



Safer, Stronger Decks: Ledger Connections for Wood and Masonry Webinar Q&A

This document includes questions submitted by attendees during the live webinar, *Safer, Stronger Decks: Ledger Connections for Wood and Masonry* held on July 10, 2019, along with presenter responses. In some cases, duplicate questions have been combined and noted as such. Please send any additional technical questions to AskSimpson@strongtie.com.

If you'd like to refer back to the webinar, you can [view the recording](#) and download the [presentation slides](#).

Question	Answer
General Deck Building and Code Requirements	
1 Would you happen to know of any new changes that will be implemented for the upcoming code changes to decks?	Though many areas are actually still on the 2015 IRC, the most recent IRC code is the 2018 edition with the next version not coming out until 2021. The two most expansive changes in the IRC for deck requirements came when the 2012 IRC saw the deck portion of the code move to Section R507, where more detailed graphics and tables were added and the extent of the section was increased up to 2 ½ pages. The next jump to the 2015 IRC extended the number of code pages to seven pages, which also included the addition of the 750 lb. lateral deck tie option. The current 2018 IRC has roughly 11 pages that make up Section R507 which contains the most number of figures and tables of any of our IRCs to date. At this time, we are not aware of any drastic changes that will occur for 2021, however it is recommended to check in to ICC's website.
2 When did the ledger attachments first appear in the codes?	<p>The first International Residential Code that discussed ledger attachments was the 2000 IRC, Section R502. This code had a relatively small section that covered the attachment of decks through a ledger to a supporting structure and prohibited the use of toe nails or nails subject to withdrawal for this attachment.</p> <p>Then, beginning with the 2009 IRC, the first graphic was added; Figure 502.2.2.3, Deck Attachment for Lateral Loads. The 2012 IRC saw the deck portion of the code move to Section R507, where more detailed graphics and tables were added and the extent of the section was up to two-and-a-half pages.</p> <p>The next jump to the 2015 IRC extended the number of code pages to seven pages, which also included the 750 lb. lateral deck tie option. The current 2018 IRC has roughly 11 pages that make up Section R507, which contains the most number of figures and tables of any of our IRCs to date.</p>

- 3 I have a municipality that will not allow any alternative fasteners (even with ICC-ES reports) other than what has been prescribed by the IRC. The only way they will allow an alternative fastener is if it has been specified by a licensed engineer and then put into the design of the project by the builder. This building department will not allow a blanket approval, making the use of alternative fasteners to the prescribed code quite costly. What have you done to combat this issue?
- We do understand that these challenges come up from time to time and we find that a productive approach often involves offering local trainings and meetings that help the building department understand our testing and calculations that we perform in order to publish our code reports, load tables and notes. We will get in direct contact with you to work on the process of setting up discussions with your local building official.
- 4 What if the shear [sheathing] is thicker than 1/2"?
- Per 2018 IRC Table R507.9.1.3(1), the tip of the lag screw needs to fully extend beyond the inside face of the band joist. With this, if the structural sheathing is thicker than 1/2", make certain that the lag bolt (or code-approved ledger screw) is long enough such that the tip of the screw is able to extend past that band joist inside face.
- 5 Is T1-11 considered to be siding or can you bolt through it?
- The 2018 IRC Table R507.9.1.3(1) and Figures R507.9.1.3(1) and (2) require that the ledger be fastened to the primary structure — specifically directly to the structural sheathing connected to the support structure's rim board. Per this, it would be our recommendation that any siding be removed in order to get to the primary structure.
- 6 Many of the decks I install are for modular or mobile homes. Code in our area doesn't allow attachment to the baseplate and only to skirting supports, therefore the free-standing deck. I can see the possibility of using some of your attachments to the skirting support, and also what you would recommend for free standing decks?
- 2018 IRC Section R507.8 states that the deck must be positively anchored to the primary structure to take both vertical and lateral loads. Additionally, the band joist of the home must bear fully on the primary structure capable of supporting all required loads and if the band or rim of the home does not meet these minimums the building official may consider only the approval of a self supported deck. Non-ledger decks are discussed in DCA6 in Figure 21. Where self-supporting decks are required by the local building official, it is recommended to follow their respective guidelines. Note that many of the Simpson Strong-Tie connectors and fasteners that are used for ledger decks may also still be used for these self-supporting decks.
- 7 Is this new connection application going to be included in the IRC or just the Simpson catalog?
- The use of SDWS ledger screws is based on testing witnessed by a third-party witnessing agency and is now covered in the fastener code report. These are considered "alternative materials" and are subject to approval by the local building official. The use of DTT2Zs and DTT1Zs are required by code for lateral load restraint per the 2018 IRC Section R507.9.1.3 and Figures R507.9.2(1) and 2.
- 8 If you have a wood frame construction with OSB sheathing, you always take the 400 lb. load capacity.
- Per the 2018 IRC, sheathing is required between the ledger and the home's band joist, where that band is required to be fully supported in order to attain the adequate lag bolt, thru-bolt or ledger screw intended capacity.

