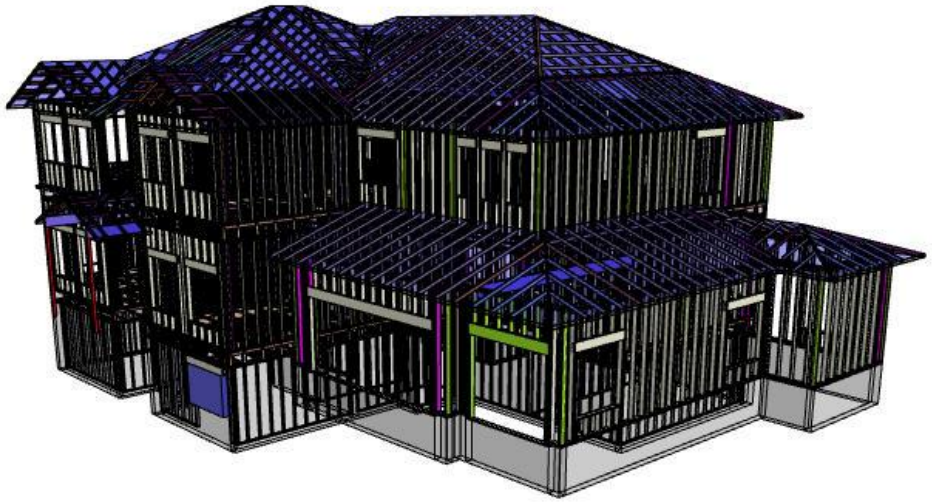
BC FRAMER® BC FloorValue®



- Introducing a New Way to Identify and Remedy Floor Problems in the Design Process

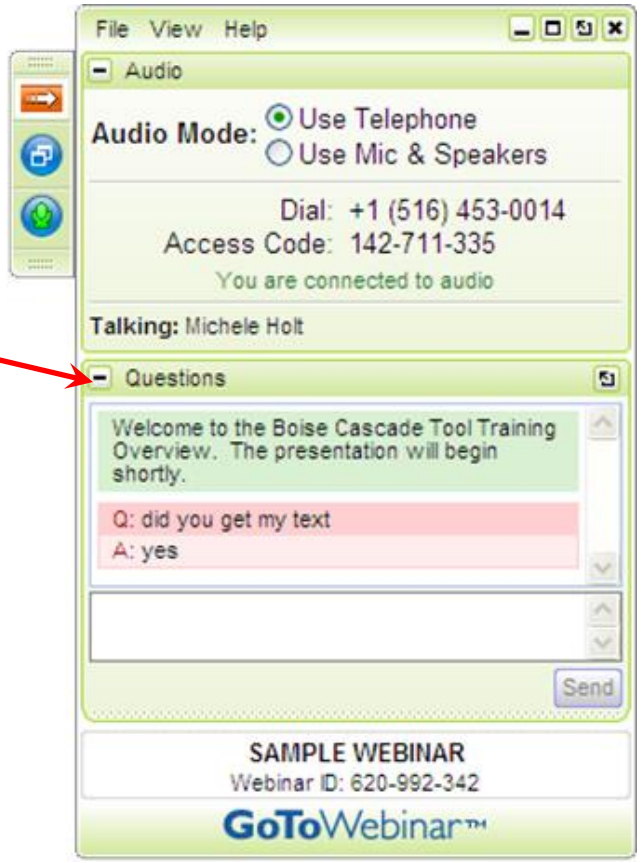
Boise Cascade

USING YOUR CONTROL PANEL

Hide or unhide the control panel

If you would like to ask a question, please type it here.

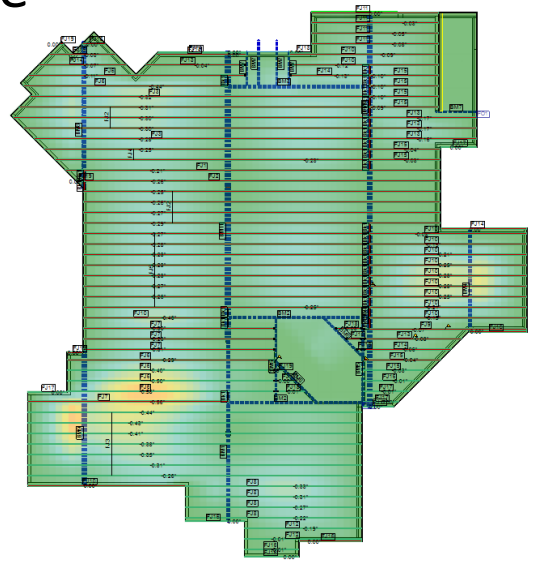
We will try to answer your question before the end of the presentation



BC FloorValue®

- Most floor systems are designed to meet deflection criteria. Even when a floor system has an acceptable deflection L/ratio it can still fail to meet occupant expectations due to items such as vibration, support beam deflection and sheathing deflection between joists

- BC FloorValue® considers the system as a whole instead of as isolated members
- BC FloorValue® includes the contribution of sheathing span between joists to overall feel
- BC FloorValue® provides value-added options for efficient upgrading or cost optimization without impacting feel
- IMPORTANT: BC FloorValue® is a not a structural analysis.
  Design Members must be run to ensure structural adequacy of modeled members or new framing options.



BC FloorValue®

What it is not

- Not a structural analysis, Premium floors may have failing members (i.e. reaction failure)
- Not a footfall/impact analysis, floors may still have localized vibrations due to isolated foot traffic
- Not a replacement for good design and good judgment, but is a tool for assisting with better decision making

