Standing on the Shoulders of Giants: Advancing Mass Timber in Oregon

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Chris Evans: You are cutting and harvesting wood from the forest, but it matters what you're doing with it. So if you're using it for formwork, its life in that state is very short. It's usually going to be landfilled at that point. It's going to start to decompose and go back to the atmosphere a lot quicker. Then taking a piece of wood, putting it into a building that's going to last 100, 200, 300 years, you're really delaying that carbon going back into the atmosphere for hundreds of years.

Chris Edwards: Welcome to Forestry Smart Policy, a podcast produced by the Oregon Forest Industries Council for policy makers and other thought leaders influencing decisions in Oregon. I'm Chris Edwards, your host and president of OFIC. In this episode, I sit down with Chris Evans, president of TimberLab, Oregon's newest manufacturer of mass timber. For those who may not know, mass timber is an umbrella term for a variety of engineered wood products made by layering and bonding smaller pieces of lumber or plywood together to create larger blocks or sheets of wood for use in large building construction instead of carbon-intensive alternatives like concrete and steel. Think of the ceiling of the new Portland Airport or the newly constructed PV hall at OSU. Chris and I talk about TimberLab's newest innovations and investments, the benefits of mass timber, challenges to large-scale adoption of mass timber, including common misconceptions, and what policymakers might do to encourage adoption of this new innovative technology. The future is indeed bright for mass timber here in Oregon. And this was a fun conversation with Chris Evans from TimberLab. Without further delay, here's my discussion with Chris. We're here with Chris Evans from TimberLab. Well, why don't you just start out by telling us how old is TimberLab? Because I've heard about TimberLab for a few years. And it seems like you guys are taking the world by storm in the mass timber construction arena. But I actually don't know how old your company is. Yeah. So I'll start there.

Chris Evans: Well, it's a pleasure to be here. So thank you for having me on the podcast. TimberLab technically is about to turn four on January 1st. That's where in 2021, we really launched TimberLab. But TimberLab was born out of another company, Swinerton Incorporated, which owns Swinerton Builders, a large general contracting firm. So we actually started our mass timber work in 2017. And then we got traction, had a good business plan. We started out as an operating group within Swinerton. And then we saw the need just because of that growth to move out into a separate company underneath Swinerton Incorporated, where we're just focused on mass timber construction, manufacturing and all that good stuff.

Chris Edwards: Yeah. Okay. So before we go much deeper there, let's talk a little bit about what mass timber is. I think most of our listeners probably know some of the basics. But mass timber is sort of a broad term for lots of little technologies, I guess, or large technologies as the case may be. So I want you to tell us just a little bit high level. What is mass timber?

Chris Evans: Yeah, mass timber. So mass timber really, I'll go back into history here. So in the code, there's a code called Type IV construction. That's heavy timber construction. Type IV construction has been around since the late 18... it was like 1870s, 1876 or so when that code came about. So it's actually a really old method of building. It started in Northeastern US with textile mills. And they used to build buildings with like a post beam and joist situation, like you'd see in your house or your basement, two by sixes, two by tens sitting on beams. And in the 1820s, it started to be built with post beam and plank. And that plank were like four inch thick planks, splined together. And that created this mass of timber there. And they coined it heavy timber or slow burning construction. That's kind of what this was. And over time, over 50 years, they saw that these mills, textile mills, there would be machinery, sparks, particulates in the air, there would be fires. Usually, when there's a fire, you'd have a whole building loss. So they started to see that these buildings built with post beam and plank did not have whole building loss. They had localized loss. And the self insurers of these buildings, the factory started a self insurance program. It was called Factory Mutual Insurance. It's a very FMI Global. It's a huge insurance company now and sets the standards for a lot of things in the construction industry. But they saw that it made sense to build this type of construction, the slow burning construction. So that heavy timber code that's still used today, type four heavy timber, is based on a lot of these things they saw in the 1800s of the way that they built. And it kind of started to go away as a method of being used for construction, especially when you get to commercial construction, you need large beams, you need large columns to make that successful. And you start to look at the trees, tree availability to be able to go do that. And then the early 1900s, concrete steel construction started to come to a rise. You had seismic considerations now with the San Francisco earthquake in 1906. So all those things started to push the industry, the commercial construction industry towards this concrete and steel type of construction. Then when you get to the idea of using smaller saw and lumber, gluing those together, glue laminated construction. I forget the exact year that started sometime in the early 1900s, but you start to see a lot of these manufacturers in Oregon that have been around since the 50s, 60s, 70s, doing glue laminated construction. And that's really, Glue Lam is really taking smaller members, 2x4 through 2x12s, gluing those together to make larger members. And so that technology then allows you to build any size shape that you really want to build, just gluing it together. Cross laminated timber started in the 1990s