- 9 I think live loads should be 60 psf not 40 psf for deck and balcony design.
- (similar)* The live load on page 25 shall be modified to minimum 60 psf (1.5 X 40) per code in our area on 2016 CRC and CBC?
- (similar)* Many jurisdictions are pushing the 60 psf for decks in Washington State.
- (similar)* IBC loading is 1.5 x live loading served. IRC is 40 psf live loading.
- (similar)* Doesn't the code require the deck live load to be 60 psf?
- (similar)* Live load of 40 psf looks lower for a deck.
- The 2018 IRC, Table R301.5 (40 psf live for decks) and Table R507.9.1.3(1) call out the live load as 40 psf along with a deck dead load of 10 psf and a snow load of ≤ 40 psf. DCA6, Table 5 has similar requirements and the same 40 psf live load and 10 psf dead load. The 2018 IBC, Table 1607.1, Item 5 does call out a 1.5 multiplier to the IRC 40 psf ($1.5 \times 40 = 60$ psf), so if the IBC is used for decks by the building department, if it is an engineered design where the engineer follows the IBC, or if the building department imposes their own amendments and it becomes code in this part of the country, it would be a local requirement until adopted by the IRC and/or DCA6.
- 10 Snow load is the major gravity load for most decks in Canada.
- This is good information to have. We know that building departments and officials have the power to impose additional requirements and amendments to their jurisdictions depending on their local conditions and/or environment.
- 11 After numerous failures in college towns due to keg parties and dancing, all balconies and decks are required to be 100 psf live load.
- This is good information to have. We know that building departments and officials have the power to impose additional requirements and amendments to their jurisdictions depending on their local conditions and/or environment.
- 12 60 psf comes from IBC 2018 and ASCE 7-16 I think
- If the local building jurisdiction has adopted the 2018 IBC as its deck building reference, then the designer and/or builder would need to abide by what is enforced by the local building official.
- 13 What are the drawbacks to *not* using a ledger and fastening hangers through siding into rim?
- Testing and research has shown that if joists are not properly fastened to a ledger board that is allowed to continuously transfer gravity and lateral loads, then the connection to the supporting structure can be compromised. Per the 2018 IRC, R507.9.1, vertical loads shall be transferred to band joists with ledger in accordance with Section R507.9.1 and lateral loads shall be connected per Section R507.9.2. In addition to the structural concerns that may occur, weather proofing and flashing can cause a long-term concern and the integrity of your deck may be at risk.

- 14 What should a contractor do to properly fasten against I-joint floor joists and narrow LVL rims?
(similar) The attachment is allowed in an I-joint floor framing application?
- The detail that is shown in DCA6 (Figure 22) describes fastening a solid 2x6 (or larger) using 10d common nails to the web of the I-joint and then fastening the deck tension tie to the attached solid 2x6. For I-joints running parallel to the home rim board, reference Figure 23 in DCA6.
- 15 Can you attach to a TrusJoist rim board (thicker than plywood but not standard lumber)?
(similar) Is there a requirement for the needing to have an LVL and not just an LSL rim board for ledger attachment?
(similar) Any data on typical APA 1-1/8" OSB rim board?
(similar) What about EWP 1-1/8" rim board on many houses now?
(similar) Did you figure the LSL rim joists, typically 1¼" thick?
- 2018 IRC Section R507.8 states that the deck must be positively anchored to the primary structure to take both vertical and lateral loads and Figure R507.9.1.3(2) references "Existing 2x Band Joist or Engineered Rim Board." Section R507.9.1.2 also allows for 1" x 9.5" dimensional laminated veneer lumber.
- The rim type and thickness when using Simpson Strong-Tie SDWS screws for ledger attachment (including LVL attachment) can be found in our most current [Fastening Systems catalog](#) as well as fliers including [L-F-LDGRFSTNR19](#) and [L-F-100DCKLIV19](#), which are available on [strongtie.com](#).
- 16 Question on decks attached on a cantilevered floor — is there a special connection coming up towards the floor rim towards the ledger for decks?
(similar) Many homes have 2' cantilevers constructed with I-joists. Many rims on homes with I-joint floor framing were ripped particle board. Always discouraged fastening to these systems without using self-sustaining deck. Many builders do not like this philosophy.
(similar) Can we have cantilever joist and new rim joist without using ledger beam?
- The 2018 IRC Section R507.8 states that the deck must be positively anchored to the primary structure to take both vertical and lateral loads and Figure R507.9.1.3(2) references "Existing 2x Band Joist or Engineered Rim Board." Section R507.9.1.2 also allows for 1" x 9.5" dimensional laminated veneer lumber.
- Additionally, the band joist of the home must bear fully on the primary structure capable of supporting all required loads. If the band or rim of the home does not meet these minimums, the building official may consider this to be unverifiable and may require a self-supported deck.
- 17 I never align my deck floor with my interior floor, typically dropping the deck floor 4" to 6" to account for snow and better flashing at doors. This offset typically creates
- One option that you may consider would be to see if you are able to get an upper row of fasteners into the lower portion of the home's rim board (be sure to maintain a 1.5" to 2" edge distance to the bottom of the ledger) and then to get a lower row of fasteners into the mudsill or sole plate. If the placement is still problematic, there are

situations where the ledger spans the rim joist, sill and foundation wall. Suggestions?