BC FloorValue®

Multiple distinct components make up the BC FloorValue® analysis

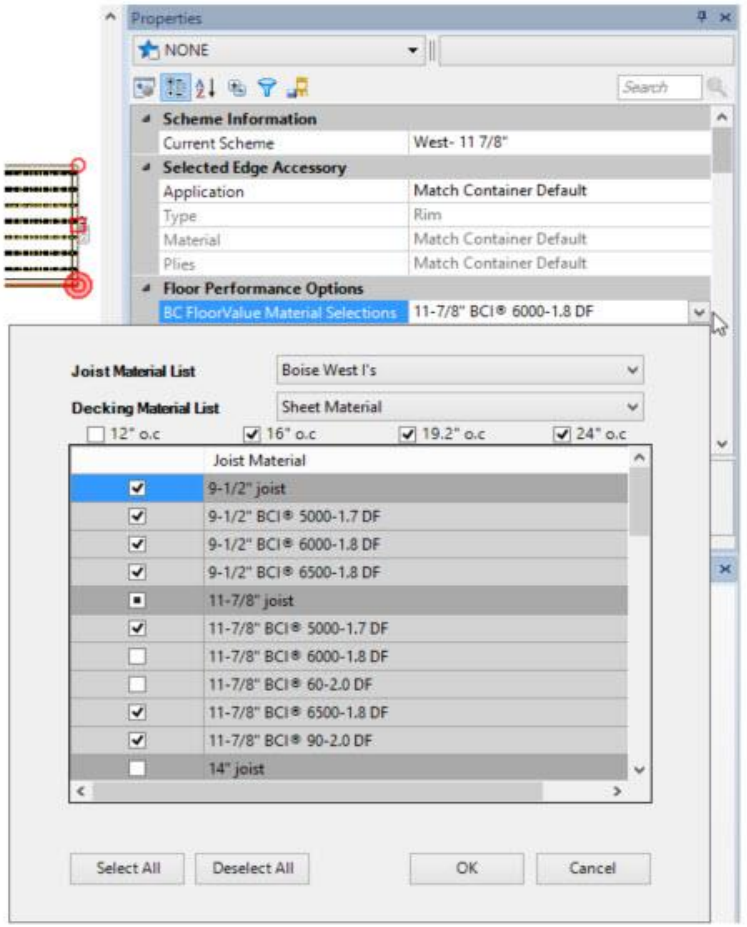
1. Deflection map
2. Vibration analysis
3. Sheathing analysis
4. System cost comparisons

Setting BC FloorValue® Material Selections
(prior to version 8.2.3)

Floor Container – Select the Floor Container then click on the BC FloorValue® Material Selections dropdown arrow.

- Set a Material List for Joist and Decking Materials.
- Left click to select OCS, Joists and Decking materials you wish to consider.

NOTE: These selections can be set as defaults for a Floor Container scheme in Manage Job Defaults. Each new Floor Container will have your selections preset.

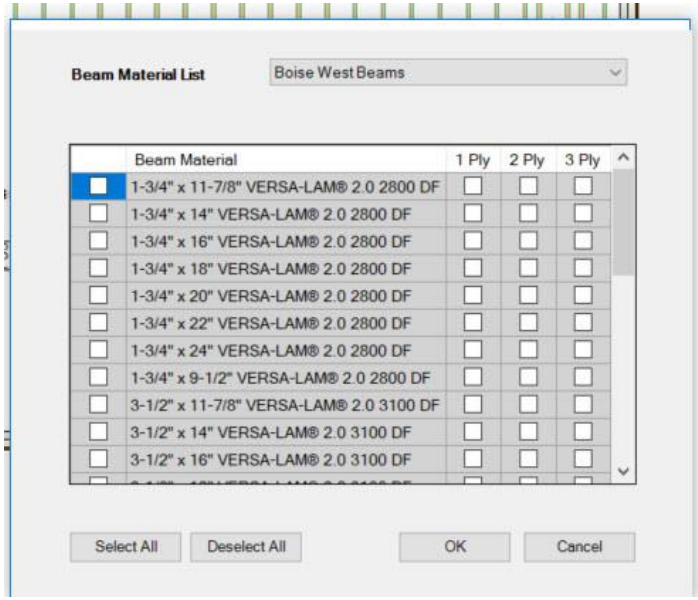


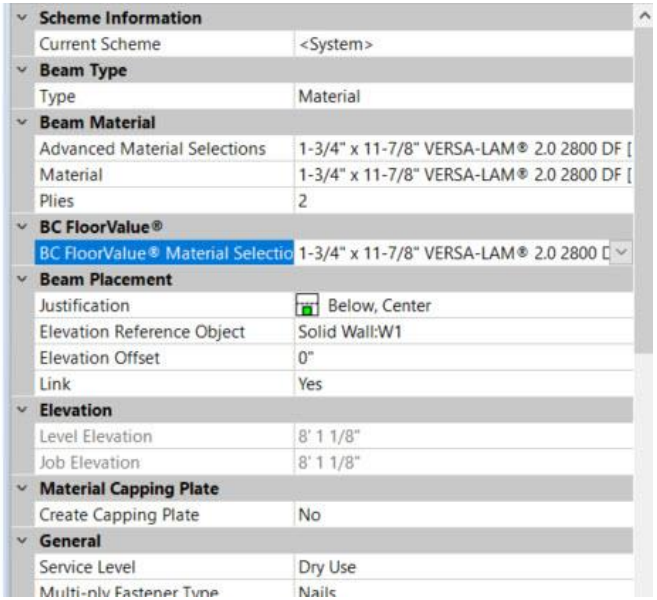
Setting BC FloorValue® Material Selections
(prior to version 8.2.3)

Beam – Select the Beam then click on the BC FloorValue® Material Selections dropdown arrow.

- Set a Material List for Beam Materials.
- Left click in the Ply column(s) to select Beam materials you wish to consider.

NOTE: Creating Beam schemes in Manage Job Defaults with unique beam products and BC FloorValue® Material list selections will speed up beam input. Beam schemes can be changed in the properties dialog with the Current Scheme property. When a scheme is selected it will contain your defined BC FloorValue® Material Selections.

