1.05 – DESIGN PROCESS

The Project Manager coordinates all proposed projects with the appropriate internal reviewing offices.

Each phase of the design process shall address the following minimum design areas:

1. Integration with Campus Master Plan
2. Program Requirements (Program Statement, Program Verification)
3. Siting/Landscaping (Context, open space, existing conditions)
4. Traffic and Parking
5. Infrastructure (FMD)
6. Architectural Character and Integrity (campus context, materials, scale)
7. Structure
8. Building Systems (FMD)
9. Grounds and Sanitation (FMD)
10. Utilities (FMD)
11. Criteria and options, for expansion (future space and infrastructure)
12. Maintenance requirements (FMD)
13. Roads and Sidewalks (FMD)

PART 1 – DESIGN GUIDELINES

The Consultant will prepare appropriate presentation materials to convey the design concepts at each phase. On Capital Projects a model is recommended. Although the Project Manager will be the primary contact, the Consultant may be required to prepare presentation materials for faculty, administrative, and students users.

PART 2 – AESTHETIC CONSIDERATIONS

The Consultant shall become knowledgeable with planning principles that have been established for the Washington University Medical Center.

There are general design principles that have evolved over the years. They are summarized as follows:

Any new structure at the Medical Center which is adjacent or connected to a laid up brick/stone building shall be of similar or compatible materials.

As a general rule, on the Medical Center campus, masonry materials within the color range of existing buildings should be selected when using limestone or other cementious materials.

When selecting an exterior building material, approval of the Project Manager must be secured prior to proceeding with development of details. Material samples are required.

Provision for future expansion should be considered for each building project.

PART 3 – HISTORICAL PLANNING PRINCIPLES

Demolition or alteration of the exterior of existing buildings may require special review or approvals. Some structures may be protected historical structures.

PART 4 - PROJECT MANAGER RESPONSIBILITIES

The Project Manager may provide the following information or services:
DESIGN STANDARDS
WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

Scope for Design Services
Project Budget and schedule
Drawings of existing facilities and information pertinent to building services and utilities
Design Guidelines
The coordination of distribution of drawings for in-house reviews
Coordination of in-house reviews
Coordination of Interior Design related needs
Coordination of meeting between A/E firm and user/occupants
Coordination of meetings between A/E firms and WUSM Protective Services, Networking Services or other WUSM departments
Coordination of User/Occupant moves
Coordination of University Approval Committee reviews
Building information access – all design phases
Access to existing building systems information archive (blueprints, specifications, etc.)

Document loaning terms: File searching and document retrieval shall be the responsibility of the Consultant. Documents may only be removed from the document archive with the Owner’s permission. All documents loaned shall be accompanied with a transmittal from the Consultant to the Project Manager. Each transmittal shall indicate each sheet of drawings removed and each bound volume, noting the existing conditions of the documents. All documents shall be returned within ten days of the document transmittal date. Approval for payment of invoices shall be based on the proper return of all loaned documents.

WUSM Design and Construction Department shall be responsible for all design change orders with the General Contractor. The General Contractor and his subcontractors shall not proceed with any change orders without the written consent of WUSM Design and Construction Department.

All work relating to security measures shall be coordinated through the Washington University School of Medicine Protective Services Department.

All work relating to communications shall be coordinated through the Washington University School of Medicine Networking services.

All work having environmental, safety, and health ramifications shall be coordinated through the Washington University School of Medicine Department of Environmental Health and Safety. It is the responsibility of EHSO to assure that basic design standards are uniformly met and to assist with the evaluation and classification of occupancies. EHSO shall review laboratory design drawings during the schematic and design development phases to ensure that EHSO Guidelines and governmental regulations for laboratories are met.

PART 5 - DESIGN AND CONSTRUCTION SUBMITTALS

General
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 Project Manager to confirm the output required to complete the phase and begin the review process.

The Consultant shall develop for the Project Manager review and approval 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.

