

MASS TIMBER TRAINING NETWORK

Advancing Trades for a Sustainable Future

Mass Timber Training Framework

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Project Sponsors

Natural Resources Canada — Green Construction Through Wood (GCWood) Program
British Columbia Institute of Technology | School of Construction & Environment

Fiscal Year 2025–26 | March 2026

Training Framework

Developing the Mass Timber Learning Outcomes

At the heart of the project’s curriculum work is a comprehensive set of over 80 mass timber learning outcomes, developed through an iterative, nationally validated process over four rounds of revision. The framework captures the skills and knowledge that participants in mass timber training need to demonstrate upon completion of training to contribute effectively to a mass timber construction project.

The outcomes are organized into nine core curriculum areas and structured across four expanding levels of mastery—from foundational awareness through to advanced application—making them adaptable for short courses, module inserts, or full program integration. They serve as the starting point for the 2 teaching frameworks outlined below and future curriculum development.

Participants

Over 100 MTAT Network members representing 51 organizations contributed to the development of the Learning Outcomes framework, including representatives of 30 Industry partners, 12 post-secondary institutions, 4 government/non-profit organizations, Red Seal Canada, a Carpentry Union, and two Indigenous partner organizations. Participants represented unique perspectives from across Canada, and shared training needs from 11 provinces and territories. The largest group of participants represented the industry in British Columbia, with 42% of contributors, then Ontario (22%), followed by Alberta (8%), Quebec (6%) and Manitoba (6%). The only two areas not represented were the Northwest Territories and Nunavut. Please see the project by the numbers page above for a more detailed list of contributors.

Methodology

The learning outcomes were developed collaboratively with network members using a modified Delphi methodology (Hesson, Kenney, McKenna, 2025) through network meetings and one-on-one consultations, then validated through an anonymous prioritization survey, additional rounds of individual consultation, and small-group validation sessions. Outcomes were also cross-referenced against the current (2022) [Red Seal Canada Carpentry occupational standard](#) (RSOS) to identify gaps and avoid duplication.

Numbering system:

The whole number indicates the mass timber learning outcome parent category:

- 1 Wood Science & Joinery Techniques
- 2 Mass Timber Materials
- 3 Pre-Construction Planning, Coordination & Collaboration
- 4 CAD & Digital Project Delivery
- 5 Tools for Mass Timber Installation
- 6 Hardware / Connections for Mass Timber
- 7 Moisture Management
- 8 Working on Site (mass timber jobsite readiness)
- 9 Rigging

The first decimal place notes the level at which the learning outcome appears (1-4) The progression follows Red Seal Occupational Standard (RSOS) logic:

- Level 1 = foundational knowledge & basic skills
- Level 2 = application & interpretation
- Level 3 = analysis & coordination
- Level 4 = integration, evaluation, leadership

The second decimal place is an item number. Learning outcomes highlighted in orange are covered in the current Carpentry Red Seal program and can be omitted in training where carpentry training is a prerequisite.

Mass Timber Trades Curriculum Learning Outcomes

This list of learning outcomes captures the skills and knowledge that trades students in mass timber (MT) training need to demonstrate upon completion of training in order to contribute to a mass timber construction project.

