

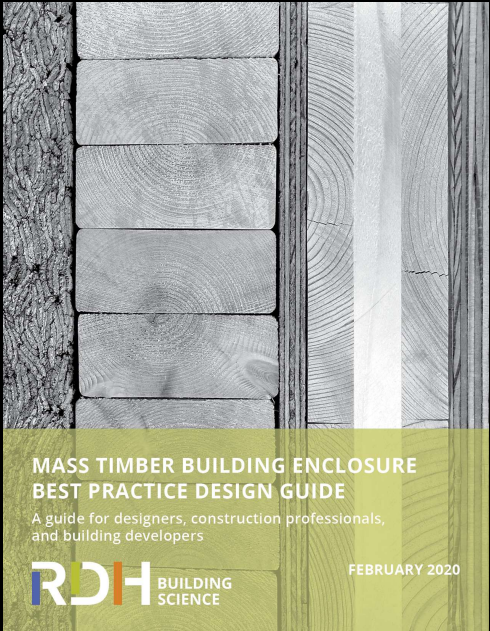


Moisture Management for Mass Timber Buildings

RDH Mass Timber Symposium: Seattle – February 11, 2020


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**MASS TIMBER BUILDING ENCLOSURE
BEST PRACTICE DESIGN GUIDE**

A guide for designers, construction professionals,
and building developers




FEBRUARY 2020

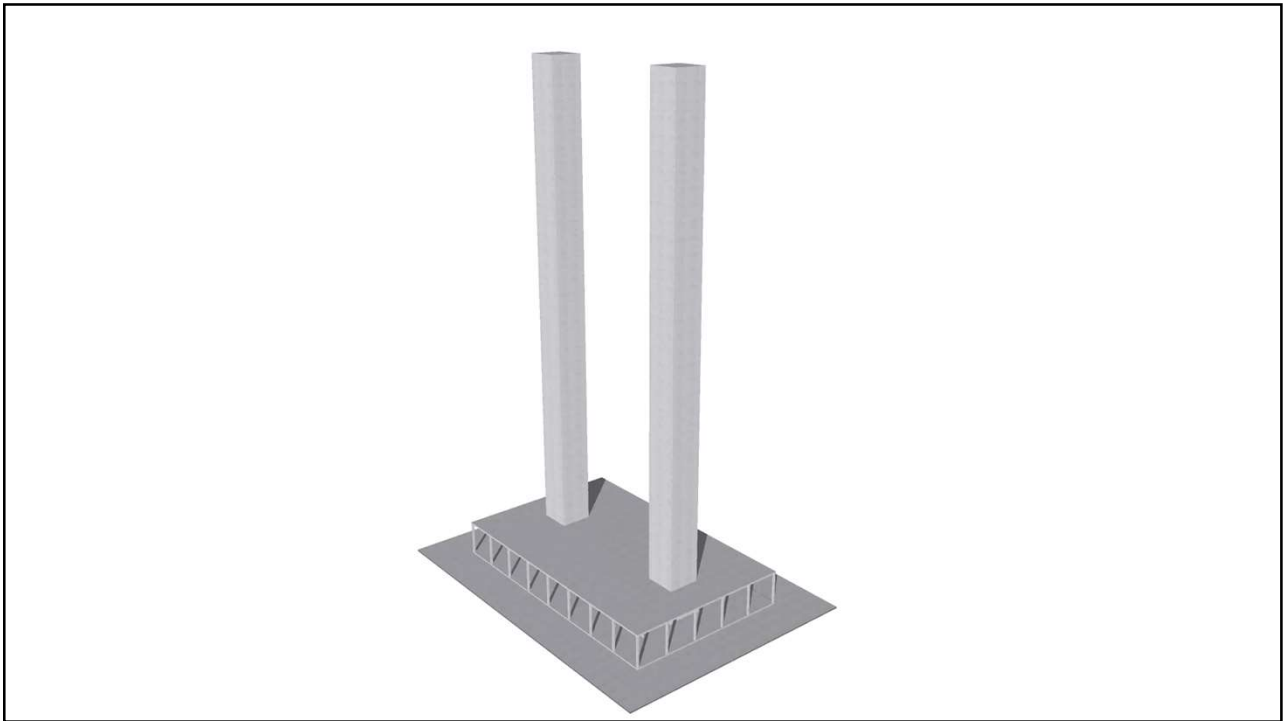
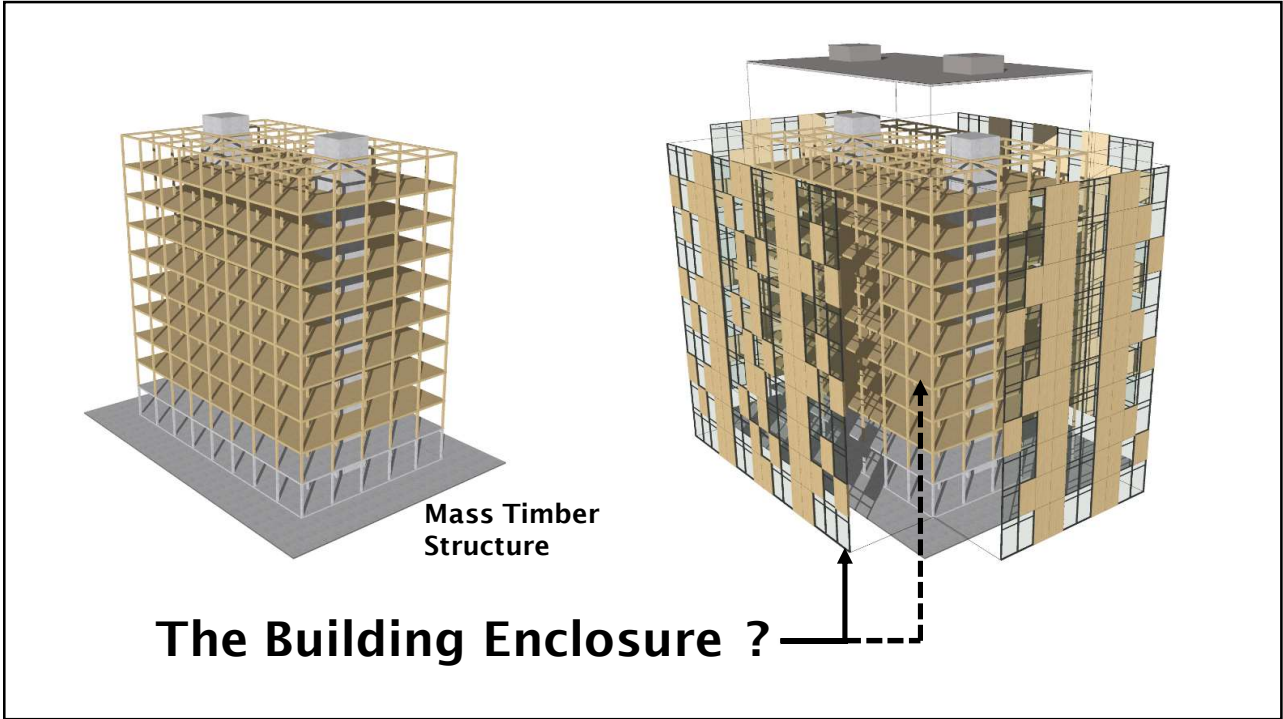


