

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SIMPSON STRONG-TIE COMPANY INC.
Petitioner

v.

COLUMBIA INSURANCE COMPANY
Patent Owner

Case PGR2024-00050
Patent No. 11,920,339

DECLARATION OF THOMAS J. IRMITER

I, Thomas James Irmiter, hereby declare as follows:

I. INTRODUCTION

1. My name is Thomas James Irmiter. My date of birth is October 19, 1957, and I reside in Williamsburg, Virginia. I have personal knowledge of the facts contained in this Declaration, and I attest that the facts are true and accurate.

2. I am currently the C.E.O. of Forensic Building Science, Inc. (“FBS”), a company I founded in 2004. I have over 50 years of experience in the construction and building inspection industry and have been performing expert work for over 35 years. I am certified by the State of Minnesota as a Building Code Official Limited and have over 450 hours of classroom training involving interpretation and enforcement of building codes. Approximately 25% of that training over the last 17 years has been on fire-rated assemblies, including code prescribed paths for design and engineered solutions. I was a member of ASTM and served on the E-committee for 5 years. I am familiar with the requirements of obtaining ASTM approvals. I was a member of National Association for the Remodeling Industry (“NARI”) between 1989 and 2000 and served as the president of the Minnesota Chapter twice. I also chaired their Ethics Committee for ten years. My current CV is attached as **Appendix A**.

3. I started working in my family's construction company in 1969 at the age of 13. I eventually advanced to a journeyman's level in carpentry. This included construction of 2-hour fire walls using 2-layers of 5/8" gypsum and using available hangers and fasteners as early as 1975. In 1984, I bought my father's small construction business and ran that business until 2000. I grew the business from four or five employees to 75 employees and into a full design-build company with an electrical division, a painting division, and staff architects producing our own designs and handling all of our own engineering. The company is well-versed in all building code requirements for new construction, residential and commercial construction. Our work also has included storm damage and fire damage repairs.

4. As a contractor, consultant, and Building Code Official, I have evaluated over 10,000 structures damaged by virtually every type of event, including defective design and construction on both residential, multi-family and commercial properties.

5. I began performing expert work more than 35 years ago for Marvin Windows located in Minnesota. At that time, Marvin was the largest manufacturer of custom wood windows and doors in the United States. In the design build practice, my company was the first design build contractor in the State of Minnesota. In the design build practice, we performed, during phase one, an initial design, established design parameters and created an architect's budget. Phase two

consisted of full working drawings and a forensic investigation on the property, which included destructive inspections of interiors, windows, walls, floors, and roof assemblies, to determine the as-built condition of a property.

6. As a building damage, envelope, and construction expert, I have pioneered a consistent building inspection and damage investigation process that is consistent with ASTM standards and standard construction, adjustment, and appraisal industry practice. This process includes systematic, comprehensive property inspections, evaluations, and testing, when called for, of all aspects of a building including foundations, exterior and interior windows, walls, facades, floors, and roofing systems and assemblies. The methodology I utilized also includes the gathering of available information to determine and evaluate the as-built condition of the property, compared with the as-inspected condition of the property, to identify all changes and deviations from the as-built condition to determine the possible scope of potential damage and repairs and building modifications required due to changes in building code requirements.

7. Another aspect of my expert work during this period includes representing homeowners, building owners, and insurance companies in litigation concerning causation of building damage and a methodology for returning the

damaged structure to a pre-loss condition, including code compliance. I have also served as an arbitrator, appraiser and umpire on a variety of cases.

8. In addition to property and building inspection, consulting, and testifying, part of my current business also includes overseeing and monitoring both new construction and reconstruction, including pre-sale inspections and due diligence, for buildings, banks, investment groups, and individuals. This includes work overseeing the \$40 million dollar rebuild of the Metropolitan Apartments in Birmingham, Alabama in 2021-2023. In particular, that work included redesigning all of the fire walls that were constructed improperly.

9. I have been retained by Patent Owner Columbia Insurance Company (“Columbia” or “Patent Owner”) to provide my opinions in the above-captioned post-grant review proceeding involving U.S. Patent No. 11,920,339 (the “‘339 Patent”, Exhibit 1001), which is titled “Method of Constructing a Fire-Resistive Wall Assembly.” I understand this post-grant review has been requested by Simpson Strong-Tie Company Inc. (“Simpson” or “Petitioner”). I understand this declaration will be entered into in the above-captioned post-grant review proceeding, as an exhibit with Patent Owner’s Response to the Petition for Post Grant Review submitted by Columbia.

10. I am being compensated at \$475.00 per hour. My compensation is in no way dependent on the outcome of this proceeding and my compensation in no way affects the substance of my statements and opinions in this Declaration.

11. In providing the testimony set out in this declaration, I have reviewed the '339 Patent, Simpson's Petition for Post Grant Review of the '339 Patent ("Petition" or "Simpson Petition"), and the Exhibits 1001 through 1043. I have also reviewed the following documents which I understand have been or will be submitted by Columbia as exhibits:

Exhibit No.	Description
Exhibit 2043	Structural Design for Fire Safety
Exhibit 2144	2012 International Building C (197664181.1)
Exhibit 2145	2000 International Building C (197664183.1)
Exhibit 2158	FW Hangers Top Mount
Exhibit 2149	1967 Uniform Building Code
Exhibit 2150	APA - The Engineered Wood Association, Voluntary Product Standard PS 2-92 - Performance Standard for Wood-Based Structural-Use Panels, Tacoma, WA, 1992.
Exhibit 2152	The Evolution of Engineered wood Joists by Paul Fissette 2000
Exhibit 2153	PERFORMANCE STANDARD CONSIDERATIONS FOR I-JOISTS USED IN RESIDENTIAL FLOOR CONSTRUCTION Borgen Yeh, Ph.D., P.E. Thomas G. Williamson, P.E. Michael R. O'Halloran, Ph.D. APA - The Engineered Wood Association, U.S.A.

Exhibit 2154	APA Design/Construction Guide 1999.
Exhibit 2147	1994 Timber Construction Manual, Fourth Edition
Exhibit 2155	ICC-ESR Evaluation # 3444 MiTek
Exhibit 2156	ICC-ESR Evaluation # 4464 MiTek
Exhibit 2135	Simpson DGT-DGHT Installation Guidelines 2024
Exhibit 2157	ASTM E814

II. BACKGROUND AND HISTORY REGARDING CONSTRUCTING WOOD FRAMED BUILDINGS AND USE OF JOIST HANGERS

12. I understand the ‘339 Patent to pertain to the construction of wood framed wall assemblies. Specifically, I understand the ‘339 Patent to claim a method for constructing fire rated wall assemblies in semi-balloon framing using joist hangers and gypsum fire retardant sheathing.

13. While there are joist hangers dating back even further, the use of hangers has been the preferred method for construction of timber framed structures since at least the early 1970s.

14. More particularly, up until the mid-1940s, balloon and timber frame construction were the predominant methods used to build wood structures. Balloon frame construction utilizes full length wall studs starting at the foundation ledge, resting on a sill plate, and spanning vertically up to 30 feet in height on the exterior wall assembly. Floor joists typically rested on a ledger board nailed into the studs at nine-foot intervals to create up to a 3-story structure. The ledger board served as a hanger for the joists. This type of floor system required cross bridging and

blocking to resist rotational movement. Timber frame construction is a method of construction that utilizes heavy large timbers to create a structural frame, often using wood to wood joinery, like mortise and tenon and secured wooded pegs.

15. Although there was some limited use even earlier than 1940, platform construction became the standard method of construction after World War II. Platform construction typically consisted of anchoring a sill plate to the foundation system using embedded lag bolts, installing exterior and interior bearing stud walls to the foundation plates, and installing the floor joist system on top of the walls to create the first story of a structure. This includes installing the floor sheathing to the joists to create a diaphragm. When additional stories are added, the process continues with wall plate and exterior and interior bearing walls installed into the wood deck of the first story. Walls are typically constructed out of dimension lumber or steel studs, such as a 2 x 6 studs, although alternative engineered studs are available. Interior partition walls are typically constructed out of 2 x 4 studs. In either case steel studs can be utilized. Floor joists can be dimensional lumber [typically 2 x 10 or 2 x 12] or engineered trusses or I-joists.

16. Prior to the introduction of hangers to install joist systems, joists were affixed to the perpendicular framing member by back nailing or toe nailing. The process of back nailing involves securing joists to supporting beams or ledgers using nails that are driven through the backside of the beam or ledger into the joist.

This method typically requires 2-3 carpenters to set each joist, depending on size.

By contrast, joist hangers, which could be set into the ledger of a beam allowed, in many cases, for a single carpenter to set the joists.

17. During the late 1970's the semi-balloon method of construction began to be used. Semi-balloon frame construction, utilizing joist hangers, is depicted in the figure below.

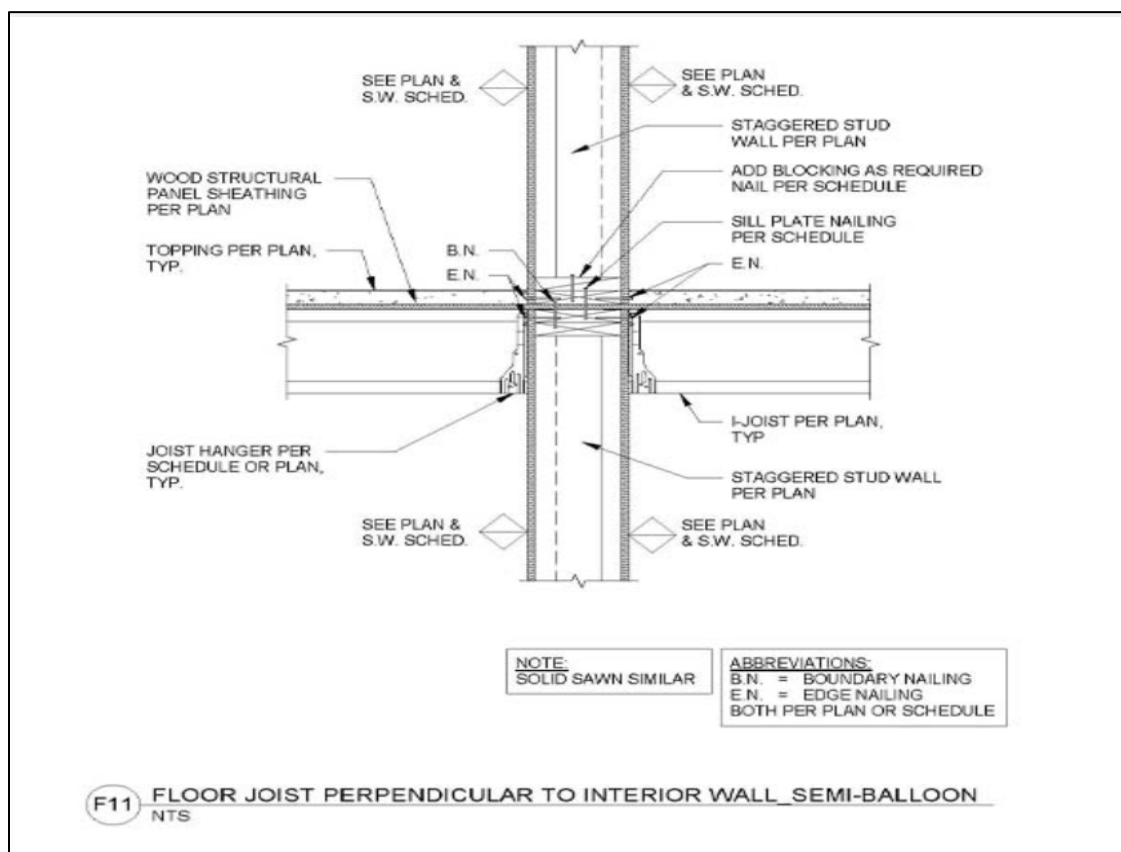


Figure 1: Semi Balloon Frame at partition wall using I-joists and hangers and Hangers [AutoCAD cut sheet from Wood Works – Wood Products Council]

