Innovating Procurement to Optimize Life-Cycle Costs

Randy Moore

Water & Wastewater Asset Management Consultant

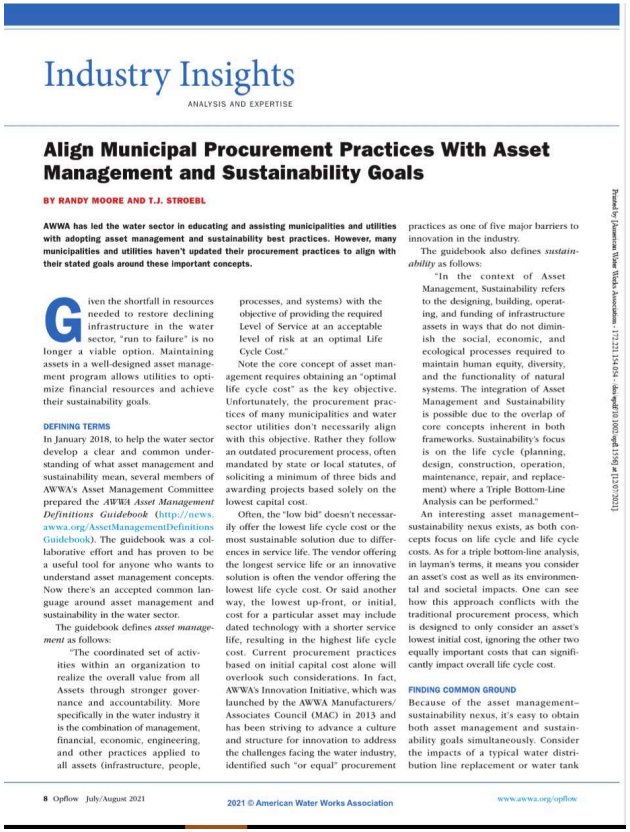
STI SPFA®

INTRODUCING RANDY MOORE

- Water & Wastewater Asset Management Consultant
- BS/MS Metallurgical Engineering & Engineering Mgt.
- (40) Years' Experience in the Water & Wastewater Sector
- NRWA Operator Training & WaterPro Conference Presenter
- AWWA Board: Past Missouri Section Director
- AWWA Past Vice President (2X)
- AWWA Past Service Provider Director at Large
- AWWA Life Member
- Founder and Past Chair of AWWA Innovation Committee
- Chair of new AWWA Manual M82 Innovation for Utilities
- Vice Chair AMPP TCI Municipal Water & Wastewater Infrastructure
- STI/SPFA Chair Legislative Advocacy Committee
- Served as Commissioner on MO Safe Drinking Water Commission

Key Points for Discussion

- **WHY?**
- **Opflow "Industry Insights" - July/August 2021**
- **Definitions**
- **Application: D102 Coatings Selection**
- **Asset Mgt Based Data Driven Protocol**
  - **Service Life → Life Cycle Costs**
- **Innovating/Aligning Procurement Language**
- **Discussion on Path Forward**



Industry Insights

ANALYSIS AND EXPERTISE

Align Municipal Procurement Practices With Asset Management and Sustainability Goals

BY RANDY MOORE AND T.J. STROEBL

AWWA has led the water sector in educating and assisting municipalities and utilities with adopting asset management and sustainability best practices. However, many municipalities and utilities haven't updated their procurement practices to align with their stated goals around these important concepts.

Given the shortfall in resources needed to restore declining infrastructure in the water sector, "run to failure" is no longer a viable option. Maintaining assets in a well-designed asset management program allows utilities to optimize financial resources and achieve their sustainability goals.

DEFINING TERMS

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The guidebook defines *asset management* as follows:

"The coordinated set of activities within an organization to realize the overall value from all Assets through stronger governance and accountability. More specifically in the water industry it is the combination of management, financial, economic, engineering, and other practices applied to all assets (infrastructure, people, processes, and systems) with the objective of providing the required Level of Service at an acceptable level of risk at an optimal Life Cycle Cost."

Note the core concept of asset management requires obtaining an "optimal life cycle cost" as the key objective. Unfortunately, the procurement practices of many municipalities and water sector utilities don't necessarily align with this objective. Rather they follow an outdated procurement process, often mandated by state or local statutes, of soliciting a minimum of three bids and awarding projects based solely on the lowest capital cost.

Often, the "low bid" doesn't necessarily offer the lowest life cycle cost or the most sustainable solution due to differences in service life. The vendor offering the longest service life or an innovative solution is often the vendor offering the lowest life cycle cost. Or said another way, the lowest up-front, or initial, cost for a particular asset may include dated technology with a shorter service life, resulting in the highest life cycle cost. Current procurement practices based on initial capital cost alone will overlook such considerations. In fact, AWWA's Innovation Initiative, which was launched by the AWWA Manufacturers/Associates Council (MAC) in 2013 and has been striving to advance a culture and structure for innovation to address the challenges facing the water industry, identified such "or equal" procurement practices as one of five major barriers to innovation in the industry.

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An interesting asset management–sustainability nexus exists, as both concepts focus on life cycle and life cycle costs. As for a triple bottom-line analysis, in layman's terms, it means you consider an asset's cost as well as its environmental and societal impacts. One can see how this approach conflicts with the traditional procurement process, which is designed to only consider an asset's lowest initial cost, ignoring the other two equally important costs that can significantly impact overall life cycle cost.

FINDING COMMON GROUND

Because of the asset management–sustainability nexus, it's easy to obtain both asset management and sustainability goals simultaneously. Consider the impacts of a typical water distribution line replacement or water tank

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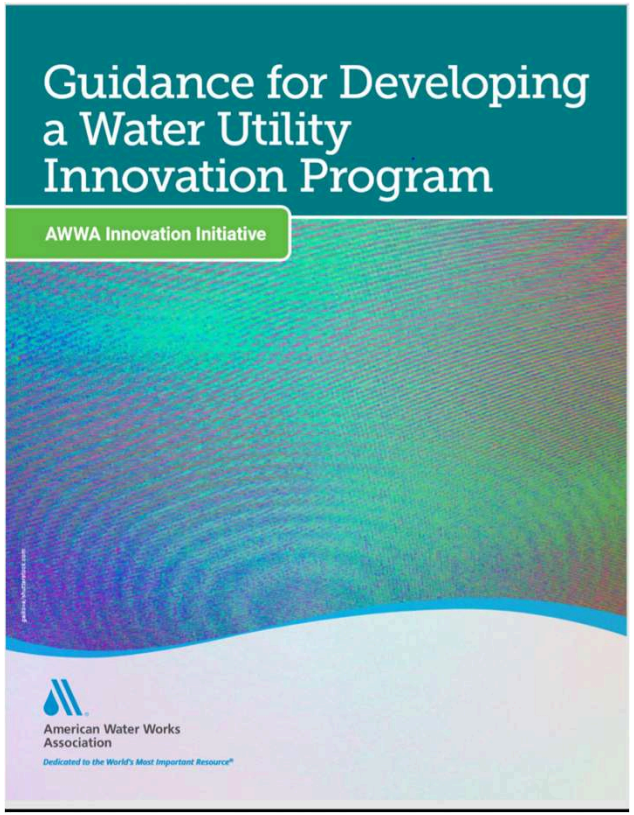
Start with WHY

Why Innovate Procurement?

