

Commissioning - Systems Basis of Design Document Overview

Section 019113-7

Systems Basis of Design Document Definition: *A document that identifies a building system's design parameters and how each criterion in the Owner's Project Requirements will be addressed for that system. The document records the concepts, calculations, decisions, and project selections used to meet the Owner's Project Requirements and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support a system's design process¹. This document is created for all commissioned building systems and updated throughout the project. The systems Basis of Design Document is a sub-set of the Project Program. See section 019213 -7.1 for a Systems Basis of Design Workbook*

Development of the Systems Basis of Design Document: The Architect–Engineer is responsible for the development and maintenance of the Systems Basis of Design Document. It serves as a formal tool for the Architect–Engineer to communicate the design parameters to the Owner, Commissioning Authority, and various review, approval, and permitting agencies. This document will be incorporated into the Project Program and once approved can only be modified with approval by the Project Manager.

Contents: Individual requirements for the Systems Basis of Design Document have been included in each of the Owner's Project Requirements Divisions specified by construction practice (i.e., Division 21-Fire Suppression in 210000-2). In addition to being included in the workbook referenced above, they have been assembled below as a comprehensive list specific to the Systems Basis of Design Document.

Division	Title	Systems Basis for Design Requirements
21	Fire Suppression	Define Basis of Design Sprinkler System
22	Plumbing	Define peak flow conditions used for design
22	Plumbing	Define special equipment service requirements
22	Plumbing	Define operating temperatures used for design
23	HVAC	Define summer and winter outdoor design conditions.
23	HVAC	Define summer and winter indoor design conditions by control zone.
23	HVAC	Define acceptable summer and winter part load conditions range by control zone.
23	HVAC	Define basis of HVAC load & energy analysis calculations.
23	HVAC	Define minimum energy efficiency requirements. (2003 IECC & ASHRAE 90.1)
23	HVAC	Define Thermal Environmental Conditions. (ASHRAE 55-2004)

23	HVAC	Define air filtration performance requirements. (ASHRAE Std.55.2)
23	HVAC	Define Mechanical Equipment Room design requirements. (ASHRAE Std. 15 & NFPA 101)
23	HVAC	Indoor Air Quality & Ventilation Requirements. (ASHRAE Std. 62 & 902 KAR Chapter 20)
23	HVAC	Define Building Systems operating setpoints.
23	HVAC	Define acceptable HVAC related sound levels.
23	HVAC	Define special equipment utility requirements.
26	Electrical	Define acceptable level of harmonic distortion in building power systems.
26	Electrical	Define acceptable lighting levels and control methods by space.
26	Electrical	Define receptacle & misc. power consumption requirements by space.
26	Electrical	Define special equipment utility requirements.
26	Electrical	Define acceptable electrical equipment related sound levels.
27	Communications	Define communication requirements by space
27	Communications	Define communication requirements of special equipment or other building systems.

See Section 019113-7.1 Sample Systems Basis of Design Workbook. This sample workbook is a guideline only. The Architect-Engineer may utilize other forms to present the pertinent data. However, the sample Systems Basis of Design Document Workbook does reflect the level of documentation expected by the Owner. The provision of a Systems Basis of Design Document capturing the information referenced in the subject definition is a project requirement.

1 ASHRAE. 2004. *ASHRAE Guideline 0 – The Commissioning Process*. American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. Atlanta, GA.