



Local Government Quick Reference Handbook

Imagine municipalities taking action on the **housing crisis, climate change, and economic development** all at once.

Mass timber buildings are part of a worldwide shift towards prefabricated construction. By replacing concrete or steel with wood, buildings have a lower carbon footprint, are more sustainable and offer faster and quieter construction. Mass timber buildings can now safely be built up to 12 storeys. This new midrise mass timber building form is an innovative way to address climate change, expand the value-added use of B.C. forests and deliver high density, midrise housing.

Municipalities are one of many stakeholders that can take action to help lead the transition to greener buildings. This Handbook identifies municipal challenges that mass timber buildings are currently facing and offers solutions.

Read more to learn how your city can take action.

Brock Commons Tallwood House -
Tall Wood Building progress.
Credit: naturallywood.com
Photographer: KK Law
([flickr.com](https://www.flickr.com/photos/kklaw/))

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Why Mid-Rise Prefab Mass Timber?

Recent changes to the B.C. Building Code allow mass timber buildings to reach 12 storeys. This new wood building form can help deliver much needed housing with climate and environmental benefits, while strengthening B.C.'s economy.

This means that, for the first time, 12 storey high density mass timber buildings can be part of community planning. However, policy barriers will need to be addressed before the benefits of mid-rise mass timber and prefab buildings can be realized.



CLIMATE AND ENVIRONMENT

- Lower carbon footprint than concrete or steel
- Support the delivery of top tiers of the Energy Step Code
- Encourage wiser use of fiber with a diminishing supply of renewable wood



LIVEABLE COMMUNITIES

- Support transit-oriented development at densities beyond 6-storey wood frame buildings
- Use this new high density, wood mid-rise building form to deliver more housing affordably
- Build faster, reduce constructions disruptions, waste and environmental impacts



ECONOMIC DEVELOPMENT

- Support B.C.'s forestry sector and an evolving value-added pre-manufacturing sector that uses less raw materials
- Create industrial and community economic opportunities
- Enhance worker safety and productivity in a climate controlled environment
- Build resilience to declining fiber quantity and quality