STI SPFA®

WHY?

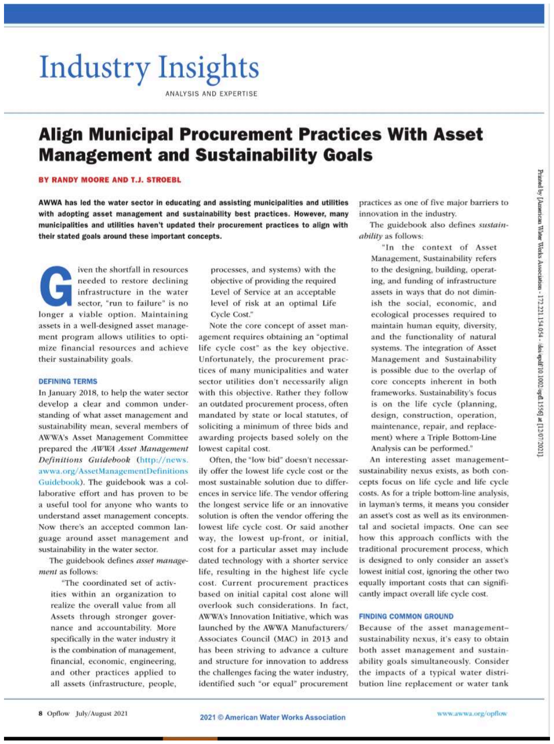


Definition: **"Innovation is the adoption of sustainable methods, ideas, and products that increase value to utility customers and/or increase utility productivity."**

“Align Municipal Procurement Practices With Asset Management and Sustainability Goals”

- **Opflow “Industry Insights” July/Aug 2021**
  - **Randy Moore, Tnemec Company, Chair Innovation Initiative, AWWA Vice President & MO Section Director**
  - **TJ Stroebl, Kurita America & Chair MAC**

- **AWWA Educational Initiative:**
  - **Innovation Committee**
  - **Manufacturer’s & Associates Council (MAC)**



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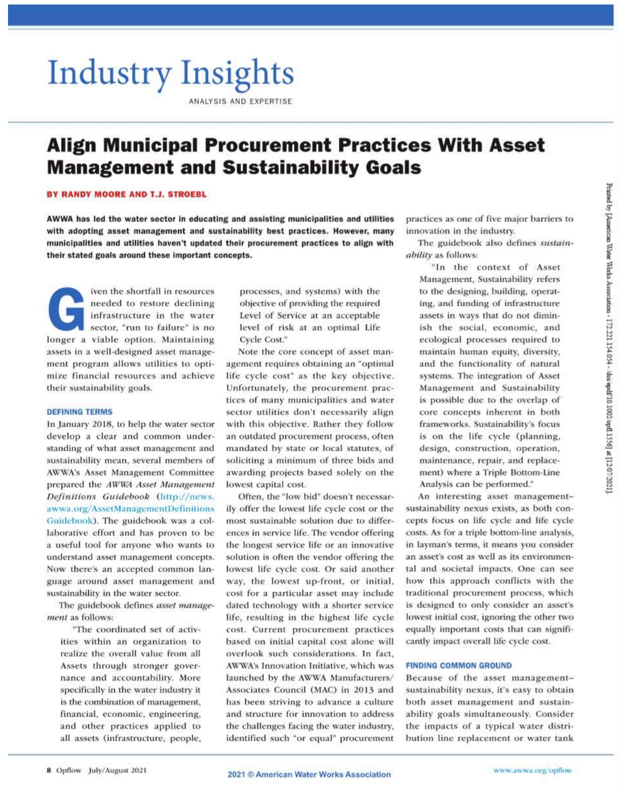

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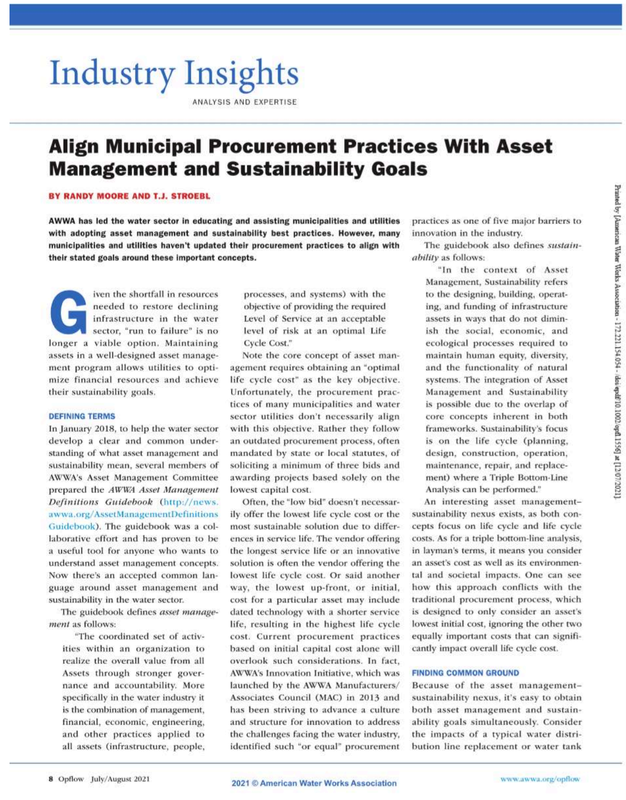

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How does innovating procurement maximize generational infrastructure funding?

"The law's investment in the water sector is nothing short of transformational. It includes $50 billion to the U.S. Environmental Protection Agency (EPA) to strengthen the nation's drinking water and wastewater systems – the single largest investment in clean water that the federal government has ever made." 3-8-2022

- **The Infrastructure Investment and Jobs Act (IIJA) or Bipartisan Infrastructure Deal $50B!**

  - **$11.7 B for Drinking Water SRF Project**
  - **$15.0 B for Lead Service Line replacements**
  - **$9.0 B for Emerging Contaminants (PFAS)**
  - **$3.5 B for Water & Sewer Systems for Indian Health Service**

  - **$12.7 B for Clean Water State Revolving Fund Projects**
  - **$1.7 B for specific geographic base programs (National Estuary, Great Lakes & Chesapeake Bay Programs)**

  - **$8.0 B for Southwest North American megadrought "Western Water Infrastructure"**

WHY?