| Wood Science & Joinery Techniques - 1 | |
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| <p>1.11 Describe the cultural significance and history of wood.</p> <p>1.12 Explain wood as a living material and its basic anatomical structure (earlywood/latewood, cell composition, moisture states).</p> <p>1.13 Identify grain direction, wood species, and cuts (flat/vertical).</p> <p>1.14 Explain how grain orientation affects cutting, fastening, and finishing.</p> <p>1.21 Explain dimensional changes in wood from humidity/temperature.</p> <p>1.22 Describe load transfer implications of grain orientation.</p> <p>1.23 Compare sustainability properties of MT species and products.</p> <p>1.31 Analyze how environmental conditions (moisture, UV, fire) affect wood performance & MT performance</p> <p>1.32 Explain char layer</p> <p>1.41 Evaluate life-cycle performance, long-term durability risks, and maintenance strategies for MT structural elements.</p> | <p>1.15 Read grain orientation in solid wood and align cutting/fastening accordingly.</p> <p>1.16 Identify and fit patches using basic joinery techniques.</p> <p>1.17 Identify cut of wood (e.g. flat vs. vertical grain)</p> <p>1.24 Repair surface damage in MT using steaming, sanding, and basic refinish techniques.</p> <p>1.25 Assess grain + machining direction to perform precise joinery operations.</p> <p>1.33 Conduct field assessments of engineered members (CLT, glulam, LVL, MPP) for deterioration, delamination, char exposure, checking, and moisture-related issues.</p> <p>1.42. Develop remediation plans for damaged MT components, including patching, refinishing, and moisture correction steps.</p> |
| Mass Timber Materials - 2 | |
| <p>2.11 Identify CLT, GLT, DLT, NLT, MPP, SCL products and their uses.</p> <p>2.12 Describe benefits of MT in sustainability and construction performance.</p> <p>2.21 Evaluate the sustainability, span capacity, and manufacturing processes of MT products.</p> <p>2.22 Describe science of MT manufacturing (including moisture fundamentals).</p> <p>2.31 Investigate emerging MT products and hybrid systems.</p> <p>2.41 Assess how MT product selection affects constructability, sequencing, tolerances, and long-term performance.</p> <p>2.42 Evaluate tolerance differences between materials used on a MT build</p> | <p>2.13 Identify MT products in shop drawings.</p> <p>2.23 Apply safe handling, temporary protection, and storage procedures for MT materials.</p> <p>2.32 Coordinate MT material handling logistics within a multi-trade environment.</p> <p>2.43 Recommend MT material solutions for project-specific needs.</p> <p>2.44 Calculate tolerance differences between materials used on a MT build.</p> |

| Pre-Construction Planning, Coordination & Collaboration - 3 | |
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| <p>3.11 Identify stages of a MT project (pre-planning, fabrication, mobilization, installation).</p> <p>3.12 Identify benefits of an off-site construction model for MT.</p> <p>3.13 Identify practices contributing to psychological and cultural safety on a highly collaborative, interdisciplinary site. / MT project.</p> <p>3.21 Explain preconstruction sequencing, supply-chain coordination, and BIM roles on a MT project.</p> <p>3.22 Describe differences between MT roles and traditional construction roles.</p> <p>3.31 Analyze expectations for collaboration (design-phase input, clash-detection, timeline impacts) on MT projects.</p> <p>3.41 Evaluate how design-phase decisions affect cost, sequencing, and downstream dependencies on MT projects</p> | <p>3.14 Use respectful, inclusive language in team communication and trades collaboration.</p> <p>3.23 Participate in collaborative processes (early coordination, design intent communication).</p> <p>3.32 Coordinate delivery, staging, and on-site movement of MT components.</p> <p>3.33 Apply strategies from respectful-workplace training to real project scenarios.</p> <p>3.42 Create a MT construction project timeline showing impacts of deviations and required cross-trade mitigation measures.</p> |
| CAD & Digital Project Delivery - 4 | |
| <p>4.11 Identify BIM principles and coordination workflows for MT/ offsite projects.</p> <p>4.12 Explain value of pre-site planning and 3D model trust.</p> <p>4.21 Explain use of 3D models for sequencing and constructability in offsite construction</p> <p>4.22 Interpret engineered bracing plans for MT.</p> <p>4.31 Analyze digital model elements for staging and structural feasibility.</p> <p>4.41 Evaluate coordination workflows to identify potential conflicts in prefabricated assemblies.</p> | <p>4.13 Navigate the 3D model of a structure.</p> <p>4.23 Create basic CAD elements.</p> <p>4.24 Extract layout info from 3D models.</p> <p>4.32 Use digital layout tools for bracing and panel alignment.</p> <p>4.33 Read/interpret MT shop drawings and assembly diagrams.</p> <p>4.42 Create model-based strategies for installation sequencing or field verification of MT.</p> |
| Tools for Mass Timber Installation - 5 | |
| <p>5.11 Identify specialized MT tools and hazards.</p> <p>5.12 Describe saw blades, drill bits, and machining properties.</p> <p>5.21 Explain how machining methods relate to tolerances and surface finish for MT.</p> <p>5.31 Assess tool selection needs for complex MT connections or repairs.</p> <p>5.41 Evaluate quality of tool-based fabrication work.</p> | <p>5.13 Operate basic MT power and hand tools.</p> <p>5.14 Chisel recess corners accurately.</p> <p>5.22 Shape, profile, and finish surfaces to tolerances.</p> <p>5.23 Fabricate jigs and demonstrate tool proficiency.</p> <p>5.32 Fabricate and fit advanced patch repairs for MT</p> <p>5.42 Develop tool-use protocols for advanced MT tasks (specialty cutting, recessing, shaping).</p> |

