



THE ADHESIVE AND SEALANT COUNCIL, INC.

November 14, 2006

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U.S. Department of Housing and Urban Development  
Office of Policy Development and Research, Room 8134  
451 Seventh Street, SW  
Washington, DC 20410

SUBJECT: Progress Report – October 2006

Contract No. H-21521CA, Investigation of Adhesive Applications for Strong and More Disaster-Resistant Roof Assemblies – Phase 1

Period of Performance: 4/7/06 – 4/7/07

Contractor: The Adhesive and Sealant Council, Inc.  
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Email Attachments which Accompany this Report:

- None

## **SECTION I – INTRODUCTION**

The HUD Office of Policy Development and Research has been extensively involved in supporting research and development on building technology innovations, construction systems, products, standards, regulations, and code issues which affect the affordability, safety and livability of the nation's housing. As the interrelationships of these topics become more complex, the continued need to conduct research and demonstrations becomes even more critical.

In addition to the research and demonstration efforts administered directly by the Office of Policy Development and Research, HUD administers the Partnership for Advancing Technology in Housing (PATH) program. PATH provides private and public sectors for the U.S. housing industry an unprecedented opportunity to advance state of the art practices in the design and construction of affordable housing for the public by accelerating the process of developing and introducing new and innovative technologies and new materials through demonstrations and pilot projects throughout the nation.

This cooperative agreement with the PATH program will investigate and characterize the use of adhesives to fasten roof sheathing materials to underlying roof structures in residential buildings. This application of adhesives holds the potential for improvements in roof system durability and disaster resistance, and applies to both new and existing construction.

## **SECTION II – PROGRESS AND SCHEDULE**

Phase 1 of this project consists of 4 tasks. This report updates the status of Task 1 and establishes revised objectives for the remaining 3 tasks of the project. The status of each task is presented below.

### **Task 1. Assess Performance Requirements and Develop Criteria for Adhesive Consideration**

Start Date: 04/15/06

Deliverable & Due Date: Summary of adhesive-based roofing attachment systems, relevant building code, relevant product standards, and related research programs. Submitted to GTR 8/22/06.

Progress and Deliverables:

Task 1 called for ASC and its subcontractor Newport Partners (NP) to better understand the performance requirements needed from adhesives used in roof assemblies by a) canvassing building code and product standards, and b) investigating related research and product testing. Together ASC and NP have completed this task by engaging dozens of industry stakeholders, including ASC members and non-member adhesive manufacturers, researchers from academia and private firms, industry associations, building code bodies, and international groups involved in research and testing. Findings can be grouped into the following categories:

- Similar research and product development efforts
- Findings on the most suitable applications for similar systems (e.g. retrofit of existing roofs)
- Relevant building code issues that affect the application (e.g. issues with fire blocking for foam plastics)
- Relevant building performance and installation issues which have been raised (e.g. restricting ability of sheathing panels to expand/contract with ambient humidity changes)

The results of these research efforts are presented in the Task 1 summary report submitted to HUD in August 2006.

We are also attempting to gain access to the recent PATH-funded research conducted by Virginia Tech on use of acrylic tapes in wall construction. We have discussed this possibility with both Virginia Tech and the GTR, and will continue to monitor the availability of the research findings.

### **Task 2: Assessment of Industry and Market Factors**

Complete by January 7, 2007

The objectives of this task are to:

- Conduct assessment of jobsite factors which are involved when using adhesive-based systems (especially in new construction). More information is needed on these issues to understand the magnitude of potential barriers.
- Investigate and characterize insurance industry programs focused on encouraging improved water resistance and uplift resistance for roof systems (new and existing) to mitigate future damages. This will improve our understanding of industry interest in applications involving adhesives.
- Determine the most feasible application(s) moving forward based on performance, building code, “constructability”, and market factors. This effort involved a roundtable discussion of adhesive manufacturers at the ASC Fall Convention to get their input. A retrofit and/or new construction application will then be the focus of Tasks 3 and 4.

Task 2 Deliverables:

- Summary report of jobsite factors, including assessments of different application strategies
- Summary report on insurance industry impacting adoption of adhesive-based systems

Task 2 Progress:

In October we convened a group of manufacturer stakeholders at the ASC Fall Convention in Nashville. A summary of this meeting was prepared and shared with the GTR in late October. The cross-section of manufacturers generally felt that new construction applications of adhesive-based roof system offered the most promise in terms of market impact and performance improvements. The group also validated our project approach, recognizing that code issues, constructability issues, and the need to provide some added value over traditional roofing methods were keys to developing the application further. The link to potential insurance industry incentives for “code plus” construction practices was also viewed as an important factor in exploring the potential for this application. Based on these findings subsequent tasks in the project will focus primarily on a new construction application.



Application of Roof Sheathing Panels  
– New Construction

Also in October, our team continued research of insurance industry programs which recognize and provide incentives (e.g. premium discounts) for construction measures which enhance the disaster resistance of homes. Florida has some instances of programs of this nature, as well as other states in the southeastern U.S. During November we will summarize our findings on this topic, which are important to this research because programs like these could eventually help determine the market viability of enhanced construction techniques.

### **Task 3: Code Evaluation and Preliminary Tests**

Complete by February 26, 2007

The objectives of this task are to:

- Explore solutions to code issues for the chosen applications: including the fire protection issue and the pathway for meeting performance-based suction load requirements. Work under this task would include interacting with adhesive manufacturers to develop potential approaches, such as making an adhesive less flammable per ASTM testing.
- Conduct preliminary testing (in conjunction with ASC members or other manufacturers) to evaluate system performance and assess potential solutions to constructability issues. For example, testing of mocked-up new construction roof systems might employ a pre-applied adhesive tape applied to the top surface of the truss.

Task 3 Deliverables:

- Summary of relevant code issues and strategies for compliance
- Summary of preliminary testing – including test design, findings, and recommendations

This task depends on the output of Task 2 and is not yet underway.

### **Task 4**

Complete by April 15, 2007

The objectives of this task are to:

- Summarize, based on results of Task 3, current “gaps” in adhesive-based roof sheathing attachment systems in three core areas: 1) performance testing, 2) codes, and 3) solutions to constructability issues.
- Develop a primer on using adhesives to strengthen roof systems. Guidance document would be aimed at the appropriate audience, e.g. if the application is new construction the audience would be builders and contractors; for retrofit applications the audience would be contractors, roofers, and DIY homeowners. The short (~ 2 page) primer will explain the benefits of using an adhesive-based system, the intended application, and recommendations for materials.

Deliverables:

- Report on findings and remaining information gaps
- Primer on using adhesives to strengthen roof systems

### **SECTION III – PLANNED EFFORT**

Activity for November 2006 will focus on the revised Task 2, primarily summarizing the state of the insurance industry with respect to incentivizing enhanced construction techniques which bolster housing disaster resistance.