CHAPTER II:
PROJECT DEVELOPMENT PROCESS

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I. PROJECT DEVELOPMENT PROCESS

This section outlines the procedures that are unique to capital projects at The University of North Carolina at Chapel Hill. These requirements supplement the planning procedures required by North Carolina's Division of State Construction, as outlined in the North Carolina Construction Manual. The designer should be familiar with that manual. The manual can be accessed at http://interscope2.doa.state.nc.us/guidelines.htm

A. DESIGNER'S RELATIONSHIP TO THE UNIVERSITY

Project planning and design for the University involves many persons within the University, the NC Office of State Construction, and other reviewing agencies. Nevertheless, the Designer should understand that the University is the project's owner and client.

At any point in time, a single University representative is assigned to each project. The Designer is required to work through this person, and must turn to this person for authoritative information on all matters and questions involving the University. The University representative is the sole point of contact for the Designer and all project correspondence and decisions shall be coordinated through this representative. The Designer should not act on any information other than that received from, or coordinated through, the designated project representative. The nature of that representative will shift according to the design phase, thus:

The University's Design Manager is the Designer's contact person during the project's initial phases (programming, designer selection, design, and bidding). The Design Manager is an employee of the University's Department of Facilities Planning.

After the construction contract is awarded, the Designer's contact person becomes the Construction Manager, an employee of the University's Department of Construction Management.

The Designer shall designate an individual within the Designer's firm who is directly responsible for the project, and who can be contacted directly on any matter pertaining to the project.

Payments to Designer. The Designer shall submit invoices for approval to the University's Design Manager through the Bidding Phase and to the Construction Manager through the Construction Phase. Invoice formats shall follow the format detailed under STANDARD FORMS AND DETAILS – Invoice for Design Services. The Designer may submit invoices on a monthly basis for up to 90 percent completion of a design phase. The remaining 10 percent is invoiced upon written approval of design submission.

Also refer to Chapter VI, Section E, "Invoice Form".

1. Project Initiation

Upon the identification of a tentative facility need by a school, department, institute, or supportive function, Facilities Planning & Construction conducts an analysis of the new space and/or renovation requirements including examination of existing space, use, and condition. The Facilities Planning Committee reviews the proposed project to insure that it is consistent with the goals, objectives, and priorities of the University. A project description and cost estimate is prepared (cost estimate is verified by the State Construction Office) and evaluated by the Facilities Planning Committee and Chancellor with a decision to proceed or cancel the project.

A project budget is prepared and submitted and project priority established for funding authorization.

2. Site Selection Process

The Master Plan for the University sets forth the parameters to be used in considering building sites and suggests areas on the campus that are appropriate for development. Facilities Planning & Construction, working with the appropriate school or department and the Vice Chancellor for Finance and Administration, prepares a recommendation for siting. The site recommendation is reviewed and approved by the Buildings and Grounds Committee, the Chancellor, and the Board of Trustees. Normally, this process runs concurrently with selection of the project architect; however, site selection may:

a) Precede designer selection,
b) Be conditional, subject to more detailed study by the project architect
c) Be delayed until the project architect has had the opportunity to study several alternative sites and prepare a specific site recommendation, based on further analysis or program needs.

3. Designer Selection

The University will place a notice for solicitation of design services on the following web site: www.northcarolina.edu. The University's Design Manager will prepare a Request for Proposal (RFP) of additional information about the project that will be forwarded to all Design Teams upon request.

Upon receipt of letters of interest, a Pre-Selection Committee will convene to discuss the Design Team's proposals. The Pre-selection Committee will select a short list of Design Teams to invite to campus for a tour and interview sessions.

a) Criteria that govern Designer Selection include:

(1) Experience with similar building types in a campus environment
(2) "Green" building experience and expertise
(3) The project team, including consultants proposed for this project
(4) Historically Underutilized Business (HUB) participation in proposed team structure; and who and how were HUB designers utilized on previous projects
(5) The team's recent experience in meeting project budgets and schedules
(6) The team's recent experience with the NC Office of State Construction
(7) Design team's workload
(8) Experience with legal and/or technical design problems on previous projects
(9) 254 Form of each proposed consultant

A Design Interview Committee consisting of representatives of the user group/s, staff from Facilities Planning & Construction Department, members of the University's Building and Grounds Committee and Board of Trustees will conduct the interviews. The Design Interview Committee will issue a recommendation, in priority order, for the selection of the Designer. This list is presented to the University's Building and Grounds Committee who in turn will issue a recommendation to the University's Board of Trustees for final selection.

Upon final selection, the University's Design Manager will notify the selected Designer and schedule the Initial Planning Conference.

4. Initial Planning Conference

The University's Design Manager will schedule an initial planning conference with the Designer to discuss general requirements for facilitating the Designer's work. This conference is held as soon as possible after a Designer is selected for the project. The Designer's professional plumbing, HVAC, electrical, and any other consultants with in the Design Team should attend this conference.

The following guidelines and information will be reviewed with the Design Team:

a) Master Plan
b) Planning and Design Guidelines
c) Sustainability Goals
d) Facility Condition Assessment Program (FCAP) Report
e) Review of project scope, budget, and schedule
f) Design Fee Proposal

5. Site and Existing Conditions Information

The University will furnish topographic surveys and other existing information for new construction. It will furnish record drawings for remodeling projects. The University cannot warrant the accuracy of this information. The University and the Designer should work together as a team to collect survey information. The Designer shall supplement the information supplied by the University with his or her own field surveys and measurements. The Designer is responsible for the accuracy of information shown on the construction contract drawings. A survey of surface features and under ground utilities should be completed by the Schematic Design Phase.

Should outside surveying services be required, the Designer shall prepare a request for these outside surveying services. The Facilities Planning & Construction's Survey Section shall submit this agreement to surveyors for proposals. Based upon the recommendations of the FPC Survey Section and the Designer, the University will engage the services of a land surveyor. Also refer to Chapter III, Section A.7. Site Design, Geo-technical Engineering.

