SBCA Research Report

Checklists for Mitigating and Remediating Mold on Wood Structural Building Components

SRR No. 1808-08

Structural Building Components Association (SBCA)

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SBCA is an APPROVED SOURCE

This research report is based on practical scientific research (literature review, testing, analysis, etc.). This research report complies with the following sections of the building code:

- *IBC* Section 104.11.1 and Section 1703.4.2 – "**Research reports.** Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from *approved sources*."
- *IBC* Section 202 – "**APPROVED SOURCE.** An independent person, firm or corporation, *approved* by the *building official*, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses."

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Introduction:

The following checklists are to be used as a practical guide in conjunction with the information on mold provided in SBCA Research Report 1807-01: “Mold on Structural Building Components.” Follow the steps indicated below to help ensure your components either remain free of mold or are remediated with respect to mold properly.

Key Definitions:

APPROVED SOURCE. (*IBC* Section 202)

An independent person, firm or corporation, *approved* by the *building official*, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.

BUILDING DESIGNER: (*ANSI/TPI 1* Section 2.2)

The owner of the building or the person that contracts with the owner for the design of the framing structural system and/or who is responsible for the preparation of the construction documents. When mandated by the legal requirements, the Building Designer shall be a registered design professional.

BUILDING OFFICIAL: (*ANSI/TPI 1* Section 2.2)

Officer or other designated authority charged with the administration and enforcement of the Building Code, or a duly authorized representative.

CONTRACTOR: (*ANSI/TPI 1* Section 2.2)

Owner of a Building, or the Person who contracts with the Owner, who constructs the Building in accordance with the Construction Documents and the Truss Submittal Package. The term “Contractor” shall include those subcontractors who have a direct Contract with the Contractor to construct all or a portion of the construction.

DUTIES AND POWERS OF BUILDING OFFICIAL: (*IBC* Section 104.1)

The building official is hereby authorized and directed to enforce the provisions of this code. The building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

MEANS AND METHODS OF CONSTRUCTION: ((*ANSI/TPI 1* Section 2.3.4.4)

The Contractor is responsible for the construction means, methods, techniques, sequences, procedures, programs, and safety in connection with the receipt, storage, handling, installation, restraining, and bracing of the Trusses.

PRE-INSTALLATION CHECK. ((*ANSI/TPI 1* Section 2.3.4.6)

The Contractor shall examine the Trusses delivered to the job site for: (a) Dislodged or missing connectors, (b) Cracked, dislodged or broken members, or (c) Any other damage that can impair the structural integrity of the Truss.

POST-INSTALLATION CHECK. ((*ANSI/TPI 1* Section 2.3.4.7)

The Contractor shall examine the Trusses after they are erected and installed for: (a) Dislodged or missing connectors, (b) Cracked, dislodged or broken members, or (c) Any other damage that can impair the structural integrity of the Truss.

RESEARCH REPORTS: (*IBC* Section 1703.4.2)

Supporting data, where necessary to assist in the approval of products, materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

TRUSS DAMAGE DISCOVERY. ((*ANSI/TPI 1* Section 2.3.4.8)

In the event that damage to a Truss is discovered the Contractor shall: (a) Ensure that the Truss not be erected, or (b) That any area within the Building supported by any such Truss already erected shall be appropriately shored or supported to prevent further damage from occurring and shall remain clear and free of any load imposed by people, plumbing, electrical, mechanical, bridging, bracing, etc. until field repairs have been properly completed.

TRUSS DAMAGE RESPONSIBILITIES. ((*ANSI/TPI 1* Section 2.3.4.9)

In the event of damage, the Contractor shall: (a) Contact the Truss Manufacturer and Building Designer to determine an adequate field repair, and (b) Construct the field repair in accordance with the written instructions and details provided the Truss Manufacturer, Building Designer, and/or any Registered Design Professional.

TRUSS MANUFACTURER: (*ANSI/TPI 1* Section 2.2)

Person engaged in the fabrication of Trusses.

Checklists for Mold Mitigation and Remediation:

Before Close-in

When mold on structural components is identified before close-in:

- ❒ Identify and correct any underlying moisture infiltration or exposure problems.
- ❒ Scrub moldy surfaces with detergent and water, rinse and allow drying before covering, enclosing or painting.
- ❒ Remove and replace damaged building materials that cannot be cleaned.
- ❒ Ensure that the interior of the building is dry (all wood less than 19% moisture content) prior to installing insulation or putting up gypsum wallboard.

