

Overview

Twenty to thirty years ago the choices open to a potential consumer or specifier of waterproofing membrane were simple. The only available products were hot-applied, built-up bituminous materials. The performance limits of these membranes were fairly well established, as were application techniques and life expectancy. However, with the introduction of single-ply rubber sheeting in the late 1950s and 1960s and liquid-applied polyurethane membranes in the 1970s, the industry advanced technologically at a rapid rate and still continues to grow today.

The various specification writing groups have attempted to keep pace with the changes in the industry, developing specifications and recommended guides for the use of the various materials as rapidly as the industry and the workings of the organization allow. ASTM Committee C-24 on Building Seals and Sealants has published two specifications: Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Integral Wearing Surface (C 957) and Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course (C 836); and three recommended guides: Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Separate Wearing Course (C 898), Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Integral Wearing Course (C 1127), and Guide for Design of Built-Up Bituminous Membrane Waterproofing Systems for Building Decks (C 981), and has balloted a guide for use of cold liquid-applied membrane on vertical surfaces below grade. ASTM Committee D-8 on Roofing, Waterproofing and Bituminous Materials has also developed a draft specification for vulcanized rubber waterproofing and is working on a recommended guide for installation of these membranes.

While this work has progressed, the industry has also moved forward, reevaluating existing designs and addressing unsolved problems with new designs and new materials. As a forum to examine the changes in the building deck waterproofing industry and to identify new areas of interest, Committee C-24 sponsored a one-day symposium on Building Deck Waterproofing in January 1989. The scope was very broad and included everyone from design professionals to manufacturers to contractors, each focusing on different segments of the waterproofing industry. This special technical publication is the compilation of papers presented at that symposium, and alternates which could not be presented because of the one-day format.

This book is divided into three parts. The first section contains five papers which cover principles of plaza deck waterproofing design, and considerations of importance to both waterproofing specifiers and subcontractors. By airing the viewpoint of three of the main parties involved in the design and installation phase of building deck waterproofing, namely the architect, the specifier, and the contractor, a better understanding of the needs of each player will be gained, better understanding will be generated, and, ultimately, better waterproofing systems will be designed and installed. Located also in this first section are two papers devoted to cathodic protection (CP). The first is a primer on the terminology and types of CP systems available in the market place. This paper deals strictly with plaza decks and should prove to be an excellent source of information for one unfamiliar with the technology. The second paper, although geared toward bridge decks, is a very detailed history of CP systems in this country and an in-depth description of cathodic protection

systems and how they perform. This paper builds on the information given in the previous article and provides much greater detail.

In the second section are four papers that deal with testing and test methods for waterproofing systems, and problem solving in the field. The first paper outlines a procedure to be used for selecting hydrophobic sealers for protection of new decks and repair of damaged building decks. The author provides insights into the appropriate specifying of hydrophobic sealers based both on performance and cost criteria. The second paper is a case study showing how a severe problem with a leaking and nearly inaccessible parking garage was successfully solved by the authors. The third paper evaluates the various methods of adhering modified bituminous waterproofing membranes and quantifies the results attained using any of the conventional methods. The fourth paper examines the test methods contained in existing ASTM waterproofing specifications C-836 and C-957 and gives some thought-provoking insights into their origins.

The last section deals with problems in the waterproofing field. One of the purposes of test methods and specifications is to identify problems in the laboratory before a product goes to the marketplace or is used in an application which is not appropriate. Unfortunately, no one can foresee all problems before they occur and products will be used inappropriately, either in terms of installation or of ability to perform as required. The papers in this section discuss problems that still exist in the waterproofing marketplace and give some recommendations for developing answers to those problems. One goal of this symposium and also this special technical publication was to provide a forum where all sides can be heard so methods can be developed to avoid problems or failures in the field, and thereby improve the entire industry.

Three papers comprise this last section. The first deals with reflective cracking in parking deck coatings and the need for a better test method to quantify a membrane's resistance to this phenomenon. The second is a general overview of the state of waterproofing specifications in the industry and some recommendations for improvement. The last paper is an overview of what can go wrong when there is a lack of understanding between architect, specifier, installer, and building owner about the expectations of a waterproofing system.

If there is one conclusion to be drawn from the compiled work of the authors, it must be that the work of ASTM, and consensus standards organizations like it, is far from complete. Problems still occur that are not detectable by current test methods. New materials are being used, and these products will require a whole new set of specifications or major changes to existing ones. Building designs are changing, and the materials used successfully in the past are not always successful in the current designs. Standards and the research work to support them are needed to address these situations. The papers in this publication should point the way toward new efforts, as well as provide a clear view of the state of the art of building deck waterproofing in 1989.

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