**MOISTURE RISK MANAGEMENT STRATEGIES
FOR MASS TIMBER BUILDINGS**

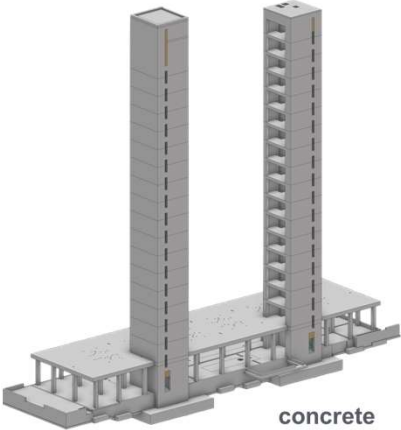
A guide for designers, construction professionals,
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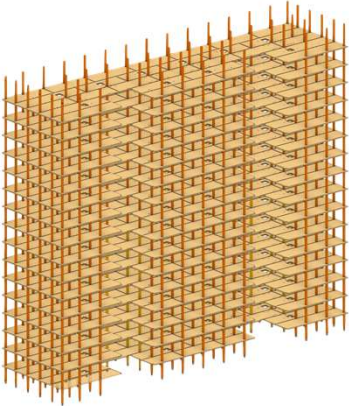
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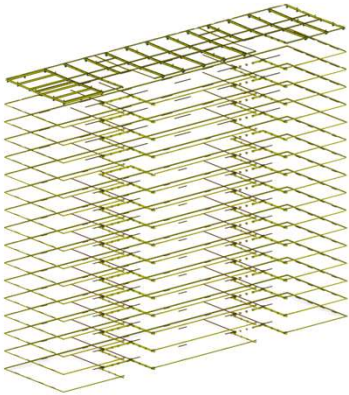
Use Wood Where Wood Makes Sense




