



## 2013 Design Guidelines

### INTRODUCTION

The University of North Carolina at Chapel Hill continues to evolve to meet dynamic growth and technology needs. The Design Guidelines incorporate the unique principles of the University to support Carolina's mission of teaching, research and public service, and to promote its spirit and culture. In planning the University's future, the Main Campus master plans were completed in 2001, 2006 and 2009. The first phase of the master plan for the Carolina North campus was completed in 2009, and the Mason Farm Road campus master plan is ongoing. The three campuses are being integrated efficiently and effectively to meet the University's divergent needs. The Design Guidelines reflect the University's flexibility without compromising the goal of excellence in providing sustainable development and operations, accessibility for all campuses, and environmental stewardship. Coherent transportation and infrastructure – juxtaposed with the expanding open space network – underpins the integration of the three campuses.

### GUIDELINE COMPLIANCE

Beginning with the programming phase the contracted designer is expected to use - and reference any exceptions to - the latest version of the Design Guidelines. The front of each phase of the documents submitted for review is to note the date stamp of the version of the Design Guidelines used for the project. In addition, the Designer is to use other requirements by the State of North Carolina. The Guidelines are organized to follow the sequence of the design process. They are to be used as a core tool by the contracted designer to direct them through project development but they do not substitute for the optimum design solution. The Guidelines are a baseline outlining the unique requirements of the University. They allow the contracted designer to introduce alternative or improved concepts, methods and products. All exceptions shall be reviewed and approved by the University's Project Manager prior to implementation.



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## I. GENERAL PRINCIPLES

### A. OVERVIEW

Celebrating the University of North Carolina at Chapel Hill's Natural Landscape and Historic Core. The UNC-Chapel Hill campus has long been praised as among the most beautiful in America. The essence of this beauty resides not only in its topography, but also in the character of its buildings, open space and landscape. The older buildings of North Campus, which line McCorkle and Polk Places, epitomize the University's aesthetic. The purpose of these Guidelines is to ensure that future buildings and grounds continue the same thoughtful planning and architectural vocabulary of the historic core of north campus.

### B. HISTORICALLY UNDERUTILIZED BUSINESSES (HUB)

The goal of the University of North Carolina in adopting its plan for expansion of participation by Historically Underutilized Businesses (HUB) is to ensure and promote equal and increased opportunities for all segments of the design and construction community to participate in University construction projects; to prohibit discrimination against businesses on the basis of race, color, national origin, or gender; to encourage full and open competition; to promote equal access to contracting opportunities among the various contractors and vendors that do business with the University; and to assist the owner in identifying and notifying prospective minority businesses of potential contracting opportunities. The term "Minority Persons" is defined in [North Carolina General Statutes 143-128.2](#) (click on link entitled "HUB Forms – Minority Business Participation Guidelines & Forms" to download document). The University seeks to include those businesses owned by minorities that have been historically underutilized and excluded from the prime contractor or subcontractor market. The University encourages all those associated with the University construction program to commit to this goal through a good faith effort.

North Carolina General Statutes 143-128.2:

[http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter\\_143/GS\\_143-128.2.html](http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/BySection/Chapter_143/GS_143-128.2.html)

The University is committed to a verifiable minimum participation goal of 10% for participation by minority businesses in the total value of work for each campus construction project. The Designer shall consult the most recent versions of "The Plan to Increase Utilization of Historically Underutilized Businesses" in State Construction Projects. These guidelines may be downloaded at the following sites:

- 1) [http://www.northcarolina.edu/info/vendors/UNC\\_HUB\\_plan\\_\(May\\_2002\).pdf](http://www.northcarolina.edu/info/vendors/UNC_HUB_plan_(May_2002).pdf)
- 2) [UNC Chapel Hill HUB website](#)
- 3) For more information, also refer to [Chapter II, Section 2, Sub-Section B](#), "Bidding Phase".

### C. PUBLIC ART

The University of North Carolina at Chapel Hill's goal is to become the nation's leading public university. Toward that end, the University plans to implement a public art program that becomes a model both with the state and among public universities nationwide. The intent is for the campus to become a museum without walls, making art an integral part of the University, and a vital and indispensable part of the campus community.

The Campus Arts Advisory Committee reviews and makes recommendations to the Chancellor's Buildings & Grounds Committee on specific public art projects proposed for the campus.



## II. 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 Administration, State Construction Office, as outlined in the North Carolina Construction Manual or SCO Manual.

The manual can be accessed at <http://www.nc-sco.com/scomanual.aspx>

The University has established a Campus Master Plan. Designers shall refer to this plan for specific information on the intended use and character of the buildings and other improvements on campus.

The Master Plan is located [here](#).

### A. DESIGNER'S RELATIONSHIP TO THE UNIVERSITY

#### 1. *University as Client*

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.

#### 2. *Project Manager*

A project manager is assigned as the single University representative for each project. The Designer is required to work through the project manager, 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 nature of that representative will shift according to the design phase, thus:

- a) The University's Project Manager is the Designer's contact person from the project's advertisement through bidding. The Project Manager is an employee of the University's Facilities Planning Department.
- b) 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

#### 3. *Designers' Representative*

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.

#### 4. *Payment Approval*

Payments to Designer: The Designer shall submit invoices for approval to the University's Project Manager through the Bidding Phase and to the Construction Manager through the Construction Phase.



## B. PROJECT PLANNING PHASES

### 1. *Project Initiation*

Upon the identification of a tentative facility need by a school, department, institute, or supportive function, Facilities Planning 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 [Campus 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. The site recommendation is reviewed for approval by the Chancellor's Buildings and Grounds Committee, the Chancellor, and the Board of Trustees.

### 3. *Designer Selection*

The University will place a notice for solicitation of design services on the web sites: for the University of North Carolina and the State of North Carolina Interactive Purchasing System. Current web addresses for these sites are

<http://www.northcarolina.edu/info/vendors/opportunities.htm>.

<https://www.ips.state.nc.us/IPS/Default.aspx>

The University's Project Manager will prepare a Request for Proposal (RFP) of additional information about the project to forward to all Design Teams upon request. A Pre-proposal meeting shall be scheduled (contingent on project scope) and facilitated by the Project Manager at the project site in order for the design community to become familiar with the project intent, submittal protocols, and owner and end user needs prior to the RFP submittal date. The Pre-proposal meeting should occur 14 days after advertisement and before submittal date.

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 Design Interview Committee 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 Chancellor's Building and Grounds Committee who in turn issue a recommendation to the University's Board of Trustees for final selection.

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



#### **4. *Initial Planning Conference***

The University's Project Manager will schedule an initial planning conference with the Designer to discuss requirements for facilitating the Designer's work. This conference is held as soon as possible after a Designer is selected for the project.

#### **5. *Site and Existing Conditions Information***

The Designer should contact Engineering Information Systems and Energy Services to obtain latest information for construction. They will furnish utility drawings and record drawings for remodeling projects. The University cannot warrant the accuracy of this information. Given the complexity of the utility infrastructure and the importance of the landscape on UNC-Chapel Hill's three campuses, it is critical that a surface and sub-surface feature conditions survey be completed by the schematic design phase. Review of the surface and sub-surface features survey by all University utilities is also critical.

#### **6. *Design Contract Negotiation***

The University's Project Manager will request the selected Designer to submit a preliminary design proposal and project schedule to the Project Manager for review.

Upon review and comment, the Project Manager sends the design proposal to the State Construction Office to review the design contract for approval. For projects under the budget limits noted in the SCO Manual, the Project Manager shall prepare the design contract Letter of Agreement. The document will be forwarded to the UNC General Administration for execution.

### **C. PROJECT DEVELOPMENT SEQUENCE**

#### **1. *Overview***

The Designer submits a proposed Project Development Schedule to the University's Project Manager for approval. This schedule will incorporate the end-of-phase milestone dates stipulated in the Design Contract. In addition, this schedule will 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
- c) The project duration and completion dates and 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 and Budget***

The Designer is expected to conduct project design and coordination meetings to verify the project program and review the design as it develops. The Designer is expected to take minutes of all meetings and distribute them to all participants through the Project Manager.

The Designer is required to make submittals of design documents at the conclusion of each design phase to the State Construction Office, the University Facilities Planning Department and any other pertinent review



agency. The requirements for each project development phase are outlined in Chapter 300 of the SCO Manual.

#### **a) Schematic Design Phase**

The Designer shall confer with the University's Project Manager, the future occupants, and the owner representatives at the beginning of the schematic design phase to review the program and establish the project requirements.

##### *i. 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 Project Manager when any information regarding the existing conditions of a project is inaccurate or inadequate.

##### *ii. Site Utilities Information*

Additional information is available on the conditions of existing structures, maintenance items that need to be addressed, and hazardous materials in existing structures. This information should not be considered complete or accurate. The Designer is responsible to review record documents of existing facilities to determine all utility and subsurface tie-ins to adjacent buildings, or building being renovated, including storm and foundation drains, and to determine all utilities located within the project limits, including areas impacted by work of the project. Project impact limits include improvements may be off the main project site, but are part of the project, such as utility extensions, driveways, and roadways.

##### *iii. 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 project required 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.

##### *iv. Schematic Design Submittal*

The Schematic Design Submittal to the University consists of a minimum of seven (7) complete sets of documents, plus an electronic file in pdf format or as determined by the Project Manager. The University will review the documents for completion prior to submission to State Construction Office.

In addition to the requirements outlined in the North Carolina State Construction Manual, these documents should include the following information:

- 1) Proposed walk and bikeways, disability, vehicular, fire and service access shown on site plans
- 2) Net square feet for each space and comparison to program
- 3) A LEED Checklist
- 4) A Conceptual Landscape Plan
- 5) A Tree Protection Plan (at this stage the plan may be interpreted as an evaluation of the impact to the existing landscape)





- 6) An initial inventory of valuable and reusable building materials available for reuse in this project, other projects, in general or to be recycled
- 7) Owner's Project Requirements (OPR) document, as facilitated by the University's commissioning (Cx) agent
- 8) A Stormwater Concept Plan (See the University's Stormwater Design Guidelines for specific components, which include an existing conditions analysis, an estimate of proposed impervious cover, and estimated size and location of proposed stormwater infrastructure and best management practices.)
- 9) A preliminary energy model that evaluates orientation, day lighting opportunities, and HVAC strategies

#### **b) Design Development Phase**

Based on the approved schematic submittal, the Designer shall prepare the design development documents.

