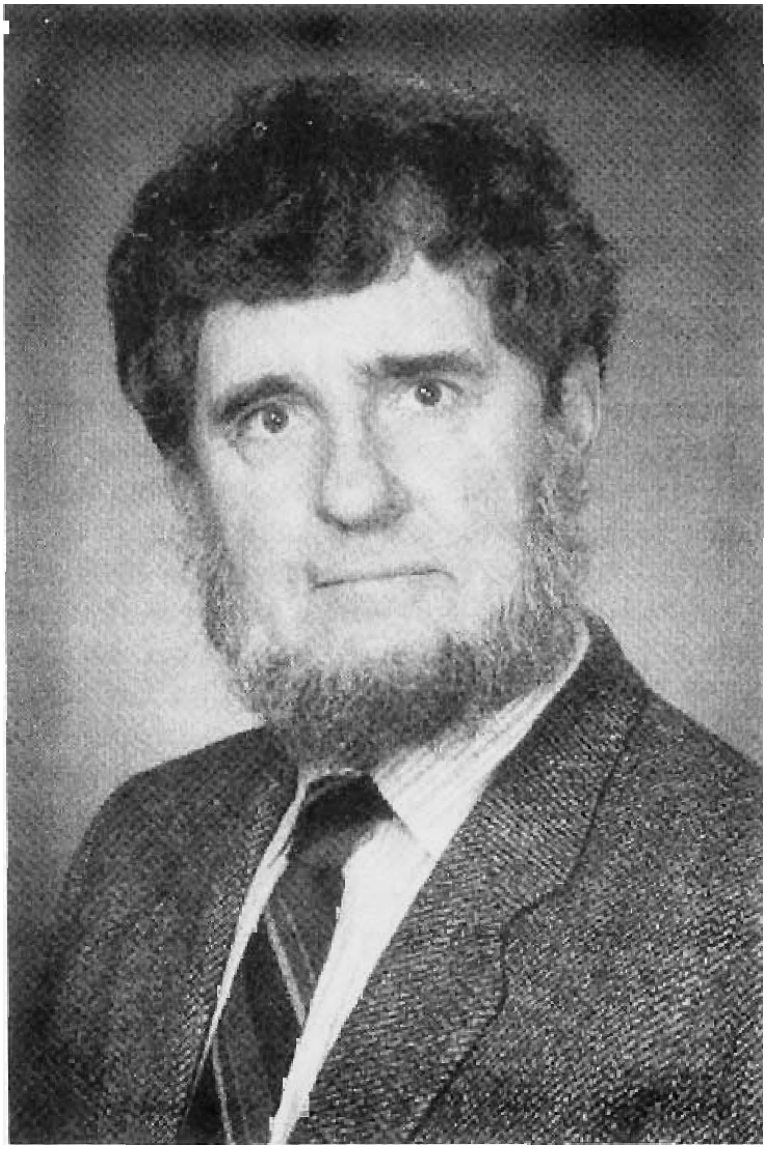

Professor John Roorda (1939 – 1999)

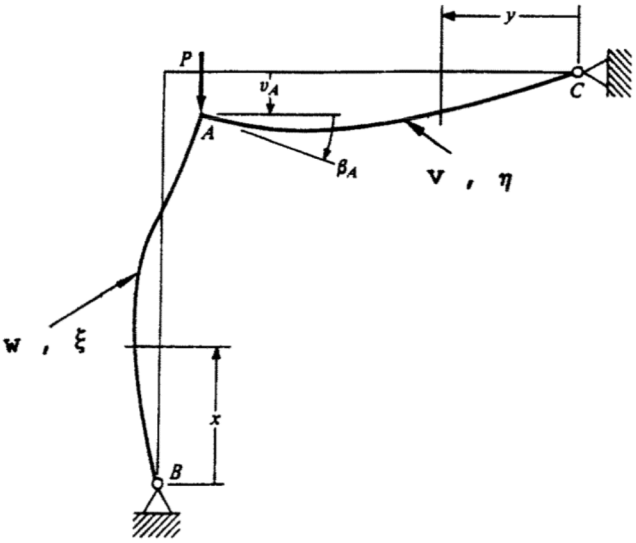

Fig. 1. Roorda–Koiter frame.