Given the complexity of the utility infrastructure and the importance of the landscape on the UNC-Chapel Hill campus, it is critical that a surface feature conditions survey be completed by the schematic design phase. Review of the surface features survey by all University utilities is also critical. As soon as is practical, a survey of existing sub-surface conditions should also be completed.

6. Design Contract Negotiation

The University's Design Manager will request that the selected Designer submit a preliminary design proposal to the Facilities Planning & Construction Department for review.

Upon review and comment by the Facilities Planning & Construction Department, the Designer will send their design proposal to the State Construction Office who in turn will negotiate and process the design contract.

B. PROJECT DEVELOPMENT SEQUENCE

1. Overview: The Designer submits a proposed Project Development Schedule to the University's Design Manager for approval. This schedule is submitted within twenty-one (21) calendar days of the date of the Design Contract, and shall incorporate the end-of-phase milestone dates stipulated in the Design Contract. In addition, this schedule shall show:

    a) The start dates and duration of each major design phase.
    b) The duration and completion dates of each design review period, which are required to maintain the project schedule. For most projects the design review periods are:

        (1) Schematic Design Review: thirty calendar days
        (2) Design Development Review: thirty calendar days.
        (3) Construction Documents Review: sixty calendar days
        (4) Final Review and Approval: thirty calendar days

    c) The project duration and completion dates of other project-related activities, such as funding decisions, surveys, sub-surface investigations, and zoning approvals.
    d) The estimated duration of the construction contract award process and the construction process.

The Project Development Schedule is updated and resubmitted with each end-of-phase submittal described below.

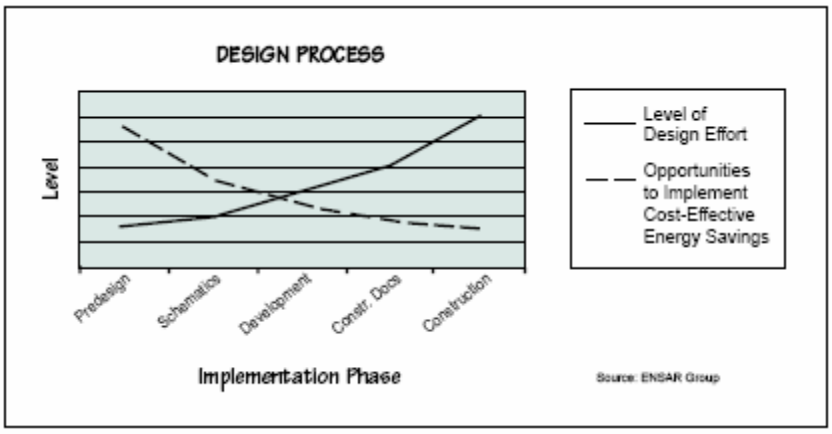
2. Project Development Phases

The Designer is expected to conduct project design and coordination meetings to verify the project program and review the design as it develops. The number of meetings will vary according to the needs of each project. The Designer or the University's Design Manager may identify the need for a meeting but, in all cases, The University' Design Manager will act as the contact for campus user groups and other University personnel. The Designer is expected to take notes and distribute them to all participants through the Design Manager.

The Designer is required to make submittals of design documents at the conclusion of each design phase to the State Construction Office, the Department of Insurance, and the University Facilities Planning & Construction Department. Where feasible, documents shall be printed two-sided. The requirements for each project development phase are outlined in Section 204 of the North Carolina Construction Manual. Additional responsibilities are outlined below:

a) Programming

If a programming phase is included as a project phase, the Designer shall confer with the University's Design Manager, the eventual occupants of the building and a variety of owner representatives to establish the project requirements. In the University context, owner representatives include, but are not limited to, staff from Energy and Telecommunication Utilities, Life Safety & Access, HVAC, EMCS, Electrical & Plumbing Shops, Grounds, Sustainability, Office of Waste Reduction and Recycling , Transportation and Public Safety, Water, Wastewater and Stormwater, Architectural & Engineering Services, including the Commissioning Coordinator, and the University's commissioning (Cx) agent, and Environment, Health & Safety. Early meetings with all owner representatives are required to clarify design intent, communicate owner standards, and understand mutual expectations. As the following graph shows, the most cost-effective opportunities to achieve energy savings (and other sustainability-related outcomes), are available for the least effort at the very inception of the design process. Design goals should be documented in a design intent document signed by all participants.



b) Schematic Design Phase

The Designer shall confer with the University's Design Manager, the eventual occupants, and the owner representatives (listed above) at the beginning of the schematic design phase to review the

program and establish the project requirements. Based on an approved summary of the project requirements, the Designer shall prepare a schematic design, which illustrates the recommended implementation of the program and project requirements.

The Designer is expected to involve the University's Design Manager—and through the Design Manager, the using department and appropriate members of the University's Facilities Management and Energy Services Groups --during the development of the schematic design.

(1) Existing Conditions

The University attempts to provide accurate, as-built drawings for the use of the Designer. However, due to the age of many of the University's buildings and the many renovations some buildings have endured, as-built drawings are not always available. It is the responsibility of the Designer to notify the Design Manager when any information regarding the existing conditions of a project is inaccurate or inadequate. Approved existing conditions maps are to be completed by the end of the schematic design phase.

All streets, roadways, driveways, sidewalks, bike racks, bus stops, bus shelters, steps, pavement markings, fire or emergency access, dumpsters and recycling locations, vegetation (species, diameter of trunk, and canopy), disability (feature) access and parking identification type information should be included as a part of the site plan.

(2) Site Utilities Information

Additional information is available on the conditions of existing structures, maintenance items that need to be addressed, hazardous materials in existing structures, etc. This information should not be considered complete and the Designer is responsible for the accuracy of the information affecting the project.

