



UNIVERSITY NEUROPSYCHIATRIC INSTITUTE

Expansion Feasibility Study

Original: November 1, 2005

Updated: May 5, 2009

University Project No. 0881-12645



Introduction

The existing University Neuropsychiatric Institute is a full service psychiatric hospital located in the southeast corner of University Research Park in Salt Lake City. The facility includes 90 beds in 45 double occupancy rooms, as well as all necessary facilities to support inpatient and outpatient psychiatric care.

FFKR Architects of Salt Lake City was retained by the University of Utah to study the feasibility of a significant building addition on the available site. Major programmatic elements included in the study for the addition are as follows.

- Net addition of approximately 68 to 72 patient beds in private rooms.
- Patient rooms organized into 5 patient care units.
- Potential for flex rooms shared between units depending on patient census
- Patient and staff support spaces in the patient care units
- Clinical Assessment Center
- Kitchen and dining facilities
- Gymnasium / wellness center
- Large meeting room
- Office space for Department of Psychiatry
- Office space for additional staff
- Therapeutic outdoor space easily accessible to patients
- Surface parking for 325 staff and visitors

Feasibility Study Design Solution

In order to analyze the feasibility of expansion, various expansion schemes were considered. The concept selected for the feasibility study places a new four-story building housing approximately 115,000 gsf north of the existing building. This concept allows the semi-private corridor serving the patient care units on the second floor of the existing building to be efficiently extended to the patient care units in the new building. Extension of the semi-private corridor of the existing building will require elimination of 4 existing double occupancy rooms in the existing building. Those 8 beds are replaced in single occupancy rooms in the expansion scheme.

The scheme selected for the feasibility study provides a covered patient drop-off and parking for 50 visitors on the west side of the building. Approximately 275 staff parking spaces, a staff entrance, and an ambulance entrance are provided on the east side of the building. The scheme has the advantage that construction of the new building can occur with minimal disruption of the existing facility.

Site Utilities

The existing Salt Lake City water, sanitary sewer, and storm drain utilities in the surrounding streets have been reviewed by VanBoerum and Frank Associates and appear adequate for the project. City water lines exist in the streets surrounding the site. It is VBFA's experience that, with the possible addition of some valving, the water lines as configured will likely meet the requirements for hospital occupancies for dual water sources.

Parking Analysis

While it was not the intent of this feasibility study to provide a detailed parking analysis, parking requirements were reviewed in three ways. First, the requirements of Salt Lake City Planning and Zoning ordinances were reviewed, even though the project does not fall within City jurisdiction. Second, the AIA Guidelines for Design and Construction of Health Care Facilities were reviewed. And finally, parking needs based on UNI experience were considered. A summary of those analysis is as follows.

The first analysis is bases on FFKR’s interpretation of Section 21A.44.060 of the Current Salt Lake City Zoning Ordinance, as follows.

<u>Classification</u>	<u>Parking Spaces Required</u>
Sanitarium 90 existing beds plus 60 new beds = 150 beds Zoning requires 1 parking space per 4 beds	38
Employees 170 existing employees x two for expansion Assume 340 employees exclusive of doctors Zoning requires 1 space per 4 employees, exclusive of doctors.	85
Dining Rooms (Used for Banquets) Assume 150 seats Zoning requires 1 space per 5 seats	30
Auditorium Assume 200 seats Zoning requires 1 space per 5 seats	40
Psychiatry Office Assume 11,000 gsf Zoning requires 3 spaces per 1,000 gsf	<u>33</u>
Approximate Total Per Salt Lake City Requirements	226

The second parking analysis is per the 2003 Edition of the AIA Guidelines for Design and Construction of Health Care Facilities. Section 11.1.C indicates that the facility shall provide at least 1.5 spaces per patient. For a 150 patient facility that would equate to 225 parking spaces.

The final parking analysis is based on UNI experience. The current UNI facility has 177 surface parking spaces. UNI experience is that there are currently times when they do not have adequate parking. The biggest demand is during the shift change between 3:00 pm and 3:30 pm when the staff for two shifts are in the building simultaneously. Based on current parking demand, it is preliminarily anticipated that the expanded facility should provide parking in the range of 325 cars.

Building Code Analysis

The following is an analysis of the basic provisions of the 2006 International Building Code as they apply to the expansion scheme of this study.