Pre-design, programming and feasibility studies are not required, unless specifically requested by the contract. Pre-design consultation with the Project Manager is necessary for any proposed project
DESIGN STANDARDS
WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

DESIGN PROCESS

1.05

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 Washington University School of Medicine regarding planning and materials use.

The Consultant shall provide design calculations for the Project Manager for review upon request.

The WUSM Design Guidelines, latest edition, shall be used throughout the design process by the Consultant. Use of this document does not relieve the Designer of Record of responsibility for the final design in accordance with their contract and with professional standards of practice.

A tabulation of gross, net, and assignable square foot building areas shall be submitted with each design phase. A.I.A. Document D101 will be used to define the square footage categories (a copy of this form may be obtained from the local A.I.A. Office).

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.

The Consultants key personnel shall remain with the project throughout all design phases and construction until final completion.

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.

Document submittals at each phase of design to the Project Office shall consist of multiple sets of drawings and specifications (including electronic copies), quantity to be determined by the Project Manager.

Construction documents shall call for contractor to submit work schedules to the Project Manager. Sequence of events, time tables, and due dates are required. For projects which involve interruptions for existing building operations or major utility usage, construction documents shall clearly give the contractor the responsibility to discuss the required outages and service interruptions with the Project Office at least 30 days in advance.

The contract documents shall require the contractor to submit a schedule for these interruptions which may adversely impact the project cost and/or time for completion. A brief description of the restrictions and their basis shall be required.

PART 6 – SCHEMATIC DESIGN

Estimates

Estimates of Probable Costs are required for all project phases, including a projection of a Not to Exceed Budget Estimate. Estimates shall include all project costs.

Outline Specifications

The specifications shall point out the principle features of the overall project. A schematic outline specification shall be presented using the CSI division format.

At the minimum, the specifications should consist of:
Description of design concept and basis of design formatted around a presentation of facts sufficiently complete for a preliminary review. Include a listing of all materials and references used in the design concept.

Area calculations, including listing of required spaces.

Architectural project description, including description of site work and landscaping, description of site utilities concepts, basic architectural components, accessibility issues; description of basic structural systems, analysis of life safety and code issues.

Mechanical project description describing all systems and their operation, energy conservation issues, design requirements.

Electrical project description describing all systems and their operation.

Special systems description of design elements not specifically addressed in the Design Guidelines.

PART 7 – REVIEW DRAWINGS

The minimum drawing submittals in this phase shall include the following:

1. Schematic site plan Showing:
   - Project location on campus map
   - Building Site Plan
   - Site utilities
   - Site improvements, including roads, parking, service areas
   - Landscaping concepts and elements

2. Architecture
   - Schematic floor plans, sections with floor to floor heights indicated
   - Exterior elevations
   - Structural schematic plan

3. Mechanical
   - HVAC schematic floor plans showing proposed systems and flow diagrams
   - Plumbing schematic floor plans showing proposed systems
   - Fire protection system schematic plans
   - Controls System

4. Electrical
   - Schematic floor plans of all electric systems with connections to site utilities
   - Lighting schematic plans showing lighting concepts

5. Special systems and equipment
   - Controls BMS
     - Fire Alarms
     - Elevators
     - Gasous Fire Suppression
   - Communications schematic plans
   - Equipment indexed listing and location plan
   - Design Development
   - General

During the Design Development phase the Consultant shall include:
Written analysis of applicable codes
ADA requirements
Description of energy conservation features which are incorporated into the project Life cycle cost analysis (LCCA) of all high energy use equipment
Detailed Project Estimate by major building component
Project Schedule
Presentation material as required

PART 8 – OUTLINE SPECIFICATIONS

The specifications in this phase shall identify all significant architectural, structural, mechanical and electrical materials and equipment.

The CSI division format shall be the basis for the specifications.