##### *i. Design Development Submittal*

The Design Development Submittal to the University consists of a minimum of five (5) complete sets of documents, plus an electronic file in pdf format or as determined by the Project Manager. The University will review the documents for completion prior to submission to State Construction Office. In addition to the requirements outlined in the SCO Manual, these documents are to include the following:

- 1) Site and space planning information for waste and recycling collection
- 2) Equipment and furniture layouts for all rooms
- 3) 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.
- 4) Outline specification for the Energy Management Control System
- 5) An updated Owner's Project Requirement (OPR) document and a Basis of Design document with input from each designer
- 6) An updated project development schedule
- 7) Stormwater Management report (See the University's Stormwater Design Guidelines for specific components.)
- 8) An updated LEED checklist including supporting documentation for projected energy and water savings
- 9) A fully developed energy model including all files required to allow UNC to rerun the energy model
- 10) Site Utility Plans

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

#### **c) 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. The Designer will prepare these documents as described in the North Carolina State Construction Manual Section 205.



The University fully supports and encourages minority business participation in campus projects. The Designer shall make every effort to ensure that the latest requirements 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.

*i. Construction Documents Submittal*

The Construction Document Submittal to the University consists of a minimum of five (5) complete sets of documents, plus an electronic file in pdf format or as determined by the Project Manager. The University will review the documents for completion prior to submission to State Construction Office. In addition to the requirements outlined in the North Carolina State Construction Manual, these documents are to include the following:

- 1) Drawings containing:
  - a. Stormwater management plans and details
  - b. Tree protection plan
  - c. Erosion Control plans
  - d. Annual water and sewage volume
  - e. Annual usage volume of non-potable water. Detailed plan sheets showing outdoor service enclosure(s) including screen wall details, electrical requirements, lighting drainage, a note listing the buildings that the site(s) are intended to serve
  - f. Plans showing clearly marked locations of the walkway recycling sites and installation details
  - g. Clearly marked locations of all indoor recycling locations -AND- detail sheets showing the plans for any recycling cabinets to be built by the project
  - h. Drawings are to have noted the locations of all items which Contractor is to salvage
- 2) A utility Load Summary Sheet identifying estimated utility loads
- 3) A Statement of Special Inspections that lists all required inspections and identifies the Special Inspector
- 4) An updated Owner's Project Requirements (OPR) and Basis of Design documents
- 5) Recycling and waste management requirements
- 6) An updated LEED checklist, including supporting documentation for projected energy and water savings
- 7) Integrated functional testing protocols and equipment testing checklist
- 8) Sequence of operations for HVAC controls
- 9) Updated Stormwater Management Report (See: University's Stormwater Design Guidelines for specific components)
- 10) Utility plans and profiles of all utilities up to the building perimeter
- 11) An updated energy model including all files required to allow UNC to rerun the energy model
- 12) 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

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://www.nc-sco.com/Forms/Alpha\\_All\\_Forms.htm](http://www.nc-sco.com/Forms/Alpha_All_Forms.htm).

#### 13) UNC-CH General Requirements

The Designer is responsible for procuring the most current version of the University's General Requirements and incorporating them into the contract documents. The Project Manager will provide a copy upon request.

#### 14) Design Response

The University uses an online Design Review and Checking System call "Dr Checks", administered by [ProjNet](#) for logging and tracking design review comments throughout the entire design process. The Project Manager will provide instructions for accessing and using the Dr. Checks system.

The designer shall provide responses on Dr. Checks to review comments generated by University personnel following the initial submittal for the schematic design phase, the design development phase and the construction document phase.

#### 15) Final Movable Fixture, Furniture & Equipment (FFE) Inventory

The project shall provide the final Moveable 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.

#### 16) A fully developed energy model including all files required to allow UNC to rerun the energy model

### d) 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 SCO Manual. They shall conform to the applicable North Carolina General Statutes.

#### *i. Prerequisites to Advertisement for Bids*

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

Upon final approval of the construction documents, the Designer provides the University with a minimum of five (5) copies of the "As-Bid" construction documents. The Designer is to establish the date for receipt of bids in consultation with the University's Project Manager and the State Construction Office. The Project Manager is responsible for notifying the University's Historically Underutilized Businesses (HUB) office.



The Designer is to review the information and links to web sites listed under [Chapter I, Section B](#), regarding the University's commitment to recruit and select minority businesses for participation in University construction contracts.

Designers are encouraged to advertise in newspapers that satisfy the requirements of the [North Carolina Construction Manual for HUB](#) (<http://www.doa.nc.gov/hub/documents/cmanual.pdf>).

**ii. Bid Date**

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

**iii. Pre-bid conferences**

Pre-bid conferences are arranged at the convenience of the Designer and the University's Project Manager.

Preferred alternate meeting must be scheduled at the same timeframe of pre-bid meeting.

**iv. Bid Openings**

It is the Designer's or – for a project with a Construction Manager at risk (CM-R) – the CM-R's responsibility to accept and open bids.

**v. Certified Bid Tabulation**

It is the Designer's or for a project with a CM-R – the CM-R'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.

**e) 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 Sections 205 and 206 of the SCO Manual.

**3. Capital Project Close-out Procedure and Record Document Requirements**

The Designer shall provide the following project services toward completion of the project. These requirements are in addition to the deliverable requirements described in the North Carolina – State Construction Manual (NC-SCM). Final payment will not be approved until all deliverables are received in good order. All items are expected to be delivered within sixty days of project acceptance. See the [Capital Project Close-out Procedure and Record Document Requirements](#).

**D. DESIGN REVIEWS**



The Designer is to make submittals and presentations, and to 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 and maintain the building (users)**

This includes the eventual building occupants as well as a range of owner representatives.

#### **b) The Chancellor's Buildings and Grounds Committee**

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

- i. Site Plan*
- ii. Simple scale model showing the site and vicinity of the project (except for renovation projects)*
- iii. Building floor plans*
- iv. Exterior elevations*
- v. 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. Three (3) presentations to the committee are required:

- i. Site Selection*
- ii. Preliminary Building Design (Schematic Design)*
- iii. Final Building Design (Design Development)*

The Designer will prepare a powerpoint presentation on the University standard format for review by the UNC Project Manager two weeks before the scheduled meeting. The UNC Project Manager will make the final presentation. The Designer should attend this meeting to address any questions from the committee.

#### **c) The Board of Trustees**

The Board of Trustees meets bi-monthly on the last Wednesday to review all new construction projects and major additions. Presentations to the Board of Trustees are made by the University Architect after the corresponding presentation has been made to the Chancellor's Buildings and Grounds Committee.

#### **d) Design Review Committee**

The Designer and the Designer's primary consultants will attend a minimum of three (3) conferences devoted to Review by the University's Design Review Committee. These reviews begin early in the design process and continue until the committee approves the site design, building footprint and building massing on the site.



## 2. *University Reviews and Presentations*

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

### a) **UNC Committees include:**

#### *i. Disability Advisory Design Review subcommittee*

This subcommittee meets once a month to review all new construction or renovation projects for conformance with the accessible guidelines within this document. This committee reviews the documents during the schematic and design development phases. On some projects, a review during the construction document phase may be requested. The designer is not required to attend. The Facilities Planning Project Manager will present the project. Facilities Planning Department has a professional on staff, as a representative of this committee, who reviews all projects at all phases for accessibility compliance.

The University's Project Manager is to take meeting notes and distribute to all attendees, the designer and user.

#### *ii. Pedestrian Safety Committee*

This committee meets once a month to review pedestrian circulation issues as they relate to major vehicular thoroughfares on campus for all construction and renovation projects. Facilities Planning Department has a landscape architect on staff, as a representative of this committee, who reviews all projects at each phase for compliance and who presents these projects to the committee.

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 Project Manager, who will distribute copies to all conference attendees.

### b) **Regulatory Reviews:**

#### *i. Jordan Lake Rules*

As a State entity, the University is required to meet the requirements of 15A NCAC 02B .0271 Jordan Water Supply Nutrient Strategy: Stormwater Requirements for State and Federal Entities. The University is responsible to the North Carolina Division of Water Quality for these requirements. For individual development sites, the University's Stormwater Engineer and the Environment, Health, and Safety Department will review the plans for compliance. Details can be found in the [Stormwater Design Guidelines](#).

## 3. *Outside Reviews*

a) The Designer is responsible for submitting documents and soliciting review comments at each phase of the process to appropriate outside agencies and keeping the Project Manager apprised of the progress and content of all reviews.

b) Project Permitting:



For University projects, permitting typically includes both local and state agencies. The permitting requirements for a specific project will be determined by Facilities Planning during the pre-design phase of each project. Buildings on campus are subject to Town zoning and require the appropriate permit ([Town's Land Use Management Ordinance](#)). The designer should confirm which zoning district applies and which permit(s) is (are) required. The Facilities Planning Project Manager submits the permit with information supplied by the designer, at the end of the Design Development phase of the design process. Typically, for buildings within the OI-4 zoning district (main campus) or U-1 zoning district (Carolina North), a Site Development Permit is the only Town zoning application required. [Site Development Permit applications](#) to the Town of Chapel Hill are not complete for the purposes of review or approval without final approval from OWASA.

An Environmental Assessment (EA) or Finding of No Significant Impact (FONSI) is required of all new buildings or significant additions. The Facilities Planning Project Manager, submits the EA/FONSI with information supplied by the designer, at the end of the Design Development phase of the design process.

- c) 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:
  - i. *The University's Project 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
    - 4) The North Carolina Division of Water Quality, for utilization of reclaimed water
    - 5) Orange Water and Sewer Authority (OWASA) for water, reclaimed water, and sewer extensions and connections
    - 6) Any work in area of streams or environmental areas will require appropriate environmental permits
  - ii. *The Designer will provide the background and technical materials necessary to support these submittals. Materials include, but not limited to:*
    - 1) Site Development Permit Summary Sheets
    - 2) Stormwater management plan including storm water calculations
    - 3) Erosion and Sediment control plan
    - 4) Traffic control plan
    - 5) Exterior lighting plan
  - iii. *The Designer shall attend public hearings related to these submittals, as required.*
  - iv. *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 SCO Manual.)*

## E. CONSTRUCTION CONTRACTS – FORMS OF DELIVERY

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.