concrete



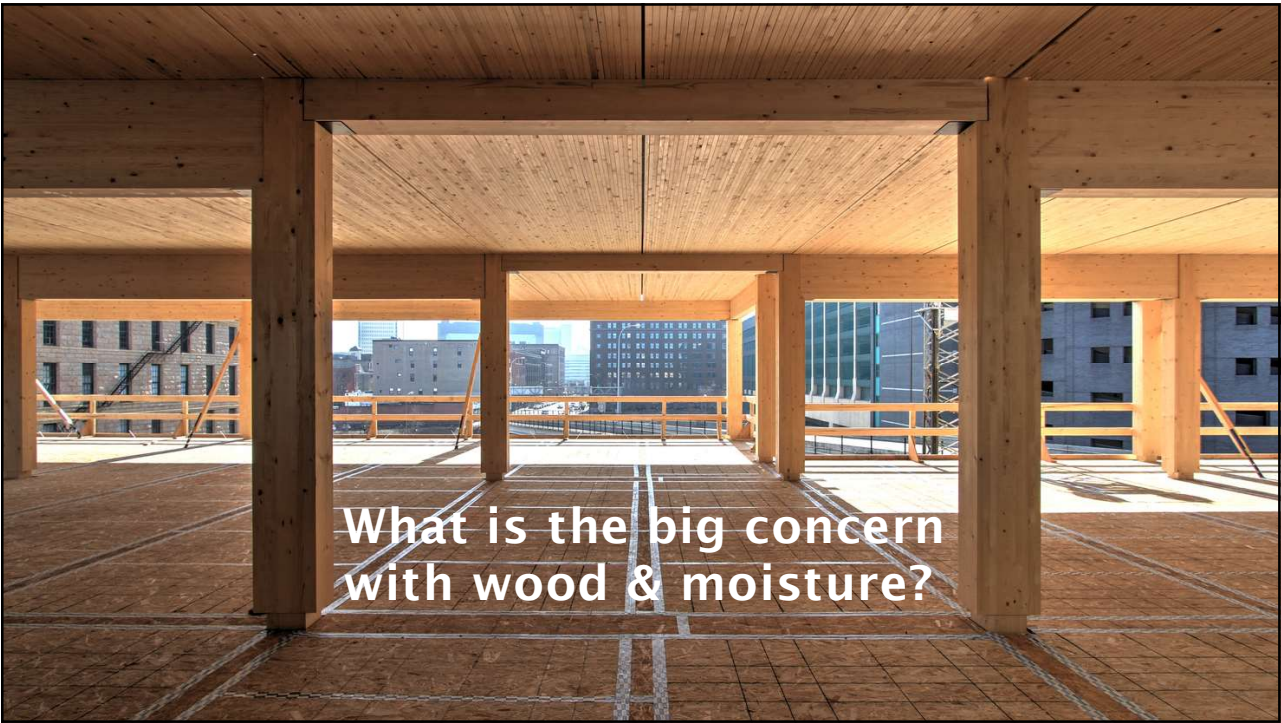
wood



steel

5





Moisture Risks to Mass Timber Buildings

→ Exposure to moisture during construction

- Supply
- Handling on site
- Construction sequence

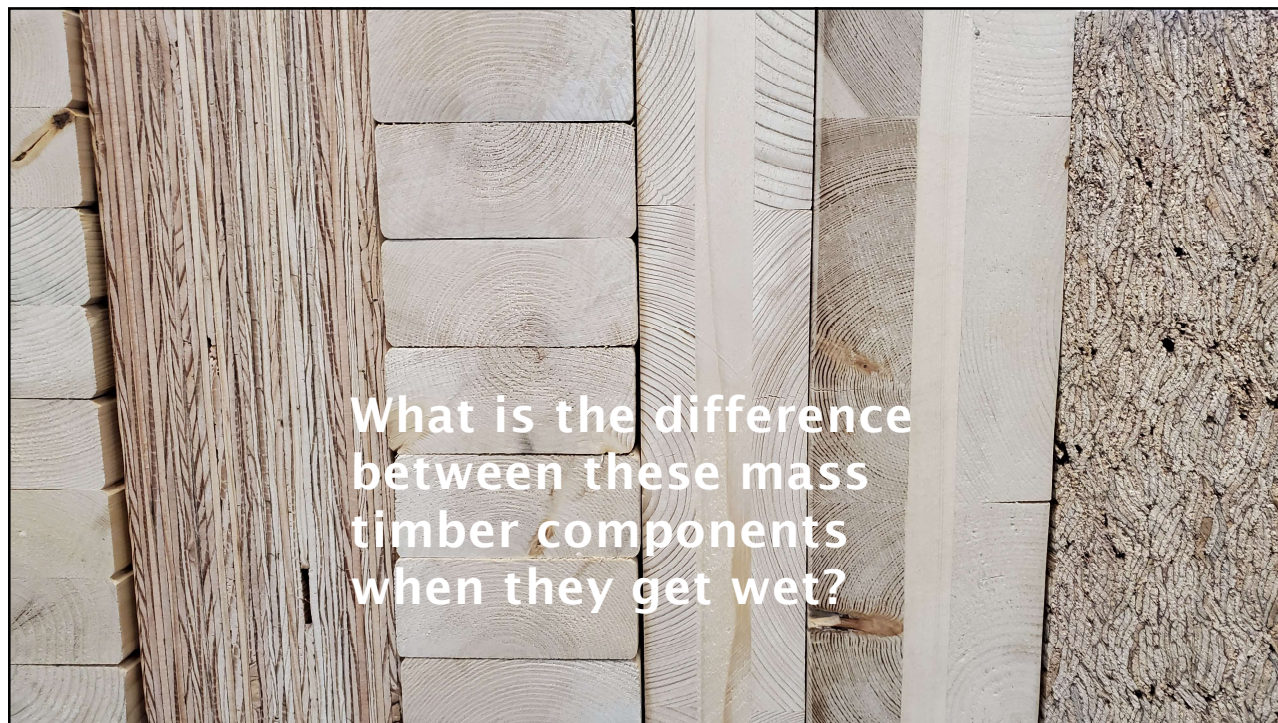


→ Exposure to moisture during operation