in Europe that started to make that 4 inch plank a huge monolithic plank of 10 foot wide, 60 foot long panels that you could use as these building elements. And then you put on top of that CNC capabilities to be able to come in and machine these big pieces. All those things have kind of culminated to bring this new type of building construction that's actually really old school of mass timber construction. New name used to be heavy timber. Now it's mass timber. But the idea is the same. It's have a mass of wood and ignition for fire is all about surface area to mass ratio. So if you have high surface area to mass to volume ratio, you're going to get ignition quick. So think about a toothpick or a stick. There's a lot of surface area, not much mass there, right? And when you get to these floor planks versus joists configuration, you've changed that whole equation. So you start to get slow burning charring that's predictable and fire resistive as opposed to this incineration of 2 by 6s and 2 by 4s that you might see in typical single-family home construction.

Chris Edwards: Yeah, so it sounds like we've got an old school, the oldest school, fiber supply, good old fashioned wood, combined with new mechanical technologies, gluing and such, and then CNC capability. So what's CNC? What's that stand for?

Chris Evans: Yeah, put me on the spot. Computer Numeric Controlled. I mean, that's popular in steel construction. It's popular in crafting. If my wife has a cricket at home and she's making stickers for the kids today. So it's just simply putting in a computer program of a design that you want and then having the computer go through and make that design for you with whatever type of device that's there. From our perspective, that's really big machines that can process 60-foot material and cut and route those pieces and take a lot of that labor and time off of doing that finishing that you'd have to do by hand. And then you get controlled results from that. So for these large commercial buildings, the key thing is about fire resistivity. That is the key thing. And the fiber is protecting the steel. And for it to protect the steel, you need to cut into the beam or column to embed the steel in there. For those connectors to hide it from any potential fire that's there. And that's kind of the art of these large commercial buildings is protecting the steel with wood, having it fully exposed so you can see the structure, but also see and see the members so that you can hide the steel, which will yield a lot quicker under a fire than the wood would.

Chris Edwards: So we are talking about a technology that is not only fire resistive, but really makes it possible to use wood. It's sort of a blast from the past in ways that wood used to be used prior to steel and concrete, construction techniques, but also I think a key thing here is using smaller diameter wood. So you can come in and have demand for commercial thinning practices in forests, because that wood that is being thinned is slower growing in those tree stands, can come out, even though it's not a large diameter, can still have a strong strength profile and be used to build these bigger beams or these bigger floor

panels because of its strength profile in there. So instead of just putting that to a low grade stud, you can have a higher and better use for that. And that higher and better use can go into a building that's going to be there for 100, 200, 300 years. And that's kind of the, I think, some of the beauty of the culmination of all the technology is it's not just looking for these big old trees, it's actually looking for small underutilized trees and puts value on the forest system different than it was probably 20 years ago. Yeah, that's right. And it's exciting that it really brings a form of wood construction into dense urban environments that are currently dominated by traditional concrete and steel construction.

Chris Evans: Yes, concrete jungle.

Chris Edwards: Concrete jungle. Yeah, 100%. I mean, if you sit in a timber building, you can't help not like it.

Chris Evans: Just as a human, you like being there. And that's, I think, something innate to being human is that connection to nature and in today's society. That's not how a lot of our work or urban environments are are situated. And so to be able to express a structure, build more simply and get those those natural biophilic responses out of it, that's that's a big part of the draw for a mass timber on the commercial side of the construction side, or I guess real estate side. The other things, back to the CNC aspect, I think my background is from a commercial general contracting career. And what I think the beautiful thing is with mass timber is because of these elements are built on a CNC machine. You have to make decisions about where you're routing mechanical and electrical fire penetrations. You have to plan that stuff in advance. You actually have to plan it while you're doing the design of the building. Most of that coordination happens after the design is done, and it's up to the contractor to coordinate those trades to figure it out later. That actually contributes to a lot of waste in construction, more lengthy construction time. What we've seen as a competitive advantage from the commercial construction side is these buildings, when they're mass timber, it forces the design team, the subcontractors, all to coordinate the structure beforehand. When you produce that set of documents, that's a permit-ready set of documents, it's ready to be constructed. You have less people on site staring up the ceiling trying to figure out where stuff goes. You have a prettier looking finished building, but the speed of construction actually goes a lot quicker, and it's not because of the speed of the structure going up, it's the speed of all the follow on trades. We've seen job over job, 20% speed reduction. So 20% reduction in schedule for these large complex commercial jobs from using the mass timber system, see the benefits of that. So from a geeky construction side, I think it's really cool to see the mass timber movement starting to push towards more productive building techniques.

