resources enable professionals to verify code compliance, troubleshoot challenges, and educate new team members—all of which contributes to reducing costly mistakes and streamlines workflow.

36. Simpson provides responsive customer service, ensuring inquiries and concerns are addressed promptly, which contributes to smoother project execution. In addition, Simpson

offers the assistance of technical specialists who can visit project sites to troubleshoot and resolve issues related to installation or product performance. Simpson has also provided onsite training to contractors for installation of product lines. These efforts help projects stay on schedule and within budget by mitigating problems early. Simpson also regularly conducts other in-person and virtual training sessions covering product usage, installation best practices, and safety protocols.

37. Simpson's products are typically widely available. Simpson has a robust supply chain, with its products stocked by major home improvement chains (e.g., Home Depot, Lowe's) and numerous specialty distributors. We have found this helpful with smaller projects where local contractors need to direct purchase from local hardware stores in a quick manner. Simpson's manufacturing and logistics model have typically allowed it to maintain steady inventory levels, reducing the likelihood of costly project delays due to product unavailability.

C. Specifying Simpson And MiTek Joist Hangers For Two-Hour Fire-Resistive Wall Assemblies In Multi-Family Buildings

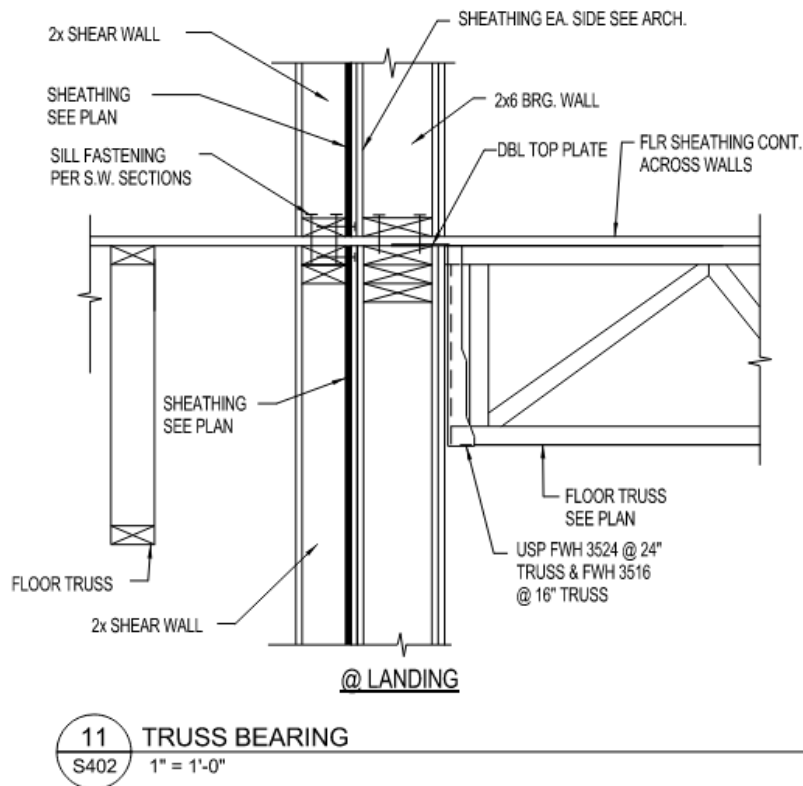
38. Based on my expertise, industry experience, specialized knowledge, and review of relevant documents, I have the following opinion regarding how I and my Housing and Hospitality team at Sandman have specified joist hangers for two-hour fire-resistive wall assemblies.

39. I understand that Simpson released its DU Series of joist hangers for two-hour fire-resistive wall assemblies in approximately December 2013. I understand that MiTek released its FWH Series of joist hangers for two-hour fire-resistive wall assemblies a few months later in approximately May 2014.

40. Prior to Simpson's release of the DU Series and MiTek release of the FWH Series, in my opinion, the market did not have good solutions for using joist hangers with two-hour fire-resistive wall assemblies. To satisfy code requirements for two-hour fire-resistive wall assemblies, I and my team would typically specify two wall assemblies: one wall for the bearing of the trusses and one wall with uninterrupted drywall sheets for the fire barrier. Another option was to construct a shaft out of concrete masonry units (CMU) to achieve the fire barrier requirements. The floor framing was then directly mounted to the CMU face. Neither of these options was ideal because both the CMU wall or double walls added additional costs to projects and reduced the amount of available square footage for units. The use of CMU shafts within a wood framed building may lead to differential shrinkage between the materials, affecting the performance of wall and floor finishes.