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| Hardware / Connections for Mass Timber - 6 | |
| <p>6.11 Identify MT building components, hardware, and fasteners.</p> <p>6.21 Explain torque effects, ductility, and connection behaviour.</p> <p>6.22 Interpret shop-drawing connection details.</p> <p>6.31 Analyze connection tolerances vs. conventional carpentry tolerances.</p> <p>6.32 Explain shear/tension forces and their effect on MT installation.</p> <p>6.41 Evaluate connection strategies for MT assemblies, including fire, seismic, and long-term considerations.</p> | <p>6.12 Install standard MT fasteners to specification.</p> <p>6.23 Install MT connectors (knife plates, hangers, drag straps).</p> <p>6.24 Install MT screws at angles correctly.</p> <p>6.33 Troubleshoot and repair MT connection issues.</p> <p>6.42 Create connection execution plans for complex MT assemblies.</p> |
| Moisture Management - 7 | |
| <p>7.11 Describe mold conditions, moisture challenges, and protective wraps for MT.</p> <p>7.12 Understand climate zones.</p> <p>7.21 Explain impacts of saturation and moisture penetration on MT assemblies.</p> <p>7.31 Analyze causes and consequences of on-site moisture exposure of MT materials.</p> <p>7.41 Develop moisture management strategies for the full construction cycle.</p> | <p>7.13 Install moisture protection materials.</p> <p>7.14 Calibrate moisture meters.</p> <p>7.22 Monitor moisture during concrete topping or slab installation.</p> <p>7.32 Implement moisture mitigation and tracking protocols.</p> <p>7.42 Assign moisture-management responsibilities to stakeholders and coordinate onsite processes.</p> |
| Working on Site (mass timber jobsite readiness) - 8 | |
| <p>8.11 Identify scope of work and MT-specific risks.</p> <p>8.12 Describe unique considerations for site organization and sequencing of MT projects</p> <p>8.21 Explain logistics, tolerances, and coordination with other trades.</p> <p>8.31 Analyze site workflows and trade interactions.</p> <p>8.32 Explain the importance of confirming elevation measurements, with a focus on measurements unique to MT builds</p> <p>8.41 Identify sequencing optimizations and risk mitigations at system level.</p> | <p>8.13 Use PPE appropriate for a MT site</p> <p>8.14 Conduct Field Level Risk Assessments.</p> <p>8.15 Survey control points.</p> <p>8.22 Use total station for layout.</p> <p>8.23 Install membranes / fire protection.</p> <p>8.33 Develop task-specific work plans for MT projects.</p> <p>8.34 Confirm as built measurements with architectural drawings.</p> <p>8.42 Execute multi-trade coordination based on site constraints.</p> |
| Rigging - 9 | |

