



CHAPTER III: UNIVERSITY PLANNING STANDARDS



Table of Contents

CHAPTER III: UNIVERSITY PLANNING STANDARDS	1
III. UNIVERSITY PLANNING STANDARDS	5
A. SITE DESIGN	5
1. General Principles Governing Site Design	5
2. Land Development Guidelines	5
3. Water Resource Management	5
4. Building Siting	6
5. Building Removal	6
6. Site Utilities	6
7. Geotechnical Engineering	8
8. Site Limits	8
9. Construction Fence	8
10. Construction Staging Areas	8
11. Tree Protection	9
12. Sitework	10
a) Grading and clearing	10
b) Sediment and erosion control	10
13. Site Stabilization	10
14. Site Drainage	10
15. Landscaping	11
16. Pesticides and Chemical Fertilizers	12
17. Termite Control	12
18. Outdoor Recycling and Solid Waste Collection Sites	12
19. Hardscape	13
20. Bicycle Racks	13
21. Bus Stop Shelters	13
22. Roads	13
23. Walkways	13
24. Walkway Trash and Recycling Containers	14
25. Parking	14
26. Pedestrian Safety	14
27. Traffic Control Plan	15
28. Driveways	16
29. Dumpster Placement and Access	17
30. Street and Roadway Utility Repairs and Replacements	17
31. Site Appurtenances	17
32. Permits and Approvals	17
B. SPACE PLANNING STANDARDS	18
C. SPACE PLANNING REQUIREMENTS	18
1. Accessibility	18
a) Site Accessibility	18
b) Building Accessibility	19
2. Building Service Areas	20
a) Housekeeping/Janitor Closets	20
b) Mail Space	23
c) Indoor Recycling Bins/Locations	23
d) Telecommunications Room	24



e)	<u>Elevators</u>	25
f)	<u>Classroom Requirements</u>	26
g)	<u>Food Service Facilities, Vending Machines, and Catering Kitchens</u>	27
h)	<u>Architecture</u>	28
i)	<u>Building Systems</u>	34
D.	<u>HAZARDOUS MATERIALS</u>	40
1.	<u>Abatement</u>	40
a)	<u>Lead-Based Paint Removal</u>	40
b)	<u>Asbestos</u>	40
c)	<u>Asbestos Statement</u>	40
d)	<u>Mold</u>	40
2.	<u>Soils</u>	40
a)	<u>Pesticides and Chemical Fertilizers</u>	40
b)	<u>Termite Control</u>	41
3.	<u>Dangerous Chemicals, Liquids, and Gases</u>	41
4.	<u>Radiation Sources</u>	41
E.	<u>CONSTRUCTION AND DEMOLITION WASTE</u>	41
1.	<u>Construction Waste Management Hierarchy</u>	41
a)	<u>Building Materials and Components</u>	41
b)	<u>Fixtures, Furniture and Equipment</u>	41
c)	<u>Required Specifications</u>	41
2.	<u>Design Requirements</u>	42
a)	<u>Building Material Assessment and Salvage:</u>	42
3.	<u>Fixtures, Furniture and Equipment Salvage:</u>	42
a)	<u>Fixtures, Furniture and Equipment Walkthrough and Inventory</u>	42
b)	<u>Cost Estimate:</u>	43
c)	<u>Scheduling:</u>	43
d)	<u>Construction Documents:</u>	43
4.	<u>Construction Requirements</u>	44
a)	<u>Meetings</u>	44
b)	<u>Planning and Implementation:</u>	44
c)	<u>Documentation:</u>	44



I. UNIVERSITY PLANNING STANDARDS

A. SITE DESIGN

1. General Principles Governing Site Design

A building designed for the UNC-Chapel Hill campus should follow these general principles:

- a) Design to reduce negative environmental impacts of development.
- b) Design to maximize opportunities to restore natural systems.
- c) Use natural topographic features to minimize grading, preserve trees, reduce water runoff and soil erosion, increase water infiltration and protect the watersheds.
- d) Landscape should be self-sustaining, low maintenance, and should support conservation and restoration of biological and water resources, including species diversity and habitat protection, soil stability, fertility, and aeration.
- e) Design should support facilities for pedestrians, bicycling, carpooling, mass transit, and other less polluting means of transportation.

2. Land Development Guidelines

UNC-Chapel Hill's primary land development strategy is to protect critical environmental areas from further development or unnecessary disturbances. The most easily identified environmental areas to protect are the steeply sloping valley walls and the historical stream channels. These features define much of the southern end of the main campus. Some stream channels still exist; however, many are presently buried under buildings, parking lots and playing fields. Key components of the natural infrastructure – water, vegetation, soils, etc. – are living systems. Degradation and fragmentation compromise the integrity of these systems and their ability to function. The University will protect the critical land features that still exist. Opportunities for restoring these features will be sought wherever the reworking of present building facilities or new construction is proposed.

3. Water Resource Management

Water as it falls on the property is an infinite resource, subject to seasonal and temporal variations. The passage of this water through our land, and the impact that our structures and activities have on its quantity and quality, are critical to sustaining it as a resource.

In the Chapel Hill part of piedmont North Carolina, the average rainfall is 48 inches a year. Approximately 10 percent, or 4 to 6 inches, seeps into the ground to recharge the reservoir of ground water. This water passes very slowly through the soils and surface rock, thus allowing only a small percentage of the groundwater to be available for human use. The region's water supply is thus largely dependent on surface water supply.

The term "water resource management" is something of a misnomer. What we can manage are our own efforts to sustain this resource, especially by assuring the quality of water in our surface streams and lakes.

The impacts of impervious surfaces, especially pavements, are well documented; the University will minimize in its project development any increase in impervious surfaces. We also will seek to remove impervious surfaces from the campus landscape where they have a great impact on water quality and hydrologic function, such as where small streams have been buried and paved over.

The high percentage of impermeable surface on the main campus has exacerbated the amounts and the speed of storm water runoff, as well as the amounts of non-point source pollutants that reach Morgan Creek. In particular, stream channels have been re-cut in an effort to handle the increased water volume and velocities and the increased sediment load.



On the uplands, opportunities are sought to modify the developed landscape to allow more rainfall to infiltrate into the soil mantle. Where little opportunity exists to accomplish this type of storm water management, we will “hold our water” more efficiently, using retention systems on the rooftops of buildings with “green roof” systems. We also will hold storm water beneath structures such as pavements, with the added benefit of soil infiltration and/or reuse. Simpler measures, such as cisterns and landscaped water features, will add to this overall program of redesigning the land to reduce the immediate runoff of storm water from the built landscape.

4. Building Siting

The siting of campus buildings is determined by the University’s Board of Trustees, as described in the Campus Master Plan (Ayers, Saint, Gross, 2000). In most cases, the Facilities Planning Department will typically manage the site selection process that involves the Building and Grounds Committee and with final approval by 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. In the initial phases of the design process and before beginning project sketches, the design team is required to analyze the site in respect to the following issues:

- a) Context
- b) Community impacts
- c) Building massing
- d) Building scale
- e) Architectural character
- f) Materials
- g) Pedestrian and vehicular circulation
- h) Access
- i) Loading and service
- j) Parking
- k) Utilities
- l) Stormwater
- m) Topography
- n) Views
- o) Daylight
- p) Prevailing winds
- q) Implications of siting on building energy requirements
- r) Environmentally critical areas
- s) Natural vegetation
- t) Opportunities for environmental restoration (removal of impervious surfaces, making streams available to sunlight, containment and use of storm water)
- u) Impact on adjacent and nearby buildings and open spaces.
- v) Retention of important visual images (i.e. view of Bell Tower, Old Well, etc.)

5. 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.

Related sections: Chapter II Project Development Phase checklists, Chapter III Section E, Chapter VI Standard Forms, Chapter V Specification 01060 Regulatory Requirements, Specification 01505 which lists UNC's Solid Waste Management Plan requirements, Specification 02070 Selective Demolition.

6. Site Utilities



All campus electrical, steam, chilled water and storm drainage systems are owned and operated by the University. Water and sanitary sewer mains on campus are owned and maintained by the Orange Water and Sewer Authority (OWASA: www.owasa.org). Water and sanitary sewer laterals are owned by the University. Gas is provided by PSNC Energy. The gas mains are owned by PSNC Energy. The University generates its own steam at its Co-generation Facility on Cameron Avenue. The University generates some electricity but purchases most of its requirements from Duke Power Company. Chilled water is produced centrally and distributed across campus. Production facilities and main distribution lines are shown on the schematic map below.

Obtaining site utility information: UNC Facilities Planning 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.

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. The subsequent procedure is as follows:

- a) Designer obtains proposal from utility locator of the Designer's choice.
- b) Designer submits proposal to University's Project Manager.
- c) Project manager obtains approval of proposal.
- d) Designer schedules work through a Facilities Planning Engineer who will coordinate with University utility personnel. Designers (architect and engineers) and representatives of relevant campus utilities must be on site to coordinate and verify information when the utility location is done. A surveyor must also be on site to document locations and elevations.

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: Refer to [Chapter V](#), Division 16 for details concerning electrical distribution.
- b) Fiber/Telecommunications Guidelines: <http://www.telecom.unc.edu/services/engineering.php>
- c) Steam Distribution Guidelines: <http://www.energy.unc.edu/Cogeneration/SteamDesignRequirements.asp>
- d) Chilled Water Design Guidelines: <http://www.energy.unc.edu/ChilledWater/Design.asp>
- e) Water, Wastewater, and Stormwater:
- f) Refer also to [Chapter III](#), Site Design, Sitework and [Chapter V](#), Division 2.

Coordination with off-campus utility providers: The Designer is responsible for coordinating with OWASA. Tasks include:

- a) Obtaining and using OWASA's design guidelines for all design work involving water and/or sewer taps; main replacements and/or extensions; and any work in the area of OWASA water and sewer mains
- b) Scheduling a meeting with OWASA officials early in the design process to identify issues related to 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.
- d) Note: RPZ will require above grade installation. The University standard is to install inside building.
- e) Note: All food handling facilities will need to meet OWASA grease interceptor requirements.
- f) The Designer is responsible for ascertaining that the capacity of the water 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/) or the NC Department of Transportation (www.dot.state.nc.us/). The Designer should consult the map below to determine what approvals are required. 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.

