

TITLE: Demolition and Restoration of Cavity Wall Constructions After Extreme Weather Events Resulting in Flooding

DESIGNATION: TA-024-2024

OBJECTIVE: To provide an informative advisory regarding remediation and corrective measures after extreme weather events resulting in flooding of exterior cavity wall construction comprised of exterior sheathing, weather-resistive barrier, and exterior cladding.

BACKGROUND

Extreme weather events often create flooding that impacts both residential and commercial property. Floodwaters infiltrate building interior spaces and can result in damage to furnishings, flooring, interior gypsum wallboard, exterior wall sheathing, framing, miscellaneous belongings of building occupants, and other components.

After floodwaters recede, restoration efforts are often performed expeditiously to get occupants back in place or back to work and to prevent environmental issues. These efforts commonly are performed to remove and discard those items deemed not salvageable or to properly clean those items considered to be salvageable.

Two of the primary building materials that are commonly removed and discarded are gypsum wallboard and wood-based sheathing installed on the interior and exterior of the wall, respectively. The exterior wall sheathing is removed en masse to get rid of moisture-damaged materials and the potential source for future biological growth.

Based on the amount or depth of water recorded within a structure, more sheathing than that exposed to floodwaters may need to be removed to accommodate the use of 4-ft- x 8-ft-sized sheathing and to ease performance of repairs. Due to often widespread magnitude of damages and the need for immediate repairs, the demolition process is often performed by temporary labor. These laborers may be directed during the restoration/remediation process without concerns of resulting consequences to the structure.

The sheathing located on both the interior face and the exterior face is often removed as part of the remediation process in order to remove potential materials that could be sources of biological growth or affect the long-term performance of the structure.

DISCLAIMER

This Technical Advisory is intended to serve only as a general resource and to identify potential issues for consideration by industry professionals. Each person using this Technical Advisory is solely responsible for the evaluation of the Technical Advisory in light of the unique circumstances of any particular situation; must independently determine the applicability of such information; and assumes all risks in connection with the use of such information. The materials contained in this Technical Advisory do not supersede any code, rule, regulation, or legislation and are not intended to represent the standard of care in any jurisdiction.

When both the interior wallboard and exterior sheathing are removed, the exterior cladding or veneer is commonly not removed in order to minimize the overall impact to structures and resulting costs. Furthermore, during removal of exterior sheathing, existing weather-resistive barriers (WRB) and through-wall flashings integrated and adhered to exterior sheathing are removed or damaged during demolition. Without the removal of exterior cladding as part of the restoration process, the WRB and through-wall flashing in traditional cavity wall or barrier wall construction cannot be properly restored to provide long-term performance as originally constructed prior to demolition efforts.

REPORTS

According to an Addendum to National Flood Insurance Program (NFIP) *Adjusters Claims Manual: Perimeter Wall Sheathing Part 3 – Section VIII*, “When Class 1, 2, or 3 sheathing material is in direct contact with floodwaters, the material is not salvageable.”^{1,2} Exterior sheathing products typically consist of gypsum board, OSB sheathing, and plywood, and both gypsum board and OSB are classified as Class 2 materials.

DISCUSSION AND RECOMMENDATIONS

Proper replacement of sheathing and other substrate materials subjected to prolonged floodwaters while maintaining the performance of the primary building enclosure control layers requires the exterior finish material be removed to access and demolish the compromised existing materials so that new sheathing can be installed and the building enclosure control layers properly re-established. As stated in the 2021 *International Building Code* and 2021 *International Residential Code*,^{3,4} the WRB must be properly installed to maintain continuity; be properly integrated with flashings, wall openings, and adjacent enclosure assemblies; and be sufficiently overlapped, correctly shingled, and properly sealed or taped at exposed laps. This is most successfully achieved by installing the WRB on the exterior side of the sheathing after the sheathing has been installed.

In cavity wall construction, fasteners for cladding are typically anchored through the WRB and sheathing or substrate material into stud framing or directly into the sheathing or substrate. The only practical and feasible approach to replacing the damaged exterior sheathing materials would be to perform the task from the exterior side of the structure so that claddings can be properly attached. Another consideration is that the floodwaters could have softened or damaged the sheathing or resulted in corrosion of fasteners, anchors, or ties that could compromise the overall integrity of the attachment. Attempting to replace the exterior sheathing from within the interior of a structure while maintaining the attachment of the cladding material would not be possible.

REFERENCES

1. National Flood Insurance Program (NFIP) Technical Bulletin No. 2. “Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program,” dated August 2008.
2. NFIP. Addendum to *National Flood Insurance Program (NFIP) Adjusters Claims Manual*. “Perimeter Wall Sheathing Part 3 – Section VIII.”
3. International Code Council (ICC). 2021. *International Building Code*. Country Club Hills, IL: ICC.
4. ICC. 2021. *International Residential Code*. Country Club Hills, IL: ICC.