

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

SECTION 01000 – GENERAL REQUIREMENTS

1. APPLICABILITY

A. GENERAL

- 1) Standards and requirements set forth in this document shall be applicable to all design and construction activity undertaken upon property under the control of the University of New Hampshire, Durham.
- 2) Facilities of the University of New Hampshire shall be divided and designated into one of two classifications; “Primary Facility” or “Secondary Support Facility”. Generally, “Primary Facilities” are the larger major campus buildings, with all other smaller support-oriented buildings being “Secondary Support Facilities”. Determine a building’s classification from the University’s Facilities Authority in order to determine applicable design and construction requirements.
- 3) Except where specifically referenced to provide choices or separate standards, the standards set forth in this document shall be deemed to apply primarily to “Primary Facilities”. Consideration for specific relief from the requirements set forth by these standards **may** be considered and granted by the University’s Facilities Authority upon written request (with back-up documentation as may be deemed necessary). Granting of such relief shall be more likely when requested in connection with a “Secondary Support Facility” classified building.
- 4) Nothing in these standards shall preclude or take precedence over applicable codes, regulations, requirements, mandates, or laws.

2. DESIGN INTENT DOCUMENTATION

A. GENERAL

- 1) Design intent, that is, a description of the building systems and the manner in which they are intended to function, shall be included in either the design drawings or technical specifications so that they become a part of the construction contract documents.

B. IMPLEMENTATION

- 1) The design intent document will include the following:
 - a) A summary of the basis for design, that is, the calculated or derived loads, parameters, or other conditions that have been used to size or select mechanical, electrical and other operational building system equipment

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

and components that are not otherwise included in the construction documents.

- b) A description of the intended operation of the building systems. This description will provide the design parameters that describe system operation. Parameters and descriptions will be included so that the intended building system operation can be understood. Descriptions need not address the internal operation of system components such as chillers or cooling towers, but must describe how these components are intended to work together as a system, in this case to generate chilled water as a sub-system of the overall building ventilation and cooling system. An example might be:

“Air Handler Freeze Protection: When the outside air temperature sensors measure temperatures below 40 degrees F. the hot water flow control valve will fully open and leaving air temperature will be controlled by modulating the face and bypass dampers. If the freeze-stat on the coil senses temperatures below freezing in any segment greater than 1 inch in length, the outside air damper will fully close, the face and bypass dampers will set to full bypass, the fan will shut off and an alarm will be sent to the BAS system. This alarm will be reset locally before normal system operation resumes.”

- 2) Design intent documentation in draft form will be submitted for review as part of design development documents.

3. MEASUREMENT OF BUILDING AREA

A. GENERAL

- 1) Measurement of building area is often required during the planning and design process and is often used to calculate cost per square foot. In turn, cost per square foot may be used as a basis for establishing project budgets and for comparison with costs experienced on other projects. In order that determination of building area be consistent from project to project, the following methodology is adopted.

B. IMPLEMENTATION

- 1) Measurement of building area is based on the standards established in AIA D101, Methods of Calculation Areas and Volumes of Buildings and the Post-Secondary Education Facilities Inventory and Classification Manual published by the National Center for Education Statistics, publication 92-165. The key measurements and their basis are described below:

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

- a) Architectural Area or Gross Area: The area of a building is the sum of the areas of the floors of the building, measured from the exterior faces of exterior walls or from the centerline of walls separating buildings. This area includes basements, mezzanines, intermediate floors and penthouses, provided that these areas have minimum of seven feet headroom height. Paved or finished covered areas shall be included at ½ the measured area. Balcony areas count fully but floor openings or upper spaces in double high rooms are not counted. See Figure 1 below for further definitions.
 - b) Net Assignable Area: Spaces within a building used for or assigned to the buildings intended function(s) or program. This space is measured from the interior faces of the enclosing walls.
 - c) Net to Gross. The difference between net and gross area is comprised of four types of space; Building Service (cleaning and public hygiene), Circulation, Mechanical, and Structural Area.
- 2) Designers will include in the Life Safety and Building Code Analysis data on the drawings a summary of Gross Area and Net Assignable area for each project.