To get the "*biggest bang*" for your CapEx bucks!

Asset Management Best Practices is the key:

- **Determine asset condition**
- **Develop an asset management plan**
- **Extend asset service life to yield lowest life cycle cost**
- **Achieve most sustainable option**

What does alignment look like?

PROCUREMENT

INNOVATE PROCUREMENT PRACTICE

ASSET MGT

SUSTAINABILITY

DEFINITIONS

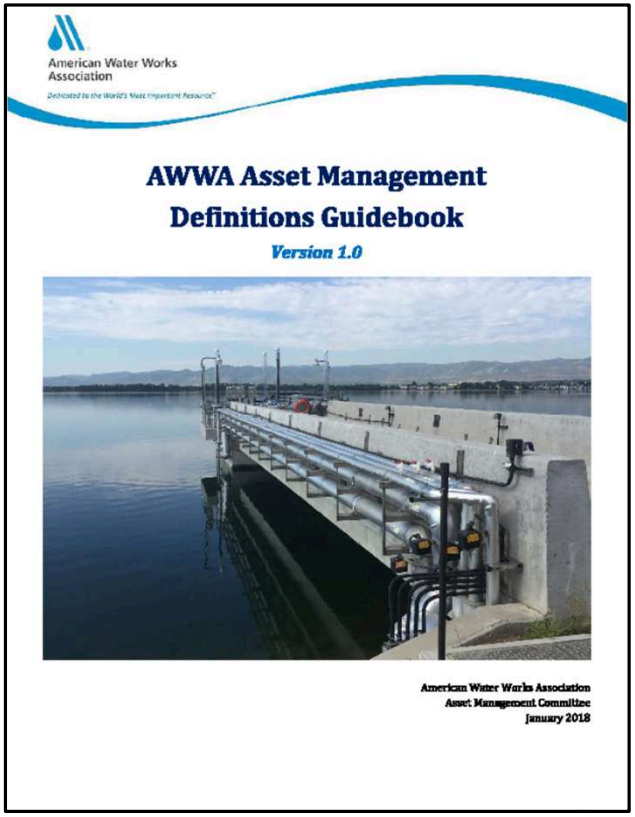
AWWA Asset Management Definitions Guidebook (Version 1.0)

AM Definitions:

- **Asset Management**
- **Service Life**
- **Sustainability**

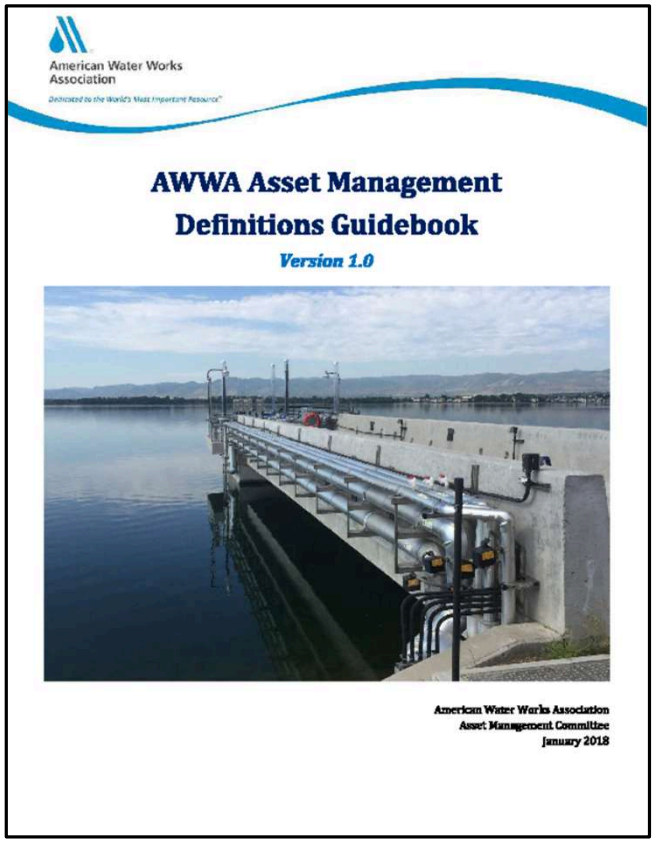
Asset Management Definition:

- "Infrastructure **asset management** is the combination of management, financial, economic, engineering, and other practices applied to physical assets with the **objective** of providing the *required Level of Service at an acceptable level of Risk at an* ***optimal Life Cycle Cost.***" *(page 12)*



Service Life Definition:

- **The length of time when an asset no longer provides the required *level of service*.** *(page 11)*