18. By the early 1970's, the use of hangers became the preferred method of framing wood construction, replacing back nailing. The figure below depicts common hangers that were, and still continue to be, used in construction.

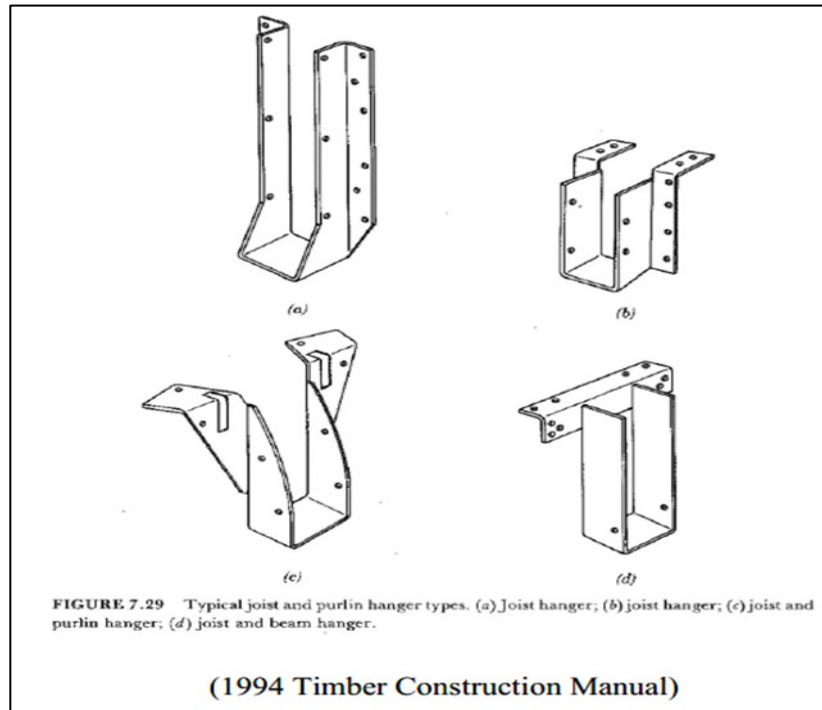


Figure 2: Typical Joist Hangers Available in 1994
1994 Timber Construction Manual, Fourth Edition at page 17 Fig.

19. Attachment of the hangers to perpendicular framing members can be accomplished by either face mounting or top mounting the hanger for attaching a truss or joist to engineered wood floor framing members, double wall top plates or minimum 2-ply 2x solid sawn headers. Connections to concrete and steel can also be done.

20. As can be seen in the diagrams in both figures 3 and 4 below, with the traditional joist hanger systems, the dimensional lumber joist or I-joist is butted directly up against the intersecting member that runs perpendicular to the joist.

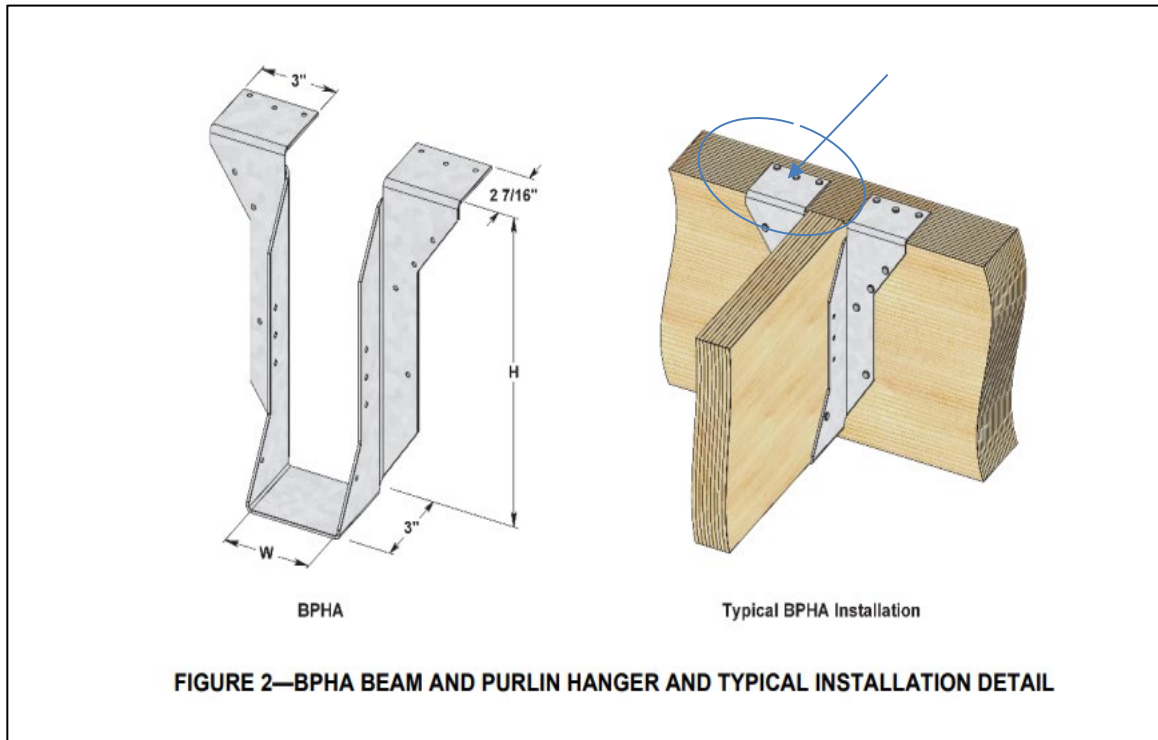


Figure 3: ICC-ESR 3444 MiTek Hanger example 2024
[Blue circle and arrow showing wood in connection]

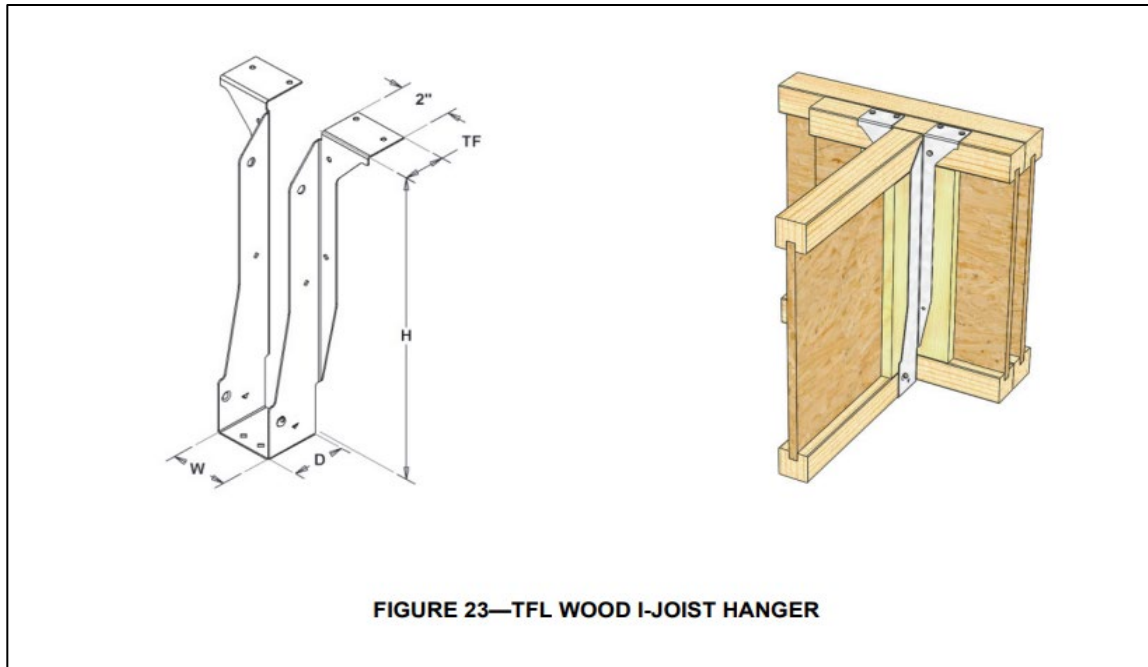


Figure 4: ESR 3444 MiTek Hanger example 2024

21. Hangers must resist the live and dead load requirements of the designs of the structure. These are typically established by the engineer of record and included on the approved plans and specifications. Deviations from the approved plans must be approved both by the engineer of record and the local code jurisdiction.

22. When these types of hangers are fastened to the intersecting member, they create a cantilever seat for the joist to rest on. These hangers must perform three essential functions:

- Hangers must resist the moment arm reaction caused by the vertical load such that the hanger will not pull away from the wall or damage the wall at the connection
- Hangers must prevent rotational moment forces that would cause the wall or hanger to become deformed or damaged

- Hangers must eliminate any failure of the wall top plate or the connection to the hanger through overloading of the vertical load path.