Due to the complexity of site utilities on campus, the University will provide the Designers a schematic layout of existing site utilities. This information should not be construed as accurate, as-built drawings. It is the responsibility of the Designer to verify the accuracy of this information and notify the Design Manager when any information regarding the existing conditions of a project is inaccurate or inadequate. Maps detailing the existing locations of sub-surface features should be completed and reviewed by all utilities by the end of the schematic design phase. Typically the surveyor that performs the surface conditions survey and topographic information will also be responsible for verifying the location of sub-surface utilities as necessary.

(3) Geotechnical Information

As part of the Designer's services to the University, the Designer shall recommend a qualified, licensed geotechnical services firm that will provide all geotechnical information for the project. The geotechnical consultant shall contract directly with the University, but still be obligated to coordinate its services with the lead designer.

The geotechnical engineer shall provide the normal sub-surface investigation written report including information on soil permeability, where appropriate for stormwater infiltration feasibility. This individual also is thoroughly involved in the design process and shall complete the following tasks prior to submittal of construction documents:

(a) Review and edit the project's earthwork specifications, final site, and structural foundation drawings for compliance with the soils report recommendation.
(b) Verify the project's site class defined in Table 1615.1.1 of the North Carolina State Building Code, 2002 Edition.
(c) Estimate the quantities of weathered bedrock excavation for bid purposes

(4) Schematic Design Submittal

The Schematic Design Submittal to the University shall consist of seven (7) complete sets of documents. In addition to the requirements outlined in the North Carolina Construction Manual, these documents should include the following information:

(a) A narrative description of the project intent.
(b) Proposed walk and bikeways, disability, vehicular, fire and service access shown on site plans
(c) Each room or space identified by functional name on floor plans including building services rooms.
(d) Location of building service entrances, new underground site utilities and service equipment.
(e) Location of outdoor trash/recycling sites.
(f) Net square feet for each space and comparison to program.
(g) A Commissioning Plan
(h) Daylight simulation analyses and preliminary energy modeling results.
(i) An updated Project Development Schedule
(j) A LEED Checklist
(k) A Conceptual Landscape Plan
(l) A Life Cycle Cost Analysis
(m) A Stormwater Mitigation Plan
(n) A Tree Protection Plan (at this stage the plan may be interpreted as an evaluation of the impact to the existing landscape)
(o) A HVAC Zoning Plan
(p) A Utility Load Summary Sheet identifying estimated utility loads.
(q) An initial inventory of valuable and reusable building materials available for reuse in this project, other projects, in general or to be recycled.
(r) Owner's Project Requirements (OPR) document, as facilitated by the University's commissioning (Cx) agent.

Prior to the Design Development submittal, submit a response to the substantive Schematic Design Review Comments.

(5) Design Development Phase

Based on the approved schematic submittal, the Designer shall prepare the design development documents. During the design development phase, the Designer will involve the University's Design Manager--and through the Design Manager, the department that will occupy the building and owner representatives from Energy and Telecommunications Utilities, Life Safety & Access, HVAC, EMCS, Electrical & Plumbing Shops, Grounds, Sustainability, Office of Waste Reduction and Recycling, Transportation and Public Safety, Water, Wastewater and Stormwater, Architectural & Engineering Services, including the Commissioning Coordinator, and the University's commissioning (Cx) agent, Environment, Health & Safety, Housekeeping, and Mail Services.

c) Design Development Submittal

The Design Development submittal to the University shall consist of (7) seven complete sets of the following documents. Additional sets shall be submitted to the Office of State Construction and to the regulatory agencies having appropriate jurisdiction. In addition to the requirements outlined in the North Carolina Construction Manual, these documents should include the following information:

(1) An updated narrative describing the project intent.
(2) Site drawing(s) showing adjacent buildings, significant existing features, new transformer locations, new exterior mechanical equipment locations, proposed construction limits, proposed site improvements, construction staging plans, tree protection plan, landscape plan, traffic control plan, stormwater management plan, landscape plan, irrigation plan, site utilities plan (including plan and profile for each utility), and other site data furnished on the previous submittal.
(3) Site and space planning information for waste and recycling collection:

    (a) Detailed plan sheets showing outdoor service area enclosure(s) including: screen wall details, electrical requirements, lighting, drainage, a list of buildings that the site(s) are intended to serve.
    (b) Locations of the walkway recycling sites and installation details.
    (c) Clearly marked locations of all indoor recycling locations -AND- detail sheets showing the plans for any recycling cabinets to be built by the project.
    (d) Any known, relevant information for specifications: 02475, 02870, 11170 and 12300 including cost information.

(4) Floor plans identifying each room or space by name and number. All room numbers must reflect the permanent room numbering signage system. The University must review and approve the room numbering system prior to committing to the drawings.
(5) Reflected ceiling plans with development of indoor lighting concept and locations of grilles, registers, and diffusers.
(6) Elevation drawings of every exterior side of each structure. These elevations should show materials, features, openings, floor and rooflines, grade lines, footings, and everything exposed to view above eaves or parapets. Partial elevations of adjacent campus buildings should also be shown.
(7) Section(s) through the entire building selected to best show the relationships of architectural and engineering features.
(8) Room finish schedule showing the types of materials to be used for floors, walls, and ceilings. The proposed interior finishes concept shall be presented to the University for approval. The University must approve all interior finish materials prior to their specification by the Designer. The Designer shall present concepts for the following:

    (a) All floor material types and locations
    (b) All wall finish materials and locations
    (c) Exterior materials, including wood species, brick and/or stone
    (d) Millwork locations and materials
    (e) Ceiling materials and locations

(9) Equipment and furniture layouts for all rooms, indicating the adequacy of the arrangement and configuration of such rooms for planning telephone and data requirements. This includes (major) mechanical equipment layout including size and location with footprints clearly identified.