Chris Edwards: Yeah. And we tend to look at mass timber for all the environmental benefits, but you're coming at it from the construction side and seeing all the construction benefits from reduced construction time, the planning that's involved up front. It's interesting to me how it differs from, say, traditionally, what we call, quote, stick-framed building, where you've got contractors that are on site. They've got plans, but, like you said, decisions are made on the fly all the time, and there's a lot of back and forth consultation, it seems like, figuring things out as they go. It seems like there's probably less of that, but what's your perspective on that?

Chris Evans: A lot less of that type of interactions on the job site. And we had a neighbor on a project just reach out, write a letter, said, I was really nervous about this building going in on our block. And this building being built has been nothing but spectacular. It's been quiet on site, the speed of construction was fast. And that's the type of unsolicited feedback from somebody who's impacted by this. And I think that that's important, is like, it's quieter building, you're erecting these buildings faster, you're not having that impact to the local community for as long. All those things, I think, are really important when it comes down to how we build in our urban environments. And I definitely think that that was one of the motivations for us, I guess it was eight years ago, when really got into looking at, is mass timber, this viable structural solution that will compete with concrete or in steel? Or is it this cute little thing that's going to be a one-off that's done on a few projects here and there? And that was the big question that I had to answer. So I did, I pulled every article I could about heavy timber, mass timber, CLT, glulam and read those and tried to just get more well rounded on the subject. Ultimately came out saying, okay, I think this has legs and it could be, it could really take a hold as another structural system in the commercial construction industry. And that's, you know, when we went to our board and talked to them about, you know, starting this company and in growing it, we had this belief that everybody else would start to see this as a very viable alternative to these other construction methods for all those reasons, the biophilic reasons, the schedule, the overall aesthetics, and then also the sustainability side from the carbon sequestration side. And especially when compared to concrete and steel, this is a very sustainable and good solution for everybody at large to be using.

Chris Edwards: If I understand it correctly, it sounds like all the materials arrive at the job site, and then it's just a matter of putting all of the pieces together, but why do traditional construction processes not also engage in that level of upfront planning?

Chris Evans: I think there are some that do. A good example would be precast concrete. That is a good example of an industry. It's been around for a while that dials everything in, has good shop drawings, preplans, all that stuff out, but not every building is suitable for

precast concrete. And when you look, I guess, at the timber buildings, these are a prefabricated kit of parts. That's how they're delivered to the site. That's doable because if you look at like a multifamily structure that's stick-built with 2x6s and everything else, there's thousands and thousands of pieces on those projects. So to detail and plan and figure out every cut, one, you'd spend so much time doing it, doesn't make sense. You can do that. People do do that and prefab those wall systems and there are good approaches with that. But when you're coming to the post and beam mass timber type structures, there's a lot less moving parts and pieces. So you can invest that time into really figuring out the exact length and width and everything else for those parts of the structure with certainty. And I think because it makes the whole structure, all those other follow on trades can tie into that. What we've seen is those other follow on trades really start to do their own prefab. So we've seen our electricians prefab all their conduits and boxes because they know exactly where their holes are that they're going to be putting their materials into. So now they can use that as a way to speed up construction on their side. And that's actually a place where we see big speed up of construction. But I think of this whole thing as it's a set of Legos, usually a set of Legos that has a couple extra pieces in the box, but has instructions and blueprints on how to build it. And everything is there that you need. And it's organized in the package 1, 2, 3, 4, 5, 6, just like the trucks are coming out in the different number of trucks. And it's not as colorful as a Lego set, but it certainly delivers like that where everything is coordinated. And three year olds and four year olds and five year olds understand, they first learn how to build off this idea of looking at a visual print that tells them what to do without any words and shows them how this thing is going to be built. And that's how we deliver our buildings. It's the same thing. We give a set of plans that shows how this is going to be built, how these things are going to come together. And it really simplifies the process. It makes the build go faster, makes it more elegant. And overall, it's fun. I mean, it's fun to work in this because it's like taking that like childlike approach of, okay, we're building these big buildings, but we can also really have fun with it and have a good time. And it can be an enjoyable process. And we can make it enjoyable for everybody, you know, the whole way through from manufacturing the whole way down to the install side.

Chris Edwards: Is it more fun than assembling IKEA furniture?

Chris Evans: You know, that's fun. You know, that can be fun. Depends. Depends.

Chris Edwards: Yeah. Depends. Depends. But anyway, so we've talked a little bit about construction efficiency, but I can imagine that if you have these large buildings that are all wood construction, largely wood construction, there's some real aesthetically pleasing aspects to it as well. So what do architects and their clients say about these projects?

Chris Evans: I mean, architects love it. It's a dream. My first job out of school was really as a residential framing contractor. One of the things I really loved about being a residential framing contractor was, at the end of the day, you could really see your work. You can see the frame of a building is a really beautiful thing. It's got the natural elements of wood, sun coming through there, everything else. It's really satisfying. And I think these deliver like that, except they're not getting really covered up with drywall. You're permanently putting those on display. You're finding ways to let the sun come through and express the structure in different ways at different times of the day or different times of the year. And I think with that, that's probably what architects really like about it, is it allows for that connectivity to nature. It really does bring that outside inside in some respects and gives you that feel of being in a forest instead of being in a cubicle. Which I think everybody, nobody really likes being in a cubicle at the end of the day. They want to have some connectivity to the outside. And this is a great way to achieve that.