Construction Manager-at-Risk has been authorized as an approved Construction procurement method. The State Law may be accessed in its entirety at [www.ncleg.net](http://www.ncleg.net) and searching for 'Senate Bill 914/S.L. 2001-496'. Consideration of the Construction Manager at Risk construction procurement method is encouraged for projects costing \$5 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.

#### **a) *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.

#### **b) *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.

### **2. *Single/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 standard Long Form, Short Form, and Brief Form construction documents have been prepared for those cases where a single contract is awarded.

Samples of construction documents developed for CM@Risk/Agent and Single Prime contracts are available from the [State Construction Website](#).





### III. UNIVERSITY PLANNING STANDARDS

#### A. SPACE PLANNING STANDARDS AND SITE PLANNING PROCESSES

In 1998 The University retained Eva Klein & Associates to provide space planning programming/design standards for the University buildings: University of North Carolina at Chapel Hill Space Planning Standards including offices, office support, classrooms and equipment requirements.

##### 1. *Permits and Approvals*

The University is subject to local zoning approvals. See section II.C.3 for further information.

An Environmental Assessment (EA) or Finding of No Significant Impact (FONSI) is required of all new buildings or significant additions. The Facilities Planning Project Manager, submits the EA/FONSI with information supplied by the designer, at the end of the Design Development phase of the design process.

Air pollution permits: If a generator is to be used in the project, the University must obtain a modification to its air permit. The Designer must notify the Environmental Affairs Manager of the UNC Environment, Health and Safety Office when the generator's make and model have been determined.

An ESC Plan is required to be submitted to the NC DLQ for all projects one (1) acre or larger. The ESC plan must be reviewed by UNC Environment, Health and Safety before the plan is submitted to DLQ. These projects will receive a NC General Permit and are required to follow all the conditions of the permit.

#### B. SERVICE PLANNING STANDARDS

##### 1. *Housekeeping*

[Housekeeping Guidelines:](#)

###### a) **Housekeeping/Janitor Closets**

- i. One basic custodial closet should service every 6,000 square feet of usable building floor space (or portion thereof), with at least one custodial closet per floor. The closet should have room to store the wastebasket (24"x 36" or larger), mop, wringer, and supplies without lifting items to store them in the sink. Housekeeping sinks should be of the built into the floor type, with a low wall surrounding a drain to reduce lifting. Water Requirement: There should be hot and cold water in each Housekeeping closet that has a sink.
- ii. Closets should be spaced throughout the building to avoid moving cleaning equipment long distances. The minimum size for each closet is 36 net square feet. Closets and the other custodial and equipment storage areas are best located close to the building elevator. All closets should have door(s) with minimum 42-inch clear opening.
- iii. This space is for the exclusive use of custodial staff; it must not house plumbing, mechanical or electrical equipment.

###### b) **Corridors/Stairwells**

- i. Corridors should be equipped with electrical outlets at least every 40 feet. The outlets should be dedicated.
- ii. Housekeeping Services require electric outlets in each stairwell. They should be on the landing on at least every other floor.



## 2. *Mail Space*

A central mail exchange point shall be located in each facility on the main or ground floor, or in a location conveniently accessible to those who receive mail. The Designer shall meet with the manager of University Mail Services to program the need of each facility.

## C. ARCHITECTURE

Refer to the [Campus Master Plan](#) 2007 update for further details and explanations.

### 1. *Windows*

Acceptable window frames are painted or clad wood frames or metal frames. Frame color should be compatible with the building exterior and approved by the Project Manager. Operable windows are encouraged. Windows on residence halls and other buildings may require security screens to discourage unauthorized entry.

### 2. *Selection of Brick or Cast Panel for Exterior Walls*

The manufacturers shall present samples to the designer for his selection from which sample patterns are to be erected or shown on the job site, after consultation with the Facilities Planning Department. The Construction Management Department will notify the architect's representative where to locate these panels. The Chancellor's Buildings and Grounds Committee will review these panels and make the selection. At the time the brick panels are viewed by the committee, the contractor shall also have available samples of all significant exterior materials, including but not limited to pre-cast stone or limestone, window and door frames, glass and metal panels. The Construction Management Office will notify the designer of the final selection. In the case of cast stone panels, small samples may be submitted for selection purposes.

Completed panels must cure for at least three weeks before they are reviewed by the Chancellor's Buildings and Grounds Committee. In addition, three weeks are required to schedule this review. Therefore the panels must be completed by the contractor a minimum of six weeks before the brick selection is needed.

### 3. *Exterior Painting*

The University must approve all exterior building colors.

Exterior fixtures and equipment, such as lampposts, bicycle racks, railing, bollard, posts, barriers, drinking fountains, street signs, and trash receptacles should be painted the University's standard black/green.

## D. LANDSCAPE ARCHITECTURE

Refer to the following links for further details and explanations:

1. [The 2007 Update to Campus Master Plan](#)
2. [The landscape Heritage and Plant Diversity Task Force Report](#)
3. [The Historic Landscape Master Plan](#)



## IV. UNIVERSITY GENERAL REQUIREMENTS

### A. SITE

#### 1. *Building Siting*

##### (i) **Site Selection Process**

The Facilities Planning Department will manage the site selection process that involves the approval by the Chancellor's Building and Grounds Committee and the Board of Trustees before a project is initiated and design services are sought. Once a Designer is selected, an initial meeting is held with the Director of Facilities Planning, the Project Manager, users and designers to discuss the Campus Master Plan, building siting, massing, and design guidelines. While the site selection process has determined the general site for the building, the designer must determine the exact location on that site.

##### b) **Building Removal**

The removal of any building requires the approval of the UNC Board of Trustees.

Reuse of building materials in the new project must be considered. Recycling and salvage of materials must be coordinated through the project manager, OWRR, and Surplus Property.

##### c) **Geotechnical Engineering**

- i. *Designer obtains proposal from a firm of the Designer's choice.*
- ii. *Designer submits proposal to University's Project Manager.*
- iii. *Project Manager obtains approval of proposal.*
- iv. *Designer schedules work. Designers (architect and engineers) must be on site to coordinate and verify information.*

##### d) **Site Limits**

The Designer shall establish the limits of the construction site in coordination with the University. The Designer should indicate these limits on the design development drawings. Design development drawings should show the location of any site fences, staging areas, tree protection measures, construction access, material storage areas and parking required by the project.

##### e) **Construction Fencing**

The construction area should be enclosed by a six-foot-high (minimum) chain link fence with top rail and screening to obscure construction activities from view. At completion of the project, the Contractor must remove the construction fence completely, including all portions of belowground footings. Fence posts must be removed, not sawn off flush with the soil line.

##### f) **Construction Staging Areas**

Construction staging should be planned in the Design Development phase of the project and included in the Design Development submittal. Construction staging plans shall be developed in consultation with the following:



- i. All Construction activity including contractor parking should be confined in the construction staging area. No parking, staging or storage of materials is permitted in the landscape outside of the construction staging area.
- ii. Public Safety Department regarding traffic circulation, pedestrian walkways and construction parking
- iii. Office of Waste Reduction and Recycling – regarding maintaining trash/recycling services to ALL buildings in or around the construction area throughout the construction process (see OWRR design guideline webpage on Maintaining Services during Construction: [Office of Waste Reduction & Recycling Guidelines](#))
- iv. Grounds Services regarding tree protection
- v. The Disabilities Advisory Design Review Sub-Committee and regarding measures to be incorporated to insure safe travel of pedestrians and vehicles during construction. These measures shall be indicated on the Pedestrian Safety Plan that will be part of the final bid documents for the project.
- vi. Public Safety Department regarding potential conflicts with fire lanes. If construction staging is located on an existing parking lot, the project shall pay for the temporary use of these spaces and restoration after construction.
- vii. Environmental Health and Safety regarding erosion control plan.
- viii. Off-site trailer storage/areas The Public Safety Department may be contacted for locating an off-site construction storage trailer.
- ix. Construction staging areas and construction sites need to include protection of existing utilities and access to surface features as needed for maintenance, fire protection, and meter reading.

**g) Tree Protection**

A tree protection plan is required for all projects. The plan is developed in consultation with UNC Grounds Services and the University's Project Manager. Placement of tree and landscape protection measures, such as fences (plastic or metal), protective mulch, protective fabric, and logging mats, should be indicated, as detailed below. The plan is a separate drawing, at an appropriate scale, labeled "Tree Protection Plan," and:

- i. Identifies size, species and location of all trees affected by the project
- ii. Indicates which trees and shrubs are to be removed from the site
- iii. Note: When trees and shrubs are removed, care must be taken to protect trees and other landscape elements that are to remain.
- iv. Indicates which trees and shrubs are to remain
- v. Indicates routes of all trenches necessary for installation of underground utility lines and specifically identifies the limits of excavation for the required trenches.
- vi. Note: Trenches must be designed to avoid encroachment into the critical root zone of trees. In some cases, tunneling may be necessary to avoid damaging tree roots. Also:
  - 1) Identify areas away from protected roots to be used for staging soil
  - 2) Provide fabric and mulch for soil storage if it is in the root zone of a protected tree
  - 3) Indicate that severed roots over 1" are to be cut clean and covered with topsoil
  - 4) Indicates the areas designated for project construction staging, parking, material storage, and waste removal. Take the following measures to mediate compaction damage:
    - 5) Severe compaction zones (any staging within the drip line, travel lanes, vehicle parking in the root zone) - Provide fabric, logging mats and mulch.
    - 6) Moderate compaction zones (material storage) - Provide fabric and mulch, or mulch only.
    - 7) No compaction (e.g. trailer location) - No protection required. Indicate trees that require limbing to avoid damage during construction.