Note: If the architectural contract includes the moveable equipment portion of the work, the Designer shall provide the moveable furniture and equipment layouts. If the moveable equipment is not in the contract, the Designer will provide floor plans to the University. All capital funded projects will have furniture planned and procured by the UNC Facilities Planning Department unless otherwise agreed upon at the time of contract negotiations.

(10) An outline specification, indicating materials, types of construction, and equipment to be used. This should include a description of each plumbing, HVAC, fire protection, and electrical system design concept.
(11) A tabulation of building data, including square feet of floor area, cubic content, roof deck "U" factor, the design live loads, and number of occupants.
(12) A tabulation of building data, including square feet of floor area, cubic content, roof deck "U" factor, heating load in BTUH, air conditioning in tons, plumbing load in drainage fixture units and gallons per day, water demand in peak GPM, electrical loads in KVA and kwh/yr, total energy consumption in btu/sf/yr, the design live loads, and number of occupants. Supply plumbing fixture cut sheets.
(13) An outline specification for the Energy Management Control System.
(14) An outdoor site lighting plan, including a luminaire schedule, with cut sheets for all exterior luminaires with more than 1000 lumen lamps. Provide a calculation for line of sight illuminance (light trespass) for luminaries near the project/property line.
(15) HVAC zoning plan and outdoor air requirements for each zone. Documentation supporting air change effectiveness of 0.9 or greater in each ventilated zone.
(16) Results of detailed energy modeling.
(17) Construction Waste Management Information:

(a) Specification 01505 should include rough lists for building materials and non-moveable furniture, fixtures and equipment in each category: reuse in this project, reuse in other campus projects, reuse by the general public, or those that are required to be recycled or are suggested for the project.
(b) Specification 02070 should include a rough plan for storage and transfer of building materials and fixtures, furniture and equipment to be reused in the project or for transferred to the owner for reuse on campus.
(c) Drawings are to have noted the locations of all items which Contractor is to salvage.
(d) Initial Fixture, Furniture & Equipment (FFE) Inventory which includes detailed info and quantities on FFE (Brand, year, etc.)

(18) An updated LEED checklist.
(19) An updated Life Cycle Cost Analysis.
(20) An updated Owner's Project Requirement (OPR) document and a Basis of Design document with input from each designer.
(21) Maintaining services and access to buildings during construction:

(a) Staging plans and site drawings should include plans for access to the building (if occupied) and adjacent buildings such that deliveries and recycling/waste collection services can be maintained.
(b) Demo plans shall note the requirement of contacting Office of Waste Reduction and Recycling to remove indoor containers and dumpsters as the project phasing affects different areas.

(22) An indoor air quality management plan during construction and prior to occupancy
(23) An updated project development schedule.
(24) Stormwater analysis calculations for stormwater management plan

Prior to the Construction Document submittal, submit a response to the substantive Design Development Review Comments.

d) Construction Documents Phase

Based upon the approved design development submittal, the Designer shall prepare construction documents and other materials required for the receipt of bids on the project. During the construction document development phase, the Designer will involve the University's Design Manager--and through the Design Manager, the department that will occupy the building and owner

representatives from Energy and Telecommunications Utilities, Life Safety & Access, HVAC, EMCS, Electrical & Plumbing Shops, Grounds, Sustainability, Office of Waste Reduction and Recycling, Transportation and Public Safety, Water, Wastewater and Stormwater, Architectural & Engineering Services, including the Commissioning Coordinator, and Environment, Health & Safety

The Designer shall prepare these documents as described in the North Carolina State Construction Manual.

The University fully supports and encourages minority business participation in campus projects. The Designer shall make every effort to ensure that the latest guidelines from the State Construction Office are followed during the preparation of documents for bidding.

The Designer and the University are responsible for determining the fees applicable to the project. The Designer and the University shall agree upon what fees are paid by the University, and what fees are listed in the specification for payment by the construction contract.

(1) Construction Documents Submittal

The University requires the Designer to submit a minimum of seven (7) complete sets of documents outlined in the North Carolina State Construction Manual. These documents must be 100 percent complete. The Designer must submit additional sets to the Office of State Construction and regulatory agencies having appropriate jurisdiction. These documents must include:

(a) An updated narrative describing the project intent
(b) A sheet of drawings containing:

(i) A tabulation of building data, including square feet of floor area
(ii) Cubic content
(iii) Roof deck “U” factor
(iv) Wall and floor “U” factor
(v) Design live loads
(vi) Number of occupants
(vii) Seismic and Wind Design Criteria
(viii) Storm Water management plan

(a) BMP’s, including first inch 85% TSS
(b) Pre-versus post development amounts
(c) 2 year volume BMP

(ix) On-site detention
(x) Erosion Control plan
(xi) Annual water and sewage volume
(xii) Annual rainwater or gray water reuse volume, if applicable
(xiii) Tree protection plan
(xiv) Detailed plan sheets showing outdoor service area enclosure(s) including screen wall details, electrical requirements, lighting drainage, a note listing the buildings that the site(s) are intended to serve.
(xv) Plans showing clearly marked locations of the walkway recycling sites and installation details.
(xvi) Clearly marked locations of all indoor recycling locations - AND- detail sheets showing the plans for any recycling cabinets to be built by the project.

(xvii) Drawings are to have noted the locations of all items which Contractor is to salvage.