III. BUILDING CLASSIFICATION WITH THE INTERNATIONAL BUILDING CODES AND REQUIREMENT FOR FIRE PROTECTION

23. The International Building Code establishes 5 types of construction.

These are listed in Chapter 6 of the 2012 IBC and Table 601:

- Section 602.2 Types I and II. Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.
- Section 602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.
- Section 602.4 Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The details of Type IV construction shall comply with the provisions of this section.
- Section 602.5 Type V. Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this code.

TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)									
BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Primary structural frame ^a (see Section 202)	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls									
Exterior ^e	3	2	1	0	2	2	2	1	0
Interior	3 ^a	2 ^a	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions									
Exterior	See Table 602								
Nonbearing walls and partitions							See		
Interior ^e	0	0	0	0	0	0	Section	0	0
							602.4.6		
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and associated secondary members (see Section 202)	1 1/2 ^b	1 ^{b,c}	1 ^{b,c}	0 ^c	1 ^{b,c}	0	HT	1 ^{b,c}	0

Figure 5: From 2012 IBC Chapter 6

24. All of these types of construction require some degree of fire protection in their design. Chapter 7 of the 2012 IBC specifies the Fire and Smoke Prevention Features. Section 706.4 of the 2012 IBC specifies that the walls separating units of specific types of structures – specifically Residential Group R-1 (including hotels and motels) and Residential Group R-2 structures (including apartment houses and condominiums) – must meet a two-hour fire rating. The International Building Code has required a fire resistance duration rating of two hours between separate units within these types of structures since its first printing in 2000. These requirements carry over from the various regional codes and can be traced back as far as the 1967 UBC in Chapter 43 Fire Resistive Standards.

25. In particular Section 705.4, Table 705.4 of the 2000 International Building Code defines the minimum fire-resistance rating for firewalls based on a structure's occupancy classification/group.

26. The fire rated assembly is typically done using gypsum board to achieve a code compliant fire rated wood frame assembly. For example, under current codes, a two-hour fire rating for wood stud framed walls can be achieved with two layers (a double layer) of 5/8-inch-thick Type-X gypsum wallboard on both sides of the wood framed wall. 2000 IBC at 126.

27. Forensic Building Science has a library containing Historic Building Codes (UBC) dating back to the 1967 Uniform Building Code (UBC). The 1967 UBC lists 2-layers of 5/8" Type X Gypsum board to create a 2-hr. rated assembly covering over wood studs.

1967 EDITION

TABLE NO. 43-B—RATED FIRE-RESISTIVE PERIODS FOR VARIOUS WALLS AND PARTITIONS—Continued

475	Wood Studs—Interior Partition with Gypsum Wallboard Each Side (Cont'd.)	73	2" x 4" wood studs 16" on center with space between filled with mineral wool batts ¹⁰ nailed to studs and full-length ½" regular gypsum wallboard applied vertically nailed with 5d cooler nails spaced 7" on center				4½
		74	2" x 4" wood studs 16" on center with two layers ½" regular gypsum wallboard applied vertically or horizontally each side, joints staggered. Nail base layer with 5d cooler nails at 8" on center, face layer with 8d cooler nails at 8" on center				5½
		75	2" x 4" wood studs 16" on center with ⅝" Type "X" gypsum wallboard applied vertically or horizontally nailed with 6d cooler nails 7" on center with end joints on nailing members				4¾
		76	2" x 4" fire-retardant treated wood studs spaced 16" ¹² on center with one layer of ⅝" thick Type "X" gypsum wallboard applied with face paper grain (long dimension) parallel to studs. Wallboard attached with 6d cooler nails spaced 7" on center				4¾ ⁴
		77	2" x 4" wood studs 16" on center with two layers ⅝" Type "X" gypsum wallboard each side. Base layers applied vertically and nailed with 6d cooler nails 9" on center. Face layer applied vertically or horizontally and nailed with 8d cooler nails 7" on center. For nail-adhesive application, base layers are nailed 6" on center. Face layers applied with coating of approved wallboard adhesive and nailed 12" on center				6½

(Continued)

TABLE NO. 43-B

Figure 6: Chapter 43 1967 UBC page 475

IV. HANGERS AND FIRE RATED GYPSUM EVOLUTION

28. As mentioned above, the use of hangers became the preferred method of framing wood construction in the 1970s. The use of hangers gained acceptance in part due to advancements in joist and trusses.

29. Glued-Laminated lumber and joist hangers appear in the 1967 Uniform building codes in Chapter 25 Wood pages 160-162.

30. The first I-joists—often referred to as TJIs—were not developed until 1969 by Trus Joist Corporation. The introduction of Microlam and LVL beams

followed shortly after. [University of Massachusetts Building and Construction Technology College of Natural Sciences | Department of Environmental Conservation <https://www.umass.edu/bct/publications/articles/the-evolution-of-engineered-wood-i-joists/>] In the 1980s, the APA-Engineered Wood Association expanded its membership to include panel engineered wood products like I-joist and in 1997 the APA introduced “***Performance Standard for Residential I-joists, APA PRI-400***”. [PERFORMANCE STANDARD CONSIDERATIONS FOR I-JOISTS USED IN RESIDENTIAL FLOOR CONSTRUCTION Borjen Yeh, Ph.D., P.E. Thomas G. Williamson, P.E. Michael R. O’Halloran, Ph.D. APA - The Engineered Wood Association, U.S.A.]

31. Notably, each of these above-mentioned engineered products require the use of metal hangers during installation. While the engineered products allowed for longer clear spans and a more open floor plan, the need for hangers with these new products complicated the interface at fire walls.

32. When the intersecting member is part of the fire wall, and traditional hangers are used, there is no fire protection where the two intersecting wood members come into contact. However, building codes require that the “fire partitions shall be continuous”:

708.4 Continuity. Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above and shall be securely

attached thereto. In combustible construction where the *fire partitions* are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fire blocked or draft stopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the *required fire-resistance rating* of the wall supported, except for walls separating tenant spaces in *covered and open mall buildings*, walls separating dwelling units, walls separating sleeping units and corridor walls, in buildings of Type IIB, IIIB and VB construction.

EX2001 IBC 2012 at 708.4. Section 705.6 of the 2000 code specifies that the fire-resistant partitions must have “*vertical continuity*” extending from the foundation to the roof of the structure.

33. While penetrations are permitted for utilities, the 2012 fire code’s rules for such penetrations are narrowly defined. They include restrictions on the size of each cutout, the aggregate area of all of the openings, the location relative to other penetrations, and size and covering of the annular spaces (i.e. the gap) around the penetrating item. [IBC 2012 Section 714]. Regardless of the size of the penetration or the materials going through the penetration [wires, cables, piping] the opening must be completely sealed around the products penetrating the assembly.

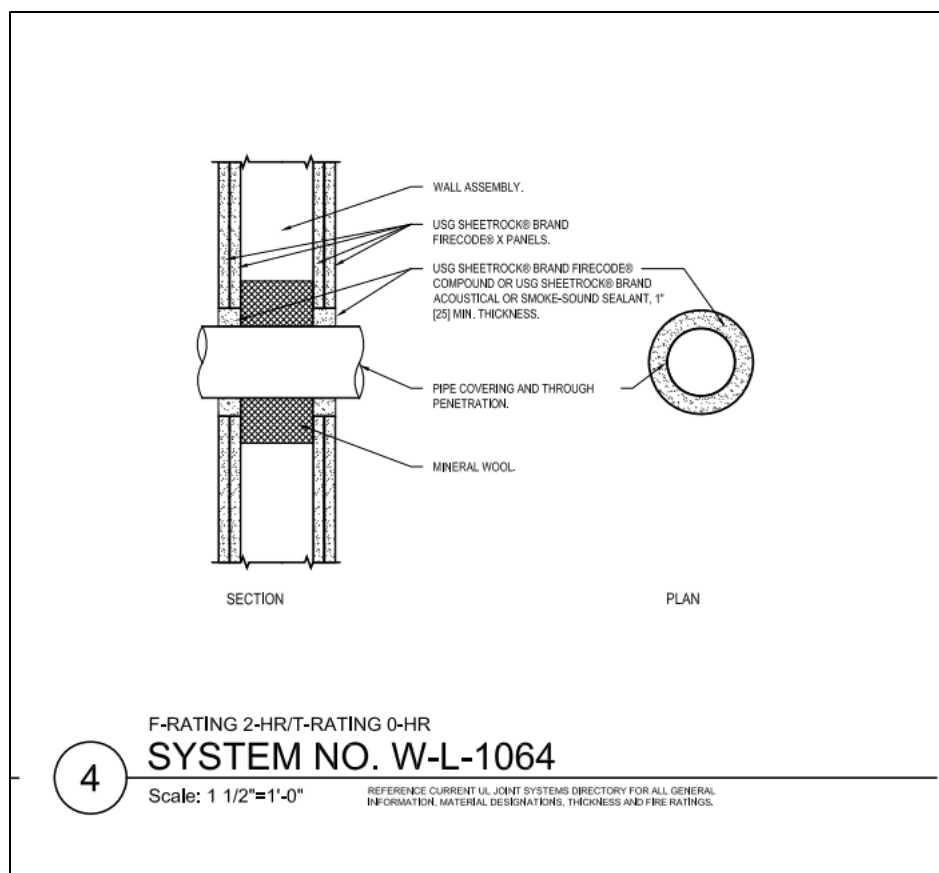


Figure 7: Cut Sheet from United Staes Gypsum of Typical 2-hour assembly
 [PDF USG-through-wall-penetrations-J2133-e]

34. Notably, there was no provision within the IBC pertaining to penetrations for joist hangers. Still, the person of skill in the art would have been concerned that the aggregate effect of penetrations—and burden to mitigate the penetrations—from joist hangers would be compounded compared to penetrations for utilities. Specifically, joist and trusses would be expected to be spaced at significantly closer intervals (typically only spaced apart 16 or 24 inches) than utilities such as electrical outlets (often spaced as much as 12 ft apart). As an example, for a twelve-foot-long wall, there may only be a single electrical outlet, but as many as eight hangers. The electrical box in this example is required to

match the wall assembly rating. A typical electrical box is 2” x 4”. A single joist hanger is essentially the same size in width but longer in length proportional to the joist being used. The installation of 12 hangers on a rated wall assembly with only one outlet box creates an effective 12-fold increase on the amount of gypsum board cutting and fire caulking to properly seal the wall assembly and meet code.

35. Thus, despite the allowance for limited penetrations, penetrations for each hanger at the firewall would risk not complying with the code. In light of the code requirements, prior to the market release of the FWH around 2014, the construction industry would have discouraged the use of any penetrations into the firewall around the joist hangers, due to the increased risk of failure at inspection, because of the building codes requirement that the fire partitions be continuous. [IBC 2012 at 708.4; Code at 705.6.] In addition, any penetration into the fire wall would require application of caulk, further increasing labor time and costs, thus providing another reason for discouraging penetrations.