- a) Provide details of the following:
  1. *Logging mats, fabric, and mulch: installed by Grounds Services. If Grounds Services will install measures, provide funding in the project for material and labor;*
  2. *Tree protection fencing is to be installed by Contractor. Fences should be checked daily.*
- b) Provide clear signage in the construction area. Examples:
  1. *"No Trespassing"*
  2. *"No Machines"*
  3. *"No Storage of Materials"*
- c) Resolve pedestrian conflicts (in consultation with the Department of Public Safety) that may be created by tree protection fencing with:
  1. *Temporary sidewalks*
  2. *Signage*
- d) Resolve vehicular conflicts (in consultation with the Department of Public Safety) that may be created by tree protection measures with:
  1. *Road re-routing*
  2. *Signage*

## 2. **Sitework**

### a) **Site Grading and Drainage**

Grade the site, including paved areas, loading dock, service yards, and landscaped areas so that gravity runoff occurs at all points. Slope all areas away from the building at a minimum gradient of  $\frac{1}{4}$ " (2%) per foot for paved areas, 2.5% for unpaved areas. Grade all terrain surrounding the building, in such a manner to prevent water flow into the building.

See the [Stormwater Design Guidelines](#) for storm drain and stormwater management design criteria and guidelines.

### b) **Landscaping**

The Designer is responsible for a landscape plan and estimate, as part of basic design services. The UNC-Chapel Hill Grounds Services will review and comment on the plan and estimate. UNC-Chapel Hill Grounds Services will provide and install all plant material according to the landscape plan. The designer's estimate will be used as a reserve in the project budget to cover this work.

The campus landscape environment consists of plant materials that form a canopy layer, a focus layer, and a floor layer. Collectively, the layers give structure and order to the campus.

Plant materials are used to:

- i. *Add visual interest to the outdoor environment.*
- ii. *Accentuate building and campus entrances at eye level.*
- iii. *Enclose special areas such as plazas to portray human scale.*



- iv. *Screen unappealing elements such as dumpsters, service areas, and parking.*
- v. *Control access and circulation.*
- vi. *Control noise, dust, and glare pollution.*

The established landscape pattern of canopy trees and lawn should be reinforced and maintained. Bold strokes of plant materials in special areas are encouraged, but to avoid over-taxing the University's Grounds maintenance abilities, limit the use of exotic specimens and do not plant high maintenance floral displays. Group shrubs in beds for easier maintenance and greater landscape impact.

Preservation of the native flora is encouraged in those areas of campus where mature vegetation stands remain. Additional planting to highlight the natural edge effect should use associated native vegetation.

Permanent landscape irrigation plans should be designed and installed as part of the construction contract for all areas of lawn and landscape in the project. The irrigation systems should be developed in consultation with the University Grounds Services and must be approved by them. If there are site changes during construction that affect the landscape, Grounds Services should be contacted prior to installation to approve any changes to the irrigation system.

Preferred plant types:

- i. *Low-maintenance native landscape is preferred over high-maintenance plantings.*
- ii. *No exotic invasive species should be used. A current list can be obtained from the NC Botanical Garden.*
- iii. *Specialized plantings should be limited to designated high profile areas such as the Bell Tower garden or the Planetarium rose garden, or to tops of structures and where large canopy trees cannot be planted.*
- iv. *Remainder of landscape should be bold and simple: large canopy trees, lawn, ground cover, and large billowy shrubs at corners of buildings or to signal entrances or special places.*

#### **c) Topsoil**

Refer to the [Topsoil Guidelines](#) for design requirements.

#### **d) Pesticides and Chemical Fertilizers**

The UNC-CH Grounds Department employs an integrated pest management program for controlling insect pests and weeds. The Designer should consult the Grounds Department before using any chemical means of pest control. Organic soil amendments are preferred over chemical fertilizers.

#### **e) Termite Control**

Termite control should be accomplished by use of borax traps and non-wood building materials.

#### **f) Outdoor Recycling and Solid Waste Collection Sites**

For a list of UNC-Chapel Hill's recycling programs and detailed information about planning needs for these programs, see the Outdoor Service Area section of the Site and Space Planning portion of the [OWRR design guidelines](#). For more information about the recycling and waste collection needs based on building use, please see Needs Based on Building Use within the Site and Space Planning section of the website.



**g) Hardscape**

Design of hardscape is part of the Designer's basic services and should be included in the design and construction documents, to be provided and installed as part of the general construction of the project.

**h) Roads**

- i. Main campus roads should have a cross section width of 48 feet and a speed limit of 30 MPH.*
- ii. Facility access roads should have a cross section width of 36 feet and a speed limit of 25 MPH.*
- iii. Service roads and driveways should have a cross section width of 24 feet and a speed limit of 20 MPH.*

**i) Cutting and Patching**

*i. Cutting and Patching Generally*

The cutting of chases, openings, or similar holes in walls, floors, and ceilings shall be done in a manner so as not to endanger the stability of any part of the structure. The Contractor shall not in any case cut or alter the work of any other contractor without the approval of--and under the direction of--the Designer. Flowable fill will be used as a standard unless noted otherwise to reduce settlement caused by lack of compaction.

*ii. Cutting and Patching Pavement*

Prior to any pavement cut all necessary NCDOT, Town and UNC-DPS permits and approvals must be acquired. Where any paving is cut for placing new utility lines, neatly cut the asphalt with straight edges, even if this requires enlarging the size of the trench, and remove with an asphalt cutter. Breaking the asphalt out with a backhoe or other means is not acceptable. Place boards or other suitable material under the backhoe out rigging to prevent damage to the asphalt. Thoroughly compact the backfill placed in the opening and immediately replace the pavement after the opening is backfilled. In parking lots, replace pavement with a minimum of six (6) inches of coarse aggregate base course, followed by a minimum of 3 inches of Type I-1 asphalt.

On streets and on parking lot travel lanes which experience frequent transit bus traffic, compact sub-grade and replace pavement with a minimum of five (5) inches of Type HB asphalt base, two (2) inches of Type H binder, and 2" of Type I-1 asphalt surface course. Where possible, compact each course of asphalt paving material with a steel-wheeled roller. Where patched areas are too small to allow rolling of the base courses, manually compact areas in a manner approved by the University Construction Manager.

Repair any minor settlement which occurs during the 12 months warranty period by removing all failed material and by re-compacting the sub-grade and patching as described above.

**j) Site Appurtenances**

The Designer should refer to the "*Campus-wide Guidelines for Street Furniture*" for information regarding campus standards for site appurtenances. This is part of the "*Campus Master Plan 2001 - University of North Carolina at Chapel Hill.*" This master plan was updated with the "*Campus Master Plan Update*" approved in 2007. These documents are available at:

*Campus Master Plan* <http://www.fac.unc.edu/PlansPolicies/CampusMasterPlan>



Refer to the [Site Appurtenances Guidelines](#) for additional design requirements for:

- Site Walls
- Walkways
- Site Lighting
- Benches
- Bike racks
- External stairs
- Screen walls
- Railings
- Ramps
- Bollards
- Walkway Trash and Recycling Containers
- Bus Stop Shelters

### 3. *Erosion Control*

- a) The following Erosion and Sedimentation Control requirements apply to all projects located on or conducted for UNC that involve any type of land disturbing activities.

The following documents are referenced within these specifications.

- 1) [North Carolina Sedimentation Control Act of 1973](#)

The superintendent in-charge is responsible for complying with all applicable provisions of the North Carolina Sedimentation Control Act of 1973.

- 2) [Provisions of the NC General Permit NC 01000](#)

The requirements of the NC General Permit for Erosion and Sediment Control are a material part of these specifications.

- 3) [North Carolina Erosion and Sediment Control Planning and Design Manual](#)

All work must meet or exceed the standards found in this manual.

- 4) NC State Cooperative Extension Soil Facts Publications. When designing sediment basins, sediment traps or using flocculants incorporate guidance found in [NC State Soil Facts publications](#).

- b) Required Permits/Approvals

- 1) All projects one (1) acre or larger are required to submit an ESC plan to the NC DLQ. The ESC plan must be reviewed by UNC Environment, Health and Safety before the plan is submitted to DLQ. These projects will receive a NC General Permit and are required to follow all the conditions of the permit.
- 2) All projects between .1 acre and one (1) acre must submit an ESC plan for approval to UNC Department of Environment, Health and Safety. In addition, the site superintendent is required to fill out inspection checklists at the frequency as required by the NC General Permit (Once a week and after rains greater than .5 inches).





- 3) Projects less than .1 acres (20,000 square feet) must include in the construction documents ESC measures that comply with the requirements outlined in this document but do not need to submit those documents to EHS.

#### 4. *Surveying Guidelines*

Refer to the [Surveying Guidelines](#) for design requirements.

#### 5. *Stormwater Guidelines*

Stormwater management and drainage design are addressed in the [Stormwater Design Guidelines](#) which include performance criteria, design standards, and procedures.

## B. TRANSPORTATION

### 1. *Pedestrian*

#### a) **Walkways**

Locate new walkways to connect major destinations and offer pedestrians a safe, accessible, and relatively direct means of travel.

##### Walks - Steps and Ramp Construction

Construct all walks with pattern identical to existing walks. Do not use soldier courses. Set brick edging stretcher courses in mortar (cement). Minimize steps where possible and replace with ramps on a gradient not to exceed one foot (1') in twelve feet (12'). Design steps and ramps to comply with the North Carolina Building Code and ADA requirements. Provide handrails and guards at steps, stairwells, bridges, loading docks and ramps to comply with the North Carolina Building Code, ADA requirements, and N.C. OSHA regulations.

Avoid steps and features hazardous to the visually impaired. Special consideration is to be given to locations where pedestrian pathways cross-vehicular routes. Where pedestrian traffic is to dominate on campus-controlled roads brick paving material should continue across the vehicular route. On Town of Chapel Hill or DOT roads coordination with the appropriate agency will be necessary. Asphalt imprinting has been approved for use upon review by both agencies. Match existing brick paving materials and patterns. Brick walks should be dry-laid. Construct brick walks, which provide service or emergency vehicle access on a concrete base. At all locations where pedestrian walkways intersect or are flush with an adjacent vehicle route, provide a detectable warning strip.

**Maintain consistent walkway widths across the campus. Standard widths are the following:**

- Major pedestrian corridors: 16 feet wide
- Major pedestrian walks: 8 feet wide
- Minor walks: 6 feet wide

Provide runways and ramps in all buildings where bulk supplies are handled. Ramps should have a non-slip surface. Carborundum or similar abrasives are not permitted. All ramps not limited solely to service personnel use must conform to all accessibility codes, standards and slope requirements.



