

These guidelines are updated periodically. Users of the guidelines are encouraged to check this site as needed to be sure of having the most current edition. Comments and suggestions concerning improvements to this section of the guidelines may be submitted to: m\_takacs@uncg.edu.

## **01001. GENERAL INFORMATION**

Updated: July 31, 2015

Consideration shall be given to the inclusion of unisex bathrooms in the design of any new construction or major renovation in buildings.

## **01010. PROJECT ADMINISTRATION**

### **1. UNCG ORGANIZATIONAL SUMMARY**

The Designer's contract is with The University of North Carolina at Greensboro (UNCG), an agency of the State of North Carolina. The University department that Designers work with directly is the Facilities Design and Construction (FDC) Department, which manages the design and construction phases of projects. Any involvement with other University departments will be conducted through the Facilities Design and Construction Department.

### **2. STATE REQUIREMENTS**

All design work shall comply with the procedures outlined in the North Carolina State Construction Manual (The Blue Book) prepared by the North Carolina Department of Administration's State Construction Office. Designers should familiarize themselves with the State Construction Office policies, guidelines, and other information. The intent of the UNCG Design & Construction Guidelines is to help Designers understand the particular needs and desires of the University and not duplicate or supersede State Construction Office requirements. There are many state agencies that have plan review authority, and these are explained in the North Carolina State Construction Manual.

- 2.1. **Building Codes:** References to codes or standards in these guidelines always mean the most recent version of that code or standard. The facility shall comply with the North Carolina Building Code. The Designer shall identify and reconcile disparities between state and local code jurisdictions. Changes in the work during construction resulting in non-compliance shall be the financial responsibility of the Designer to correct.
- 2.2. **OSHA Compliance:** The Designer shall be familiar with and implement the requirements of the Federal, Occupational Safety and Health Act, and Occupational Safety and Health Act of North Carolina, administered by the NC

Department of Labor. These standards provide safeguards for the safety and health of all University employees and students.

- 2.3. Sales Tax Reporting: State law requires UNCG to report sales tax; therefore the following shall be included in a project's specifications:

With each Application for Payment submitted, Contractors must provide a statement of materials purchased for and/or used in the University project. Included should be the purchase date, type of property, University project name, North Carolina County of purchase, cost of property and county sales and use tax paid. Forms should include the period of time covered and should be signed and dated. You may use the form entitled "UNCG Contractor Statement of Property Purchased" or a comparable one so long as all information listed above is provided. This form is available for download from the "Resources" section of the FDC website.

Only those building materials, supplies, fixtures and equipment which actually become part of the building or structure are to be included on this form. The statement must also include the cost of any tangible personal property withdrawn from the Contractor's warehouse stock and the amount of county sales or use tax paid thereon by the Contractor. Similar statements by subcontractors must be obtained by the General Contractor and furnished to the University. In the event that several purchases are made from the same vendor, the certified statement must indicate invoice numbers. This statement of property and county tax paid is required by General Statute 105-164.14 (e).

The statement **SHOULD NOT INCLUDE** tax paid on supplies, tools and equipment used to perform contracts.

If no taxable materials have been used during the period, submit a form stating "No Taxable Materials This Period". Give all other information regarding project name and period covered and sign and date the form. This will let us know that the form has not simply been omitted.

- 2.4. For construction contracts funded in whole or in part with federal resources and exceeding \$2000, subcontracts must contain the clause: "no laborer or mechanic employed directly on the site of the work shall receive less than the prevailing wage rates as determined by the Secretary of Labor." The Project Manager from UNCG will be able to tell whether federal funds are being used.

### 3. UNIVERSITY AND DESIGNER

- 3.1. Designer's Representative: The Designer shall designate a Project Manager for all

formal communications with the University and other agencies throughout the design and construction phases of the project.

- 3.2. **Owner's Representative:** The University will identify the Design Project Manager who will be the University's representative throughout the programming and design phases of the project. During these phases all communications shall be directed to this person and the Designer shall accept direction only from this person. It is the Owner representative's responsibility to develop consensus and to resolve disparate input within the University.

During the bidding phase both the Design Project Manager and the Construction Project Manager will have responsibilities with the project. Both will be represented at the Pre-bid Conference and the Bid Opening.

After opening bids, when it is determined that the project is within budget, the University's Construction Project Manager will be the University's contact person for the remainder of the project. All direction and communication from the University during the construction phase shall be through the Construction Project Manager only.

- 3.3. **Other University Departments with Project Involvement:** There are other departments within the University from whom involvement may be required during the design and construction of the project. It is the responsibility of the Project Managers identified above to orchestrate the involvement of any other groups.
- 3.4. **Program Statement:** For large or complex projects, a program statement is prepared by the Facilities Design and Construction Department in cooperation with other University departments and, perhaps, with the Designer. It is the Designer's responsibility to incorporate all aspects of the program statement into the project. Therefore, it is essential at the beginning of design, that the Designer request and obtain clarification from the University regarding any question about the program statement.
- 3.5. **Project Budget:** There is a fixed budget for capital improvement projects which will be reflected in the Owner/Designer contract. The University believes the project is adequately budgeted for the scope of work and the Designer shall verify this before proceeding with design. If the Designer believes the budget is inadequate he shall advise the University in writing of the extent to which the scope must be reduced in order to design a quality, cost effective project for the available funds.
- 3.6. **Project Schedule:** In preparation for the Owner/Designer Contract negotiations, a design phase kickoff meeting will be scheduled by the Design Project Manager. One of the agenda items for this meeting will be review of the University's anticipated project schedule. The project schedule will include time periods required for each element in the design process including the start date, reviews,

approvals, bidding, award of construction contracts, notice to proceed, construction duration, construction completion, and final inspection. Once agreed to by all parties, the Designer must adhere to the schedule. The University has a project tracking process and the Designer may be asked to provide a brief, monthly status report on work accomplished, and indicate any change to the original schedule.