V. PRIOR METHODS OF INSTALLING HANGERS AT THE FIREWALL

36. As explained above, at least as early as 1997, there has been a need for hangers to attach trusses or joists to two-hour fire rated walls achieved with two layers of drywall. See 1967 UBC at p.475; (1997 the APA introduced *“Performance Standard for Residential I-joists, APA PRI-400”*). Such a hanger needs to comply with the fire code, resist the live and dead load requirements of the

structure, resist the moment arm reaction caused by the vertical load such that the hanger will not pull away from the wall or damage the wall at the connection, prevent rotational moment forces that would cause the wall or hanger to become deformed or damaged, and eliminate any failure of the wall top plate or the connection to the hanger through overloading of the vertical load path. Also, there would have been a need for a hanger that minimizes labor (as is always the case in construction) and prevents exposure of drywall to moisture (as has been known since the first use of drywall around 1950's).

37. I have personal familiarity with the hangers and methods used to interface at fire walls over the years prior to 2014. None of them have adequately satisfied all the above needs.

38. The commercially available hangers and installation methods on the market at that time of 1997 and before, and up until 2014 when MiTek produced the FWH hanger, generally required penetration of the fire wall at the mounting point of the hangers, liberal notching of the fire wall, and use of fire calks around the notching of the fire rated drywall. This added time and money to the construction process and created uncertainty regarding whether the fire wall complied with applicable codes. Many of the hangers and fasteners being used in

the “early days” of these products had not been UL rated or had any testing for use in a fire rated assembly.

39. Prior to the FWH hanger, this issue was being dealt with by implementing a “this is the best we can do” attitude and copious amounts of fire caulk. Architects and Engineers [the project specifiers] inserted the words “typical” or “per manufacturer” or “to code” of the approved plans but often did not detail this particular connection, leaving it up to the contractor to design something in the field and the building inspector to accept or deny it with a work stop order.

40. In an attempt to meet the minimum requirements of the code for a continuous firewall, contractors starting doing a number of design work arounds at fire walls. I have personally inspected and seen all of the following:

- Hangers cut and bent around the Gypsum boards changing the approved design of the hangers, often using pipe strapping to augment. In effect the engineered and approved hanger is being manipulated to fit the assembly rather than using a hanger that works.
- Installing 2-layers of fire rated gypsum board onto the intersecting member and installing the hanger through the gypsum board disturbing the load path of the hanger with the gypsum board. The fasteners penetrating the gypsum create a cantilever and diminished load capacity at the gypsum.
- Installing 1-piece of gypsum board and doing the same as above and then cutting the second piece of gypsum board around the hanger. Then installing fire caulk to fill the voids. This requires using rated caulk which is considerably more expensive than the MiTek hanger.
- Installing hangers and cutting the Gypsum Board around the hangers and liberally applying rated caulk. This requires using rated caulk

which is considerably more expensive than the MiTek hanger.

41. When contractors install 2-layers of gypsum board prior to installing the hangers and subsequently attach the hanger to the face of the drywall, this created a load-bearing problem due to an interruption in the load path through the cantilevered fasteners as a result of the installation of the 2-layers of gypsum board [1.25 inches]. By spacing the end of the joist away from the supporting or bearing members, the downward force transferred from the joist to the hanger is now farther offset and thus introduces a larger moment reaction on the hanger. In my experience, this choice of installation, over time, has seen failures in the ability of the hanger to withstand the implied loads without buckling, which in worst case scenarios could cause collapse of the building. This typically manifests in cracking and shearing of the attached gypsum boards to the framing members.

42. All of these processes were also typically done prior to the interior of the structure being enclosed and protected from water intrusion from rains. This enclosure process is referred to as “*dried -in*”. Below in Figure 8, is an example of the water damage occurring during framing at a fire wall prior to “*dry in*”.



Figure 8 Photo of the Metropolitan Apartments taken by Author Circa 2019

VI. MITEK'S FWH HANGER

43. In my opinion, the engineered cantilever in the MiTek hanger was an innovative part of the FWH. It addressed the moment and load path in one hanger while allowing for space to slip the 2-layers of 5/8" gypsum board in front of the adjacent perpendicular wood member and behind the hanger after the rough ins and framing were completed and the building was dried in.

44. For example, there was a need for a firewall hanger since as early as the 1997 that could perform the following functions:

- Eliminate the need to “pre-install” fire rated gypsum board prior to completion of framing and dry-in
- Cut down on installation time
- Address the increased use of engineered wood products and how these could be connected to create load bearing assemblies since, for example, back nailing of I-joists was prohibited

- minimized penetrating the fire walls

45. The FWH and its installation method of being installed prior to drywall met all the needs addressed above, something that the prior art hangers and methods had not been able to do.

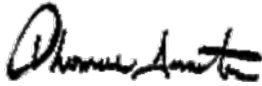
46. In my opinion as a contractor, consultant, and Building Code Official, the hanger applications being utilized in construction prior to the FWH hanger and its installation method, that penetrated the firewall, did not adequately maintain the fire resistive rating of the 2-hour fire resistive assembly wall requirements to meet the code requirements.

47. The FWH hanger and its installation method allowed for work of all of the trades to be completed and approved before any gypsum board was installed at the fire walls, streamlining the construction flow and guarding against damage caused by “*pre-installation*” of gypsum board when the structure was not “*dried-in*”.

48. Prior to the introduction of the FWH hanger and its installation method by Patent Owner, there was no hanger commercially available that would allow for installation of the hanger during the framing stages, while leaving all of the gypsum board installation until a later stage, while adequately maintaining the fire rating of the wall assembly.

49. The use of the Patent Owner fire wall hanger and its installation method, and the more recent addition to the market of similar hangers and methods by Simpson, have become the industry standard for fire wall design and have eliminated the need for engineered design options or work-arounds at these installation locations in fire walls.

50. I declare under penalty of perjury that the foregoing is true and correct. Executed this 27th day of May 2025.



Thomas J. Irmiter

Appendix A

THOMAS J. IRMITER

St. Paul, Minnesota 55105 • 651-222-6509 • teirmiter@forensicbuildingscience.com

Updated 05-02-2025 QUALIFICATIONS SUMMARY

Renowned industry leader with broad based, diverse experience spanning over 35 years in the forensic construction and building industries. Background demonstrates success serving as an expert to determine failure causation for natural and person-caused matters. Adept in building strong working relationships with internal and external business partners, key stakeholders, and industry regulators to support legal proceedings and settlements due to faulty material and construction practices. Committed to ongoing continuing education, holding a variety of licenses and registrations, and serving as subject matter expert across multiple disciplines, features, materials, and applied practices.

EDUCATION & CREDENTIALS

HAMLIN UNIVERSITY
Bachelor of Arts (1981)

UNIVERSITY OF WISCONSIN – SCHOOL OF ENGINEERING [4 credit hours]
Advanced Project Management (2007)

DESIGNATIONS & LICENSING

State of Minnesota Building Official, License #LB002764 (2006 – 2027)
International Code Council, Residential Building Inspector, Certification #B1 (2008 – 2027)
International Code Council, Property Maintenance & Housing Inspector, Certification #64 (2008 – 2027)
International Code Council, Building Safety Professional Member #5313388 (2007-2024)
International Code Council, Corporate Member #8053289 (2015 – 2026)
Insurance Appraisal & Umpire Association Member and Certified Appraiser/Certified Umpire (2017 – 2026)
Certified Renovator- Lead Safety (2015 – 2022)
Certified Vinyl Siding Installer, ID #18025 (2015 – 2018)
Metro Skywarn Spotter, ID #7154 (2015 – 2017)

CONTINUING EDUCATION

Code Official Licensing Requirements | 35 CEUs | 2025
Amendments to the 2020 MN Residential Building Code, Anatomy of A Department of Labor and Industry Investigation, Application of the Minnesota Residential Building and Energy Code from Start to Finish, Building a Better Basement, Building Planning Provisions of the Minnesota Residential Code, Code Administration, Framing and Finish Applications of the 2020 MN Residential Code, A Comprehensive Look at the Framing Provisions of the Minnesota Residential Code and More, Exterior Envelope Energy Provisions of the Minnesota Residential Energy Code, The How and Why of Exterior Insulation, Exterior Water-Resistive Provisions of the Minnesota Residential Code, Footings and Foundation Provisions of the Minnesota Residential Code, New Home Construction From Permit Application to Final Inspection, Insulation Why, Where, and What, Prevent-Construction Building Safety, Principles of Design, Fire and Life Safety, So, Tell Me About Your Problem House, Below The Sill
Code Official Licensing Requirements | 42 CEUs | 2023
Administrative Provisions of the Minnesota Residential Code, The 45L Tax Credit and Energy Star Certification, Aluminum Exterior Components with Wood-Grain Look Designed for High Performance, The Awesome Wall: A Better way to Build, The Basics of Premanufactured Wall Panels, Blower Door Testing and Common Air Sealing Issues, Building Barrier-Free Bathrooms, How to Deal with a

Crazed Homeowner: Responding to a Homeowners' Aggressive Threats & Tactics, Permanent Wood Foundations: A Tested Solution for New Code Changes, Understanding Construction Defect Claims, Online Project Management Including Two Hours of Energy Code, Lead Paint Awareness, Successful Site and Building Design, MN Online Video Weatherization and Renewable Energy, MN Online Code and Energy Efficient Building.