Existing Facility

The building code in effect at the time of construction would likely have been the 1985 Uniform Building Code. The record drawings for the existing building list the construction type as Type II - 1 Hour, and the occupancy as Group I. The existing building is a two stories tall. The 2006 International Building Code would likely classify the original building as Type II A Construction.

Occupancy Types

Patient Care Areas	I-2
Office and Lab	B
Large Classroom or Meeting Room	A-3

Occupancy Separations

I-2 to B	1 Hour
I-2 to A-3	1 Hour
A-3 to B	1 Hour

Note: The building can be designed with nonseparated occupancies since the most stringent I-2 occupancy requirements for building height and area are being used.

Required Construction Type

Table 503 requires Type I B Construction for Group I Occupancies 4 Stories high. Allowable area for Type I B construction is unlimited.

Table 601 Fire Resistive Requirements of Type I B Construction are as follows.

Structural Frame	2 hour
Exterior Bearing Walls	2 hour
Interior Bearing Walls	2 hour
Floor Construction	2 hour
Roof Construction	1 hour

Building Separation

The original building of IBC Type II A construction must be separated from new Type I B construction by a 3 hour fire wall per IBC Section 705, with 3 hour opening protection per Table 705.4

Fire Sprinkler System

Code provisions related to Group I - 2 Occupancy will require that the building be fully sprinkled. These provisions include Section 407.5 relating to sleeping rooms, and Table 1016.1 relating to corridors.

Food Facility Design Analysis

A Food Facility Design Analysis prepared for this study by Miller & Jedrzejewski Associates of Salt Lake City is included as an appendix to this Expansion Feasibility Study.



August 19, 2005

UNIVERSITY of UTAH NEUROPSYCHIATRIC INSTITUTE FOOD FACILITIES ANALYSIS

1. FOOD FACILITIES DESIGN ANALYSIS

1.1 DESIGN CRITERIA:

The purpose of the food facilities for this facility is to serve a variety of menu options for breakfast, lunch and dinner meals to the 90 existing resident patients and the projected expansion of 60 additional resident patients. The facility will also serve 100 breakfast and 100 diner and 200 lunch meals to staff. Additionally the facility will serve a variety of menu options for paying guests and visitors. The total meal count is approximately 1,000 meals per day

Approximately 60% of the resident meals are served to the patient rooms. The rest are served in a community dining setting shared by patients, staff and visitors.

1.2 EXISTING FACILITY:

The existing facility is located on the lower floor in the southwest end of the building. The facility includes a preparation kitchen and a small cafeteria. The dining room has a spectacular view of the Salt Lake Valley. In room meals are prepared and transported in delivery carts to the patient rooms through common corridors and an elevator that links the upper floor.

1.3 FOOD FACILITY REQUIREMENTS:

The new food facilities are to provide a variety of functions as itemized below.

Patient Meals Preparation and Delivery: This facility is to include all of the functions required to serve and clean up the required patient meals for breakfast, lunch, dinner and snacks. This facility will also be tasked with preparing and serving meals for conferences and catering in the building. Specifically the kitchen will include dry storage, cold and frozen storage, preparation area, bakery, cooking area, tray make-up area, delivery staging area, ware washing, ice production, janitor closet, employee support areas and kitchen and dietician offices. A more detailed description of the requirements of this facility follows in Section 1.5.

Cafeteria Food Preparation: This kitchen may be incorporated with and share similar facilities as the patient meal preparation kitchen. This facility is expected to prepare a variety of menu options for breakfast, lunch and dinner for authorized patients, staff and guests. This area is to support the cafeteria serving area. Specifically the kitchen will include dry storage, cold and frozen storage, preparation area, bakery, cooking area, ware washing, ice production, janitor closet, employee support areas and kitchen offices. A more detailed description of the requirements of this facility follows in Section 1.5.

Cafeteria Serving Area: There are a variety of methods to serve the cafeteria meals including; a standard in line cafeteria serving counter with a cashier at the end of the line, a “scramble” type with multiple serving areas, a controlled circulation area and a common cashier at the exit and the food court method that incorporates stand alone food outlets with individual cashiers. In each case the facilities will be serving a variety of breakfast, lunch and diner menu options where the staff and guests will be required to pay. It has been discussed and is anticipated that the “scramble” method will be employed in this facility. Dirty trays will need to be transported to a ware washing area either through a bussing method or adjacent tray drop-off area. A more detailed description of the requirements of this facility follows in Section 1.6.

