

GUIDELINES:

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Revised:

PURPOSE:

The purpose of the Basis of Design (BOD) Narrative is to document the reasoning and decisions made during the design phase of a project. The Basis of Design Narrative is the Design Team's implementation of the Program of Requirements (POR). It presents the basic rationale and assumptions, criteria, logic, and considerations developed in evaluation of MEPFP systems design. The BOD is created during the schematic design phase and is continually updated during the design development through the construction document phase. It includes a narrative to describe the Design Team's approach for a general audience, including the pros and cons of various options and evolves into a more technically detailed document that can be used by Facilities Maintenance Technicians (FMT) for building operation, re-commissioning, and maintenance.

DEFINITIONS:

PCP = Planning and Capital Projects

BOD = Basis of Design

Design Team = Architect, Engineers and Consultants

FMD = Facilities Management Department

FMT = Facilities Maintenance Technician

FO = Facilities Operations

GCM = General Construction Manager

LEED = Leadership in Energy and Environmental Design

PPM = Planner/Project Manager

POR = Program of Requirements

WUSM = Washington University School of Medicine

PROCESS:

1. Design Phase

- i. The Planning and Capital Projects (PCP) Planner/Project Manager (PPM) will require the design team to provide an initial **Basis of Design document (BOD)** to the Assistant Director of Facilities Operations.
- ii. The BOD document should follow the format below.

b. PERFORMANCE REQUIREMENTS AND OVERALL DESIGN ASSESSMENT

- i. The first section of the BOD Narrative should start by highlighting the various assumptions and outside parameters made by or given to the Design Team at the onset of design, for example, the WUSM Design Standards or any program of requirements. The [Drawing Review Checklist](#) is an additional tool to be completed by the Design Team that includes specific requirements for all WUSM projects. The Design Team should include a general description of the building type (laboratory, office, etc.) and its intended occupancy class or use group.
- ii. Primary design assumptions include but are not limited to the following:
 1. Project background which is relevant to understanding the design, including those from the POR which had a major influence on the design such as energy, safety, sustainability, etc.
 2. References or citations from POR affecting primary design decisions.

3. Schedule and budget limitations.
 4. Operational occupancy, building usage, diversity, etc.
 5. Indoor environmental design conditions, such as temperature, humidity, ventilation, air changes per hour, space pressurization, presence of hazardous materials or radioactivity.
 6. Building system primary design criteria, such as ambient conditions, space-by-space equipment loads, equipment redundancy, safety factors, diversities, stand-by power loads and capacities.
 7. Fuel and utility sources available at the site, stand along building components versus campus loop services.
 8. Facility management information on how the facility will be operated and maintained and by whom.
- iii. Standards and project goals should also be documented in the BOD.
1. Specific codes/standards, regulations, guidelines or other references and the year of publication.
 2. Legal requirements such as building codes, fire and life safety regulations and specialized equipment or system codes.
 3. Owner mandated requirements either in standard design guidelines or specific to the particular project, such as Environmental Health and Safety guidelines.
 4. Criteria for Leadership in Energy and Environmental Design (LEED) or other sustainable design goals.
 5. Energy considerations, such as facility source and load energy consumption and cost goals.
 6. Considerations for future expansion.

c. PRELIMINARY BASIS OF DESIGN NARRATIVE INFORMATION

- i. After the primary design assumptions are summarized, the Design Team should include a summary of their assessment of the parameters and approach to the systems design. This portion of the narrative should be broken down to a systems level.
- ii. Narrative description of each major building system:
 1. Limiting conditions of the project on system types and locations.
 2. Why system types and locations were chosen, including any life cycle cost analyses.
 3. Discussion of building hydronic systems – which systems were selected, types of pumps, control methodology, piping system criteria, and pump head sizing procedures.
 4. Discussion of air distribution systems – included duct systems, plenum construction, air flow control strategies, fan system type, methodology for sizing duct systems, and fan static pressure sizing procedures.
 5. Heating and cooling system component design demands and excess capacity capabilities.
 6. Building automation system types, control schemes, and philosophy behind the sequences.
 7. Important design and O&M considerations.

d. DESIGN SOLUTIONS

- i. The BOD Narrative is a critical instrument for project transfer from the Design Team to the FMT. The BOD should evolve into a technically complete tool through the design process. The Design Team and Planner/PM is responsible for reviewing the BOD

Narrative with all other pertinent FMD personnel before the completion of the design phase, during construction, and at project completion.

- ii. The Basis of Design document should include a summary of design solutions for any exceptions or notables. These are the unique pieces of information that should be carried forward to potential future projects that may impact the built space or the way the space is operated or maintained, etc. Examples of notable design solutions are considerations for future expansion; both functional tie ins for space or tie in to utilities, as well as designed spare capacity by system (exhaust, emergency power, etc).

2. Construction – Punch list completion

- a. The Planner/PM will require the Design Team to provide a final **Basis of Design document (BOD)** to the Assistant Director of Facilities Operations.
- b. The Assistant Director of Facilities Operations will be responsible for review, approval and distribution of the BOD to the appropriate Facilities Operations Zone Managers and FMTs.
- c. The Planner/PM should save the final BOD document in the project close out folder with the As-Built documents, warranties, and operations and maintenance manuals for future reference.