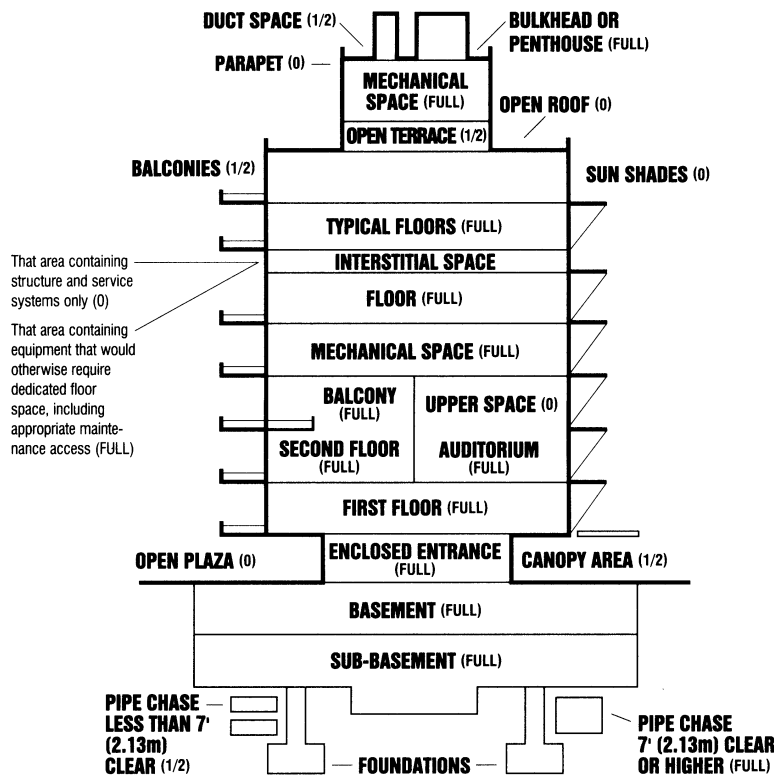


Figure 1: Architectural Area Calculation

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

4. RECORD DRAWINGS

A. GENERAL

- (1) Record drawings are required under the terms of the standard University System of New Hampshire construction and design services contracts. This section provides additional definition to those requirements.

B. IMPLEMENTATION

- 1) Record Drawing Submission Requirements
 - a) Provide hard copy drawings dated and labeled "As-built Record Set".
 - b) Provide electronic drawing files using the latest version of AutoCAD's *.dwg format utilizing color dependent plot styles, on hi-quality CD-R media in a non-compressed format (no *.zip files).
 - c) Provide a list, in both hard copy and electronic copy, explaining in detail all electronic files provided. This list shall contain descriptors of the drawings content (i.e. Architectural Floor Plans – Level 1, ...), date of most recent revision, sheet numbers included in file (i.e. A-1, A-5, ...) as well as physical size of the electronic file
 - d) Provide a list, in both hard copy and electronic copy, explaining in detail all layers and their contents.
- 2) Record Drawing Preparation. All drawings
 - a) Shall be in architectural units and standard architectural scales, with the exception of civil / site drawings, whose units shall be standard engineering units. North arrow shall be shown on all drawings where appropriate.
 - b) Hard copy drawings. All hard copy drawings shall be submitted on at least 3 mil double matte drafting file suitable for dry contact print reproduction.
 - c) Electronic drawing files. Layering standard for all architectural, plumbing, fire protection, mechanical, electrical and other drawings shall be similar to the AIA layering standard. The layering standard for Civil and Site drawings shall utilize the UNH layering standard for civil / site drawings, see attachment A.
 - d) Utilize standardized blocks throughout all electronic drawings, with all entities internal to the block to preferably be on layer 0, with color and linetype of byblock; for attributes their color assignment is the designers choice. Room numbers shall be provided as attributes of a block.
 - e) Each sheet shall be in a separate AutoCAD file utilizing a single AutoCAD Layout. If this is not practical, then multiple sheets can be in a single AutoCAD file; however, each sheet shall be on a separate AutoCAD layout. The AutoCAD layout sheet size shall match the plotted sheet size and the Layout names shall be the sheet number. The layout's viewport visibility shall be "ready to print" and require no layer visibility manipulations by UNH for each viewport in each layout of each drawing provided.
 - f) Perform the AutoCAD etransmit command on each separate AutoCAD file, and include the following support files, if the etransmit command is unavailable simply provide the following:
 - g) Appropriate pen setting files (*.ctb).

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

- h) Any External References (Xrefs), Images or OLE objects used in the drawing with path information removed.
- i) Font and shape files used (*.shx, *.ttf or *.shp) in the drawing, as well as the Font map file (acad.fmp or similar appropriate file).
- j) Plotter setup files (*.pc3).

5. HOUSEKEEPING CLOSETS

A. GENERAL

- 1) Telephone, computer and mechanical equipment shall not be installed in new/renovated or existing housekeeping closets.
- 2) Every closet shall contain a minimum floor surface of 16 square feet with a floor-mounted mop basin.
- 3) Every closet shall be provided with a minimum of two shelves (4 l.f. each) and a minimum of six 12" O.C. wood dowel pegs for hanging mops, brooms, etc.
- 4) Every building shall be provided with a minimum of one closet per floor per building, and with a central closet for large equipment.