## **b) Pedestrian Safety**

The Design of campus facilities should optimize opportunities for pedestrians, cyclists, and motorists to travel safely. Safe travel for all modes of transportation should be created and maintained at all times, especially during construction. Pedestrian safety planning shall be part of all University construction projects. The Department of Public Safety and Facilities Planning will review, comment, and approve all pedestrian plans during all phases of a project. The University Pedestrian Safety Committee will also review all plans that affect pedestrian routes where they meet roadways.

Pedestrian safety planning must be part of all University construction projects. Design of campus facilities should optimize opportunities for pedestrians, cyclists and motorists to behave safely. Safe travel ways for all modes of transportation should be created and maintained at all times, especially during construction.

**Pedestrian Safety Plan:** The pedestrian safety plan should address, but not be limited to: the location of sidewalks in relation to crosswalks on streets; and the impact of the construction on pedestrian traffic patterns. The Designer will develop this plan in consultation with the University's Project Manager, the UNC-CH Department of Public Safety and UNC Disability Services (<http://www.dps.unc.edu/Transit/aroundcampus/pedestrianinfo/pedestrianinfo.cfm>). These departments will review the plan and approve it or make recommendations for improvement. The Pedestrian Safety Plan is included in the bid documents and must address the following:

### ***i. Limits of construction***

- 1) Staging areas
- 2) Entrance to construction site/staging areas
- 3) Vehicular circulation to and through site

### ***ii. Pedestrian routes around construction site***

- 1) Accessible routes
- 2) Disability parking location

### ***iii. Building entrances***

- 1) Key building entrances and service areas to be maintained
- 2) Accessible building entrances

### ***iv. Resolution of pedestrian/construction traffic conflicts***

### ***v. Signage plan (prepared by Designer, coordinated with University's Project Manager)***

- 1) Proposed pedestrian signage
- 2) Designated pedestrian routes
- 3) Signage locations

### ***vi. Details of proposed pedestrian safety improvements***

- 1) Temporary sidewalks, ramps, etc.



**vii. Phasing**

- 1) Separate plans indicating construction phasing and schedule

**viii. Public advertisement (by user and UNC)**

- 1) Appropriate public advertising of the pedestrian plan

**ix. Written approvals (UNC-CH, University's Project Manager's responsibility)**

- 1) Facilities Planning (University's Project Manager and staff)
- 2) Construction Administration (University's Project Manager)
- 3) Public Safety (Transportation Planning and Parking)
- 4) Disabilities Advisory Committee
- 5) User

**2. Human Powered Vehicles**

**a) Bicycles**

Bicycle riding is encouraged on campus and bicycle racks should be included in the project when appropriate. Include bicycle parking racks and parking surface in the bid documents and consider as part of the construction costs. Bicycle parking racks should be installed on a paved surface. Brick pavers are the preferred material. The number and site of bicycle racks is determined in joint consultation with the Department of Public Safety and the Facilities Planning Project Manager. Bicycle parking sites shall be considered at the schematic design phase and final site locations indicated in the final construction documents. When siting bicycle racks choose locations that are accessible by bicycle; avoid paths with outdoor stairways. Locate each bicycle rack site as close as possible to the perceived destination of the bicyclist (doorways, entranceways, etc.) To afford protection from the elements, use building overhangs and other sheltered locations for bicycle racks when possible. Include street curb cuts and ramps for bicycle riding access to buildings and structures.

**3. Motor Powered Vehicles**

**a) Roads**

- i. Main campus roads should have a cross section width of 48 feet and a speed limit of 30 MPH.*
- ii. Facility access roads should have a cross section width of 36 feet and a speed limit of 25 MPH.*
- iii. Service roads and driveways should have a cross section width of 24 feet and a speed limit of 20 MPH.*

**b) Driveways**

All driveways shall follow the design guidelines as set forth in the North Carolina Division of Highways (Engineering Guidelines) as found on the Web site: [www.doh.dot.state.nc.us](http://www.doh.dot.state.nc.us). However, due to the unique situations and circumstances on the UNC campus, it is expected that these guidelines may require modification from site to site based on the needs of the University and other safety considerations as determined by the UNC Department of Public Safety (Transportation Planner). All necessary driveway permits from the Town or DOT shall be the responsibility of the contractor. Also refer to: <http://www.townofchapelhill.org/index.aspx?page=463>



Based on estimated vehicle trips, all campus driveways shall conform to the following standards except as modified in writing by the UNC Transportation Planner:

- i. *Traffic driveways shall be a minimum of 24' from curb to curb*
- ii. *Curb radii shall be a minimum 15 feet except for driveways expected to accommodate large trucks in which case the minimum radii shall be 40 feet*
- iii. *Concrete is preferred over asphalt for driveways and loading docks. Six inches minimum thickness of 6000-lb. reinforced concrete is required to accommodate heavy service and utility trucks. Sub base compaction shall be at the DOT standard of 95%. Flowable fill may be used as filler when less adequate fill is not available. This standard compaction rate shall also apply to pavement patching and other roadway cuts.*
- iv. *Sidewalks intersecting with driveways shall be tapered or sloped to the driveway. A 48" wide portion of the sidewalk with a 2% maximum cross slope shall be provided at all driveway aprons. Directional curb cuts and marked crossings shall be provided at all other driveways. In all cases, sidewalk tapers and sidewalk curb cuts shall conform to all accessibility codes and standards.*
- v. *Roadside or gutter drainage must be accounted for in driveway design. Drainage may not flow down into the driveway but must be retained on the roadway system to the nearest designed catch basin or out flow.*
- vi. *Driveway intersection plans shall include the design and construction of the appropriate pavement markings and stencils, lane indicators, stop signs, yield signs, pedestrian crossing signs, pedestrian crossings, etc. as required by the UNC Public Safety Department (Transportation Planner). The costs for such amenities shall be included in the project bid estimates and final construction contract documents.*
- vii. *All Town of Chapel Hill or Department of Transportation permits for driveways shall be the total responsibility of the contractor. Construction of driveways intersecting with public right-of-ways or other University roads and driving surfaces shall require a traffic control plan to assure the safety of other vehicles and pedestrians during the construction process.*
- viii. *Due to the high amount of pedestrian traffic, care should be taken to minimize the distance that drivers of waste handling vehicles (and others delivery and service vehicles) have to drive in reverse. Care should also be taken to avoid having service vehicles back across walkways or into traffic.*

#### **4. Parking**

The Designer must review all changes to existing parking with the UNC-CH Public Safety Department. Reduction in number of parking spaces on a building site due to project development must be compensated for by payment into the parking replacement fund. Current parking replacement fees are \$20,000 per space. These fees will be charged to the project budget. Parking lots shall be designed to accommodate heavy trucks when trash and recycling containers are located within the lot. Existing trees should be preserved to the greatest extent possible. Large parking areas should be visually separated into smaller modules.

#### **5. Traffic Control Plan**

All construction activity impacting roadways (vehicular access) or sidewalks (pedestrian access) shall have a written traffic control plan (TCP) and access plan submitted for review and comment by the Department of Public Safety prior to the completion of the final construction and bid documents. In most cases, the TCP shall also require approval from the Town of Chapel Hill's Traffic Engineering Department or the State Department of Transportation (DOT). Traffic Control Plans must be included in the project bid documents.

The responsibility and implementation costs for any required Traffic Control Plans (TCP) required before, during, or after the project construction activity, shall be the responsibility of the contractor. These costs shall include all labor and equipment necessary to meet the requirements of the TCP including all reimbursement costs to the UNC Department of Public Safety for special traffic direction, construction



parking enforcement, or other personnel utilized to provide and assure the safety of UNC-CH during the construction.

The TCP shall follow the standards found in the Uniform Manual for Traffic Control Devices issued by the State Department of Transportation (DOT) except as modified by the Town of Chapel Hill Traffic Engineering Office or the UNC Department of Public Safety (Transportation Planner).

## **6. Street and Roadway Utility Repairs and Replacements**

All utility repairs or replacements requiring cuts into roadways, driveways, or parking lots shall be coordinated with the Department of Public Safety in advance of the start of work. In repairing required cuts to complete utility repairs, contractors shall provide a sub base compaction rate standard of 95% as required by the State Department of Transportation. Testing shall be conducted to ensure that the appropriate compaction rate is met.

## **C. UTILITIES**

### **1. Site Utilities**

All campus electrical, steam, chilled water, storm drainage and non-potable water systems are owned and operated by UNC Energy Services. The Communications Technology office of UNC's Information Technology Services is responsible for telephone and computer network connections. Water (potable and reclaimed) and sanitary sewer mains on campus are owned and maintained by the Orange Water and Sewer Authority (OWASA: [www.owasa.org](http://www.owasa.org)), with some segments of the mains owned by the University. Water (potable and non-potable) and sanitary sewer laterals are owned by the University. Gas is provided by PSNC Energy and all gas mains are owned by PSNC Energy. The University generates its own steam at its Cogeneration Facility on West Cameron Avenue. The University generates electricity at the Cogeneration Plant and purchases electricity from Duke Energy Company distributed through the University's three substations and distribution system. Chilled water is produced at several Chilled Water plants and distributed across campus.

Obtaining site utility information: UNC Facilities Planning or Energy Services will provide the Designer with existing site utility information for construction and renovation projects. This information is schematic only. The Designer is responsible for obtaining more detailed and accurate information required for the project. The Designer should engage a utility locating service during design development or the early construction document phase and work closely with the utility locating service and the owner of each utility, including the University utilities operating groups to ensure all utilities are located accurately on the drawings used for the design of the building. The designer is also responsible for reviewing existing record drawings for prior work in area of project to determine location of existing utilities, including building subsurface utility connections, supplies and storm and foundation drainage connections. UNC Electric Distribution Systems coordinates all underground utility locating for Energy Services utilities; contact them at 919-962-8394 to schedule the locates. Locates for public utilities can be requested through NC One Call at 800-632-4949.

Contracting utility locating services: At the Designer's request, the University's Project Manager will send a letter asking the Designer to hire a utility locator. The Designer together with engineering consultants will outline the required scope of this work.