Chris Edwards: Yeah, drywall and fiberglass insulation and more drywall. That's not the most inviting environment. We all have it. We're sitting in a room that's that traditional type of construction. But some of us are dreaming of a day when we will have more natural wood in the built environment. So let's talk a little bit about performance structurally, the attributes of a mass timber building. What about earthquakes and fires? You mentioned fire, but it seems like concrete and steel, that must be a robust and really strong structure. So how does mass timber compare with that from an earthquake perspective?

Chris Evans: Yeah, I don't want to knock on concrete and steel because there's a good time and place for concrete, time and place for steel, absolutely. And there's beautiful structures made out of those products. And probably the foundations. Yeah, the foundations. At a minimum. Yeah, and most of these mass timber buildings, not all of them, but right now, like a lot of them are hybrid in some way. So usually the lateral system can be a wood shear wall system. It can be a CLT shear wall system. There's other types of wood systems. Like we did a 10-story shake table with like a rocking wall, which is kind of a really high-end seismic wood system for resilient buildings. Traditional concrete lateral systems and steel lateral systems are really good. I really look at the idea about value. Value is beyond cost. It's aesthetics plus function divided by cost. Okay, that's kind of the construction value equation is value equals aesthetics plus function divided by cost. Not just function, not just aesthetics. So if you see a concrete structure that performs a function, it keeps people upright on the floor above and the building protected, that's great. But there's probably a low aesthetic value for that. If you can substitute that for something like CLT structure and glulam, that provides the same function of building use and capability, but also has that added value of aesthetics, even if it's at a higher cost, you're getting a higher value out of that. And so I think that that's always the thing to be looking at

when making decisions for buildings. There's certain times where the value equation is, yeah, we should be using concrete all day long or steel all day long, but there's plenty of times and plenty of availability where instead of using those, you could derive higher value for the client, higher value for the building occupants by choosing timber over those traditional building methods because you could deliver higher value for maybe the same cost, maybe less cost, maybe incrementally more cost. But that's kind of how I look at it.

Chris Edwards: I like that. Aesthetics plus function divided by cost. That makes a lot of sense. Let's talk a little bit about the environmental benefits. You touched on it a little bit earlier. The opportunity to use, let's say, thinning from the national forest. And we have really, we've had a wildfire crisis on our federal lands here in the Pacific Northwest, and we need to be treating thousands and thousands more acres. And of course, those thinning treatments involve removing material. So you don't have to be harvesting old growth. You're talking about smaller logs being removed from the landscape. But because you're gluing all those pieces together, you're able to mimic and I'm guessing probably even outperform solid beams. If you think about a beam design, I'm not a structural engineer, but just from a high level, out of a glulam beam, you would need twice the size of log to get the same kind of span performance from a natural cut beam. And so it's really the glulam is efficient from a resource perspective that it can take a lot of different size trees and leverage the fiber from that.

Chris Evans: But it's also efficient from utilizing the fiber that you're getting in the best way. I mean, you're really coming in on that beam and using a select piece of high strength material for the bottom layer, and then the next high strength for the next layer up, and then some lower grade stuff for the sheer zone in between, and then a little bit more of high grade stuff on the top zone of the beam. And so you can really customize that performance by selecting the grading of those 2x members that are in there. And with a tree that you cut down and just cut into a beam, you don't get that. You have a lot of natural characteristics in that take away from the strength, like an old tree branch that was going through and creates a knot. That's going to lessen the structural performance of it. So the whole act of using glulam really helps lower what the fiber, the comparative fiber would be from like a solid beam design. So there's efficiency there and then efficiency with being able to use a wide range of sizes of tree, not just a huge diameter tree that's been growing in the forest for a long time.

Chris Edwards: Is all the lumber that you use tested and rated? Or are you able to buy just standard grades of lumber that are just sold in the market?