7. Geotechnical Engineering

The Designer shall recommend a Geotechnical Engineering firm to provide sub-surface investigation if required by the project. The procedure for contracting these services is similar to the procedure outlined above for utility location services:

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

8. 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.

9. Construction Fence

The construction area should be enclosed by a six-foot-high (minimum) chain link fence with top rail and filter fabric screening. 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.

10. 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 should be developed in consultation with the following:

- a) 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.
- b) Public Safety Department regarding traffic circulation, pedestrian walkways and construction parking.
- c) 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:
<http://www.fac.unc.edu/OWRRGuidelines>

- d) Grounds Services regarding tree protection.
- e) Disabilities Advisory Committee regarding measures that should be incorporated to insure safe travel of pedestrians and vehicles during construction. These measures should be indicated on the Pedestrian Safety Plan that will become part of the final construction documents for the project.
- f) 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.
- g) Environmental Health and Safety regarding erosion control plan.
- h) Off-site trailer storage/areas The Public Safety Department may be contacted for locating an off-site construction storage trailer.

11. Tree Protection

The beauty of the Carolina campus is due in large part to the park-like setting of its historical quadrangles with their large trees. Protecting trees during construction is therefore of paramount importance. Aspects of the University's Tree Protection Plan are listed below.

A tree protection plan is required for all projects. The plan must be a separate drawing, at 1"=20' scale, prepared by a Certified Arborist or Landscape Architect, labeled "Tree Protection Plan". The Tree Protection Plan needs to consider impacts of the building site and all utility connections associate with the project. The plan is developed in consultation with UNC Grounds Services and the University's Project Manager, during the schematic or design development phase, and becomes part of the design and construction documents. Facilities Planning, Construction Management and Grounds Services must approve it. 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:

- a) Identifies size, species and location of all trees affected by the project.
- b) Indicates which trees and shrubs are to be removed from the site.
- c) Note: When trees and shrubs are removed, care must be taken to protect trees and other landscape elements that are to remain.
- d) Indicates which trees and shrubs are to remain.
- e) Indicates routes of all trenches necessary for installation of underground utility lines and specifically identifies the limits of excavation for the required trenches.
- f) 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.
- g) Note: Limbing should be done by the UNC Grounds Services or, in the event that this department cannot meet the project schedule, by a certified arborist. Adequate funds should be set-aside in the project budget to cover this cost.
- h) Provide details of who will install and maintain protection measures



- (1) Logging mats, fabric, and mulch: installed by Contractor or Grounds Services. If the Grounds Services will install measures, provide funding in the project for material and labor:
 - (2) Tree protection fencing: installed by Contractor. Fences should be checked daily.
- i) Provide clear signage in the construction area. Examples:
- (1) “No Trespassing”
 - (2) “No Machines”
 - (3) “No Storage of Materials”
- j) 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
- k) 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

12. Sitework

- a) Grading and clearing

All grading and clearing must be done in a manner that prevents damage to trees and tree roots that are to remain on the site.

- b) Sediment and erosion control

The North Carolina Sediment Control Ordinance requires an Erosion and Sediment Control Plan for all projects with over one acre of land disturbance. (Verify regulatory size requirements. Please note at time of this release, September 2006, a change to one half acre is under review.) The plan must be filed with Orange County before the start of construction.

In planning project erosion control measures the following guidelines should be followed:

- (1) Use silt fencing to protect drainage swales and steep slopes from erosion.
- (2) Place construction fence at break of slope. Use construction fencing to prevent dumping and trespass by vehicles and people.
- (3) Monitor and repair fences daily.
- (4) Stabilize slopes immediately after finish grading with narrow-leaf fescue and perennial rye. On steep slopes, use hydro seeding or coco mats to ensure rapid stabilization.

Clearly indicate which measures are temporary and which are permanent. Require the contractor to remove temporary measures prior to landscape installation.

13. Site Stabilization

The contractor should provide finish grade and temporary seeding to stabilize site at the conclusion of site-disturbing activity. Plant bed areas can be stabilized using a light layer of pine straw or mulch.

14. Site 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 ¼" (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. Roof drains should be tied into the Stormwater management system for the building. Stormwater runoff should be infiltrated on site wherever feasible. (Infiltration capability of the soil is very site specific, and must be verified with appropriate infiltration testing. The site soils or location of nearby utilities may require reuse instead of infiltration.). Suggested methods to accomplish on-site infiltration include: pervious pavement (asphalt or concrete) with re-charge beds beneath, connection of roof leaders and storm drains to sub-surface infiltration beds, infiltration berms in undisturbed woodlands, infiltration beds or trenches. Stormwater runoff may also be controlled with manufactured rain storage systems beneath parking areas or on rooftops or collected in cisterns for re-use in irrigation or as building gray water for toilet flushing or other nonpotable uses.

15. 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:

- a) Add visual interest to the outdoor environment.
- b) Accentuate building and campus entrances at eye level.
- c) Enclose special areas such as plazas to portray human scale.
- d) Screen unappealing elements such as dumpsters, service areas, and parking
- e) Control access and circulation.
- f) 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, rounds Services should be contacted prior to installation to approve any changes to the irrigation system.

Preferred plant types:

- a) Low-maintenance native landscape is preferred over high-maintenance plantings.
- b) No exotic invasive species should be used. A current list can be obtained from the NC Botanical Garden.
- c) 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.



- d) 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.

16. 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.

17. Termite Control

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

18. Outdoor Recycling and Solid Waste Collection Sites

Each building is to have an outdoor recycling collection site (cardboard dumpsters and recycling carts). The Designer must, for projects in which this requirement cannot be met, specify what cannot be sited at the building and the recommended location that will serve as an alternate site for these services. This is to be submitted to the Office of Waste Reduction and Recycling and to Housekeeping Services for approval.

Design considerations for waste and recycling containers must be based on the building's usage and occupancy. All containers shall be located on an accessible path of travel per the ADA and State Building Code.

Ideally, the recycling carts and dumpsters will be on the same pad and enclosure. However, in some cases it is necessary for the dumpsters (or compactors) to be located on separate pads from the carts. This page gives a variety of configurations and basic specifications. The standard design for an outdoor service area is for a recycling and trash site that can accommodate:

- a) 3-6 recycling carts (residence halls require more)
- b) cardboard dumpster
- c) at least one trash dumpster (residence halls and high volume areas may require more than one)

A variety of programs can utilize the outdoor service areas. Along with this a variety of containers and vehicles are used to service the program. A brief list is given below.

- a) Dumpsters (Trash and Cardboard)
- b) Outdoor Recycling Carts (Bottles/Cans, Newspapers/Magazines)
- c) Compactors (Trash and Cardboard)
- d) Rolloff Containers
- e) Animal Bedding
- f) Food Waste Carts
- g) Grease Collection

Dumpsters are serviced by front load trucks. The standard size for a cardboard dumpster is 8 cubic yards. The standard size for a trash dumpster is 8 cubic yard side load dumpster. The concrete pad for the dumpsters can be designed in a variety of configurations as long as the pad and site meet the University's service requirements. Pads should be sloped away from rear wall and towards planned drainage routes to avoid pooling around dumpsters and carts.

The quantity, size, and type of dumpsters needed is dependent on the building use and size. When volume or special needs dictate a larger dumpster, horizontal compactors are recommended. Contact the Office of Waste Reduction and Recycling for assistance determining the size and type of container needed.



For a list of UNC-Chapel Hill's recycling programs and detailed information about planning needs for these programs, see [Chapter V](#), Sections 02475 and 11170 and the Outdoor Service Area section of the Site and Space Planning portion of the OWRR design guideline website: <http://www.fac.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.

19. 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. Details for hardscape elements such as brick paving, stone walls, screen walls, fences and gates, retaining walls are included in the Standard Specifications section of this document.

20. Bicycle Racks

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.) Use building overhangs and other sheltered locations for bicycle racks when possible to afford protection from the elements. Include street curb cuts and ramps for bicycle riding access to buildings and structures.

21. Bus Stop Shelters

The University, in consultation with the Chapel Hill Transportation Department and the UNC Public Safety Department's Transportation Planner, shall determine where to locate bus stop shelters when ridership volumes justify use and adequate space is available. The unit used on campus is the standard unit used by the Town of Chapel Hill, mounted on a brick paved area. It should be appropriately illuminated and adequately transparent to ensure user security and safety. Provide a suitable clear space around the shelter to allow for visual accessibility and maintenance. Integrate related site furnishings such as waste receptacles, lighting, newspaper machines, public telephones and landscaping features into the space surrounding the shelter.

22. Roads

- a) Main campus roads should have a cross section width of 48 feet and a speed limit of 30 MPH.
- b) Facility access roads should have a cross section width of 36 feet and a speed limit of 25 MPH.
- c) Service roads and driveways should have a cross section width of 24 feet and a speed limit of 20 MPH.

23. Walkways

Carefully plan new walkways that connect major destinations and offer pedestrians a safe, accessible, and relatively direct means of travel. Indicate these new walkways on the schematic design site plan. Avoid steps and features hazardous to the visually impaired. Give special consideration to locations where pedestrian pathways cross-vehicular routes. Where pedestrian traffic is meant 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 (see Standard Detail). Construct brick walks, which provide service or emergency vehicle access on a concrete base.



- a) Maintain consistent walkway widths across the campus. Standard widths are:
- b) Major pedestrian corridors: 16 feet wide
- c) Major pedestrian walks: 8 feet wide
- d) Minor walks: 6 feet wide

Ramps and steps shall meet ADAA requirements in all locations. Provide railings and guards at stairwells, steps, bridges, loading docks and ramps. Treads and landings are to have positive drainage away from the building. 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 to be used by the general public must conform to ADA standard slope ratios.

