



FORTIS
CONSTRUCTION INC.

PREPARED IN COLLABORATION WITH



TIMBERLAB

Mass Timber Weather Protection Plan

MULTNOMAH COUNTY LIBRARY | EAST COUNTY LIBRARY

1297 NW EASTMAN PARKWAY
GRESHAM, OR 97030



PERSPECTIVES 

Introduction

The purpose of the **Mass Timber Weather Protection Plan** is to mitigate the impact of the elements on the East County Library until the building is enclosed and the permanent heating and cooling systems are fully operational. **The primary focus of this plan is protection of the exposed glulam columns, glulam beams and Cross-Laminated Timber (CLT).** Mass Timber erection will take place in the Summer and Fall of 2024. Installation of the building envelope will take place in the Winter of 2024 and Spring of 2025. Permanent heating and cooling will be operational in the Fall of 2025. Timberlab is responsible for weather protection during fabrication, shipping, and erection. Fortis Construction is responsible for all weather protection after erection is completed.

This is a project-specific plan. Depending on the time of year, location, construction type, etc., the plan will vary and Fortis will create the right approach for each unique build.

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Fabrication and Shipping

1. **One coat of Sansin KP-12 sealer** will be applied to the end grain of glulam and CLT panels including at penetrations. Factory coating of mass timber was not accepted in the GMP and is not included in the protection plan.
2. **Glulam and CLT panels** will be **stored and shipped** fully wrapped with UV-stabilized HDPE secured by tape.
3. **Stored material on site** will rest on dunnage away from standing or running water and remain fully wrapped with factory applied wrapping. Additional coverage will not be provided to maintain visibility of parts.
4. **All pre-installed ferrous metals will be coated** with one coat of rust inhibitive shop primer to prevent staining of wood. Carr Construction will be responsible for coating the steel they provide. Steel receiving SFRM will receive a primer that is compatible with the fireproofing.
5. **Glulam receiving pressure treatment** will be wrapped for transportation to the treatment facility. At the time of treatment, members will be unwrapped, treated and remain unwrapped to dry in exterior conditions prior to being re-wrapped with new wrapping secured by staples.
6. **Following rain events** on site during working hours, observation of visible members shall be made to cut the bottom of wrapping to allow pooling moisture to escape, if occurs. An allowance is included in the GMP for Fortis to address weather protection during off-hours.

Erection

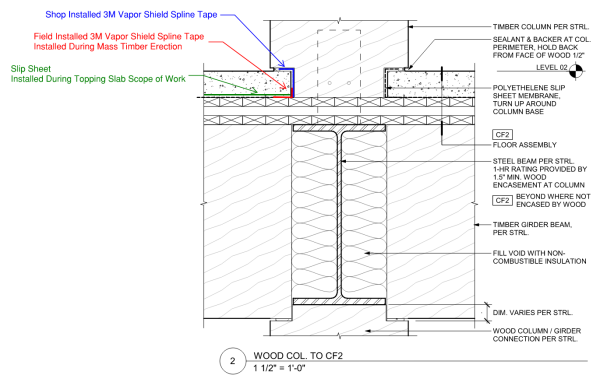
1. **Factory plastic** will be removed from the glulam and CLT panels during erection to avoid trapping water and uneven sun exposure. Upon removing the plastic, the material will immediately be **inspected for damage or excessive moisture**. Any observed damage due to moisture shall be documented and the documentation will be shared with the design team.
2. **Temporary wood bracing** will be used during erection. Bracing locations and attachments will be reviewed in the engineered bracing plan. When structurally acceptable, bracing will be located in inconspicuous locations. Small screw holes from bracing will be patched with wood filler. Large holes will be filled with wood plugs of matching species and grain direction. Wood bracing will be secured to the structural slab and will be removed prior to installing the topping slab.
3. **If materials are field cut**, one coat of Sansin KP-12 sealer shall be applied to the exposed end grain.
4. **No use of permanent markers, chalk or pencils** will be permitted on exposed surfaces of wood members.
5. **During erection**, Timberlab will periodically **remove standing water from the wood decks**. The moisture content of the wood will be monitored to ensure it does not exceed 19%.
6. **In preparation for large storms**, Fortis will stage pumps and other accessories required to remove water from the CLT decks. Fortis will appoint a designated crew to de-water the CLT. **Prior to each weekend**, Fortis will appoint a designated representative who will monitor the weather and remain in town. **In the event of a severe storm**, the designated representative will drive to the site and determine the appropriate water remediation efforts.
7. **CLT panel splines will be protected in the following manner**: Install CLT panel, tape joint with 3M 3015 or similar, install steel spline strap and/or roof collector plates. Slip sheets of light gauge steel will protect CLT from field welding of collector splines. Any damage to spline tape will be repaired.
8. **Steel plate collectors will be primed** with thorough quality assurance to ensure proper adhesion and dry time prior to installation to CLT in attempt to eliminate bleeding.
9. **CLT edges and Glulam beam ends abutting concrete walls** will receive a layer of self-adhered protective membrane or tape.
10. **Once erection is completed**, Timberlab will **document and report to the design team** any damage due to moisture at this time. Fortis will monitor the wood moisture content and damage moving forward.