Chris Evans: So glulam is all about specialty graded lumber specifically for that process. It has to be dried to the right moisture content. It's very smooth the way it's plain so that it

can be laminated correctly. And then from the strength profile standpoint, it's graded for specifically for that use for for lamb stock use. So the stuff we use for glulam is not something you could go buy off the shelf at Home Depot. When you go to CLT, the whole idea of CLT was to take lower grade wood, number two and number three product that you would buy at a Home Depot. And through the process and certification process, be able to plane that out so that can be laminated and use that lower quality wood to create high strength structural panels. And that's really the beauty of CLT is it's not requiring a lot of high grade. It requires a lot of low grade material. Again, come back to like forest thinning. Most of the fiber in CLT is two by six. So five and a half inches, you know, finished. So you can you can get a lot of great fiber, high strength fiber from thinning processes and smaller logs and all that maybe underutilized type of material and be able to put it into this product to make a higher and better use and higher and better use that will be around for a long time. And I think that's the key when you get to the environmental side is your cutting and harvesting wood from the forest. But it matters what you're doing with it. So if you're using it for formwork and you spray diesel fuel all over it and you form up concrete, then its life in that state is very short. It might be used for a job, two jobs, depending on how big the job is. But at some point, you don't have a high level of reuse because it has oil and fuel over it from that form that so it doesn't bond to the concrete. It's usually going to be land filled at that point, not properly recycled or reused. It's going to start to decompose and go back to the atmosphere a lot quicker. Then taking a piece of wood, putting it into a building that's going to last 100, 200, 300 years. Now you're really deferring and storing that carbon and delaying its move into the atmosphere. And in its place, you're either thinned a forest and allowed other trees to sequester carbon faster or you're growing new forests that can do the same thing. And so I think that's where the nuances here is like the intent with these mass timber buildings. They're high-performing buildings. They're buildings that are going to be around for generations, not just for three months or six months, but you're really delaying that carbon going back into the atmosphere for hundreds of years.

Chris Edwards: Well, let's talk a little bit about public perception. And there are many aspects to this topic, but we could start with fire, circling back to the fire topic, public perception that wood burns, and perhaps some concerns about that. So maybe you could talk a little bit more about that.

Chris Evans: Yeah, I think the easy thing is back to building a campfire, is you would never start a campfire with an eight-inch log. And no human would do that successfully because you don't have the necessary tools to get ignition. And when you're building that fire, you need to build it with stuff that has a small volume, a high surface area. You can get the ignition pretty quickly. And that's really the difference between a building built with two by fours and two by six is a stick-built building, like you'd see in single-family home

construction, versus this mass timber building. The science is just different. And I think you can't just look at it as wood. You have to look at the science of how the wood comes together and the science of how things burn. I have pictures of a building that has wood beams, and then every other beam is a steel beam. It's one of these textile mills from the 1800s. It had a fire, and every other bay was collapsed. And it was the bay where there was the steel. Steel was twisted, deformed, and fell apart. And we don't hear a bunch of people saying that steel burns because people don't really think about it. But stuff inside buildings burn, and steel yields to that burning and collapses. And if the fireproofing falls off, then you're not protected. And with wood, it's a totally different story. You have that protection there all the time. And the simple design of having the mass, and that's the mass part of the timber, is the protection that really makes these safer buildings to be in and occupy. We have to get above the fact of thinking about just as wood and put some common sense into the thinking. If you really think that wood burns, go start a fire with a big round tree log and good luck without having an axe or anything else and having smaller stuff to really get that fire going.

Chris Edwards: So you've got the perception around fire. How about the perception of earthquake resilience? We started to talk a little bit about not all steel and concrete is necessarily bad. It's also utilized in some of your buildings as well. And certainly foundations are made out of concrete and steel. But how about earthquake resilience? How do mass timber buildings hold up?

Chris Evans: Mass timber buildings are half the weight of a concrete building. And lateral design is all about the mass of the building. And so concrete building that is twice the weight has to have twice the resistance seismically to restrain that weight in an earthquake. So seismic design in mass timber buildings is actually a lot easier. You have a much lighter building. You have much less loading in a seismic event that you have to restrain. And especially with seismic code recently being upgraded, it really puts a tax on the lateral design. That is another thing pushing mass timber to be even more affordable on the West Coast than concrete and steel because of its lightness when compared to those other products.

Chris Edwards: That's really interesting. So we've got fire, earthquakes. Let's talk a little bit about sustainability. It's been said that, well, hold on, mass timber has a lot of promise, but some activists are concerned about where that wood comes from. And so I would imagine that TimberLab, as a company, you're in the business of satisfying the demands and the needs of your clients. And those probably range when it comes to environmental considerations. How do you address those concerns?