24. Walkway Trash and Recycling Containers

Place receptacles at the intersections of major pedestrian corridors, plaza areas, and entries to major student areas such as the Student Union and snack bars. Coordinate placement of “walkway” recycling receptacles with the Office of Waste Reduction and Recycling and the Grounds Department to ensure that the site can be serviced adequately. All containers shall be located on an accessible path of travel per the ADA and State Building Code.

Recycling sites must have three containers. One for trash, one for bottles/cans, and one for newspapers. They must be located adjacent to one another as pictured. They should be placed with the trash container closest to the area highest in traffic. The bottle/can bin should be the middle bin and the newspaper bin should be next.

The containers should be level, firmly secured to the ground contiguous to walks, and on a brick-surfaced area extending outward from the walk.

Resources and more information are available on the Site and Space Planning: Walkway Sites section of the OWRR design guideline website: <http://www.fac.unc.edu/OWRRGuidelines> and [Chapter V](#), Section 02870 Site Furnishings.

25. 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 \$15,000 per space. These fees will be charged to the project budget. The use of impervious paving should be minimized. The Designer should use new development or renovation projects as an opportunity to replace former impervious paving with landscaping or with new pervious paving/re-charge beds. (See Section A.3. Water Resource Management) When planning for new parking, the Designer should provide clearly defined areas that are physically separated from roads. 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. Major lots should be paved, striped, delineated with curbs and gutters, and be illuminated for safe use.

26. Pedestrian Safety

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 (<http://main.psafety.unc.edu/publicsafety/>) and UNC Disability



Services. 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:

- a) Limits of construction
 - (1) Staging areas
 - (2) Entrance to construction site/staging areas
 - (3) Vehicular circulation to and through site
- b) Pedestrian routes around construction site
 - (1) Accessible routes
 - (2) Handicap parking location
- c) Building entrances
 - (1) Key building entrances and service areas to be maintained
 - (2) Accessible building entrances
- d) Resolution of pedestrian/construction traffic conflicts
- e) Signage plan (prepared by Designer, coordinated with University's Project Manager)
 - (1) Proposed pedestrian signage
 - (2) Designated pedestrian routes
 - (3) Signage locations
- f) Details of proposed pedestrian safety improvements
 - (1) Temporary sidewalks, ramps, etc.
- g) Phasing
 - (1) Separate plans indicating construction phasing and schedule
- h) Public advertisement (by user and UNC)
 - (1) Appropriate public advertising of the pedestrian plan
- i) Written approvals (UNC-CH, University's Project Manager 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

27. 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).

Cost and convenience should always be subordinated to safety for the students, faculty, employees, and visitors on the UNC campus.

28. 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. 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.

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

- a) Traffic driveways shall be a minimum of 24' from curb to curb
- b) 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
- c) 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.
- d) Sidewalks intersecting with driveways shall be tapered or sloped to the driveway but not to an extent such that a wheelchair would have difficulty in negotiating the slopes. In all cases, sidewalk tapers and sidewalk curb cuts shall conform to the State ADA design standards.
- e) 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.
- f) 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.
- g) 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.
- h) Anywhere bus stops are planned or existing, roadway and driveway surfaces at the stopping point of the buses (50 to 75 feet) must also conform to the 4" to 6" thick 6,000 lb reinforced concrete standard rather than regular asphalt or lesser concrete standards.
- i) 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. For more information about driveway requirements vehicles, see Chapter V, Section 02475 and the OWRR website: <http://www.fac.unc.edu/OWRRGuidelines>



Another reference is the Town of Chapel Hill Design Manual:
<http://townhall.townofchapelhill.org/agendas/ca040126/5b-design%20manual.pdf>

29. Dumpster Placement and Access

“The essential element in locating a dumpster is the ability of the refuse collection vehicle to safely and efficiently service the container... A turning radii template should be used to assure that access can be provided without unnecessary backing maneuvers... Where refuse collection vehicles will need to turn around to exit a development site, the site plan should be designed so that backing movements do not exceed 100’ in length. In these cases the turn around area should be dimensioned using a turning radii template of the appropriate scale. In all cases, the proposed site plan should be designed so that refuse collection vehicles do not need to back onto or off of any public street or over any public sidewalk.”

30. 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.

31. Site Appurtenances

The Designer should refer to [ASG Design Guidelines](#) and “[Campus-wide Guidelines for Open Space](#)” for information regarding campus standards for:

- a) Gates and walls
- b) Walkways
- c) Light fixtures
- d) Street furniture
- e) Benches
- f) Bike racks
- g) External stairs
- h) Seat walls
- i) Screen walls
- j) Railings
- k) Ramps
- l) Bollards
- m) Waste and recycling receptacles (For the most current information see www.fac.unc.edu/OWRRGuidelines/?Topic=Walkway)

32. Permits and Approvals

A Zoning Compliance Permit (ZCP) is required of all projects that add square footage to the campus except those in the OI-4 zoning district. The Facilities Planning Project Manager, submits the ZCP with information supplied by the designer, at the end of the Design Development phase of the design process.

A Site Development Permit is submitted, in lieu of a ZCP, for buildings within the OI-4 zoning district and included in the approved Development Plan for that zone. The Facilities Planning Project Manager submits the Site Development Permit application with information supplied by the designer, at the end of the Design Development phase of the design process.

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.

B. SPACE PLANNING STANDARDS

In 1998 The University retained Eva Klein & Associates to provide space planning programming/design standards for the University buildings.

1. University of North Carolina at Chapel Hill Space Planning Standards
2. Offices
3. Office Support
4. Classrooms
5. Space Planning/Equipment Requirements Building Design

C. SPACE PLANNING REQUIREMENTS

1. 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. As a matter of course, the Designer is expected to provide a design that will comply with the current version of the North Carolina State Building Code and with the American with Disabilities Act (ADA). However, the Designer should be aware that the University views compliance with these regulations as a minimum goal. Universal design principles that provides the same access to all is encouraged.

- (1) All new construction shall fully comply with the Americans with Disabilities Act (ADA) of 1990, the ADAAG, (July 1, 1994) and the latest edition of the North Carolina State Accessibility Code.
- (2) To the greatest extent possible, renovation projects shall bring the project area and the accessible route of the facility to full ADAAG and the NCAC compliance.
- (3) In many instances, the Designer is expected to provide accessibility that exceeds the federal and state regulations. These requirements and recommendations are listed below.

The Americans with Disabilities Architectural Guidelines (ADAAG) may be accessed online at <http://www.usdoj.gov/crt/ada/stdspdf.htm>.

The North Carolina State Accessibility Code, may be attained from the North Carolina Office of the State Fire Marshall. <http://www.ncdoi.com/osfm/>.

a) Site Accessibility

(1) Parking, Passenger Loading Zone and Bus Stops

- (a) An Accessible Path of Travel shall be provided from the accessible parking spaces (if provide) to the main building entrances on all projects.
- (b) An Accessible Path of Travel shall be provided from the nearest bus stop to the main building entrances on all projects.
- (c) In existing buildings where the main entrance is technically infeasible to make accessible, the Path of Travel shall be provided to the accessible building entrances. In existing buildings the 20% disproportional threshold would apply.

(2) Path of Travel/Curb Cuts/Ramps



- (a) Exterior walkways should not exceed a slope of 1:20 in the direction of travel. If this can not be achieved because of site topography, then a ramp may be used. Use of ramps should be kept to a minimum.
- (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 should not be used.
- (c) 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 approved handrails.

(3) Signage

- (a) Directional signage shall be provided to the accessible building entrance(s) when it is not apparent where the accessible entrance(s) are located.

b) Building Accessibility

(1) Entrance and Means of Egress

- (a) Main Entrance doors into the building shall have automatic door openers. Where the building has main entrances on different levels, automatic door openers shall be provided at each level.
- (b) The location of activators (push plates) and stub outs for the automatic door openers shall be shown and dimensioned on the drawings. They shall be mounted at 36" above the adjacent grade to the center and shall be 4 1/2" diameter minimum.
- (c) All entrances with door activator shall also have a stub out for a proximity reader.

(2) Doors, Doorways and Door Hardware

- (a) All lever hardware shall have an end return.
- (b) Entry doors for the primary toilet rooms on levels served by main entrances into the building shall have hard wired automatic door openers. All other toilet rooms shall be stubbed out (power supplied to ceiling above and conduit only to future activator locations) for future installation of automatic door openers.
- (c) Doors of common bathrooms in dormitories, (outside of dorm suites), shall have automatic door openers on all floors having designated accessible dorm rooms. All other common bathrooms within dormitories shall be stubbed out for future installation of automatic door openers. Toilet rooms in accessible suites or apartments shall be stubbed out for future installation of automatic door openers.
- (d) The location of activators (push plates) and stub outs for the automatic door openers shall be shown and dimensioned on the drawings. They shall be mounted at 36" above finish floor to the center and shall be 4 1/2" diameter minimum.
- (e) Automatic door openers or stub outs may be required at additional locations and will be determined on a project by project basis not later than the Design Development review.

(3) Toilet Rooms, Bathrooms and Accessories

- (a) Toilet rooms with 10 or less fixtures (water closets and urinals) shall have only one entry door into the toilet room. Do not provide vestibules.



- (b) Toilet rooms with more than 10 fixtures (water closets and urinals) should be designed without doors into the toilet room. If the toilet room entry is off an area where a door is desired (i.e. a waiting, reception or seating area), then only one door into the toilet room shall be provided.
 - (c) Accessible toilet stalls should have a clear floor area within the stall as defined by the NCAC, (a 60" clear diameter circle).
 - (d) The accessible paper towel dispenser shall be adjacent to the accessible lavatories.
- (4) Drinking Fountains
 - (a) Drinking fountains located in along a path of travel should be recessed when possible.
- (5) Elevators and Platform Wheelchair Lifts
 - (a) A grab bar shall be provided on at least one wall of the elevator cab.
- (6) Signage
 - (a) This section reserved.
- (7) Seating: Fixed, built-in and Assembly
 - (a) One hospital bed type table is to be provided for each wheelchair space in assembly seating.