6. OWNER'S STOCK STORAGE SPACE

A. GENERAL

- 1) UNH construction contracts typically require the contractor to provide fixtures, fittings, filters, flooring, light fixtures and other materials that are unique to the building to UNH as owners stock. This material is typically unique to the building and is best kept in the building rather than being removed to a central storage area where its identity with a particular building may be lost.
- 2) Use of mechanical spaces for material storage is inappropriate and, depending on the material and its packing material, may be contrary to life safety code.

B. IMPLEMENTATION

- 1) Design of new buildings or buildings undergoing major renovation will include designated owner stock material storage space. This space can be a caged area in the attic or basement with a lockable door provided applicable codes are met. Otherwise, hard-walled space is required. Some shelving should be provided so material can be organized and the space efficiently

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

used. Metal warehouse type shelving is appropriate. The size of the area will depend on the building.

- 2) Owner's stock storage space is considered program space.

7. SOLID WASTE AND RECYCLING

A. GENERAL

- 1) Interior building designs for non-residential buildings will include an area on every floor that will be used as a recycling station. Recycling stations will be clearly designated on floor plans and attention will be given to location, the rating of surrounding walls and doors, etc. to insure compliance with life safety codes. Stations will not be in stairways or in hallways that are essential means of egress.
- 2) Exterior building design shall consider trash removal and dumpster locations. The amount of space needed and amount or type of containers will be determined by the size of the building, its intended use and the proximity of other dumpster locations. All dumpster locations shall also be accessible to large refuse removal vehicles.
- 3) At residence halls, exterior design will also provide suitable space for recycling containers.

8. TELECOMMUNICATIONS AND DATA SYSTEMS SPACE

A. GENERAL

- 1) Telecommunication and data systems are as essential to the functioning of modern buildings as electrical and plumbing systems. Telecommunications systems must be designed into new and newly renovated buildings. Appropriate space for routers, hubs, servers, etc. must be provided and pathways to connect to individual outlets must be included.

A. IMPLEMENTATION

- 1) Section 16741 of this standard provides detailed requirements for telecommunications installation. Preliminary planning must anticipate the need for telecommunication spaces, rooms and closets. Early involvement of UNH Telecommunications is essential to insure requirements are being adequately anticipated.

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

9. CONFINED SPACES

A. GENERAL

- 1) Entry into confined space as defined by OSHA requires special training use of specialized safety equipment and at least two individuals, one of whom remains outside the space at all times. Maintenance access to such space is obviously more difficult, time-consuming, and expensive.
- 2) Creation of confined space may be unavoidable. For example, utility vaults will almost always be defined as confined spaces. Other areas within buildings such a utility chases may or may not be defined as confined spaces depending on configuration.

B. IMPLEMENTATION

- 1) Designers shall familiarize themselves with the definition of “confined space.” Any area meeting the definition of confined space should be identified on the drawings. Components requiring periodic maintenance service or repair should be located outside any such confined spaces wherever possible.

10. FIRE LANES

A. GENERAL

- 1) Fire lanes shall be required around the entire perimeter of residential buildings over three stories or 35 feet to the highest occupied floor level. They shall allow Fire Apparatus within 250 feet travel distance of any portion of the building measured interiorly or exteriorly. The exception to this will be where the fire lane cannot be provided, or it is not beneficial as determined by the authority having jurisdiction, approved fire protection system or systems shall be provided as required and approved by the authority having jurisdiction.
- 2) All buildings constructed from this date forward shall be accessible to Fire Department Apparatus by way of fire lanes. Such roadways shall be constructed of concrete or asphalt. Any other materials proposed to be used shall be approved by the authority having jurisdiction.

B. IMPLEMENTATION

- 1) The minimum width of a fire lane shall be as follows:
 - a) For a fire lane 0-500 feet in length the road shall be at least 18 feet in width. For a fire lane more than 500 feet in length the fire lane shall be at least 26 feet in width.

