Ledger Board to Rim Joist
Structural Screws

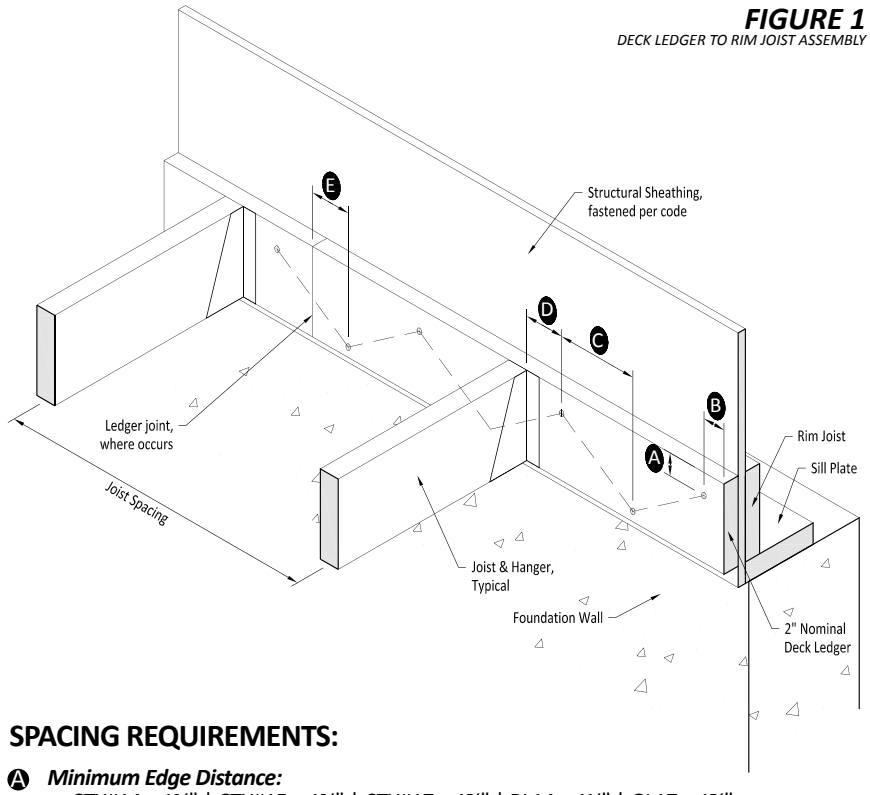
Tech Bulletin
Connection Details

USES/FASTENER INFO:

- ***The Superior Alternative to the Common Lag Screws, ideal for a contractor!***
  Heat treated and hardened, these screws are stronger and more durable than ordinary lag screws. They have deep cutting threads for quick, easy driving and a sharp notched point for exact, quick starting with less "walking". The Big Timber® screws have a built-on washer head with smooth edges giving them a professional finish.
- ***The Big Timber® screws are used in Structural wood-to-wood connections.***
  May be used where fasteners are required to exhibit corrosion resistance when exposed to adverse environmental conditions and/or preservative-treated wood, and are alternates to hot-dip-zinc galvanized coated fasteners.
- ***The coatings for the different types of screws differ in pigmentation only.***
  Big Timber® screws proprietary Triple Ceramic Coating has been evaluated for a corrosion resistance in both ACQ and salt spray conditions.
- ***Unique design reduces need for pre-drilling***

The Big Timber® screws comply with, or are suitable alternatives to what is specified in, the 2015/2012/2009 International Building Code (IBC) and 2015/2012/2009 International Residential Code (IRC). 2016 California Building Code (CBC) and the 2016 California Residential Code (CRC); also meet additional requirements of the CBC Chapters 16, 16A, 17, 17A, and 23, as applicable. 2014 Florida Building Code - Building and the 2014 Florida Building Code - Residential; also in compliance with the High-Velocity Hurricane Zone provisions of each.