provisions that include anchoring your ledger into solid concrete or fully grouted CMU using ½" adhesive anchors or wedge anchors. Also, depending on your local building jurisdiction and/or if specified by a licensed engineer, you may be able to partially fasten to the wood portion of your supporting structure and partially anchor into the concrete footing/wall. However, it is recommended to inquire with your local building official to confirm that these fastening/anchoring options are appropriate for your part of the country.

18 Can you address decks installed at a popout that was part of the original construction? ... deck was original too ..can this be ok if properly engineered?

The primary concern will be to make certain that the deck is being attached to a proper rim board per code. The 2018 IRC Section R507.8 states that the deck must be positively anchored to the primary structure to take both vertical and lateral loads and Figure R507.9.1.3(2) references "Existing 2x Band Joist or Engineered Rim Board." Section R507.9.1.2 also allows for 1" x 9.5" dimensional laminated veneer lumber. Additionally, the band joist of the home must bear fully on the primary structure capable of supporting all required loads. If the band or rim of the home does not meet these minimums, the building official may consider this to be unverifiable and may require a self-supported deck.

19 Any recommendations for home inspectors when spacing of any aspect of the ledger attachment does not meet code? DCA6?

If it is found that the ledger is adequately placed against the supporting structure and has sound contact with the home's structural sheathing and band joist (i.e., confirm that the deck is being placed against a structure that can support the vertical and lateral loads of the deck), then adding SDWS screws to the ledger into the supporting structure may be a viable option to help make up for mis-spaced or improperly located existing lags or bolts. Load capacities and spacing minimums for this fastener are shown in our [Fastening Systems catalog](#), C-F-2017 and in several letters and fliers, including [L-F-LDGRFSTNR19](#) and [S-F-SDWLGRT18](#).

20 Attaching ledger through plywood sheathing is not allowed?

Just to clarify — installation into plywood only is not acceptable, it does need to be in conjunction with the home rim board. See 2018 IRC Table R507.9.1.3(1) and Figure R507.9.1.3(2).

21 Is there guidance on the connection for the footing and footing guidance?

2018 IRC Section R507.3 — Footings — states that decks shall be supported on concrete footings or other approved structural systems designed to accommodate all design loads per Section R301. 2018 IRC Figure R507.3 graphically shows the deck posts to deck footing connection and section R507.3.2 gives minimum footing sizes.

Ledger Attachment with Fasteners (Lag Screws, Thru-Bolts, Structural Screws)

- 22 What if the anchor bolts/screws are not staggered or are installed in pairs?

(similar) Placement of ledger — why do the bolts need to be staggered as shown on the drawing on slide 22?
- In order to install the most amount of fasteners without having an exceeding number of them be within any one continuous grain line within your wood member, staggering is necessary. Also note, a great amount of testing has been performed on these different bolt and lag screw installs — whether in conjunction with The American Wood Council, NADRA, or through several universities throughout the US. The testing has shown that the staggered spacing is the most effective installation method.
- 23 For a common deck these would be spaced at 16" on center based upon only 450 lb. Is this acceptable?
- Spacing for lag screws and thru-bolts needs to follow the requirements set forth in the 2018 IRC Table R507.9.1.3(1). The rim type and thickness, as well as Simpson Strong-Tie SDSW spacing ledger attachment can be found in our most current [Fastening Systems catalog](#) and fliers including [L-F-LDGRFSTNR19](#) and [L-F-100DCKLIV19](#), which can be found on our Simpson Strong-Tie website.
- 24 What is considered by building officials with regard to a code-approved fastener for deck ledgers? What is spelled out in the code refers to a 1/2" galv. lag screw.
- Regarding a "code approved fastener for deck ledgers" criteria, the 2018 IRC allows for alternative materials as approved by the building official, which is typically allowed as long as the connector or fastener has an approved third-party code report. The 2018 IRC Table R507.2.3 provides fastener and connector coating minimums and Tables R507.9.1.3(1) and (2) provide minimum size and spacing requirements for lag screws.
- 25 For balloon-framed walls, can the ledger be fastened to face of the stud using SDW screws?
- The SDWS screw through the ledger may be installed directly to the primary structure's studs and we offer detail to this in our mainline fastener catalog ([C-F-2017](#)), as well as flyer [F-F-SDWS18](#). You will find installation graphics, load tables and other specifications there.
- 26 Can SDS screws attach a ledger to the side of studs?
- Using SDS screws for ledger attachment is allowable. For fastening into the side of studs, reference the most recent Simpson Strong-Tie [Fastening Systems catalog](#) for load tables, installation graphics and installation specifications.
- 27 Are FastenMaster TimberLOK screws acceptable?
- Acceptability is based on the locally approved building code which will include thru-bolts, lag screws and code-approved proprietary screws. Our level of expertise would be more specific to the Simpson Strong-Tie code-approved screws like the SDWS.
- 28 The code figure had 3/4" min. from bottom edge. The SDS requires more.
- For end and edge distance as well as center-to-center spacing of the Simpson Strong-Tie proprietary fasteners (SDS, SDWS, etc.), refer to the product-specific spacing tables and graphics, as these have been tested to the specific requirements.