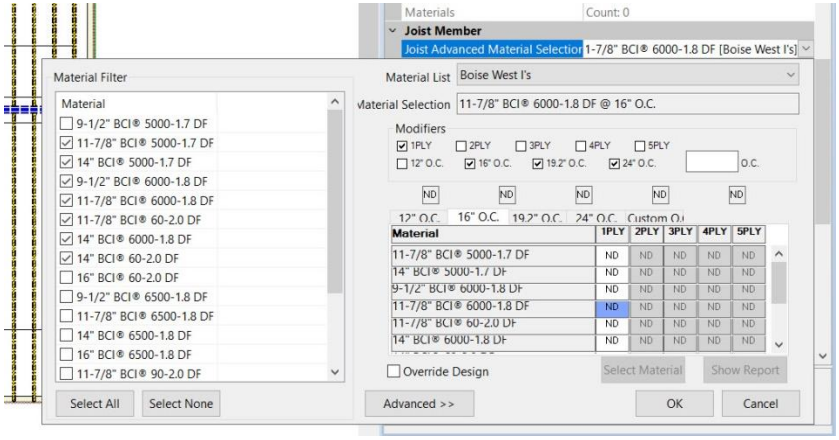




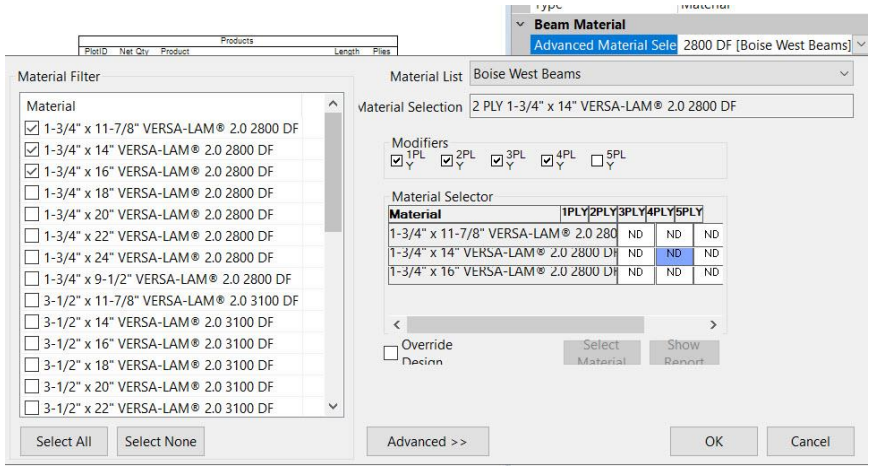
Setting BC FloorValue® Material Selections (as of version 8.2.3)

- Prior to 8.2.3- we used both “Floor Performance” & “Advanced Material Selection” to set the consider list.
- Now, the consider list for joist is set in just one place.

This is the joist list, which is located in the Floor Container Properties



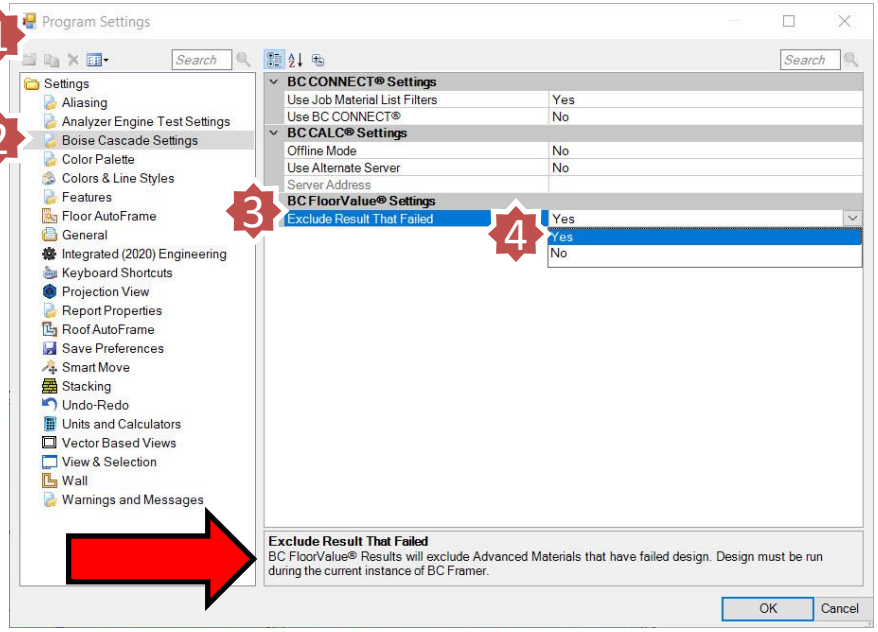
This is the beam list, which is located in the Beam Properties / Advanced Material



(as of version 8.2.3)

❑ BC FloorValue® : Combine Consider List with Floor Value List

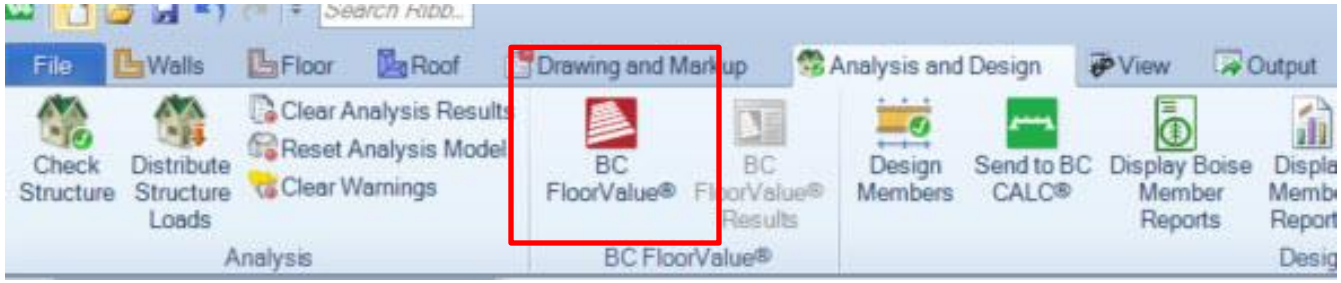
- In the past, we could get BC FloorValue® results that fail design.



Run BC FloorValue®

Click the BC FloorValue® icon on the Analysis and Design tab –

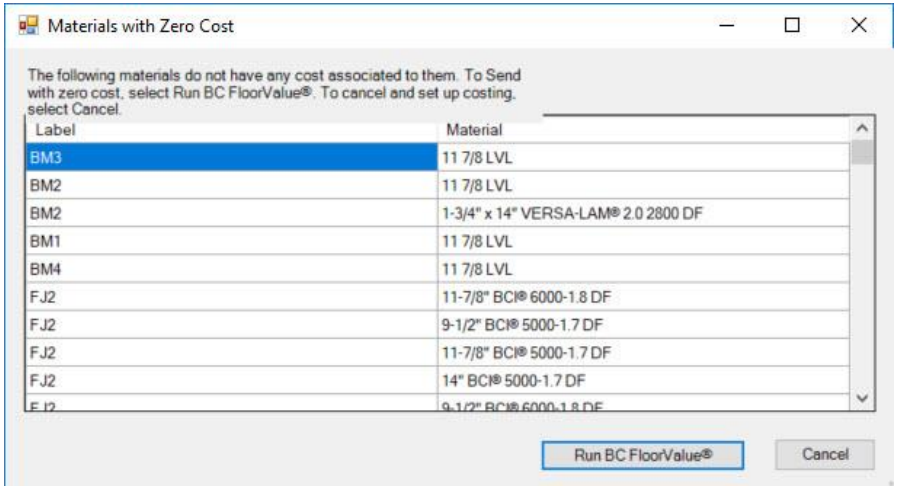
- all floor containers in the model will be included in the command.



