

*“The Transatlantic Cable” Tripartite Civil Engineering History Webinar Presentation:*

## **“Crystal Springs Dam: The oldest mass concrete dam in the world”**

Date and Time: Wednesday 29 January 2024 – 6 pm (UK), 1 pm (EST), 10 am (PST).



Crystal Springs Dam Construction in 1896 (San Francisco Public Utilities Commission).

Abstract: This presentation is based on an article that appeared in the March/April 2024 issue of ASCE’s *Civil Engineering* magazine. When completed to its full 145-foot (44.2m) height by the Spring Valley Water Company in 1890, the Crystal Springs Dam in San Mateo California it was the highest mass concrete gravity dam in the world. It provided, for the first time, a reliable water supply to the City of San Francisco that enablee the City, already the largest city on the West Coast, to continue its development into a word financial and business center.

Crystal Springs Dam was the first large dam built in North America exclusively using large quantities of unreinforced mass concrete instead of the masonry and earthen embankments then accepted for dam construction. Construction pioneered several “firsts” that later became standard practice for the construction of the Hoover, Grand Coulee and other large dams. These innovations include: on-site mechanical mixing of concrete; prewashing all crushed aggregate before mixing with the Portland cement; casting the dam as a series of interlocking blocks; placing concrete in shallow forms to minimize heat-induced cracking during curing; and covering fresh concrete with boards and periodically spraying it with water to slow the curing.

Hermann Schussler, a classically trained civil engineer from Germany, oversaw the design, procurement, and construction in his capacity as chief engineer for the Spring Valley Water Company of San Francisco. The presentation will focus on Schussler’s incredible attention to detail and problem-solving skills in advancing the design and construction of the dam at a time when there were no design standards to guide him and very few other engineers in California to assist him in the project.

Presenter: Lawrence M. (Larry) Magura, P.E., F. ASCE, BC WRE

Short Bio: Mr. Magura is a semi-retired water resources engineer, who earned an undergraduate degree from UC Davis, and holds two master’s degrees from UC Berkeley, one in civil engineering (water resources option) and one in watershed management. He is a licensed professional engineer in Oregon, Washington and California and holds national certification as a water resources engineer (BC.WRE) from the American Academy of Water Resources Engineers. He was elected by the ASCE Board of Direction to the grade of Fellow in 2017. He has served as President of the Oregon Section, ASCE (1992), and just finished his 3-year term as the Society Director for Region 8 (western US and Canada minus California).



Mr. Magura is also a member of ASCE’s History & Heritage Committee. In that capacity, he coordinated the successful efforts to get Crystal Springs Dam in San Mateo, California listed as a National Historic Civil Engineering Landmark in December 2023.

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