65th ANNUAL INSTITUTE FOR BUILDING OFFICIALS | 2021

Code Official Licensing Requirements | 35 CEUs

State of the State; From Building Science to Control Layers to High-Performance Enclosures; 2018 IBC Performing Nonstructural Plan Day 1 & 2; Protecting Duct and Air Transfer Openings; Commercial Roofing Assemblies 101

63RD ANNUAL INSTITUTE FOR BUILDING OFFICIALS | 2019

Code Official Licensing Requirements | 35 CEUs

State of the State; Understanding the Roles of Participants in Emergency Response to Catastrophic Damage; Firestop from an Inspection Standpoint; Concrete and Reinforcing Steel Observations; Structural Steel Observations; Soils and Building Code; The Remodeling Conundrum: When the Order Matters; Ventilation: The Many Sides of Air; 2018 IBC and IFC Fire Protection Systems; and Legal Aspects of Code

58th ANNUAL INSTITUTE FOR BUILDING OFFICIALS | 2015

18 CEU Hours

The "State of the State"- Construction Regulation; Update to MN Rule 1322 "Residential Energy"; MN Amendments for 2012 IEBC; MN Amendments for 2012 IRC; Residential Masonry & Concrete; Residential Deck Connections; Legal Perspectives in Code Enforcement; Tenant/Landlord Law Overview for Inspectors; and Application of International Mechanical Code to Existing Housing

FIRST PARTY CLAIMS CONFERENCE | 2014, 2015 & 2017

Attendee & Presenter

Problems and Solutions Under Law and Ordinance and Code Upgrade Coverage- Finley Harckham, Esq., Anderson Kill Loss Advisors; Hail Mechanics, Opacity, and Why Small Hail Can Do Big Damage- Matt Phelps, P.E., APEC, LLC; New Developments in the Engineering Investigation of Wind/Hurricane Damage- Neil Hall, Ph.D., P.E., AIA, Neil Hall & Associates; The Million Dollar Question ... Literally: How to Determine the Date of Loss for Hail and Wind Claims- Howard Altschule, CCM, Forensic Weather Consultants, LLC; 2015 Attendee Appraisals-Strategies and Techniques to Effectively Manage Process; Judging the Validity and Efficacy of Engineering and other Expert Reports; Little Known Technologies in Residential & Commercial Roofs; Builders Risk and Construction Defects-Case Studies; 2014 Presenter: Fire Investigation from the Perspective of the Adjuster, Insured and Investigator

National Association of the Remodeling Industry (NARI) and National Association of Home Builders (NAHB) ANNUAL CONVENTION

1989 – 2006 Attendee and Presenter

Weather Resistive Barriers, including Tyvek, "D" Paper, Pink Wrap, & Tytar; Window & Door testing and installation per AAMA including Flashing; CAD Design; Computer Aided Estimating Xactimate System; Peachtree Estimating System; Xactimate Training; Vapor Retarders; Insulation; Ventilation; Roofing – EPDM, TPO, BUR, Mod Bit, Steel, Metal & Elastomeric; Fasteners & Connectors; Computer Aided Structural Analysis; Caulks & Sealants and adhesion and cohesion failure; Tyvek (including 10 Hours Dupont direct Training on Stucco Wrap & Flex Wrap); MFM Brand Window Tape Seminar; Pella Window Tape Seminar; Building Science Corporation, Joe Listerbeck, Water Intrusion Diagnosis & Repair; Complex Framing Using LPI and TJI Joists & Connectors; Using OSB as a Structurally Rated Panel; Barrier Free Design; Proper Installation of Kick-Out Flashing, AWCI; What causes mold? AWCI; Plaintiffs Mold Summit (16 Hours); NARI Certified Remodeler Test; Calculating loads on wall, Floor, & Roof Assemblies; Blueprint Reading & Materials Take-Offs; Building Codes & Standards by Geographic Region, including UBC, BOCA, WDC and Model Energy Code (Prior to adoption of ICC Codes); Administration of Construction Projects; Legal Aspects of Construction Contracts & Project Specifications; Fastening Schedules for Various Components, including Trusses, Engineered Components, Steel, Studs, Plates, Headers, Sheathing, Lath, Weather Barriers, & Ledgers; Calculating Live, Dead, & Snow Loads; Site Layout & Drainage; Basic Mechanical & Electrical, Historic Restoration Principles Historic Preservation Association

ARCHITECTURAL TESTING WINDOW PERFORMANCE SEMINAR | 2003

Testing & Interpreting Testing Results of Fenestrations using AAMA and ASTM Criteria; Using ASTM E-2128 as Performance Criteria for Evaluating Water Intrusion; and Glass on Glazing Panels & U-values

NATIONAL ASSOCIATION FOR THE REMODELING INDUSTRY (NARI) Certified Remodeler | 1989 – 2002

200+ Total Hours | Minimum of 12 Hours Annually (**First Person in the State of Minnesota to Pass the Certification Test**)

Advanced Framing techniques Floor Truss vs. I-joist Systems; Installation and flashing of Flanged Windows; Supplemental Xactimate Training; New Product introduction from DuPont, Tyvek; Job Sequencing & Project Scheduling; Introduction to CAD Design; Use of Simpson Fasteners & Connectors to Obtain Structurally Rated Assemblies; Insulation & Ventilation Techniques

REMODELERS SHOW | 2002

Pella Window Installation Training & Techniques, using Tyvek and New Pella Tape System Seminar; Mold Seminar Taught by Dr. Joseph Lstiburek; and Seminar on Comparison of OSB, Dens Glass Gold, & Plywood Permeability

ASSOCIATION OF WALL & CEILINGS INTERNATIONAL CONFERENCE | 2001

8 Hours Training

Mold Abatement and Diagnostic Techniques Class; EFIS Installation Techniques & Establishing Drainage Plains; and Barrier Wall Design vs. Drain Plane Design

STATE OF MINNESOTA CONTINUING EDUCATION | 1993 – 2000

56 Hours CEU | Contractor License Maintenance

Completed requisite coursework and taught classes required for contractor continuing education including Lead Safety Training as the only non-State of Minnesota Department of Health person qualified by the Department of Commerce to teach Lead Safety Training.

ANDERSEN RENEWAL WINDOWS, JOINT VENTURE | 1997 – 1999

200+ Hours Training

Liaison to Andersen Partnership Council, Group of 20 Contractor Advisors; Set up 20-person Installation Team to Install First Windows Developed in Pilot Program; Direct Consultant with Aspen Technologies and Andersen Design Team; Recommended Modifications to the Product, including Flange System; Glazing Pockets & Type of Seal at Glazing Panel; Drip Cap Design & Integration; Weep System Design Installation Techniques & Requirements; ASTM and AAMA testing, Installation Costs by Unit, 1 of 3 Tracking Systems; Consulted on Advertising & Product Marketing; Received 200+ hours in Training on Fenestration Products, including Design Installation, Service, Sales, Marketing & Distribution; Assisted Renewal in Setting Up In Home Sales & Showroom Sales Program; and Trained Initial Renewal Sales Force.

SOLARIUM SYSTEMS INC., LORD & BURNHAM GREEN, & FOUR SEASONS | (1986) (1,000+ Hours)

1,000+ Hours | Classroom & Hands-on Manufacturing

Erection & Construction of Glass Solariums; Cutting Extrusions; Installing Weep Tracks; Installing Glazing Tapes & Glazing Panes; Installing Mull Covers; Integration of Operable Fenestration Components, including Windows, Doors, & Fan Systems; Building & Designing Heat Sink Collectors using Insulated Slab On Grade & Wood Foundations; Heat Wall & Trompe Wall Designs; Complex Hip-Unit Solariums & Multiple Unit Designs & Structurally Rated Extrusions & Where To Use These; Spread Mull Techniques & Structurally Rated Mull Assemblies; Integrating Site-Built & Erected Solariums Into Wall & Roof Assemblies & Proper Flashing Techniques; ASTM and AAMA testing of product in lab and field.

MARVIN WINDOWS | 1993

30 CEU Hours | Warraroad Plant | Factory Training

Removable vs. Factory Applied Flanges; Sealant at Flanges; Need for Drip Caps; Introduction of SDL Glazing; Change in Coating Process for Factory Finishes; Metal Frame Assembly Installation Over Wood Assembly; Authentic Divided Lite Limitation with Glazing Panels; Use of Commercial Products in Historic Residential Structures; HPC Approvals for Marvin Alpine; Installation Techniques, including Flashing Gridlines; and First Look at French Casement Prototypes

Additional CEU Coursework:

Environmental Issues, 3 Hour Course (2019); 2012 IBC Performing Nonstructural Plan Review, 24 CEUs (2016); 2012 IBC Inspection of Fire-Resistant Rated Walls, Floors, Ceilings & Roofs, 7 CEUs (2015); Basic Techniques of Install of Vinyl Siding, 5 CEUs (2015); Lead Safety for Renovation, Repair & Painting, 8 CEUs (2015); 2012 IRC Wall Bracing (2012); and Attended 55th Annual Institute for Building Officials (2010); ICC Residential Building Code Inspector (2008); Overview MN Rules Chapters: 1323, 1301 & 1322 (2009); ICC Residential Property Maintenance Inspector (2009); Performing IBC Commercial Inspections, 1-day (2010); UL Fire Research Light Weight Instruction, 1-Day (2010); Fire Station Flashing, 1-Day (2010); Fire Rated Assemblies, 1-Day (2010); ICC – IRC Townhome Requirements, 1-Day (2010); Building Science and Building Enclosures, 2.5 Days (2010 & 2011); IRC & IBC, 2-Days (2012); 2012 International Existing Building Code, 1-Day (2013); Brace Wall Panel Design, 1-Day (2013); and 2012 IBC Transitions From 2006 (2013)

HONORS & AWARDS

Remodeling Magazine “Big 50”, One of Top 50 Contractors in the Nation (1990)

Certified Remodelers Designation, First Contractor in Minnesota to Pass the Certified Remodelers Test (1990)

Outstanding Leadership Award, NARI, Minnesota Chapter (1989 – 1996)

Leadership Recognition, Awarded Annually by the Builders Association of Minnesota (1994 – 1997)

Founder, Minneapolis/St. Paul Home Tour (1994)
 Criteria Writer, National Quality Awards Sponsored by NAHB, Washington, DC (1995)
 National Quality Awards, NAHB, One of Four Judges (1996 – 1998)

Most Unique Project To Date - 2012

Served as the expert on the **Fungal Meningitis Outbreak**, which is to date recognized as the largest Pharmaceuticals disaster in United States history. I worked closely with the United States District Attorney for Boston and the Federal Bureau of Investigation and the Centers for Disease Control to design the inspection protocols to determine the cause of the contamination on site. Through my team's efforts we were able to locate the source of the mold found in the steroids and the mechanism for entry into the building and into the clean rooms. This resulted in an over **400-million-dollar award for the victims**.