41. Simpson's DU Series required the hanger to be installed after the drywall, or at least a portion of the drywall, was installed on the wall assembly. I understood from some of the contractors that we worked with that they did not prefer this installation sequence—i.e., installing the drywall before the hanger—because it required wood framing subcontractors to install drywall; which is not typically part of their scope. We also heard concerns from contractors that did not want to install any drywall prior to the building being weathertight. They were concerned with damage to the drywall due to rain and snow events during construction. For these reasons, I decided to specify MiTek's FWH Series products when a joist hanger was necessary at a two-hour fire-resistive wall assemblies. I still specified Simpson structural connectors and other proprietary building products for everything but the joist hangers for two-hour fire-resistive wall assemblies, for all the reasons discussed above. An example of a

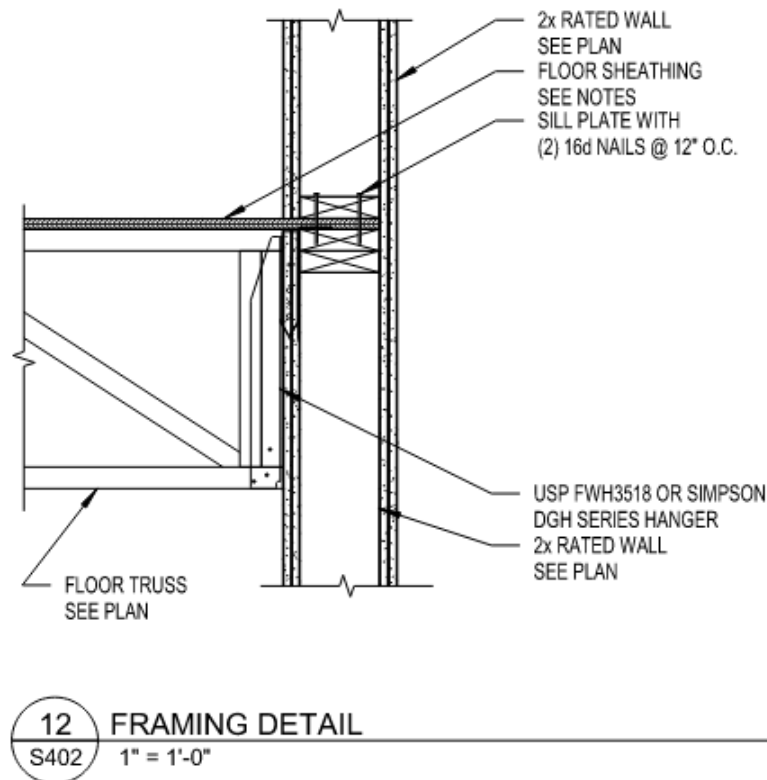
specification of a FWH structural connector in Structural Construction Documents from a project in which I was the SEOR is shown below:



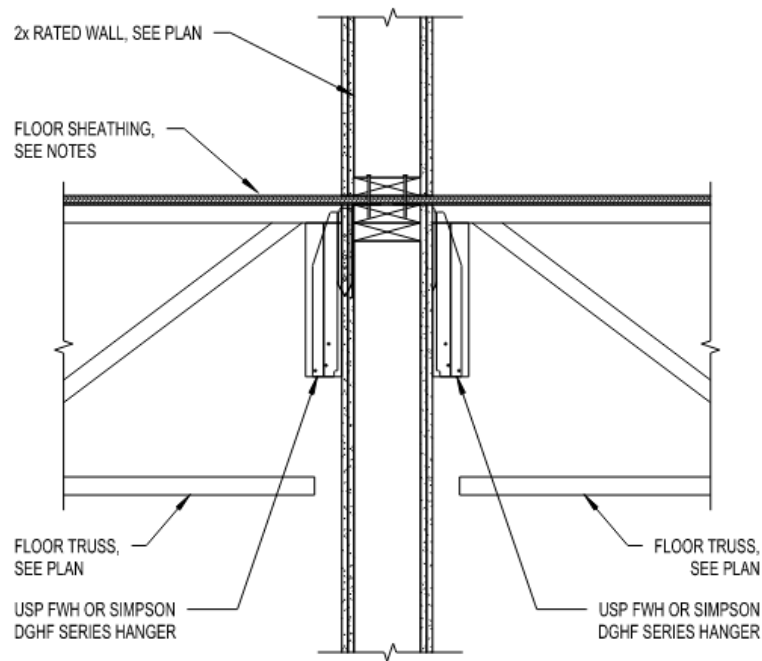
42. I understand that Simpson released its DG Series of joist hangers for two-hour fire-resistive wall assemblies in approximately June 2017. Unlike the DU Series hangers, Simpson's DG Series can be installed before the drywall is mounted on the wall assembly. I and my team began specifying the DG Series at around the time that Simpson released it to the market.