Chris Evans: Yeah, I think there's a couple of components to this. One, we're growing more fiber and organ each year than we're utilizing. Mass timber is right now just a little blip of demand. It's not hugely impacting the overall demand curve in the market. But I would look at it as helping to stabilize, stabilize the economy, stabilize the demand for forest products. If we don't have demand for forest products, what we will see, which is much worse than temporary clear cut, we will see permanent deforestation. And permanent deforestation happens when there's not demand for forest products. And then a land owner makes the decision to permanently cut the trees and not use that land as a forest anymore. That would be a travesty. And so we have to have a balance to have the right demand for forest products so that we can manage the forests. I think as a society, nobody wants to see a day where we're coming and permanently cutting down a forest so that it can just be paved over and be a shopping mall or some other type of facility or piece of concrete or tract of land that's helping to urban sprawl. That's really, I think, the frame of reference that we look at from is like, we want to prevent this permanent deforestation, have good demand for forest products so that that industry is stabilized. Beyond that, make smart choices. Like, we don't look at a process to say if a process is good or bad. We go walk the forest with the landowner. We see how they're managing the forest. We see what their forestry harvesting plan is. And you can't just make snap judgments on all wood burns. Yes, wood burns, but you can't burn a huge log with a lighter. You have to start a fire, right? So you have to understand what the science is behind this. And that's what we do. We go and meet with the forest owners, try to understand more about what their management practices are, and make sure that they're subscribing to good management practices that look at the health of the forest long term.

Chris Edwards: Well, there's certainly no shortage of armchair forestry and armchair forest activism in the state of Oregon. And for those listening that aren't familiar, the Oregon Forest Practices Act, which just recently underwent a major revision through the Private Forest Accord, and is the most modern and up-to-date Forest Practices Act in the nation. That Forest Practices Act requires replanting. And a lot of folks, I'm always surprised at how many people don't know that. We're proud of our environmental record here in Oregon. It should also be noted that there are a number of different types of ownerships here in the state of Oregon. So while we have about two-thirds of our land is federally owned, with a very different management regime, that leaves about one-third of it privately owned. It's those private acres that are managed more for timber production. We all know that the federal forest used to produce a lot more timber, but because of the Spotted Owl and other issues, Northwest Forest Plan, that logging really curtailed, which, as a side note, is part of the big wildfire problem that we have right now. See my previous comment about forest thinning efforts and fuels treatments that are sorely needed. But on private lands in the

state of Oregon, that's really where most of the log supply is coming from, to meet the housing needs of not only Oregon and the Pacific Northwest, but a good part of the United States. And Oregon is the number one state for sustainable forestry in all of the United States. We're the leader in softwood lumber production, we're the leader in softwood plywood production, and we are the leader in acres under a habitat conservation plan once the private forest accord plan is approved. So now that I'm stepping off of my soapbox about sustainability, perhaps you could talk a little bit about what the challenges are to widespread adoption. Because as you mentioned, there hasn't been a whole lot of market penetration by mass timber. I mean, clearly, the opportunity is enormous, and we'd like to see more of that. I think it's not only good for our economy here in the state of Oregon, but it's just good for society. What needs to happen to get a little bit wider spread adoption of this technology?

Chris Evans: So, the first CLT panel is being used in the US, and I'll use CLT because everybody equates that to what mass timber is. It's not technically all about CLT, but 2011, and since 2011, we've seen this nearly 40% year-over-year growth. That's ebbed and flowed along the way, but that's a doubling of the market for mass timber every two years. We've continued to see, despite COVID, an increase year-over-year of the demand and use for mass timber. The hurdles to continuing widespread adoption are, there's a few, but one of them is the growth of the supply chain. So if we think about the growth of the supply chain, that's one. The second one is standardizing details and people just getting familiar with how to use it. So that's architects and structural engineers. And then three, just having enough of a supply chain of contractors and installers and secondary producers for that work. If you think about concrete and steel, they've had over 125 years of maturing that supply chain. And you can throw a rock and find an AISC steel fabricator. They're littered throughout the United States, where they are secondary producers of the steel industry of plate steel and beam shapes to be able to produce buildings. That's a very mature supply chain. The details are figured out in that. The engineering is figured out in that. There's not much new innovation in that business. We are sitting here at the beginning, 10 years in in the US, 30 years in when you consider Europe. But we're really still in the early stages of the next 100 years of development of these mass timber buildings for use in our built environment. So what simply needs to happen is continued investment into the supply chain. We started out as a secondary fabricator of products, other people were building. So we would buy glulam and CLT from other vendors, and then process those to get them into being kitaparts building components. There needs to be more companies like us doing that work across the United States. We are now investing in a large cross laminated timber facility in Millersburg. That will be the only CLT facility west of the Cascades in the US that can service the US, but service the whole I-5 corridor up and down the west coast and be a

primary supplier to Washington state, Oregon, California. And those types of companies need to be coming online, where they can sit in a good timber basket, use the resources that are already there, and put those into those products so that the supply chain is more localized. And all those things will continue to bring the price of the system more and more competitive with those traditional prices of concrete and steel. Right now in the West Coast, you see that mass timber structures are on par with concrete and steel structures from a cost standpoint. Ten years from now, you're going to see it where mass timber structures are the most cost effective way to build, most cost effective, most sustainable way to build, most large structures. So that's where we're tending to go. So supply chain needs to be filled out. The detailing side on the structural engineering and architectural side continues to need to be refined, but we have made in the past eight years, just so many strides down that road where this industry has really expanded very quickly in the past eight years that we've been focused on it. It is humming right now, even though the economy, I would say, is not at its peak growth rates, it's kind of moving along, especially the real estate market, since interest rates went up, has kind of really slowed down. But each year, Mass Timber takes more and more market share compared to those other systems that are out there. So it's still a growing industry, despite having a relatively flat construction market.