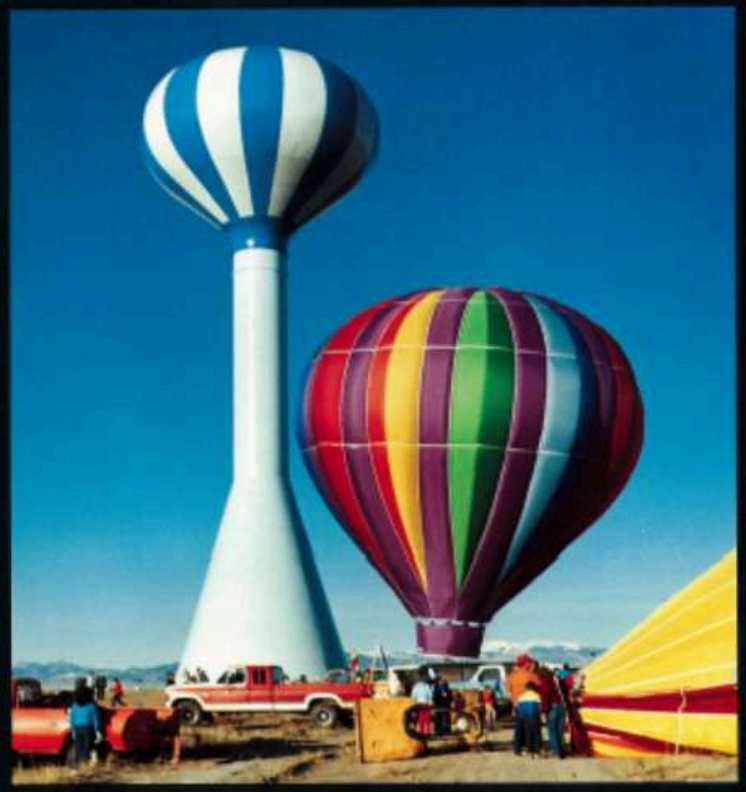


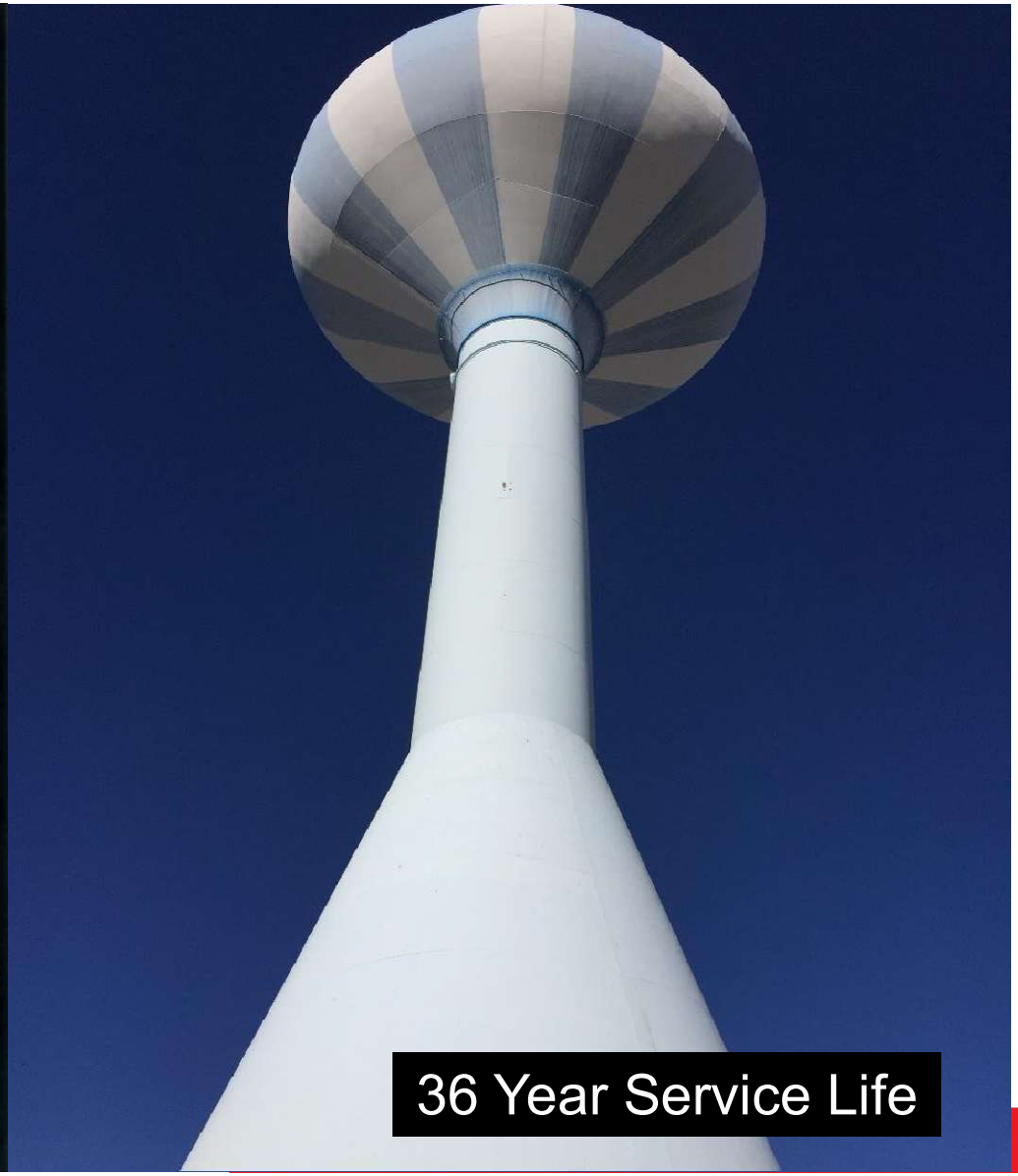
Owner Decides Acceptable "level of Service"

- Water Tank: Alamosa, CO

Actual Service Life	36 Years

TNEMEC
WATER TANK COATINGS





36 Year Service Life

Sustainability Definition:

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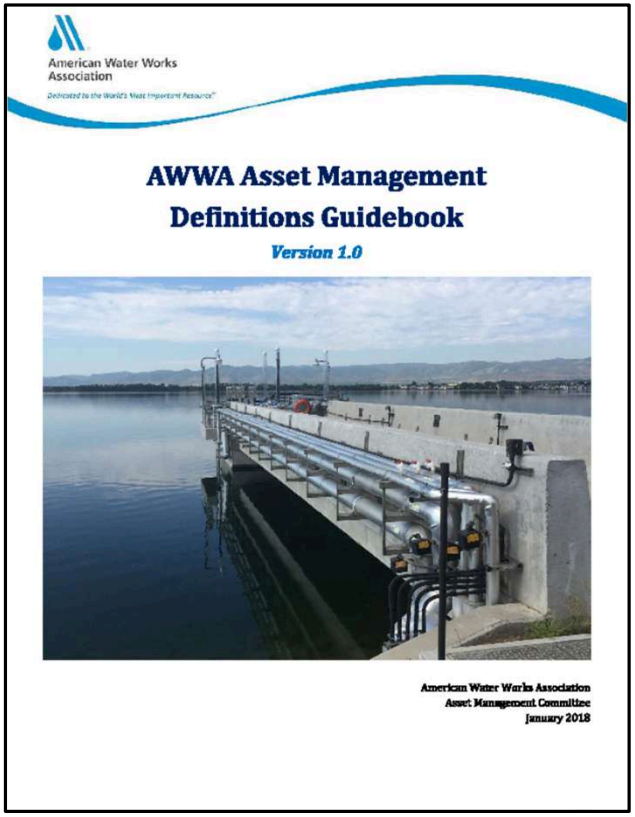

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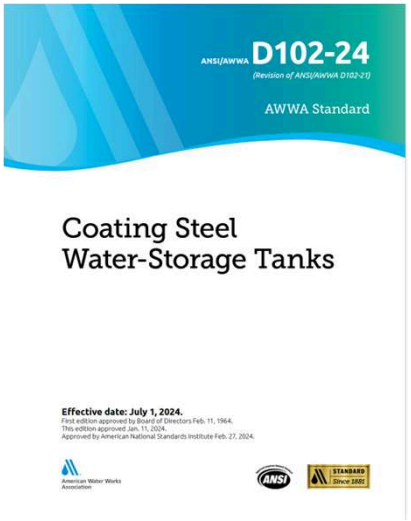
Asset Mgt/Sustainability Nexus → THE MOST SUSTAINABLE SOLUTION !