(c) A "color board" (one copy only) accurately depicting the interior and/or exterior materials, colors, and finishes used on the project, as well as their location within the building. Review and approval of the room finish schedule and all proposed finish material selections must have occurred with the Facilities Planning Office prior to submittal of the "color board."
(d) A utility Load Summary Sheet identifying estimated utility loads.
(e) An updated project development schedule.
(f) A Statement of Special Inspections that lists all required inspections and identifies the Special Inspector.
(g) An updated Owner's Project Requirements (OPR) and Basis of Design documents.
(h) These specifications related to recycling and waste management:

(i) Specification 02475 with any relevant site or space planning requirements for this project.
(ii) Specification 02870 listing the walkway recycling containers to be used, their placement, and the funds reserved for their purchase.
(iii) Specification 11170 listing the solid waste handling equipment to be purchased for the project. This should include specifications for compactors and funds for dumpsters.
(iv) Specification 12300 Custom Cabinets and Millwork listing specifications for recycling cabinets.
(v) Specification 01505 should include final lists for building materials and non-moveable furniture, fixtures and equipment in each category: reuse in this project, reuse in other campus projects, reuse by the general public, or those that are required to be recycled or are suggested for the project.
(vi) Specification 02070 should include a final plan for storage and transfer of building materials and fixtures, furniture and equipment to be reused in the project or for transferred to the owner for reuse on campus

(i) An updated Life Cycle Cost Assessment
(j) An updated LEED checklist
(k) Integrated functional testing protocols and equipment testing checklists.
(l) Commissioning schedule.
(m) Staff training schedule.
(n) Sequence of operations for HVAC controls.
(o) Updated tabulation of building data, including square feet of floor area, cubic content, roof deck "U" factor, heating load in BTUH, air conditioning in tons, plumbing load in drainage fixture units and gallons per day, water demand in peak GPM, electrical loads in KVA and kwh/yr, total energy consumption in btu/sf/yr, the design live loads, and number of occupants. Supply plumbing fixture cut sheets.
(p) Mechanical room layouts.
(q) The project shall provide the final Movable Fixture, Furniture & Equipment Inventory which includes detailed info and quantities on fixture, furniture and equipment (Brand, year, etc.), whose equipment it is, who will be getting it, and how it will be transferred, delivered, or moved.
(r) A set of Electronic CAD files, in AutoCAD 2000 or later format, corresponding to the sheets submitted in section (a) of this section. These are to be submitted directly to the FPC Plan Room.
(s) General Conditions.

The Designer is responsible for procuring the most current version of the State of North Carolina's General Conditions. Copies may be found at the State Construction Office's website, http://interscope2.doa.state.nc.us.

(t) Supplementary General Conditions.

The Designer is responsible for procuring the most current version of the University's Supplementary General Conditions. The Design Manager will provide a copy upon request.

(u) Designer Response.

The designer shall provide written response to review comments following the initial submittal for the schematic design phase, the design development phase and the construction document phase. The Design Manager shall distribute the responses to review comments to the eventual occupants and to the building owner representatives, including Energy and Telecommunications Utilities, Life Safety & Access, HVAC, EMCS, Electrical & Plumbing Shops, Grounds, Sustainability, OWRR, Transportation and Public Safety, Water, Wastewater and Stormwater, Architectural & Engineering Services, including the Commissioning Coordinator, and Environment, Health & Safety

After the Designer has submitted the initial completed construction documents, and has received review comments, the Designer shall revise the construction documents in accordance with these comments. Within three weeks of the Designer's receipt of the review comments, the Designer shall write a summary of his or her response to the University's review, and shall provide a copy of this response with the revised construction documents to the University's Design Manager, who will distribute the response internally.

(v) Final Movable Fixture, Furniture & Equipment (FFE) Inventory

The project shall provide the final Movable Fixture, Furniture & Equipment Inventory which includes detailed info and quantities on fixture, furniture and equipment (Brand, year, etc.), whose equipment it is, who will be getting it, and how it will be transferred, delivered, or moved.

e) Bidding Phase

The Designer's bidding phase responsibilities, related to advertising for bids, opening of bids, disposition of bids, and award of the construction contract(s), are outlined in the North Carolina Construction Manual. They shall conform to the applicable North Carolina General Statutes.

(1) Prerequisites to Advertisement for Bids

The Designer shall furnish two sets of revised copies of the construction documents to the University's Design Manager. The Designer shall provide additional sets, as required by the North Carolina State Construction Manual, to the State Construction Office and other regulatory agencies having jurisdiction.

Upon final approval of the construction documents, the Designer shall provide the University with five (5) copies of the "As-Bid" construction documents. One of these sets must be in the possession of the University's Construction Administration Department during bidding. Three sets will be used by the University's Facilities and Energy Services

Departments during construction and may be submitted after bids have been received. A fifth copy will be provided to the University's Cx agent.

The Designer shall establish the date for receipt of bids in consultation with the University's Design Manager and the State Construction Office. Four to six weeks are usually required between the publication of the advertisement for bids and the receipt of bids.

(2) Historically Underutilized Businesses (HUB)

Review the information and links to web sites listed under Chapter I, Section P. regarding the University's commitment to recruit and select minority businesses for participation in University construction contracts.

Designers are encouraged to advertise for bid in The Challenger Newspaper (800-462-0738; www.challengernews.com), as well as in other newspapers that satisfy the requirements of the North Carolina Construction Manual.

(3) Bid Date

The Designer must coordinate with the Design Manager in setting the date and time of the bid opening.

(4) Pre-bid conferences

Pre-bid conferences are encouraged; however, the University does not permit mandatory pre-bid conferences. They are arranged at the convenience of the Designer and the University's Design Manager. The Designer shall invite, as appropriate, the University's Construction Manager, the State Construction Office, the project geotechnical engineer, the Environment, Health and Safety Office representative, the Office of Waste Reduction & Recycling Representative (OWRR), the Campus Arborist, the Sustainability Coordinator, the Commissioning Coordinator, the UNC – Grounds Department, and all other interested parties to this conference. The Designer shall distribute copies of meeting minutes to all parties named above. Interested contractors are not required to attend any pre-bid conference to be eligible to submit bids.

(5) Bid Openings

It is the Designer's responsibility to accept and open bids.