Chris Edwards: I imagine architects and structural engineers play a really critical role. And we've talked about the supply chain, but somebody has to imagine the design for the client, specify Mass Timber. What's happening on the design side? And what are you seeing?

Chris Evans: The designers love it. I had a colleague who said that Mass Timber is like crack for architects. Like they love it. They there's no doubt because it's cool and it's fun. It's a fun way to go in and look at how buildings need to go together. So from that side, nothing. Like the inspiration there, the desires there, the imagination there, the creativity is there. Where we've seen a lot of jobs stall out is on the general contractor side. The folks pricing it. It's an element of risk and unknown. And usually a general contractor is risk averse, and they are coming into the unknown trying to put enough of a price on it to make it where it doesn't seem like it's viable. We had a much different perception on it because we saw it as an advantage. If we can figure this out, we can gain an advantage over other people in the industry. And we're starting to see where other general contractors get it. They understand it. They're starting to find not how should we not make it work, but this is how we make it work. And I think that turn, I like to think that we were a leader in that across the nation of starting out from that GC perspective and really coming in saying, we're not against this, we're going to come in and figure it out, that we've seen a lot of other companies fall asuit, and we've seen a lot of general contractors really jump in to try to take ownership of it and do more of it. That change has happened over the past few years, and

we think that trend will continue. And that's really what's going to keep spiking up the use of this across the US.

Chris Edwards: Yeah, you've come a long way in just the last 10 years. I know 10 years ago, talking with folks in your sector, there was definitely more uncertainty among contractors. And because there's uncertainty among contractors, clients weren't maybe, you know, as enamored or weren't thinking about mass timber from the beginning. So it was sort of a chicken and egg thing. It's been my perception that the Tallwood Design Institute has played a critical role with OSU, you know, really pioneering the structural integrity side of the equation and University of Oregon pioneering the architectural design side of the equation. And those investments in our public universities have really helped, you know, spawn that growth.

Chris Evans: Yeah, absolutely. I think that, plus you look at some early adopters like DR. Johnson, putting in, you know, their CLT press down there that, you know, made the first domestically produced CLT panel installed, you know, from their facility there up in at Levers office, the architects in Portland. Like that's very significant. And this, the story of mass timber in America is definitely an Oregon story. Like Oregon had been a pioneer in this type of construction, had built a lot of the first buildings. I think the Portland Airport really showcases that and says here, you know, this is embodying what has happened in this city. And, you know, our hope is just to stand on the shoulders of those giants to help continue that legacy and help be a leader, you know, in the industry and help bring these, you know, keep bringing really good buildings to the built environment. And these, so these buildings can be last 100 or 200 years, 300 years. They should be long term buildings, not short term buildings. I know there's probably, we're talking about perceptions, perception that a wood rots, steel rots, concrete rots. I mean, if you've never seen spalding concrete from buildings, not protected from saltwater environments and everything, the rebar will expand and break apart those buildings. Steel buildings, if they get wet, they will rust, they will fall apart, they will yield to the environment. Any type of building structure will do that. And wood is no different. You have to make a smart building and protect the building structural elements, period. And if you do that, your buildings, no matter what they're made of, are going to last a long time. Wood is no exception to that.

Chris Edwards: Yeah, I've heard folks that try to criticize the carbon story of building with wood. And it's a really good carbon story. Assert that, well, you know, wood buildings, they only stand for 30 years or something like that. And back when I had Facebook, I'm no longer on Facebook, but back when I had Facebook, I decided to do an informal poll. And so I just said, hey, when was the house that you live in built? And I literally had over 100 responses. And everybody was saying, oh, yeah, my house was built in the 19 teens, and we live in a