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| <p>9.11 Identify rigging equipment, hand signals, knots, fall-protection basics for MT.</p> <p>9.21 Describe considerations for vertical member tipping and CG balance.</p> <p>9.22 Identify different rigging slings, hardware, and below-the-hook lifting devices.</p> <p>9.31 Analyze rigging configurations for MT load scenarios.</p> <p>9.32 Describe methods and considerations for handling and control of MT loads</p> <p>9.33 Describe methods for identifying centers of gravity and load balance in large wood components</p> <p>9.41 Calculate loads and select appropriate rigging configurations for engineered assemblies.</p> | <p>9.12 Perform hand signals, tie knots, prepare and secure loads, use tag lines, locate lifting points.</p> <p>9.13 Apply lifting practices for cranes</p> <p>9.23 Land/position MT elements precisely.</p> <p>9.24 Create a lift plan for a MT beam</p> <p>9.25 Calculate load weights for MT</p> <p>9.26 Apply lifting practices for multiple-crane sites</p> <p>9.34 Operate rigging tools (clutches, slings) and implement safe lift plans.</p> <p>9.35 Find center of gravity on a rectilinear panel</p> <p>9.36 Accurately install lifting points on a rectilinear panel</p> <p>9.41 Create a fall protection plan for a medium sized crew</p> <p>9.42 Create a lifting plan for a just in time delivery of various panels and beams</p> |
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Framework 1: Mass Timber Integration into Harmonized Carpentry Apprenticeship Training Red Seal Occupational Standards

The below table is a combination of 2 tables from the Red Seal Occupational Standards: Carpenter Task Matrix (*page 19 RSOS*) and Harmonization of Apprenticeship Training (*page 24 RSOS*). These sequenced topics have then been mapped onto the Mass Timber (MT) Learning outcomes table. The column “Mass Timber learning outcomes mapped onto existing RSOS tasks” lists Mass timber learning outcomes that could naturally fit into existing RSOS learning outcome and task categories. The column “Mass Timber learning outcomes that don’t map onto existing RSOS tasks” includes learning outcomes that are currently outside the scope of trade as defined by the existing RSOS for Carpenters and would require additional training. A program review and addition of these learning outcomes to the trade is recommended.

Numbering system:

The numbers in orange indicate a MT learning outcome. Whole numbers indicate learning outcome parent category (*see learning outcomes table*). First decimal place notes level following RSOS logic:

Level 1 = foundational knowledge & basic skills

Level 2 = application & interpretation

Level 3 = analysis & coordination

Level 4 = integration, evaluation, leadership

The second decimal place is an item number. The letter – numbering system not highlighted in orange is part of the RSOS task matrix.

For example: B-5.01 *Interprets project drawings* **4.11, 4.12**

- RSOS Task B5: *Interprets documentation - Level 1- foundational knowledge*)

- Corresponding items: **4.11** Identify BIM principles and coordination workflows. **4.12** Explain value of pre-site planning and 3D model trust.