APPLICATION EXAMPLE

AWWA D102 “Coating Steel Water Storage Tanks”

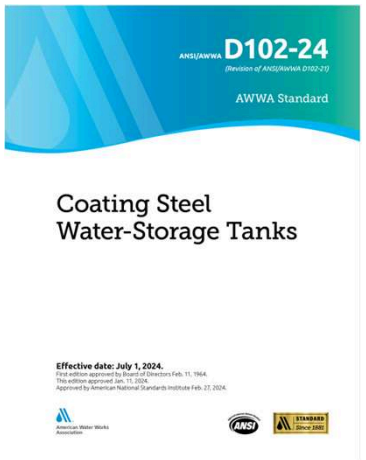
EXAMPLE: AWWA STD. D102-24

- Industry **consensus** standard that describes coating systems for coating and recoating the **inside** and **outside** surfaces of steel tanks used for potable water storage
- Provides the **minimum requirements**, including materials, coating systems, surface preparation, and inspection and testing
- Industry technical reference for owners and engineers to specify and enforce
- Little to no guidance on how to select a coating system



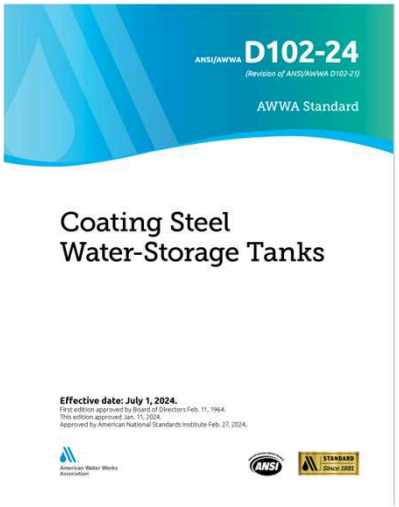
AWWA STD. D102-24
OUTSIDE COATING SYSTEMS

System	Generic Description
OCS No. 1	Three (3) or four (4) coat **Alkyd** system
OCS No. 2	Three (3) coat **Moisture-Cure Urethane (MCU)** system with a MCU **Zinc-Rich Primer**
OCS No. 3	Three (3) coat **Acrylic** system with an inorganic or organic **Zinc-Rich Primer**
OCS No. 4	Three (3) coat **Fluoropolymer** system with an inorganic or organic **Zinc-Rich Primer** and a 2-component polyurethane intermediate
OCS No. 5	Three (3) coat 2-component **Polyurethane** system with a 2-component epoxy primer and intermediate
OCS No. 6	Three (3) coat 2-component **Polyurethane** system with an inorganic or organic **Zinc-Rich Primer** and a 2-component epoxy intermediate
OCS No. 7	Three (3) coat **Water-Based** 2-component **Polyurethane** system with a **Water-Based 2-component Epoxy** primer and intermediate



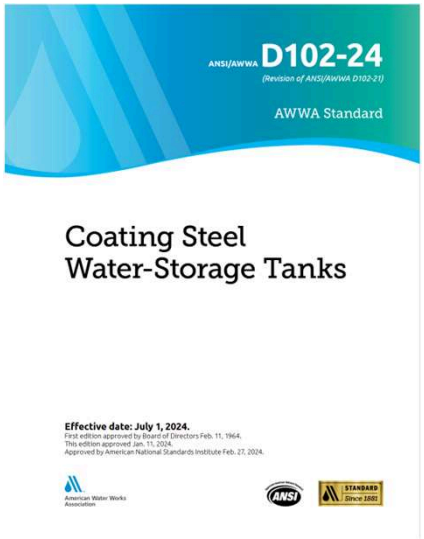
AWWA STD. D102-24
INSIDE COATING SYSTEMS

System	Generic Description
ICS No. 1	Two (2) coat 2-component **Solvent-Borne Epoxy** system
ICS No. 2	Three (3) coat 2-component **Solvent-Borne Epoxy** system
ICS No. 3	One (1) or Two (2) coat 2-component **High-Solids Epoxy** system with an optional **Zinc-Rich Primer**
ICS No. 4	One (1) coat **100% Solids Aromatic Polyurethane** system with an optional **Zinc-Rich Primer**
ICS No. 5	Three (3): coat 2-component **Solvent-Borne Epoxy** system with an **Organic Zinc-Rich Primer**
ICS No. 6	Two (2) coat: 2-component **Solvent-Borne Epoxy** system with an **Organic Zinc-Rich Primer**



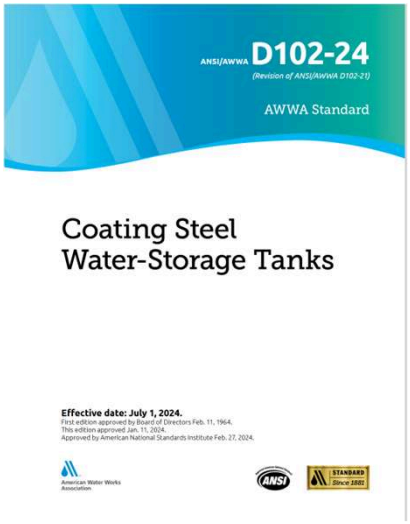
AWWA STD. D102-24: APPENDIX A.1

"Several generic types of coatings systems are included in D102 because it has been determined that no single coating systems is best suited for all service exposures or applications conditions. The coatings systems presented are not equivalent in terms of expected service life or initial and long-term costs".



AWWA STD. D102-24: APPENDIX A.1

"As an aid in selecting coating systems for a particular site, it is recommended that the purchaser establish the site-specific conditions of exposure and then conduct an economic evaluation of the several coating systems using life-cycle cost analysis techniques."
(**new change** D102-21)



Start with Why?

WHAT DO YOU WANT THE COATINGS TO DO?

1) Corrosion Protection
2) Aesthetics
3) Immersion Service
4) Color & Gloss Retention
5) Abrasion Resistance
6) … ??

Exterior?

Interior?

How long should the coatings last?