Protection During Building Envelope Installation

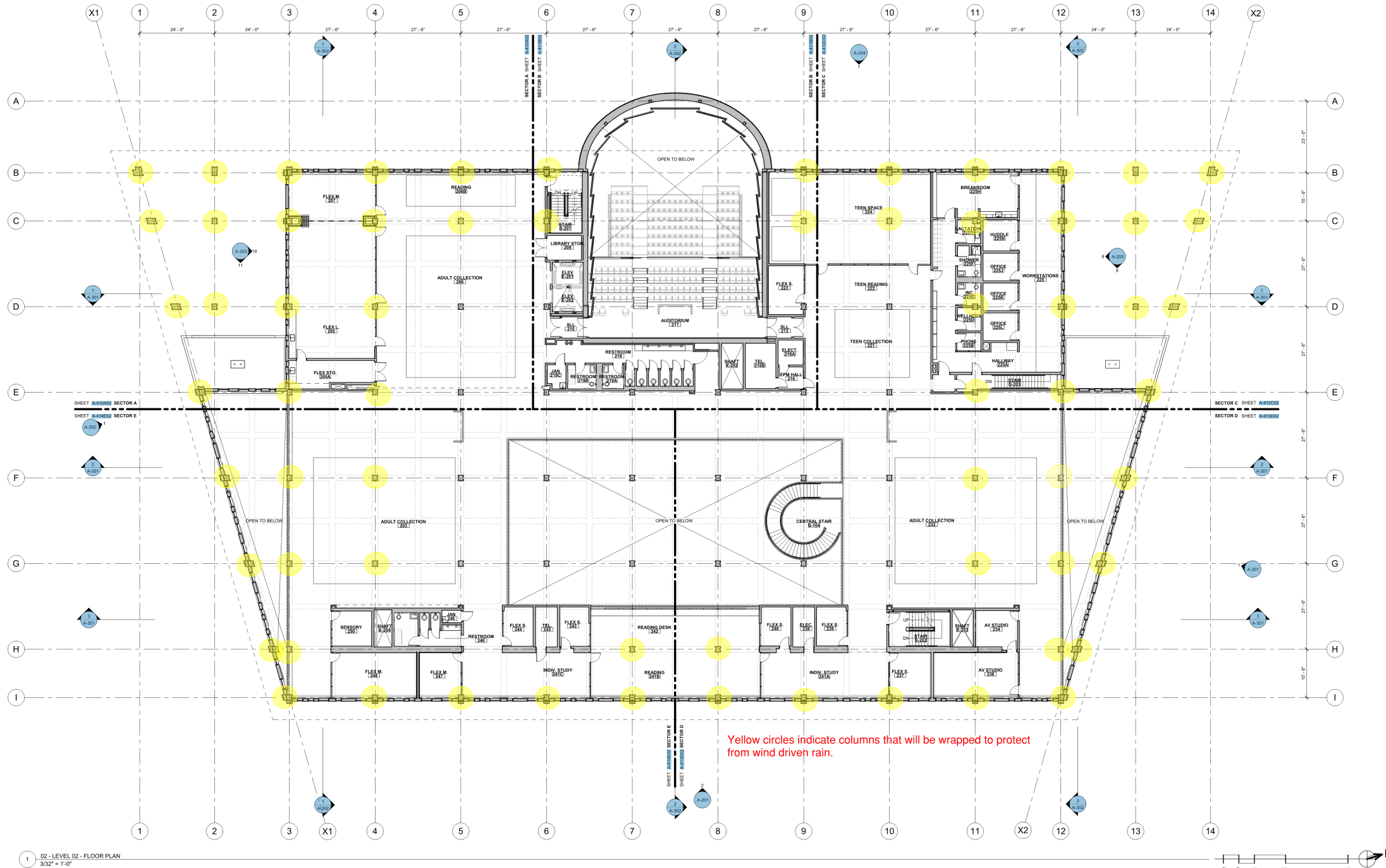
1. **Following installation** of the roof CLT panels the **roofing subcontractor will verify the moisture content** of the CLT is at adequate levels before applying the vapor barrier. If the MC exceeds requirements of the selected vapor barrier, Fortis will take necessary action to reduce MC of the roof panels to appropriate levels. The vapor barrier will be installed prior to installing the perimeter parapet, electrical conduit, and all roof supports. The vapor barrier will be installed continuously over the factory installed CLT penetrations. Penetrations will be marked and cut as needed to limit moisture intrusion during construction.
2. **Rainwater will puddle on the vapor barrier** until the permanent roofing system is installed. **Fortis will remove the water daily** to avoid standing water for long periods of time.
3. **Temporary roof drains** will be installed to remove water from the roof and away from the building.
4. **Temporary covers** will be installed over clerestory, mechanical and other large roof openings. Covers will be sloped and covered with a water-resistant material to shed water.
5. **Once the vapor barrier is complete, framing on the roof will begin** along with electrical rough-in at the roof level and install of rooftop steel supports. All electrical penetrations through the vapor barrier will be sealed by the roofer with a product that is compatible with the roofing system. Sealant product data will be included in the roofing accessory submittal.
6. **The permanent roofing system** will be installed over the winter during dry windows.
7. **Fortis will wrap all columns highlighted with a yellow circle on the floor plan** (*found on the following page*) to protect from wind driven rain. 3M Vapor Shield Spline Tape will be installed at each level 2 column per the attached "Typical Temporary Protection Detail For Level 2 Columns".
8. **Prior to pouring the level-two topping slab** all columns will be wrapped to prevent contact with concrete. All deck penetrations and joints will be sealed to prevent concrete leakage during the concrete pour.
9. **Installation of the weather barrier and glazing systems** will be a priority on the project to dry-in the building as soon as possible.
10. **Ensure rooftop steel columns are welded shut prior to erection.**