Corrosion, Flashing and Weatherproofing

- 29 Corrosion of fasteners is also caused by chlorine in a pool environment. It is very plausible that this may be a source for corrosion as well.
- 30 Is the stainless requirement for screws within the IRC? The 2018 IRC Table R507.2.3 — Fastener and Connector Specifications for Decks — indicates that all metal fasteners and connectors used for decks follow the finish/coating requirements of this table. Stainless steel is required if there is exposure to salt water or located within 300' of salt-water shoreline.
- 31 Is this a manufacturer's listing requirement for stainless steel? If it is within 10 miles, does that void the warranty? The 2018 IRC, Table R507.2.3 references the distance as, "...located within 300 feet of a salt water shoreline shall be stainless steel." However, the NADRA guide references several studies, including one done by the International Molybdenum Association titled "Stainless Steel for Coastal and Salt Corrosion" and recommends that locations within five to 10 miles of saltwater are considered at risk for chloride-related corrosion. Also, the Cedar Bureau (cedarbureau.org) recommends 316 SS within 15 miles of salt water. We recommend simply discussing the minimum requirements as set forth by your local building official to be assured that you are meeting the minimum coverage for your area.
- 32 What about a bay? Lots of work in SF Bay Area with galvanized, not stainless steel. The 2018 IRC Table R507.2.3 requires that fasteners and connectors exposed to salt water or located within 300 feet of a saltwater shoreline use stainless steel. The NADRA document recommendations, based on research from several resources including the International Molybdenum Association and the Cedar Bureau, suggests a best practices of using stainless steel if located within 10 miles of the saltwater shoreline. However, many building jurisdictions have special local requirements and/or exceptions so we recommend knowing what your building official requires and following those minimums.
- 33 What screw do you use with galvanized metal? For use with connectors that are galvanized to a ASTM A653 G185 (ZMAX) minimum, the fastener just needs to be galvanized to a HDG minimum of ASTM A153 per 2018 IRC Table R507.2.3. The Simpson Strong-Tie SDWS screw meets this minimum per code report [IAPMO UES ER-192](#). See p. 34 of [F-DECKCODE17](#) for more corrosion-resistance info.

- 34 Is flashing required with the BVLZ?
- (similar)* How are you addressing flashing along brick veneer and the ledger?
- (similar)* Why are we still connecting these ledgers directly to the wall and trapping water? We all know the benefits of a rainscreen, so why is the ledger not on 1/2" PT strapping as to allow the water to pass on by? I'm sure we can get fasteners 1/2" longer to accommodate and prolong our deck. That first deck board has no chance of surviving the other way.
- (similar)* What kind of flashing do you recommend with the BVLZ connector?
- (similar)* How do you install flashing with the BVLZ?
- Weatherproofing as required by code is still necessary with the BVLZ install. It is recommended to contact your local building department, as many jurisdictions have specific requirements when it comes to the details and specifications of flashing and weatherproofing.
- 35 How do we mitigate condensation moisture around the screws and the wood? We see long-term wood deterioration because of moisture (from inside the condition space, evidently) at the screws through a membrane.
- Weatherproofing as required by code is still necessary with the BVLZ install. The compression strut and ledger plate are both ZMAX®. The SDWH screw has ASTM 153, Class C HDG coating, which gives a high level of corrosion protection. Reference Simpson Strong-Tie® corrosion information at strongtie.com/corrosion.
- 36 Are there good details for proper flashing at sliding and standard door wall openings. Most of the details shown are for typical wall studs.
- It is recommended to contact your local building department, as many jurisdictions have specific requirements when it comes to the details and specifications of flashing and weatherproofing. Realizing that there are so many variables that occur when flashing around your ledger at a door opening, often the building official will have details and minimums that will have to be met for that specific area.
- 37 Use of ledger standoffs?
- The 2018 IRC, Table R507.9.1.3(2) does allow for a stand off of up to 1/2" thickness of stacked washers. The Simpson Strong-Tie SDWH and SDWS screws both have been tested and load rated in this application. We offer detail to this in our mainline fastener catalog ([C-F-2017](https://strongtie.com/C-F-2017)).

