# Design Guideline 2.1
# Owner's Project Requirements and Basis of Design Documents

## Scope

All projects shall provide an Owner's Project Requirements (OPR) document and a Basis of Design (BOD) document. Beginning in the Schematic Design phase and continuing until the project has been completed and as-built documentation submitted, the Architect/Engineer with input from the project team shall develop and update an Owner's Project Requirements (OPR) document and a Basis of Design (BOD) document. These two documents together shall provide a complete description of the project's design intent.

The Design Professional is responsible for developing and maintaining the OPR and BOD documents throughout the project.

## Related Sections

**U-M Design Guideline Sections:**
2.3 U of M Owner's Review
3.1 Sustainable Design and LEED® Requirements
3.2 Energy and Water Conservation
4.3 Building Commissioning

**Reference Documents:**
U-M OPR/BOD Report Format
U-M Room Data Sheet Format
ASHRAE Guideline 0-2005, "The Commissioning Process"
USGBC, "LEED® Reference Guide for Green Building Design and Construction"

## Execution

### OPR and BOD

The OPR is an inclusive, detailed description of the Owner's goals and requirements for the project, and the Owner's expectations on how the project will be used and operated.

The BOD is an inclusive, detailed description of the Design Team's concepts, assumptions, calculations, decisions, product selections and operating conditions to meet the Owner's project requirements and to satisfy applicable codes, standards and guidelines. It shall be formatted to coordinate with and respond to the OPR.

These two documents will be benchmarks by which the completeness, adequacy and acceptability of the project will be judged. They will be the standards by which the project will be commissioned. They will answer Owner questions after occupancy, and they will be the foundation for maintenance programs and future renovation projects.

Projects shall use the U-M OPR/BOD Report Format. For small projects where the U-M report format is not appropriate, an alternate OPR/BOD format may be permitted by approval with the U-M Design Manager.

An OPR and BOD draft shall be presented to the project Design Manager no later than at 50% Schematic Design.

The OPR and BOD documents shall be updated at each phase of design and submitted with Design Deliverables.

**Room Data Sheets**

Room Data Sheets shall be used to help define functional requirements of individual space types and are to be included as part of the OPR document. It is intended that the OPR and Room Data Sheets be viewed together.

As early as Programming and no later than SD phase, projects shall begin populating Room Data Sheets. A draft of the Room Data Sheets shall be presented to the project Design Manager no later than at 50% Schematic Design. Room Data Sheets are to be completed by DD phase and the mechanical sections indicated are to be updated, as needed, through As-Builts. At a minimum, each room type will have a Room Data Sheet.

Projects shall use the U-M Room Data Sheet Format.

Room Data Sheets shall be included in the Appendix of the OPR/BOD document.

- Use U-M Room Data Sheet Format.
- At a minimum, each room has a Room Data Sheet.
- To be started during Programming. The level of detail will be determined with the U-M Design Manager.
- Completed at DD phase.
- Room Data Sheet information transferred to construction drawings during CD phase.
- Room Data Sheet information related to Mechanical Requirements, Special HVAC Requirements, Process Cooling and Exhaust are to be updated through As-Builts.
- Indicate Room Data Sheets that have undergone revisions by marking the “revision” checkbox and provide the revision issue date.

**Development and Updating**

Identify key concepts and specific requirements from the project's program and design concept report for inclusion in the OPR. Develop the BOD with descriptions of the systems, assemblies and conditions designed to meet the Owner’s Project Requirements. Update the OPR and BOD as the project goals and requirements are defined and clarified. Submit them at the end of the Schematic Design, Design Development and Construction Document phases along with the other Design Deliverables. Each update shall incorporate new and revised project information including:

- Progress in project design.
- Changes in project goals. (Document discussion summary, decision outcome and the decision date in the OPR. Provide supporting documentation in the OPR/BOD Appendix).

- Changes in project scope. (Document discussion summary, decision outcome and the decision date in the OPR. Provide supporting documentation in the OPR/BOD Appendix).
- Code interpretations.
- Input from Occupants, Construction Managers and Contractors.
- Input from Utilities, Maintenance, Department of Public Safety, Environmental Health Services, etc.
- Input from architectural, mechanical and electrical design coordination meetings.
- Input from value engineering sessions.
- Test reports on existing conditions.
- Design calculations.
- Equipment selections.
- The final power system short circuit, protective device coordination and arc flash hazard study including the electronic data file for long term updating by the Owner.
- Project specific carbon emissions information (percentage of each building use type and a breakdown of programmatic spaces included with each building type; weighted average calculations; project specific building emissions target; energy model output and/or calculations to demonstrate compliance with emissions target)
- Energy and water conservation calculations and modeling.
- Updates to LEED Checklist.
- Sound, effluent, dispersion, CFD, vibration, and other studies.
- Bid Alternates and Owner's Options.
- A list of all design deviations from U-M Design Guideline requirements.
- Updates to Facility Condition Assessment (FCA) Report.

**Format**

- Use U-M report format for both OPR and BOD and the Room Data Sheets.
- The document shall be formatted to 8.5”x11” (z-fold 11”x17” will be acceptable when needed for diagrams, drawings, tables, etc.).
- When using a U-M report, assure hidden text is turned “on” and carefully review additional information and guidance notes.
- Page numbers shall be used throughout the document.
- Indicate where revisions have occurred using “track-changes” or another method approved by the U-M Design Manager.
- It is intended that the OPR, BOD and Room Data Sheets be viewed together. Avoid duplicating information.

**As-Built OPR/BOD and Room Data Sheets**

At the conclusion of the project, a final OPR/BOD document and Room Data Sheets with “as-built” information shall be submitted by the Architect/Engineer. It shall incorporate all changes that arose during construction or in the immediate post occupancy period that impact the OPR/BOD and that the A/E was involved with. The update shall include revisions to room data sheets where changes occurred (Sections

within the Room Data Sheets required to be updated through As-Builts are labeled as such in the U-M Room Data Sheet Template) It shall also describe discoveries made during construction and compromises accepted at project completion.

To facilitate the production of an as-built OPR/BOD document and Room Data Sheets, identify changes during construction that impact the final OPR/BOD and notify the U-M Design Manager accordingly. When writing addenda, CCD's and RFI's, mark them with "Impact on OPR/BOD" if they affect the OPR, BOD or Room Data Sheet sections that require updates through As-Built..