

# NC State University Design and Construction Guidelines

## Division 00 Planning & Design – Space Planning

### 1.0 Purpose

- A. These guidelines provide requirements for the Designer and Contractor to follow related to space planning.

### 2.0 General Requirements

- A. Single Occupant Toilet Room – Each new or renovated building of minimum 20,000 GSF shall have one lockable, single occupant, gender-neutral toilet facility, centrally located with other toilet facilities on a main entry level.
  - 1. The room shall be identified as “Single Occupant Toilet.”
  - 2. Additional considerations:
    - a) Wall-mounted baby changing station.
- B. Lactation Rooms – Each new or renovated facility of minimum 40,000 GSF shall have one lockable lactation room located on a main entry level, accessed from main building corridors. Rooms without a sink should be located near a break room. The room may be designed to serve another appropriate purpose when not in use for lactation, ex. telephone room, conference room.
  - 1. The room shall be a minimum of 50 ASF. Sound attenuation shall be installed in walls. The room shall have:
    - a) Keyed deadbolt lock, for occupant control while in use.
    - b) Minimum 24” deep by 42” wide work surface with 30” clear kneespace.
    - c) One duplex outlet located above work surface.
    - d) Coat hooks.
  - 2. Additional considerations:
    - a) Keypad lock for controlling room access.
    - b) Comfortable chair.
    - c) Small, stainless steel sink with gooseneck faucet.
    - d) Liquid soap, paper towel, hand sanitizer dispensers.
    - e) Wall-mounted baby changing station.
    - f) One telephone and data outlet located above work surface.
  - 3. The room shall be identified as “Lactation” and include contact information for room access.

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- C. Break Areas - Break areas shall be designed to serve multiple purposes and can combine several different functions at one location, for example: kitchen, lunch room, vending, informal meeting room.
- D. Vending Areas – Vending areas shall be located in building interiors in high traffic areas that are easily accessed for deliveries
  - 1. Machines shall be screened from direct line of sight from gathering space or paths. Group machines together in an alcove or a break room with trash and recycling nearby; program 10 SF per machine.
  - 2. Locate machines on the ground floor of buildings that do not have a service elevator.
  - 3. A UWS data outlet shall be provided behind vending machines, with one outlet per every three vending machines. Each machine shall have a separate 20A circuit.
- E. Interior Recycling- Interior recycling areas shall be easily accessible, dedicated spaces on each floor for the collection and storage of recyclable materials: paper, corrugated cardboard, glass, plastics and metals at a minimum.
  - 1. One area per 10,000 SF on each floor is required.
  - 2. Reference the following Recycling Area Guidelines Table to ensure that projects are designed to have sufficient space allocated for the storage of recyclable materials.

Building SF	Minimum Recycling Area SF
0-5,000	82
5,001-15,000	125
15,001-50,000	175
50,001-100,000	225
100,001-200,000	275

- 3. The standard indoor recycling collection site shall accommodate:
  - a) Three (3) recycling containers
  - b) One (1) trash container
- 4. Recycling containers are provided by NC State and are the following dimensions:
  - a) Rubbermaid square recycling container
    - (1) Height: 34 ¼ in 87.0 cm
    - (2) Length: 19 ½ in 49.5 cm
    - (3) Width: 19 ½ in 49.5 cm