SERVICE LIFE EXPECTATIONS

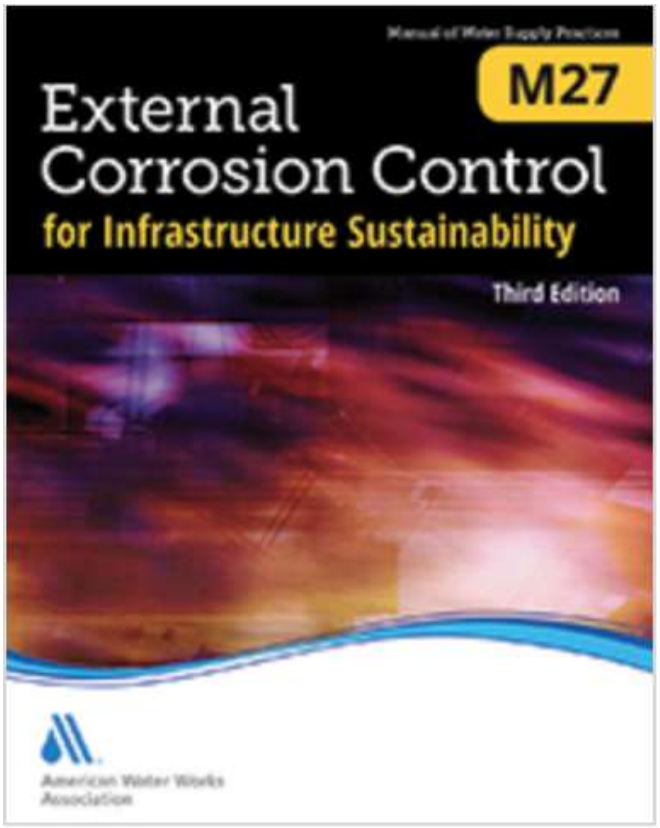
AWWA Manual of Practice M42 states a steel tank's service life is "indefinite"!

STI/SPFA CENTURY CLUB

Growing list of 100+ year old tanks

Your coating system is an ASSET protecting an ASSET!

4th Edition coming soon!



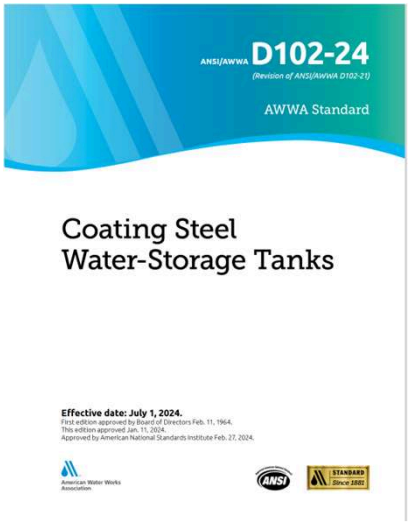
How do I determine what to specify for any infrastructure “widget”

HOW DO I SELECT A COATING SYSTEM or ANY INFRASTRUCTURE ASSET?

ASSET MANAGEMENT BASED DATA DRIVEN PROTOCOL

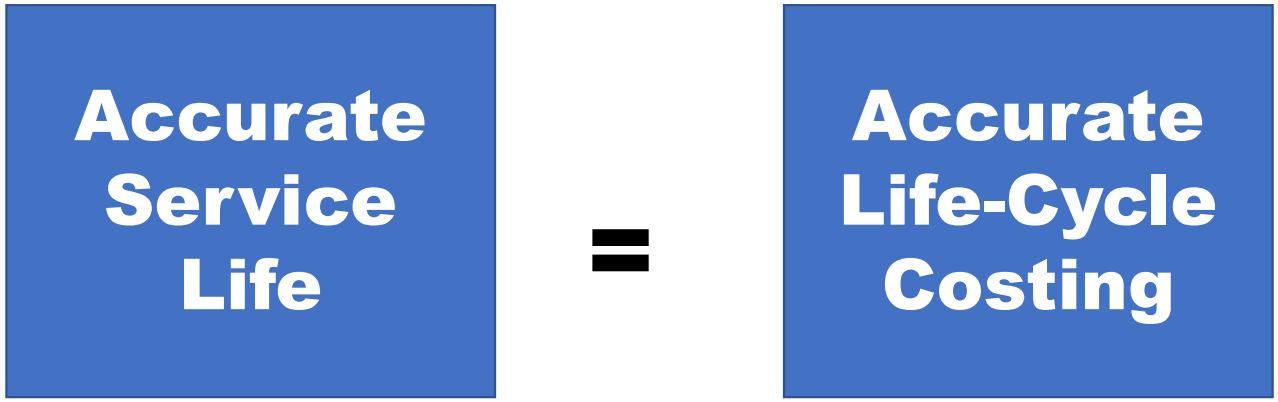
AWWA STD. D102-24: APPENDIX A.1

"Because it is impractical for an occasional purchaser of coatings to make sufficient laboratory test to determine whether coating constituents meet requirements of this standard, it is recommended that the coatings be purchased from a manufacturer where the products have a proven performance for the intended service through **in-place use** or satisfactory **evidence of laboratory-tested equivalency**."