Lateral Load Connection

- 38 What are the lateral forces for commercial decks, such as a ski lodge? The IBC seems to be silent on this.
- A commercial deck would often be designed as a structure that would need engineering by a licensed engineer and would require an approved calculation and design package. The lateral loads would be determined by the engineer and the lateral connections would be specified and detailed depending on the demand loads from the design.
- 39 IRC 2015 R507.2.4, each lateral-load connection shall have an allowable stress design capacity of 1,500 lb. (implied for the condition where the floor joists are inline to deck joists). However, when the connection is per Fig. R507.2.3(2) [what IRC calls “floor joists parallel to deck joist” though in fact they’re perpendicular, I think IRC meant “floor joist parallel to deck ledger”), IRC requires four locations of 750 lb. ASD. Anyway, if I cannot develop the 1,500 lb. in two locations due to support condition, am I allowed to provide 4 x 750 lb. for the condition where floor and deck joist are in line?
- Regardless of whether the supporting structure’s floor joists are parallel or perpendicular to the joists of the deck structure, either two 1,500 lb. lateral load connections are required or four 750 lb. connections. Refer to DCA6, Figures 22 and 23 for clarity when floor joists run either parallel or perpendicular to deck joists.
- 40 Isn't the tie within 24" over ends for DTT1 ties?
- The deck lateral load connection being within 24" of the ends of the deck is required for both the DTT2Z and the DTT1Z. See 2018 IRC, R507.9.2 as well as current Simpson Strong-Tie tech bulletin [T-C-DECKLAT19](#).
- (similar)* DTT1Z - Chart shows within two feet of end. You stated two inches. Which is right?
- (similar)* Inches or feet from end for DTT1Z?
- 41 If my deck projects out 8'-0" from the house but it's only 6'-0" wide, does it still need (4) DTT1Zs?
- The 2018 IRC does not give a size or square footage bound to the size of your deck regarding the requirement for the lateral load connection. If following Section R507.9.2, four DTT1Zs (or two DTT2Zs) would still be required.
- 42 Do you have any recommendations of connecting lateral tension ties to floor trusses? We typically see 18" deep trusses.
- The detail that is shown in DCA6 (Figure 22) describes fastening a solid 2x6 (or larger) using 10d common nails to the web of the I-joist and then fastening the deck tension tie to the attached solid 2x6. For I-joists running parallel to the home rim board, reference Figure 23 in DCA6.

- 43 The lateral holdowns cover the pull-out of the deck but, this still doesn't address shear transfer.
- Though the code does not specifically address shear transfer, it does state that all lateral loads be transferred to the ground or to a structure capable of transmitting them to the ground. Though the findings from research and testing are always ongoing and often leave the potential for future code updates, at this time the code is written to address the potential for decks to fall away from them home, therefore primarily covering the withdrawal or tension that may be caused from lateral loads on a deck.
- 44 What happened to the Simpson deck publication L-F-SDWSGRD15 for guardrail attachment without using DTT2Zs? It uses screws only.
- For guardrail attachment, it is acceptable to connect the bottom of your post into the structural framing with SDWS screws only per that document ([L-F-SDWS16RG19](#)). For lateral attachment of your entire deck structure back to your supporting structure, the deck lateral loads must be transferred using tension ties per 2018 IRC R507.9.2 and per Figures R507.9.2(1) and (2).

BVLZ Brick Veneer Ledger Connector Installation and Use

- 45 How do you handle connections with a 2x8 rim board?
- We published loads for 2x10 and 2x12 rim boards due to the constraints of the screw length, thread length and gap distance. If your existing structure uses a 2x8 rim, the specifics of your job need to be evaluated by a design professional.
- (similar)** I am in an area where the majority of floor frames are 2x8. Can the BLVZ be used?
- 46 What is the maximum gap?
- The BVLZ accommodates a "gap" distance between the structural framing and the ledger from 4 3/4" to 6 1/4". When WSP is present, the gap between the WSP and the ledger must be between 4 1/4" and 5 3/4".
- (similar)** What max. thickness of veneer can be used for the BVLZ?
- 47 Does the BLVZ work if there is no air gap between veneer and building plywood?
- The minimum distance that the BVLZ will accommodate between the ledger and the WSP is 4 1/4". The size of the air gap can vary but the BVLZ can accommodate any "gap" distance so long as it is within our specified ranges.
- 48 Doesn't the thickness of the existing rim board (2x dim. lumber or 1" or 1-1/8" engineering rim board) affect the spacing of the ledger connectors?
- We currently only have the BVLZ load rated for installation on a solid 2x rim board. A 2x is 1 1/2" wide, minimum. Load values for sawn lumber are applicable to 1 1/2"-wide structural composite lumber rim with equivalent specific gravity. We are looking to expand our offerings and it will likely affect the spacing requirements, but for now, the information we provide is only applicable for a 2x rim board installation.