| A – Performs common occupational skills - 12% | | | | | | |
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| Task | Level 1 | Level 2 | Level 3 | Level 4 | Mass Timber (MT) learning outcomes mapped across existing RSOS tasks | Mass Timber (MT) learning outcomes that don't map across existing RSOS tasks |
| Task A-1 Uses and maintains tools and equipment 32% | <p>A-1.01 Uses hand, power and pneumatic tools – 1.14, 1.15, 1.16, 5.11, 5.12, 5.13, 5.14</p> <p>A-1.02 Uses stationary tools</p> <p>A-1.03 Uses powder-actuated tools</p> <p>A-1.04 Uses lifting, rigging and hoisting equipment - 9.11, 9.12, 9.13, 9.22</p> <p>A-1.05 Uses layout instruments and equipment – 8.13, 8.14, 8.15, 8.22</p> <p>A-1.06 Uses tack welding equipment (Not Common Core)</p> <p>A-1.07 Uses torch cutting equipment (Not Common Core)</p> | <p>A-1.05 Uses layout instruments and equipment - 8.22</p> | | | <p>1.14 Explain how grain orientation affects cutting, fastening, and finishing</p> <p>1.15 Read grain orientation in solid wood and align cutting/fastening accordingly.</p> <p>1.16 Identify and fit patches using basic joinery techniques.</p> <p>5.11 Identify specialized MT tools and hazards.</p> <p>5.12 Describe saw blades, drill bits, and machining properties.</p> <p>5.13 Operate basic MT power and hand tools.</p> <p>5.14 Chisel recess corners accurately.</p> <p>8.14 Conduct Field Level Risk Assessments.</p> <p>8.15 Survey control points.</p> <p>8.22 Use total station for layout</p> <p>9.11 Identify rigging equipment, hand signals, knots, fall-protection basics.</p> <p>9.12 Perform hand signals, tie knots, prepare and secure loads, use tag lines, locate lifting points.</p> <p>9.13 Apply lifting practices for cranes</p> <p>9.22 Identify different rigging slings, hardware, and below-the-hook lifting devices.</p> | <p>9.23 Land/position MT elements precisely.</p> <p>9.24 Create a lift plan for a mass timber beam</p> <p>9.25 Calculate load weights</p> <p>9.26 Apply lifting practices for multiple crane sites</p> <p>9.31 Analyze rigging configurations for load scenarios.</p> <p>9.32 Describe methods and considerations for handling and control of mass timber loads</p> <p>9.33 Describe methods for identifying centers of gravity and load balance in large wood components</p> <p>9.34 Operate rigging tools (clutches, slings) and implement safe lift plans.</p> <p>9.35 Find center of gravity on a rectilinear panel</p> <p>9.36 Accurately instal lifting points on a rectilinear panel</p> <p>9.41 Calculate loads and select appropriate rigging configurations for engineered assemblies.</p> <p>9.42 Create a fall protection plan for a medium sized crew</p> <p>9.43 Create a lifting plan for a just in time delivery of various panel and beams</p> |
| Task A-2 Performs safety-related activities 26% | <p>A-2.01 Uses personal protective equipment (PPE) and safety</p> | | | | <p>8.11 Identify scope of work and MT-specific risks</p> <p>8.13 Use PPE</p> | |

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| | equipment – 8.11, 8.13 A-2.02 Maintains safe work environment | | | | | |
| Task A-3 Builds and uses temporary access structures 26% | A-3.01 Uses stationary access equipment A-3.02 Uses mobile access equipment A-3.03 Erects/dismantles scaffolding A-3.04 Modifies scaffolding | | | | | |
| Task A-4 Uses communication and mentoring techniques 16% | A-4.01 Uses communication techniques - 3.13, 3.14 | | | A-4.02 Uses mentoring techniques - 3.33 | 3.13 Identify practices contributing to psychological and cultural safety required for the high level of interprofessional collaboration on a MT project 3.14 Demonstrate professionalism through use of respectful, inclusive language in team communication. 3.33 Apply strategies from respectful-workplace training to real project scenarios. | |
| B – Performs planning and layout - 14% | | | | | | |
| Task | Level 1 | Level 2 | Level 3 | Level 4 | Mass Timber learning outcomes mapped across existing RSOS | Mass Timber learning outcomes that don't map across existing RSOS |
| Task B-5 Interprets documentation 35% | B-5.01 Interprets project drawings 2.13, 4.11, 4.12, 4.13 B-5.02 Interprets specifications 4.33 B-5.03 Interprets safety | | | | 2.13 Identify mass timber products in shop drawings. 4.11 Identify BIM principles and coordination workflows. 4.12 Explain value of pre-site planning and 3D model trust. 4.13 Navigate a 3D model. 4.33 Read/interpret MT shop drawings and assembly diagrams. | 3.11 Identify stages of a MT project (pre-planning, fabrication, mobilization, installation). 3.12 Identify benefits of an off-site construction model. |