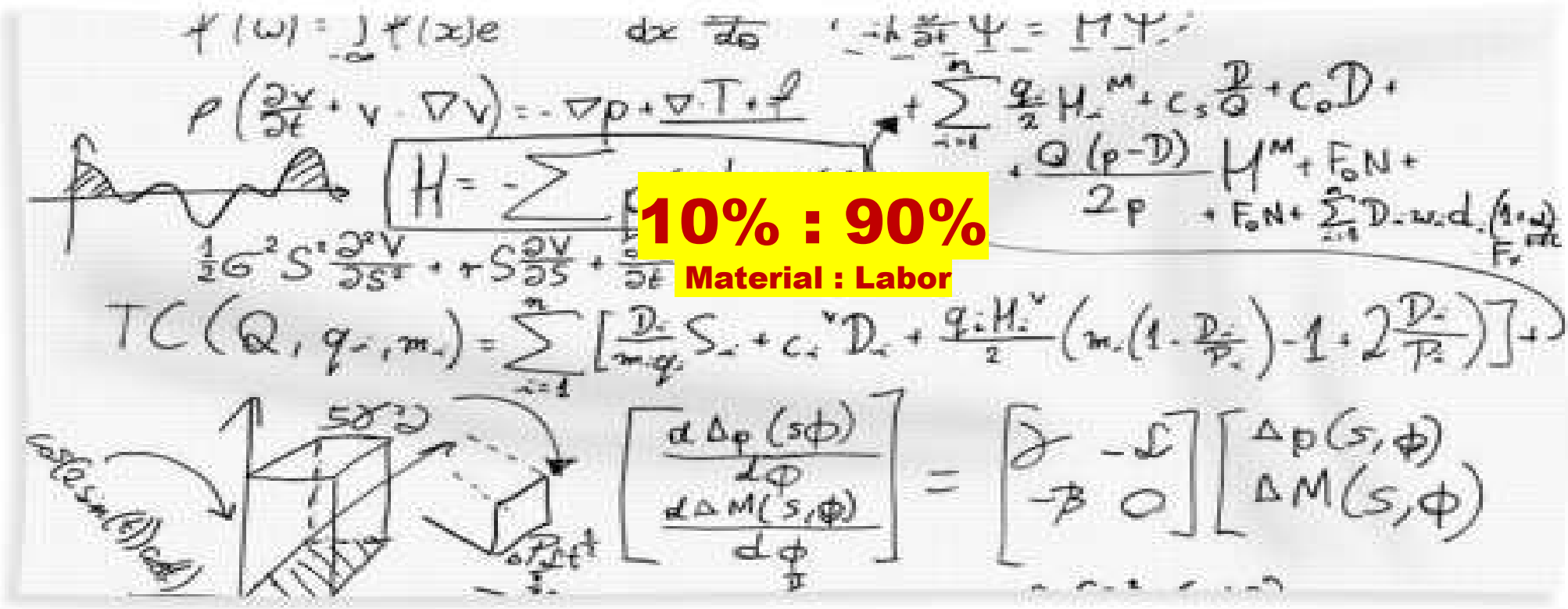


Asset Mgt Based DATA DRIVEN PROTOCOL

ASSET MANAGEMENT BASED DATA DRIVEN PROTOCOL



“Widget” Life-cycle costing



10% : 90%

Material : Labor

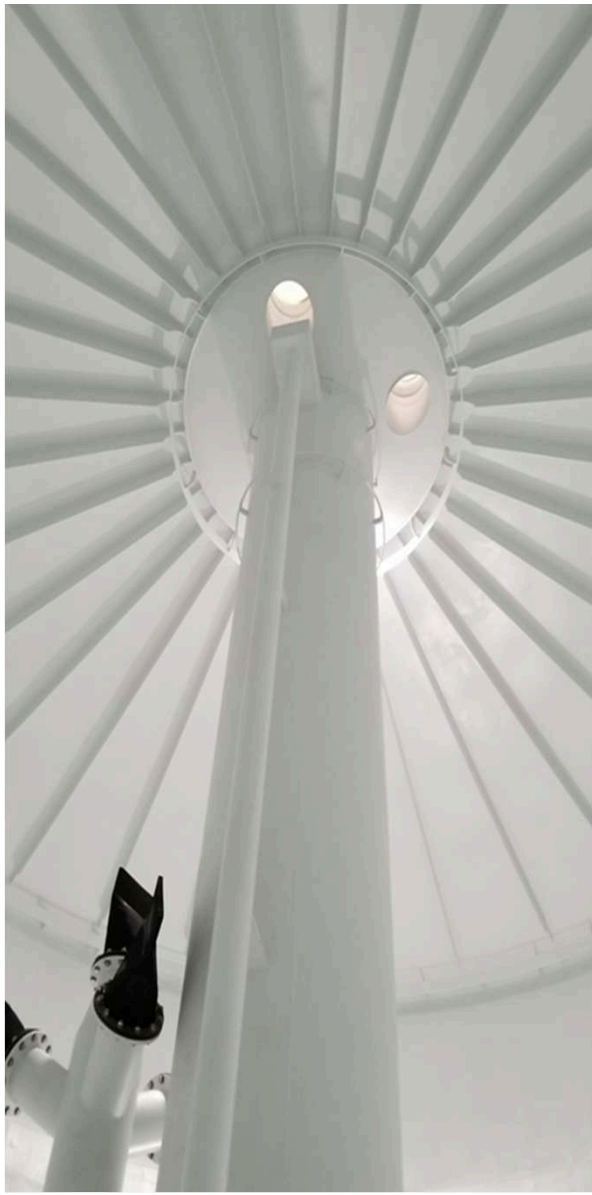
Longest Service Life = Lowest Life-Cycle Cost

WHAT ARE THE GOALS AGAIN?

- Asset Management goal: “Optimize life cycle cost”.
- Sustainability is integrated with Asset Management with the *same goal*: “focus on life cycle cost”.

- **Longest Service Life = Lowest Life Cycle Cost**

WHAT DO YOUR PROCUREMENT DOCUMENTS YIELD?



How do I innovate & align procurement practices to achieve lowest life-cycle cost?

- **Remove language in the bid documents and/or specification mentioning it seeks the "lowest bid." Insert language about *desiring the lowest life cycle cost and/or the longest service life possible***

- **Insert language around sustainability goals and that the municipality or water *utility* *seeks the most sustainable solution/offering*. State it will use a triple bottom-line approach to evaluate the sustainability of all solutions/offerings**

- **Require that bidders provide information on relevant key parameters such as performance test data and case histories so the associated life cycle cost can be more accurately determined**

Discussion on Path Forward

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Industry Insights

ANALYSIS AND EXPERTISE

Align Municipal Procurement Practices With Asset Management and Sustainability Goals

BY RANDY MOORE AND T.J. STROEBL

AWWA has led the water sector in educating and assisting municipalities and utilities with adopting asset management and sustainability best practices. However, many municipalities and utilities haven't updated their procurement practices to align with their stated goals around these important concepts.

Given the shortfall in resources needed to restore declining infrastructure in the water sector, "run to failure" is no longer a viable option. Maintaining assets in a well-designed asset management program allows utilities to optimize financial resources and achieve their sustainability goals.

DEFINING TERMS

processes, and systems) with the objective of providing the required Level of Service at an acceptable level of risk at an optimal Life Cycle Cost."

Note the core concept of asset management requires obtaining an "optimal life cycle cost" as the key objective. Unfortunately, the procurement practices of many municipalities and water sector utilities don't necessarily align

practices as one of five major barriers to innovation in the industry.