- 49 Obviously, you cannot use the BVLZ product if the brick is in poor condition (older homes), as they would crumble with the screw running through it — correct?
(similar) What if the brick veneer is in poor condition? Job specific conditions need to be evaluated prior to installing the BVLZ.
- 50 Is this available for attached decks or just free-standing decks? The BVLZ is a viable option for attaching a deck ledger to structural framing through masonry veneer. It provides an alternative to having to build a freestanding deck.
- 51 With the threads at the end of the bolt and not throughout, how can you determine if the screw is driven in too far and through the wood, leaving the threads outside of the wood support? When the BVLZ is installed within the parameters that Simpson Strong-Tie suggests, the 14" screw with the 5.5" thread length will have full thread engagement in the rim board. Investigating job-specific existing conditions prior to installing the BVLZ is necessary in order to make sure that your conditions are within the required parameters.
- 52 What keeps the compression member of the BVLZ from puncturing the rim board? The allowable load of the BVLZ is not large enough for the compression strut to puncture a 2x rim. We have done calculations on the surface area of the compression strut's folded end cap and tests to prove this.
- 53 Can this be installed when joists are parallel with the exterior wall? Yes, the BVLZ can be installed when joists are parallel to the exterior wall.
- 54 It appears the screw holes for the BVLZ anchor are as large as the horizontal screw hole. This seems something that would allow for too much vertical play. True? The hole sizes for the SDWH screw are oversized to accommodate the large thread diameters of this screw. Also, we specified the larger-diameter hole to allow the installer to use the same drill bit for drilling all of the holes. Lastly, having an oversized screw hole allows the installer to take advantage of the self-jigging mechanism on the ledger plate without having the angle of the drilled hole interfere.
- 55 Does the BVLZ allow for a 4" step down from the interior floor? Depending on the specifics of the job, this might be possible. You will have to evaluate the size of your rim, the gap distance and where the compression strut will land on the rim. So long as you are still within the dimensional parameters that we set, it should be acceptable.
- 56 How long are the two screws shown? (alt. ledger attachment) The SDWH screws are 14" long with a 5.5" thread length.
- 57 [In the graphic, the] BVLZ connector not showing into the house rim board - how far min to penetrate in the rim? When installed properly, the 14" screw with the 5.5" thread length allows for correct placement of the screw into the rim. You need full engagement of the threads through the rim.

- 58 Can you drill through the solid brick member? It is possible to drill through solid brick, but depending on many factors (type of veneer, age of masonry, etc) it can be harder to do. Some brick may be more brittle than others, so we recommend you evaluate how well the veneer can tolerate the multiple drilled holes.
- 59 Does the floor joist beyond have to be perpendicular to the wall at the location of the BVLZ? For an engineered design, the engineer of record should consider the existing structure's ability to support the new deck. Floor joist orientation is part of that existing structure. For the BVLZ prescriptive spacing tables, floor joist orientation is irrelevant when using Tables 1 and 2. If you are going to reinforce your floor joists in order to use BVLZ prescriptive spacing tables 3 or 4, make sure to follow the correct detail that coordinates with the floor joist orientation on the job. The BVLZ Prescriptive Spacing Tables can be found on our website [here](#).
- 60 What happens if the builder hits a brick tie? If possible, adjust BVLZ to avoid hitting a brick tie.
- 61 What suggestions or research do you offer for attaching a ledger over one to two inches of continuous insulation?
(similar) Does the BVLZ work over exterior insulation instead of brick? The BVLZ can be installed when foam board insulation is present. Drill through the foam board where the compression strut will be so as to allow the compression strut to bear on structural framing.
- 62 What are the limitations of the BVLZ regarding uneven surface bearing conditions along the face of the veneer, such as with cultured stone or textured brick? Similarly, what about various masonry styles like thin-set stone? This shouldn't be an issue as long as you consider the gap distance that the ledger will be from the structural framing or WSP. So long as the gap distance between the framing and ledger along the uneven surfaces is within the range we allow, the BVLZ can still be used.
- 63 How can an inspector verify that the wood was not penetrated or damaged? The installer will be able to tell when they have finished drilling through the masonry. The resistance that is applied to the drill lets up once you reach the air gap. The gap distance should be somewhat uniform along the ledger, and therefore the length of compression strut that is extending from the ledger plate will also be somewhat consistent. Inspectors can check that the struts are tightened and flushed to the framing. They can also measure the length of strut that is exposed to confirm consistent installation.
- 64 How do you drill in at 40 degrees?
(similar) What is the best way to get the 40-degree angle needed on the BVLZ installation? You can use a speed square to help you find the 40-degree angle. We have seen customers cut out small blocks to use as guides when drilling the holes at 40 degrees in both the masonry and the ledger. Also, the holes are oversized compared to the shaft of the SDWH screw, so if your drilling angle is off by +/- 1 degree, you can still use the self-jigging feature on the ledger plate to install the screw at the correct angle.

(similar) Does Simpson have a tool to make sure the predrilled angled hole is properly drilled to the right angle?

(similar) Is there a template to drill the 40-degree angle? That is almost impossible to do free-handed.

(similar) How do you assure the angle is 40 degrees?

(similar) How will the common backyard builder measure a 40-degree vertical angle with the brick veneer?

(similar) Will a guide be provided with the kit for drilling the 40-degree angled hole in masonry?

65 How critical is the precision of the tension member (screw) in the BVLZ? Say if it were drilled at a 35-, 45, or 50-degree angle?