### **01100. ALTERNATES**

A limited number of alternates may be used as a means of insuring base bids within the available construction funds. Additive alternates are preferred to deductive alternates.

Care must be exercised to coordinate Plumbing, HVAC, Electrical and General Contract alternates. Alternates contingent upon one another should be given the same number, as: P-2, HVAC-2, E-2, G-2.

### **01200. PROJECT MEETINGS**

See requirements in the N.C. Construction Manual (Section 111) for Preconstruction, Monthly Progress and Final Inspection Meetings.

Additionally:

#### **1. PRECONSTRUCTION MEETINGS**

The FDC Construction Project Manager will provide the Designer with a list of special UNCG items to be included with the Designer's normal agenda for the preconstruction meeting.

#### **2. CONSTRUCTION PROGRESS MEETINGS**

During construction the designated Project Manager for the Designer will attend weekly and monthly construction meetings to provide liaison and inspection services necessary to ensure compliance with plans and specifications. The Designer will take the Meeting Minutes for the monthly construction meetings and distribute to all attendees within three (3) days. Upon instructions of the Designer, the frequency of meetings may be increased or decreased as required by the progress of the work.

All in-house and contract consultants participating in the design of the project will attend weekly and monthly meetings while work related to their design is in progress.

#### **3. PRE-INSTALLATION MEETINGS**

Updated 6/15/15

The Designer will include in the project specifications a list of pre-installation meetings to be conducted by the General Contractor during construction, prior to start of installation of major building components. Examples of building components requiring pre-installation meetings may include, but not necessarily limited to:

- Site Work – Demolition, clearing, grading and soil compaction
- Landscaping – topsoil requirements, selection, planting, maintenance
- Cast-in-place concrete – excavation, formwork, reinforcement, concrete placement and curing, foundation waterproofing
- Pre-cast concrete – fabrication, delivery, storage, handling, erection and welding
- Masonry – material selection and sample panels, storage, laying, reinforcement, joints, flashing, etc.
- Windows – storefront and curtain wall installation
- Hardware – doors, electronic access control and coordination
- Roofing – material storage, installation, protection
- Sealants – waterproofing, caulking, expansion joints, etc.
- Plumbing, Fire Sprinklers, Electrical Systems – installation, operation, scheduling
- Security/Audio Video Systems – installation, operation, scheduling, coordination of door installation and hardware

Attendees to these meetings will be the Designer and any associated consultant(s), the Prime Contractor (Superintendent, Project Manager or Office Representative, Foreman) and involved subcontractors (superintendent, foreman and/or crew), the Owner, and any specialized equipment or material supplier(s) or manufacturer(s) representative and any third-party testing company as required. The purpose of these meetings is to review work related shop drawings, submittals, coordination drawings, installation and quality requirements, and coordinate the work among the various trades making sure that all coordination issues are reviewed, considered and resolved prior to the start of installation. The Designer is required to prepare the pre-construction conference agenda with help from the Owner and Contractor, conduct the meeting, take notes and distribute the minutes (within 5 days).

#### 4. ELEVEN MONTH WARRANTY REVIEW

The Designer may be required to perform an eleven (11) month warranty review which will consist of the Owner and Designer, including his consulting engineers (PM&E), performing an on-site review of the project prior to the expiration of the twelve (12) month warranty period. The Designer is to provide a written list of warranty items to the General Contractor.

### 01210. CONSTRUCTION REQUESTS FOR PROPOSALS

The following steps should be followed as closely as possible in the change order process. Restraints, such as time, may require that some steps be accelerated by verbal or fax

communications and documented later with the appropriate written or hard copy correspondence. In all cases the Designer should keep the State Construction Office representative and the University Construction Project Manager apprised of the status of change order items.

1. Proposal Request (AIA G709 form or equal) - issued by the Designer to all prime Contractors and copied to the University. The proposal request shall contain complete information, including texts and drawings, needed to make a fair and realistic proposal.
2. Proposal - from the Contractor in writing to the Designer (with a copy to the University) with a breakdown detailed enough to accurately evaluate the cost. The State Construction Office will require a detailed breakdown with the change order. Unit prices without fixed quantities may be acceptable in some emergency situations when the work needs to be done quickly, however a not-to-exceed figure will be required. The proposal shall include appropriate subcontractor proposals and effect, if any, on the work schedule or completion date.
3. Designer's recommendation - to the University (no copy to the Contractor) including a brief description of the request, cost of the proposal, date by which the Contractor requests a decision and the Designer's recommendation on whether or not to proceed with the change. It is the Designer's obligation to evaluate the proposal amount and verify that the cost is reasonable and consistent with current prices for doing the work. The Designer shall inform the Contractor if they believe the cost is excessive and have the Contractor re-submit as necessary in order to present a fair cost.
4. Owner's acceptance or rejection - to the Designer (with a copy to the Contractor) authorizing inclusion in a change order or disapproving the proposal.
5. Designer's notice to the Contractor (with copy to the University) - informing the Contractor of the final resolution. Prompt issuance of the change order may eliminate this step.
6. Change order - prepared by the Designer and follows the normal process as described in the project documents and the North Carolina Construction Manual. Note that it usually takes six weeks to execute a change order and that six originals should be prepared and then signed in the following order: Contractor, Designer, University, and State Construction. The Contractor cannot request payment for any change order work until the change order is fully executed with all four signatures and returned from State Construction. The Designer shall promptly notify the Contractor when the change order is returned and distribute the fully executed change order to the Contractor and surety.

