June 25, 2020

Chris Gorecki
Chairman
Georgia Structural Pest Control Commission
Georgia Department of Agriculture
19 M.L.K. Jr Drive SW
Atlanta, GA 30334

Re: Termite Inspection at the Framing Foundation Interface

Dear Mr. Gorecki:

The Spray Foam Coalition (SFC) and Spray Polyurethane Foam Alliance (SPFA) thank you and the Georgia Structural Pest Control Commission (GSPCC) for hosting a discussion to address concerns related to termite inspections at the framing foundation interface (FFI). SFC and SPFA support clarifying requirements for the use of high performance insulation at the FFI in the Georgia State Minimum Standard Building Code (Code) to ensure builders, consumers, spray foam applicators, and pest management professionals understand what application practices are acceptable and to protect consumers from termites and other wood destroying organisms.

SFC and SPFA believe that working with the GSPCC, we can develop a consensus solution that protects consumers and allows for the use of high performance insulation and termite inspections at the FFI.

Many construction practices limit the ability to visually inspect for termites without impacting consumer protections from termite damage. The pest management industry can rise to the challenge and implement a variety of solutions that allow for termite inspection, testing, control and warranties in these areas.

SFC and SPFA believe that consumer protection must include minimizing termite damage, reducing energy use, and protecting against moisture intrusion and air leakage, and these needs must be balanced to protect consumers. Uncontrolled air leakage and moisture intrusion negatively impact energy efficiency, building durability, indoor air quality, and create conditions that invite wood destroying organisms. Eliminating the use of high-performance insulation and air sealing at the FFI is contrary to generally accepted building science principles related to heat transfer and moisture control and will lead to unintended consequences. Consumers and builders need to be able to select high performance insulation to seal crawlspaces to protect their homes against moisture, meet the Code requirements, help control stack effect,[1] and make their homes more comfortable

Recently, the GSPCC completed a study with the University of Georgia that showed that alternative inspection technology and destructive sampling can identify termite activity. The study states:

> *The microwave motion detection device, Termatrac T3i, demonstrated the ability to detect termite activity in structural lumber with and without a covering of SPF*

[1] Stack Effect (or chimney effect) is the movement of air into and out of buildings through chimneys, flue-gas stacks, or other openings, driven by air buoyancy. Buoyancy occurs due to a difference in indoor-to-outdoor air density resulting from temperature and moisture differences.

*Destructive sampling using the borescope provided evidence that by drilling ¼-inch holes into SPF one can determine if termites are present.*

Based on these conclusions, GSPCC should promote these practices to improve consumer protections rather than proposing to eliminate the use of SPF, a proven solution for Georgia residents. SFC and SPFA understand that the small size of the current inspection area of many microwave motion detection devices may limit the ability to quickly conduct a termite inspection. However, a quick termite inspection may not present the best solution to protect consumers. Further, we acknowledge there may be concerns with patching and repairing SPF after destructive sampling. We are committed to help develop the appropriate education and tools to implement this solution. Simply put, as construction practices change to improve building performance, termite inspection practices must also evolve.

In general, building codes do not rely on a single form of protection, and the solution for termite control should be no different. No single solution to termite inspections at the FFI can completely protect consumers. We recommend any consensus solution leverage visual inspection, proactive pest management treatments, termite barriers (for new construction), destructive sampling (with patch and replace), bait stations, and advanced inspection technologies.

**Visual Inspection**

Hidden pathways for termites have *always* existed in homes. Hidden pathways may exist either on the exterior, interior, or somewhere in the middle of all types of foundation and above-grade structure interfaces (*i.e.* basements, crawlspaces, and slabs-on-grade).[2] Hidden pathways can also be formed by other essential parts of buildings (*i.e.* electrical work and plumbing). SPF does not present a unique, insurmountable challenge.

Further, visual inspection is limited and only 33% effective in preventing termite damage. Relying on visual inspection, even without the presence of high performance insulation, was found to be largely an ineffective means (67% of the time) of addressing termite infestation and damage issues.[3] In *Termite Control Services: Information for the Georgia Property Owner*, Suiter and Forschler state:

> *Non-visual inspections offer alternative means for visual termite inspections for inaccessible areas. When users are properly trained, non-visual inspections such as IR, motion detectors, moisture meters and trained dogs can provide additional means to detect termites where visual inspections are not possible.*

Ultimately, relying primarily on visual inspection is preventing the pest management industry from fully addressing modern construction practices to protect consumers.

**Consumer Protection and SPF**

SFC and SPFA agree with GSPCC that protecting consumers' homes must be the principal focus for any solution to termite inspections at the FFI. Achieving consumer protection is not an off/on switch. Building science is a complicated balance of multiple variables that contribute to durable and resilient homes. Any solution that protects consumers must also balance termite inspection, energy efficiency, and sound building science**.**

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[2] Protection of Wood-Frame Homes from Subterranean Termites: Evaluation of Building Code Provisions & Recommended Improvements

[3] Termite Survey and Hazard Mapping. Cookson and Trajstam. 2002.

Homeowners are generally selecting SPF as a primary component to create an unvented or encapsulated crawlspace. Unvented crawlspaces are formed by insulating and air sealing the crawlspace with a water-resistant, air impermeable, material, like closed-cell SPF. SPF is an ideal tool for unvented crawlspaces because it can insulate, air seal, and control moisture at the FFI without additional products. Eliminating the use of SPF on the FFI undermines the benefit of the use of SPF in crawlspaces.