- To analyze a single floor container, select any joist in the container. Only that floor container will be included in the command.
  (Check Structure and Distribute Structure Loads will also run in the background.)

Materials with Zero Cost

If any products in your model or framing options do not contain a price in Materials the “Materials with Zero Cost” dialog will display a list of materials.



This dialog is informational only. It is intended to aid in adding prices to the Materials database to take full advantage of the cost comparison tool in BC FloorValue®.

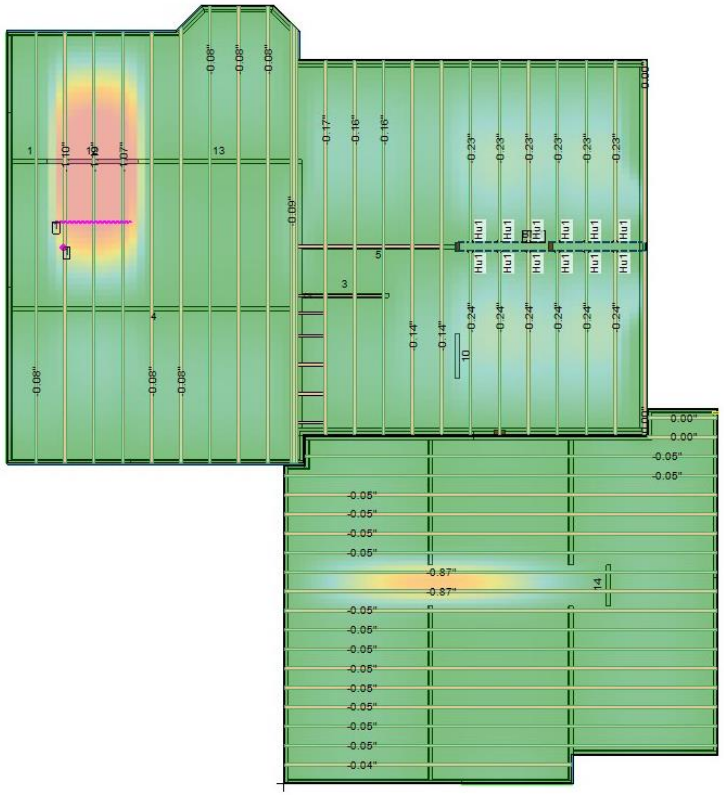
Click Run Analysis to run BC FloorValue® without adding prices.

Click Cancel to end the command.

To take full advantage of the cost comparison feature in the Results dialog it is recommended that prices be added to all listed materials.

Deflection Heat Map

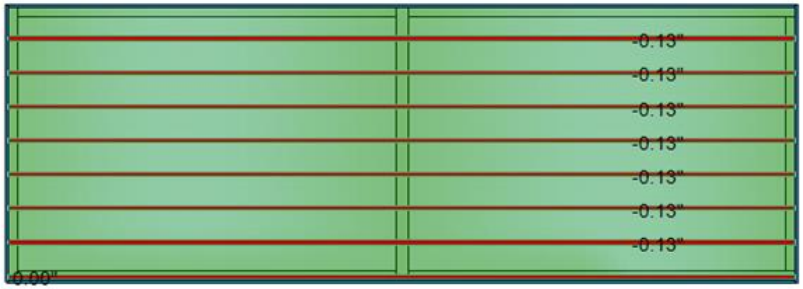
- Based on all live and dead loads, no pattern loading considered
- Analyzes floor as a system, taking into account deflection of supporting members
- Visually alerts the user to locations of differential deflection across the floor system
- Helps identify potential problem areas where occupants notice uneven floor deflection



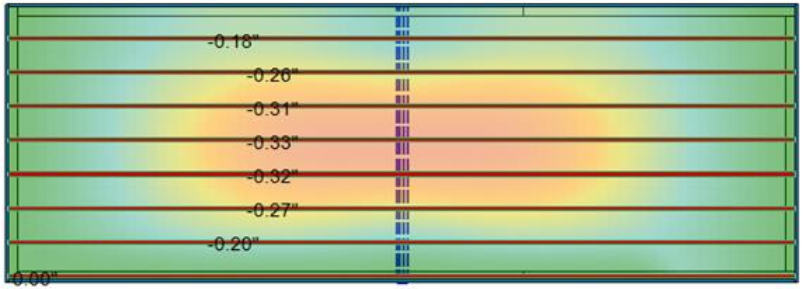
Deflection Heat Map

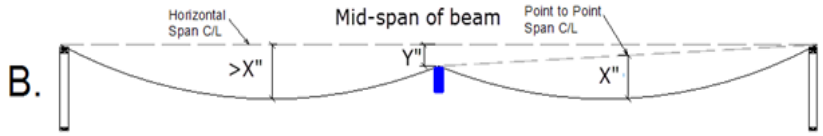
- Displays System deflection rather than single member design values.