43. I decided to dual specify both Simpson's DG Series and MiTek's because we were informed that both brands of hangers were a higher cost item when compared to typical metal hangers. The dual specifying gave the GC and bidders the direct option to put together a bid or pricing strategy that optimized the costs for these components. This saved the step of a potential substitution request later in construction. An example of a dual specification of a FWH

and DG (specifically, DGH) structural connector in Structural Construction Documents from a project in which I was the SEOR is shown below:



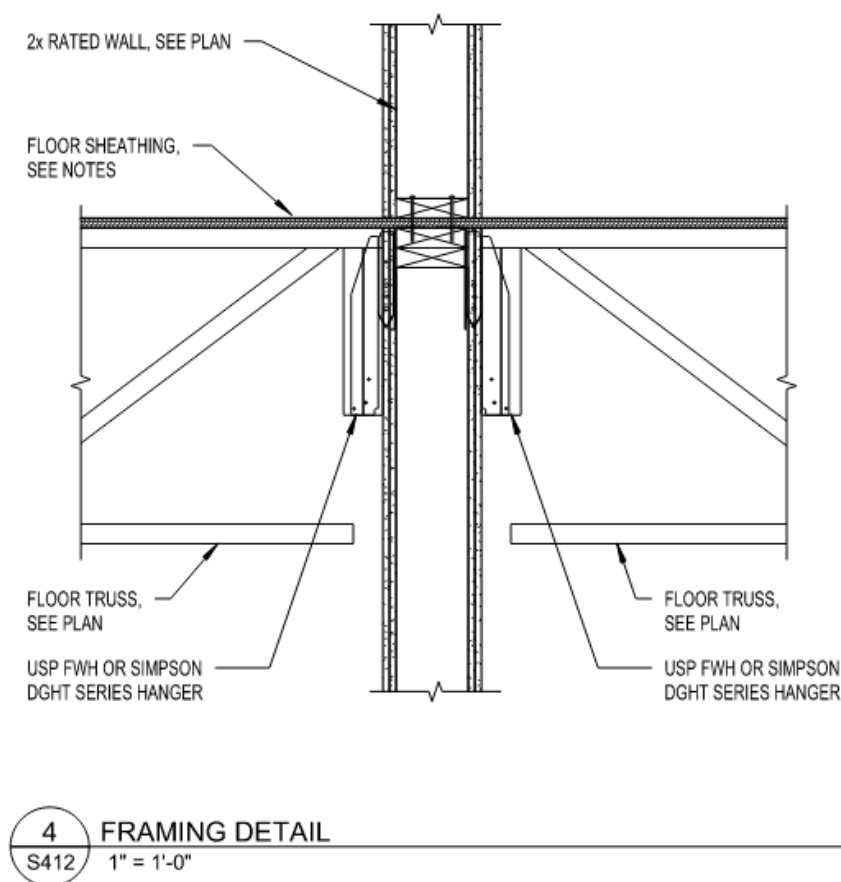
44. I understand that Simpson stopped selling its DG Series and released its DGF Series of joist hangers for two-hour fire-resistive wall assemblies in approximately April 2019. I and my team began specifying the DGF Series in place of the DG Series. I and my team also continued to dual specify the FWH Series. An example of a dual specification of a FWH and DGF Series (specifically, DGHF) structural connector in Structural Construction Documents from a project in which I was the SEOR is shown below:



10 FRAMING DETAIL
S404 1" = 1'-0"

45. I understand that there are some differences between the DG Series and the DGF Series, namely with the element that each hanger used to stop the joist or truss from being positioned too far back in the hanger. These differences were not significant to me and I am not aware of any differences between the DG Series and DGF Series that would be significant to structural engineers specifying the DG Series and DGF Series, because the DGF Series hangers were rated for the same loads as the corresponding DG Series hangers, the DGF Series cost the same as the corresponding DG Series hangers, and the DGF Series could be installed in a similar manner to the DG Series hangers. In short, the switch from the DG Series to the DGF Series was not consequential to me, and I am not aware of it being consequential to other structural engineers, contractors or architects.

46. I understand that Simpson released its DGT Series of joist hangers for two-hour fire-resistive wall assemblies in approximately June 2023, and stopped selling its DGF Series shortly thereafter. I and my team began specifying the DGT Series in place of the DGF Series. I and my team also continued to dual specify the FWH Series. An example of a dual specification of a FWH and DGT Series (specifically, DGHT) structural connector in Structural Construction Documents from a project in which I was the SEOR is shown below:



47. I understand that there are some differences between the DGF Series and the DGT Series, namely with the configuration of the hanger and the number of notches required to be cut in the drywall sheets. These differences were not significant to me and I am not aware of any differences between the DGF Series and DGT Series that would be significant to structural

engineers specifying the DGF Series and DGT Series. The DGT Series hangers were rated for similar loads as the corresponding DGF Series hangers, the DGT Series cost less than the corresponding DGF Series hangers, and the DGT Series could be installed in a similar manner to the DGF Series hangers (although the DGT Series could also be installed with a power nailer, which was an added benefit). In short, the switch from the DGF Series to the DGT Series was not consequential to me, and I am not aware of it being consequential to other structural engineers, contractors or architects.

CONCLUSION

48. I reserve the right to modify, supplement, or amend this opinion if new or additional information becomes known to me. I have not yet prepared any exhibits or demonstrative evidence for trial, but I reserve the right to do so.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Dated: 2-14-2025



Nathan Hoffmann, PE