Protection After Building Envelope Completion

1. **Once the building is enclosed, temporary climate control equipment** with remote monitoring capabilities will be brought into the building to move air, slowly raise the temperature of the building, and reduce the humidity.
2. **Over a period of 3-4 weeks, the temporary climate control equipment** will bring the building to a temperature range of 60-70 degrees and a relative humidity of 55%.
3. **Water staining will occur** on the mass timber during the winter months. For light staining, Sun Frog Born Again will be applied. Sanding will be implemented at areas with heavy staining and utilized as a last resort. In place testing of chemical and sanding treatments will be done at inconspicuous locations prior to utilization throughout the building. Treatment will be applied corner to corner of each member. Sanding corner to corner of CLT panels or glulam members will remove the tanning relative to the adjacent wood members and result in a discernible difference. This difference will fade over a period of time but will be visible when the building is turned over.
4. **The interior wood finish** will be applied after water damage mitigation is completed and the temporary climate control is in place.
5. **Once the permanent building heating and cooling systems are in place,** the temporary climate control equipment will be removed.



Typical Temporary Protection Detail For Level 2 Columns





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TIMBERLAB

CONTACT

Katie Hunter

Fortis Construction

Senior Project Manager

Katie.Hunter@FortisConstruction.com

Kevin Kelly

Fortis Construction

Project Manager

Kevin.Kelly@FortisConstruction.com