### **01300. SUBMITTALS.**

#### **1. DESIGN SUBMISSIONS FOR REVIEW**

The University will review design submissions (various phases of construction documents)

from the Designer, usually within three weeks of receipt of the submittal. The submissions presented to FDC will be further distributed to all other appropriate University departments for their reviews. The Designer will submit a minimum of four (4) copies of review documents to the Design Project Manager. Reviews will be generalized and shall not be considered an office check of the drawings and specifications. The Designer shall be responsible for a complete office check of all phases of drawings and specifications.

Written comments will be returned to the Design Project Manager by the various University offices involved with the review. FDC will compile these comments with their own and will transmit the total list of University review comments to the Designer. The Designer will provide written responses to all review comments as part of the next design submission.

## 2. CONSTRUCTION SCHEDULE

For large or critical projects the University will hire an independent scheduling consultant to assist with the construction schedule. Facilities Design and Construction will provide a specification to include in the contract documents for this requirement.

### 01301. SPACE MANAGEMENT DRAWING REQUIREMENTS

#### 1. POLYLINE REQUIREMENTS

Updated: November 5, 2014

**Space Polylines** – For every architectural floor plan provided to the University, the Architect shall provide polylines for the following:

**Exterior Gross Polylines** -the exterior gross area of a building floor is defined as all the area within exterior surface of exterior walls; i.e., the total constructed area of a building. This polyline shall be drawn on layer A-AREA-GROS. Line color is to be cyan.

**Space/Room Area Polylines** - shall be added to every space or room including vertical penetrations (stairs, elevators, shafts & chases) building service areas (restrooms, mechanical rooms, etc.) and circulation spaces. They will measure from the inside face of surfaces that form the boundaries of the designated areas. They shall be a closed line polygon with vertex points located at every interior corner of the space or room. Polylines shall not wrap into the door opening. Polylines shall go through building columns and minor projections. All polylines for rooms shall be drawn on layer A-AREA. Line color is to be magenta. All polylines for vertical penetrations, building service areas and circulation spaces shall be drawn on layer A-AREA-COMN. Line color is to be red.

#### 2. DELIVERY OF FLOOR PLAN DRAWINGS

The design architect, vendor, or contractor is responsible for providing the UNCG's

Facilities Design and Construction department with accurate drawings in an AutoCAD readable electronic format at three different times. The first deliverable will be at the Design Development stage. These drawings shall be to the above standard. The polylining standard applies to architectural floor plans only. The drawing shall be free of construction related notations including but not limited to dimensions, schedules, construction related notes, etc. All external reference drawings (xrefs) must be bound to the drawing. Architectural drawings must be on a CD or other mobile storage media capable of handling large files.

The second delivery will be at the bidding of Construction Documents, drawings should show room layouts and room numbering. Drawings will be marked to identify bid set and dated. The third delivery will be at the time of completion of the project. These as-built drawings must visually depict the final “move-in” condition of permanent architectural elements as represented in simplified floor plan format. Drawings will need to be polylined for this submission with no xrefs.

All drawings shall be prepared in accordance with the National CAD Standards available at: <http://www.nationalcadstandard.org/>. The National CAD Standards are defined by the following documents:

- CAD Layer Guidelines, published by the AIA
- Uniform Drawing System, Modules 1-3, published by CSI
- Plotting Guidelines developed by Coast Guard, published by CADD/GIS Technology Center
- NCS Project Committee Report(Resolves minor discrepancies among the above.)

### **01310. LAND SURVEYS**

1. AIA Document G601 - Land Survey Agreement shall be used to secure the services of a surveyor. This document includes a request for a proposal, an agreement form for surveying services and a description of the information to be provided by the survey.
2. The drawings shall show complete information, being careful to include underground items, inverts, utility lines, plants, etc. The survey shall also indicate all abandoned underground utility lines and structures, identifying their original use and noting their source and termination locations. All symbols and abbreviations shall be clearly explained on the drawings.
3. All Surveys shall be oriented to the “UNCG Control Network”. All boundary, topographic, and design surveys, and design drawings and digital files resultant of these surveys, shall be oriented horizontally, and vertically if containing elevations, to the UNCG Local Coordinate System for inclusion in the UNCG Geographic Information System. This orientation, within applicable accuracy standards, shall be inclusive of all geographic information presented as a result of these surveys.



Information pertaining to the location and coordinates of UNCG control Monuments on which the UNCG Local Coordinate System is based is available from the UNCG Facilities Design and Construction Office.

A minimum of (2) survey control points of semi-permanent material such as rebar or iron pipe oriented to this system shall be established at the project location. The coordinates of these points and the coordinates of the UNCG Control Monument on which they are based shall be labeled. The bearing and distance measured from at least one of the project control points to the UNCG Control Monument used shall also be labeled.

These requirements shall be in addition to all professional standards and requirements in effect at the time these design services are performed.

#### **01340. SHOP DRAWINGS AND SAMPLES**

##### **1. SHOP DRAWINGS**

The specifications shall list items for which shop drawings or samples are required. Two approved copies of shop drawings shall be submitted to the Construction Project Manager after the Designer has reviewed and stamped them.