The guidebook also defines *sustainability* as follows:

"In the context of Asset Management, Sustainability refers to the designing, building, operating, and funding of infrastructure assets in ways that do not diminish the social, economic, and ecological processes required to maintain human equity, diversity, and the functionality of natural systems. The integration of Asset Management and Sustainability is possible due to the overlap of core concepts inherent in both

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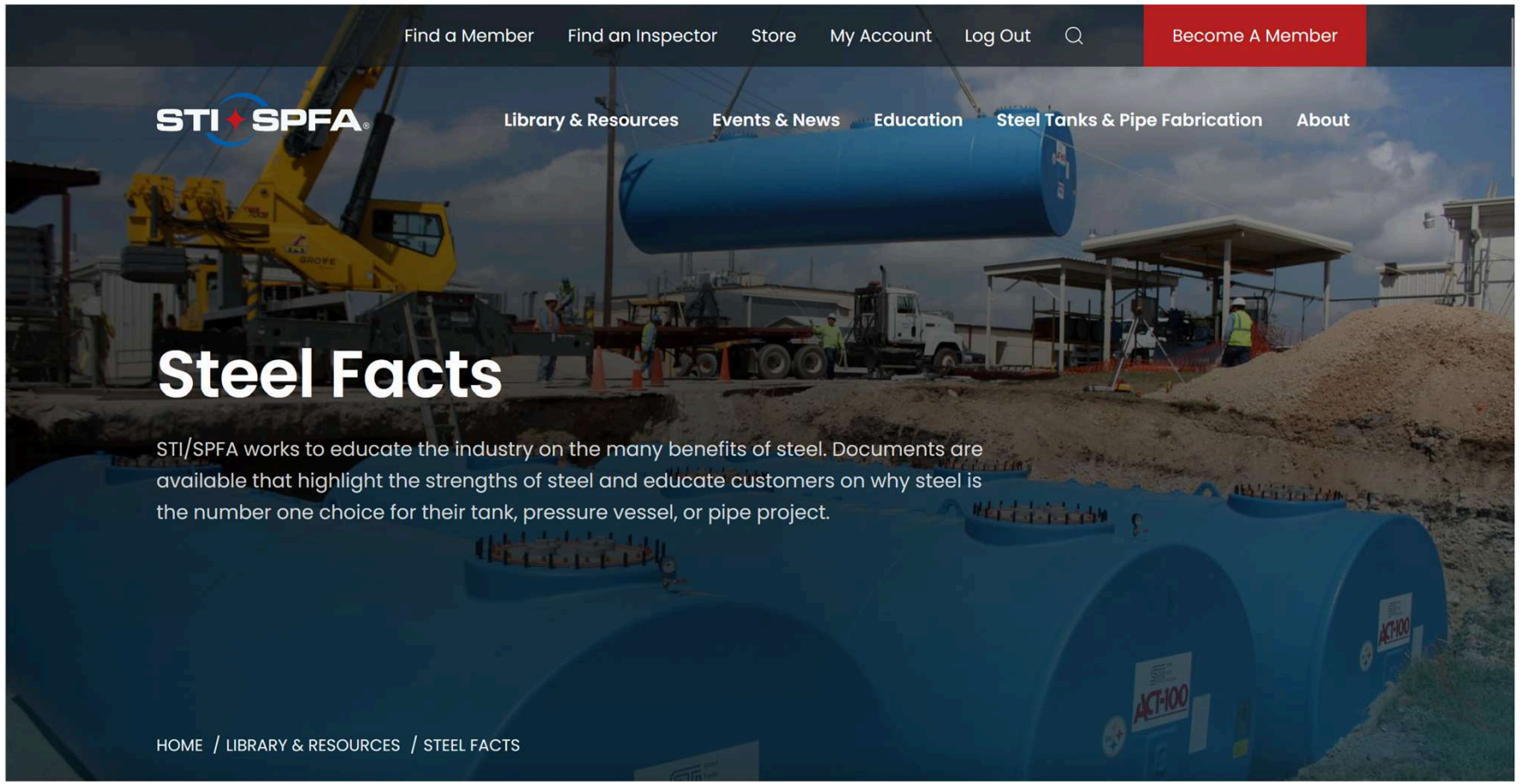

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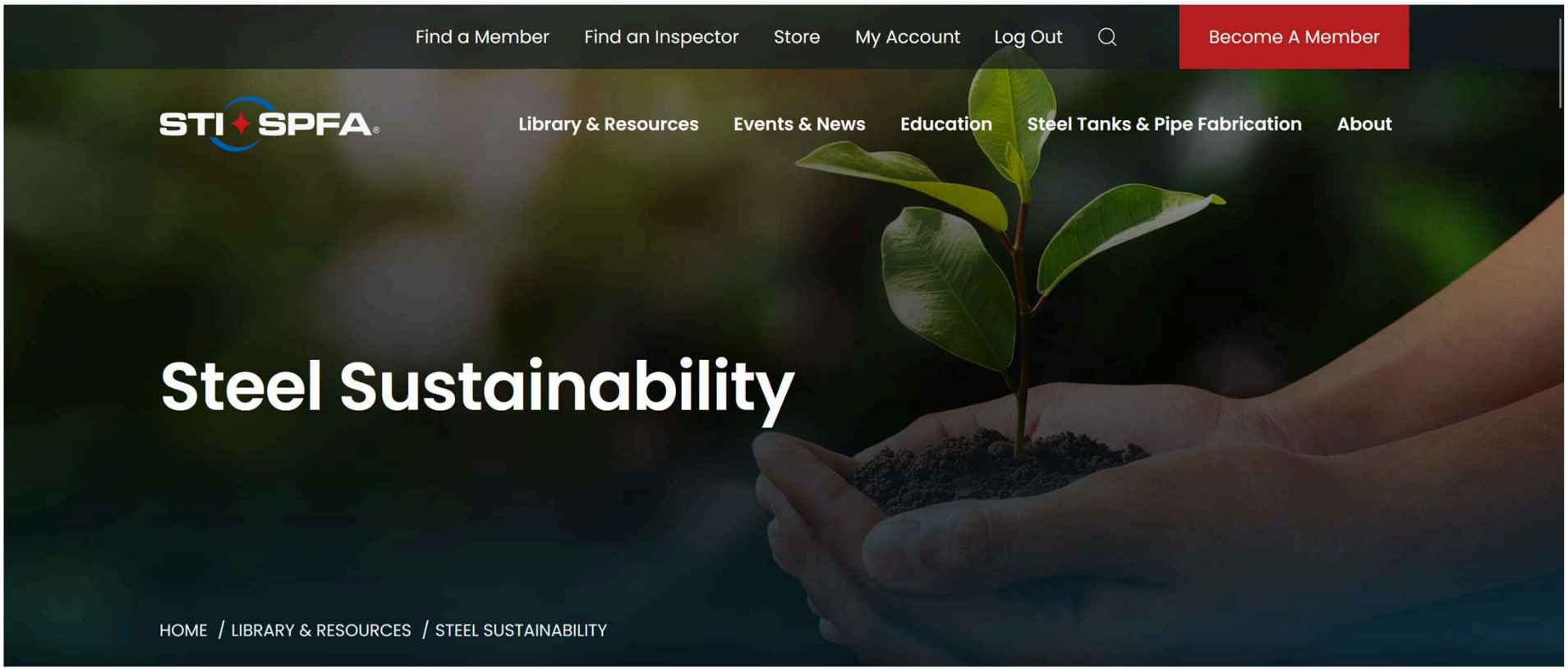

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STI/SPFA Members Make Their Voices Heard in D.C.

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