PROFESSIONAL AFFILIATIONS

President, NARI, Minnesota Chapter (1989 – 1991) [**Only 2-time President. Chair of Ethics Committee 10 years**]
 Presented First Uniform Model Contractor Licensing Bill for Remodelers, Builders Association of Minnesota, and State Legislature (1990)
 Appointed, State Board Builders Association of Minnesota (1996 – 1998)
 Member, Andersen Window's Partnership Council (1996 – 1998)
 Contributor, Development of Renewal Window by Andersen (1997 – 1999)
 Member, American Society of Testing and Materials (ASTM) (2004 – 2006)
 Corporate Member, International Code Council (ICC) (2007 – 2018)
 Member, Better Business Bureau (2004 – 2016)
 Member, RCI (2013 – 2014)
 Department of Insurance Continuing Education Instructor, Approved to Teach Insurance Industry Classes for Adjusters in California, Colorado, Florida, Georgia, Minnesota, New York, Pennsylvania, and Virginia (2014 – 2019)

PROFESSIONAL CHRONOLOGY

FORENSIC BUILDING SCIENCE, INC. | 2004 - Present

Owner & Principal

Managed forensic analysis and evaluation of water intrusion behind exterior boundary walls on residential single-family, two-family, and multi-family dwellings and commercial low- and high-rise buildings. Conducted on-site inspections and evaluations, both non-invasive and destructive, of foundation, floor, wall, curtain and storefront, soffit and attic/roof assemblies to evaluate as-built conditions and determine causation for damages to these various assemblies either by defect, design, weather or other causes. Prepared project specific repair scopes and unit price estimates as well as obtaining and reviewing bids from contractors. Evaluated applicable building and life safety codes and standards in place at the time of original construction and at time of a loss. Served as qualified **causation, codes, and damages expert witness**, delivering testimony regarding causation, codes and costs to repair for both Federal and State court cases and numerous Arbitrations. Served as trial consultant numerous times. Served as Arbitrator three times. Conducted inspections in Alabama, Arizona, Arkansas, Colorado, California, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Mexico, New York, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, and Wisconsin. Non-U.S. inspections include Mexico and Scotland.

- Performed causation analysis of failed foundation, wall, floor, window, door and curtain wall, façade, and roof assemblies.
- Evaluated codes and standards, including manufactures requirements.
- Collected and logged and stored evidence and drafted on-site documentation detailing remediation and repairs.
- Resolved construction and insurance disputes through appraisal, mediation, and arbitration.
- Per ASTM and AAMA procedures Tested and deconstructed fenestration and curtain walls.
- Oversaw project management and project cost estimating functions, using Industry standard methods including Xactimate, Bid4build and RS Means.
- Performed staged site inspection and documentation on new homes and structures undergoing renovations and repairs, including footing, framing, weather barrier, roofing, fenestrations inspections, and insulation and ventilation inspections.

- Produced project specifications, Analyzed, and delineated comparative bids and performed job cost and project scope analysis.
- Sampled for bulk mold, aciniform fire particulates, and lead, petroleum by-products, **Covid and Bacteria**.
- Conducted infrared and moisture mapping in walls, floors, foundations, and roof assemblies.
- Identified clean room design defects.
- Reviewed and evaluated construction documents.
- Inspected first-party losses, including fire, wind, hail, ice dams, weight of snow and ice and water, hurricanes, tornadoes, floods, pipe burst, and vehicle impact.
- Sloped and low sloped roof and facade inspections including EPDM, copper, metal standing Seam and mechanically fastened, TPO, BUR, Mod Bit, shingles, concrete and clay tile, slate, flashing, stucco, EIFS, brick, stone, vinyl siding, Hardi-composite siding, wood siding and CMU.
- Insurance appraisals as umpire and appraiser
- Pre-sale due diligence inspections
- Arbitrator and Mediator and Trial Consultant

ADVANCED BUILDING SOLUTIONS | 2003 - 2004

Causation Consultant

Performed on-site forensic destructive testing to determine problems related primarily to bulk water intrusion. Reviewed all evidence gathered from full remediation projects and issue pertinent reports. Maintained and updated a database of project costs representing a cross-section of contractors and project types. Researched and tested various products used to construct wall assemblies. Developed and maintained a protocol for destructive evaluations of fenestrations. Assisted in developing and implementing best practices and protocols for remediation projects including partner contractor training.

- Principal expert witness for the company
- Forensic analysis of construction defects and fist party claims, including on-site testing
- Window testing deconstruction
- Building code evaluations
- Water intrusion studies and reports
- Water penetration testing
- Final analysis of damages
- First party disputes

DONNELLY MANAGEMENT SERVICES, INC. | 2002 - 2003

Causation Consultant Construction Defect

Developed concept of a service to represent homeowners and commercial clients experiencing failures to their homes and buildings because of -water infiltration issues. Created initial best practices for Donnelly Stucco for involvement in the full remediation process.

- Documented and issued pertinent reports on discoveries at failed structures, both residential and commercial
- Established and maintained protocols for on-site documentation and evidence gathering and storage
- Principal expert witness for company
- Established template for water intrusion reports including creation of terms in use by other consultants today
- Created some of the first full remediation specifications and templates in use by other firms today
- Created a percentage of damages theory used in mediations today
- Developed a unit cost template still used by others today

DONNELLY STUCCO | 2001 - 2002

Sales Manager-Quality Control

Directed sales operations for residential and commercial stucco sales and design for traditional 4-coat, proprietary 2-coat, and EIFS systems. Visited Job sites to assure quality of product was maintained. Handled all customer disputes.

- Daily sales for residential re-stucco and stucco related repairs
- Initial forensic destructive testing in spring of 2002
- On-site, hands-on involvement in remediation and reconstruction process
- Management of sales leads
- Maintain company marketing program
- Prepare all estimates including new construction stucco work
- Prepare and execute contracts
- Assist clients with color and texture designs
- Attend pre-job meeting with client and Donnelly plastering staff person
- Worked in the field as an installer from time to time

IRMITER CONTRACTORS & BUILDERS, LTD. | 1984 - 2000

President

Purchased assets of a sole proprietor business and formed Irmiter Contractors and Builders, Ltd. Completed training and education in the following areas:

- Application of Building Codes and Standards into practical field applications
- Advanced framing using floor truss systems
- Installation of flanged windows
- Installation of new product from Dupont called Tyvek
- Job sequencing and project scheduling
- Xactimate training and use
- Introduction to CAD design
- Use of Simpson fasteners and connectors to obtain structurally rated assemblies
- Point load design
- Requirements for Historic Restoration
- Steel beam and column construction
- Insulation and ventilation techniques
- Calculating loads on wall, floor and roof assemblies including mathematical formulas
- Blueprint reading and materials take-offs
- Building codes and standards by geographic region including UBC, BOCA, WDC and Model Energy Code
- Administration of construction projects
- Construction contracts and project specifications
- Fastening schedules for various components including, studs, plates, headers, sheathing, lath, weather barriers, and ledgers
- Calculating live load, dead loads, and snow loads
- Site layout and drainage
- Basic mechanical and electrical
- Received 100 hours of field training from Chevron Corporation on use of Chevron Industrial Membrane (CIM) for use on flat roof applications and pond liners. Install CIM product on over 50 residential and commercial structures over a four-year period. Product used to replace standard five-ply hot mop systems in place at the time. Included specific training on wall-to-roof flashing details, flashing at posts and penetrations, pitch pockets and special applications on vertical surfaces
- Received 40 hours training from manufacturer of EPDM systems including ballast system install, mechanical fastener installs, and full adhesion system install. Installed various system membranes on flat roofs for ten-year period, including BUR and Mod Bit
- Received over 100 hours of training from Marvin Windows and their representatives, including John Taylor, on proper installation for and of Marvin windows and doors including sizing, measuring, layout, field mulling, structural field mulling, and designing window walls. ASTM and AMA testing of products.
- Direct training by Velux America through the W.J. White Company in Bloomington, Minnesota on installation and field service modification of Velux roof windows. 40-hour training included modification of engineered trusses for installation of oversized skylights, complex framing of skylight shafts, proper flashing techniques for skylights and roof windows on sloped and non-sloped roofs, and gag framing and flashing of skylights and roof windows. Personally, spent five years (approximately 3000 hours) trouble shooting and repairing improper insulations (leakers) in five state area, including commercial applications. Developed and installed first gang-flash system using low pitched roofing kit on flat roof; still in use today. Installed over 1500 roof windows and skylights from 1980-1990 including low-sloped applications
- Direct training by Solarium Systems Inc, Bloomington, Minnesota, Lord and Burnham Greenhouse Systems and Four Seasons Greenhouse through W.J. White Company for:
 - Erection and construction of glass solariums
 - Six-month training period (1000 hours) included both classroom and actual hands-on training on manufacturing at the plant
 - Including cutting extrusions
 - Installing weep tracks
 - Installing glazing tapes and glazing panes
 - Installing mull covers
 - Integration of operable fenestration components including windows doors and fan systems
 - Building and designing heat sink collectors using insulated slab on grade and wood foundations
 - Heat wall and trompe wall designs
 - Complex hip unit solariums and multiple unit designs and structurally rated extrusions and where to use these
 - Spread mull techniques and structurally rated mull assemblies
 - Integrating site built and erected solariums into wall and roof assemblies and proper flashing techniques

- Installed over 100 solariums and solariums component systems for W.J. White during five-year period on both residential and commercial structures
- ASTM and AAMA testing
- Worked on approximately 20 Construction defect cases as expert witness during this time.

BUD IRMITER REMODELING | 1976 – 1984

*Also employed at City of Minneapolis – Office of Public Information 1977 – 1978

Master Carpenter

Worked as a lead carpenter supervising numerous crews and completed additional training in the following:

- Specification writing
- Blueprint reading and materials take offs for complex projects
- Integration of subcontractors and project scheduling
- Proper job sequencing
- Design and installation of wood foundation systems
- All aspects of framing
- Advanced electrical rough in
- Installation of point load footings and re-supporting houses with offset bearing walls
- Re-supporting failed and sagged footings, posts, beams, and wall structures
- Changing structural bearing points
- Interior finishing trim including stair construction
- Multi-level deck design
- Advanced cabinet making
- Cabinet and countertop lamination
- Advanced plumbing including relocation of and offsetting of soils and waste pipes
- Working with poly retarders and un-faced insulation
- Training and installation of EPDM roofing and related materials
- Installing windows and doors
- Installing various types of siding
- Installing roofing products including BUR Hot Mop, Welded seam metal, Mod Bit, Wood Shakes, Asphalt Products, Clay and Concrete Tile

BUD IRMITER REMODELING | 1969 - 1976

Apprentice Program (1969 – 1976)

Performed the following duties and completed training programs as listed below.