2. Building Service Areas

a) Housekeeping/Janitor Closets

- (1) 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"x36" 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.
- (2) 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, arranged and equipped as shown in [Chapter VI](#), Standard Details & Drawings. Buildings with tile/carpet will have floor buffers, brooms and vacuum cleaners in the housekeeping closet. There should be room for these in each housekeeping closet without putting things in the sink or elsewhere in the building. 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.

Refer to [Chapter VI](#), Section E. Standard Details & Drawings.

This space is for the exclusive use of custodial staff; it must not house plumbing, mechanical or electrical equipment.

(3) Mini-Max Custodial/Storage/Locker Room

- (a) Hot and cold water should be provided.
- (b) Each closet must be equipped with at least four electrical outlets. They will be used to charge batteries for floor equipment and to power radio chargers.



- (c) There should be 12-inch deep shelves on at least two walls in the room for storage of supplies (not over the sink). Each closet should have a closet organizer installed on one wall over from the sink (Rubbermaid) RUB01992, 18".
- (d) There should be a light in the closet with a light cover.
- (e) There should not be water heaters or steam pipes and water pipes and valves that take up floor space. This creates an unsafe condition for housekeeping employees. Additionally, housekeeping supplies and equipment should not be stored where maintenance employees need to enter to work.

(4) Min-Max/Bulk Storage Closet

- (a) Housekeeping Services requires one Min-Max/Bulk Storage closet per new/renovated building. The purpose of the Min-Max/Bulk Storage closet is to store Housekeeping supplies (paper towels, toilet paper, soap, and etc.) for the entire building.
- (b) The Min-Max/Bulk Storage closet should be located on the ground floor or the floor that is on the same level as the loading dock if the building has a loading dock. It should be located as close as possible to the dock or service entrance.
- (c) The room should have double doors. Singlewide doors are not wide enough. Min-Max closets should be built to at least 10 feet long by at least 12 feet wide. For buildings with more than four floors the min-max closet should be larger.
- (d) The room should be equipped with shelves that measure 2 feet wide by 2 feet deep by 2 feet height that cover at least one long wall.
- (e) There should be at least four electrical outlets in the room. They will be used to charge batteries for floor equipment and to power radio chargers.
- (f) There needs to be a 30-inch by 30-inch floor sink in the room if there is not a housekeeping closet on that floor in the building. If there is another closet with a floor sink in it on the same floor there is no need to have a sink in the Min-Max/Bulk Storage.

(5) Corridors

Corridors should be equipped with electrical outlets at least every 40 feet. This will allow for power to run floor maintenance equipment i.e. (buffer/vacuums, and etc.) The outlets should be dedicated so that when equipment is plugged into them they don't cause problems for other building systems.

(6) Stairwells

Housekeeping Services require electric outlets in each stairwell. They should be on the landing on at least every other floor. The outlets are used to power the vacuum cleaners for vacuuming steps.

(7) Water Requirement

There should be hot and cold water in each Housekeeping closet that has a sink.

(8) Toilet Rooms

The NCSBC, Volume 1-C and the ADA provide the minimum requirements and all toilet room designs shall comply with these codes. UNC-CH has additional requirements and recommendation for design of all new and renovated toilet rooms. They are as follows:



(a) Restroom Accessories

- (i) Dispensers Housekeeping Services prefers to use the jumbo paper towels and jumbo toilet tissue in all restrooms. The paper towel dispenser has been approved for ADA access.
- (ii) Toilet Paper dispenser (Georgia Pacific) (formerly Fort James), stock number 58150, Double roll 9 or 10.5 “
- (iii) Paper Towel dispenser (Georgia Pacific) (formerly Fort James), stock number 54338-00
- (iv) Soap Dispenser, (Triad), stock number 9351
- (v) Sanitary Napkin receptacle (Rubbermaid), white, stock number 6140 (ladies Rest rooms only) One should be installed in each ladies rest room stall.
- (vi) All disability stalls in all rest rooms must be equipped with a Bradley model 5402 toilet paper dispenser that uses 2 standard core toilet paper rolls instead of the jumbo roll.
- (vii) All restroom floors must have a floor drain. Additionally, they must have a hose bib with keyed operation.

(b) Toilet Room Entry Doors

- (i) Toilet rooms with 10 or less fixtures (water closets and urinals) shall have only one door from the accessible pathway into the toilet room. This does not exclude toilet partitions doors at each stall. Toilet rooms with more than 10 fixtures (water closets and urinals) should be designed without doors from the accessible pathway into the toilet room. If the toilet room entry is from an area where a door is desired (i.e. a waiting, reception or seating area), then only one door is to be provided.
- (ii) Entry doors for the primary toilet rooms on levels served by main entrances into the building shall have hard wired automatic door openers. All other toilet rooms shall be stubbed out for future installation of automatic door openers.
- (iii) Doors of common bathrooms within dormitories, outside of dorm suites, shall have automatic door openers on all floors having designated accessible dorm rooms. Doors of common bathrooms on all other floors and doors to accessible bathrooms within dorm suites shall be stubbed out for future installation of automatic door openers.
- (iv) The location of push plates and stub outs for the automatic door openers shall be shown on the drawings. Push plates shall be mounted at 36” above finish floor.

(c) Accessible Toilet Stall

Accessible toilet stalls should have a clear floor area as defined by the NCSBC, Volume 1-C within the stall. (5’-0” diameter or equal turning space) and/or 60” clear from the front of the water closet to the opposite wall with the out swinging door located at the side or 48” clear with the out swinging door located at the end. When an in swinging door is used, its swing shall encroach no more than 12” into the clear floor area.

(9) Hazardous Material Storage

A Hazardous materials room to temporarily store chemical and radioactive waste must be designated for all buildings containing research laboratories. This room should be designed in accordance with NFPA 30 for an inside flammable materials storage room to provide for spill containment, classified wiring, automatic sprinklers, fire-rated walls, exhaust



ventilation, etc. The room's size depends on the size of the research building and the nature of anticipated research projects. A floor area of 70 – 100 square feet is typical. Where possible, the hazardous materials room should be located near or accessible to the loading dock.

b) 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 provide locking mailboxes for (A) Campus Mail and (B) U.S. Mail and (C) a locking Incoming Mail box for each department located in the building, with spare boxes for later additions of departments or divisions. All locking boxes shall be keyed to the (D) Campus Mail Service master lock and key system. (E) Mail cabinets shall have signs and numbers, with copy supplied by Facilities Services. (F) The UNC-CH University Mail Service will determine the number of the incoming boxes, according to projected departmental needs of facility. (G) Each buildings mail space, shall be a minimum of 8 ½ ' X 15 ' , which includes space for mailbox sections and wall counters.

(A) The dimension for a Campus Mail receptacle shall be: 16"wide X 15"deep X 30"high, with a flapped opening of 3"X12".

(B) The dimension for a U.S. Mail receptacle shall be identical to a Campus Mail receptacle, Item A.

(C) The dimension for a Incoming Mail receptacle shall be 16" wide X 15" deep X 14 ½" high, with each receptacle independently hinged and lock and clusters of two receptacles hinged on a separate mechanism, to allow mail employees to open fronts of clusters together. An example of this type of unit can be found in the South building basement.

(D) All receptacles shall be secured using locks and keys to be obtained through the Access Controls – Key Shop (126) at 962-0161.

(E) All receptacles shall be labeled according to University Mail Services standards, with signs to be ordered and obtained through the Sign Shop (124) at 962-3762.

(F) & (G) The Manager of University Mail Services or External Operations Supervisor shall be contacted at 962-1139, to determine the number of required boxes for each individual facility and to review plans for proposed mail space for individual projects.

c) Indoor Recycling Bins/Locations

Interior space for recycling collection must be allocated based on where and how much material is generated. There must always be a trash can adjacent to or as part of the indoor recycling site. Office paper, newspaper/magazine, and bottle/can recycling locations should be located on each floor.

All containers shall be located on an accessible path of travel per the ADA and State Building Code. Care should be given to locate containers away from exit doors, elevators, or in areas that may impede movement in the event of an emergency. In accordance with applicable codes, recycling containers should be placed away from fire alarms, extinguishers and automatic door openers. Recycling containers shall not be placed in stairwells.

Whenever possible, departments should share recycling areas. When this is not possible, each department should have its own recycling areas. If there is only one department for the whole



building, there should be a recycling center for office paper, newspaper/magazine, and bottle/can collection on each floor.

In non-public areas, standard OWRR-provided bins are sufficient. See square Toter bins and round Rubbermaid bins information below. In public

areas, recycling cabinets may be used instead of OWRR's standard bins.

[Click here for photos of recycling cabinets installed in various campus buildings.](#)

Also see: [Needs Based on Building Use](#)

General: Indoor recycling must be provided in the following areas:

- (1) work rooms*
- (2) copy rooms*
- (3) break rooms**
- (4) computer labs*
- (5) lounges**
- (6) outside classrooms and auditoriums**
- (7) other areas where people will congregate or generate recyclables**

* Copier, mail and work rooms must have a trash can and two recycling bins (one for office fiber and one for newspapers/magazines).

** Public areas must have a trash can, bottle/can bin, and newspaper/magazine bin. In some situations, office fiber bins are also needed in public areas.

Buildings such as residence halls, dining halls, athletic facilities, theatres, conference centers, shipping and receiving areas, animal quarters, etc. may have special needs. Consult the Office of Waste Reduction and Recycling for assistance with planning space for indoor recycling in these areas.

OWRR will work with designers and building occupants to determine location, the number and type of bins needed.

See [Chapter V](#), Section 02475 and OWRR design guidelines on Space

Planning: Indoor Recycling. For more information on recycling locations: www.fac.unc.edu/OWRRGuidelines

d) Telecommunications Room

The University's Academic Technology and Networks group publishes Telecommunications Design Guidelines that can guide architects and engineers in the spatial and technical requirements for University telecommunications systems. The Guidelines is regularly updated. A current copy of the Guidelines is available at: <http://www.telecom.unc.edu/services/engineering.php>

Every building shall contain a primary telecommunications distribution closet, with minimum dimensions of 6' deep x 10' wide. Unrelated plumbing, mechanical, electrical, or housekeeping equipment shall not be located in this room. Electrical receptacles, lighting and empty conduits shall be provided as described in [Chapter VI](#), Section N. Standard Details & Drawings, "[Communications Closet-Primary Distribution Closet](#)". The room should be located near the



point where the main communication services enter the building, and should be directly accessible from a corridor. Frequently, this room will require dedicated mechanical ventilation.