A. Rigid Wall at mid-span



B. Weak Beam at mid-span

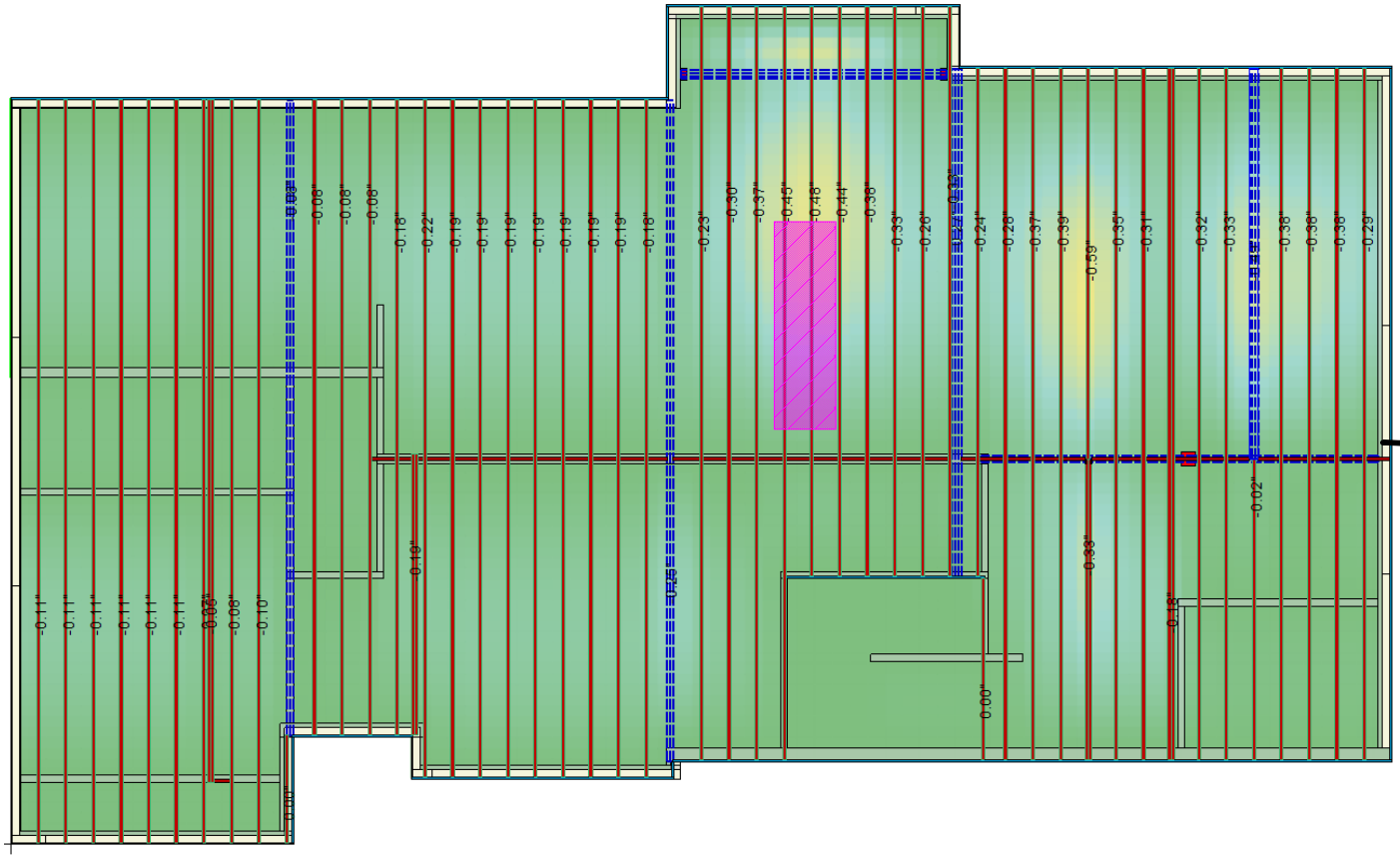




System Deflection Scale				
Worst				Best

Boise Cascade

Deflection Heat Map: Example

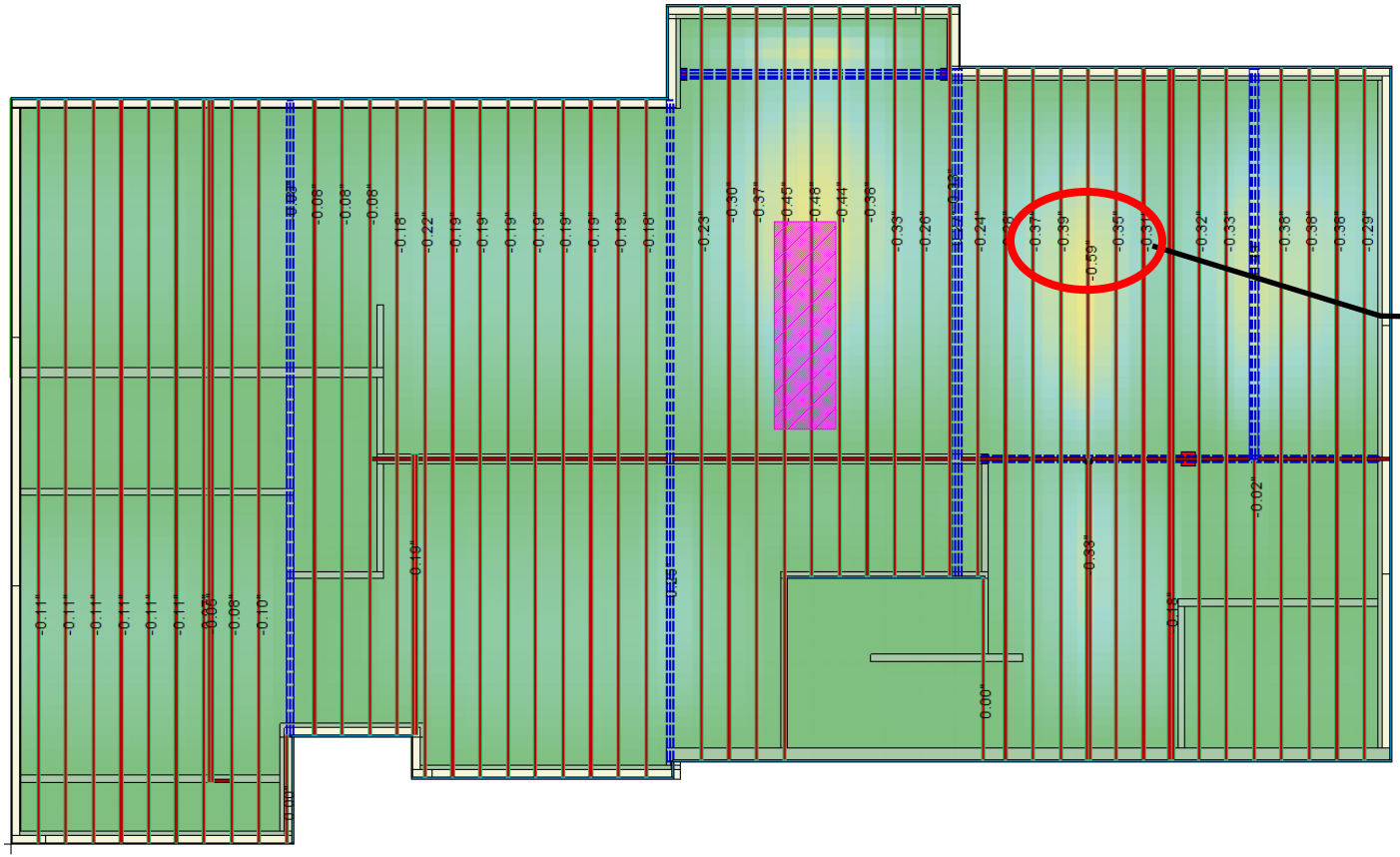


Joists in this home were designed to well over L/480! Customer complained that they were walking at an angle in the kitchen.

