

SEAW RSM-03

SEAW's Handbook of a *Rapid-Solutions Methodology*[™] for Wind Design

by

STRUCTURAL ENGINEERS ASSOCIATION OF WASHINGTON
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Preface

The formal and elegant explanation of wind:

“If the air were always quiet, it would not be necessary for engineers to consider wind forces when designing structures. They would need to consider only the static pressure due to the weight of the air. However, the air is seldom quiet but flows, sometimes with great violence, under the influences of forces generated by heat from the sun, and the centrifugal forces resulting from the earth’s rotation.”—*Wind Forces on Structures*”, American Society of Civil Engineer, *TRANSACTIONS*, Vol. 126, Part II, 1961

The more concise explanation of wind:

“The wind is like the air, only pushier.” – *Taken from an anonymous 5th grade science exam answer*

This SEAW *Handbook* and its companion document, SEAW’s *Wind Commentary* (SEAW/ATC-60 Report), was a long time coming. They emerge from a thirteen-year SEAW Wind Engineering Committee dream of helping the general practitioners – be they design engineers, governmental and scientific organizations, contractors, or even researcher – understand the mechanics of wind analysis and design as regulated by modern building codes and standards. Although the International Building Code and American Society of Civil Engineers Standard No. 7 are primarily used in the United States along with its territories and protectorates, as well as Canada and some parts of South America and the Middle East, the concepts and shortcut formats we present can be extended to other methods of designing for wind pressures.

The SEAW Wind Engineering Committee began the *RSM* short-cut rapid-solution provisions in late 1992 when the Wind Engineering Committees of the three Pacific coast Structural Engineers Associations of Washington, Oregon and California joined forces in order to work on wind-related issues including those in codes and standards. (See Chapter 1 of SEAW’s *Wind Commentary* for the history of the TS-SEA.)

The Structural Engineers Association of Washington (SEAW) *Rapid Solutions Methodology*[™] for Wind Design (*RSM*) consists of simplifications to the ASCE 7 Analytical Method for common structures of all heights.

The authors of this book have between them decades of varied experience and a deep respect for each other and those other experts from whom we solicited advice and expertise. If one wants to

learn any subject thoroughly, I can easily recommend that you try to write a textbook or even a learned-treatise on that subject.

The synergy that was unleashed by the individuals listed below was nothing short of marvelous. One individual, more than any deserves individual credit and that is Tony Tschanz, PhD, who in my estimation is an “*Engineer Extraordinaire*.” Tony’s efforts to egg us on to find ever shorter, simpler, cleverer and more “perfect” ways to describe or summarize points was crucial. Tony also has always felt that the science and technology of wind engineering must be made as clear as can be for those willing to study and understand it.

The following SEAW members contributed to and developed this report. In addition members of this committee have volunteered for years to help maintain and improve ASCE 7 and the IBC.

- Donald Scott (Chairman of the SEAW Wind Engineering Committee),
- Ahmad, Asili,
- Scott Beard,
- Edwin T. Huston,
- Edgar Lebert,
- John V. Loscheider,
- William H. Mooseker, and
- Tony Tschanz.

Also, we wish to acknowledge the essential efforts of A. Gerald Brady who edited our drafts for the report, and Peter N. Mork, Michelle Schwartzbach, all of the Applied Technology Council who provided report production services and Angela Seybold here in Seattle who provided local report production services as well. The affiliations of these individuals are provided in the list of project participants.

Finally, a special thanks is due to our spouses and friends who supported us over the last 3-½ years in this effort. Admittedly, however, the support was also accompanied by somewhat skeptical questions of if we would ever really finish!

Jerry J. Barbera
Chairman, SEAW Handbook Committee
Seattle, Washington, June, 2004

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