All administrative, academic, and research buildings should contain one satellite telecommunications distribution closet for every 15,000 sq. ft. of net usable floor space, with at least one such room on every floor above and/or below the floor containing the main communications equipment room. In addition, the cable distance from any communications outlet to the closet shall not exceed 150 feet. These closets shall be vertically stacked near the telephone and communications conduit risers and shall have a minimum dimension of 6' deep x 8' wide. The room shall be directly accessible from a corridor. Unrelated plumbing, mechanical, electrical, or housekeeping equipment shall not be located in this room. Electrical receptacles and lighting shall be provided as described in [Chapter VI](#), Section N. Standard Details & Drawings, [Communications Closet-Satellite Distribution Closet](#).

e) Elevators

(1) Design

The elevator design shall comply with the North Carolina Department of Labor's specification guides for geared traction or hydraulic passenger elevators. These specification guides can be found at <http://www.nclabor.com/elevator/elevator.htm>

An electrical receptacle should be available for housekeeping purposes in the elevator or the corridor on each floor adjacent to the elevator landing.

Elevators and elevator machine room equipment should provide smooth and quiet operation. Sounds and vibrations should be isolated from the building structure. Elevators should be designed to return to the ground (exit) floor upon activation of fire alarms or during a power outage.

Unless the building is a high rise or has special needs for elevator operation during a power outage, elevators should not be used during a power outage. Elevators are typically large and disturbing loads for a generator to handle (especially the newer solid state drives used on generators). Putting an elevator on the emergency generator can double the size of the generator on a small building, and introduce problems in proper generator operation and power quality problems for other loads. For elevators requiring emergency generator as indicated above, each project should consider the pros and cons of putting one or more elevators on emergency power. NC Building Code requires high rises to have at least one elevator on emergency backup for fire fighter's operations.

Except in unusual situations, elevators are not designed for exclusive use as freight elevators. Electrical traction elevators are preferred. The Designer shall coordinate with the Project Manager Program requirements for the quantity and size of freight elevators.

(2) Elevator Equipment rooms

Access to pits and elevator equipment rooms must comply with North Carolina Code for Elevators. Access to elevator equipment rooms is not permitted through housekeeping or other such space. Elevator equipment rooms should not be used for access to roof or other parts of the building. Each elevator pit must have a drain or a sump pump as necessary to remain clear and dry. A float switch should control sump pumps. The sump pump must have an oil sensor shut-off and drain to the sanitary



sewer. Each elevator pit must have a work ladder and a light with a switch easily accessible from the door.

Ventilation and cooling in elevator equipment rooms shall be sufficient to limit the maximum temperature in the space to 90 degrees Fahrenheit. Any exterior air supply intakes should be filtered. Ventilation fans should be sidewall mounted if possible. If a roof-mounted fan is necessary, a permanent ladder should allow access to this fan.

Fluorescent light fixtures shall be mounted in the elevator equipment rooms above, in front of, and behind all control circuit panels. Adequate lighting should be provided for the hoist machine.

A safely accessible ladder and platform shall be provided for any elevator equipment room above roof level. The penthouse, where necessary, shall have a minimum seven-foot ceiling and sufficient ventilation or cooling to limit the maximum temperature in the space to 90 degrees Fahrenheit. Any exterior air supply intakes should be filtered.

(3) Mechanical Considerations

Provide centralized exhaust chases increasing the feasibility for heat reclaim from building exhaust air. Coordinate with the mechanical designer during programming to determine feasibility of heat reclaim as determined by total volume of exhaust air and life cycle cost analysis.

Locate mechanical rooms on the ground floor with access to the exterior.

Provide a telephone/data outlet in each mechanical room.

Provide a lockset on mechanical room doors requiring keyed entry and which automatically lock upon closing. Egress from the mechanical room shall not require unlocking the door.

Size mechanical rooms to provide adequate space for normal maintenance and change-out of components including pulling tubes for converters, hot water generators, and coils in air handling units. Provide adequate means of access for replacement of the largest piece of equipment without removing walls.

f) Classroom Requirements

The Provost's Office, the Classroom Advisory Committee, and the Registrar will determine the program requirements for classrooms, number and type of seats, and level of technology. Equipment will be provided and installed by UNC ATN Client Services but paid for by the project. The project manager will set up a reserve in the project budget using information generated by ATN Client Services.

For phasing requirements, refer to [Chapter II](#), Section B.1. Project Development Phases.

(1) Facilities

(a) Standard Classroom Equipment

- (i) Seminar Room (10 – 20 Seats)
- (ii) LCD projector
- (iii) Slide Projector (optional)



- (iv) Document Camera (optional)
- (v) Network connection at instructor's station
- (vi) Projection screen (manual)
- (vii) Dimmable lights (manual or controlled from touch screen)
- (viii) Room-darkening shades (manual)
- (ix) Mini-blinds

(b) Classroom (20 – 100 seats) or Lecture Hall (over 100 seats)

- (i) LCD projector(s)
- (ii) Slide projector(s)
- (iii) Document camera
- (iv) VCR
- (v) DVD
- (vi) Speakers
- (vii) Network connection at instructor's station
- (viii) Motorized projection screen(s)
- (ix) Dimmable lights (controlled from touch screen)
- (x) Room-darkening shades (motorized)
- (xi) Mini-blinds

The Provost's Office, the Classroom Advisory Committee, and the Registrar will determine the program requirements for classrooms, number and type of seats, and level of technology. Equipment will be provided and installed by UNC ATN Client Services but paid for by the project. The project manager will set up a reserve in the project budget using information generated by ATN Client Services.

For phasing requirements, refer to [Chapter II](#), Section B.1. Project Development Phases.

g) Food Service Facilities, Vending Machines, and Catering Kitchens

The building project team, in conjunction with the building User and Campus Auxiliary Services, should evaluate the need for a food service facility within the scope of the project.

(1) Food Service Facilities are categorized as:

- (a) Health Department Inspected Facility – This type of facility provides food prepared on-site, serving the needs of the campus community. State and local Health Departments review designs for code compliance and make on-site inspections. Campus Auxiliary Services is responsible for the operation of these facilities.
- (b) Non-Inspected Facility – This type of facility provides pre-packaged food products that are prepared off-site and served in sealed containers. The Campus Bookstore is responsible for the operation of these facilities.

(2) Food Vending Equipment

The building occupants and Campus Auxiliary Services should evaluate the need for drink and snack vending machines. Machines should be located in areas that are easily accessible yet not visible from main public spaces. Location of the vending machines should be coordinated with the locations of the recycling containers. See [Chapter V](#), Section 02475 and OWRR design guidelines page on Space Planning: Indoor Recycling. For more information on recycling locations: <http://www.fac.unc.edu/WasteReduction/>



(3) Catering Kitchens:

Catering kitchens should be suitably equipped for the heating and serving of pre-cooked food. Only in those instances where the building is licensed to prepare and serve food, should the kitchen be designed with food preparation equipment. Campus Auxiliary Services should be consulted in the design of all catering kitchens.

Any facilities that will host large events or have catering kitchens should plan to have recycling bins inside for use during functions. In addition, outdoor recycling carts must be available for service and catering personnel to use during or after the event.

h) Architecture

(1) Building Envelope

The building envelope shall be analyzed in terms of sustainability, maintenance, and longevity. Utilize the Office of State Construction Life Cycle Cost Analysis and consult the University Project Manager as to the expected lifespan on the building.

(2) Exterior Materials

The Campus Master Plan notes a variety of exterior building materials that should be used at the University <http://www.fpc.unc.edu/campusmasterplan>

(3) North Carolina Products

When possible, and when doing so is consistent with the desired quality and cost of the project, the Designer will specify materials and equipment manufactured in North Carolina. If not available in North Carolina, the Designer shall attempt to specify materials and equipment within 500 miles of the site.

(4) Standard Stock Items

Designers must base their designs upon standard stock items whenever possible. Where custom-built items are required, the Designer shall clearly state this fact.

(5) Walls

Contextual compatibility among campus buildings is extremely important. Therefore, selecting the predominant exterior materials for new construction is also critical. Brick is the predominant construction material on campus and is an appropriate exterior wall material.

- (a) Limestone or pre-cast concrete trim is encouraged.
- (b) Any variety in brick colors should be subtle.
- (c) Any brick patterns should be subtle.
- (d) There should be no excessive stripping or patterning.
- (e) A mix of bonds (Flemish, running, etc.) should be encouraged.
- (f) Stacked bond should be discouraged.
- (g) "Oversize" brick and brick in unusual colors are not appropriate.
- (h) Limestone, architectural pre-cast concrete and wood are other acceptable building materials.
- (i) Use of granite, slate, limestone, pre-cast concrete, wood and metal as building envelope trim are deemed appropriate. Cast-in-place concrete, metal panel,



“utility” brick and glass block are generally discouraged as materials for exterior walls. Curtain walls may be used at special areas such as a hospital concourse or large public lobbies. Synthetic stucco will not be used as building material.

- (j) Refer to the Campus Master Plan for further details and explanations. <http://www.fpc.unc.edu/CampusMasterPlan/>.

(6) Entry

The main entrance should be proportional to the entire building façade. Consideration should be given to overhead cover and shading devices as part of the entrance design. The primary entrance must accommodate access for the handicapped. Refer to the Campus Master Plan at <http://www.fpc.unc.edu/CampusMasterPlan/>.

Frameless glass doors are not permitted. Hollow metal doors with glass panels are preferred, as they require less maintenance and are more readily secured.