Deflection Heat Map: Example

Problem:
Island joist deflects 0.25” more than adjacent joists when deflection of supporting beam is considered.

Deflection Heat Map



Potential Problem:
Joists exceed design criteria of
L/480 live load and
L/360 total load but simple span joist deflects 0.24” more than adjacent continuous span joists.

Vibration Analysis

Basement		
FC1	11-7/8" BCI® 5000s-1.8-16" o.c.s.	Enhanced
	3/4" 4x8 OSB	Premium

- Based on dead loads, no pattern loading considered
- Analyzes floor as a system
- Considers joist, sheathing and support stiffness contributions to performance
- Identifies the overall performance of the floor system and the worst case joist or beam
- Classifies each floor container into one of three categories, Minimum, Enhanced, Premium
- Helps identify potential problem areas where occupants notice floor vibrations independent of the deflection heat map

Vibration Analysis: Ratings

Minimum: The feel of this floor system ranges from the lowest performing floor, which likely is also structurally inadequate, to one that is comparable to those designed to the code minimum L/360 live load deflection criteria. The closest comparable deflection range in terms of L-over ratings is L/0 to L/360.

Enhanced: The feel of this floor system ranges from just slightly better than a code minimum floor to one that exceeds a floor designed to the typically recommended L/480 live load deflection criteria. Similar to L/480 being the recommended live load deflection criteria for most I-joist floor systems, Enhanced is the recommended BC FloorValue® rating for most I-joist floor systems. The closest comparable deflection range in terms of L-over ratings is L/361 to L/480.

Premium: The feel of this floor system ranges from just slightly better than Enhanced to one that exceeds a floor designed to Boise Cascade's Four Star L/960+ live load deflection criteria targeted at the more discriminating homeowner. The closest comparable deflection range in terms of L-over ratings is L/481 to L/999+.

It is important to note that the BC FloorValue® rating will not always coincide with the L-over deflection results from the structural analysis or in literature span tables. Structural member design includes pattern loading and does not consider the flexibility of the supports whereas BC FloorValue® does not consider pattern loading and takes support flexibility into account.

Sheathing Analysis

- Considers the worst case sheathing span perpendicular to framing members
- Compares sheathing span to the sheathing's span rating
- Classifies the sheathing for each floor container into one of four categories, Code Minimum, Standard, Enhanced, Premium
- Helps identify potential problem areas where occupants notice soft spots between joists with flexible floor coverings

Decking	Joist Spacing Limit			
	Min. Code	Standard	Enhanced	Premium
19/32" or 5/8" Ply/OSB	19.2"	-	16"	12"
23/32" or 3/4" Ply/OSB	24"	-	19.2"	16"
7/8" or 1" OSB	32"	-	24"	19.2"
1 1/8" Ply/OSB	48"	32"	-	24"

Basement		
FC1	11-7/8" BCI® 5000s-1.8-16" o.c.s.	Enhanced
	3/4" 4x8 OSB	Premium

System Cost Comparisons

- **Section A:** Modeled materials – Rating for lowest performing member is reported
- **Section B:** Selected Alternate Framing or Decking option and ratings
- **Section C:** Estimated cost changes modeled vs. selected alternates