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| | documentation 8.14 B-5.04 Interprets workplace documentation | | | | 8.14 Conduct Field Level Risk Assessments. | |
| Task B-6 Organizes work 24% | | | | B-6.01 Schedules work sequence 4.41, 4.42, 8.32 B-6.02 Performs site preparation 8.41 B-6.03 Performs quantity takeoff B-6.04 Organizes material 4.41 | 4.41 Evaluate coordination workflows to identify potential conflicts in prefabricated assemblies. 4.42 Create model-based strategies for installation sequencing or field verification. 8.21 Explain logistics, tolerances, and coordination with other trades. 8.32 Explain the importance unique to mass timber builds of confirming elevation measurements 8.41 Identify sequencing optimizations and risk mitigations at system level. | 3.41 Evaluate how design-phase decisions affect cost, sequencing, and downstream dependencies. 3.42 Create a construction timeline showing impacts of deviations and required cross-trade mitigation measures. 8.42 Execute multi-trade coordination based on site constraints. |
| Task B-7 Performs layout 41% | B-7.01 Performs site layout 8.11, 8.12 B-7.02 Lays out concrete formwork B-7.03 Lays out floors B-7.04 Lays out decks B-7.05 Lays out walls B-7.06 Lays out ceilings B-7.07 Lays out roofs | B-7.01 Performs site layout 4.22, 4.24 B-7.03 Lays out floors B-7.05 Lays out walls B-7.06 Lays out ceilings B-7.07 Lays out roofs B-7.08 Lays out stairs | B-7.02 Lays out concrete formwork B-7.03 Lays out floors B-7.06 Lays out ceilings B-7.07 Lays out roofs B-7.08 Lays out stairs B-7.09 Lays out balustrades | B-7.03 Lays out floors B-7.07 Lays out roofs B-7.08 Lays out stairs B-7.09 Lays out balustrades | 4.22 Interpret engineered bracing plans. 4.24 Extract layout info from models. 8.11 Identify scope of work and MT-specific risks. 8.12 Describe site organization and sequencing. | 3.21 Explain preconstruction sequencing, supply-chain coordination, and BIM roles. 3.22 Describe differences between MT roles and traditional construction roles. 3.23 Participate in collaborative processes (early coordination, design intent communication). 3.31 Analyze expectations for collaboration (design-phase input, clash-detection, timeline impacts). 3.32 Coordinate delivery, staging, and on-site movement of MT components. 3.41 Evaluate how design-phase decisions affect cost, sequencing, and downstream dependencies. 3.42 Create a construction timeline showing impacts of deviations and required cross-trade mitigation measures. |

| | | | | | | <p>4.21 Explain use of 3D models for sequencing and constructability.</p> <p>4.23 Create basic CAD elements.</p> <p>4.31 Analyze digital model elements for staging and structural feasibility.</p> <p>4.32 Use digital layout tools for bracing and panel alignment.</p> <p>8.31 Analyze site workflows and trade interactions.</p> <p>8.33 Develop task-specific work plans.</p> <p>8.42 Execute multi-trade coordination based on site constraints.</p> |
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| C – Performs concrete work - 16% | | | | | | |
| Task | Level 1 | Level 2 | Level 3 | Level 4 | Mass Timber learning outcomes mapped across existing RSOS | Mass Timber learning outcomes that don't map across existing RSOS |
| <p>Task C-8 Constructs formwork 72%</p> | <p>C-8.03 Constructs footing forms C-8.04 Constructs wall form systems and grade beam formwork C-8.05 Constructs slab formwork C-8.08 Installs embedded reinforcements C-8.09 Dismantles formwork</p> | | <p>C-8.01 Erects excavation shoring and underpinning C-8.02 Erects concrete falsework C-8.06 Constructs column formwork C-8.07 Constructs stair formwork C-8.08 Installs embedded reinforcements</p> | | | |