- Carpentry – which including all aspects of framing, siding, windows, and roofing
- Stucco and brick
- Electrical, plumbing and heating
- Interior plastering and decorating
- Cabinet making
- Roofing (standard shingle, cedar shake, tile, slate, flashing details, chimney rebuilding and tuck pointing, BUR)
- Clearing job sites particularly on the residential roofing projects
- Learning to properly stack and cover framing lumber
- Installing mop down starter edge and 90 lbs. rolled roofing (this was prior to the development of ice and water shield)
- Installing 18-inch lap to the weather rolled roofing on flat and slightly BUR (this was prior to EPDM membranes)
- Scrapping and priming exterior homes
- Sanding gypsum board
- Cutting and installing ceramic tile
- Cement mixing
- Advanced framing including layout of floors, walls, roof structures, bearing points, point loads, stairs etc.
- Installation of metal roof flashing and underlayment flashing
- Installation of three-tab shingles and metal valleys
- Tuck pointing chimneys, rebuilding chimneys and chimney flashing
- Construction of chimney saddles and crickets
- Installation of lead flashing on tile roofs and tile and slate roof repairs

- Solder jointing metal roofing
- Inboard gutter repair and rebuilding
- Surface mounted gutter installations
- Foundation water proofing
- Wall framing and layout
- Installation of weather resistive barriers
- Installation of Kraft Faced insulation
- Gypsum board installation
- Fire taping Gypsum board
- Interior and exterior painting and staining
- Glass and sash chord replacement
- Repair and rebuilding of double hung windows
- Selection of wood and basic cutting of components for cabinet making
- Excavation and site preparations
- Foundation and footing layout
- Footing installation, including post, ledge and spread footings
- Block installation
- Installation of drain tiles
- Wood and steel siding installation
- Plywood and Bildrite sheathing installation
- Installation of lath and stucco
- Stucco re-dashing
- Gypsum board taping and plaster repair
- Spray texturing
- Wall papering and painting including faux and glazing
- Removal of lead and galvanized water pipes and installation of copper water pipes
- Removal and installation of hot water boilers
- Installation of carpet and linoleum
- Installation of wood floors including floor refinishing
- Stripping and refinishing woodwork
- Retrofitting new headers without installing temporary support walls
- Advanced cabinet making including mortise and tenon work
- Basic electrical rough in

CITY OF MINNEAPOLIS - OFFICE OF PUBLIC INFORMATION | 1977 - 1978

Director

Reported directly to City Clerk, Lyle Schwarzkopf. Managed a staff of 8. Published monthly city employee newsletter.

- Assisted in lobbying effort for proposed stadium in Downtown Minneapolis.
- Received training in use of Thermographic Equipment from the U.S. Department of Energy for interpreting thermography study regarding heat loss in residential structures; including extensive training on interpreting infrared images, convective loops and negative plain pressure as these relate to improper insulation and ventilation procedures and percentage of heat loss attributable to wall and roof assemblies.
- Implemented and delivered secondary training to citizens in local wards for presentation of the thermography images that were taken by the federal energy agency in conjunction with the Department of Housing and Urban Development (HUD).
- Inspected approximately 5 homes in each ward, total of 50, to verify accuracy of testing procedures and make recommendations for proper insulation and ventilation of the attic areas.

CONSTRUCTION CONSULTING AND ARBITRATION EXPERIENCE

- Destructive Inspections, 2,500+ Residential Properties
- Inspections, 7,500+ Commercial, Hospital, Airport, Industrial, Apartment Condo, Hotel Buildings
- Investigator for WCCO (CBS Affiliate) I-Team Investigation of Local Home Builders on "Houses from Hell", Pajec Residence, Apple Valley, Minnesota (1991)
- Principal Designer, ICB, Ltd., 1,500+ Residential and Commercial Remodeling and Renovation Projects

- Developed installation strategies for Andersen Renewal Windows, including changes in flashing and flange designs
- Sole Arbitrator, Construction Dispute between Silver Bullet Construction and Client Named by Hennepin County District Court Judge in 1998
- Consultant, Marvin Windows, St. Louis, Missouri (four years)
- Consultant, NAHB Research Center in Washington D.C. (four years)
- Consultant, Malcolm Baldrige Institute in Washington D.C., One of a Five Person Team to Develop National Quality Standards for Residential Construction
- Consultant Renewal By Andersen (two years)
- Dongtai Investment Group, LLC d/b/a Crown Plaza Suites v. Certain Underwriters; (Served as an Arbitrator on a Three Person Arbitration Panel)

GUEST LECTURER & PRESENTATIONS

- National Convention Speaker each Year for National Association for the Remodeling Industry, 1988 – 1999
- International Symposium on Sustainable Housing Insulation in Northern Climate Houses, 1988
- City of St. Paul. District 14 Council, Annual Remodeling Exposition, 1990 - 1995
- National Conventions for National Association of Home Builders, 1990 - 1998
- National Convention for National Kitchen and Bath Association, 1990 – 1998
- Minnesota Remodelers Council, Anderson Windows, Marvin Windows, 1990 - 1999
- National Leadership Conference – Construction Management, Sponsored by NAHB, Hanley Wood, Andersen Windows, 1998
- American Society of Home Inspectors – How to Inspect for Water Intrusion Current Methodologies, 2003
- Mold Summit, Chicago IL, 2005
- 54th Annual IBC Officials Meeting, 2010
- International Facilities Managers Association – Evaluating Existing Buildings – Ordinance & Law Issues in Insurance Policies, 2006
- GAPIA Fall Educational Conference Speaker, 2016
- NAPIA Mid-Year Meeting Presenter, 2017
- TAPIA Fall Education Seminar Presenter, 2019
- TAPIA Fall Meeting Speaker, 2023
- TAPIA, Spring Conference Speaker, 2025

TESTIMONIES | DEPOSITIONS | APPRAISALS | ARBITRATIONS

Arbitrator (Served as Arbitrator)

- Dongtai Investment Group, LLC d/b/a Crown Plaza Suites v. Certain Underwriters; (Served as an Arbitrator on a Three Person Arbitration Panel)
- Phoenix East II v. Underwriters et al.
- Vose Ave Apartments v. Underwriters et al.

Testimony at District Court Trials: [Past 4-years]

- Commerce Office Park-One, L.P. v. Texas Windstorm Insurance Association, Cause No. 2018 DCV-3027-D. District Court February 7, 2020
- Virtuwave Holdings, LLC v. State Farm Lloyds and Benjamin Conrad Stuenkel, Cause No. 416-04266-2018. District Court, 135th Judicial District Collin County, TX February 24, 2020
- Condomino Pavilion Court v. One Alliance Insurance Corporation, Cause No SJ2019CV09745 (Puerto Rico), September 14, 2021
- Virtuwave Holdings, LLC, v State Farm Lloyds and Benjamin Conrad Stuenkel. Cause No. 416-04266-2018, District Court, 135th Judicial District Collin County, TX, November 08, 2021

- Consejo De Titulares Del Condominio Bahia Del Mar v. Mapfre Praico Insurance Company Cause No. AU2019CV00515 (Puerto Rico), December 1, 2021
- Villas de Hato Tejas v. Mapfre Praico Insurance, No. BY2019CV05153 (Puerto Rico), January 23, 2023
- Parque 228 v. One Alliance No. BY2019CV05518 (Puerto Rico), February 13, 2023
- Consejo de Titulares de Condominio de De Diego 444 v. Mapfre Insurance Company, No. SJ2019CV09012, June 20, 2023
- Costa Esmeralda v. MAPFRE, Civil No. FA2019CV01093, September 5, 2023
- Michael and Gloria Hawkins – Parker v. Universal Property and Casualty Company, et al., Case No.51-cv-2022-900015, September 12, 2023
- Coral Beach Condominium v. MAPFRE, Civil No. CA2019CV03400, September 18, 2023 (Puerto Rico)
- Monte Real Condominium v. MAPFRE, Civil No. SJ2019CV09887, August 05, 2024 (Puerto Rico)
- Vista Verde Condominium v. MAPFRE, Civil No. SJ2019CV09853, October 30, 2024 (Puerto Rico)
- Villas del Faro Condominium v. MAPFRE, Civil No. HU2019CV01340, December 9, 2024 (Puerto Rico)

Federal Court Trial Testimony:

- Goodman v. Economy Premier Assurance Company, Case No. 0:19-cv-01815-PAM-ECW, Federal Court August 4, 2021
- Hamkim Inc. d/b/a Vista Inn v. Amguard Insurance Company Case No. 1:20-CV-01194-DDD-KMT, May 01, 2023
- Maxus v. Metropolitan, LLC v. Travelers Property Casualty Company of America Case No. 4:20-cv-00095-FJG, July 25, 2023
- Green Acres Baptist Church, Inc v. Brotherhood Mutual Insurance Company, Case No. 6:23-cv-566, January 27, 2025

Arbitration Testimony:

- Consejo Titulares Condominio Altos de Escorial v. Triple S, Civil No CA2020CV01172, (Puerto Rico)
- Consejo Titulares Condominio Aquatika v. Triple- S Propiedad, Civil No LO2020CV00047 (Puerto Rico)
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- Condominio Montecentro v. MAPFRE, Civil No. CA2019CV03398 (Puerto Rico)
- Ashford Imperial v. Multinational Insurance Company, Civil No. SJ2019CV12948 (Puerto Rico)
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- Jardines del Parque Escorial v. MAPFRE Praico Insurance Company, Civil No. CA2019CV03404 (Puerto Rico)
- Veredas Del Parque Escorial v. MAPFRE Praico Insurance Company, Civil No. CA2019CV03699 (Puerto Rico)
- Terrazas Del Parque Escorial v. MAPFRE Praico Insurance Company, Civil. No. CA2019CV05120 (Puerto Rico)
- Condominio Condado Del Mar v. Multinational Insurance Company, Civil No. SJ2020CV02020 (Puerto Rico)

Commercial Arbitration Testimony:

- Hollingsworth Investments LLC, vs. THE CINCINNATI INSURANCE COMPANY, Cause No. 3:18-cv-353-DPJ-FKB UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF MISSISSIPPI NORTHERN DIVISION February 2020
- In The Matter of the Arbitration Nueces County, Texas v. Certain Underwriters at Lloyd's London Subscribing to Policy Cause No. AMR-37950-03, et al. New York, New York, December 14, 2021 (Deposition)
- Bomasada BHM Construction LLC v. Maxus Metropolitan Cause No. 01-20-2684; American Arbitration Association, June 1, 2022 (Deposition)
- 5556 Gasmer Management LLC (AD HOC) vs. Certain Underwriters at Lloyd's London, Et al, June 23, 2022 (Deposition)
- Bomasada BHM Construction LLC v Maxus Metropolitan, LLC- Case 01-20-007-2684, October 3-19, 2022
- In the Matter of the Arbitration Pharr San Juan Alamo Independent School District v. Independent Specialty Insurance Company, et al May 7, 2024 (Deposition)
- In the Matter of the Arbitration v. Certain Underwriters at Lloyd's, Indian Harbor Insurance Company, et al. (Deposition)

