

Question 1

Question : Do you have a cost analysis to help in choosing between the connectors?

Answer :

Yes, one of the features in our newly published Beam Hanger Design Guide is the ratio of connector cost to capacity. This ratio will help in choosing the connector that has the right capacity for your connection while being the most cost effective.

Question 2

Question : Are the connector capacities available in ASD for the USA?

Answer :

Yes, the values listed in the USA Beam Hanger Design Guide are in ASD.

Question 3

Question : Can the concealed hangers still achieve a fire rating without the fire caulking?

Answer :

This is a question that depends on the configuration of the connection. Depending on the housing configuration under the current codes, fire caulking may be optional. Additionally, some European standards consider two elements at a connection to be “bounded” when the gap is smaller than 2 mm (0.08”) this would mean fire caulking may not be required.

However, it is important to keep in mind the new code changes for Type IV in the IBC 2021. Under the new code section, IBC 703.9, sealants are required at edges and intersection of fire resistance rated mass timber elements, unless they show that the FRR is maintained without the sealant. The tests that we have performed have used fire caulking around the connector and are in compliant with future code changes.

Question 4

Question : Is there an ICC report showing that the connection is rated for a 1-hour fire rating?

Answer :

Our Beam Hanger Systems are not ICC approved yet. As of now, engineers were able to pass the building code approvals for the RICON S VS and the MEGANT in the USA by providing the building officials the proper set of research data, which we can provide for fire rating, inter-story drift performance, load resistance, etc.

Question 5

Question : Are your Beam Hanger ICC approved?

Answer:

The ICC approval for the Beam Hanger System is currently pending.

Question 6

Question : Can you confirm sealants around connections if not a “joint” do not have to be fire caulking in the new type IV. I recognize that fire caulking was used in the tested assembly you presented.

Answer :

Not all connections require fire caulking, a good example is the CLT floor panel to glulam beam connection in the TR10. The TR-10 uses the char contraction effect to calculate the wood thickness required at an intersection of two unbonded timber elements.

Question 7

Question : Is there any study being made for the use of these connections in tropical weather areas?

Answer :

The beam hanger systems have been used extensively in Canada and the USA in various environmental conditions including seismic zones. As per the code, dry service conditions should be maintained.

Question 8

Question : The code allows Type III to use FRTW on the exterior.

Answer :

You are correct. IBC 2015 Clause 602.3 Type III. states that “ Type III construction is that type of construction in which the exterior walls are of noncombustible materials and 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.”

That section of the presentation was meant only to summarize the code requirements. Designers should refer to the IBC 2015 for complete detailed requirements.

Question 9

Question : The example was related to a 2hr fire rated connection but the fire testing certified the beam hangers for 1.5hr. How do you justify that?

Answer :

The tested assembly was awarded a fire rating of 1.5hr.

The connectors were designed with a wood cover of 2-¼” for the tests and the estimated char thickness measured after the test was 2-1/16”. This shows this calculation method is accurate. To compare, the nonlinear approach in the TR10 estimates the achar for 1.5hr as approximately 2-⅛”. After the test, no failure was observed and the connection sustained the load throughout the full length of the test duration. The test has proven the effectiveness of wood cover to protect the concealed beam hangers in a fully loaded full-scale fire event.

It is important to understand that the 2hr FRR presented in the webinar and the design tables of our design guide are both based on the FRR design calculation method presented into the TR-10 and testing data. This is a valid design approach recognized by building official in North America.

Question 10

Question : Why are the minimum beam size requirements in the fire design, bigger for some of the smaller connectors?

Answer :

We recommend placing the connector at the lowest most 30% of the beam depth to avoid creating a virtual notch. The beam sizes in the fire design table are so that the connectors can be used without reinforcement. If other beam sizes are used, proper reinforcement screws should be used around the connector.

The beam sizes also take the corner rounding effect into consideration. For narrower connectors, the corner rounding is important on the sides of the connector and for wider connectors, the corner rounding is important at the bottom.

Question 11

Question : Do the fasteners for the wood cover need to be fire rated?

Answer :

No, Clause 4.4.1.2 of the TR10, states that the fasteners for attaching the wood cover do not need to be fire rated, but they do need to have enough length to make sure the wood cover stays in place during the fire.