| Task C-9 Installs concrete, cement-based and epoxy products 28% | C-9.01 Places concrete C-9.02 Facilitates curing of concrete C-9.03 Performs basic concrete finishing | | C-9.04 Installs pre-cast components C-9.05 Installs grout | | | |
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| D – Performs framing - 20% | | | | | | |
| Task | Level 1 | Level 2 | Level 3 | Level 4 | Mass Timber learning outcomes mapped across existing RSOS | Mass Timber learning outcomes that don't map across existing RSOS |
| Task D-10 Constructs floor systems 29% | 10.01 Installs engineered floor systems. 2.11, 2.12 D-10.02 Constructs dimensional lumber floor framing | D-10.02 Constructs dimensional lumber floor framing | | | 2.11 Identify CLT, GLT, DLT, NLT, MPP, SCL products and their uses. 2.12 Describe benefits of MT in sustainability and construction performance. | 2.13 Identify mass timber products in shop drawings. 2.14 Identify cut of wood (e.g. flat vs. vertical grain) 6.11 Identify MT building components, hardware, and fasteners. 6.12 Install standard fasteners to specification. |
| Task D-11 Constructs deck systems 16% | D-11.01 Constructs decks D-11.02 Installs deck components | | | | | |
| Task D-12 Constructs wall systems 27% | D-12.01 Installs engineered wall systems D-12.02 Constructs dimensional lumber wall framing | D-12.01 Installs engineered wall systems 2.21, 2.31, 8.23 D-12.02 Constructs dimensional lumber wall framing | | | 2.21 Evaluate sustainability, span capacity, and manufacturing processes of MT products. 2.31 Investigate emerging MT products and hybrid systems. 8.23 Install membranes / fire protection. | 2.22 Describe the science of MT manufacturing (including moisture fundamentals). 2.23 Apply safe handling, temporary protection, and storage procedures for MT 6.21 Explain torque effects, ductility, and connection behaviour. 6.22 Interpret shop-drawing connection details. 6.23 Install connectors (knife plates, hangers, drag straps). 6.24 Install MT screws at angles correctly. |

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| <p>Task D-13 Constructs roof and ceiling systems 28%</p> | | <p>D-13.01 Installs engineered trusses 6.11 D-13.02 Constructs roof and ceiling framing</p> | <p>D-13.01 Installs engineered trusses D-13.02 Constructs roof and ceiling framing</p> | <p>D-13.01 Installs engineered trusses 2.41, 2.42 D-13.02 Constructs roof and ceiling framing</p> | <p>2.41 Assess how product selection affects constructability, sequencing, tolerances, and long-term performance. 2.42 Evaluate tolerance differences between materials used on a mass timber build 6.11 Identify MT building components, hardware, and fasteners.</p> | <p>2.31 Investigate emerging MT products and hybrid systems. 2.32 Explain char layer in MT 2.33 Coordinate MT material handling logistics within a multi-trade environment. 2.43 Recommend MT material solutions for project-specific needs. 2.44 Calculate tolerance differences between materials used on a mass timber build 6.31 Analyze connection tolerances vs. conventional carpentry tolerances. 6.32 Explain shear/tension forces and their effect on installation. 6.33 Troubleshoot and repair connection issues. 6.41 Evaluate connection strategies for MT assemblies, including fire, seismic, and long-term considerations. 6.42 Create connection execution plans for complex assemblies. 8.34 Confirm as built measurements with architectural drawings</p> |
| <p>E – Performs exterior finishing - 14%</p> | | | | | | |
| <p>Task</p> | <p>Level 1</p> | <p>Level 2</p> | <p>Level 3</p> | <p>Level 4</p> | <p>Mass Timber learning outcomes mapped across existing RSOS</p> | <p>Mass Timber learning outcomes that don't map across existing RSOS</p> |
| <p>Task E-14 Installs exterior doors and windows 41%</p> | | <p>E-14.01 Installs exterior jambs/frames E-14.02 Installs exterior doors E-14.03 Installs exterior windows E-14.04 Installs exterior door and window hardware</p> | | | | |
| <p>Task E-15 Installs roofing</p> | | <p>E-15.01 Installs roofing</p> | | | <p>7.11 Describe mold conditions, moisture challenges, and protective wraps</p> | <p>7.31 Analyze causes and consequences of on-site moisture exposure.</p> |