(7) Windows

Acceptable window frames are painted or clad wood frames or metal frames. Frame color should be compatible with the building exterior. Standard module should be vertical, organized with the façade tripartite system of base, middle and top. Uses of square, arch, round and other special shaped windows are encouraged in attic and building base. Tops of the windows should be a lintel or an arch. Head and sill of windows should be articulated with the head being a jack arch or limestone/pre-cast concrete. Windows should be furnished with clear glass. Colored glass should use subtle or soft colors. No reflective glass is permitted. Exceptions may be considered for certain situations. Use double-glazed insulating windows in conditioned spaces. The orientation and solar gain potential of windows is always an important consideration. However, mirror glass is discouraged. When possible windows should be designed or selected in such a manner that it can be washed on both sides from inside the building. When this is impossible, safety belt anchors should be placed on the outside of all windows. Guardrails should be installed on windows with sills less than two feet from the floor, and where appropriate, operable windows are encouraged. Windows on residence halls and other buildings may require security screens to discourage unauthorized entry.

(8) Roof

Slate shingles are preferred as the roofing material. High quality asphalt shingles, tile and painted or natural standing seam metal are other acceptable roofing materials. Large areas of flat roof are not acceptable, especially where the roof surface is visible from the ground or from nearby buildings. Avoid installing HVAC or other equipment on building roofs. Provide a partial roof, parapet or penthouse when equipment must be installed on the roof. All building roofs are to be provided with tie-off anchors (mechanically attached to the buildings) to meet OSHA standards.

- (a) Permanent roof top fall protection must be designed and installed as a part of each construction project for new buildings and every re-roofing project.
- (b) The design and construction of anchorage points for fall arrest systems must be inspected and certified by a PE.
- (c) The certified fall arrest anchorage points must be marked on the as-built drawings with the PE (professional engineer) stamp.
- (d) The anchorage points must be permanently tagged on the roof top equipment with the a) load rating, b) name of PE, c) date of inspection, and d) credential of the professional engineer performing the certification.



- (e) Safe roof access should be provided via permanent ladders or stair access to all roof levels. Ladders inside closets are not acceptable.
- (f) Consider reflective or vegetated surface to minimize heat islands.
- (g) The design dead load of roof systems shall include an additional 10psf to accommodate for future load increases (such as re-roofing).

(9) Sample Panels

A sample panel composed of all major exterior building material including roof, wall, window and trim material should be developed as part of the design development review.

For structures removed from the heart of main campus, the Designer may consider other exterior materials. However, the Designer must have compelling reasons for using other materials and must use other means to integrate these structures into the fabric of the campus.

The samples panels must be reviewed and approved by members of the University's Building and Grounds Committee.

(10) Interiors

(a) Interior Finishes

The University of North Carolina at Chapel Hill does not have any standardized system of interior finishes for its buildings. Instead, the University seeks to guide the Designer in the selection of the type and durability of finishes, dependent upon the room use, and leave the final selection to the Designer, with the approval of the building's users and Facilities Planning.

The University's Project Manager will coordinate the review and approval of interior issues. The University requires a review period for all interior finish selections. The Designer shall incorporate all revisions into the construction documents. In general, custom colors and interior finish materials are discouraged due to the difficulty in replacing them during maintenance and repair. Exceptions to this rule will be considered on an individual project basis. Use of low-volatility, organic-content paints, finishes, and carpeting is strongly encouraged.

State Law SB58, Chapter 256 requires that construction of all state facilities fully consider the use of recycled materials "whenever economically practical". The Designer shall propose finish products that have recycled content such as floor tile, ceiling tile, paving materials, and carpet. Consider also the recyclability of the product at the end of its life.

(b) Flooring

When selecting or recommending flooring materials, the Designer should consider safety, ease of maintenance and future repairs or replacement. Painted or rough brick floors are not permitted.

- (i) Sealed Concrete – acceptable



- (ii) Terrazzo – acceptable-(Housekeeping Services request that lobby and corridor floors not be made of black or dark colored epoxy Terrazzo.
- (iii) Carpet – acceptable; must be recyclable.

- (a) All carpet is part of the construction contract and is specified by the Designer. The Designer should minimize the number of carpet types and colors, and should consider attic stock, maintenance and replacement.
- (b) Carpet Specifications

Only contract, commercial-grade carpet is permitted. Cut pile broadloom carpet is permitted in special light traffic areas only. Solid color cut pile is not permitted. Custom colors are discouraged. Use resilient cove base, rolled goods without preformed corners in carpet areas. Where wheelchairs or cart traffic is anticipated, dense, loop pile carpet should be used. Broadloom carpet must be installed with a direct glue-down installation. Carpet padding is permitted only on a case-by-case basis for specialty areas. Five percent attic stock of the same dye lot is required for each carpet types specified.

Encourage carpet tiles with random designs to minimize waste. Specify that carpets, backing, and adhesives should conform to VOC standards developed in EPA protocols for RTP campus. Refer to commercial interiors performance specifications developed by the US Green Building Council.

- (iv) Vinyl composition tile – acceptable; must be specified for high-speed
- (v) Scrubbers. Use commercial-grade tile with “through-pattern” vinyl chip

Constructions for all break rooms and housekeeping rooms.

- (vi) Ceramic Tile – acceptable
- (vii) Use ceramic tile on shower floor. Use ceramic tile or terrazzo on restroom floors. Custom-colored ceramic tile is not permitted. All ceramic tile floors shall have a ceramic tile base with an acid-resistant grout.
- (viii) Quarry Tile – acceptable
- (ix) Floor Mats – acceptable
- (x) Provide recessed, lattice-type floor walk-off mats inside every building entrance. These mats shall be removable for cleaning. Surface mats, including coco-mats, are not permitted.
- (xi) Sheet Vinyl flooring – acceptable
- (xii) Use commercial-grade, acid-resistant, integral base sheet vinyl flooring in laboratory and health care areas.
- (xiii) All color selections shall be from a manufacturer’s standard palette.
- (xiv) Rubber Base

- (a) No preformed corners

- (xv) Veneer plywood – acceptable



All color selections shall be from a manufacturer's standard palette.

(c) Wall Finishes

(i) Walls

- (a) Gypsum wallboard – acceptable
- (b) Concrete masonry unit – acceptable
- (c) Brick – acceptable
- (d) Gypsum plaster – acceptable.
- (e) Wood paneling – acceptable

All wood paneling should be Class "A" fire-rated.

(ii) Exterior Painting

The color palette on the exterior of University buildings is derived from the use of local red clay brick and light-colored stone, stucco, or trim. On historic buildings, paint color should match mortar color. The University must approve all exterior building colors.

Refer to [Chapter II](#), Section C, "Design Reviews".

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 and green.

The University may require that exterior equipment such as air compressors, mechanical equipment and the like be painted black and green, or another color appropriate to the situation.

Refer to [Chapter V](#), Division 9 "Finishes" for information regarding Color Coding and Identification standards for the University.

(iii) Interior Paint

The University standard wall finish is latex enamel eggshell-finish paint. Wallpaper or vinyl wall covering is not permitted. Fabric wall covering is permitted in special areas only. Paint – required to be low VOC (conform to EPA protocols for RTP campus) and applied prior to installing carpet and furnishings. The flame spread ratings of walls and ceilings shall comply with NC Building Code and NFPA 101 – Life Safety Code.

(d) Ceiling

The flame spread ratings of walls and ceilings shall comply with NC Building Code and NFPA 101 – Life Safety Code.

- (i) Gypsum wallboard – acceptable
- (ii) Acoustical ceiling tile – acceptable; 24" x 24" tiles preferred.
- (iii) All selections shall be from a manufacturer's standard palette.



(e) Window Covering

The Designer shall specify window blinds. The general contractor shall purchase and install them as part of the general contract. The University standard window covering is 1-inch horizontal mini-blinds of a quality equal to Levolor, Bali, or Hunter Douglas. The standard color is white. Special building requirements or design context may allow a deviation from this standard.

(f) Fixtures, Furniture and Equipment (FF&E)

(i) General

Prior to completion of the Construction Documents, the Facilities Planning Office in consultation with the project User will determine on a project-by-project basis which of two methods will be used for furniture and equipment procurement services. The two methods are:

- (a) Amendment to Designer's contract to provide additional services.
- (b) Arrange with UNC Architectural & Engineering Services Department to provide services.

Items included in Designer's basic services specified as part of the construction documents, purchased and installed by the General Contractor:

- (a) Room Signage
- (b) Window Blinds including blackout blinds if required
- (c) Appliances and fixed equipment.
- (d) Attached furniture, i.e. auditorium seating, classroom furniture attached to the building.
- (e) Finishes
- (f) Millwork and built-ins
- (g) Layout of electrical and telecommunication outlets

(ii) Responsibilities included in Furniture and Movable Equipment procurement services:

(a) Furniture

- (i) Confirm requirements for new furniture and/or reusing existing.
- (ii) Survey of existing furniture
- (iii) Selection of new furniture and upholstery
- (iv) Coordinate selection with architectural interior finishes.
- (v) Prepare detailed Furniture budget.
- (vi) Prepare specifications and/or purchase orders. Rely on Commercial Interiors Performance Specifications developed by the US Greed Building Council or document rationale for recruiting an alternative.
- (vii) Coordinate purchasing process.
- (viii) Supervise installation
- (ix) Conduct pre-installation conference



- (x) Track delivery schedule and coordinate with architect, UNC Construction Manager, and User's move-in.
- (xi) Provide on-site inspection.
- (xii) Conduct and prepare Furniture Punch List
- (xiii) Punch list follow up.
- (xiv) Prepare final statement at job completion.

(b) Movable Equipment

All moveable equipment is purchased and installed by the University.

(c) Additional Signage

Design, prepare specifications and budget for any additional signage, i.e. donor plaques. Coordinate purchase process and supervise installation. Coordination of furniture with architectural finishes

Every effort is made to coordinate furniture issues with the Designer during all phases of the project, especially during the Design Development and Construction Document phases. The Designer shall provide final floor plans and sample boards of architectural finishes to the University for use in selection of furniture.