Satellite Outlet: A facility adjacent to the cafeteria and directly accessible from the dining area as well as the facility lobby is desired to serve a limited menu during and past the operational hours of the cafeteria. This facility will serve coffee, snacks, baked goods and limited prepared items. A “Starbucks” concept has been discussed.

Dining Area: A dining area accessible to authorized patients, staff and guests is required to eat the meals acquired from the cafeteria or brought in by staff. This area will include a seating, condiments area with ice, water and microwave. An exterior dining patio directly adjacent the to inside dining room is desirable.

1.4 FOOD FACILITIES DESIGN OPTIONS:

There are a variety of solutions to accomplish the goals of the food facilities as outlined in this analysis. With an existing kitchen facility as well as new construction each of the options is to be evaluated on their merits and costs implications.

A) Remodel the Existing Facility: The existing facility can be expanded and remodeled to accomplish the required goals.

Pro's: -Existing dining room with its spectacular view can be maintained.
-Portions of the existing kitchen facility can be utilized.

Con's: -Square footage is limited.
-The cafeteria is remote from the main entry and lobby of the facility.
-The kitchen will be the far from the new addition.
-The existing facility will be disturbed during construction causing an interruption the meal service to the facility.

Budget: The anticipated cost for the food service equipment in this option would be approximately \$450,000.00

Conclusion: Due to the available square footage the ability to meet all the requirements of the facility is not feasible.

B) Partial Remodel the Existing Facility/New Facility: The existing facility will be remodeled to provide the preparation and delivery of the in-room patient meals including ware washing. A new facility will be developed as part of the addition including the cafeteria serving area and kitchen and ware washing.

Pro's: -Portions of the existing kitchen facility can be utilized.
-Patient meals and tray delivery can function without interfering with the operation of the cafeteria
-The cafeteria and dining can be located near the main entry and lobby.

-An exterior patio can be provided.
-The size and type of cafeteria can be adequately planned for in the new addition, including the satellite option.
-Direct access for deliveries and trash removal to the cafeteria kitchen can be provided.

Con's: -Existing dining room will not be utilized.
-Additional cost to build and operate the facility due to the separated similar facilities and duplication of staff.
-The in-room meal preparation kitchen will be the far from the new addition.
-The existing facility will be disturbed during construction causing an interruption the meal service to the facility.

Budget: The anticipated cost for the food service equipment in this option would be approximately \$550,000.00

Conclusion: This option would utilize as much of the existing facility as possible, which will save construction money; however there will be ongoing operational costs. The development of an active dining experience in the heart of the facility can be provided.

B) All New Facility: The existing facility will be abandoned and a new facility will be developed as part of the addition including all functions of the food facilities.

Pro's:

- The operational cost of the facility will be more efficient.
- New facilities that meet the exact requirements of the facility can be planned and provided.
- The patient meal preparation and delivery will share facilities with the cafeteria functions.
- The cafeteria and dining can be located near the main entry and lobby.
- An exterior patio can be provided.
- The size and type of cafeteria can be adequately planned for in the new addition, including the satellite option.
- Direct access for deliveries and trash removal to the cafeteria kitchen can be provided.
- Some of the existing equipment may be re-used in the new facility.
- The existing kitchen can stay in service during construction, providing meals without interruption right up to the commissioning of the new facility.

Con's:

- Existing dining room will not be utilized.
- Existing kitchen will not be utilized.
- The additional cost to build an entirely new facility while abandoning the existing facility.

Budget: The anticipated cost for the food service equipment in this option would be approximately \$500,000.00

Conclusion: This option would provide the optimum design solution to meet the facility requirements. The operation would not be disrupted during construction. The development of an active dining experience in the heart of the facility can be provided.

1.5 FOOD PREPARATION KITCHEN DESIGN REQUIREMENTS:

The following identifies specific design requirements for the food preparation areas. These requirements may be duplicated if separate facilities are developed or shared in a common preparation kitchen.