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- b) Rubbermaid square recycling lid with delineated receptacle slots
    - (1) Height: 6 ¼ in 15.9 cm
    - (2) Length: 20 1/8 in 51.1 cm
    - (3) Width: 20 1/8 in 51.1 cm
  - 5. Where a more formal appearance is needed, recycling cabinets sized to accommodate the standard size containers provided by NC State may be used.
- F. Custodial Service Rooms - Custodial service rooms shall be designed and located in all new construction, renovations, and additions.
- 1. Custodial receiving and bulk storage room – One receiving/storage room shall be provided in buildings of 40,000 SF or greater and shall be located on the ground level near the loading dock or service entrance.
    - a) Minimum dimension 12' x 16'; door shall swing into corridor.
    - b) Provide ventilation for items being stored: floor scrubbers, chemicals, battery-powered equipment.
    - c) Provide shatter proof fluorescent lighting fixtures.
    - d) Provide minimum four GFI duplex electrical outlets.
    - e) Provide hard, waterproof wall finish preferably ceramic tile, sealed concrete, or epoxy paint.
    - f) Provide minimum four 18" to 24" deep adjustable shelves installed at 48" A.F.F. on three of the four walls of the room.
    - g) Provide 24" x 36" wall-mounted bulletin board.
    - h) Floors shall be terrazzo, ceramic tile, VCT, sealed concrete, or painted with non-slip epoxy paint with continuous 4" base made from same material.
    - i) Water heaters, electrical panels, pipe chases, entrance doors to adjoining rooms, and mechanical equipment are not permitted in this space.
  - 2. Custodial closets – One closet shall be provided for every 22,000 SF of floor space, with a minimum of one per floor, located near elevators or restrooms.
    - a) The closet size shall not be less than 80 SF; minimum 7'0 clear in any direction. Door shall swing into corridor.
    - b) Provide ventilation as required for items being stored: floor scrubbers, chemicals, battery-powered equipment.
    - c) Provide shatter proof fluorescent lighting fixtures.
    - d) Provide minimum of two GFI duplex electrical outlets.
    - e) Provide a chemical and stain resistant 20" x 32" x 6" deep floor-mounted, pre-cast mop receptor.

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- f) Mop receptor faucet shall have threaded hose bib connection.
- g) Provide mop strip with holders above mop receptor.
- h) Provide 36” shelf above mop receptor mounted 70” A.F.F.
- i) Provide floor drain; sloped entire floor at a minimum of ¼” per foot.
- j) All floor drains shall have access to a hose bib.
- k) Provide hard, waterproof wall finish to a minimum of 4’-0” A.F.F., preferably ceramic tile, sealed concrete, or epoxy paint.
- l) Provide three 18” to 24” deep adjustable shelves installed on two of the four walls at 48” A.F.F.
- m) J-Fill Quattro Select chemical dilution dispensing system will be provided by NC State. Chemical dilution station shall be located above the water source on the side of mop receptor where it causes the least amount of workstation disruption; provide blocking in wall at this location.



- (1) Dimensions: 24.25” x 18.5” x 7.5”
  - (2) Weight: 19 lbs.
  - n) Provide space for an 18”x24” bulletin board installed on wall.
  - o) Floors shall be terrazzo, ceramic tile, VCT, sealed concrete, or painted with non-slip epoxy paint with continuous 4” base made from same material.
  - p) Provide one small, one-tier, key access locker for every 22,000 SF, mounted securely to the floor.
  - q) Water heaters, electrical panels, pipe chases, entrance doors to adjoining rooms, mechanical equipment are not permitted in this space.
3. Custodial multipurpose office – One custodial multipurpose office shall be provided for every 55,000 GSF, and shall be located adjacent to the receiving and bulk storage room.

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- a) The office shall be a minimum of 120 SF.
  - b) Install wall-mounted steel key vault with combination lock, provided by NC State.
  - c) Provide minimum of four separate duplex electrical outlets and one university standard data outlet.
  - d) Floor shall be carpet or VCT.
  - e) Provide 30" x 48" wall mounted bulletin board.
  - f) Water heaters, electrical panels, pipe chases, entrance doors to adjoining rooms, etc. shall not be permitted in this space.
- G. Mail Room - Each new or renovated facility will have a mail room or closet sized to serve the entire building.
1. Locate mail room on the ground floor and close to the loading dock.
  2. The mail room shall be securable.
  3. Provide counter surface for three mail bins.
- H. Exterior Refuse Collection Site - Each building must have an exterior refuse collection site.




1. Sites shall either be freestanding or located adjacent to a building loading dock having a service entrance with double doors.
2. Sites at loading docks shall accommodate all roll carts and dumpsters, follow all pad dimensions and criteria below, and be delineated from any adjacent parking spaces with a painted white stripe.
3. Each site shall accommodate:
  - a) Three to six recycling roll carts (residence halls will require more).



