



Joint Committee on Roofing Materials and Systems

Introduction

CIB W83/RILEM 166-RMS Joint Committee on Roofing Materials and Systems has completed two year's activities. The Chairman is Walter Rossiter, National Institute of Standards and Technology (NIST) (USA) and the Secretary is Edward Kane, Firestone Building Products Co. (USA). The Committee is comprised of 33 members from 19 countries, and is a descendent of the CIB W83/RILEM 120-MRS Joint Committee on Membrane Roofing Systems, which completed its work in 1995. Two reports were issued: (1) "Thermal Analysis Testing of Roofing Membrane Materials: Final Report of the Thermal Analysis Task Group," and (2) International Index of Codes of Practice Related to Membrane Roof Systems."

The Joint Committee has two objectives: (1) to develop a methodology for assessing the condition of in-

place (i.e., existing) flexible roofing membranes, and (2) to determine the state-of-the-art with regard to design, application, and maintenance of sustainable membrane roofing systems. To meet these objectives, the Committee has initiated two task groups each of which will conduct activities to meet one objective. Task Group 1 will focus on condition assessment. Task Group 2 will examine issues associated with sustainable roofing, and is entitled "Towards Sustainable Roofing." This title recognises that the concept and practices of sustainable roofing will be evolving over the life of the Committee. Although individual members may have specific interests in the activities of one task group, all members are participating in the discussions of both.

Since its initiation in 1995, the Joint Committee has met three times:

- Brussels, Belgium, on 14 & 15 May 1996 sponsored by Performance Roof Systems,
- Haifa, Israel on 7 & 8 April 1997 sponsored by Technion, and
- Gaithersburg, Maryland USA on 14 - 16 April 1997 sponsored by NIST.

The Brussels Meeting

At the Brussels meeting, the two task groups developed plans for performing their work over the next 3-4 years. Each will issue a report at the completion of its work. Task Group 1 activities will address the following: (1) estimation of the remaining service-life of an existing flexible roofing membrane; (2) decisions on whether an existing membrane should be left alone, repaired, re-covered, or replaced; and (3) development of a methodology to assess remaining service-life of an existing membrane, and to assist in making decisions whether it should be left alone, repaired, re-covered, or replaced. Procedures for sampling existing membranes will be considered in the methodology.

Task Group 2 will examine the state-of-the-art of the practices used throughout the world for constructing, maintaining, and disposing sustainable roofing systems. Included will be a review of the impact of roofing on the world environment including energy consumption, energy savings, and landfill uses. The activity will be limited to flexible membrane roofing systems (often referred to as "waterproofing" in some regions of the world), and their means of attachment and support, and underlying insulation. In recent years, concerns over protection of the environment during the construction and maintenance of roofing systems have created interest in design and application criteria that prevent or limit harm to the environment. Such practices, which also consider the life-cycle costs of the roofing systems, are called sustainable (or, sometimes, environmentally-friendly) roofing. The trend to sustainable roofing is expected to continue to grow in the years ahead. Practices for sustainable roofing may vary from country to country around the world, or even between different regions within a given country. The state-of-the-art of sustainable roofing practices has not been assessed on a worldwide scale.

The Haifa Meeting

At the Haifa meeting, each task group first further refined the plans for conducting the Committee's activities. Then, each began work towards accomplishing the tasks. A major activity for Task Group 1 was the development of a draft flow chart that outlined the general pathways and activities that comprise the inspection and assessment of a low-sloped roofing system. The draft flow chart was circulated to the full Committee for the members' review and comments.

Task Group 2 began its work on reviewing the state-of-the-art of sustainable roofing by considering a definition for "sustainable roofing." Although most members understood the concept, potential confusion in understanding the term was considered possible due to language barriers among the members. After much discussion, the following definition was agreed upon. Sustainable roof: A roof system designed and constructed taking into account energy consumption, waste products, environmental impact, and costs for the following: material fabrication including extraction and processing, material packing, transportation, installation, service life, reuse/recycle/tear-off, and disposal. The Committee initiated the

development of a bibliography of papers and reports that address roofing in one or more of the above listed subjects.

