

GENERAL INFORMATION

Washington University School of Medicine (WUSM) Design Standards addresses the following General Information:

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[Design Standards Variance Application](#)

[Project Delivery Manual](#)

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INTRODUCTION AND FORWARD

GENERAL

1. This document contains the Washington University School of Medicine (WUSM) Design & Building Systems Standards (referred to in the contract as “Medical School Campus – Washington University School of Medicine Design Standards”) for maintenance and construction in WUSM facilities, and is an integral component of the Design Guidelines.
2. The WUSM Design Standards, latest edition, shall be used throughout the project design & implementation process by the Consultant. Use of this document does not relieve the Architect or Engineer of Record responsibility for the final design in accordance with their contract and with professional standards of practice.

PRODUCTS

1. The Design Standards are divided into two sections: Design Standards (Architectural) and Building Systems Standards (MEPFP). The term “Design Standards” shall be used as the overall title of this document. The Design Standards cover sections which have been prepared by WUSM Capital Projects and other campus departments that have standards relating to design or construction. See the Table of Contents for a detailed listing of the information included.
2. This publication has been prepared for the guidance of Consultants providing architectural and engineering services under contract to WUSM through the Capital Projects Office as well as University Staff. They form the basis of quality for all campus-wide design, construction, and maintenance procedures. Quality levels are determined on the basis of reliability, serviceability, safety, and cost (including design, construction, inventory, operating, and maintenance costs). While these Standards are meant to inform all Facilities projects, WUSM constructs and maintains a broad range of facilities and anticipates that from time to time these standards may need to be adjusted to meet specific project needs and advances in technology. Requests for deviations from the Standards should be discussed with the WUSM Project Manager and submitted using the [Design Standards Variance Application](#) to the WUSM Capital Projects Office for review.
3. As improvements are made in building technologies and materials, it is anticipated that these Standards will evolve. WUSM is committed to regular review, modification, and improvement of the Standards. Please obtain the latest Standards information from our website. [Link to most recent version of the Standards.](#)

DEFINITIONS & ABBREVIATIONS

1. Terms used in this document shall be defined as follows:
 - a. “Owner”: The Washington University on behalf of the School of Medicine” or “Washington University School of Medicine” (WUSM).
 - b. “EH&S”: WUSTL Environmental Health & Safety.
 - c. “WUSM Project Manager (WUSM PM): Owner’s Representative as defined in the Project Contract.

DESIGN PHASES: PROCESS

1. In the early design stages, various solutions to the design problem shall be explored and presented to the WUSM Project Manager for consideration. All design elements must be carefully explored with long term goals (projected life of facility, equipment, and systems) in mind. The Consultant is to adhere to the latest edition of the Design Standards. Exceptions may be made on a case-by-case basis by requesting approval in writing to the WUSM Capital Projects Office using the [Design Standards Variance Application](#).
2. A detailed comparison and economic analysis between various design options should be prepared where appropriate. Their use in determining the design selection shall be coordinated with the WUSM Project Manager.
3. Safety, compliance, sustainability, energy conservation, and efficiency of mechanical / electrical systems and equipment are of prime importance. The Consultant is advised that design decisions regarding equipment / system selections will not be based on first cost alone. A Life Cycle Cost Analysis (LCCA) will be prepared in the early design stages and presented to the WUSM Project Manager for review and / or approval. In addition, very high energy use equipment, such as HVAC chillers and pumping systems, require a Present Worth Analysis (PWA) over the projected life cycle.
4. WUSM projects vary by type, where applicable, each phase of the design shall address the following minimum design areas:
 - a. Integration with WUSM Strategic Planning
 - b. Siting / Landscaping (context, open space, existing conditions)
 - c. Traffic and Parking
 - d. Roads and Sidewalks
 - e. Infrastructure Architectural Character and Integrity (campus context, materials, scale)
 - f. Program Requirements (program statement, program verification)
 - g. Structure
 - h. Building Systems
 - i. Grounds and Sanitation
 - j. Utilities
 - k. Criteria and Options for Expansion (future space and infrastructure)
 - l. Maintenance Requirements
2. The WUSM Project Manager coordinates all proposed projects with the appropriate internal reviewing offices. In addition to working with the WUSM Project Manager and User Groups, Consultant coordination and review of the design with WUSM internal reviewing offices is required. The Consultant shall, at the start of a project, work with the WUSM Project Manager to identify the interactions that will be necessary during the Design Phases. Requirements for project reviews will vary per project. The following chart outlines the internal reviews:

WUSM COORDINATION & INTERNAL REVIEW MATRIX	PRE-DESIGN	SCHEMATIC DESIGN	DESIGN DEVELOPMENT	CONSTRUCTION DOCUMENTS	POST-OCCUPANCY	NOTES
Project Kick-Off	○					
ADA Compliance Strategies / Universal Design	○			●		1
Custodial Services		○	○	●		1
Specialized Facilities	○			●		
Environmental Health & Safety		○	○	●		1
Division of Comparative Medicine		○	○	●		5
Infection Control						
Institutional Animal Care and Use Committee						
Emergency Preparedness			○			
Roofing Systems		○	○	●		1
Access Controls			○	●		1
Materials & Finishes			●			3
Signage			○			6
Miscellaneous Equipment Schedule			○	●		7, 8
Furnishings Coordination			○	●		3
Mechanical		○	○	●		1, 2
Life Cycle Cost Analysis & Present Worth Analysis			○	●		
Electrical		○	○	●		1, 2
Voice / Data			○	●		1
A/V			○	●		1
Plumbing		○	○	●		1, 2
Fire Protection		○	○	●		1, 2
Drawing Review Checklist				●		8
Warranty Review					●	9