##### **2. SAMPLES**

After consultation with the University, the Designer shall specify in the contract documents items for which samples will be required and stipulate the number of each sample required. The Designer will specify that the Contractor is required to submit all color and material samples requiring Owner and Designer approval at the same time. All samples and color chips must be approved by the University. If samples are expensive or are complete assemblies suitable for inclusion in the work, e.g., precast concrete panels, door hardware, equipment; approved samples may be installed in the work. The Designer will incorporate all of the color and material samples from the General Contractor onto a Construction Phase Color Board for review and approval by the University.

##### **3. MODELS AND PATTERNS**

Specifications for ornamental work which require models or patterns, shall specifically stipulate that models and patterns become the property of the University after the ornamental work has been installed.

##### **4. COORDINATION DRAWINGS**

Coordination drawings are frequently used to coordinate trade installations, especially

PME installations. When the Contractors request base drawings, the design team shall provide electronic AutoCad drawing files to the Contractor, in a version that is acceptable to the Contractor.

## **01400. CRAFTSMANSHIP – QUALITY AWARD PROGRAM**

Updated: June 15, 2015

The University will be sponsoring a Craftsmanship Quality Award Program for the project. This program will consist of setting up a nominating team and giving awards to the quality crew/individual of the month. UNCG will provide the awards and the site for the meetings. Designers will be required to be in attendance in order to determine the recipient. The goal or desired outcome of this program is to foster cooperation, peer recognition and create a mild competitive environment so high quality work is valued and publically recognized.

### **1. QUALITY NOMINATION TEAM**

The team responsible for determining the monthly recipient will be made up of the following people:

- UNCG Construction Project Manager
- Designer Representative (usually Project Architect or Engineer)
- UNCG end user
- Contractor Representative (usually Superintendent or Project Manager)
- Major Subcontractor Representatives, if desired
- Scheduling Consultant, if desired
- Office of State Construction Representative
- Other knowledgeable individuals, depending on project

### **2. JUDGING CRITERIA**

The judging criteria for the award shall be determined by the Quality Nomination Team at their first meeting and be posted at the jobsite in a prominent location. The judging criteria should take into account some or all of the following:

- Quality of the work in place and meeting or exceeding the project's specifications
- Cooperation with other contractors and overall attitude (i.e., anticipating the following contractors' needs in order to produce a high quality product)
- Schedule adherence or completing work ahead of schedule
- Shop drawings and submittal turnaround time
- Jobsite cleanliness and orderliness
- Lack of nonconformance reports and limited punch list items
- Jobsite safety
- Communication

### 3. CERTIFICATE AND LETTER

The award will be a certificate to the winning crew each month and hard hat stickers for all members of the winning crew. The certificate and a letter addressed to the president of the firm, will state the reasons why the team was selected, the names of all members of the winning crew, and will be sent to the firm's home office. There should be no limit on how many times a team can win. The Designer, Consultant, Owner's Representative, or anyone involved with the project are eligible to win as well as the Contractors.

The awards will be given to the recipient(s) at a gathering of all workmen on site to promote peer recognition and foster a desire for others to be recognized in the future. The hard hat stickers are given directly to the recipient(s) by UNCG's Director of Facilities Design and Construction, the Assistant Director of Construction or Construction Project Manager.

This information is to be included in the project's specifications so all parties know about it before bidding. Any further refinements and/or clarifications are welcome by the University. Please feel free to make further refinements or suggestions in order to make this a better program for all parties involved.

## 01500. TEMPORARY FACILITIES AND CONTROLS

### 1. TEMPORARY UTILITIES

Requirements are generally as stated in the General Conditions, Article 40. Contractors must arrange for and pay for all temporary utilities required for execution of the work unless directed otherwise by the University. Specifications shall be written to stress this point.

- 1.1. Plans for running temporary lines through University property shall be approved by the Designer and the University. If connections to University utilities are permitted, the Designer shall consult the University regarding services available and points of connections. Services may require metering through meters furnished by the Contractors with the University being reimbursed for utilities consumed.
- 1.2. Costs for providing temporary services shall be included in the Contractors' bids. Specifications shall clearly identify each Contractor's responsibility for the installation of service lines and payment for services, whether services are furnished by the utility company or by the University. The University will pay for steam and electricity supplied through the building's permanent utility connections. Temporary utilities for construction trailers and construction work will be provided by and paid for by the appropriate Contractor.

## 2. CONSTRUCTION AIDS

- 2.1. Elevators shall not be used for construction purposes unless written arrangements are made including:
  - 2.1.1. Protective covering of car interior, doors and entrance.
  - 2.1.2. Weekly cleaning and servicing by the elevator installer.
  - 2.1.3. Complete restoration of all elevator system components to like new condition.
  - 2.1.4. The repair and warranty period required by the contract will not be diminished by authorizing this use.
- 2.2. Existing elevators shall not be used during construction without permission of the University.
- 2.3. No elevators shall be loaded beyond their capacity.

## 3. BARRIERS

- 3.1. Ingress and egress for buildings: During University occupancy of buildings, all marked exits must be maintained to meet code requirements.
- 3.2. Construction fence should be clearly identified on the drawings and in the specifications. The location of the construction fence should be coordinated with the Owner during the design phase of the project.
  - 3.2.1. The location of the construction fence should not impede pedestrian or vehicle traffic. If necessary, alternative routes will have to be identified and shown on the drawings.
  - 3.2.2. All accessible entrance and/or fire exits must be maintained by the general Contractor during the period of construction in University occupied buildings.
  - 3.2.3. The construction fence shall not block or infringe upon emergency vehicle access, block fire hydrants, blue phones/emergency phones, PIVs, or Fire Department connections.
  - 3.2.4. The construction fence shall be a minimum of 6' - 0" high chain link fence with green privacy screen installed on the inside of the fence to obscure vision into the site. Chain link fence posts should be supported on surface

pedestals to prevent the need for post holes.