(6) Certified Bid Tabulation

It is the Designer's responsibility to provide Certified Bid Tabulation to the University within 48 hours after the bid opening, together with MBE appendices required under the "Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts" to the University's Design Manager. The Design Manager will forward these documents to the State Construction Office.

f) Construction Phase

The construction phase for the project begins when the Designer receives a fully executed copy of the construction contract(s).

The Designer's responsibilities during the construction phase are outlined in Section 205 of the North Carolina State Construction Manual. Additional responsibilities are outlined below.

(1) Pre-Construction Conference

The Designer and the University's Design Manager shall arrange for a pre-construction conference, to review project requirements and to provide a framework for all construction activities. The Designer shall invite all project contractors, the University's Construction Manager, the State Construction Office, the project geotechnical engineer, the Environment, Health and Safety Office representative, the Office of Waste Reduction & Recycling Representative (OWRR), the Campus Arborist, the Sustainability Coordinator, the Commissioning Coordinator, the UNC – Grounds Department, and all other interested parties to this conference. The Designer shall distribute copies of meeting minutes to all parties named above.

(2) Periodic Observations

The Designer, where required by the design contract, shall provide liaison and necessary observation of the project to ensure compliance with plans and specifications. The University's Facilities Services personnel and designated commissioning team also will observe work progress periodically and will provide comments to the Designer through the University's Construction Administration Department. Included among these observations by the Facilities Services staff is an above-the-ceiling inspection of all areas prior to installation of suspended ceilings.

(3) Submittal Review

The Designer shall provide the University's Construction Manager with one copy (minimum) of each approved submittal. The Designer shall provide the University's Sustainability Coordinator with one copy of each approved submittal relating to products and materials identified on the LEED checklist. The Designer shall provide the University's Commissioning Coordinator or the University's Cx agent with one copy of each approved submittal relating to systems and equipment identified in the commissioning plan. The Designer also shall notify the Facilities Planning Design Manager of all final submittals and any substitutions or revisions relating specifically to design issues. The Designer shall provide Office of Waste Reduction and Recycling with the Solid Waste Management Plans (Draft and Final).

(4) Project Close-Out Responsibilities

The Designer shall provide the following project closeout services upon completion of the project. These are described in the North Carolina State Construction Manual, with the following modifications:

(a) Assemble and forward closing papers.
(b) Commissioning Report.
(c) The Mechanical Designer shall update the Basis of Design document HVAC section to included an as-built written description of how the entire HVAC system is designed to operate including start up and shut down procedures. The Designer shall schedule and conduct a review of the HVAC plans and specifications with the University's HVAC shops, Energy Services, EMCS, A&E Services Engineers, and Commissioning personnel prior to the

instruction period described in STANDARD SPECIFICATIONS, Section 15650.

(d) All Designers shall update the project's OPR and Basis of Design documents to reflect final as-built conditions. The final OPR and Basis of Design document shall also be part of the O&M manual.
(e) List equipment additions to the campus preventive maintenance program. When substantial construction is completed, the Designer shall provide a list of the mechanical and electrical equipment additions to the University's preventive maintenance program.
(f) Provide O&M manuals and instructions for continuous or recommissioning.
(g) Provide computation and disposition of liquidated damages (if required).
(h) LEED Documentation.
(i) Issue Certificate of Final Completion and Compliance.
(j) Provide record drawing as-built for water and sewer to OWASA and UNC.
(k) For Stormwater infrastructure improvements: provide as-built, system schematics, and written description of how the BMP's are designed to function with operations and maintenance requirements.
(l) Utility as-built surveys (Utilities shall be surveyed for as-built prior to trench closure for accurate location and elevation information).
(m) Schedule and conduct training for maintenance personnel for building operation.
(n) Order all recycling/solid waste equipment for the project. See specifications 02870, 11170 and 12300.
(o) Arrange for installation of the recycling/solid waste equipment per drawings and specifications.
(p) Coordinate installations with Office of Waste Reduction and Recycling.
(q) Contact Office of Waste Reduction and Recycling to provide any Office of Waste Reduction and Recycling -supplied equipment, labels, and equipment; and to establish a collection schedule for new occupants.

Provide record drawings and specifications. In addition to the "reproducible" required by the NCCM, the University requires two printed sets of as-built drawings: at least one must be on archival quality stock such as Mylar or Vellum, the other may be on bond paper. The Designer shall furnish electronic versions of each CAD-drawn sheet in addition to hard copies. The drawings shall be in AutoCAD release 2000 or higher. One hundred percent complete electronic as-built floor plans are required. The Designer shall furnish an electronic version of specifications and project manuals, updated as-built in Microsoft Word format in addition to an updated paper copy. The Designer shall also furnish an index, in Microsoft Word format, of the drawings detailing the sheet number, sheet name and corresponding file name. Each drawing shall be bound, with no x-references and purged of unreferenced objects.

Provide a final report, in paper format and original material in Microsoft Word format. This shall include but is not limited to:

(a) All sections listed in the State Construction Manual
(b) All flooring types installed, including color, manufacturer, VOC and recycled content, style and backing, as well as location.
(c) Actual resilient base and flooring, color, manufacturer and style
(d) Actual paint chips with color, VOC content, manufacturer and location.
(e) Actual wall finish materials installed with color, rapidly renewable materials content, manufacturer and location.
(f) Actual casework and other wood and composite wood products installed, including manufacturer and location.
(g) Custom signage, if used, typeface, size and local supplier.
(h) Actual light bulbs installed along with manufacturer and style number.

(i) The Designer also shall provide maintenance information and local supplier for the above items.
(j) DOI's Minimum Plumbing Fixtures Calculation spreadsheet.
(k) Provide OWRR with a summary of ACTUAL recycling, reuse and salvage activities for the project. This is to include, but is not limited to:
(l) quantities landfilled, recycled, reused, and salvaged;
(m) a break down of the types of materials recycled, reused and salvaged; the percent of total waste of each of the categories listed;
(n) the destinations of these materials;
(o) the economic impact of these activities on the project; and any success stories or challenges incurred.