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

- b) For a fire lane serving a building more than 35 feet in height from grade level to the highest occupied floor level, the fire lane shall be at least 26 feet in width.
- c) The fire lane shall be located within a minimum of 15 feet and a maximum of 25 feet from the building, and shall be positioned paralleled to the entire side of the building.
- d) Adjacent to fire hydrants, fire lanes shall be a minimum of 15 feet and a maximum of 26 in width, and that width shall be maintained 20 feet in either direction from the hydrant.
- e) The minimum inside turning roadway radius shall be 30 feet. The minimum outside radius shall be 56 feet. These requirements mandate a 26 foot wide fire lane if the sharpest turning radii are use. (Due to vehicle off-tracking).
- f) Maximum grades for access roadways shall be as follows:
 - (1) Concrete surfaces : 15%
 - (2) Asphalt surfaces : 12%
 - (3) Other : 8%
- g) All required fire lanes and access roads shall maintain a vertical clearance of at least 13 feet and 6 inches.
- h) Owners and/or property representatives shall be required to identify and mark fire lanes to the satisfaction and approval of the authority having jurisdiction. This requirement shall be marked on the approved plans and shall be complied with in the field.
- i) The entrances to all required Fire Department fire lanes shall be posted with an approved sign. Signs shall be posted along the entire access road with not more than 100 feet between signs. The placing of signs shall be subject to the approval of the authority having jurisdiction. Any vertical curbs restricting access to fire lanes by non-emergency vehicles shall be no higher than 4 inches tall.
- j) When applicable, all curbing which outlines the fire lanes shall be painted red. White lettering reading "No Parking-Fire Lane" shall be placed every 30 feet or portion thereof, on top of said curbing or striping. Such lettering shall be a minimum of 4 inches tall. Additional striping of Fire Department fire lanes may be required under special conditions. The minimum width of this red striping shall be 8 inches wide with white lettering reading "No Parking-Fire Lane", with characters being at least 12 inches and 1-1/2 inches in stroke.

11. UTILITY OUTAGE COORDINATION

A. GENERAL.

- 1) The UNH campus is served by a variety of utility systems including electrical distribution, water, sanitary sewer, storm sewer, natural gas, district hot water,

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

domestic hot water, steam supply and condensate return, telephone, data transmission and cable TV. These systems are a mix of University-owned,

Town of Durham municipal, and commercial utilities. The complexity and inter-related nature of these systems dictates careful planning and coordination of any outages or connections.

B. IMPLEMENTATION

- 1) Planning and Design. Utility connections and interface points will be carefully planned and complete information provided in construction documents so as to provide the contractor with complete information regarding location, materials, shut-off points, etc. Designers will verify adequate capacity is available from existing systems where tie-in of new service is planned.
- 2) Construction. The construction contractor will confirm shut-off points, and, to the extent possible, the type and size of existing lines so as to insure the correct materials are on hand prior to scheduling connections to existing systems. Where lock-out, tag-out of systems is required to insure safety, the contractor will provide their own tags in addition to whatever tags UNH or other utility system owners may provide.
- 3) Outages. Outages must be carefully planned and fully coordinated with all affected campus constituents. Outages are frequently scheduled during off-hours to minimize disruptions to campus activities and there are some periods such as exam week, when outages will not be scheduled. Outage planning must start several weeks prior to the time when the work needs to be accomplished. **Actual notice that the contractor is ready to perform the work requiring the outage must be provided a minimum of two working days prior to the shut-down.**
- 4) Coordination. Designers and/or contractors will coordinate utility interfaces and connections through the assigned Facilities Design and Construction Project Manager. The project manager will facilitate contact with the responsible campus entities for detailed coordination. Generally, these points of contact will be:
 - a) Water, storm sewer, district hot water, steam supply and condensate return, electrical distribution and natural gas: UNH Director of Utilities
 - b) Telecommunications and Data: UNH Director of Telecommunications
 - c) Cable TV: Director of Housing
 - d) Sanitary Sewer: Director of Utilities (portions of the system within the campus are part of the Town of Durham system. However, the UNH Director of Utilities will be the initial point of contact.)
 - e) Building Automation System: Campus Energy Office

UNIVERSITY OF NEW HAMPSHIRE
CONSTRUCTION AND RENOVATION STANDARDS

12. O&M MANUALS AND SYSTEM TRAINING

A. GENERAL

- 1) Proper training of maintenance personnel on newly installed building systems is essential to their proper operation and service life.

B. IMPLEMENTATION

- 1) Construction contracts incorporating AIA A201 General Conditions for Construction (as modified by USNH) include requirements for Operation and Maintenance Manuals and system training to be provided by the construction contractor. For small projects that use informal contract language, the following language shall be included:

The contractor shall provide, as a part of the contract, qualified personnel to conduct a walk-through of any new/renovated facility for the purpose of familiarizing UNH personnel with the operation of the building systems and equipment. Each system will be placed in operation and operated through the intended range of its capability. For example, the heating system will be operated to high and low set points, freeze-stat protection of coils will be verified by simulating freeze-stat trip, etc. Comprehensive Operation and Maintenance Manuals shall also be furnished in bound, labeled and indexed volumes for all installed equipment. Four copies of each volume will be provided.

END OF SECTION