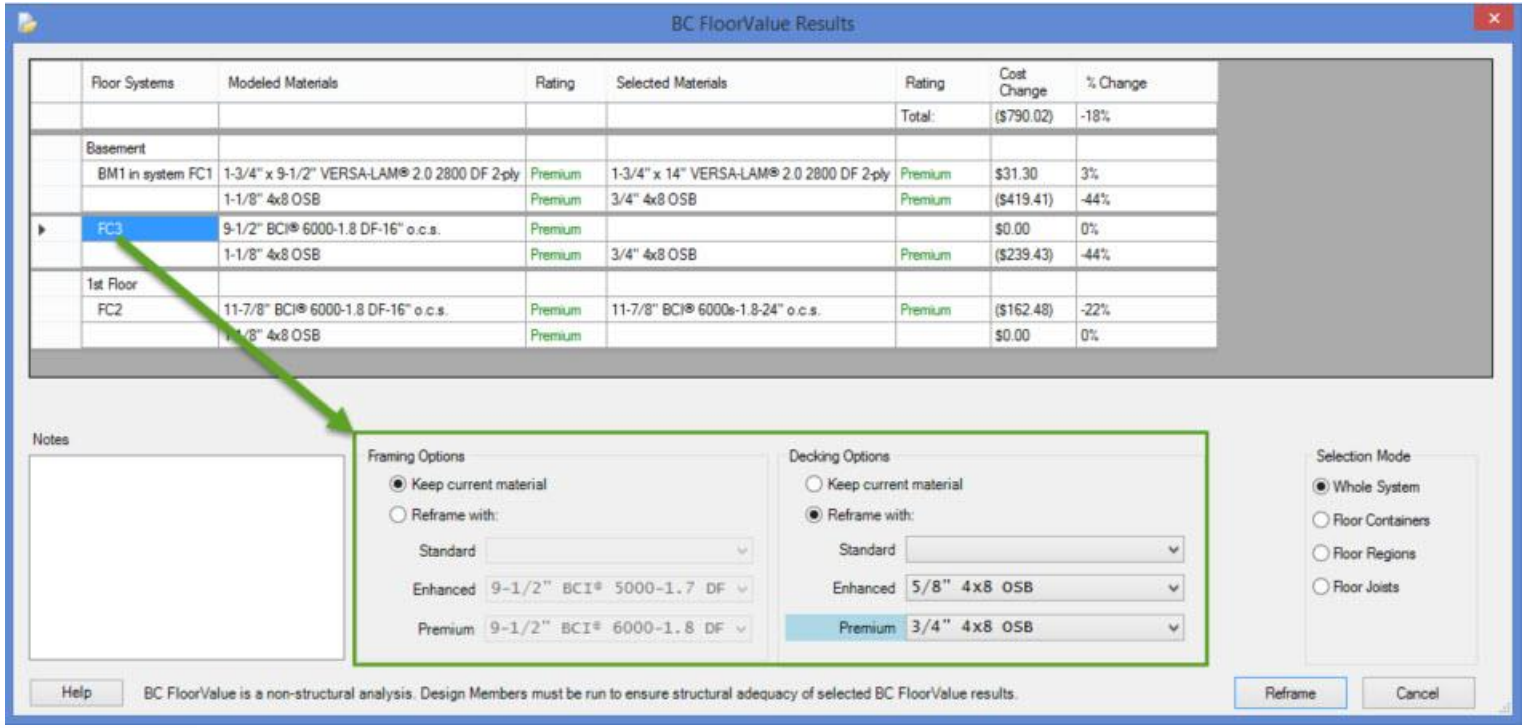
BC FloorValue Results

Floor Systems	Modeled Materials (A)	Rating	Selected Materials (B)	Rating	Cost Change (C)	% Change
				Total:	($790.02)	-18%
Basement						
BM1 in system FC1	1-3/4" x 9-1/2" VERSA-LAM® 2.0 2800 DF 2-ply	Premium	1-3/4" x 14" VERSA-LAM® 2.0 2800 DF 2-ply	Premium	$31.30	3%
	1-1/8" 4x8 OSB	Premium	3/4" 4x8 OSB	Premium	($419.41)	-44%
FC3	9-1/2" BCI® 6000-1.8 DF-16" o.c.s.	Premium			$0.00	0%
	1-1/8" 4x8 OSB	Premium	3/4" 4x8 OSB	Premium	($239.43)	-44%
1st Floor						
FC2	11-7/8" BCI® 6000-1.8 DF-16" o.c.s.	Premium	11-7/8" BCI® 6000s-1.8-24" o.c.s.	Premium	($162.48)	-22%
	1-1/8" 4x8 OSB	Premium			$0.00	0%

System Cost Comparisons

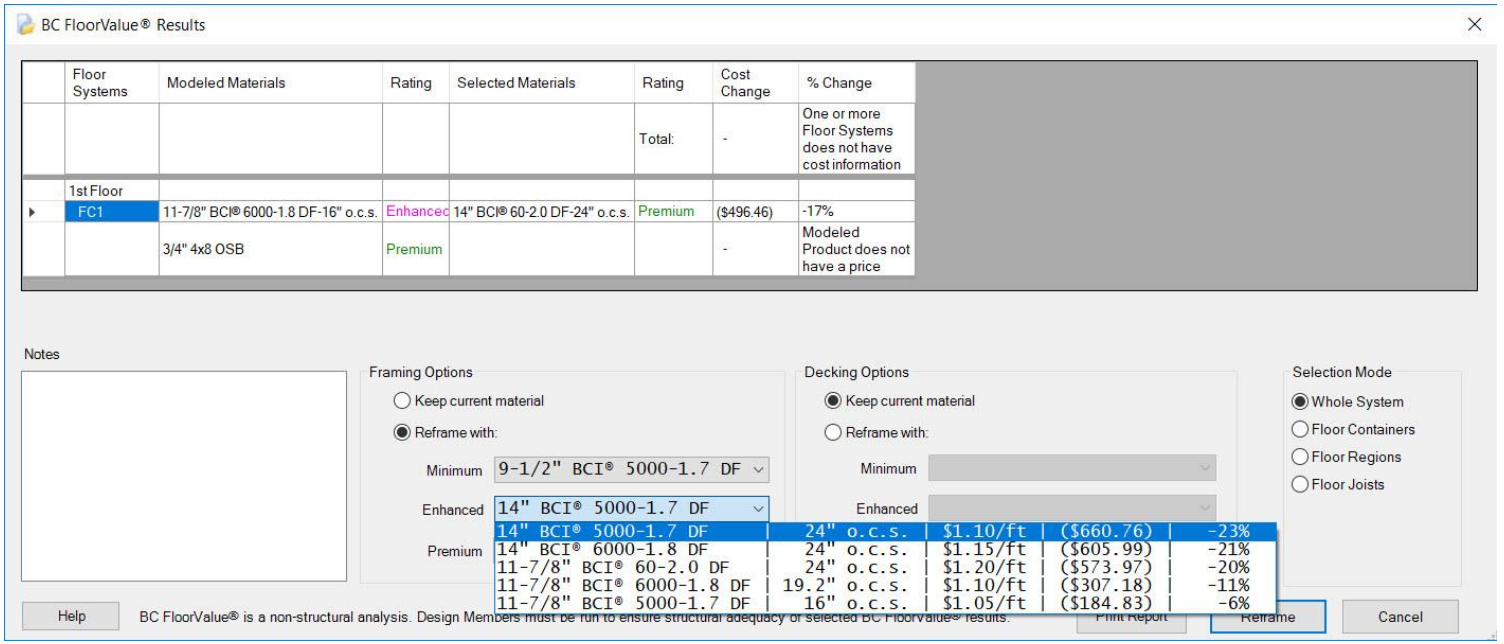
Selecting Framing and Decking Options

- Selecting a Floor Container in the results table populates the Framing and Decking options