Utility Kick-off Meeting: UNC-CH utility personnel and Designers will meet in the initial phases of the design process to identify utility issues. Representatives from all campus utilities (steam, chilled water, electric distribution, telecommunications, water, wastewater, and stormwater) as well as OWASA (if



required) and PSNC (if required) will attend the meeting. Additionally, a representative of the UNC-CH Public Safety Department will attend regarding issues of road closings and construction scheduling.

#### **Coordination with UNC utility providers:**

The Designer is responsible for coordinating with UNC utility providers. Click the links below for more information:

- a) [Electrical Distribution](#)
- b) [Fiber/Telecommunications Guidelines](#)
- c) [Steam Distribution Guidelines](#)
- d) [Chilled Water Design Guidelines](#)
- e) [Stormwater Guidelines](#)
- f) [Water & Wastewater](#)
- g) [Non-Potable Water Guidelines](#)
- h) Utility System Master Plans: contact Energy Services for more information.  
<http://www.energy.unc.edu/>
  - i. *Energy Systems Infrastructure Improvements, Final Report, January 27, 2006*
  - ii. *Electric Distribution Master Plan & Distribution Modeling, December 15, 2006*
  - iii. *Water & Sewer Master Plan, October 2002, and Critical Facilities Plan*
  - iv. *Stormwater Capital Improvement Plan, Fall 2010*

#### **Coordination with off-campus utility providers:**

The Designer is responsible for coordinating with utility providers (including OWASA, PSNG and any others) and Energy Services. Tasks include:

- a) Obtaining and using OWASA's design guidelines at:  
([http://www.owasa.org/client\\_resources/whatwedo/spec/table%20of%20contents%202011%20pdf%207-18-2012%20reduced.pdf](http://www.owasa.org/client_resources/whatwedo/spec/table%20of%20contents%202011%20pdf%207-18-2012%20reduced.pdf)) for all design work involving water and/or sewer connections; main replacements and/or extensions; and any work in the area of OWASA water and sewer mains, and coordinating with additional University requirements.
- b) Scheduling a meeting with UNC Energy Services Water, Wastewater and Stormwater and OWASA officials early in the design process to identify issues related to water, reclaimed water, sewer and fire protection
- c) Note: If sprinklers are being added to the building, a fire flow test will be necessary. To obtain a fire flow test, contact OWASA. Added sprinklers will require a RPZ.
- d) Note: RPZ will require above grade installation. The University standard is to install inside building on an exterior wall to discharge above grade.
- e) Note: All food handling facilities will need to meet OWASA grease interceptor requirements, including coffee bars and coffee shops.
- f) The Designer is responsible for ascertaining that the capacity of the water, non-potable, and sewer system is sufficient for the intended use.
- g) The Designer must submit drawings to OWASA for review and approval at all design phases. Written sign-off from OWASA is required before the start of construction.



- h) If design necessitates tapping lines in roads, additional approvals may be required from the UNC-CH Department of Public Safety and the Town of Chapel Hill ([www.ci.Chapel-Hill.nc.us](http://www.ci.Chapel-Hill.nc.us)) and/or the NC Department of Transportation (<http://www.ncdot.gov/>). DOT roads require a 3-party encroachment agreement among UNC-CH, OWASA and DOT. The Designer should arrange this during the project design, to avoid construction delays.
- i) The Designer is responsible for coordinating with PSNC for the Natural Gas Utility (<http://www.psnenergy.com/en/builder-developer-services/>)

## 2. *Electric Metering*

All electrical installations are typically metered for KWH/KWD for utilities billing purposes at the transformer. Electric Distribution Systems will furnish and install all pad mounted transformer metering equipment including meter, meter base, current transformers, potential transformers and wiring. Cost of this installation will be included in the project cost.

Submit all electrical installations requiring special metering to Electric Distribution Systems for approval.

## 3. *Site Lighting*

### a) **General**

Exterior lighting constitutes the first line of defense in the overall security and safety plan of the campus. It provides the needed visibility for vehicles and more importantly, pedestrians to safely travel around the campus. At the same time, lighting that illuminates perimeter neighborhoods or the night sky is actively avoided.

Exterior lighting covered by this section into the following categories:

- Streets
- Parking lots
- Walkways
- Athletic
- Common areas surrounding buildings.

It is the goal of the University to preserve the ambiance of the campus while ensuring well-lit areas of travel about the campus. This requires the consistency, as is feasible, of fixture types and luminaries. The availability of several voltages requires special attention in design. There may be multiple voltages within any one particular area. Typical voltages are 120, 208 and 277.

### b) **Removal of Existing Fixtures**

It may be necessary to remove some existing fixtures to facilitate the transition between a new fixture and the existing fixtures or to improve the illumination level. UNC Electric Systems personnel accomplish removal of all existing fixtures. Associated cost for this work is to be included within the project budget.

There are many fixtures on campus that are very old and almost impossible to replicate. Great care needs to be exercised when handling these fixtures.

All fixtures may or may not be on one circuit. Use appropriate breakers and contactors in conjunction with rated photocells.



### c) Addition of New Free Standing Fixtures

When the need arises for adding new freestanding fixtures, care must be given to ensure uniformity in fixtures and lighting levels and color with surrounding fixtures and lighting levels and color. Detail should be given to all obstructions that result in a “cutoff” of the required light pattern. New and or replacement fixtures shall conform to existing fixtures in and around the general area under consideration and shall be of equal or better quality. As a minimum, lighting levels should conform to those put forth by the Illuminating Engineering Society of North America. Temporary lighting may be required during the construction phase to ensure a safe area at night. Temporary lighting will be the responsibility of the project.

The UNC Campus Lighting Master Plan Committee (CLMPC) approves all selections for site lighting. UNC Electric Distribution Systems provides standards, approves selections and ultimately maintains all outside, pole mounted area, walkway, parking lot, street, and athletic lighting on the UNC campus properties. Projects involving larger numbers of lights should be included in the requirements for the electric contractor and are subject to Electric Distribution Systems approval and inspection. For more details on lighting, see relevant section of the University’s Development Plan at <http://www.fac.unc.edu/PlansPolicies/CampusMasterPlan>.

All outside lighting, except athletic lighting, shall be designed to be metal halide or LED fixtures. This choice shall be a function of the area in which the lighting is to be designed the type area and compatibility of lighting in the surrounding areas, to ensure a reasonable compatibility in lighting style and function. The lighting type choice is determined by Electric Distribution Systems in coordination with the CLMPC (see above).

Athletic field lighting will be metal halide fixtures. The poles, fixtures, operating voltage, and power sources or feeds will be specifically designed for each particular installation.

Consideration shall be given to specifying exterior lighting such that exterior luminaries with more than 1,000 initial lamp lumens are shielded and all luminaries with more than 3500 initial lamp lumens meet the Full Cutoff IESNA Classification. In addition, consideration shall be to specifying luminaries within a distance of 2.5 times its mounting height from the property boundary to have shielding such that no light from those luminaries crosses the property boundary (IESNA RP-33).

Furthermore, lighting should be designed to reduce light pollution to the night sky. For more details on light pollution and light trespass, see the Illumination Engineering Society of North America’s Recommended Practices for outdoor lighting (IESNA RP-33) or reference the presentation by the [Northwest Energy Efficiency Alliance and the Lighting Design Lab](#).

UNC Electric Distribution Systems prefers that power be supplied to all fixtures from a source provided by Electric Distribution Systems or, alternatively the respective building load center. The selection for power source will be made by EDS.

The electric source or feed for outside lighting shall be a minimum of one 60 amp, 240 volts, two pole circuit wired from a breaker in the building to a weather proof enclosure mounted on the exterior of the building. Within the enclosure will be an electrical contractor that is controlled by a photocell. All outdoor fixtures shall be photocell relay operated. Multiple lighting fixtures should be on a contactor that controls all lights within an area.

With special approval from the Manager of UNC Electric Distribution Systems, the electrical contractor(s) may be located inside an easily accessible electrical/mechanical room. No other building or landscaping lights shall be served from this system.





## D. ACCESSIBILITY

The University of North Carolina at Chapel Hill is committed to making all buildings and areas of the campus physically accessible to all faculty, staff, students, and visitors. A universal design principle that provides the same access to all is encouraged. The Designer is expected to provide a design that will comply with the current versions of the North Carolina State Building Code and the Americans with Disabilities Act Accessibility Guidelines (ADAAG). <http://www.ada.gov/publicat.htm>. The University requires some elements that exceed these codes and standards. They are listed below.

### 1. Path of Travel/Curb Cuts/Ramps

- a. Exterior walkways should not exceed a slope of 1:20 in the direction of travel. If this cannot be achieved because of site topography, then a ramp may be used. Use of ramps should be kept to a minimum. Construction tolerances shall be considered in the design of sloped surfaces to ensure they do not exceed the maximum allowed.
- b. Curb Cuts shall be concrete contrasting in color to the adjacent walkway and shall have detectable warnings in the lower 2'-0" for the width of the ramp portion. All curb cuts shall be in the direction of travel. Diagonal curb cuts at intersections should not be used.
- c. Exterior stairs shall be kept to a minimum. They shall be concrete or approved material of contrasting color from the adjacent walkway. A step with a single riser shall not be used. All stairs shall have handrails on both sides.

### 2. Doors and Hardware

- a. All lever hardware shall have an end return.
- b. Automatic door opener shall be hardwired. The location of activators (push plates) and stub outs for the automatic door openers shall be shown and dimensioned on the architectural drawings. Activators shall be mounted 36" above the adjacent grade or floor and be 48" minimum from any portion of the door in the open position. The push plate shall be 4-1/2" diameter minimum. Door activator shall be provided at the following locations:
  - i. Main Entrance doors into the building. Where the building has main entrances on different levels, they shall be provided at each level. These locations shall also be stub out for a proximity reader.
  - ii. Entrance doors into the primary multi-fixture toilet rooms on levels served by the main entrances mentioned above
  - iii. Additional locations may be requested on a project by project basis no later than the Design Development Phase
  - iv. Where vestibules are provided, the opener shall activate the doors on each side of the vestibule. An activator shall be located in the vestibule.
- c. In addition, stub outs for future automatic door openers (conduit supplied to ceiling above and to boxes at future activator locations) shall be provided in the following locations:
  - i. Entrance doors to all other multi-fixture toilet rooms on all floors
  - ii. Entrance doors of common use bathrooms in dormitories, accessible dorm room entrance doors and toilet room doors in an accessible suite

### 3. Toilet Rooms, Bathrooms and Accessories

- a. Toilet rooms shall not have vestibules.
- b. Toilet rooms with more than 10 fixtures (water closets and urinals) should have a cased opening entrance without doors into the toilet room unless it is off an area where a door is desired (i.e. a waiting, reception or seating area).
- c. Accessible toilet stalls should have a turning space within the stall as defined by the NCBC, (a 60" clear diameter circle).