- 3.2.5. The Contractor will be responsible for maintaining the fence during construction and for removing the fence at the end of construction.
- 3.2.6. The Contractor will provide appropriate utility work barricades, construction fence, informational signage, etc. for excavations outside the construction fence area.
- 3.2.7. The Contractor will provide accident prevention signage per N.C. OSHA.
- 3.2.8. All Contractor parking shall be restricted to the fenced in area of the construction site.

3.3 Utility Protection: All valves, manholes, hand holes, etc. within the construction site must be protected at all times. Barriers shall be installed prior to any construction and shall remain until construction and site cleanup are complete. The barriers shall be of substantial material, minimum construction should consist of 4' high metal posts with orange construction fencing.

#### 4. SITE SECURITY

Except during working hours, fence gates shall be kept locked by the Contractor at all times. Three keys to the gates shall be provided to the University for distribution to the Project Manager, University Police and the University Locksmith. An optional arrangement of locking the gate is with a chain and double padlock, one of which will be provided by the University for University access.

UNCG will supply only the security measures required for University operations. The Contractor shall provide the necessary security means to protect his work, materials, tools, and construction equipment. Watchman services shall be supplied by the Contractor as he deems necessary. Any watchman service set up by the Contractor shall be approved by the Owner. The Contractor shall be responsible for replacement of his materials, machinery, equipment, tools and supplies due to theft or mysterious disappearance. All tools and equipment shall be clearly marked with the Contractor's identification. All toolboxes shall be clearly marked by the Contractor.

#### 5. TRAFFIC AND PARKING

- 5.1. Construction area access: If existing streets and roads on campus must be used for more than normal construction traffic, a plan of the traffic patterns must be worked out in cooperation with the University and shown on the project drawings.
- 5.2. Maintenance of traffic flow: The University's Project Manager must be notified at least one week in advance of any anticipated work affecting traffic flow. To assure

maintenance of flow and safety, a field inspection of the area shall be made jointly by the Designer, University, and Contractor prior to performing any work which would interrupt normal traffic patterns. The Contractor, whose work requires interruption of traffic, shall be required to post signs in all affected areas in sufficient numbers and with appropriate messages to warn motorists entering the construction zone and to alleviate conflicts and confusion among motorists or pedestrians. Temporary lanes shall be well marked, and obstructions, barriers, lane changes, or detours shall be indicated by appropriate signage at each point of potential confusion, as well as at each change in direction of a temporary route. University Police shall be notified in advance of the anticipated time of return to normal traffic patterns. Upon completion of construction affecting streets or traffic flow, but before temporary control devices and lane markings are removed, the area shall be restored to receive traffic in the normal pattern. If it is evident that traffic will become hazardous or restricted in any manner, uniformed special duty police officers must be provided by and at the Contractor's expense.

- 5.3. Parking: **Updated December 18, 2014.** The Designer shall review all changes to existing parking with UNCG Parking Operations & Campus Access Management (POCAM). Projects that permanently eliminate parking spaces on campus shall either replace the spaces with spaces similarly located on the campus, or pay into the parking fund balance account the then-current cost for an equal number of parking deck spaces. This cost will be reviewed with POCAM for each project.

Construction staging plans should be included in the Design Development submittal and developed in consultation with the Parking Operations & Campus Access Management regarding construction parking and/or use of parking facilities for construction staging. **Access to parking on campus is extremely limited. Carpooling or the use of alternative transportation is encouraged.** This cost for disruption of parking will be reviewed with POCAM for each project.

There may be projects on a case by case basis which may not follow this guideline. In this case, a letter of agreement or memorandum of understanding signed by all parties concerned documenting this charge shall be required.

- 5.4. Access to facilities: While the University is a publicly owned institution, its function and facilities are dedicated to serve specific operations and programs. Therefore, Contractor's personnel may be barred from using existing toilet, food service, or other facilities.

## 6. CONSTRUCTION AREA MAINTENANCE

- 6.1. Debris and weeds: **Updated December 18, 2014.** Site shall be well maintained including removal of debris. Debris shall be removed from University property. Use of University trash receptacles is prohibited. The Contractor must cut grass and weeds inside the project boundary as necessary to maintain a neat appearance at the

site. Use only herbicides approved by the University. The use of pesticides is prohibited.

- 6.2. Noise and dust control: In occupied buildings the Designer shall indicate areas for which noise and dust control must be provided and shall specify methods of control and responsibility for installation. If details of installations are involved, specify these in the applicable sections of the technical specifications.

## 7. PROJECT IDENTIFICATION

Normally a project identification sign is required. The University will determine the need for the sign. If a sign is required, the location and design shall be shown on the drawings. The sign should generally be white letters on a navy blue background with gold trim unless other design considerations are desired. A copy of the University standard project identification sign is available from the Design Project Manager. A shop drawing showing layout of the text is required. No additional signs identifying participants shall be permitted.

## 8. SITE LIMITS

The limits of the construction site, including staging and parking if appropriate, are to be clearly shown on the construction drawings.