○ Coordination and development of design

● Final review meeting

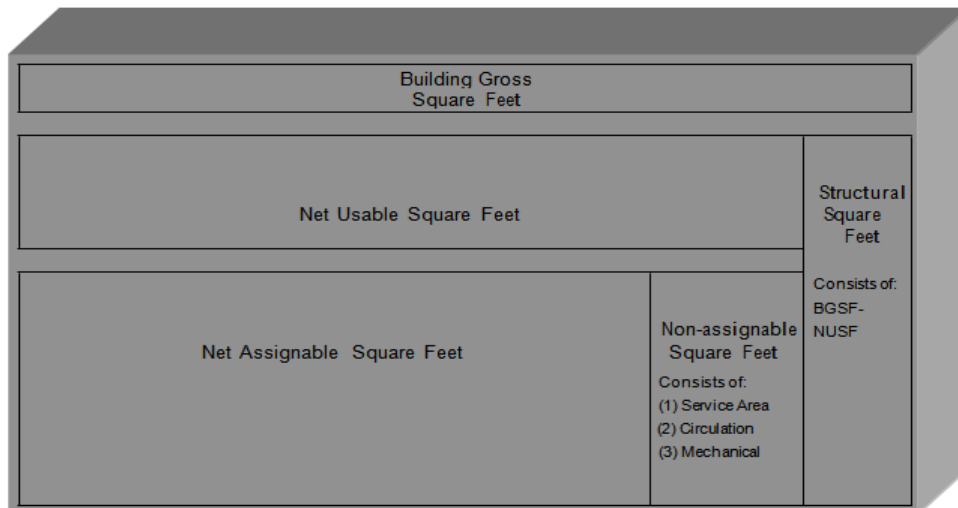
- 1 Review required at completion of CD's
- 2 Informational meetings may be necessary to understand existing conditions
- 3 Review with WUSM Senior Planner/Project Manager prior to presentation to Users
- 4 Required when working within healthcare environments
- 5 Required on projects involving animal facilities
- 6 Signage by Owner, coordination with Architect may be required during Design Development
- 7 Submit to WUSM Project Manager at Completion of Design Development Documents
- 8 Submit to WUSM Project Manager at 95% Completion of Construction Documents
- 9 Walk-through/facility review no later than 11 months after Substantial Completion

3. Reviews and Approvals:
 - a. The Consultant shall become knowledgeable with planning and approval processes that have been established for the Washington University Medical Campus and coordinate the schedule of the design phases with the WUSM Project Manager's overall project schedule incorporating all required reviews and approvals.
4. Historical Planning Principles:
 - a. Demolition or alteration of the exterior of existing buildings may require special review or approvals by the Authorities Having Jurisdiction (AHJ).
5. Pre-design, programming, and feasibility studies are not required, unless specifically requested by the contract. Pre-design consultation with the WUSM Project Manager is necessary for any proposed project involving the campus infrastructure systems (High Voltage and Steam Distribution, Sanitary and Storm Sewers, Gas, Water, Chilled Water Distribution, etc.). Pre-design consultation is required with WUSM Capital Projects regarding planning and use of materials.
6. Equipment Procurement: The Owner may elect to pre-purchase equipment for some projects and will in such cases require the Consultant to assist in the preparation of equipment bid documents and bidding. The Owner will coordinate the equipment procurement and delivery schedule.

DESIGN PHASES: DELIVERABLES & FORMATS

1. Project Documents – Consultant Responsibilities:
 - a. To ensure that the Consultant is meeting expectations, the following is provided to supplement the requirements of the Project Contract. In advance of starting a project phase, the Consultant shall review with the WUSM Project Manager to confirm the output required to complete the phase and begin the review process.
 - b. The Consultant shall develop for the WUSM Project Manager's review and approval: Program Validation Materials, Schematic Design Documents, Design Development Documents, and Construction Documents, to establish the scope, relationship forms, size, and appearance of the project in accordance with the requirements of all Agreements and Design Standards.
 - c. A detailed cost estimate, by major building component, is required with each project submittal phase. The estimate detail for each submittal shall be consistent with the level of design required for that submittal phase. Estimates shall be prepared in CSI division format with a summary sheet showing the section totals. WUSM understands that the Consultant will use their own methods and measurements for developing the required construction cost estimates.
 - d. The Architect is to acquire from all users of the space to be designed (including hands-on assistance in developing) a list of maximum and minimum stored quantities of hazardous materials such as, but not limited to, chemicals and flammable liquids, biological waste bulk quantities, and radiological materials used, stored, and disposed of. This list shall be submitted to the WUSM Project Manager and be reviewed by EH&S.
 - e. Document submittals at each phase of design shall consist of multiple sets of drawings and specifications (including electronic copies), quantity to be determined by the WUSM Project Manager.