FIGURE 1
DECK LEDGER TO RIM JOIST ASSEMBLY



SPACING REQUIREMENTS:

Ⓐ ***Minimum Edge Distance:***
CTX#14 = 1⅜" | CTX#15 = 1⅜" | CTX#17 = 1⅜" | BL14 = 1½" | GL17 = 1⅞"

Ⓑ ***Minimum End Distance:***
CTX#14 = 1¾" | CTX#15 = 2" | CTX#17 = 2¼" | BL14 = 1⅞" | GL17 = 2¼"

Ⓒ ***On-center Screw Spacing in inches*** - see Table 1

Ⓓ ***Minimum Fastener Spacing from Joist Attachment:***
CTX#14 = ⅞" | CTX#15 = 1" | CTX#17 = 1⅛" | BL14 = ¹⁵⁄₁₆" | GL17 = 1⅛"

Ⓔ ***Minimum Edge Distance at a Splice:***
CTX#14 = 1¾" | CTX#15 = 2" | CTX#17 = 2¼" | BL14 = 1⅞" | GL17 = 2¼"

Note:
1. *Fasteners should be staggered in a "W" pattern and spaced as indicated.*
2. *Concrete Foundation Wall shown for illustration only, a wood framed lower floor is acceptable.*
3. *Floor Joists not shown for clarity.*

FASTENER SIZE SELECTION:

Construction Lag Screws "CTX"
Star Drive Round Washer Head

#14x: 2½", 3", 4", 5", 6"
Thread Length: 1¼" - 3"

#15x: 3", 3½", 4", 5", 6"
Thread Length: 1½" - 3"

#17x: 7", 8", 10", 12"
Thread Length: 3½" - 4"

Black Log "BL"
Hex Washer Head

14x: 4", 6", 8", 10", 12", 14"
Thread Length: 2" - 2½"

Grey Log "GL"
Hex Washer Head

17x: 5", 7", 9", 11"
Thread Length: 3"

INSTALLATION:

- Pilot holes are not required.
- Select appropriate Big Timber® screw.
- Screws must be installed with the minimum spacing, end distances, and edge distances needed to prevent splitting (*Figure 1*).
- Follow the minimum fastening patterns indicated from *Table 1*.
- Select appropriate sized drill bit
  - Star Drive or Hex Head
    CTX#14 = T-25 | CTX#15 = T-30 | CTX#17 = T-40
    BL14 and GL17 = ⁵⁄₁₆" Hex Head
- Install screws with a standard low speed/high torque powered tool into the outer most ply, not by driving with a hammer.
- Install screws through 2x deck ledger board, into the structural sheathing, and continue into the rim joist until the washer head is drawn flush to the ledger board. Do not overdrive screws, as may compromise structural integrity of the ledger to rim joist assembly.
- No building finishes shall be installed between the deck ledger board and the rim joists.
- All connections and joints shall be properly flashed to prevent water infiltration.
- At time of installation all lumber shall have a moisture content of 19% or less.
- Construction inspections shall be conducted as required by the local building code of jurisdiction.

Refer to this bulletin for proper fastener size selection and fastening pattern. Always consult a registered design professional for critical assembly/fastening requirements and follow all local building codes.

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Tested Fasteners as reported in ICC-ES Report ESR-3534 www.icc-es.org
"CTX"
"Black Log"
"Gray Log"

Consult a registered design professional for critical assembly and fastening requirements. Design loads are to be determined by an Engineer based on project specifics.

Effective Date: March 3, 2017

Big Timber® Construction Fasteners

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FASTENING PATTERN:

Determine the proper spacing of Big Timber® Construction Fasteners from *Table 1* based on the following criteria.

- Required design live load based on the ***local building code with jurisdiction***.
- Select the joist span and spacing.
- Use *Table 1* for the wood species being used for the ledger or rim joist. The wood species used shall be for the lowest specific gravity of either the ledger or rim joist.
- Select screw type and spacing.

- Values listed for each of the Big Timber® Construction Fasteners are based on ICC-ES Report ESR-3534.

- It is the ***responsibility of a licensed professional*** to design the ledger board to rim joist connection as required by the building code of jurisdiction. The ***building code of jurisdiction*** shall govern over the guidelines set forth in this bulletin.

- All structural sheathing material that may separate the ledger board and rim joists must be ***attached per code requirements*** and capable of transferring ledger board forces to the rim joists.

- *Table 1* values assume the ***code standard dead load*** for building materials of 10 pounds per square foot.