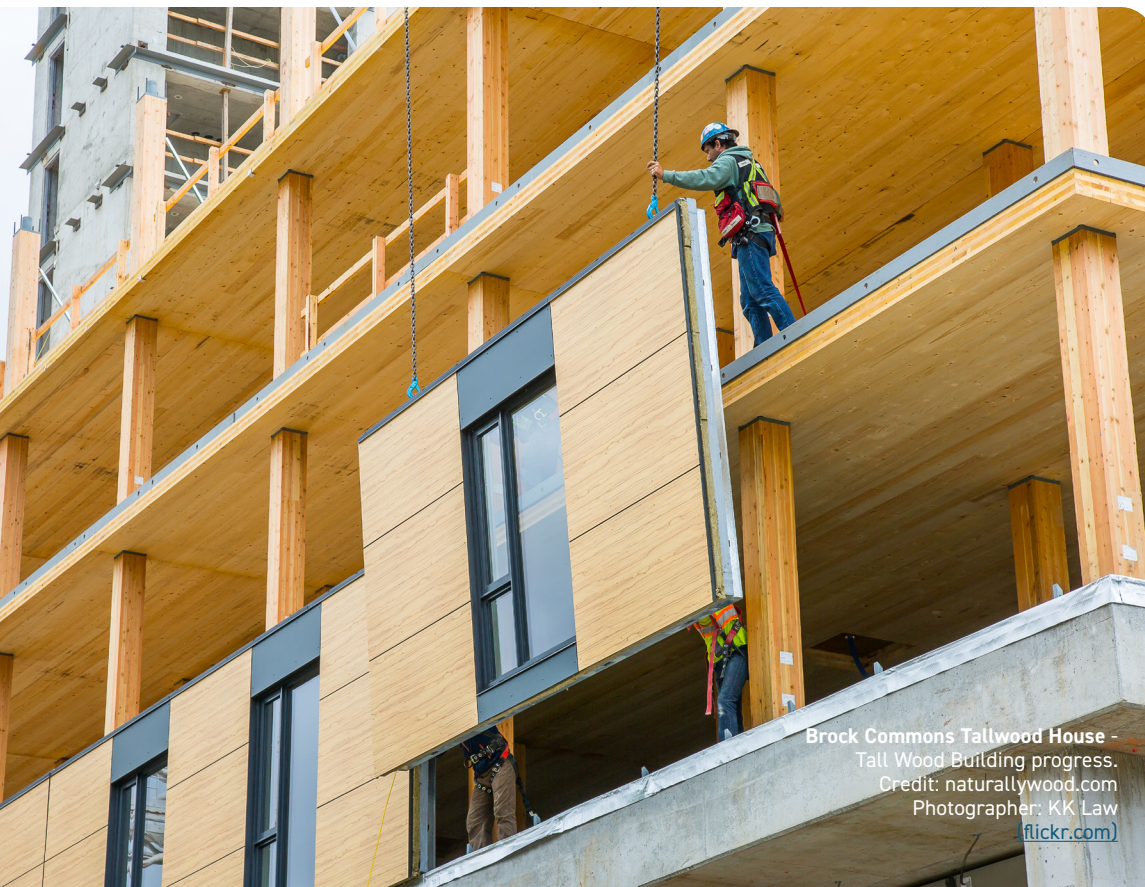


Brock Commons Tallwood House -
Tall Wood Building progress.
Credit: naturallywood.com
Photographer: KK Law
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What is Mass Timber?

Mass timber is a type of prefabricated construction that uses specially manufactured wood products with strength ratings comparable to concrete and steel. [Read more about Mass Timber products here.](#) These systems meet both national and provincial fire protection and structural standards. They also offer the added benefit of being lighter – or as light as one-fifth the weight of concrete buildings.

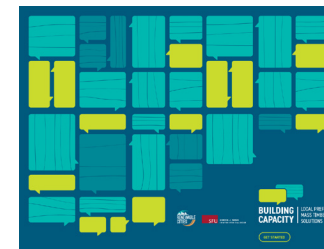
Mass timber buildings are assembled with prefabricated panels that create the structure and outward appearance of the building. Repetitive components and modules are necessary for structural integrity and efficiency. This method of construction has design implications since it is more difficult to step floors, add balconies, etc.



Brock Commons Tallwood House -
Tall Wood Building progress.
Credit: naturallywood.com
Photographer: KK Law
([flickr.com](https://www.flickr.com/photos/kklaw/))

Taking Action To Support Mass Timber

Existing policies and processes at the local government and provincial levels currently present challenges to the expanded use of prefab mass timber. In addition, the private sector and building industry need to transition to this new building form. This Local Government Quick Reference Handbook briefly focuses on municipal challenges and solutions. Readers are encouraged to refer to the following two reports for more detailed solutions for all sectors to consider.



[Building Capacity: Local Prefab Mass Timber Solutions](#) was released in 2023 by SFU's Renewable Cities. It provides a more thorough explanation of mass timber, challenges and solutions. At the municipal level, the primary matters relate to:

1. Land use regulations (Official Community Plans, Zoning and Design Guidelines); and
2. Building Permit process.



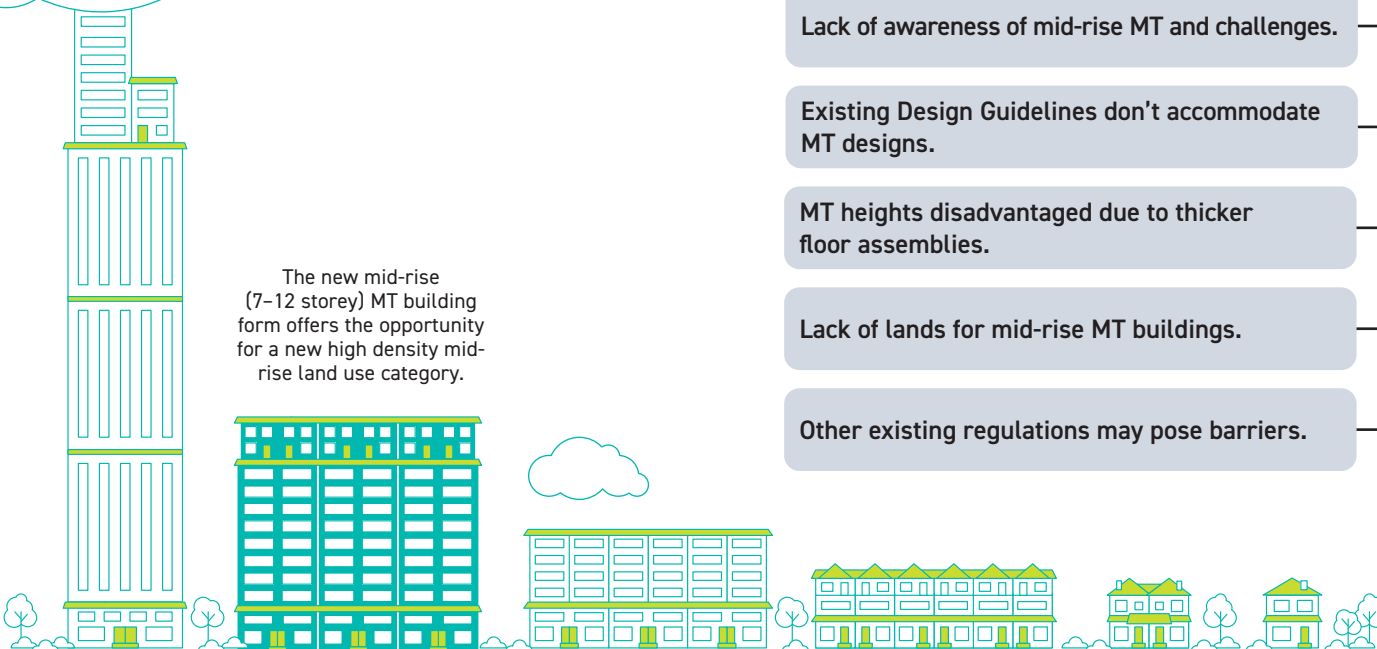
To assist with understanding mass timber and the inherent design challenges, a companion document [Design Solutions to Prefab Mass Timber Construction](#) was also prepared. It includes a more detailed structural explanation of mass timber, design implications and solutions.

Land Use Regulation Solutions

Official community plans, zoning bylaws and design guidelines present various challenges to mid-rise mass timber (MT) buildings. These regulations have traditionally been designed to accommodate the maximum height of wood frame buildings. These increased from 3 storeys to 4 storeys in the 1990s and more recently to 6 in 2009. The most recent change to 12 storeys now needs to be considered. The following are land use and development approval solutions to consider in your community:

The new mid-rise (7–12 storey) MT building form offers the opportunity for a new high density mid-rise land use category.

Challenges	Solutions
Existing medium and high density zones (3.5 FSR–5.0 FSR) don't accommodate mid-rise MT building forms (7–12 storeys).	✓ Encourage site specific MT applications. ✓ Accommodate the “footprint” of 7–12 storey MT in existing Zoning Bylaws. ✓ Planning and building staff engage early with applicant teams on MT. ✓ Expedite MT applications. ✓ Delegate minor zoning variances to staff.
Lack of awareness of mid-rise MT and challenges.	✓ Inform councils, staff and advisory bodies of MT benefits and challenges.
Existing Design Guidelines don't accommodate MT designs.	✓ Expand existing Design Guidelines to accommodate MT.
MT heights disadvantaged due to thicker floor assemblies.	✓ Provide a 4 to 7 inch floor height exception.
Lack of lands for mid-rise MT buildings.	✓ Designate new lands for mid-rise MT through OCP, Zones, Development Permit Guidelines.
Other existing regulations may pose barriers.	✓ Review existing regulations and amend as appropriate.



Land Use Regulation Solutions



SUCCESS STORIES

Kelowna Mid-Rise Mass Timber Building

Kelowna's 9 storey Capstone mass timber building, under construction, will provide 122 affordable, energy-efficient rental homes, anticipated to exceed Step 3 of the BC Energy Step Code.

