SITE PLANNING
(Logistics, Safety, Coordination & Planning)

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BRAD NILE

5 decades of building with wood.

35-year construction career.
THE PROMISE OF MASS TIMBER CONSTRUCTION:

- A beautiful building
- Rapid construction
- Minimal staging and laydown needs
- Offsite fabrication potential for all trades
KEY FACTORS IN DELIVERING THIS PROMISE:

- A well managed and planned jobsite
- A well managed mass timber procurement and modeling effort
SITE ORGANIZATION CONSIDERATIONS:

- Building footprint compared to the available site.
- Crane location and hoisting plan
- Truck routing for materials in
- Trash, debris and recycling management
SITE ORGANIZATION

Start planning early. Refine and add every relevant detail.
SITE ORGANIZATION

Early planning should be iterative and collaborative.
Total perimeter accessibility prepared for crane & facade access
Portland, OR

No available site - all access via sidewalk & street closures.
No available site, except an easement just big enough for a tower crane.
CRANE PLAN

DOWNTOWN SITE

• Full-time sidewalk closure and part time street closure.

• RT crane for positioning flexibility and after-hours tuck away.
PRE-CONSTRUCTION SITE CONSIDERATIONS:

• Street and sidewalk closures
• Pedestrian protection
• No-fly zones
• Hoisting obstructions:
  ✓ Overhead power lines
  ✓ Trees
  ✓ Neighboring buildings
  ✓ Facade access
  ✓ Utility connections
Jurisdictional requirements and readymade options
HOISTING
OBSTRUCTIONS

Trees, Power Lines and No-fly zones
TIMBER PROCUREMENT PRE-CONSTRUCTION CONSIDERATIONS:

SCHEDULE

• Adequate time for modeling
• Confirmed Material Delivery Flow

DELIVERY PLANNING

• Truck sequence and cadence
• “Fly from truck” modeling and loading
• Factory center-of-gravity locating
• Hoisting and rigging provisions
• Worker Safety Provisions
• Guardrails
TRUCK LOADING, SEQUENCE & CADENCE PLANNING
(CLT LOAD MODELING EXAMPLE)
FLY FROM TRUCK
MODELING & LOADING
Hardware & Center of Gravity Locating
MOISTURE MITIGATION PLANNING

What to remember…

1. Have a plan:
   - Factory Sealers.
   - Stain Control
   - Moisture Control
   - Dry-out planning
   - Finishing

2. Build During the dry months

3. Study the connection details

4. Protect Critical details.

5. Expedite the envelop installation

6. Use a “vented” roof assembly.
MOISTURE MANAGEMENT PLAN SUMMARY

1. Sealers  
   All CLT Ends, edges and cuts.  
   UV protection on all beams and columns.

2. Stain Prevention  
   Only galvanized, aluminum or powder coated connectors.  
   NO cutting of steel around raw wood.  
   Remove all wrapping once on site.

3. Moisture Control  
   Adhesive tape at all joints and seams.  
   Regular bulk water removal and management.  
   Critical connection protection.

4. Dry out  
   AIR CIRCULATION (With no heat.)  
   Add heat slowly only after surface drying is complete.  
   Add humidity with heat. (With monitoring.)  
   14% moisture content MAX prior to any timber cover.
SAFETY PLANNING
SUMMARY
PLAN EARLY & CONTINUOUSLY

- Hoisting
- Worker access and tie-off provisions while the structure is underway
- Guardrail provisions
- Structure temporary bracing & stabilization
PUBLIC SAFETY

- Necessary traffic revisions
- Pedestrian protection
GENERAL ACCESS

• Stair assemblies going up with the structure
• Maintaining 2 paths of egress.
MAXIMIZE OFF-SITE FABRICATION
(BEYOND THE STRUCTURE)

- MEP systems
- Facade Elements
WORKER SAFETY PROVISIONS:

HAVE A PLAN!

THE 1978 PLAN:

✓ Be careful.

✓ Grab something if you fall.
THE 1986 PLAN:

- Demolish and rebuild facade elements ON THE GROUND!
THE 2019 PLAN:

✓ Maximize off-site fabrication - Prefabricated Facade Panels
Maximize Off-site Fabrication - Plumbing and Piping Systems.
Working the plan: Prefabricated Wall Elements, shop installed roof vapor barrier.
Working the plan: Ground Installed Edge Protection
CONCLUSION

Plan early and continuously.

- Crane type and location
- Material Flow
- Public Safety
- Temporary Bracing
- Moisture Management

Model everything.

- Realize a no-sawdust jobsite.
- If it is in the building, it is in the model.
- Model truck loads for direct fly to position.

Maximize off-site fabrication
(Beyond the Structure).

- MEP systems
- Facade Elements
EXCELLENT EXAMPLES OUTSIDE THE USA:

Brock Commons, UBC

Urban One, Structurlam, Seagate

Vancouver, British Columbia
EXCELLENT EXAMPLES OUTSIDE THE USA:

Swatch Omega Headquarters
Blumer Lehmann, Gossau, Switzerland
Thank you for your participation.

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