- Accidental water leaks (sprinklers/plumbing)
- Long-term small water leaks
- Relative humidity (too high or too low)



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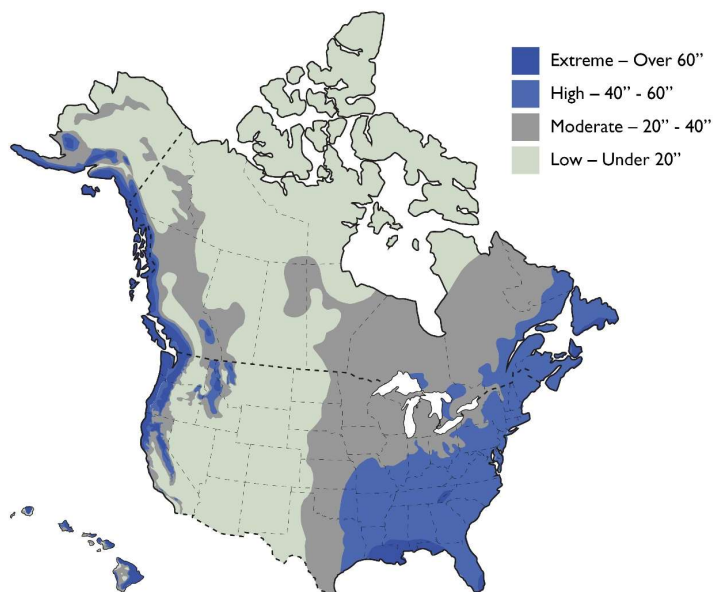


Risk Management:

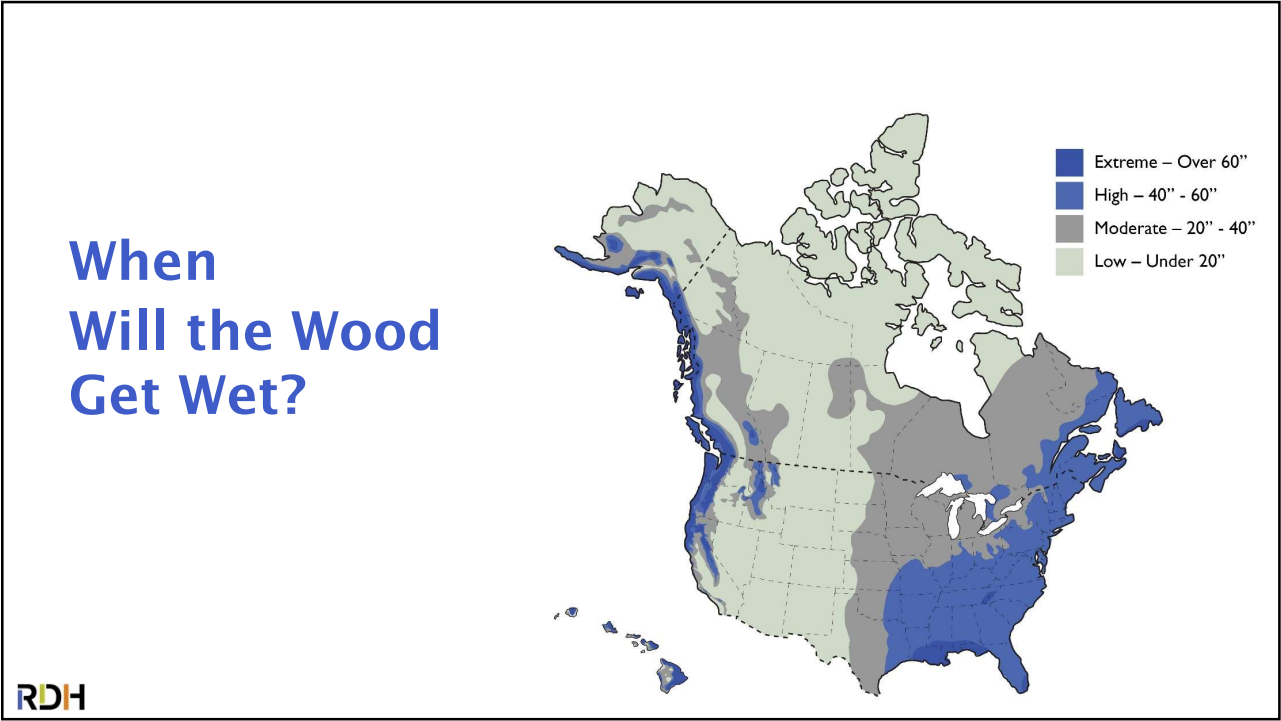
- **Design**
- **Construction**
- **Occupancy**