PART 9 – CONSTRUCTION DRAWINGS

Drawings shall reflect an expansion of the schematic design phase and shall establish the final scope, form and size of the project. At the minimum, drawings shall present the following:

1. Architecture
   Floor plans, sections and exterior elevations
   Exterior materials palette and samples to show any changes in materials, patterns, textures and color
   Typical wall sections and significant construction details
   Built in equipment layouts to establish final project requirements
   Renderings or models as required
   Furniture and moveable equipment layouts as required

2. Landscape and site improvements
   Drawings that will establish final scope and details of landscape and site improvement work

3. Site Plans
   Site plan showing connections to all utilities with routing of new and existing services and connections
   Site Improvements Plan to establish final scope and details of site improvement work and landscape concepts

4. Structural
   Plans of each building level to show basic structural systems
   Drawings to show preliminary sizing of major structural components
   Drawings to show critical clearances

5. Mechanical
   Floor plans of each building level with single line layout and riser diagrams of piping and ductwork; applies to HVAC, Plumbing, and Fire Protection / Life Safety systems
   Fire Protection equipment
   Preliminary equipment sizes and capacities of major system components
   Equipment layouts for HVAC and plumbing to establish space requirements
   Acoustical and vibration control
   Energy conservation features

6. Electrical
   Drawings to show plans for lighting, power, communication systems and fire alarm systems
Drawings to show preliminary sizes and capacities of major equipment, equipment layout establishing space requirements and clearances
Riser diagrams

7. Special Equipment Drawings showing special equipment including elevations and details of kitchen equipment, materials handling systems, computers, etc.

8. Design Calculations
Update of design calculations for the Project Offices review and approval.

PART 10 – CONSTRUCTION DOCUMENTS

General
Energy conservation analysis prepared in the Design Development phase shall be updated and submitted for Project Offices’ review and approval.

The Consultant shall prepare a detailed code analysis which conforms to BOCS Building Code format.

ADA requirements to show the final scope and cost of compliance.

Detail Estimate of probable construction cost by major building component.

Presentation materials as required by the Project Manager.

Specifications
The specifications for this phase shall provide complete details of all construction features, methods, materials and equipment. The specifications shall allow contractors to prepare bids without the need to make assumptions or judgments.

When specifying materials and equipment, the Consultant shall reference names of three manufacturers that are deemed to be suitable for meeting the desired product quality. Specific exceptions can be found in the Design Guidelines.

The CSI division format shall be utilized.

Drawings
The Contract Document drawings shall provide sufficient detail (including existing systems) to allow for clear understanding of the scope and size of the project by Duke and the Contractor and to minimize interference between new and existing systems. At a minimum, they should include, but not be limited to:

1. General
   Site-use plan showing, construction staging and contractor parking
2. Architecture
   Site plan
   Dimensional floor plans
   Reflected ceiling plans
   Building sections, elevations, details and schedules
3. Landscape and Site Improvements
   Site improvements
   Grading and drainage
Planting and irrigation plans

4. Utilities
   Site plans for all existing and new utilities. Existing utilities shall be located in early design phase to minimize interference
   Sections and details

5. Structural
   Foundations
   Framing for floors and roof
   Schedules
   Details and sections

6. Mechanical HVAC
   Floor plans with double line layout for ductwork
   Floor plans for HVAC piping
   Equipment Room layouts and sections in 1/4” or 3/8” scale
   Details and necessary elevations
   Schedules for all HVAC equipment
   Flow diagrams for major systems
   Zone maps to illustrate areas served by the various mechanical systems
   Temperature control diagrams and sequence of operation description

7. Mechanical Plumbing
   Floor plans for all applicable services with overhead and under slab piping shown on separate plans
   Flow diagrams for major systems
   Equipment and toilet room layouts in 1/4” or 3/8” scale
   Typical details and schedules
   Piping riser diagrams

8. Mechanical Fire Protection and Sprinkler Systems
   Floor plans with number of sprinkler heads indicated on each floor

9. Electrical
   Floor plans for lighting
   Floor plans for power
   Floor plans for low voltage power
   Power riser diagram
   Riser diagram for low voltage systems
   Equipment layouts
   Details and schedules
   Telephone and fire alarm riser diagrams, as well as TV and data diagrams

   Equipment Procurement
   The Project Office 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 Project Office will coordinate the equipment procurement and delivery schedule.

END OF SECTION