Unvented crawlspaces protect consumers. Creating an unvented crawlspace is the one of the most practical applications to effectively bring ductwork and HVAC equipment located in the crawlspace into conditioned space in both new and existing homes. Ductwork and HVAC equipment inside the conditioned space can save between 11 and 15% on cooling energy use in hot-humid climates.[4] Sealing the FFI with high performance insulation helps control stack effect, reducing infiltration of moisture-laden air at the FFI. This, in turn, reduces dehumidification needs during the cooling season and greatly reduces the potential for condensation on concealed wood framing. Allowing condensation to form on the framing will result in mold, mildew and poor indoor air quality, and can ultimately lead to conditions ideal for wood-destroying organisms, including termites, that lead to rot and decay of the home's structure.

**GSPCC Code Change Proposal**

The GSPCC proposal seeks to eliminate high performance insulation from the FFI. From a building science perspective, the GSPCC's proposal is deficient and will lead to unintended consequences. The proposal does not provide for an adequate internal air barrier to control winter time moisture – leading to rot and decay**.** Further, the proposal does not require an adequate air barrier. The Georgia State Minimum Standard Building Code limits air leakage to 5 $ACH_{50}$. To meet this standard, builders will need to seal the FFI, leveraging high performance insulation to limit air leakage.

Finally, the Code sets the minimum requirements for building in the State. Eliminating the use of high performance insulation at the FFI limits consumer choice and the ability to exceed the current requirements.

**SPFA Code Change Proposal – Joint SPFA / SFC Video on Proposal**

One of the most effective means to create an unvented crawlspace is to apply a continuous layer of closed-cell SPF (ccSPF) from the subfloor above to the interior grade of the crawlspace wall. Best practices for unvented crawlspaces include insulating and air sealing the entire FFI and inside of the foundation wall with a continuous layer of ccSPF, using a vapor barrier on the floor of the crawlspace.

SPFA's proposal includes an uninsulated inspection strip at the top of the foundation wall and leaves the front face of the sill plate exposed for visual inspection. SPFA's proposal provides a compromise to the best practices for encapsulated crawlspaces by leaving the sill plate exposed for visual inspection and sealing the gap between the sill plate and foundation using other sealants. Termite damage to the sill plate will demonstrate the onset of a subterranean termite infestation. If termites are visually detected in the sill plate, non-visual inspection techniques or destructive sampling can be applied in adjacent areas of the FFI to detect additional damage.

[4] Beal, D., J. McIlvaine, K. Fonorow, and E. Martin. 2011. Summary of Interior Ducts in New Construction, Including an Efficient, Affordable Method to Install Fur-Down Interior Ducts. Prepared for the U.S. Department of Energy.

The SPFA proposal not only improves energy efficiency compared to the GSPCC proposal, it also helps balance moisture intrusion and condensation from infiltration of hot-humid air during the summer. Further, the SPFA proposal works on new construction and retrofit, and it is compliant with inspection gaps implemented in other southeastern states. This proposal could serve as the basis for best practices for unvented crawlspaces in other states.

Based on the previous discussion with the GSPCC, we have developed some additional considerations for a compromise solution, which are included below.

**Use of Exterior Air Barriers on the FFI**

During the June 9 meeting, members of the GSPCC suggested that air sealing of the FFI can be achieved by installation of an air barrier material or system from the exterior side of the building**.** This design is problematic for nearly all types of residential construction because the air barrier or sheathing must be continuously sealed to the foundation. Importantly, it is not a practical solution for retrofit, without conducting extensive renovations. It also creates yet another pathway hidden behind the barrier for termites to enter the structure.

To air seal the exterior of the FFI, water resistant barriers (WRBs) or air barriers are adhered to the outside of the building. The products will need to be taped, sealed, and permanently installed to create a continuous air barrier. Using an external barrier essentially replicates the same problem for exterior visual inspection and creates more hidden pathways.

Applying an air barrier, like SPF, to the interior side of the FFI is less complex, more practical, more effective, more energy efficient, and more durable (*e.g.* the air barrier is protected from the elements). Therefore, in terms of protecting consumers, air sealing the internal side of the FFI is a more effective solution.

**Potential Compromises**

SFC and SPFA believe a new proposal could protect consumers and provide a solution for termite inspections at the FFI. We believe the use of termite barriers in combination with the requirements for an uninsulated inspection strip may provide a starting point for a compromise solution. Because termite barriers force termites to come out into areas for visual inspection, the use of termite barriers will provide additional opportunity for visual inspection at the FFI – although this solution is most useful for new construction.

We acknowledge that different solutions need to be developed for new construction and retrofit.

***New Construction***

- Apply spray foam to the FFI leaving the front face of the sill plate exposed with an inspection strip at the top of the foundation wall
- Require a combination of termite barriers, treated wood sills, and soil treatment for all new wood frame construction
    - Possible exception for finishes on finished basement walls when treated wood materials or metal studs/furring are used for attachment of finishes to the interior side of the basement wall
- Use alternative inspection technology
- Use destructive sampling (with patch and replace) where infestations are suspected
- Proactive use of termiticide (in accordance with the FIFRA label) and bait stations

***Existing Construction***

- Apply spray foam to the FFI leaving the front face of the sill plate exposed with an inspection strip at the top of the foundation wall
- When sill plates are of untreated wood, the wood shall be surface treated with a termite treatment suitable for interior use (e.g., borate, etc.) prior to the retrofit insulation work regardless of the insulation and air-barrier materials and approaches used at the FFI
- Use alternative inspection technology
- Use destructive sampling (with patch and replace) where infestations are suspected
- Proactive use of termiticide (in accordance with the FIFRA label) and bait stations

SFC and SPFA would be happy to answer questions or further discuss this compromise solution before its approval by GSPCC.

Sincerely,

Stephen Wieroniey

Director
Spray Foam Coalition

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