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73-23

Standard Practice for Sustainable Infrastructure

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AMERICAN SOCIETY OF CIVIL ENGINEERS

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PREFACE

This standard may be used to develop and implement sustainable infrastructure solutions through the entire infrastructure life-cycle process. Leadership shall encourage transformative development of the infrastructure solution from the earliest stages; consider and analyze all reasonable alternatives; and consider natural, no-construction, and constructed project solutions. Leadership shall use this standard to address owner, community, and stakeholder needs and issues and to balance the economic, environmental, and social impacts (positive and negative, quantifiable and nonquantifiable) throughout the life cycle of sustainable infrastructure solutions. In addition, leadership shall comply with the life-cycle cost analysis requirements of this standard to protect and professionally steward private and public funds.

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CHAPTER 1
GENERAL

1.1 GENERAL

The scope, purpose, applicability, and limitations are defined in this chapter.

1.2 SCOPE

1.2.1 Components and Outcomes The components and outcomes described in the subsequent chapters of this standard are intended to guide sustainable infrastructure development through the entire life-cycle process. Leadership shall encourage transformative development of the infrastructure solution at the earliest stages; consider and analyze all reasonable alternatives; and consider natural, no-construction, and constructed project solutions. For constructed project solutions, the entire life cycle of the project shall be considered within the context of this standard.

1.2.2 Project Team Composition The composition of the project team, as determined by the owner or owner agency, shall consist of owners or owner agencies, architects and engineers, support organizations, and contractors and subcontractors necessary to deliver the desired infrastructure solution.

1.2.3 Project Team Leaders Project team leaders shall use Chapters 2 through 7 of this standard to identify the economic, environmental, and social impacts (positive and negative, quantifiable and nonquantifiable) of sustainable infrastructure solutions. In addition, leadership shall comply with life-cycle cost analysis requirements in Chapter 8 of this standard.

1.2.4 Standard Authority This standard does not supersede regulatory requirements or codes/standards.

1.3 PURPOSE

To establish the minimum requirements for a sustainable infrastructure solution.

1.4 LIMITATIONS

This standard can be used on infrastructure solutions of any scale, though it is specifically not intended to unduly burden small projects.

This standard is not intended to be used to establish regulatory requirements for interior, conditioned buildings with the primary purpose of human occupation.

1.5 USE OF THIS STANDARD

1.5.1 Solutions This non-mandatory standard may be used to develop and implement sustainable infrastructure solutions. The following criteria shall be satisfied for an infrastructure solution to be considered sustainable:

1. A minimum of 19 outcomes defined in Chapters 2 through 7 shall be satisfied (as applied to the life cycle of the sustainable infrastructure solution unless otherwise stated). No-build and natural solutions shall be considered as alternatives to new-construction infrastructure solutions when appropriate.
2. Outcomes defined in Chapters 2 through 7 that are deemed not applicable to the sustainable infrastructure solution shall be considered in the unsatisfied outcomes.
3. A life-cycle cost analysis shall be performed in accordance with Chapter 8 for all infrastructure solutions that satisfy 19 outcomes defined in Chapters 2 through 7.
4. Infrastructure solution(s) that satisfy Criteria 1 and 3 (directly above) and achieve the least equivalent life-cycle cost as determined by Chapter 8 shall be defined as sustainable infrastructure solutions.
5. A Sustainability Management Plan shall be prepared for the selected infrastructure solution. The Sustainability Management Plan shall (as a minimum)
   - Address owner, community, and stakeholder needs and issues
   - Establish sustainability goals and objectives to balance the solution's economic, environmental, and social impacts (quantifiable and nonquantifiable)
   - Identify specific outcomes as defined in Chapters 2 through 7 that will be achieved to yield a sustainable infrastructure solution
   - Be implemented throughout the life cycle of the infrastructure solution to monitor and enhance sustainability performance.

1.6 DEFINITIONS AND ACRONYMS

1.6.1 Definitions

Base Date: First date of the life-cycle cost analysis period.

Brownfield: Site documented as contaminated per an ASTM E1903 Phase II environmental site assessment or a site classified as a brownfield by a local, state, or federal government agency.

Carbon Dioxide Equivalent: Measure used to compute the sum of greenhouse gas emissions and to assess the impact of those emissions based on their global warming potential (GWP) for an infrastructure project (construction or operations phases, or project total).

Commissioning: Actions and processes used to ensure the owner's construction requirements for an infrastructure project have been achieved, including functional and performance testing and other qualitative means.

Community: Any group or representative of the group in the physical vicinity of a project that may be impacted by the infrastructure solution.