- d. The accessible paper towel dispenser shall be adjacent to the accessible lavatories.
- e. If only one urinal is provided, it shall be accessible.

#### **Equal Access Toilet Rooms**

In new buildings and major building renovations that include toilet rooms at least one Equal Access Toilet Room shall be provided. This shall be a single use toilet room with a lockable door that includes the following features:

- Compliant with the current ADAAG and NCBC for a single accessible toilet room
- Signage shall read “Toilet Room” or “Unisex Toilet Room”

Provide diaper changing and lactation areas within these restrooms in buildings such as libraries, museums, performing arts buildings and other location where they are most likely to be in demand. Verify with the Facilities Planning Project Manager if this is to be included in the project. In addition to the above also provide:

- A fixed built-in diaper changing table / countertop separate from the lavatory.
  - An electrical outlet adjacent to the diaper changing table between 32” and 42” AFF. It shall be out of reach of a child on the table but within 36” of the surface
  - An area for a large chair for nursing mothers
  - Provide signage indicating additional uses
4. Drinking Fountains located along a path of travel should be recessed when possible.
  5. Elevators shall be provided with a grab bar on at least one wall of the elevator cab.
  6. Platform Wheelchair Lift shall not require a key to operate.
  7. Interior and exterior signs identifying permanent rooms and spaces shall have both the name and number in raised letters and Braille that complies with the current accessibility codes.
  8. In classrooms and auditoriums where a tablet arm is provided for fixed seating, a fixed table or tablet arm on a pedestal shall be provided at all wheelchair seat locations.
  9. Stair handrails shall have a bottom extension that extends 12” plus one tread width from the bottom nosing.

## **E. SUSTAINABILITY**

The University has instituted a number of policies and programs to support the development of a sustainable campus and to fulfill its carbon-reduction obligation as a signatory of the American College and University Presidents’ Climate Commitment. Designers working on our campus are requested to partner in these efforts by striving to identify sustainable design opportunities. Design teams are expected to conduct a charrette early in the design process to involve stakeholders in planning for energy efficiency, water efficiency, solid waste reduction, land preservation and other aspects of sustainable development. Ideas will be evaluated by the project team for feasibility within the constraints of project program, budget and schedule. Each project shall include and has been budgeted to incorporate: energy modeling, commissioning of HVAC systems, tie-ins to the campus energy management system, metering and submetering to facilitate the collection of energy data, stormwater management, and construction waste recycling.

We recognize the USGBC’s LEED rating system as the most widely accepted standard for evaluating sustainability of the built environment. Individual building projects are encouraged but not required to seek LEED certification. However, each project is expected to incorporate measures that would enable it to be certified at a minimum silver level whether or not it is applying for certification. A LEED checklist is to be



included with each design submittal indicating current performance objectives. Supporting documentation outlining the strategies that will be employed to achieve energy and water efficiency should also be included. A campus-specific checklist, showing which points are attainable through adherence to the Design Guidelines, may be found in the [Appendix](#).

### **1. Energy Performance/Climate Action Plan**

In our efforts to reduce greenhouse gas emissions, the campus is particularly interested in constructing space-efficient buildings with the lowest energy consumption possible. During advance planning, building orientation should be analyzed with the goal of minimizing solar heat gain and glare, and optimizing opportunities for day lighting. Programming should adhere to campus space standards and seek opportunities for multiple-use spaces.

In response to NC GS 143-135, all “Major State Facilities” must meet the performance goals for energy and indoor and outdoor water set forth in the Sustainable, Energy Efficient Buildings Advisory Committee report (<http://www.nc-sco.com/documents/guidelines/EEREPORT.pdf>). In addition, energy models developed for NC GS 143-135 must comply with state construction office guidance (<http://www.nc-sco.com/documents/guidelines/EnergyBldg.pdf>) and with UNC Chapel Hill’s Energy Policy ([http://www.unc.edu/campus/policies/Energy\\_Use\\_Policy.pdf](http://www.unc.edu/campus/policies/Energy_Use_Policy.pdf)) for occupied hours, temperatures and relative humidity. Lighting must comply with UNC Chapel Hill’s Lighting Policy (<http://www.unc.edu/campus/policies/Energy%20Efficient%20Lighting%20Policy.pdf>) prohibiting the use of incandescent lighting except in special circumstances. Designers should contact UNC Chapel Hill’s Energy Management department (<http://www.save-energy.unc.edu>) for the current utility rates to use in modeling.

The designer must provide month by month energy consumption figures for each utility in the model. This will allow UNC Chapel Hill to compare actual and predicted performance of the building. In addition, the designer must provide complete revised/updated energy model files in electronic format so that UNC Chapel Hill can re-run the energy model.

All new buildings and additions that affect the HVAC system shall incorporate commissioning of the MEP systems. Building envelope commissioning should be undertaken when appropriate. Buildings are required to have metering for performance verification of energy and water use to comply with NC GS 143-135 ([http://www.nc-sco.com/documents/guidelines/Bldg\\_Perf\\_Verification.pdf](http://www.nc-sco.com/documents/guidelines/Bldg_Perf_Verification.pdf)).

Building projects are encouraged to incorporate renewable energy systems when possible and appropriate. The campus Solar Electric Generation Policy may be found on the Electric Systems website.

### **2. Water Use Reduction**

Water use is subject to North Carolina General Statute 143 135.37, “Energy and water use standards for public major facility construction and renovation projects; verification and reporting of energy and water use.”

Detailed design guidance should be sought in the Plumbing and Site sections of this document.

#### **a) Non-Potable Water.**

In conjunction with the Orange Water and Sewer Authority, UNC-Chapel Hill has installed a Reclaimed Water (RCW) System to serve the main campus. Reclaimed water is highly treated wastewater that can be used in lieu of potable water for certain authorized applications. The water is distributed through a separate, dedicated piping system and with connections made only at permitted points of use. Allowable uses include irrigation and toilet flushing. The largest reclaimed water use on campus is cooling tower make-up at the University and Hospital chilled water plants.



A number of campus projects have installed cisterns to meet stormwater management requirements. Rainwater harvesting also benefits water reduction goals by replacing potable water use for irrigation and toilet flushing.

The University's campus-wide Non-Potable Water (NPW) utility develops and operates the combined reclaimed water and rainwater harvesting systems. Projects with new plumbing or irrigation systems are expected to install non-potable water piping to increase the use of this resource. Designers should address the potential uses of non-potable water in the planning and schematic design phases of a project. Consult the [Non-Potable Water Design Guidelines](#) for detailed design guidelines and regulatory information.

## F. WASTE MANAGEMENT

### 1. *Site and Space Planning for Recycling and Solid Waste Management*

Designers are required to work with the University Office of Waste Reduction and Recycling to develop convenient spaces for waste handling containers and service access.

The University is mandated by the "North Carolina Solid Waste Management Act of 1989" and North Carolina *Executive Order 156* on State Government Environmental Sustainability, Reduction of Solid Waste, and Procurement of Environmentally Preferable Products to establish recycling programs and meet waste reduction goals.

Executive Order 156:

<http://www.p2pays.org/ref/03/02221.pdf>

As set forth in *North Carolina General Statute 130A-309.14* all state agencies shall ensure that employees have access to containers for recycling (at a minimum) aluminum cans, high-grade office paper, and corrugated cardboard. All state employees are required to separate identified recyclables materials generated in the course of agency operations and place them in the appropriate recycling containers.

North Carolina General Statute 130A-309.14:

[http://www.ncleg.net/EnactedLegislation/Statutes/HTML/BySection/Chapter\\_130A/GS\\_130A-309.14.html](http://www.ncleg.net/EnactedLegislation/Statutes/HTML/BySection/Chapter_130A/GS_130A-309.14.html)

Design considerations for waste and recycling containers must be based on the building's usage and occupancy. In addition to indoor recycling, a building must, at a minimum, have access to a dumpster for trash, one for cardboard and outdoor recycling carts.

When the building contains food service operations, containers and exterior space must be allocated for grease collection and food waste recycling. Animal labs and quarters require exterior space for the collection of animal bedding for composting. Theatres, art studios, and maintenance shops often produce bulky waste that cannot be collected in front load dumpsters. Any building containing offices must have loading dock or service area access for paper collection. Residence Halls require extra refuse and recycling containers.

UNC-Chapel Hill collects the following materials for recycling:

- a) Animal Bedding—Collected on the interior by the animal lab staff, and then stored outside for pickup
- b) Bottles & Cans—Collected throughout the building on a space usage basis and in outdoor carts (especially in high volume areas like residence halls, catering areas, dining halls, etc.)
- c) Cardboard—Housekeeping brings flattened boxes out of the building to dumpsters outside
- d) Food Waste—Collected at kitchen areas inside and then stored outside for pick up
- e) Grease—Collected at dining facilities and picked up by outside contractors



- f) Mixed Paper, Newspaper & Magazines—Collected throughout the building on a space usage basis and in outdoor carts (especially in high volume areas such as residence halls, libraries, etc.)
- g) Office Paper—Collected throughout the building on a space usage basis
- h) Scrap Metal—Collected at shops and taken to county or in-house facilities
- i) Clean Wood Waste—Collected at shops and taken to county or in-house facilities

For a list of UNC-Chapel Hill's recycling programs and detailed information about planning needs for these programs, see the Site and Space Planning section of the OWRR design guidelines: <http://surface.facilities.unc.edu/OWRRGuidelines/>. For more information about the recycling and waste collection needs based on building use, please see Needs Based on Building Use within the Site and Space Planning section of the website.