(g) Sustainability Initiative

Product Specifications shall be performance-based, drawing on US Green Building Council Guidelines. General principles include resource efficiency and waste minimization. Qualities sought include durability, low-embodied energy, minimum off-gassing of volatile organic compounds, made from recycled content and recyclable, manufactured from rapidly renewable materials, and produced within 500 miles of product site. Environmentally preferable manufacturing practices and non-toxic components are additional considerations.

(h) Interior Signage

Information to be inserted at a later date.

i) Building Systems

Scope: 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 Chapter III, Section A.6 "Site Utilities" for information on design requirements and the specific line of demarcation for each utility.

(1) Plumbing Systems

Refer to [Chapter V](#) for more information on plumbing requirements.

(2) Mechanical Systems



UNC-Chapel Hill's standard HVAC system is a fully ducted, centralized, variable volume custom air handling unit serving VAV terminal units with hot water reheat coils. HVAC systems should be of heavy commercial/industrial quality construction. Design the system to provide a reliable service life of at least 30 years. It should be conservatively sized such that it can maintain proper temperature and humidity levels without having to operate at the top end of its design envelope. It must be easily maintainable with adequate service areas in and around the components. The equipment shall be outfitted with the necessary sensors and components such that it can self-monitor and provide the necessary information for easy diagnosis of problems. The systems must be flexible enough to accommodate space renovations that will occur during its life. The systems should strive to centralize and locate points of routine maintenance such that building downtime, occupant interruption, and maintenance time is minimized.

Recirculation of air from break rooms, mechanical rooms and print/copy rooms is not permitted.

Heat recovery methods shall be utilized unless proven to be not cost effective by a life cycle cost analysis. Careful coordination with the Architect during schematic design is necessary to provide chases to combine exhaust systems which aid in the incorporation of heat recovery systems.

Design the system to provide positive pressurization to the building, minimizing infiltration. The system shall be fully ducted on both the supply and return side. Ductwork shall be externally insulated metal ductwork. Duct liner or exposed insulation anywhere in the system is not permitted. The use of non-centralized fan powered devices such as fan powered terminal units and fan coil units are prohibited in occupied spaces.

The University encourages innovative design, but deviation from these standards must be approved by the University.

(a) HVAC Zoning:

The designer should maximize HVAC zoning, with a zone considered to be the area covered by one terminal unit, to allow flexibility to individual occupants. In general, HVAC zones should not exceed 700 square feet.

Refer to Chapter II for submittal requirements for HVAC zoning plans. The designer should note this submittal requirement is for UNC review and the HVAC zoning plan does not necessarily need to be included in the final construction drawings.

(b) General Indoor Design Conditions:

- (i) Indoor Summer Conditions: 75 degF, 50% RH max.
- (ii) Indoor Winter Conditions: 70degF, 30% RH min.
- (iii) Mechanical Room Conditions: 50-80degF, 50% RH max.

(c) Additional Design Requirements:

- (i) Mechanical Rooms. Every mechanical room shall have a minimum of one hose bibb.
- (ii) The use of discontinued equipment is not permitted.
- (iii) Air handling equipment including air handling units, exhaust fans, and terminal units shall be shown to scale on the floor plans. HVAC



- plans (ductwork) at the Construction Document phase (or Later) shall be shown as “double lined” unless duct diameters are less than 10”.
- (iv) Piping larger than 2” dia., shown in mechanical rooms, shall be shown double lined to reflect the insulated diameter of the pipe.
 - (v) Indicate, on the plans, the manufacturer’s recommended maintenance clearances for mechanical equipment such as heat exchangers, air handlers, pumps, fans, terminal units, condensing units, etc. This should be indicated with a light, dashed line.
 - (vi) When equipment using refrigerants is to be installed, the designer shall specify the use of HFC refrigerants in lieu of HCFC refrigerants, where available.
 - (vii) Design HVAC systems which provide air change effectiveness greater than or equal to 0.9, as calculated by ASHRAE 129-1997.
 - (viii) Humidification is generally required to maintain minimum relative humidity levels of 30%.

(d) Maintenance Access:

Designers are to indicate, on the plans, minimum clear maintenance access for all pieces of major equipment including air handlers, terminal units, heat exchangers, boilers, chillers, air compressors, pumps, motors, control valves (greater than 3”), etc. The designer should generally provide the manufacturer’s recommended clearances. Specific requirements which follow may exceed manufacturer’s recommendations.

- (i) Air Handlers: 36 inches minimum access for fan compartments with motors 10 hp and larger. Also provide coil pull access for the depth of the coil plus 18 inches and the width of the coil plus 30 inches on both sides.
- (ii) Provide a means and a pathway for replacing the entire air handler without major demolition including removing exterior walls, roofs, etc.
- (iii) Boilers: Provide 24 inches on all sides except the burner, which should have 36 inches minimum.
- (iv) Control valves: For valves 3 inches and larger, provide access above the assembly of the assembly height plus 12 inches. Install ALL control valves in the vertical position, unless otherwise required by the manufacturer.
- (v) Heat Exchangers: Provide tube pull plus 12” on shell and tube type exchangers.

The designer should also be diligent with oversight of coordination in the field to prevent reduction of access (from conduit, piping, etc) for equipment mounted overhead.

(e) Fire Protection

Sprinkler System (Also refer to [Chapter IV](#), B.2. “Fire Alarm System”)

If the building has a sprinkler system or standpipe a PIV must be provided. The designer shall determine the need for a fire pump prior to design development stage.

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.



Specify that the schedule of fire protection valves is located adjacent to the main fire alarm control panel for the building.

Fire Alarm System (Also refer to [Chapter IV](#), B.2. “Fire Alarm System”)

(3) Electrical

(a) Building Service and Loads

- (i) Building service and distribution should be sized for building demand with reasonable space for future growth, based on anticipated demand load growth of building. Contact Electrical Distribution for existing demand load on buildings being renovated and for typical demand on similar campus buildings, where a new building is being constructed.
- (ii) Sub-panels shall be located as close as feasible to load served. The number of circuits requiring oversized wire to compensate for voltage drop shall be minimal. ASHRAE 90.1 requirements for maximum 3% voltage drop on branch circuits shall be complied with. Branch circuits from 120/208 panels shall not require wire size increase greater than no. 10 for 20 amp circuits. The majority of homeruns for 20 amp, 120/208 volt circuits shall not exceed 75 feet.
- (iii) Providing submetering on the main distribution breakers in the main switchboard shall be considered for future energy analysis of the building of different loads.
- (iv) Panels shall only feed circuits on the floor where they are located.
- (v) Unless specifically approved and indicated in plans, specifications shall indicate that conduit shall not be run in slab.
- (vi) The use and location of flush panels shall be approved by the Project Manager and building user. Where approved, a minimum of four spare conduit stubbed above ceiling for future use shall be provided.
- (vii) Provide 480 V, 3-phase for large HVAC loads and pumps. Indicate HP rating for all HVAC loads in the electrical drawings.
- (viii) Provide sufficient duplex convenience outlets in mechanical rooms to enable maintenance to plug in drop cord trouble lights, operate small tools, drills, etc. See housekeeping and telecom guidelines for receptacles required in corridors, housekeeping closets and telecom rooms.
- (ix) In open office spaces, where systems furniture is not included in drawings, note on drawings for contractor to coordinate with the furniture contractor the exact locations of furniture feeds for receptacle and telecommunications outlets prior to rough-in.
- (x) Minimize over sizing of any generator for starting load by using stepped loading and considering controls with mechanical consultants that reduce inrush on large motors and pumps. Generators shall be sized for running load between 50-75 percent. Specify generator features that provide reliable operation when supplying non-linear loads. Specify loads put on generator with lowest available harmonics. Designer shall confirm any existing or specified elevator added to the generator will not cause problems with proper generator operation. A generator load table with both starting and running demand shall be included in the CD drawings.

(b) 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 UNC's in-house designers familiar with the Diebold system 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 division of owner/contractor work 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 shall 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) Emergency Generators

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 as means of egress, 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_x, hydrocarbons, particulates, CO and SO_x. Diesel exhaust is considered a respiratory irritant and a suspect carcinogen. In the near future, tightening of air emission regulations are expected for stationary diesel engines as they are for on-road diesel engines.

See Section C.1. "Emergency Generator Guidelines" in [Chapter IV](#), for UNC requirements for generator emissions.

(iii) Electrical Closets

The size and locations of electrical closets for electrical distribution and security systems shall be determined in the SD submittal. Where building does not allow flush panels in corridors, electrical closets shall provide space for at least one future lighting and appliance sub-panel. Plans shall



identify floor space for future panel. The main electrical room shall be located on the building perimeter.



D. HAZARDOUS MATERIALS

The University's Health and Safety Office conducts surveys and maintains records describing the extent of asbestos in campus buildings. Asbestos-containing materials should be addressed in all renovation projects. The Designer must assess existing conditions and recommend corrective action to the University and the State Construction Office.

1. Abatement

a) Lead-Based Paint Removal

The University's Environmental Health & Safety office must review all projects involving paint removal so that paint may be tested for lead content. Where lead-based paint abatement is required, contractors must contain all lead within the work area so that it does not disperse to adjacent areas or outside. Contractors hired to remove lead-based paint from University buildings shall have documented lead hazard abatement training and shall submit a written abatement plan for review and approval by the UNC-CH, Environment Health and Safety Office.

Refer to [Chapter IV](#), Section B.4. "Lead Based Paint Management" for information on means & methods.

b) Asbestos

The State Construction Office policy is as follows: Remove all asbestos-containing materials that are disturbed during renovation. If asbestos-containing materials are not disturbed and are in good condition, leave them in place. Perform all demolition or renovation work that involves the removal or disturbance of asbestos-containing fireproofing, finish material, insulation or other asbestos-containing material in strict accordance with the Division of State Construction Specifications for Asbestos Abatement. Perform all demolition or renovation work described above with the approval of the UNC-CH, Environment Health and Safety Office. Verify that your asbestos removal contractor is on the Division of State Construction's latest approved list.