At Time of Delivery

Inspect all structural components for:

- ❒ Conformance with the order
- ❒ Dislodged/missing fasteners and/or connector plates
- ❒ Cracked, dislodged or broken members
- ❒ Any other damage that may impair performance

Storage

- ❒ Review storage options and practices for each jobsite. Store according to the supplier's recommended practice.
- ❒ If feasible and efficient, store structural components under roof.
- ❒ Store structural components in an area that is high and likely to stay dry during the period of construction.
- ❒ If storage is going to be for a prolonged period of time, consider storing with clearance above the ground to avoid wetting from storm runoff and to permit air circulation (see Figure 1). Do not store structural components in areas that will collect water (e.g., swales, basements, drainage areas, etc.).

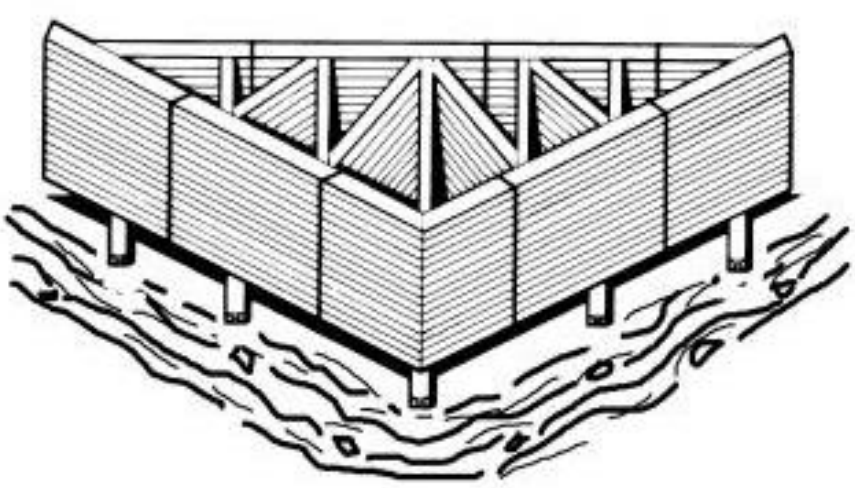

Figure 1

- ❒ During periods of rain, the builder should consider covering stacks of structural components with tarp or plastic sheeting to protect against moisture gain. The covering should be weighted down from the top to prevent it from blowing away but the sides of the stack should be loose; otherwise circulation will be reduced and moisture held in. One alternative is to stake the sides of the tarp so there is clearance around the structural components allowing air circulation.

Avoid High Risk Construction Practices

- ❒ If concrete basements are poured with the first floor deck installed and then the deck is covered with an impermeable tarp for the winter construction, it is recommended that adequate ventilation is provided to limit interior relative humidity and maintain all lumber at moisture content of 19% or less.
- ❒ Buildings with crawl spaces frequently have mold develop on the floor components and the underside of the floor sheathing prior to the end of construction process. Ground moisture must therefore be contained by placing a vapor barrier over the open ground area in the crawl space. Again, it is recommended that adequate ventilation should be provided to minimize interior relative humidity.
- ❒ Party walls can be frequently wetted by rain if the interface between the roof and the party wall is left unfinished. This allows rain to penetrate the entire length of the party wall and soak all the wood below. Mold frequently occurs on the paper-faced gypsum board and framing on these walls (see Figure 2).

Figure 2

Mitigation

Although rain will frequently wet framing lumber before the building is weather tight, mold will not grow unless it remains wet.

- ❒ Water should be drained or removed from horizontal surfaces such as floors.
- ❒ Ventilation should be increased to facilitate drying. Sawdust and other construction debris should be removed as if left on the floor this material will inhibit the drying process.
- ❒ The moisture content of the structural components should be less than 19 percent before the components are closed in. If there has been rain during the installation process, allow for a suitable amount of drying time following the wetness before closing in building components. An electronic, resistance-type pin, or pin-free moisture meter can be used to determine moisture content of the structural components. Drying of wood-based materials occurs slowly by the processes of evaporation or diffusion. Evaporation can be accelerated by ventilation, heaters, heat lamps, use of the furnace, etc.