(sketch of Roorda Frame from Chaos, Solitons & Fractals, Vol. 7, No. 8, pp. 1179-1186, 1996, by I. Elishakoff, et al)

Professor Ardeshir Guran writes in a September 2012 email message to David Bushnell:

"John was from Milton, Ontario, Canada. His roots were from Friesland, Netherlands. He chose [the University of] Waterloo because of its co-op program in engineering. He graduated from Waterloo in 1962 with a degree in Civil Engineering. [Then he] went to University College London, UK on a commonwealth scholarship. [He] received his PhD in 1965 (Supervisor: Prof. Henry Chilver. Later, Sir Henry Chilver, and finally Lord Henry Chilver). After one year of postdoctoral fellowship at the University of California (San Diego) he returned to Waterloo as an assistant professor.

John retired (along with about half of the UW Civil Dept when he was department chair), because of a very generous retirement package. But then he learned of his diagnosis (lung cancer) shortly after that.

Selected Publications:

J. Roorda, Instability of imperfect elastic structures, Ph.D. Thesis, University College London, London, UK, 1965.

15 Roorda, J., "Stability of Structures with Small Imperfections," ASCE Journal of Engineering Mechanics Division, Vol. 91, No. EM1, 1965, pp. 87-106.

Roorda, J., "The Buckling Behavior of Imperfect Structural Systems", Journal of Mechanics and Physics of Solids, Voi. 13, 1965, pp. 267-280.

J. Roorda (Department of Civil Engineering, University of Waterloo, Ontario, Canada), "Some statistical aspects of the buckling of imperfection-sensitive structures", Journal of the Mechanics and Physics of Solids, Vol. 17, No. 2, March 1969, pp. 111-123, doi:10.1016/0022-5096(69)90038-6
ABSTRACT: The buckling of imperfection-sensitive elastic structures is examined from a statistical point of view. Given the relation between the imperfection and the buckling load, an account is given of the dependence of the statistical parameters of the critical load distribution upon the parameters of the imperfection distribution. It is shown that the statistics of the critical load distribution are highly dependent on both the mean and the dispersion about the mean of the imperfections. The question of the probability of failure at a specified nominal load, and its dependence on the degree of uncertainty of both load and imperfection, is also analysed. Numerical results are obtained on the basis of a normal imperfection distribution for two classes of structures, namely symmetric and asymmetric structures.

John Roorda, (Solid Mechanics Div., Univ. of Waterloo, Waterloo, Canada), "Buckling of Shells: An Old Idea with a New Twist", ASCE Journal of the Engineering Mechanics Division, Vol. 98, No. 3, May/June 1972, pp. 531-538
ABSTRACT: The erratic buckling behavior of cylindrical shells in axial compression is analyzed using the concept of equivalent imperfections. It is postulated that the sum of all departures from perfection in a real shell can be replaced by a hypothetical axisymmetric imperfection in a corresponding shell of infinite length. The equivalent imperfect is treated as a random variable with a normal distribution whose mean and variance are assumed to be directly proportional to the shell radius to thickness ratio. This leads to a design formula which is compared with the results of some 360 cylinder buckling experiments published elsewhere. An appropriate choice of proportionality constants yields a curve which gives a good lower bound on the experimental buckling loads over the whole range of radius to thickness ratios. An analogy is drawn between the Perry-Robertson strut formula and the one proposed here for cylinders.

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(1) Research Assistant, Department of Civil Engineering, University of Waterloo, Waterloo, Ontario, Canada
(2) Associate Professor, Department of Civil Engineering, University of Waterloo, Waterloo, Ontario, Canada
"On a probabilistic stability theory for imperfection sensitive structures", International Journal of Solids and Structures, Vol. 10, No. 3, March 1974, pp. 341-359, doi:10.1016/0020-7683(74)90082-1
ABSTRACT: The concept of almost sure sample stability and sample stability in probability are formulated for elastic systems. Using a Koiter type approach these concepts are used in the analysis of imperfection sensitive structures. The applied load and the initial geometric imperfections are introduced into the analysis as random

quantities. A compressed beam of finite length on a nonlinear elastic foundation is used in an example calculation.

Reis, A. J. and J. Roorda. 1979. "Post-Buckling Behavior under Mode Interaction," J. of Eng. Mech. Division, ASCE, 105(EM4):609-621.

Seleim SS, Roorda J (1986) Buckling behaviour of ring-stiffened cylinders, experimental study. Thin-Walled Struct 4:203–222