- A) **RECEIVING AREA:** A separate exterior receiving area with access to the kitchen is planned. The receiving area will include a check-in desk, storage shelving, meat and dairy cooler box, freezer box and produce cooler box. An exterior remote air-cooled refrigeration unit will provide the refrigeration for the walk-in's. The location for this unit is to be determined. The method of deliveries and trash removal is to be determined and appropriate facilities are to be provided. If warranted a conditioned trash room will be provided at the receiving area.
- B) **OFFICES:** The kitchen plan will provide for an office with two occupants with an interior window to view the kitchen facility. A separate dietician office will be provided.
- C) **SUPPORT:** A unisex handicapped employee toilet, lockers, break area and a dedicated janitor closet will be provided.
- D) **FOOD PREPARATION:** A food preparation area will be provided adjacent to the cook line with access to the dry and refrigerated walk-in boxes and reach-in refrigerators. This area also will include ice-making equipment with transport cart to service the serving areas.
- E) **COOKING:** The cooking area will provide all of the cooking equipment required to prepare varied and flexible menu options. The equipment will include ovens, steamer, kettles, tilt skillets, fryers and range, located under a Type I exhaust hood. The exhaust hood will be designed with removable centrifugal type filter cartridges. Exhaust ducts will exit the building through an internal chase to the roof. A Utility Distribution System may be considered and

implemented as budget considerations are discussed. Continuous floor troughs as required will be located in front of the steam kettles and tilt skillets. A Chef's cooler walk-in box will be provided adjacent to the cook line. Reach-in refrigerators will also be provided at the opposite end from the Chef's cooler for additional support.

- F) **SERVING SUPPORT:** Pass through refrigerators and pass through hot food storage cabinets will be provided to support the cafeteria serving area.
- G) **POT WASHING:** A separate pot washing area with storage shelving will be located adjacent to the cook line. A power wash tank, final rinse sink chamber with booster heater and a garbage disposer may be provided.
- H) **WARE WASHING:** Ware washing facilities will be located to allow for as direct an access as possible from the dining area, serving lines and kitchen. Soiled trays are to be dropped at a collection point near the exit of the dining area and transported by tray conveyor system or dirty dish table to the ware washing facility. Ware washing will be accomplished with an in-line conveyor dish machine with a pre-wash, wash chamber and final hot water rinse supported by a dedicated hot water rinse booster heater. A Type II Exhaust vent hood will be provided at the dish washer. Exhaust ducts will exit the building through an internal chase to the roof. Storage area for clean dishes and glassware will be provided.

1.6 CAFETERIA SERVICE AREA DESIGN REQUIREMENTS:

The following identifies specific design requirements for the cafeteria serving area. These requirements are based on the "scramble" serving method.

- A) **SERVING FUNCTIONS:** The serving area will be accomplished with a "scramble" type serving area. There will be a minimum of three distinct food type service areas. The menus for these areas are to be determined. Each service area will include the specific cooking equipment as required for each menu type. Type I exhaust hoods as required will be provided at these areas. The exhaust hoods will be designed with removable centrifugal type filter cartridges. Exhaust ducts will exit the building through an internal chase to the roof.

Additional self serve functions will include tray pick-up, hot and cold beverages including a merchandising refrigerator for specialty and branded beverages and products, pre-made salads and salad bar, soup and deserts including ice cream bar, bakery display and chilled items.
- B) **SERVING AREA:** The overall appearance of the serving area is to be high quality without the appearance of cafeteria tray slides and over-use of commercial food service equipment. Service equipment supporting plates, flatware, glasses and cups will be provided. Adequate circulation space and cueing space will be provided to limit congestion and increase customer flow.
- C) **ENTRY:** A distinct and approach to the serving area is will be provided from the main circulation area of the facility.
- D) **EXIT/CASHIER:** Cashiers will be provided at the exit of the serving area. The exit will be located to minimize the cross traffic of customers entering and exiting the serving area as well as those exiting the dining area and dropping soiled trays at the tray drop area.
- E) **CONDIMENTS:** Condiment stations including a sink, trash, microwaves and water and ice dispenser will be located outside the serving area and available for use whenever the dining room is open.
- F) **TRAY DROP:** A location to drop trays will be located near the exit of the dining facility so that soiled trays can be returned to the ware washing area in the kitchen. The drop area and/or the tray conveyor will be large enough to allow for easy access to drop trays and prevent stacking during rush times.

1.7 BUILDING REQUIREMENT AND UTILITY REQUIREMENTS:

- A) **ARCHITECTURAL:** The kitchen will be provided with quarry tile floors, washable walls and washable ceiling materials. The walk-in freezers will be provided with an integral built-in

insulated floor system. The structure will accommodate the weight of the exhaust hoods. Blocking will be provided in the walls for wall mounted equipment. The serving area finishes including counter tops and counter faces are to be high quality and decorative.