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**Will the Wood
Get Wet?**



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What do you mean the details matter?



risk management 101

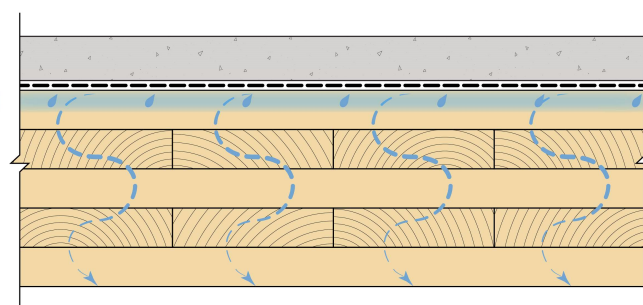












**wet concrete
on wet wood?**





How-to: Manage Moisture Risk

- Start planning early – design and assembly choices
 - Impact on architecture, structure, building enclosure, fire separation and acoustics
 - Consider multi-function materials (i.e. temporary roof later becomes functioning air barrier/vapor barrier or floor acoustic underlayment)
 - Consider schedule impacts of wet wood during construction (i.e. design away the delay?)
- Include requirement in specifications for general contractor and mass timber sub-contractor to provide & follow a written **Moisture Management Plan**
 - Responsibility of contractor or sub-trade
 - Plan for regular reviews of implementation (by 3rd party and/or BE Consultant, Architect, Structural Engineer)
 - Ask for mock-ups



How-to: Moisture Management Plans

- ✓ Step 1: Risk Evaluation - consider climate, rainfall, construction schedule, length of exposure of all mass timber floors/roof/walls, type of mass timber (CLT, NLT, etc.)
- ✓ Step 2: Factory applied coatings to exposed surfaces/edges/cores (CLT)
- ✓ Step 3: Pre-applied or field applied temporary or permanent membrane protection (NLT/CLT)?
- ✓ Step 4: Active water management team onsite to reduce uptake (small tarps, squeegees/vacuums etc.)
- ✓ Step 5: Whole building tarping & protection systems
- ✓ Step 6: Environmental drying
- ✓ Step 7: Mechanical drying contingency

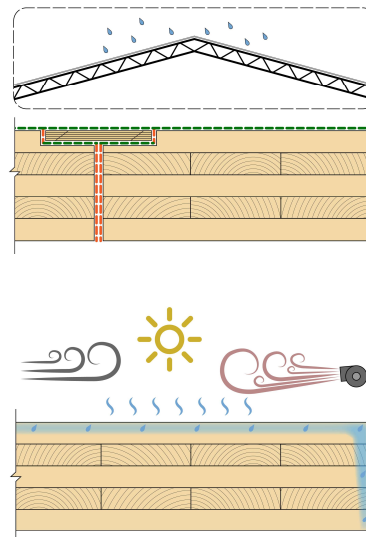


Figure 12 Moisture Management Planning Tool for CLT roof and floor assemblies.