First Party Appraisals: [Past 4-years]

- Hidden Cove/Marine Quest, Frisco, TX, Plaintiff Appraiser, 2020
- Stonewater Properties Matter, Corpus Christi, TX, Plaintiff Appraiser, 2020
- Los Arcos en Suchville, Guaynabo, Puerto Rico, Plaintiff Appraiser, 2020
- Baywood Hotels Inc. DBA Baywood Hotels, Alexandria, VA, Plaintiff Appraiser, 2021
- Castro Residence, Lake Hills, TX, Plaintiff Appraiser, 2021
- Smith Residence, Dallas, TX, Plaintiff Appraiser, 2021
- Houser Residence, Chincoteague, VA, Umpire, 2022
- LAPC Lofts, LLC, Buffalo, NY, Plaintiff Appraiser, 2022
- Aman Hospitality- Motel 6, Plaintiff Appraiser, 2022
- Elsen- Montvale, VA, Umpire 2022
- Motor City Church, Plaintiff Appraiser, 2024

Depositions Filed in Courts: [Past 4-years]

- Hollingsworth Investments VI, LLC, Plaintiff, v. The Cincinnati Insurance Company, Cause no. 3:18-cv-353-DPJ-FKB. January 30, 2020
- Virtuwave Holdings, LLC, v State Farm Lloyds and Benjamin Conrad Stuenkel. Cause no. 416-04266-2018, February 24, 2020
- Rocky Waters Motor Inn, LLC, Plaintiff, v. The Travelers Indemnity Company of America, Docket No. 3:19-CV-6, February 28, 2020

- 1700 PCH Development, LLC, Plaintiff, v. Golden Eagle Insurance Corporation, et al. Civil Action File No. 2:19-cv-10151-TJH-JCx, September 22, 2020
- Brabo International Group, INC, Plaintiff, v. United Fire & Casualty Company, Civil Action File No. 5:19-cv-00066, September 24, 2020
- Council of Holders of Pavilion Court Condo, Claimant Party, v. One Alliance Insurance Corporation, Civil No. SJ2019CV09745, October 20, 2020 (Puerto Rico)
- Council of Holders of Parque 228 Condo, Claimant Party, v. One Alliance Insurance Corporation, Civil No. BY2019CV05518, October 23, 2020 (Puerto Rico)
- Dr Malka L. Goodman, Trustee of the Aviel Goodman Revocable Trust, Assignee of Dr. Aviel Goodman, Plaintiff, v. Economy Premier Assurance Company, and MetLife Auto & Home Insurance Agency, Inc., Case No. 0:19-cv001815 (PAM/ECW), November 2, 2020
- Bahia Del Mar Condo, v. MAPFRE Praico Insurance Company, Civil No. AU2019CV00515, November 4, 2020 (Puerto Rico)
- Park West, v. Triple-S Propiedad, Civil No. BY2019CV06642, November 10, 2020 (Puerto Rico)
- Charlan Enterprises, Inc. D/B/A Jamespoint Management and Aspen Heights Waco Project, LTD., Plaintiff, v. Peleus Insurance Company, Civil Action No. 6:19-cv-00632-ADA-JCM, November 11, 2020
- Bahia Del Mar Condo, v. MAPFRE Praico Insurance Company, Civil No. AU2019CV00515, November 20, 2020 (Puerto Rico)
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- Balcones de San Juan, v. MAPFRE Insurance Company, Civil No. SJ2019CV09071, December 4, 2020 (Puerto Rico)
- Las Gaviotas, v. One Alliance Insurance Corporation, Civil No. SJ2019CV09749, December 29, 2020 (Puerto Rico)
- Miramar Towers v. MAPFRE Praico Insurance Company, Case No. SJ2019CV09032, January 5, 2021 (Puerto Rico)
- Hacienda Las Ceibas v. Triple-S Propiedad, Case No. SJ2019CV0267, January 8, 2021 (Puerto Rico)
- Bristol v. AIG, Case No. SJ2019CV09134, January 12, 2021 (Puerto Rico)
- Elbal Gardens v. MAPFRE Praico Insurance Company, Case No. SJ2019CV09028, January 19, 2021 (Puerto Rico)
- Piazza Luchetti v. Triple- S Propiedad, Case No. SJ2019CV09745 January 22, 2021 (Puerto Rico)
- Tri Investments Inc, Plaintiff. V. United Fire & Casualty Company, Civil Action No. 5:18-cv-00116, January 26, 2021
- MDM F T LLC, Plaintiff v. DDG Construction, Inc and Jai V Desai, Cause No. 429-06183-2018, January 27, 2021
- Homeowners Association of Stays of Condominium Chalets v. Triple-S Property Inc, Civil No. SJ2019CV12131, January 28, 2021 (Puerto Rico)
- Bristol v. AIG, Case No. SJ2019CV09134, January 29, 2021 (Puerto Rico)
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- Consejo de Titulares Cond. Vistas de la Vega v. MAPFRE Praico Insurance Company, Civil No. VA2019CV00189, February 5, 2021 (Puerto Rico)
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- Consejo Titulares Condominio Le Rivage v. Triple S, Civil No SJ2019CV11780, February 16, 2021 (Puerto Rico)
- John Howell DBA Pro-Techt, LP v. The Hartford Lloyd's Insurance Company, Civil Action No. 3:19-CV-2793-N, February 17, 2021
- Villas de Cuidad Jardin v. MAPFRE Praico Insurance Company, Civil No. BY2019CV05153, February 19, 2021 (Puerto Rico)
- Ashford Imperial v. Multinational Insurance Company, Civil No. SJ2019CV12948, February 23, 2021 (Puerto Rico)
- Consejo Titulares Condominio Balmoral v. Triple S, Civil No. SJ2019CV12749, February 24, 2021 (Puerto Rico)
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- Highland Park ISD v. Lexington Insurance Company, Crawford & Company, and Ricky Terrel, In the District Court of Potter County Texas, Case No. 17-52437 Chapter 9 Proceeding Liquidation Claim No 16, March 17, 2021
- Torre De Cervantes v. MAPFRE, Civil No. SJ2019CV09120, March 23, 2021 (Puerto Rico)
- Kush Enterprises, LLC, v. Massachusetts Bay Insurance Company, In the District Court Eastern District of Tennessee Knoxville Division Case No. 18cv00492, March 25, 2021

- Amanda M. Thompson and Douglas W. Thompson, v. Privilege Underwriters Reciprocal Exchange, Pure Doe Companies 1-20, In the Superior Court of the State of Arizona In and For the County of Maricopa, Case No. CV2020-000330, March 31, 2021
- Jerry Spencer v. United Services Automobile Association, Cause No, 19-1999-B, In the District Court 114th Judicial District Smith County, Texas, May 13, 2021
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- Consejo de Titulares del Condo. Lago Vista II v. MAPFRE, Civil No. BY2019CV05147, May 20, 2021 (Puerto Rico)
- Consejo de Titulares del Condo. Terrazas de Parque Escorial v. MAPFRE, Civil No. CA2019CV03423, May 25, 2021 (Puerto Rico)
- Consejo de Titulares del Condo. Vista Verde v. MAPFRE, Civil No. SJ2019CV09853, June 3, 2021 (Puerto Rico)
- Consejo de Titulares del Condo. Monte Real v. MAPFRE, Civil No. SJ2019CV09887, June 10, 2021 (Puerto Rico)
- Consejo Titulares Cond. Alturas de Caldas v. MAPFRE, Civil No. SJ2019CV09025, June 15, 2021 (Puerto Rico)
- Cond. Atlantic Plaza v. MAPFRE, Civil No. SJ2019CV09009, June 17, 2021 (Puerto Rico)
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- MDM F T LLC v. DDG Construction, INC and Jai V. Desai v. Frisco Blu Hotels, LLC; Hernandez Hvac, LLC; Hernandez Roofing & Remodeling, JMB Roofing Company; L&A Stucco & Stone, LLC; DMH Doors & Hardware, Inc; CEJA Contractors; And R&D Construction, Cause No. 429-06183-2018, In the District Court 429th District Court Colling County, Texas, July 8, 2021
- Ashford Imperial v. Multinational, Civil No. SJ2019CV12948, July 15, 2021 (Puerto Rico)
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- Colinas del Bosque v. MAPFRE, Civil No. BY2019CV05118, August 19, 2021 (Puerto Rico)
- F. Zuniga, Inc., Zucco Minerals and Development Co., LTD., and Diamond Distributions, LC. V. United Fire & Casualty Company, Civil Action No. 5:20-cv-00121, August 27, 2021
- Coral Beach Condominium v. MAPFRE, Civil No CA2019CV03400, August 31, 2021 (Puerto Rico)
- Sul Garrott, LLC v. Total Contracting Limited, Cause No. 2019-29340, September 03, 2021
- Flash Mart Group, Inc., v. Capacity Insurance Company, Cause No. 3:20-cv02916B, September 08, 2021
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- The First Baptist Church of Boulder d/b/a The Pine Street Church v. Church Mutual Insurance Company Civil Action 1:20-cv-02107-CMA-SKC, October 07, 2021
- Coral Beach Condominium v. MAPFRE, Civil No. CA2019CV03400, November 2, 2021 (Puerto Rico) Cont.
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- Mountain Food, LLC v. Sentry Insurance a Mutual Company, Cause No. 20-cv-3083-RMR-STV, December 16, 2021
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- Costa Esmeralda v. MAPFRE, Civil No. FA2019CV01093, April 19, 2022 (Puerto Rico) cont.
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- Condado Del Mar Condominium v. Multinational Insurance Company, Civil No. SJ2020CV02020, August 25, 2022 (Puerto Rico) *cont.*
- Gold Court II Condominium v. Triple S Propiedad, Civil No. SJ2019CV10027, September 1, 2022 (Puerto Rico)
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- Shoreline Hospitality, LP v. Mt. Hawley Insurance Company, et al, Civil Action No. 2:21-cv-296, September 28, 2022
- The Colorado Springs School v. American Alternative Insurance Corporation, Civil Action No. 1:21-cv-02396-REB-NRN, November 9, 2022
- Marshall Mall Investors LP v. Allied Property and Casualty Insurance Company, Civil No. 2:21-cv-01109-RWS, March 15, 2023, *cont.*
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