- B) **PLUMBING:** An exterior grease trap as required by code is to be provided. The appliances associated with grease are to be connected to the grease trap except the dishwasher, which is prohibited by code. Hot water at 140 degree Fahrenheit is to be provided to the dishwasher booster heater. Cooking equipment will be fueled by natural gas. It is estimated that approximately 3million Btu/hr will be required for the cooking appliances. Built-in floor troughs at the steam cooking equipment and ware washing areas is to be provided
- C) **ELECTRICAL:** It is anticipated that 120-208 volt three phase power will be available. The food service equipment will require a total load of approximately 1,600 amps. 208 volt, three phase equipment will be specified wherever applicable.
- D) **MECHANICAL:** Numerous exhaust hoods will be required for the operation of this facility. It is estimated that the total exhaust for these hoods will be approximately 20,000 cfm at 1.5 SP. The exhaust hoods will be part of the food service equipment; however, the mechanical system will provide the exhaust ducts and fire rated chases required by the exhaust hoods. Make-up air at 80% of the exhausted air is to be provided by the mechanical system. It is anticipated that the make-up air will not be built into the exhaust hoods. The kitchen will require air conditioning for both summer and winter conditions.

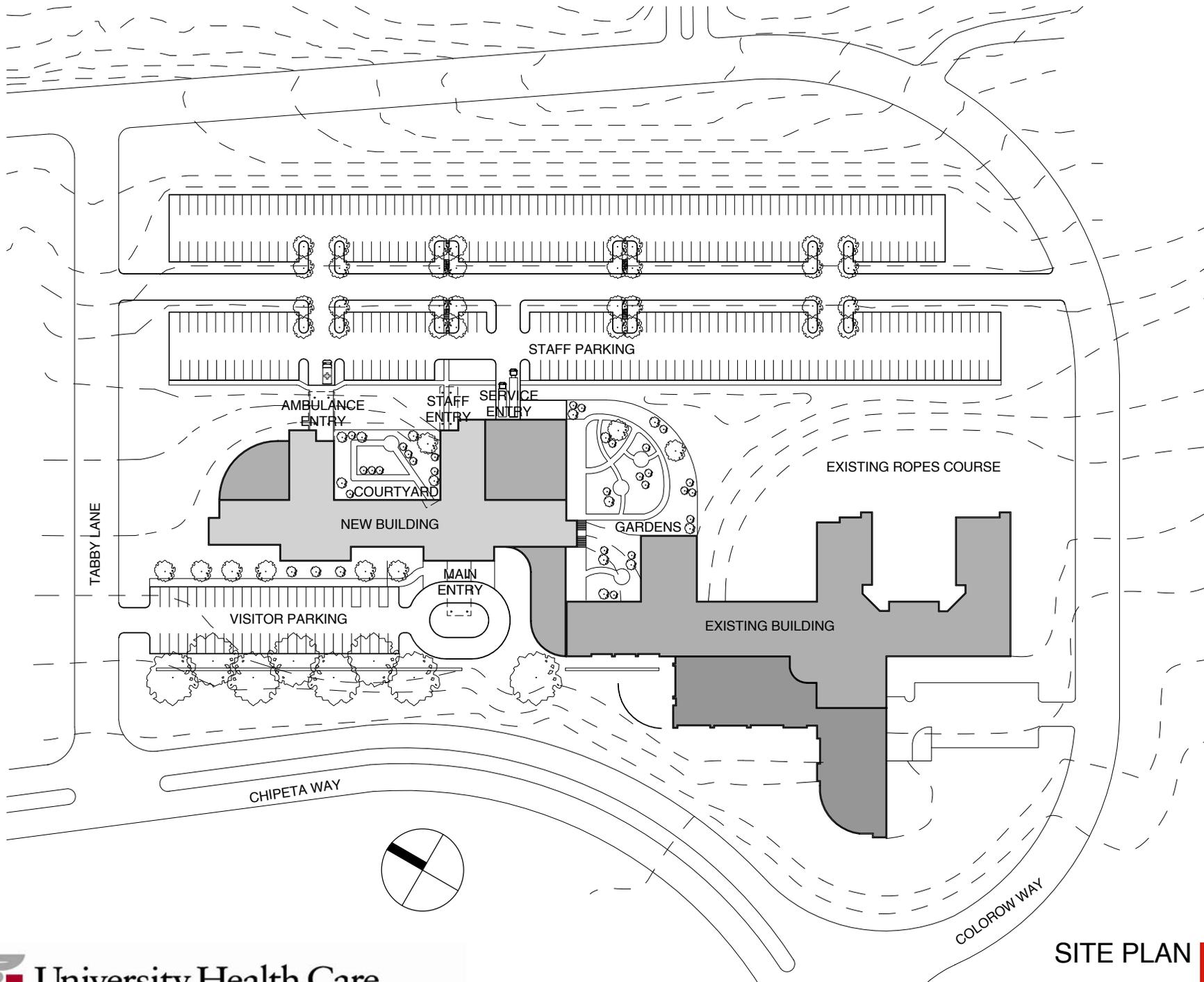
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interior design—space planning - food facilities design