## **01600. MATERIAL AND EQUIPMENT**

### 1. MATERIAL STORAGE

Each Contractor shall provide weather-tight storage sheds, adequate to hold materials required on the site at one time, for materials which might be damaged by the weather. Outdoor storage of materials shall be confined to the area within the construction fence. Temporary storage structures shall be painted with at least one coat of paint; color shall be approved by the University. No signs except small identification signs are permitted on sheds. Corridors, stairs, and other public spaces shall not be used for storage.

### 2. SURPLUS MATERIAL AND EQUIPMENT

During a renovation where certain equipment, fixtures, or materials are to be removed by the Contractor, the Designer shall prepare a list of this equipment during the planning stage of the project and present the list to the Design Project Manager. The University will decide if the surplus equipment is salvageable. Salvageable equipment and fixtures that are removed will be transported by the Contractor to a designated location.



## 01700. PROJECT CLOSEOUT

### 1. PROJECT RECORD (AS-BUILT) DOCUMENTS

Updated: September 17, 2014

At least once per month, the Designer will review the Contractor's on-site as-built drawings to confirm that the drawings are being kept up to date. After final acceptance of the project, the Designer shall revise the construction document drawings to accurately record the project as-built. Identify the addenda, change order, alternate, etc. for each item. Label all as-built documents as "RECORD DOCUMENTS".

Two sets of white bond paper record drawings (one bound with durable covers and the other set provided loose), two copies of "bound" AutoCAD and PDF files of all project drawings, and Word copies of specifications on CAD storage media, and three copies of the Final Report are required. **On projects that are developed using BIM, deliverables must include one electronic copy of the Record (as-built) BIM in a Revit-supported format as a project record archive to document the as-constructed building and its components for use in future projects and O&M activities. The Record BIM must be delivered on DVD or other mobile storage media capable of handling large files. It is noted that all changes made to reflect the project as-built shall be made on the CAD media so the electronic media will print the same document as the hard-copy record drawings. All electronic record documents shall be submitted with the paper record documents within 60 days of the project acceptance.**

### 2. OPERATION AND MAINTENANCE DATA

Updated: September 17, 2014 / May 13, 2015

Detailed requirements should be stipulated in the appropriate sections of the specifications. For items of General Construction, specify that information for care and maintenance be furnished for any item requiring more than ordinary custodial care. For mechanized and electrical equipment, specify that operation manuals be provided. **Note any items that relate to LEED Certification or N.C.G.S. 143-135.35 through 143-135.40 and on-going maintenance for sustainability and energy efficiency.** For special equipment stipulate that, in addition to operation manuals, the manufacturer provide demonstrations and operating instructions by factory trained employees to designated University personnel who will be operating the equipment. On projects involving complex operational systems, the Designer shall prepare and submit an overall detailed system operation guide to the University at the end of construction.

~~Two~~ **Three (3) identical hard copies and one (1) electronic copy in PDF format** of operation and maintenance manuals shall be provided to the FDC Project Manager after review and approval by the Designer. They shall consist of manufacturers' operation and maintenance instructions, shop drawings or catalog cut sheets, and other data listed herein; all bound in 8-1/2" x 11" x 3" (maximum thickness) binders. Material shall be assembled as follows:

- 2.1. Binder cover, spine and title page stating: "UNCG (name of project)", "Operation & Maintenance Manual for (name of equipment or system(s))", "PREPARED BY (name of Contractor), (date)". Additionally, for the title page, include the names, addresses and phone numbers of the prime Contractor and major subcontractors or material suppliers.
  - 2.2. Table of contents ordered alphabetically (may be combined with title page). If the quantity of material is such that it requires more than one binder the manual may be divided into volumes and the table of contents in each volume shall list the total contents for all volumes. Material in the volumes should be grouped by systems as reasonably as possible (electrical might be in 3 volumes, for example power, lighting and alarm system).
  - 2.3. Contents with index tabs.
    - 2.3.1 Description of system contents, where located and how each part functions individually and concluded with a list of all equipment incorporated into the project with supplier's name, address, and phone number and service needed with reference to the data in the binder which describes proper service.
    - 2.3.2 Approved shop drawings and product data including parts and maintenance information.
    - 2.3.3 Manufacturer's operating instructions including how to start, stop and restart each piece of equipment, how to set temperature and humidity for normal operation, and caution notices.
    - 2.3.4 O&M Manuals and cut sheets must clearly identify make, model number, and serial number for each piece of equipment that is installed. Include belt size, filter size, motor HP and voltage.
3. DEMONSTRATION AND TRAINING

Prior to beginning equipment demonstrations and trainings, the O&M manuals shall be delivered to the Owner so they can be referenced by the maintenance personnel during the organized training sessions. Equipment start-up operations will not be considered part of the training sessions. The Equipment Contractor will develop a training schedule that minimizes disruption of the Owner's operations and assure the training of the Owner's multiple shift personnel. The Equipment Contractor will develop specific learning objectives for each training session. The Equipment Contractor will inform the Owner of the course content and coordinate the dates, times and durations of the instruction sessions. The Contractor will provide advance notice to the Owner a minimum of three (3) business days prior to each training session. Training will be provided by the equipment manufacturer's "service" representative. The subcontractor or sales

representative may be utilized for general overview of the entire building operation.

A video of each training session will be provided to the Owner. The video can be factory supplied or may be recorded on site during the training sessions. If recorded on site, the vendor will provide an experienced, professional videographer who has experience recording demonstration and training events similar to those required. Three reproducible electronic copies (DVDs or Thumb Drives) of the training video recordings will be provided to the Owner within seven (7) days after the completion of each training session. Each video will be labeled as follows:

- a) Name of project
- b) Subject of training session or demonstration
- c) Name and address of Manufacturer
- d) Name and address of Videographer
- e) Name and address of Contractor
- f) Date of video recording.