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- b) One cardboard recycling dumpster.
  - c) One trash dumpster (residence halls, dining facilities or other high volume areas may require more).
  - d) One autoclave dumpster if building has autoclave capability.
  - e) Additional space may be necessary for dumpsters or roll carts for special waste streams.
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4. Pad dimensions and criteria for two dumpsters:
    - a) Minimum pad dimensions - 26' W x 15' D.
    - b) Pad shall be sloped to drain away from the building.
    - c) Pad and sub grade preparation shall support NC State standard trucks.
  5. The site shall be screened from view and landscaped. Screening enclosure criteria for sites with two dumpsters:
    - a) Minimum height is 6'.
    - b) Screening material shall be brick masonry or blend with nearby buildings and shall cover the enclosure's interior as well as exterior elevations.
    - c) Access shall be clear and open and at least 26' wide.
    - d) One steel post stop shall be placed to protect the wall at either side of the vehicle entrance.
    - e) One steel post stop shall be centered behind each dumpster.
    - f) Piping, equipment, utility vaults, access hatches, grease pit or traps shall not be installed inside the enclosure.
  6. Access drive and dumpster placement:
    - a) Access drives shall be capable of supporting NC State standard trucks.
    - b) Position dumpsters and pad such that the truck can approach the containers head on.
    - c) Provide 23' high clearance above the approach and container pad.
    - d) Access drive grades shall not exceed 6%.
    - e) Dumpsters shall not be placed under any hanging utility wires.
    - f) Dumpsters shall be placed at a minimum of at least 30' away from residential buildings.
    - g) Dumpster placement shall not require the truck to back into any public street.
    - h) Dumpster placement shall not require the truck to back up for a distance of more than 30'.
  7. NC State standard front-loading dumpster dimensions: 81”H x 71”W x66”L.

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8. NC State standard truck type:
  - a) Front-End Loader (FEL) used to empty trash and cardboard dumpsters.
    - (1) Height: 13' or 156"
    - (2) Wheel Base: 19.5' or 237"
    - (3) Width: 8'1" or 97"
  - b) Overhead clearance with dumpster in raised position is 23'.
  - c) Turning radius: 46'.
  - d) Turning diameter: 97'.
  - e) Track: 78.6" (approx. 6'6").
  - f) Total length with boom overhang and arms extended: 40'.
  - g) Truck length without boom: 35'.
  - h) Front overhang: 50" (4'2").
  - i) Fork Length: 4'.
  - j) Total gross vehicle weight: 64,000 pounds (the maximum without being over weight limits).
  - k) Front axle weight: 18,000 pounds.
  - l) Empty trash dumpster weight: 700 pounds.
  - m) Full trash dumpster weight: 1,600 pounds.
9. NC State must be consulted when determining oil recycling locations.



### I. Mechanical and Electrical Rooms –

1. Rooms and vaults shall be located at grade whenever possible and have access from the exterior, and/or interior access from building corridors, lobbies or service spaces.
2. Rooms shall not be accessed through occupant or custodial spaces and they shall not house departmental equipment or controls. Access to equipment shall be through standard doors or other approved permanent openings.
3. Rooms containing major pieces of equipment including, but not limited to, chillers, boilers, pumps, tanks and fans shall be located at grade, adjacent to loading docks. Doors shall be adequately sized to accommodate removal of the largest items. Equipment room doors shall swing outward.
4. When not at grade, access shall be provided via permanent stairs and platforms. Provide a crane rail and hoist sized for the heaviest piece of equipment that must be replaced.

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5. Rooms shall be designed to meet the manufacturer's guidelines for providing adequate maintenance clearances for all systems and equipment.
6. Rooms shall have sufficient floor-to-floor height to provide a minimum clearance of 8'-0" in access areas after all piping, ducting, equipment, etc. is installed.
7. The temperature in mechanical rooms must not exceed 80 degrees F.
8. Mechanical, electrical and telecom rooms that are conditioned shall have separate cooling units that are independent from the main building HVAC systems.
9. In addition to any equipment-specific requirements, mechanical rooms shall be have at least one floor drain piped to the sanitary system for general purposes.
10. At least one interior hose bib shall be provided in mechanical rooms.
11. A minimum of two duplex GFCI 120V electrical outlets with two separate dedicated 20A circuits, located 5' from each side of centerline of the entry door shall be provided. Additional receptacles within 25' of major equipment shall be provided.
12. One LAN access data jack must be provided in all mechanical rooms.