The Gaithersburg Meeting

At the Gaithersburg meeting, the task groups continued with their respective activities. Task Group 1 began by discussing the comments received on the condition assessment flow chart drafted at Haifa. After considerable discussion, the flow chart was refined. The present version is shown in Figure 1 ([click for larger version](#)). As is evident in Figure 1, the flow chart illustrates the general steps involved in assessing the roof condition and indicates decision points that are crossed when determining whether an existing roof should be maintained in its present state, repaired, or replaced.



Note in the flow chart that one step of assessing the condition of the roof involves sample extraction and examination of the samples (probably in a laboratory). This step is not well defined at this time by the Committee members and will be examined in the next few months. Questions raised include: How often should samples be taken? How many samples are required to properly assess the condition of the roof? What tests should be recommended? What are the standards for condition assessment used in the countries represented by the members? How are the results of tests conducted to assess condition interpreted?

Two other steps in the assessment process for which information is being assembled by the Committee are those involving the visual inspection of the roof and of the building. In this regard, the Committee intends to review the parameters which should be used to visually assess a roof. The members will list protocols used to inspect flexible membrane roof systems. The overall goal is to produce a bibliography of manuals that can be used internationally. In conjunction with this goal, some of the Canadian members have made available to the Committee the results of their review of computer software used to assess the condition of existing roofs. A presentation of the review was made at the Gaithersburg meeting.

The 4th International Symposium On Roofing Technology

The National Institute of Standards and Technology (NIST) Building and Fire Research Laboratory (BFRL) and the National Roofing Contractors Association (NRCA) have joined in sponsoring Symposia on Roofing Technology on a biennial basis since 1969. In the United States, these Symposia are the major industry forums for the dissemination and discussion of research results and the presentation of the latest advances in roofing technology. In 1977, 1985, 1991, and 1997, the Symposia were international in scope with international co-sponsors, authors, and audience. In 1997, NIST and NRCA were joined by CIB and RILEM along with three other organisations, the International Waterproofing Association (IWA), the National Research Council of Canada (NRCC), and the Canadian Roofing Contractors Association (CRCA) in co-sponsoring the Fourth International Symposium on Roofing Technology. This Symposium was held from 17-19 September 1997 in Gaithersburg, Maryland.

The theme of the 1997 Symposium was "Challenges of the 21st Century." Advances in technology have contributed significantly to improvements in roofing performance since the beginning of the Symposia series. The theme of this Symposium was appropriate as the roofing community faces the continuing challenge of using science and technology to overcome current weaknesses and limitations in roofing performance, and to put sound solutions into practice. Approximately 450 individuals were in attendance from 22 countries. Fifty-nine papers grouped into 18 sessions were given over 21/2 days of concurrent sessions with simultaneous English, French, and German translations. 12 papers were presented by members of the CIB/RILEM Joint Committee. In addition, members acted as technical reviewers of the papers and chairs of the technical sessions. A Proceedings of the Symposium is available from the NRCA (address at the end of this Report). The subjects addressed in the technical sessions included the

following: single-layer roofing, service life evaluation, asphalt shingles, metal roofing, wind engineering, fire, hail and earthquake, in-service performance, test methods for bituminous roofing, technology review, modified bitumens, moisture control, moisture detection and insulation, modelling of moisture control, and practice and design.

The Next Meeting

The next meeting of the Committee will be held from 7-9 June 1998 in Copenhagen, Denmark. The host will be the Danish Building Research Institute. Completed plans are being developed at this time. The dates and location of this meeting were selected to coincide with the 10th International Congress of the International Waterproofing Association, which will be held in Copenhagen on 10-12 June 1998. The IWA Congresses are held every three years and are attended by the members of the CIB/RILEM Joint Committee.

Contact for further information on the Committee including details of the June 1998 meeting:

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