❒ The Contractor shall examine the Trusses after they are erected and installed for: (a) Dislodged or missing connectors, (b) Cracked, dislodged or broken members, or (c) Any other damage that can impair the structural integrity of the Truss.

Before “close in,” check the structural components and other building materials for:

- ❒ Dislodged or missing connectors
- ❒ Cracked, dislodged or broken members
- ❒ Any other damage that can impair the structural integrity of the Truss.
- ❒ Any active mold growth.

- ❒ If mold growth is found it is recommended that further jobsite installation is ceased and mold remediation is implemented.
- ❒ In the event that damage is found, the Contractor shall contact the Truss Manufacturer and Building Designer to determine an adequate field repair.

Mold **Remediation**

If mold growth is found, it can be easily removed by the following the straightforward remediation procedures herein. Superficial mold that occurs on lumber does not affect the performance of the trusses or any wood used in the project, the general public increasingly perceives that it could be a problem.

- ❒ Superficial mold can be removed by scrubbing with water and detergent followed by rinsing. The goal of mold remediation is the removal of most of the mold; it is not necessary to kill the mold.
- ❒ Mold clean-up is completed when the involved area is free of dust and no material transfers to a clean cloth or glove that is wiped across the involved surface.

It is not necessary to test for mold once it has been identified.

Testing air samples for mold is rarely useful in any building and is of no value in a new building during construction.

The clean-up of mold is the same regardless of the species of mold present.

If residual staining from mold onto a clean cloth remains, the area of residual mold can be protected with a permeable latex paint. Some paints contain zinc, which acts as an inhibitor of mold growth.

General Information

A few potential sources of unwanted moisture in constructed buildings:

1. During the construction process or post dry-in, when rain generates standing water
2. Plumbing leaks
3. Gaps in roofs, siding or masonry prior to and post flashing implementation
4. Poorly flashed and sealed windows
5. Slabs and foundations that are porous or have cracked
6. Water infiltration from inadequate exterior to the building drainage
7. Faulty roof drains and downspouts
8. Improperly maintained A/C system that can create excessive condensation
9. Poor ventilation and/or air circulation combined with high indoor humidity. This can be from showers, cooking or other activity, which results in condensation that does not dry out, which then promotes mold growth.

Commentary:

The information contained herein is a product, engineering or building code compliance research report (see *IBC* Section 1703.4.2) prepared in accordance with the referenced building codes, testing and/or analysis using accepted engineering procedures, experience, and technical judgment.

SBCA Research Report (SRR)

SBCA Research Reports provide an assessment of only those attributes specifically addressed within a given report.

Responsibilities:

- Product design, installation, quality control and code compliance are the responsibility pursuant to a specific scope of work as follows:
    - The Building Designer shall prepare the Construction Documents, which shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that such documents conform to the Legal Requirements, including the Building Code.
    - The Contractor is responsible for the construction means, methods, techniques, sequences, procedures, programs, and safety in connection with the receipt, storage, handling, installation, restraining, and bracing of all structural elements.
    - The Truss Manufacturer shall obtain the Truss design criteria and requirements from the Construction Documents. The Truss Manufacturer shall be permitted to rely on the accuracy and completeness of information furnished in the Construction Documents or otherwise furnished in writing by the Building Designer and/or Contractor. The Truss Manufacturer shall manufacture the Trusses in accordance with the final Truss Design Drawings, using the quality criteria required by this Standard unless more stringent quality criteria is provided by the Owner in writing or through the Construction Documents.

The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This Research Report assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.

Some information contained herein is the result of testing and/or data analysis by other sources, which SBCA relies on to be accurate, as it undertakes its scientific or engineering analysis.

SBCA has reviewed and found the data provided by other professional sources are credible. The information in this Research Report conforms to SBCA's procedure for acceptance of data from Approved Sources (see *IBC* Section 202).

Where appropriate, SBCA relies on the derivation of design values and other code provisions, which have been codified into law through codes and standards (e.g., IRC, WFCM, IBC, SDPWS, NDS, ACI, AISI, PS-20, PS-2, etc.). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g. lumber, steel, concrete, etc), SBCA relies upon grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

The engineering evaluation was performed on the dates provided in this report.

This Research Report is subject to periodic review and revision. For the most recent version of this report, visit sbcindustry.com. For information on the current status of this report, contact SBCA.

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For Further Reading:

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