#### 4. FINAL INSPECTION

Procedures shall be as outlined in the Construction Manual with the following additions:

- 4.1 The preliminary inspection shall include the Designer, Designer's consultants, Contractors and University.
- 4.2 The Designer's consultants shall participate in preliminary and final inspections and shall inspect their respective parts of the work. The Owner's, Designer's and consultant's punch lists shall be compiled into one punch list by the Designer.
- 4.3 Punch lists shall indicate which Contractor is responsible for each item and clearly indicate the location of each item.
- 4.4 Inspections of concealed areas shall be made when the areas are visually accessible.

#### 5. LIQUIDATED DAMAGES

Refer to the NC State Construction Manual, Section 303, Article 23, for state requirements concerning liquidated damages. Reasonable amounts for liquidated damages vary according to real loss to the University, therefore each project must be considered on its own and the amount determined in conjunction with the University.

If it becomes apparent that a project will exceed its contractual completion time, the Designer shall notify the Contractor in writing and withhold from all subsequent applications for payment an adequate amount of money to cover the cost of liquidated damages that may be incurred.

## **01900. GENERAL DESIGN STANDARDS**

The following items are listed for convenience to enumerate certain standards that the University expects in all projects.

### **1. MASTER PLAN AND UTILITIES MASTER PLAN**

The University Master Plan and Utilities Master Plans shall be studied by each Designer to ensure the compatibility of design with Master Plan objectives. FDC will provide a copy of the Plans when appropriate to the project.

### **2. LIFE CYCLE COST AND MAINTAINABILITY** Updated: January 29, 2015

Designers shall consider long-term durability and maintainability when selecting and specifying materials and equipment.

Life cycle cost including installation, maintenance, and disposal will be considered in the selection of building systems and equipment. The designer must develop life cycle cost studies and present the information for review by the University to assist with the selection of materials and equipment on major renovation and new construction projects.

In general, the Designer shall specify materials and equipment with which the Facilities Operations is familiar and prepared to operate and maintain utilizing existing methods and materials. Where a single proprietary manufacturer's product is listed it is because of the need for compatibility and the words "No substitution" will follow.

- 2.1 Serviceability and Accessibility to equipment shall be incorporated in the design of all new and renovated facilities. All building equipment, including VAV boxes, sensors, controls, duct detectors, dampers, light fixtures, valves, etc., that will require inspection, maintenance, or replacement over the service life of the building, shall be installed in locations that are safely accessible by service personnel. It is preferred that equipment be accessible from floor level if possible or a short ladder if necessary. The Designer will consider the location of the equipment with respect to the possible location of fixed furniture, or fixed seating, that may impact accessibility to the equipment. The Designer will consider the type of ceiling, and accessibility to the equipment through the ceiling. Access panels should be sized to allow maintenance access and removal of equipment, especially duct detectors, fire dampers, door controllers, and fire sprinkler equipment. Equipment should be positioned to minimize obstruction of connections and service elements by adjacent piping and duct runs. If necessary, the Designer will include in the design, work platforms and personal fall protection tie-offs to facilitate safe work access to and around the equipment. Door and window openings shall be sized to allow replacement of equipment within the space without structural modifications whenever possible. Design

drawings shall include a 1/4" scale or larger drawing showing the layout and elevations of equipment in primary mechanical rooms and electrical rooms.

Each mechanical/electrical room shall have at least one light on an emergency circuit. Gypboard, sprayed ceilings, or sprayed on fireproofing in mechanical rooms is to be avoided. Primary mechanical/electrical equipment rooms shall be located with access to the building exterior and allow for convenient service vehicle access and equipment removal. These spaces shall not be combined with custodian closets. All walls shall be constructed of concrete masonry units (CMU). Floor penetrations shall be core drilled and sleeved to three inches above the finished floor.

University policy requires that custodial spaces, and mechanical and electrical equipment rooms are not accessible to occupants of the building. It is therefore necessary that occupants' equipment and controls be located so that the occupants will not have to enter these rooms for routine operation of equipment. This includes fuses, circuit breakers, switches, valves, etc., that might serve departmental equipment.

Roof access must be as safe as possible. Code compliant permanent ladders or stairs must be built into the structure for all such access. Provide adequate, permanent access to all roof areas from the building interior. Walk-out access by way of stairwell extensions or via penthouses is preferred. From the rooftop, permanent, exterior ladders may be provided to connect different roof levels. Ladders longer than 20 feet shall be caged in accordance with the Federal Occupational Safety and Health Administration (OSHA). For steep-sloped roofs, it is preferred that perimeter roof access from the ground level be provided, if possible, for access to gutters and other items requiring maintenance by a boom lift. On low-rise buildings, ladders that extend from grade to rooftop are discouraged. Roof access through windows is unacceptable.