Vancouver Zoning and Development By-law

Mass timber buildings are now allowed up to 18 cm more per floor as a height variance to account for thicker floor assemblies.

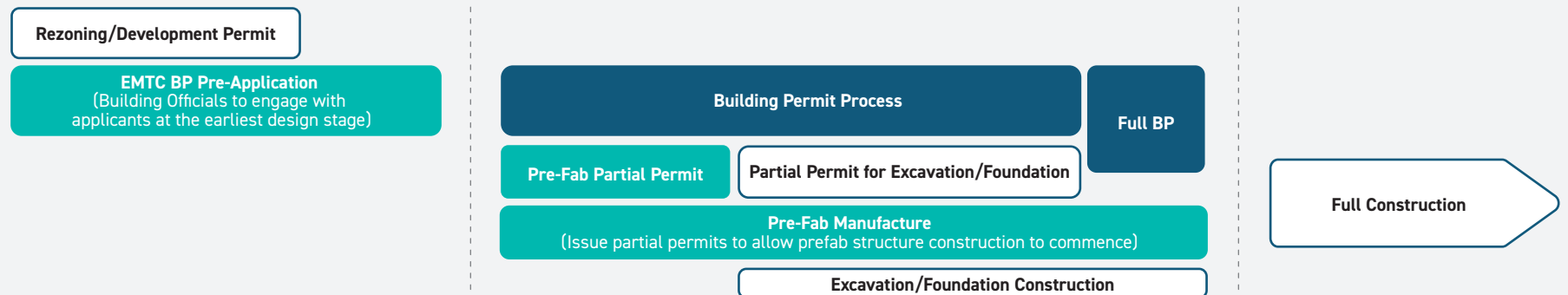
Capstone, Society
of Hope - NOvation
Architecture Ltd.
([flickr.com](https://www.flickr.com/photos/1221/))

Building Permit Solutions

Pre-manufacturing buildings has both design and construction implications. These need to be taken into consideration in the building permit process to realize prefab MT benefits. The following are actions to consider:

Challenges	Solutions
MT construction requires decision at outset of design process.	✓ Building officials to consult with applicant design teams at the rezoning/DP design stage.
Off-site manufacturing necessitates the delivery and storage of pre-manufactured components.	✓ Accommodate off-site requirements for the delivery and assembly of pre-fabricated buildings.
Lack of awareness of MT benefits and building permits (BP) challenges/barriers.	✓ Inform building staff of MT benefits and challenges.
MT digital design and manufacturing lends itself to electronic BP submissions and reviews.	✓ Modernize municipal BP processes to be digital and more timely.
Current Building Code requires multiple BCBC alternative solutions at the BP stage.	✓ Encourage and support national and provincial Building and Fire Code changes.
To be efficient, mass timber components need to be pre-manufactured prior to issuance of full BP's.	✓ Issue partial permits for the structural "shell" of MT buildings so pre-manufacturing can commence early.

Sample Modified and Expedited Mass Timber BP Process



Building Permit Solutions

SUCCESS STORY

In countries around the world, jurisdictions are modernizing their building permit process to better accommodate prefabricated and mass timber construction. The United Kingdom has implemented a modernized building permit process that accommodates offsite construction, and in fact, offsite construction is promoted in the UK's Construction Strategy. Australia, Japan and Scandinavia have also established streamlined and standardized building permit processes. Some local governments in B.C. have moved in this direction as well, including the City of North Vancouver.

Brock Commons Tallwood House
- Tall Wood Building progress.
Credit: Acton Ostry
([flickr.com](https://www.flickr.com/photos/actonostroy/))

Collaborative Solutions

Local governments are just some of the entities that need to take action to see mass timber and prefabrication expand in B.C.

Developer/Applicant Team

Developers will be significant players in the move to mass timber construction. They and their professionals (architects, engineers, project managers, etc.) must become experts in the unique aspects of mass timber design and prefabrication construction. The following are suggestions for them:

Project Teams

- Commit to a mass timber method of construction at the outset of projects.
- Engage with a qualified professional team at the outset of the design process, rezoning and development permit to ensure smooth municipal design and building permit approvals.
- Enlist the expertise of municipal planning, building, fire and engineering staff as early as possible in the design process.