C. DESIGN REVIEWS

The Designer must make submittals and presentations, and must participate in presentations and review conferences at various stages of the project planning process.

1. Facilities Planning Reviews

During the design process, the Designer will make presentations to various groups charged with reviewing and approving the proposed project's design. These groups include:

a) The University department(s) that will use the building (users)

This includes the eventual building occupants as well as a range of owner representatives including Energy and Telecommunications Utilities, Life Safety & Access, HVAC, EMCS, Electrical & Plumbing Shops, Grounds, Sustainability, Office of Waste Reduction and Recycling, Transportation and Public Safety, Water, Wastewater and Stormwater, Architectural & Engineering Services, including the Commissioning Coordinator and the University's Cx agent, and Environment, Health & Safety.

b) The Campus Master Planning Consultants

The Baltimore-based architecture firm Ayers, Saint, Gross prepared the 2000 Comprehensive Campus Plan. ASG has been retained by the Board of Trustees to review all subsequent campus development. Two reviews are required for each project: one for site design before schematic design begins and one for building design during the design development phase. Details of required materials for these meetings are provided in the Campus Master Plan, Design Guidelines, and Implementation section. These ASG review meetings should precede the Building and Grounds and Board of Trustees presentations. The Designer must incorporate all ASG comments into the design before presenting it to the Building and Grounds Committee or the Board of Trustees.

c) The Chancellor's Buildings and Grounds Committee

The Designer's presentations to the Chancellor's Buildings and Grounds Committee and the Board of Trustees occur as early as possible in the design development phase, and typically require:

(1) Simple scale model showing the site and vicinity of the project (except for renovation projects)
(2) Building floor plans
(3) Exterior elevations
(4) Sketch or rendering

The Chancellor's Buildings and Grounds Committee meets once a month to review all new construction projects and renovations in which the exterior of the building is affected. Four presentations to the committee are required:

(1) Site Design – twice (for information and approval)
(5) Building Design – twice (for information and approval)

Details of required materials for these meetings are provided in the Campus Master Plan, Design Guidelines, and Implementation section.

d) The Board of Trustees

The Board of Trustees meets bi-monthly, beginning in July, on the last Wednesday to review all new construction projects and major additions. The same four presentations outlined above are required. Presentations to the Board of Trustees are made after the corresponding presentation has been made to the Chancellor's Buildings and Grounds Committee.

Required conferences, which are scheduled by the University's Design Manager, include:

e) End of Phase Reviews

The Designer and the Designer's primary consultants will attend at least one conference devoted to end-of-phase reviews of the schematic design submittal, design development submittal and the construction document submittal, to discuss any areas of concern.

The University reviews projects to insure that they conform to its criteria and that they are suitable for University purposes. These reviews are not intended as a quality control service for the Designer. When concerns are raised on a technical aspect of the Designer's work, the Designer holds complete responsibility for the technical appropriateness and adequacy of the plans and specifications prepared by the Designer.

f) Schematic Design Conferences

Several conferences usually precede the approval of the schematic design documents.

These conferences must:

(1) Clarify the program of requirements
(2) Review and discuss the Designer's design proposals
(3) Discuss the Designer's evaluation of the achievability of program requirements within the project budget
(4) Define alternates which shall become important components of the construction documents

2. University Reviews and Presentations

Various departments and committees within the University's including departments in the Facilities and Energy Services Divisions review designs during end-of-phase reviews, which are coordinated by the University's Design Manager. The Designer shall not proceed to the next phase of design before receiving written approval of the previous phase from the University's Design Manager.

UNC Committees include:

a) Disability Advisory Committee

This committee meets once a month to review all construction or renovation projects in regard to their universal accessibility. Projects are usually brought to the committee for review in the Design Development phase. The recommendations of the committee should be incorporated into the construction documents for the project. Copies of relevant parts of the plan showing that the committee's recommendations have been addressed should be submitted to the committee chair through the Design Manager.

b) Classroom Design Advisory Committee

This committee meets once every two weeks to address issues of classroom design. This committee participates in all phases of new and renovation classroom projects, from programming through construction document preparation.

c) Pedestrian Safety Committee

This committee meets once a month. It reviews pedestrian circulation issues as they relate to major vehicular thoroughfares on campus for all construction and renovation projects.

Exterior site design for each project will be reviewed on the following guiding principles:

(1) A pedestrian-friendly campus is both necessary and desirable.
(2) A balance must be achieved among the rights and responsibilities of pedestrians, cyclist, motorists, and users of transit services.
(3) Design of facilities, roadways, sidewalks, and landscaping should optimize opportunities for pedestrians, cyclists, motorists, and transit services users to behave safely.
(4) UNC Departments that review construction and renovation projects include: Facilities Planning Department, including the University Landscape Architect, the Accessibility Project Manager, and the Historic Preservation Project Manager.
(5) Architectural and Engineering Services
(6) Historically Underutilized Business Office (HUB)
(7) Environment, Health and Safety Office (EHS)
(8) Building Services
(9) Energy Services – Electric Distribution, Chilled Water, Cogeneration/Steam Distribution, Energy Management Control Systems, Water, Wastewater and Storm Water
(10) Grounds Services
(11) Academic Technologies and Networking – Data/Telecommunications (ATN)
(12) Transportation and Parking Services, Department of Public Safety
(13) Engineering Information Services
(14) Office of Waste Reduction and Recycling (OWRR)
(15) Construction Management
(16) Sustainability Office

The Designer will record the content of all conferences, and will, within seven days, provide a memorandum containing a complete summary of the decisions and actions, which affect the project. This memorandum will be submitted to the University's Design Manager, who will distribute copies to all conference attendees.