- The live load assumed in these guidelines does not include snow load.

- Size and spacing of deck ledger connectors are based on gravity loads only and do not include wind and seismic forces.

- The rim joist must be restrained for eccentric loading from the deck ledger and shall not be end nailed to floor joists.

- For wet service conditions depending on your climate and area of installation the ledger board connector spacing may need to be reduced. ***Contact your design professional and local building official for guidance***.

- Desks shall be self supporting where the rim joist connection cannot be verified through inspection.

- The values from *Table 1* assume that the fasteners are properly installed per the instructions on this bulletin.

Table 1

Fastener Designation		Live Load	Ledger Material	Rim Joist Material	Screw Spacing (in inches) based Joist Spans of:				
					6ft or less	Up to 8ft	Up to 10ft	Up to 12ft	Up to 14ft
CTX #14	#14x4"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	30	23	18	13	11
			G= .55 Southern Pine	Engineered Wood	24	21	16	12	9
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	24	20	14	10	9
			G= .55 Southern Pine	Engineered Wood	18	16	12	9	8
	#14x5"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	30	21	16	12	10
			G= .55 Southern Pine	Engineered Wood	22	18	16	12	10
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	24	21	16	12	9
			G= .55 Southern Pine	Engineered Wood	18	16	12	9	8
	#14x6"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	30	20	15	10	9
			G= .55 Southern Pine	Engineered Wood	30	22	16	12	10
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	20	18	16	12	9
			G= .55 Southern Pine	Engineered Wood	18	16	14	10	8
CTX #15	#15x3 1/2"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	30	24	20	14	12
			G= .55 Southern Pine	Engineered Wood	24	18	16	12	9
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	20	18	16	14	9
			G= .55 Southern Pine	Engineered Wood	18	16	14	12	8
	#15x4"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	28	24	20	18	16
			G= .55 Southern Pine	Engineered Wood	24	20	18	16	14
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	20	18	18	16	12
			G= .55 Southern Pine	Engineered Wood	18	12	10	9	8
	#15x5"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	28	24	20	16	12
			G= .55 Southern Pine	Engineered Wood	20	18	16	12	10
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	18	16	12	10	9
			G= .55 Southern Pine	Engineered Wood	18	16	12	9	8
	#15x6"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	30	24	20	16	12
			G= .55 Southern Pine	Engineered Wood	24	20	18	16	12
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	24	18	16	14	10
			G= .55 Southern Pine	Engineered Wood	20	16	14	10	9
BL "Black Log"	#14x4"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	24	20	18	16	12
			G= .55 Southern Pine	Engineered Wood	20	18	16	12	10
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	20	18	16	12	10
			G= .55 Southern Pine	Engineered Wood	18	16	14	10	8
	#14x6"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	28	24	20	18	12
			G= .55 Southern Pine	Engineered Wood	20	18	12	10	9
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	20	16	12	10	9
			G= .55 Southern Pine	Engineered Wood	18	14	12	10	9
GL "Grey Log"	#17x5"	40 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	24	20	18	12	10
			G= .55 Southern Pine	Engineered Wood	16	12	11	10	9
		60 psf	G= .42 Douglas Fir/Spruce-Pine Fir	2x Lumber	16	12	11	10	9
			G= .55 Southern Pine	Engineered Wood	14	12	10	9	8

GENERAL NOTES:

- Select the size and length of screw which meets local building code requirements.
- Screws are an integral component of well-designed, installed, and maintained ledger board attachment system.
- ***Consult with engineering and architect professionals*** to assure the integrity and capability of your project.
- Building design approval and inspection are key steps in a strong and capable project.
- Screws should be driven into sites which provide the proper structural support for the screw during installation and for load support in customer use.
- Screws should be driven to seat properly to the attachment site.
- Wood moisture content is a factor in screw installation strength and should be considered during installation and use.
- ***Building codes provide design requirements for safe loading.*** Use proper design safety factors for the application.
- Periodic Maintenance to assure integrity of the attachment, material condition, and screw tightness are important steps in the continued performance.

Always consult a registered design professional for critical assembly/fastening requirements and follow all local building codes.

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