house that was built in the 20s, and we lived in a house that was built in the 60s. And while I live in a new development, but it was clear, by no stretch of the imagination, could you assert that houses generally stand for about 30 years? Our communities are littered with homes that were built prior to World War II, and many post, you know, in that housing boom post-World War II, but they're a lot older than 30 years old. I graduated from college 30 years ago. You need well-built construction. That's as simple as it gets. And if you build structures well and protect them and maintain them, they can last a heck of a long time, way more than 30 years. We were talking, as a side note, on the carbon story, decomposition in the landfill because you brought it up earlier. Actually, I asked Tom DeLuca, Dean of the College of Forestry, OSU, about that, because one of these carbon papers, and I'm using air quotes, one of these reports that asserts that buildings aren't very long-standing, wood ends up in the landfill, it decomposes. He's a soil scientist and he takes students from his class to the landfill. They've arranged to have part of the landfill, you know, brought up, and they can read the print on a newspaper because it's capped, it's capped, and there's not the availability of oxygen down there. So things decompose much more slowly. That blew my mind. I had no idea that that was the case, but so that's something that he gets particularly excited about when people make that assertion that, oh, it goes to the landfill and it just immediately starts its decomposition. And clearly, there is some decomposition that happens in landfills, otherwise we wouldn't be able to capture methane from them. But it's not nearly the rate of decomposition that people tend to think. And so when we are managing our lands and we're harvesting, we're taking that carbon and locking it away in the built environment, increasingly in mass timber, and then we're replanting, it's really part of that carbon cycle that is sequestering carbon from the atmosphere much more aggressively than an unmanaged forest, which clearly does sequestra carbon. It is also growing and capturing carbon and locking it away until the next wildfire comes ripping through there and releases it all into the atmosphere. But that's a whole nother podcast. So let's get back to mass timber. So because we work with policy makers, whether at the Board of Forestry or in the Oregon Legislature, do you have any thoughts about what policy makers in Oregon could do to incentivize the win, win, win, win, win that is mass timber and the increased adoption and utilization here in Oregon?

Chris Evans: Sure. I think there's things that both local policy makers and state policy makers could look at doing. I'd say first, let's look at what other jurisdictions are doing nationally. Look at what California is doing with embodied carbon requirements for new buildings in that state. I think Denver and New York cities recently passed legislation that are focused on embodied carbon emissions and understanding and documenting those when you go in to start building buildings, which all incentivize the use of timber instead of highly emissive building components. I think someone once told me that the best procured

steel is equivalent to the worst procured wood. And choosing wood, even if it's not the best sourced and procured, is still a better choice when you're looking at these building systems. And I think we really have to be looking at this like from the big picture, taking a step back and saying, how do we help our built environment not be a carbon emitter, but carbon neutral and a carbon sink? And that's as a community, that's where we want to get to over time. Policy definitely plays a part in that. So local jurisdictions could help incentivize the use of mass timber by coming up with special zoning exceptions to incentivize that use. For example, allowing for increased density on a site that is using mass timber as a building element instead of concrete or steel would be something that's very achievable to do for local building officials, building codes and jurisdictions.

Chris Edwards: Yeah, it does seem like there could be some local incentives like that. And of course, the state issues bonds for construction of state finance projects, building projects every year. And we've seen a number of, whether it's the Knight Campus down at the University of Oregon, PV Hall at Oregon State University. I mean, there are certainly some projects that have been financed with public funds that have included mass timber in the past. Embodied carbon would certainly be an approach as well. Because like you said, the worst procured wood is better than the best procured steel. And that's really what we're talking about in the environmental wind, and then all the other winds that clearly mass timber represents for the state. So any final thoughts about where we're going with this sector?

Chris Evans: Yeah. Overall, super excited. I think super excited that the design community, owners of buildings, the general public, they are all very excited about different building products being used in our built environment. I never thought people would get that excited. I thought I was the only one that got excited about building products. But apparently, there's a lot of people that are excited about that and interested in where they live, where they work, where they exist. And I think that that's really cool, from taking a career focused on the built environment, to see that people do care where they sit. That's really exciting, encouraging, and motivational. I think we want to continue to be a player in there to provide good building alternatives and options for people and help get folks educated on what good decision-making is in that process. Also, we're really excited to bring engineered wood products manufacturing into Oregon by placing a CLT plant here in Millersburg. It's a really good thing for the local economy, for our economic development within the state, helping utilize our existing resources and infrastructure and our very capable workforce in the state that's already trained to work in mills. And especially as we see mills closing throughout the state, coming in to provide a spark, some energy, some stabilization to the engineered wood products sector, I think is really important for everybody that's Oregonian and even folks in Washington and California. I think this is a

really good thing for the region. So overall, excited, been really thankful for all the public and private support out there to help our business grow. And we just look forward to another 10 years of good growth and being able to make good products.

Chris Edwards: Yeah, that's great. It really is exciting to see the growth here in Oregon. If there is a state in which mass timber ought to be growing, it should be right here in Oregon. And you mentioned standing on the shoulders of giants. As far as I can tell, TimberLab is on the way. If you're not already the giant in the sector, you're on the way to becoming one of those giants. So we appreciate you sharing your perspective on this exciting growth of this sector.

Chris Evans: Awesome. Thank you.

Chris Edwards: I hope you enjoyed this episode. Be sure to check back for new content coming your way soon on the Forestry Smart Policy Podcast. And as always, if you have a question about this episode or something else, just drop us a note at podcast at ofic.com. And who knows, maybe in a future episode, we will address your question or whatever beef you may have with what we have presented.