3. Outside Reviews

The Designer is responsible for submitting documents and soliciting review comments at each phase of the process and keeping the Design Manager apprised of the progress and content of all reviews by the following:

a) State Construction Office (SCO)
b) Department of Insurance (DOI)

c) Orange Water & Sewer Authority (OWASA): For any project which will affect water or sewer, or any exterior project, including landscaping and grading changes.
d) Public Service of North Carolina (PSNC) – natural gas: For any project which will impact or is located near a gas main.

Responsibilities for preparing the various permit applications and other submittals required by the local, state or federal agencies having jurisdiction over aspects of the project are as follows:

e) The University's Design Manager shall coordinate, prepare, and file on behalf of the University the submittals required by:

(1) The Town of Chapel Hill, and the Town of Carrboro, on all matters.
(2) The North Carolina Department of Administration, to demonstrate compliance with the Environmental Policy Act.
(3) The North Carolina Department of Transportation (NCDOT), for encroachment agreements, driveways, and traffic control.

f) The Designer will provide the background and technical materials necessary to support these materials. Materials include:

(1) Stormwater management plan including stormwater calculations
(2) Erosion and Sediment control plan
(3) Traffic control plan
(4) Exterior lighting plan

g) The Designer shall attend public hearings related to these submittals, as required.
h) The Designer will file all other applicable permit applications, plans, specifications, and other documents required by any local, state or federal agencies having jurisdiction over any part of the project. Including NCDOT (See Section 203 of the North Carolina Construction Manual.)

D. CONSTRUCTION CONTRACTS – FORMS OF DELIVERY

Traditionally, multi-prime and single-prime contracting methods have been widely used at the University. Currently, Construction Manager-at-Risk and Construction Manager-as-Agent are the preferred contracting methods for large capital projects.

It is the policy of the University to select construction manager-at-risk for State capital improvement projects as defined in G.S. 143-128.1 and G.S. 143-128.2 on project specific criteria. The University considers the selection of a competent construction manager-at-risk as vital to providing the University with the best and most appropriate facilities consistent with authorized funds.

With the passage of Senate Bill 914, Construction Manager at Risk has been authorized as one of five approved construction methods. The bill may be accessed in its entirety at www.ncleg.net. Under the bill, the Construction Manager is selected exclusively by qualifications based on the response to the request for proposal. Consideration of the Construction Manager at Risk construction procurement method is encouraged for projects costing $10 million or more. The Construction Manager undertakes to act as the Owner's fiduciary and to furnish professional construction management services during the design and construction phases of the project.

1. Construction Manager at Risk (or as Agent)

Once Facilities Planning has chosen the Construction Manager Delivery method, the University will advertise and select a Construction Manager during the initial stages of the project's design. The Construction Manager will be contracted to provide Pre-Construction Services, and thus will attend regularly scheduled meetings with the Project Designer and other consultants to advise on matters relating to site use, improvements, selection of materials, building methods, construction details, building systems and equipment, and construction phasing and sequencing. The Construction Manager will work closely with the

University's Commissioning Coordinator to plan and schedule staff training and equipment testing. In general, it will be the responsibility of the Construction Manager to provide the following services:

a) Preconstruction Phase:

(1) Assist in Preparing Project Budget
(2) Perform Value Engineering, in consultation with owner's representatives, including the commissioner
(3) Develop and Maintain Project Master Schedule
(4) Provide Constructability Review
(5) Establish Construction Cost Model and Develop Cost Estimates
(6) Coordination of Contract Documents
(7) Identify Principal Trade Contracts
(8) Assist in the Administration of Historically Underutilized Business (HUB) Program
(9) Develop Methodology for Trade Contractor Pre-Qualification
(10) Attend project commissioning meetings

b) Guaranteed Maximum Price:

Shortly after the submission of the construction documents to the State Construction Office for final review, the Construction Manager will develop and provide to the Owner a Guaranteed Maximum Price, which will include all construction costs, and all other projected costs including the Construction Manager's fees, the Guaranteed Maximum Price contingency and General Conditions Allowance. The Guaranteed Maximum Price will set out each anticipated trade contract amount, the Construction Manager's fixed fee, General Conditions reimbursable costs items including on-site field staff, and all project related costs.

c) Construction Phase Services

During the Construction Phase, the Construction Manager will provide services as required to effect the complete construction of the Project and to maintain the established Guaranteed Maximum Price of the Project. In general, it will be the responsibility of the Construction Manager to provide the following services:

(1) Maintain Project Construction Costs
(2) Maintain Project Master Schedule
(3) Provide Administration of the Trade Contracts
(4) Provide Project Staffing
(5) Establish On-site Coordination / Management
(6) Perform Quality Control / Inspection in coordination with the University's commissioning agent and team
(7) Develop and Maintain Project Safety Program
(8) Develop and Implement Shop Drawing Review
(9) Maintain Project Site Documents
(10) Provide Construction Reports
(11) Provide Project Close-Out Administration

2. Single/Multi-Prime Contract

The single contract is the most commonly used contract type. Plans and specifications are prepared by the design professional and become part of the bidding documents. A single contractor is then selected by the University to perform the work. The single contract is usually the easiest to administer because of its centralization of responsibility, namely, one owner (the University), one contractor, and one construction contract. The standard Long Form, Short Form, and Brief Form construction documents have been prepared for those cases where a single contract is awarded.

With multiple prime contracts, the University divides a project into two or more parts and then enters into a separate contract for each part. This type of construction is also referred to as the "fast-track" method. Contracts for parts of the project such as site development, site excavation, or foundation work are awarded before the contract for the main structural work is awarded. Multiple prime contracts require careful coordination because several contractors are involved, and no single contractor is responsible for the entire project.

Samples of construction documents developed for CM@Risk/Agent, Single Prime, and Multiple Prime contracts are available from the State Construction Website under Forms.