2.1.1 Building Maintenance Systems: During the design of all facilities, consideration shall be given to the safety of personnel during future maintenance operations. Provisions shall be made to provide safe access and working platforms for the maintenance of roofs, rooftop-mounted HVAC units, elevated equipment, lighting, etc. New buildings will incorporate design elements that eliminate the need for supplemental fall restraint or fall arrest systems. For low-sloped roof sections, the incorporation of at least 45 inch parapet walls into the design is required as an edge treatment for both the control of water run-off, and the safety of maintenance personnel. Gravel stop edges and low parapets less than 45 inches shall be avoided. Methods of fall protection for existing buildings shall be evaluated on a case-by-case basis and recommendations for incorporation shall be discussed with Facilities Design and Construction. Analysis of the existing roof structure will be required as part of the evaluation process. When supplemental fall

protection is required, the Designer shall provide a design in accordance with OSHA requirements. The design of fall protection shall be included in the construction documents as part of the base bid. Permanent, supplemental fall restraint and fall arrest equipment shall be designed, fabricated, installed, tested, and certified by a firm specializing in this type of work. Drawings indicating all arrest elements shall be sealed by a North Carolina registered professional engineer. Recommendations shall be based on the type of roof and other project specific issues.

- 2.1.2 The Designer will meet with the FDC Design Project Manager and the UNCG Office of Safety to coordinate the identification, selection and design of building maintenance systems on all projects.
- 2.1.3 In buildings with new HVAC or Lighting System installations (New Buildings or Renovations) that require special knowledge to operate, the Design Engineer will provide operating instructions for the Owner. These instructions will include diagrams if required, written and illustrated for the use of laypersons unfamiliar with the operation of these systems. The instructions will be further developed and finalized after bidding once the final systems have been identified. The Design Engineer will work closely with the system contractor and manufacturer to define these instructions and they will be included as final deliverables at final inspection.
- 2.2 Supply Storage Room for Custodians shall be provided in every building of 40,000 square feet or larger. The room shall be at least 200 square feet in size, be located close to the freight or service entrance, have shelving on at least one wall, and have a minimum of three electrical outlets on each of the long walls.
- 2.3 Custodian Closets shall not be less than 60 square feet in size and shall have no dimensions less than six (6) linear feet. Provide one (1) custodian closet for each 15,000 - 18,000 square feet of building floor space with a minimum of one (1) for each floor. They shall not be located on a stair landing, inside another room, under stairways, or in narrow spaces. Passageways, mechanical equipment rooms, pipe chases, etc., shall not serve as custodian closets; nor shall elevator controls, electrical panels, telephone equipment, roof access hatches, etc. be located in custodian closets.

Each custodian closet shall have:

- 2.3.1 Hard surface walls.
- 2.3.2 Provide barrier-free, wall mounted, recessed cabinet, swing down, stainless steel eyewash stations with integral drain. Custodian closets to receive eyewash stations will be identified through discussions with Facilities

Operations, Housekeeping, and the University Safety Office departments. Eyewash stations will be located so that the swing down door will not be blocked from opening. Access to the unit must be kept clear of obstructions at all times. Installation will be based on the types of chemicals to be stored in the closet and the possibility that mixing of chemicals may occur in these locations.

- 2.3.3 A 36" door that swings out, not into the room. Where the door must swing into the room, a minimum of 80 square feet is required.
- 2.3.4 Hot and cold water. Faucet shall be threaded for a hose connection, mounted 36" above the floor and provided with a vacuum breaker before the threaded portion.
- 2.3.5 Ceramic or quarry tile mop sink located in one corner on the wall beside the entrance door. The floor shall be pitched to the receptor or a floor drain.
- 2.3.6 A GFI duplex receptacle in the "open" wall.
- 2.3.7 Adequate lighting, but no light fixtures or sprinkler heads located above mop receptor. [Provide occupancy sensors for lighting controls.](#)

## 2.4 Building Refuse

- 2.4.1 The University is concerned about the appearance of its campus; careful attention must be given to solutions for handling building waste. Refuse removal is contracted with an outside provider, but waste disposal will be included in review of project requirements at the outset of the design effort. Areas to hold trash and trash compaction devices will be screened. The University uses front loader trucks and containers; therefore, the location and screening should support that method of removal. Provisions will be made for proper separation of refuse for recycling as required under North Carolina General Statute 13A-309.
- 2.4.2 Recycling Rooms shall be provided for the collection of recyclable waste materials on each floor of a new facility or building renovation. Recycling rooms should be located off of a main corridor with nearby access to an elevator, an exterior delivery area or a loading dock. Recycling rooms should be no less than 11'-8" long x 6'-8" wide. Typical University collection containers are 2'-6" w x 3'-0" d x 3'-10" h.

- 2.5 Service Entrances shall be level with the street where possible. Where ground floor elevation is above street level at the service entrance, a loading platform with a minimum height of 3 feet shall be provided. An area shall be provided to accommodate service trucks with a minimum depth of 54 feet; 64 feet is preferred;

and a minimum width of 12 feet.

Factory-built laminated rubber dock bumpers shall be provided. Consideration should be given to the use of adjustable type dock levelers to accommodate the varying heights of truck beds.

- 2.6 Attic ventilation shall be such that good air flow is obtained for the entire cross section and is adequate by the code (as a minimum). It is desirable to have more than minimum ventilation when a dark roof is used. Mechanical ventilation may be required in borderline cases.
- 2.7 Mechanical Rooms should generally not be located above occupiable spaces because of the risk of water damage to the spaces below. When equipment is located above spaces where water damage could occur, provide water containment areas around all equipment, piping and devices capable of generating water to protect spaces below the mechanical room from damage. These water containment areas are in addition to drain pans that are provided with the individual pieces of equipment. Water containment areas shall have at least one floor drain adequate to drain the containment area, and have a minimum of 4" high perimeter curbs. A walkable applied waterproofing membrane shall be applied to the floor and turned up and over curbs. All floor penetrations within the curbed containment area shall be provided with curbs or sleeves, 4" minimum above finished floor, and sealed to prevent leakage of water to the space below.