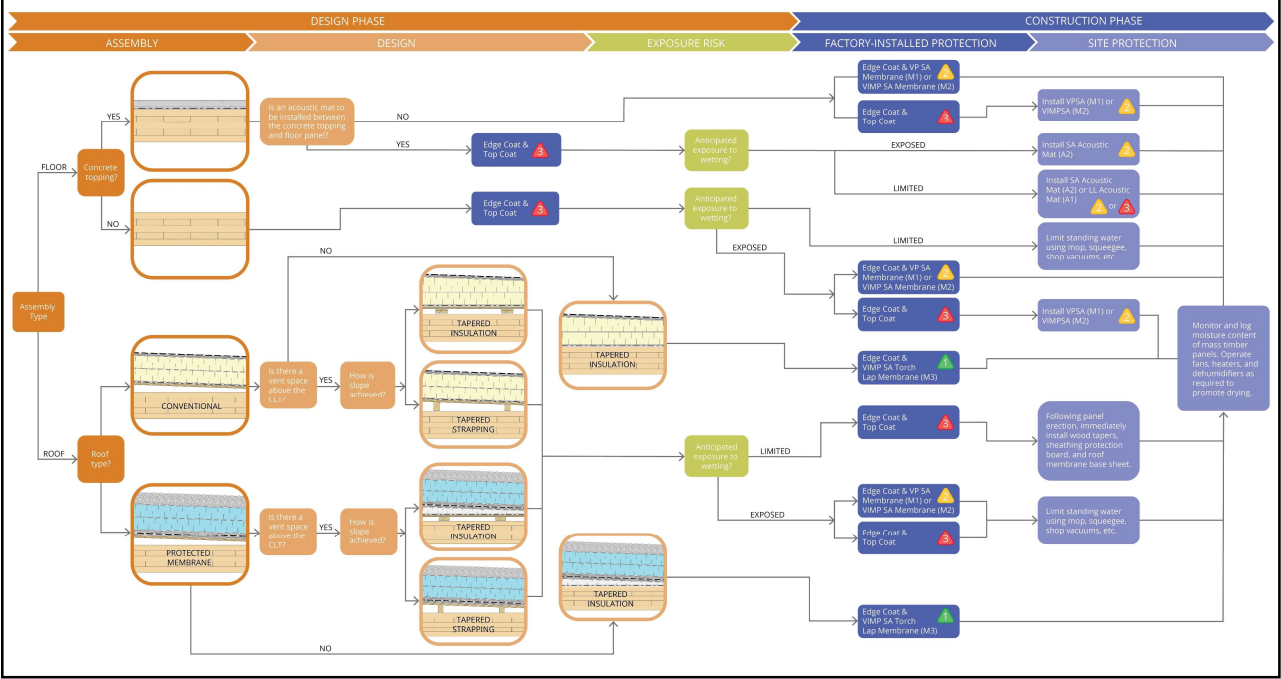
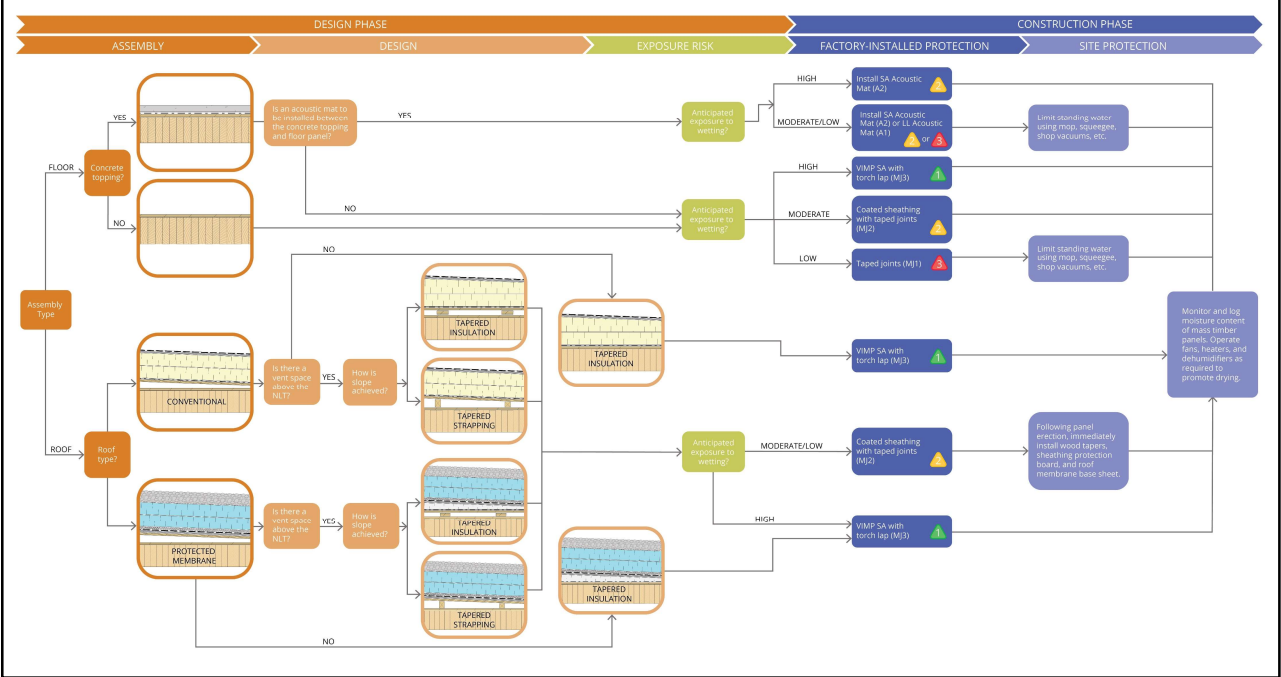