Provincial

The Province of British Columbia has been a leader in wood construction in Canada for decades. The following are further actions that B.C. could take to expand support of mid-rise mass timber construction:

- Increase the existing 12 storey mass timber B.C. Building Code (BCBC) height restriction.
- Pursue alternatives to mass timber encapsulation while still achieving life-safety standards.
- Identify, track and revise BCBC provisions that create challenges at the local level.
- Modernize the National Building Code/BCBC update process to allow for more frequent code changes.
- Track and share alternative solutions.
- Gain faster certification of building products.
- Create a green certified professional program to simplify approvals.
- Provide ongoing financial assistance to local governments to modernize building permit processes.
- Support the expansion of the mass timber manufacturing industry to kick start mass timber demand and increase investor confidence.

Collaborative Solutions



SUCCESS STORY

Adera Development Corporation, a B.C. real estate development company, was one of the early adopters of mass timber construction. The company has been involved in several mass timber projects, including the Virtuoso and Crest projects in UBC, among the first multi-family buildings in Canada built with mass timber.

Adera has worked closely with local governments, engaging municipal staff early on, and has collaborated with suppliers and manufacturers to develop and improve mass timber products and construction methods.

330 Goldstream Ave -
Photo credit: James Jones
Photography, courtesy
Cascadia Architects

Community FAQs

Prefabricated and mass timber mid-rise buildings are a novel building form in B.C.
Here are some answers to common questions your community may have:

Are mass timber buildings fire safe?

Mass timber has been extensively tested and meets rigorous fire safety standards. It is permitted under the National Building Code (NBC) and B.C. Building Code (BCBC).

What's different about building in mass timber?

- The structural character of mass timber influences design – this makes it critical to commit to it at the earliest design stage.
- Building in mass timber uses off-site manufacturing and assembly – which is faster and quieter than traditional, in situ construction.
- Pre-manufacturing buildings has implications for the Building Permit process – applicant design teams, planning and building municipal staff should all be engaged early.

Why does this report focus on 7-12 storey (mid-rise) mass timber buildings?

In 2019, the BCBC was revised to allow 12 storey buildings using mass timber, creating new opportunities for 7-12 storey mass timber buildings and the extensive benefits that they bring.

“Mid-rise” buildings of these heights are not commonly built nor provided for in land use regulations since they were previously required to be built in concrete or steel and were generally not considered economically viable at these heights.

Why does prefab mass timber have different design and regulatory implications?

Mass timber has unique structural considerations that influence the form and design of the building, including:

- Structural logic
- Building height
- Articulation of massing
- Massive bar building form
- Public / ground interface
- Balconies / private outdoor space

These characteristics, combined with the 12 storey BCBC height limit, have implications for municipal OCP's, Zoning and Design Guidelines that were written with long-established construction methods and materials in mind.

See [Design Solutions to Prefab Mass Timber Construction](#) for more info.



Take Local Government Action

Local governments can adopt prefab and mass timber-friendly policies, but mid-rise mass timber (MT) buildings may only suit some areas. Nonetheless, they can sometimes be a preferable alternative to high-rise buildings. Even smaller communities that don't build mid-rise buildings can still benefit greatly from taking action to encourage off-site construction.

Additional Resources:

[Building Capacity: Local Prefab Mass Timber Solutions](#)
[Design Solutions to Prefab Mass Timber Construction](#)

To implement these policies, input from planning and building staff, developers, and the public is necessary. Here are the suggested steps to move forward in your community:



This guide was independently prepared by an interdisciplinary project team assembled by Renewable Cities, a project of the Morris J. Wosk Centre for Dialogue, Simon Fraser University.

Contact Information

If your local government is interested in having our team lead a workshop or short presentation, please email Brad Doff, Senior Project Manager, Renewable Cities: brad_doff@sfu.ca.

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Office of
Mass Timber
Implementation



**Forestry Innovation
Investment**