## **2. Construction and Demolition Debris**

The University, State, Orange County and Chapel Hill are committed to reducing waste and the use of landfills. Waste reduction and recycling practices aren't limited to routine day-to-day functions and events on campus; they also apply to construction and renovation activities. Construction waste management practices include deconstruction, reuse, salvage, recycling and disposal.

Executive Order 156 calls on all state agencies to: "seek opportunities to reduce environmental impacts associated with capital improvements throughout project planning, site and building design, and construction. Agencies shall, to the extent feasible and practicable, implement project initiatives or modifications that result in energy efficiency, water conservation, pollution prevention, solid waste reduction, and land preservation during the construction and operation of agency facilities."

Resources and more information are available on the Construction and Demolition Waste Management section of the OWRR design guidelines: <http://surface.facilities.unc.edu/OWRRGuidelines/>

## **3. Recycling Office of Waste Reduction and Recycling Services to Buildings During Construction**

In order to maintain services to buildings under construction and adjacent buildings, OWRR and its contractors must be able to access dumpsters and loading docks during all phases of construction and renovation.

Also see Construction Staging Areas, Walkways, and Driveways in Chapter IV of these guidelines. Important information relevant to maintaining solid waste services is on the "Services to Buildings During Construction" section of the OWRR design guidelines: <http://surface.facilities.unc.edu/OWRRGuidelines/>

## **G. ENVIRONMENT, HEALTH AND SAFETY**

The Environment Health and Safety Department has established and implemented procedures for designers to follow for new construction and major renovation projects.

### **1. Decommissioning**

*Currently under development.*

### **2. Demolition and Hazardous Material Abatement**

[Introduction to Environmental Demolition Specification](#)

[Waste Process](#)



[Environmental Demolition Specification](#)

3. ***Hazardous Material Management and Waste Disposal (hazardous and universal waste)***

Refer to *Hazardous Materials Guidelines* and *Hazardous Material Management and Waste Disposal*.

[Hazardous Materials Guidelines](#)

[Hazardous Material Management and Waste Disposal](#)

Management of fuel and oil in containers, at construction sites, 55 gallons or greater in size must be conducted in accordance with the Spill Prevention Control and Countermeasure (SPCC) Plan. Specific requirements are located in the UNC SPCC Plan Design Guidelines and Construction Site Guidelines located at: <http://ehs.unc.edu/spcc/>

4. ***Construction in or near occupied buildings-occupant protection***

Refer to [Construction design guidelines for Working Within and-or near Occupied Buildings](#).

5. ***Design for indoor environmental quality***

Refer to [Design Guidelines for Indoor Environment Quality](#).

6. ***Emergency Generators***

Refer to [EHS Design Guidelines for Emergency Generators](#).

7. ***Fire safety equipment***

[Refer to Design Guidelines for Fire Safety](#).

8. ***Laboratory buildings***

[Refer to UNC Laboratory Design Guidelines](#).

9. ***Ergonomics***

Refer to [Ergonomics Guidelines](#).

10. ***Machine Guarding and Electrical Safety for New Equipment***

*Currently under development.*

The EHS website has significant additional information.

The EHS home page is <http://ehs.unc.edu/index.htm>.



The campus Environment, Health and Safety Manual is located at:

<http://ehs.unc.edu/manuals/ehsmanual/index.shtml>

Designers are to contact EHS during design for input and information on user requirements.

Contact information for EHS is at <http://ehs.unc.edu/staff/index.shtml#indhyg>

## H. BUILDING SYSTEMS

This section generally covers the building design within the envelope of the building. The demarcation line between site utilities and building services is defined by each utility and may occur inside the building envelope. The designer should refer to the [Energy Services website](#) and the specific line of demarcation for each utility.

### GENERAL

The designer is to ensure the design meets the applicable requirements of the NC building codes, the State of North Carolina statutes for state owned buildings and zoning for the towns of Chapel Hill & Carrboro or other local jurisdiction. The designer also is to comply with the University of North Carolina Design. The designer shall request clarification for any item noted below that is a possible conflict with these codes, statutes and guidelines.

#### 1. *Control Systems*

This document provides tools for the designer to specify the appropriate level of control system quality for reliable control. Refer to these Controls Standards at the Facilities Planning website for design requirements:

[Preface and Implementation Guidance](#)

[Controls Standards – Index](#)

#### 2. *Plumbing & Mechanical Systems*

Refer to [Mechanical Systems](#) for additional design requirements and to [Environmental Chambers](#) for specific requirements to design Environmental Control rooms.

#### 3. *Electrical*

Refer to [Electrical Design Guidelines](#) for additional design requirements.

#### 4. *Telecommunications*

Refer to [Telecommunications Design Guidelines](#) for additional design requirements.

#### 5. *Life Safety*

This section includes Fire Protection Sprinkler Systems, Fire Detection and Alarm Systems and emergency power generation.



#### a) Fire Protection Sprinkler System

Refer to [Fire Protection Design Guidelines](#) for additional design requirements:

- i. *The designer is to review the attached guidelines and use them to prepare their design and the contract documents for the Fire Protection Sprinkler Systems. This is document is not intended to conflict with any Code or NFPA Standard. If conflict is observed, the designer shall notify the Facility Planning Project Manager and if necessary obtain a ruling from NC Office of State Construction.*
- ii. *The designer shall consider the following while preparing their design and the contract documents.*
- iii. *The designer shall determine the need for a fire pump prior to design development stage through the conduct of water flow tests. All testing must be coordinated with Orange Water and Sewer Authority (OWASA) and the University's Life Safety Systems Department. Designer shall contact OWASA to determine the fee for water flow tests and coordinate payment to OWASA with the UNC-CH Project Manager. A formal request along with the fee must be submitted to OWASA prior to testing (see the OWASA website).*
- iv. *In all new construction and wherever possible in renovations, fire pumps shall be directly connected to both the service transformer and the emergency generator via a service entrance rated combination fire pump controller.*
- v. *Specify that a schedule of fire protection valves shall be installed adjacent to the main fire alarm control panel for the building.*

#### b) Fire Alarm System

Refer to [Fire Alarm System](#) for additional design requirements.

#### c) Emergency Power Generation

Emergency generators are required for many of the new building designs based upon the State Building codes that address ventilation for toxic and highly toxic materials, elevators, high rise buildings, fire pumps and more. However, because of air permitting restrictions, the University seeks to reduce the number and size of emergency generators whenever possible. The primary environment, health and safety issues relate to noise and generator air emissions. Most of the generators on the UNC Campus are powered by diesel fuel. Diesel generators emit NO<sub>x</sub>, hydrocarbons, particulates, CO and SO<sub>x</sub>. Diesel exhaust is considered a respiratory irritant and a suspect carcinogen.

See [Emergency Generator Guidelines](#) at the Facilities Planning website for UNC requirements for generator design.

### 6. Security

#### a) Electronic Security Systems

##### i. OneCard System

Except for Medical School and Housing, most buildings at the University of North Carolina at Chapel Hill employ the OneCard card access system, using a Diebold A-1000 access reader system. Requirements for the design of this system are project-specific.

The designer will work with the Project Manager to determine project scope and cost early in the design process. The project cost will include the equipment and work provided by UNC.





The following outlines responsibilities of owner/contractor work as it applies to the Diebold system.

The building contractor will furnish and install all door hardware, electrical exit devices, automatic door operators, ADA push plates & power supplies for all door hardware, unless otherwise specified.

The building contractor will furnish and install all raceways, boxes, 24 volt wiring & associated components required for the OneCard System.

The building contractor will install new fire-retardant plywood on the wall of the OneCard closet. The size of the closet(s) will depend on the size of the system,

UNC Electronics shop will purchase, install, and make all terminations to the OneCard equipment including card readers, proximity readers, A-100 controllers, A-1000 controllers with Wiegand adaptors, Altronix ULX400, power supply for door strikes, Proximity reader power supplies, terminal server, control cabinet and relays, and associated components.

#### ii. *Electrical Closets*

The size and locations of electrical closets for electrical distribution and security systems will be determined in the SD submittal. Where building does not allow flush panels in corridors, electrical closets will provide space for at least one future lighting and appliance sub-panel. Plans will identify floor space for future panel. The main electrical room is to be located on the building perimeter.

### b) **Physical Security Systems**

Designer shall incorporate appropriate physical security measures into facility design. Include design as noted in the Hardware Design Guidelines elsewhere in this guideline.

Refer to the [Hardware Design Guidelines](#) for design requirements.

## 7. **Commissioning**

### a) **Commissioning and Building Performance Verification**

Building commissioning is required for projects as defined in GS 143-135. Refer to *NC SCO Building Commissioning Guideline* for requirements for commissioning. During the warranty phase of the project, the building's energy performance must also be verified per GS 143-135. Refer to *NC SCO Building Performance Guideline* for energy performance verification requirements.

Refer to *NC State Construction Manual* for requirements for how commissioning interfaces with other aspects of the design and construction process.

The UNC Chapel Hill campus has a commissioning group tasked with analyzing and implementing the current state guidelines. Designers, commissioning agents, contractors and other professionals are to contact UNC Facilities Planning for current information on the process.

*NC SCO Building Commissioning Guideline:*

[http://www.nc-sco.com/documents/Guidelines/BLDG\\_COMMISSIONING.pdf](http://www.nc-sco.com/documents/Guidelines/BLDG_COMMISSIONING.pdf)



*NC SCO Building Performance Guideline:*

[http://www.nc-sco.com/documents/Guidelines/Bldg\\_Perf\\_Verification.pdf](http://www.nc-sco.com/documents/Guidelines/Bldg_Perf_Verification.pdf)

*NC State Construction Manual:*

<http://www.nc-sco.com/scomanual.aspx>

**8. Laboratory Design**

Refer to [BSL3 Laboratory Design](#) at the Facilities Planning website for design requirements.

**9. Permanent Fall Protection**

Refer to [Permanent Fall Protection Design Guidelines](#) for design requirements.

**10. UNC Room Numbering**

Refer to the [UNC Room Numbering Design Guidelines](#) for design requirements.

**11. Masonry**

Refer to the [Masonry Design Guidelines](#) at the Facilities Planning website for design requirements.

**12. Hardware**

Refer to the [Hardware Design Guidelines](#) for design requirements.

**13. Specialties**

Refer to the [Specialties Design Guidelines](#) for design requirements.