Figure 13 Moisture Management Planning Tool for NLT and DLT roof and floor assemblies.



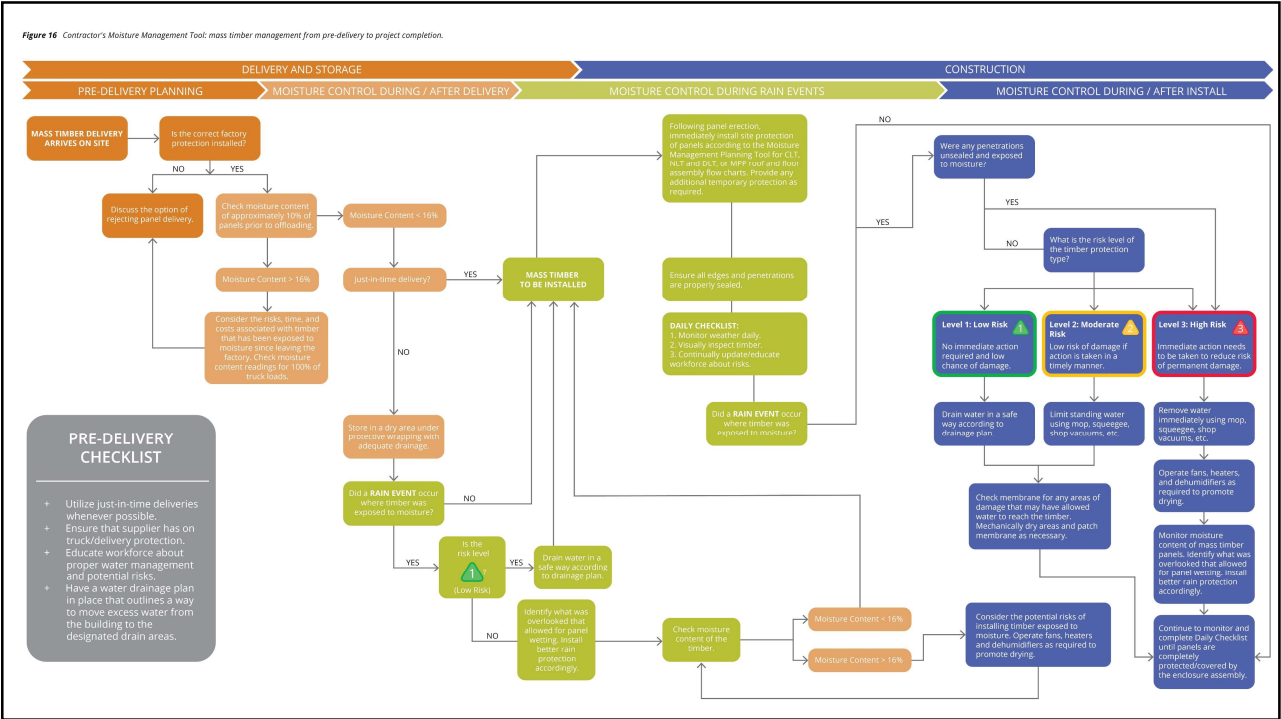
Protection Type	Protection Name	Description	Example Product	Risk Level
Coat	Edge Coat	High build paraffin edge protection sealer	Broda Check Stop or similar	ALL
	Top Coat	Hydrophobic wood sealer	Sansin KP-11 or similar	3
Membranes (CLT & MPP)	Membrane 1 (M1)	Vapor-permeable self-adhered (VP SA) membrane	VaproShield SlopeShield Plus with sealed laps or similar	2
	Membrane 2 (M2)	Vapor-impermeable self-adhered (VIMP SA) membrane	Textured or sanded impermeable peel and stick with sealed laps	2
	Membrane 3 (M3)	Vapor-impermeable self-adhered SBS membrane with torched laps (VIMP SA Torch Lap)	Soprema Elastophene Flam Stick with sealed laps or similar	1
Membranes & Joint Protection (NLT & DLT)	Membrane and Joint 1 (MJ1)	Membrane: None, sheathing is exposed Joint treatment: Taped and/or sealed	SIGA Wigluv, Rothoblaas Frost Band, ZIP flashing tape, or similar	3
	Membrane and Joint 2 (MJ2)	Membrane: Precoated, moisture-resistant bonded water-repellent sheathing Joint treatment: Taped and/or sealed	ZIP sheathing, ZIP flashing tape	2
	Membrane and Joint 3 (MJ3)	Membrane: Vapor-impermeable self-adhered (VIMP SA) SBS Joint treatment: Fully adhered or welded membrane (torched laps)	Soprema Elastophene Flam Stick with sealed laps or similar	1
Acoustic Mat	Acoustic Mat 1 (A1)	Acoustic loose-laid (LL) vapor-impermeable mat	Per acoustic design with sealed laps	3
	Acoustic Mat 2 (A2)	Acoustic self-adhered (SA) vapor-impermeable mat	Per acoustic design with sealed laps	2