- f. The Consultant will prepare appropriate presentation materials to convey the design concepts at each phase. Although the WUSM Project Manager will be the primary contact, the Consultant may be required to prepare presentation materials for faculty, administrative, and student users. Models of major building projects are recommended.
- g. The Consultant shall provide Project Measurement Calculations to the Project Manager including building gross (BGSF), net useable (NUSF), and net assignable (NASF) square footages at each phase of design.
 - i. CATEGORIES OF BUILDING MEASUREMENT
 - 1. BUILDING GROSS SQUARE FEET (BGSF) = Net Usable Square Feet + Structural Square Feet
 - 2. NET USABLE SQUARE FEET (NUSF) = Assignable Square Feet + Non-assignable Square Feet
 - 3. NET ASSIGNABLE SQUARE FEET (NASF) = Categories of Assignable Space
 - ii. CONCEPTUAL FRAMEWORK FOR BUILDING SQUARE FOOTAGE
**If space is in non-assignable categories and is "assigned" for only departmental use it is then added to Net Assignable Calculation*



DEFINITIONS

- 1. BUILDING GROSS SQUARE FEET (BGSF)
 - a. The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas for circulation and shaft areas that connect one floor to another.

- b. Basis for Measurement – Building Gross Square Feet is computed by physically measuring or scaling measurements from the outside faces of exterior walls, disregarding architectural and structural projections such as cornices, pilasters, buttresses, etc., that extend beyond the exterior building wall faces. Excludes areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure is met, round up BGSF to the nearest whole number. Within the building, count vertical circulation space-whether floored or not, such as vertical mechanical, electrical & elevator shafts at each floor.
 - c. Examples of *Included Space*:
 - All interior assignable spaces
 - Basements and attics
 - Garages
 - Enclosed porches or portion of porch covered
 - Penthouses
 - Mechanical equipment floors (interstitial)
 - Public areaways, lobbies, and mezzanines
 - Inside balconies utilized for operational functions
 - Vertical circulation with/without floors (count at each floor)
 - Mechanical and electrical shafts (count at each floor)
 - Elevators and elevator shafts (count at each floor)
 - d. Examples of *Excluded Space*:
 - Attics without flooring
 - Parking lots (uncovered)
 - Light wells
 - Playing fields
 - Portions of upper floors eliminated by rooms or lobbies which rise above single floor height
 - Floored areas with less than 3.0' clear headroom (unless they can be properly designated and used as mechanical or custodial areas)
 - All open to the weather spaces with no overhead covering (e.g. exterior corridors, porches, balconies, courts, etc.)
2. NET USABLE SQUARE FEET (NUSF)
- a. The sum of all areas on all floors of a building either assigned to, or available for assignment to, an occupant or specific use, or necessary for the general operation of a building.
 - b. Basis for Measurement – Net Usable Square Feet is computed by summing the Net Assignable Square Feet and the Non-assignable Square Feet.
 - c. Limitations – Deduction should not be made for necessary building columns and projections. These small areas are not excluded as they represent an insignificant percentage of the total area of an average-sized space. Capturing their area would be unduly burdensome relative to the very small contribution they would make toward precision. Areas defined as structural should not be included.
 - d. Examples of *Included Space*:

- Laboratories
 - Offices
 - Lab/offices support spaces
 - Mechanical rooms
 - Electrical rooms
 - Public corridors (street level)
 - Phone/data rooms
 - Kitchens
 - Vending machine areas
 - Elevator lobbies (street level)
 - Building Maintenance
 - Loading docks
- e. Examples of Excluded Space:
- Bathrooms
 - Elevators
 - Stairs
 - Janitorial spaces
 - Mechanical shafts
 - Public corridors (non-street level)
 - Elevator lobbies (non-street level)
3. NET ASSIGNABLE SQUARE FEET (NASF)
- a. The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use.
- b. Basis for Measurement – Net Assignable Square Feet is computed by physically measuring or scaling measurements from the inside faces of surfaces such as walls, partitions or doors, etc., that form the boundaries of the designated areas. Space is to be covered by a ceiling 3'-0" or higher, and preferably but not required in special circumstances, enclosed on all sides by walls, partitions, doors, or functionally equivalent. Round up ASF to the nearest whole number. Include columns or similar structural elements, built-in or freestanding furniture and equipment, and alcoves and other similarly recessed areas. Exclude areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure are met.
- c. Examples of *Included Space*:
- Reception
 - Interior circulation corridor serving suite
 - Phantom corridor for large un-partitioned space
 - Office
 - Workroom/Copy room
 - Conference or seminar room
 - File room or storage room
 - Teaching or Research Laboratory
 - Teaching or Research Laboratory support space

- Classroom and classroom support space
- Library and library support space
- Special purpose room (auditoria, cafeteria, TV studio)
- Locker or shower room
- Maintenance garage
- Private restroom or Custodial closets specific for departmental operations