If you drill the screw at a steeper angle (50 degrees), you risk driving it through the interior floor system. If you drive the screw at a shallower angle (30 degrees), the screw will be in shear instead of tension and therefore, performance is reduced. We have a small tolerance that is acceptable, but overall, the 40-degree angle is critical.

66 Can the BVLZ be used for stucco connections?

(similar) Can the ledger be attached to stucco?

(similar) Is the BVLZ only for use with veneer, or can it be used for non-veneer construction?

(similar) Can the BVLZ be used over stucco?

(similar) Can this be used over stucco?

The geometric constraints of the BVLZ prevent it from being a solution for deck ledger attachment on homes with stucco, a thin siding or non-veneer construction.

67 Can you use a cold-formed steel ledger?

The BVLZ has not been evaluated for this application.

68 Please comment on the connection of ledgers to insulating concrete form walls.

(similar) Would the BVLZ work with an ICF system as well?

The BVLZ has not been evaluated for this application.



69 Can the BVLZ be used on a double deck install? The BVLZ has not been evaluated, approved or load rated for installation on a double 2x deck ledger.

BVLZ Design, Testing and Load Resistance

70 Does the use of the BVLZ require an RDP design? If your job meets the requirements specified for use with the prescriptive spacing tables, you can use the spacing tables that we provide.

71 Did I understand correctly, are BVLZs for lateral loads only, and do you have to provide additional ledger fasteners for gravity loads? The BVLZ is tested and load rated for download only.

72 Have you guys considered wood shrinkage for this application? During your annual deck inspection, you can check that the compression strut is still flush against the interior framing. If deck wood shrinkage has caused anything to become loose, this would be the time to tighten it up.

73 What does the lateral connection look like when using the new masonry connector? We are currently in the design phase of a lateral connector that can be used in conjunction with the BVLZ. The BVLZ is load rated for download only.

74 Does the use of the BVLZ require an RDP design?
(similar) How do you deal with the lateral load at a house, parallel to the wall, with brick veneer?
(similar) Has shear on the deck been considered? How is shear transferred back to the building?

75 Is there any conflict between the BVLZ and the lateral-load device requirements in the code? Are your DTT devices permitted to be installed through masonry? The BVLZ does not resist out-of-plane lateral loads and code requires that you resist out-of-plane deck load. The DTT2Z and DTT1Z are suitable for use through masonry veneer to resist out-of-plane loads. It requires that you drill the masonry hole first and you will need a longer threaded rod or SDWH screw to ensure that you get the full 3" of thread length into the structural framing.

76 Any suggestions for taking care of transferring the compression force of the lateral load through the brick veneer at the holdown location? Lateral movement of the deck away from the structure is the main concern, as that can lead to a deck collapse. This is why the code requires the use of (2) 1,500 lb. holdowns at each end or (4) 750 lb. holdowns along the ledger.

- 77 I don't understand the units on this BVLZ table. The allowable download units listed in the table on [p. 291 of the Wood Construction Connectors catalog](#) are in pounds (lb.). They apply to load durations of 1.0 and 1.15.
- 78 Have you done any trial calculations to check the rim board for torsion? Calculating cross-grain tension is not clearly defined. In order to determine the allowable loads and spacing, we conducted assembly tests.
- 79 With the BVLZ, does compression failure of WSP sheathing really allow failure of the structure? It seems like the crushing of the sheathing wouldn't allow much deflection. While this was never a failure mode in the testing that we completed, the calculation for the bearing of the compression strut against the framing did govern the calculations. Per AC13, we load rate connectors based on the lowest of (3) values: lowest ultimate of (3) (or the average of (6)) test set-ups divided by a safety factor of 3, 1/8" deflection, and calculations per the NDS.
- 80 It is hard to believe that these screws and 2x rim joist framing could develop enough strength to support the loads. Testing and calculations have been done to prove the allowable load. Please see [IAPMO ER280](#).

Miscellaneous (Specific Applications, Other Base Materials, Cost)

- 81 Any products for attachment to a load-bearing brick wall? Load-bearing brick is very common in the Mid-Atlantic (DC, MD, VA). The BVLZ is not designed for structural brick. Simpson Strong-Tie® SET epoxy adhesive is load rated for both shear and tension using 5/8"- and 3/4"-diameter threaded rod. To see how you can apply this to your specific job, refer to the most current [Anchoring, Fastening and Restoration Systems for Concrete and Masonry catalog](#)
- 82 You didn't talk about connections between deck and masonry with veneer. You only talked about wood with veneer. Do you have any solutions for that? The BVLZ is only intended for attaching the wood ledger to structural wood framing through masonry veneer. Simpson Strong-Tie SET epoxy adhesive is load rated for both shear and tension using 5/8"- and 3/4"-diameter threaded rod. To see how you can apply this to your specific job, refer to the most current [Anchoring, Fastening and Restoration Systems for Concrete and Masonry catalog](#)
- 83 What if the height of the deck does not match the elevation of the rim board? Do you have a solution for attaching the ledger to wall studs? The SDWS screw through the ledger may be installed directly to the primary structure's studs and we offer detail to this in our Fastening Systems catalog ([C-F-2017](#)), as well as flier [F-F-SDWS18](#). You will find installation graphics, load tables and other specifications there.
- 84 What about hollow concrete block? Per DCA6, Figure 17, connection directly to hollow masonry is not allowed.