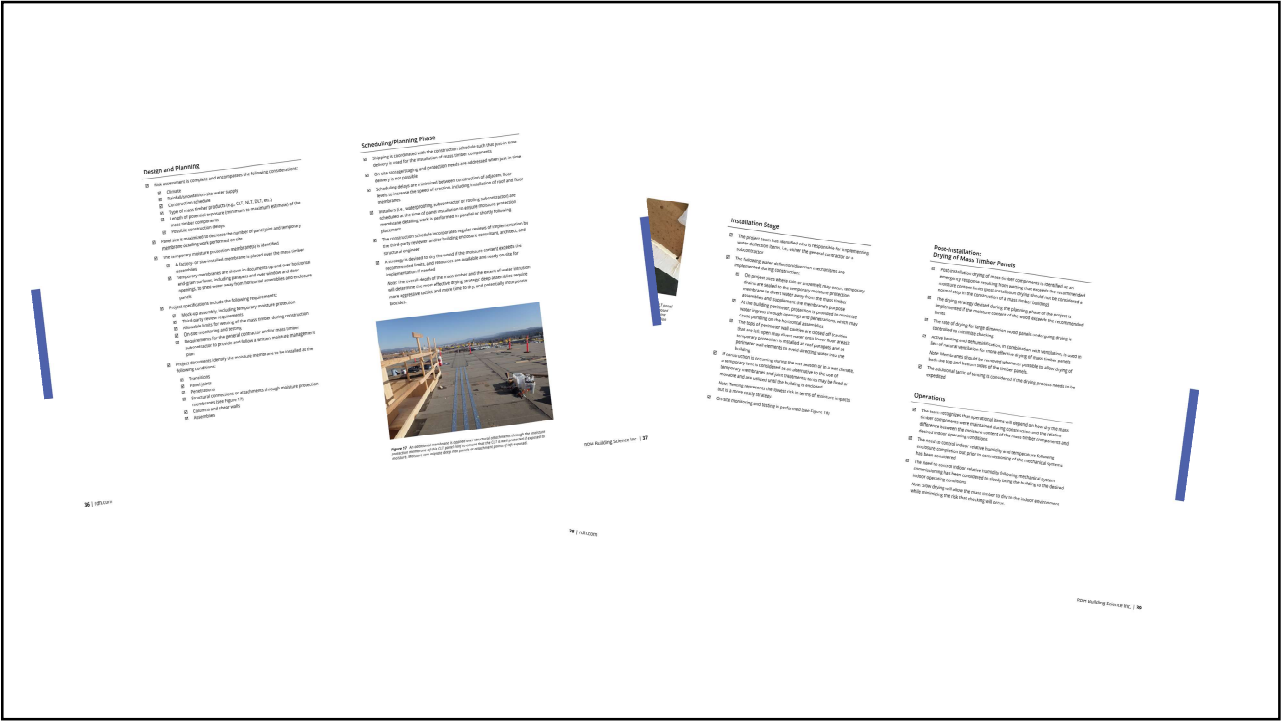
Legend

Risk Level 1: Low Risk
No immediate action required and low chance of damage.

Risk Level 2: Moderate Risk
Low risk of damage if action is taken in a timely manner.

Risk Level 3: High Risk
Immediate action needs to be taken to avoid the risk of permanent damage.





**Key Points:
Moisture
Management for
Mass Timber**

1. Plan During Design
2. Perform a Risk Evaluation
3. Develop a Construction Phase Moisture Plan & Get Buy In
4. Execute the Design & Moisture Management Plan
5. Monitor the Plan

