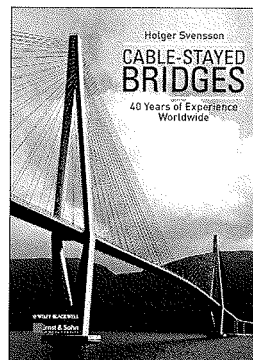


|||| 書 評 ||| Cable Stayed Bridges ||| Holger Svensson 著 |||

著者はドイツのコンサルタントLeonhardt, Andrä und Partnerで世界各地の橋梁の設計、設計照査、施工監理などに40年にわたって携わってきた設計技師である。この会社の創始者であるレオンハルト教授引退後は同社の社長、会長を歴任し、2010年に同社を引退した。現在はドレスデン工科大学の非常勤教授である。国際学会でも活躍し、2003年から2011年まで国際構造工学会IABSEの副会長を務めた。

本書は著者が2009年にドレスデン工科大学で専門課程の学生を対象に行った講義の講義録を加筆修正して学生と専門技術者向けの単行本としたものである。30回の講義の全容が2枚のDVDに動画で収められて本書に付属している。

本書は、著者の橋梁技術者としての40年の経験で重要と感じた事項を記述している。主な内容は、(1) 斜張橋の黎明期から今日に至るまでの歴史、(2) 桁・塔の構造詳細とケーブル、(3) 力の流れ、部材寸法を決める予備設計と設計照査、(4) 斜張橋の架設、となっている。取り上げた斜張橋は(1) 著者または所属したコンサルタントがかかわった斜張橋、(2) 特殊なディテールを有する



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斜張橋、(3) 記録的な径間を有する斜張橋であり、完成した橋梁に限っている。講義内容をすべて網羅したDVDの添付は本書の大きな特徴の一つと言える。

著者は「良い写真は言葉の説明に勝る」との信念があり、1 265枚の鮮明なカラー写真と図表が掲載された本書はページをめくるだけでも技術的な興味をそそる本といえる。鋼橋関係者にもコンクリート橋関係者にも今後の斜張橋の設計において構造計画、構造詳細、美観設計などの参考の一助になる内容の一冊と思われる。

(文責: 藤野 陽三, 田中 義人)

“Cable Stayed Bridges--40 Years of Experience Worldwide” by Holger Svensson

Holger Svensson, the author of this book, is a bridge engineer who was with Leonhardt, Andrä und Partner, an engineering firm founded by Professor Fritz Leonhardt with his colleagues. He has vast experience in design, design review, construction engineering and site supervision of numerous bridges all over the world for over 40 years. After Prof. Leonhardt retired from the firm, Mr. Svensson assumed the office as the Speaker of the Executive Board, and subsequently, Chairman of the Board, before retiring from the firm in 2011. He is now an adjunct professor at the Dresden University of Technology (TU Dresden). Mr. Svensson has been and is still active in many national and international institutions and societies, and served as vice-president of IABSE from 2003 until 2011.

The book addresses not only experienced engineers but also students. It is developed from series of lectures delivered by the author as an advanced course to students at the TU Dresden in 2009. All of the 30 lectures were video-recorded.

There were only 150 cable stayed bridges internationally known in 1986, but the number exceeds 1,000 today. The world's-longest main span length was only 404 meters in 1975, but has been gradually extended to 1,104 meters today. Cable stayed bridges are getting longer and longer and a bridge with a main span of 1,800 meters has already been designed for future construction.

The book describes the principles that the author considered important based on his 40-year experience as a bridge engineer. Main contents of the book include: (1) historical development of cable stayed bridges from the early days until now, (2) the structural details of girder, tower and stay cables, (3) preliminary design that provides understanding of the flow of forces, the initial sizing and the independent checking of the design, and (4) erection of cable stayed bridges. The book covers discussions and examples of completed cable stayed bridges where the author or Leonhardt, Andrä und Partner was involved, bridges with unusual structural details and bridges with record span lengths including bridges made of steel, concrete, composite and hybrid materials.

The book describes examples of several cable stayed bridge projects in which the author was directly involved, including the design and construction of the Pasco-Kennewick Bridge (main span: 299 meters, completed in 1978, the first concrete cable stayed bridge in the USA), the East Huntington Bridge (main span: 274 meters, completed in 1985, a hybrid of cable stayed bridge and cantilever bridge), the Helgeland Bridge (main span: 425 meters, completed in 1991, built near the Arctic Circle in Norway under strong wind and cold temperature conditions), and the eight-lane Baytown Bridge (now Fred-Hartman Bridge, main span: 381 meters, completed in 1995, featuring a double diamond-shaped towers and composite girders).

The book lists names of responsible engineers as much as possible in fear that such names are often forgotten as time passes. The author believes that it is the responsibility of the current engineers to keep the public standing of the engineers who played major roles in the respective bridges. Certainly, the author recognizes that a bridge is not a work of an individual but rather a result of a team-work of client engineers, design team

and site engineers who all work together in a mutual trust. In Japan, it is not a customary to acknowledge engineer name for the recent bridge projects but the names of the design consulting firm and the contractor are engraved in the structure. This may signal the Japanese national character that put the team efforts above the individual.

The book includes some pages of advertisements related to bridge construction and stay cables. Japanese readers may feel them rather unusual because we have never seen any such advertisements in highly specialized technical books in Japan. However, such pages will be a good guidance to the sources for detailed information on the bridge construction, materials and cable inspection.

One of the most distinctive features of this book is that it comes with two DVD video discs that cover the 30 lectures delivered by the author at the TU Dresden.

During the construction of the Honshu-Shikoku bridges, Japanese TV aired repeatedly the footage of the motion and tragic collapse of the old Tacoma Narrows Bridge in a windy condition. The footage was shown in the author's lecture and is included in one of the DVD discs that are attached to the book. The shocking scenes renew our awareness of the importance of the design consideration to cope with the wind induced vibration.

The book will stimulate technical interest of the readers just by flipping pages for its 1265 clear color photographs and figures, which were born out of the author's strong conviction that a good picture tells more in details than any description.

The book is recommended to both steel and concrete bridge engineers as a useful reference for their structural planning, structural details and aesthetic design of the cable stayed bridges in the future.

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Reviewed by Prof. Yozo Fujino, Tokyo University and Dr. Yoshito Tanaka, Shinko Wire (Retired)