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| 24% | | components 7.11, 7.21 E-15.02 Installs roof coverings 7.41 | | | 7.21 Explain impacts of saturation and moisture penetration on assemblies. 7.41 Develop moisture management strategies for the full construction cycle. | 7.32 Implement moisture mitigation and tracking protocols. |
| Task E-16 Installs exterior finishes 35% | | E-16.01 Installs exterior wall components – 7.22 E-16.02 Installs exterior wall coverings 7.13 | | | 7.13 Install moisture protection materials. 7.22 Monitor moisture during concrete topping or slab installation. | 7.42 Assign moisture-management responsibilities to stakeholders and coordinate onsite processes. |
| F –Performs interior finishing - 14% | | | | | | |
| Task | Level 1 | Level 2 | Level 3 | Level 4 | Mass Timber learning outcomes mapped across existing RSOS | Mass Timber learning outcomes that don't map across existing RSOS |
| Task F-17 Applies wall and ceiling finishes 17% | | | F-17.01 Installs wallboard F-17.02 Applies compound to walls and ceilings F-17.03 Installs panels, tiles and solid wood finishes F-17.04 Installs suspended ceilings F-17.05 Installs demountable wall systems – 7.31 | | 7.31 Analyze causes and consequences of on-site moisture exposure. | 1.13 Identify grain direction, wood species, and cuts (flat/vertical). 1.14 Explain how grain orientation affects cutting, fastening, and finishing. 1.15 Read grain orientation in solid wood and align cutting/fastening accordingly. 1.16 Identify and fit patches using basic joinery techniques. 1.31 Analyze how environmental conditions (moisture, UV, fire) affect wood performance. 1.32 Evaluate suitability of wood species for specific MT applications. 1.33 Conduct field assessments of engineered members (CLT, glulam, LVL, MPP) for deterioration, delamination, char exposure, checking, and moisture-related issues. 1.34 Document findings using trade-specific terminology. |
| Task F-18 Installs flooring 17% | | | | F-18.01 Installs underlayment F-18.02 Installs floor coverings | | 5.41 Evaluate quality of tool-based fabrication work. |

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| | | | | F-18.03 Installs access flooring | | 5.42 Develop tool-use protocols for advanced MT tasks (specialty cutting, recessing, shaping). |
| Task F-19 Installs interior doors and windows 31% | | | F-19.01 Installs interior jambs/frames F-19.02 Installs interior doors F-19.03 Installs interior windows F-19.04 Installs interior door and window hardware | | | 5.31 Assess tool selection needs for complex connections or repairs. 5.32 Fabricate and fit advanced patch repairs. |
| Task F-20 Constructs and installs finish components and stairs 35% | | F-20.03 Constructs stairs | F-20.01 Fabricates finish components 5.22, 5.23 F-20.02 Installs finish components and accessories F-20.03 Constructs stairs | F-20.03 Constructs stairs | 5.22 Shape, profile, and finish surfaces to tolerances. 5.23 Fabricate jigs and demonstrate tool proficiency. | 1.21 Explain dimensional changes in wood from humidity/temperature. 1.22 Describe load transfer implications of grain orientation. 1.24 Repair surface damage in mass timber using steaming, sanding, and basic refinish techniques. 1.25 Assess grain + machining direction to perform precise joinery operations. 5.21 Explain how machining methods relate to tolerances and surface finish. |
| G – Performs renovations - 10% | | | | | | |
| Task | Level 1 | Level 2 | Level 3 | Level 4 | Mass Timber learning outcomes mapped across existing RSOS | Mass Timber learning outcomes that don't map across existing RSOS |
| Task G-21 Performs renovation-specific support activities 48% | | | | G-21.01 Removes existing material 1.42 G-21.02 Protects structure during renovations | 1.41 Evaluate life-cycle performance, long-term durability risks, and maintenance strategies for mass timber structural elements. | 1.11 Describe the cultural significance and history of wood. 1.12 Explain wood as a living material and its basic anatomical structure (earlywood/latewood, cell composition, moisture states). 1.23 Compare sustainability properties of mass timber species and products. |

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| <p>Task G-22 Performs renovation-specific construction activities 52%</p> | | | | <p>G-22.01 Joins new to existing construction G-22.02 Changes existing structure during renovations 1.41</p> | <p>1.42 Develop remediation plans for damaged mass timber components, including patching, refinishing, and moisture correction steps.</p> | |
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