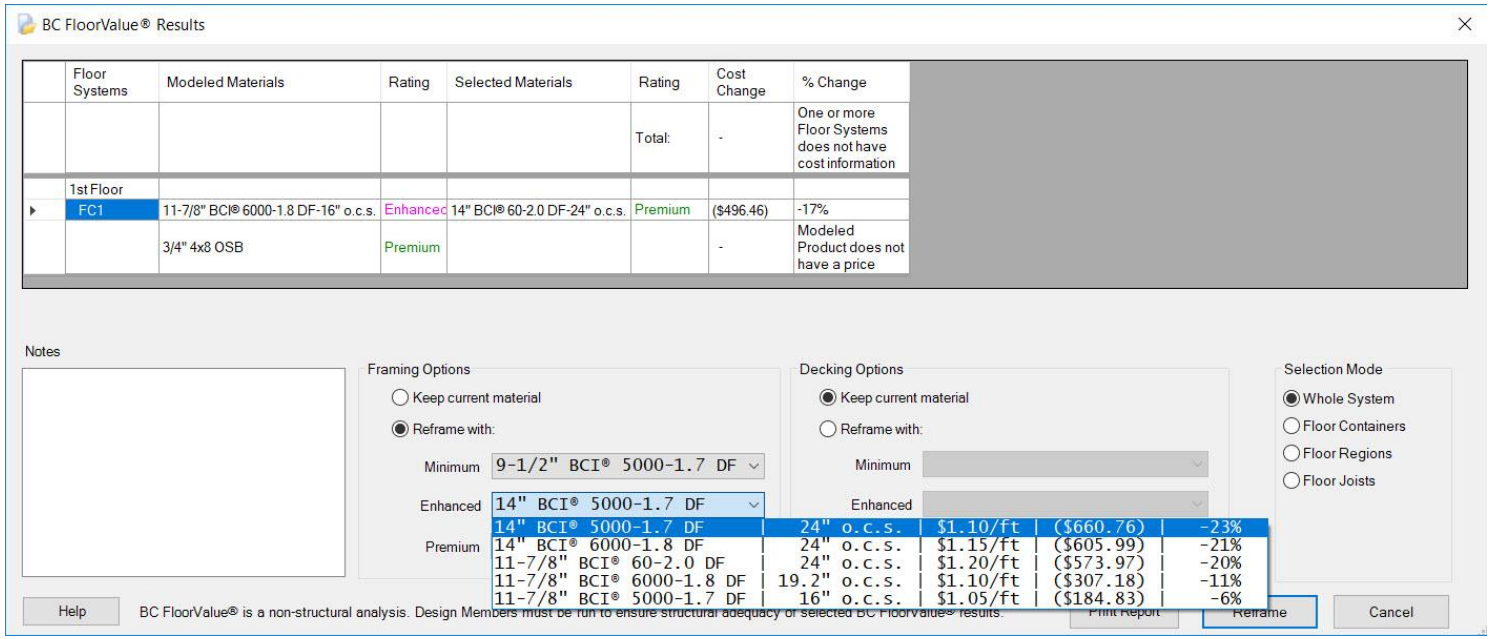
System Cost Comparisons

- Each rating menu displays the lowest cost option by default
- Expanding the dropdown list shows all user-defined framing options with cost per unit, estimated cost differential to the modeled material and the percent difference



System Cost Comparisons

- Cost estimate for the alternative option is based on the Whole System (floor container) selection mode
- Designer needs to estimate costs for the other three selection modes that only change a portion of the floor container

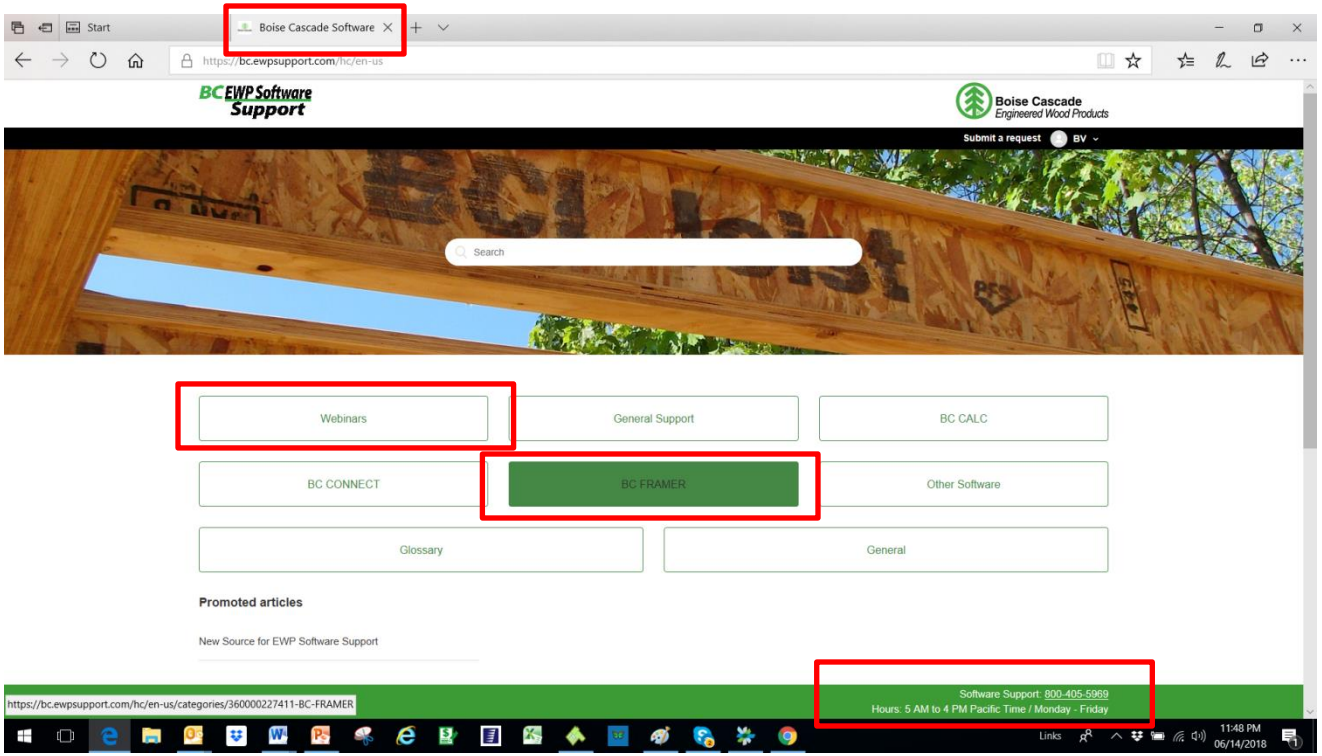


BC FloorValue®

It's a new proactive approach to identifying issues when the floor is being designed - so what could be a HUGE problem is resolved in minutes.

- **RESULT: Peace of Mind**

QUESTIONS ?



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