

Federal Roofing Committee Meeting

October 27 & 28, 1992 -
Champaign IL

Reported by
Dr. Richard E. Norris RRC,
PE

The Federal Roofing Committee (FRC) met in Champaign, Illinois on October 27 and 28, 1992. Federal employees interested in roofing issues are members. Guests included Donald Berg of the National Roofing Contractors Association (NRCA) and George Sievert of the Society of Plastics Industry (SPI). The meetings are a biannual event that allows members to present short summaries of the roofing activities in their organizations. It also provides a forum for coordination of research, standards writing, guide specifications, and other federal roofing activities.

The meeting began with a welcome from Dr. Shaffer, the Technical Director of the U.S. Army Construction Engineering Research Laboratories (CERL), the host organization. The first session included presentations from researchers and practitioners, describing some of their more interesting activities. The second session was a business meeting, primarily for the coordination of efforts.

The Naval Civil Engineering Laboratory (NCEL) was represented by Dr. Robert L. Alumbaugh and Dr. Richard E. Norris, RRC. NCEL roofing activities include:

- Research on the mechanical properties of modified bitumen roofing materials is continuing. Plans are to expand this project to compare chemical composition and physical properties of roofing membrane materials during aging. This work will track the changes in mechanical properties with change in chemical composition during weathering and show the correlation between the two. This would aid in the design of materials as well as in the design of roofing membrane systems. Drs. Norris and Alumbaugh co-authored a paper on the mechanical properties of modified bitumen roofing materials that Dr. Norris presented at the 8th International Waterproofing Congress in Madrid, Spain.
- Dr. Alumbaugh and Tom Wallace,

the Navy's roof consultant conducted two roofing workshops, one in San Diego, California, and the other at Dam Neck, Virginia. They are preparing a notebook for future workshops.

- Dr. Alumbaugh is writing an Inspection, Maintenance, and Repair Manual for Sprayed Polyurethane Foam Roofing (SPUF) systems, for the U.S. Bureau of Reclamation.

- Dr. Alumbaugh is co-author of a report on the thermal performance of SPUF roofing systems that will be presented at the SprayFoam conference in Orlando in 1994.

- Dr. Thomas Novinson of NCEL is discussing potential funding for his work on energy conserving coatings with industry. He is working with pigments that change color from white to dark blue when cooled. Funding for continuation of the work would allow development of roof coatings with these pigments.

The Oak Ridge National Laboratory (ORNL) was represented by Andre Desjarlais. ORNL activities include:

- Analysis of the impact of convection on the annual heating load for various climates was performed. As a result of this analysis, the State of Minnesota has adopted the requirements that thermal performance data be reported at winter design conditions (-18°F) in their energy code. ORNL is developing an ASTM test method for determining the thermal performance of attic insulation materials. Particular emphasis is placed on the convection effects on thermal performance. This work develops a method for retrofit of existing attics to mitigate the convection condition that reduces the effectiveness of the insulation.

- ORNL recently completed construction of an air permeability testing apparatus. Studying the icing problem on standing seam metal roofs at Ft. Drum. CRREL personnel assisted in the development of heat tracing systems to minimize valley icings on metal roofs.

- CRREL co-sponsored the Second International Conference on Snow Engineering in July 1992. Mr. Tobiasson also presented a paper at the conference and edited the proceedings.

- CRREL has an ongoing project to develop snow load meteorological data for the USA.

- Mr. Tobiasson chairs the ASCE Task Committee on Snow Loads and continues to assemble information for an update of ASCE Manual 7, "Minimum Design Loads for Buildings and Other Structures."

- Mr. Tobiasson is working on a chapter of the new ASTM Manual "Moisture Control in Buildings."

- Mr. Tobiasson will present the paper "Use of an Infrared Scanner and a Nuclear Meter to Find Wet Insulation in a Ballasted Roof" at Thermosense XV Conference.

- Mr. Tobiasson will present the paper "Standing Seam Metal Roofing Systems in Cold Regions" at the 10th Conference on Roofing Technology at NIST in April.

Al Knehans of the Army Corps of Engineers, Directorate of Public Works, Engineering & Housing Support Center (EHSC) reported on the ROOFER program and other EHSC activities. ROOFER is a roof management expert system, developed and implemented by the Army to improve the government's roofing construction and maintenance programs.

These include:

- Eleven Army installations have completed ROOFER implementation as of October 1992. This represents a total of 19.7 million square feet of roofs at a cost of \$1.37 million for the evaluations. Two installations have begun implementation of the ROOFER program, and will add 5.4 million square feet and \$409 thousand to these totals. Twenty (20) other installations are considering the program.

- AR420-70, a new Army document, establishes requirements for Army installations to implement the ROOFER

criteria in a periodic inspection program.

- TM5-617 will soon be published. It is a manual on roofing design and construction, intended to aid the designer in specifying a roofing system for the Army. This document was prepared by the Huntsville District Engineer's office of the Corps of Engineers, represented at the meeting by Frank Hancock.

Dave Bailey represented CERL. Their current activities include:

- CERL conducted a materials characterization study of BUR, EPDM, PVC, and modified bitumen membranes and identified critical performance characteristics and degradation factors and mechanisms. This work will be published in a technical report. Plans include tests to validate the degradation mechanisms and track the methods of degradation and establishment of long-term in-service exposure tests to provide comparisons to accelerate aging tests. This will allow development of a degradation model.

- CERL is experimenting with methods of leak detection to develop a "smart roof" that will alert the building owner to the presence of leakage before it has the time to do much damage.

- CERL is the lead laboratory in development of the ROOFER program. The condition evaluation procedure for single-ply membrane systems is completed. A program of short courses, conducted by the University of Illinois - Conferences & Institute is in place to educate those consultants and facilities engineers that will use the ROOFER program. Several ROOFER publications are planned for this year.

- A long term exposure test of experimental PVC roofs is in its eighth year. Samples are taken periodically for evaluation.

- A long term exposure test of modified bitumen test roofs is in its fifth year. A publication documents the results of the first three years of testing.

Dr. Walter J. Rossiter, Jr. represented the National Institute of Standards and