- 85 When fastening to concrete, is there a justification for using a 1.6 factor to bring the nominal 1,500 lb. to LRFD level/strength design? If I do that in SDC C or above, do I need to further decrease the anchor capacity by 0.75 (ACI 318-14 Sect. 17.2.3.4.4); i.e., increase the load by $1/0.75 = 1.33$? This increases the ASD of 1,500 lb. to 3,200 lb. LRFD. This effectively prevents the use of 1/2" mechanical fasteners (Strong Bolt 2 or Titen HD) which are meant to be used with the DTT2 deck tension tie.
- It is true that the allowable demand load that needs to be restrained is 1,500 lb. per end of deck, so when resolving that into concrete you simply need to make certain that you are only using ASD or only using LRFD in your design. For example, when using the Simpson Strong-Tie [Anchor Selector](#) and if using a 3/8" x 7" Wedge-All anchor with a 2-5/8" min embedment and you attain a particular strength (LRFD) capacity, just factor your ASD demand by a 0.6 for Wind or 0.7 for Seismic to compensate for the strength factor.
- 86 Will you be covering decks as part of a manufactured home?
- For this presentation, we will not be covering connection to a manufactured home specifically, however if that style home has a continuous load path of its own, is properly secured to its own foundation, and has a structural rim board that meets the minimums of the 2018 R507.9.1.2, then it may still be adequate. Please confirm with your local building official to make certain that connecting to a manufactured home falls within the bounds of what is allowed by your jurisdiction
- 87 Does Simpson have a solution for connecting stair stringers to concrete pads?
- One option that we discuss in our Decks Done Right workshops involves attaching the stair stringer to the inside face of the last stair railing post, which is anchored to a concrete footing using a steel post base. The connection between the post and stringer would be achieved by means of a deck tension tie fastened to stair stringer blocking and the stringer would terminate at ground level on a solid concrete landing. A graphical depiction of this is shown in our [Deck Connection and Fastening Guide](#).
- 88 If you have a 4x4 post connecting the footing and bottom of the deck, what are the options and recommendations to connect the post to the beam, so that it handles the vertical and lateral loading?
- The posts and beams must be connected in accordance with 2018 IRC Figure R507.5.1(1) and (2). A knee brace (KBS1Z) is one means of being able to establish a lateral restraint and post caps such as the BC/BCS, LCE/AC, LPC and PCZ/EPZ can be used to establish the vertical loading. The beam-to-post connections are all represented in our [Deck Connection and Fastening Guide](#).
- 89 Cost?
- Retail cost is between \$25–\$30 per installation. The BVLZ is sold in a four pack (BVLZ-KT4) and singles (BVLZ-KT1).
- 90 Is the BVLZ available and approved in Canada?
- We are evaluating the product per the Canadian codes and hope to have it approved there in the future.

Resources

- 91 Can all of this information be printed as a reference or guide? Yes – you can download a copy of the presentation slides [here](#).
- (similar)* Will the PowerPoint presentation be available to attendees?
- (similar)* Any way to get the PowerPoint?
- (similar)* Is this slide show available to download?
- 92 Will the resources be available after the presentation? Here is a list of the resources links made available during the webinar:
- [North American Deck and Railing Association \(NADRA\) website](#)
 - [DCA 6 - Prescriptive Residential Wood Deck Construction Guide](#)
 - [Training - Deck Building 101: Beginner's Course](#)
 - [Training - Deck Inspection for New and Existing Construction](#)
 - [General Corrosion Information](#)
 - [Engineering Letter - THDSS for Deck Ledger Connection to Concrete Walls](#)
 - [Engineering Letter - THDSS for Deck Ledger Connection to GFCMU Walls](#)
 - [Simpson Strong-Tie Deck Center](#)
 - [Deck Connection and Fastening Guide](#)
 - [Deck Planner Software](#)
 - [Ledger Connections per Fastener Designer Web App](#)
 - [BVLZ Installation Guide](#)
 - [BVLZ Prescriptive Spacing Tables](#)
- 93 Is there a video shows installation of the BVLZ ? Yes, the installation video is in production and will be available on our website in the near future. In the meantime, we do have an installation guide available on our website and it is also packaged with the product.
- We also showed a preview of the installation video during the webinar. You can view the recording [here](#).
- 94 Where are the spacing tables for the BVLZ located? I do not see any tables in the Wood Construction Connectors guide. The BVLZ prescriptive spacing tables are located online only. You can find the information on our website [here](#). There will also be an engineering letter available online shortly for easy download and printing of the tables.