Refer to [Chapter IV](#), Section B.1. "Asbestos Containing Building Materials" for information on means & methods.

c) Asbestos Statement

The Designer responsible for the construction project must sign a statement verifying that no asbestos-containing building material (ACBM) was specified as a building material in any construction document the Designer prepared for the building, or, to the best of his or her knowledge, no ACBM was used as a building materials specified for use in the building. The Designer shall file one copy of this statement at the UNC-CH, Environment Health and Safety Office, 212 Finley Golf Course Road, CB#1650, Chapel Hill, NC 27514.

d) Mold

Refer to [Chapter IV](#), Section B.5. "Moisture and Mold Growth Problems" for information on means & methods.

2. Soils

a) 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.

b) Termite Control

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

3. Dangerous Chemicals, Liquids, and Gases

The Designer must submit project floor plans and storage arrangement of chemicals, flammable liquids, and gases to the UNC-CH, Environment Health and Safety Office for review and approval. This office's web site, which contains downloadable form, can be accessed at <http://ehs.unc.edu/index.htm>

4. Radiation Sources

The Designer must submit project floor plans and equipment arrangement of all radiation sources to the Radiation Safety Office, UNC-CH, Environment Health and Safety Office for review and approval. The Radiation Safety Officer shall submit safety recommendations to the NC Radiation Protection Section for approval as required. See Web address. <http://ehs.unc.edu/index.shtml>

E. CONSTRUCTION AND DEMOLITION WASTE

Proper waste management and waste avoidance is to be considered in decisions made during all stages of the capital project planning and construction process. Those involved with the design and construction of buildings on campus are to have the knowledge and resources needed to avoid waste and manage the resulting waste in a manner that allows for the least environmental impact.

1. Construction Waste Management Hierarchy

a) Building Materials and Components

- (1) Reuse in project
- (2) Reuse on campus
- (3) Recycle (grinding wood for mulch, metal shelves recycled)
- (4) Disposal (in accordance with state regulations)

b) Fixtures, Furniture and Equipment

- (1) Reuse by department
- (2) Reuse on campus
- (3) Sell through Surplus (on-site if appropriate)
- (4) Disposal in accordance with state regulations

A construction and demolition waste plan is required for all projects. Contractors are required to develop their waste management plan jointly with the University Office of Waste Reduction and Recycling. OWRR can direct contractors to local markets for recyclable materials. The Orange County Regulated Recyclable Materials Ordinance bans cardboard, metals, clean wood waste, and pallets from county landfills. Waste haulers must obtain a license from the Orange County Solid Waste Office.

c) Required Specifications

The Designer will include the following specifications dealing with Construction and Demolition Waste Management in all projects: 01060 Regulatory Requirements, 01505 Construction Waste Management, and 02070 Selective Demolition. Resources and more information are available in



[Chapter V](#) and on the Construction and Demolition Waste Management section of the OWRR design guideline website: <http://www.fac.unc.edu/OWRRGuidelines>

2. Design Requirements

a) Building Material Assessment and Salvage:

This section refers to the building components such as slate roofing, brick pavers, stone, marble bathroom partitions, doors, windows, architectural elements.

Building Material Walkthrough and Inventory of Valuable & Reusable Materials: To identify existing materials that can be reused in the project, the designer (with UNC Design Manager, OWRR and customer) perform an initial walkthrough of the building in the schematic design phase. The project creates an initial inventory of valuable and reusable materials. They evaluate the reuse of these materials back into the project. The inventory of materials to be reused in the project, salvaged for use in other projects, or to be recycled is to be included in Specification 01505 (see [Chapter V](#) or the [OWRR Guideline website](#) for more information.)

(1) Reuse in Project:

For materials to be reused in the project, the Designer will create a detailed plan for removal, refurbishment, storage, and reinstallation of said materials to be included in Specification 02070.

(2) Reuse in Other Projects:

Information about any valuable materials not being reused (i.e. slate roofing) should be shared with other UNC Design Managers and Building Services Supervisors. For materials to be reused in other projects on campus, the UNC Design Managers or Building Services Supervisors will work together to create a salvage plan.

(3) Recycle and Outside Salvage:

The designers should use the remaining inventory of materials to create a list of project specific materials required and suggested to be recycled. The purpose of this list is to assist the Contractor in the creation of a Solid Waste Management Plan. This list should be developed in coordination with OWRR and included in Specification 01505, Section C, Draft Solid Waste Management Plan.

(4) Disposal:

Disposal is in accordance with state and local regulations. See Specification 01060 for more information.

3. Fixtures, Furniture and Equipment Salvage:

This refers to bulletin boards, clocks, pencil sharpeners, desks, chairs, lab equipment, kitchen equipment, audio visual equipment, capital assets, etc. Making sure that everything in the building is removed from the building and relocated or properly disposed of is very important. For this to happen smoothly and efficiently, communication and coordination between the Designer, the owning department, the move coordinator, the UNC design and construction managers, Surplus Property, the movers, and OWRR is required.

a) Fixtures, Furniture and Equipment Walkthrough and Inventory: The Designer (with the help of UNC Design Manager) organizes a walkthrough of building with maintenance shops, Surplus,



and OWRR during the Design Development phase to provide adequate time for prioritizing and planning salvage. The purpose of this walkthrough is to evaluate a list of fixtures, furniture and equipment to be managed in accordance with the FF&E salvage hierarchy: reuse by the department, reuse on campus, sell through surplus (on-site, if appropriate) and disposal in accordance with state regulations.

(1) Salvage List:

A list is generated detailing items to be salvaged and who will be responsible for removing, transporting, and storing said items. This list is to be distributed to the UNC Design Manager, shops, Surplus, OWRR, and department representatives.

(2) Surplus Property:

An inventory of any moveable furniture and equipment not being reused needs to be provided to Surplus. Options for handling excess furniture may include:

- (a) transfer to other departments (Business Managers may be contacted and notified of available equipment)
- (b) sell onsite using a Surplus framework, or
- (c) transport to the UNC Surplus Warehouse to be sold

(3) Departmental Responsibilities:

It is the owning department's responsible to make sure that the proper asset management and surplus property forms have been completed. The owning department must also arrange for the transportation of any surplus moveable furniture and equipment to the surplus warehouse. For more guidance, please refer to the UNC-Chapel Hill Design Guidelines Chapter IV: Moving Procedures for Bond Projects.

(4) Shop Follow Up:

The shops will report back to the UNC Design Manager and OWRR when they have completed their salvage. This work will take place before the Contractor takes possession of the building, if possible. Any other arrangement must be detailed on the plans.

b) Cost Estimate:

The Designer will also, as part of their cost estimate, break out the cost and benefit of any salvage and reuse compared to purchasing new building materials or fixtures, furniture and equipment. This will be used to prioritize salvage and reuse options, and should be completed during the Design Development phase.

c) Scheduling:

Time for salvage and moving furniture must be considered when creating the project schedule. It is important to think about the appropriate condition of a building at the time of transfer to the Contractor. Asbestos abatement requires that all furniture and trash be removed prior to beginning work.

d) Construction Documents:

Any salvage involving the Contractor is to be clearly designated on the Construction Document set of plans. As appropriate, any equipment or fixtures of interest that will be left as part of the project



should be included in Section 01505 to assist the contractor with the preparation of a solid waste management plan. They may be included in the project specific salvage and recycling requirements or in the list optional materials for which salvage and recycling options are to be evaluated by the contractor. All moveable furniture and equipment should be removed prior to the contractor taking possession of the building.

4. Construction Requirements

a) Meetings

(1) Pre-Bid:

OWRR must be placed on the pre-bid meeting agenda to discuss regulatory requirements, the required solid waste management plan, and distribute resource lists to the bidders.

(2) Pre-Construction:

OWRR must be placed on the pre-construction meeting agenda to review the above topics and get the contact info for the project contact.

(3) Solid Waste Management Planning Meeting:

Prior to the creation of the Final Solid Waste Management Plan, a meeting is needed to review the Draft Plan and discuss monthly reporting requirements. This meeting is to include the Contractor, the UNC Construction Manager, and OWRR's Construction and Demolition Waste Specialist. Subcontractors may also be included in this meeting or subsequent follow up meetings, as necessary.

(4) Progress and Follow Up:

Throughout the construction process and prior to project completion, OWRR, the Construction Manager, or the Contractor may request periodic meetings to discuss progress or difficulties encountered with the development, implementation or reporting of plan requirements.

b) Planning and Implementation:

(1) Draft Plan: The Contractor is required to submit a Draft Solid Waste Management Plan (Specification 01505) five days from Notice to Proceed OR prior to removal of ANY waste from job site, whichever occurs first. The draft should be completed and submitted electronically. To expedite the plan review, it is to be submitted simultaneously to the Designer and OWRR.

(2) Final Plan: Once OWRR has communicated requested changes, the Contractor has five business days to submit a Final Solid Waste Management Plan (Specification 01505). Any deviance from the final SWMP must be approved by OWRR.

c) Documentation:

(1) Monthly Solid Waste Management Plan Reporting:

In accordance with Specification 01505, each month the Contractor must submit documentation (weight tickets, manifests, etc.) of the disposal, recycling, reuse, and salvage of all materials and a summary with each Payment Application. Failure to do so may delay payment. This submittal must be in an OWRR approved format and the summary must be filled out electronically.



(2) Selective Demolition Reporting:

In accordance with Specification 02070, items or materials identified during the design process for salvage or reuse must be identified on the plans and in construction documents.

Also, the University, as a State institution, is accountable for controlled property and equipment including electrical, mechanical, and plumbing equipment. The Contractor shall deliver any surplus equipment to the Surplus Property Warehouse.

(3) Project Close-Out Reporting:

- (a) At the completion of the project, the design team is to provide OWRR and the UNC Construction Manager with a summary of recycling, reuse and salvage activities for the project. This is to include, but is not limited to:
- (b) quantities landfilled, recycled, reused, and salvaged;
- (c) a break down of the types of materials recycled, reused and salvaged; the percent of total waste of each of the categories listed;
- (d) the destinations of these materials;
- (e) the economic impact of these activities on the project; and
- (f) any success stories or challenges incurred.



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

DEPARTMENT OF FACILITIES PLANNING & CONSTRUCTION