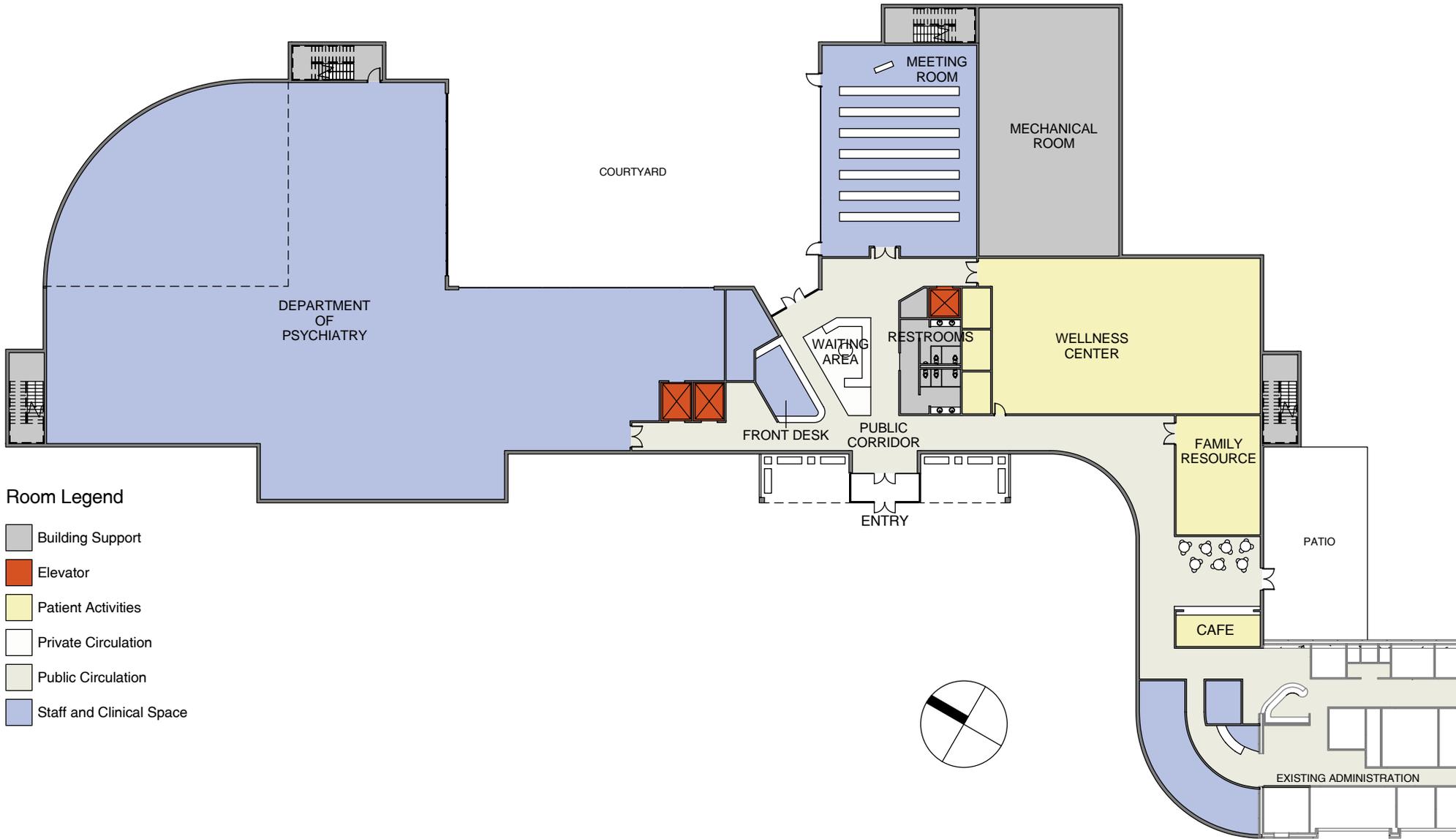


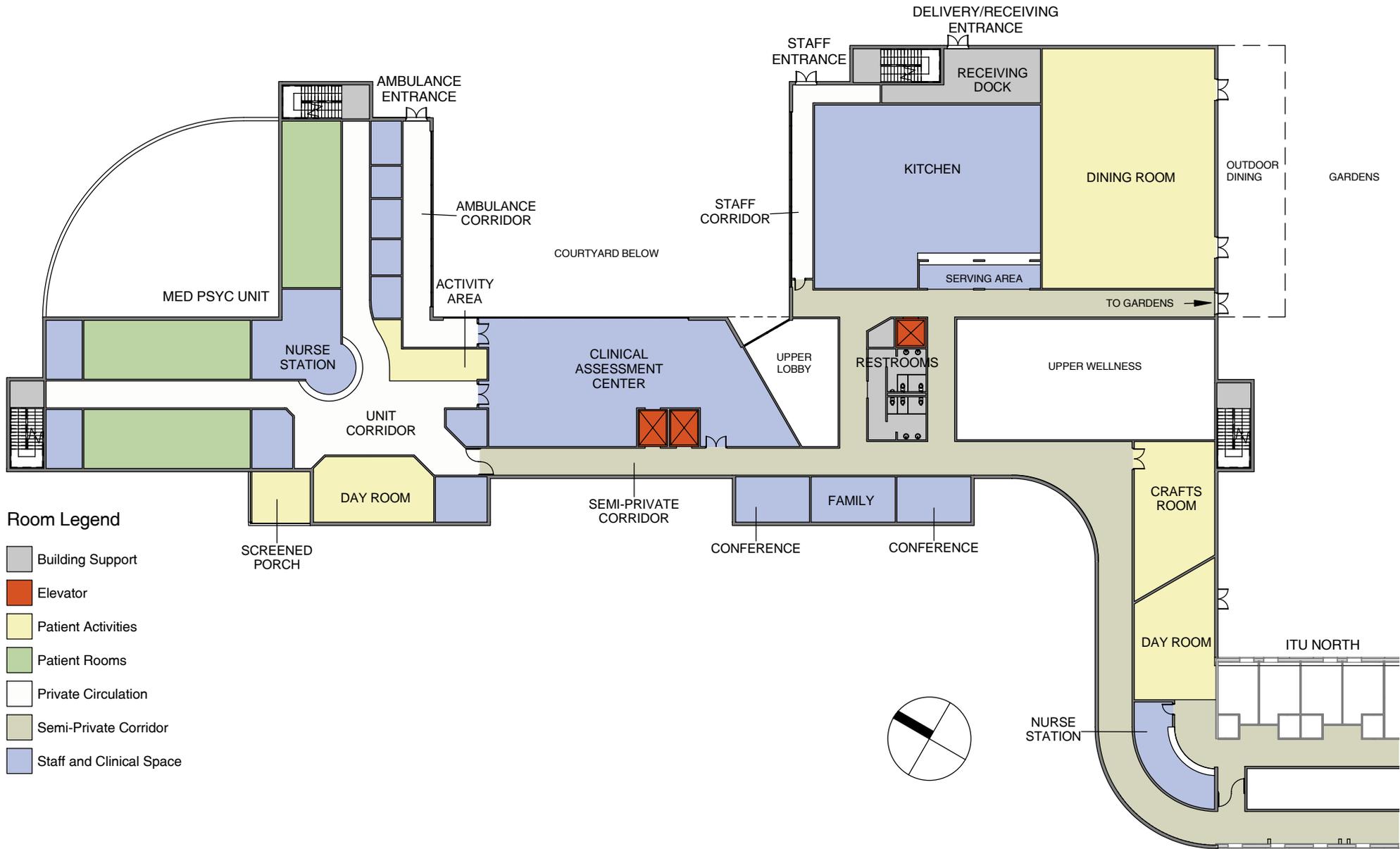
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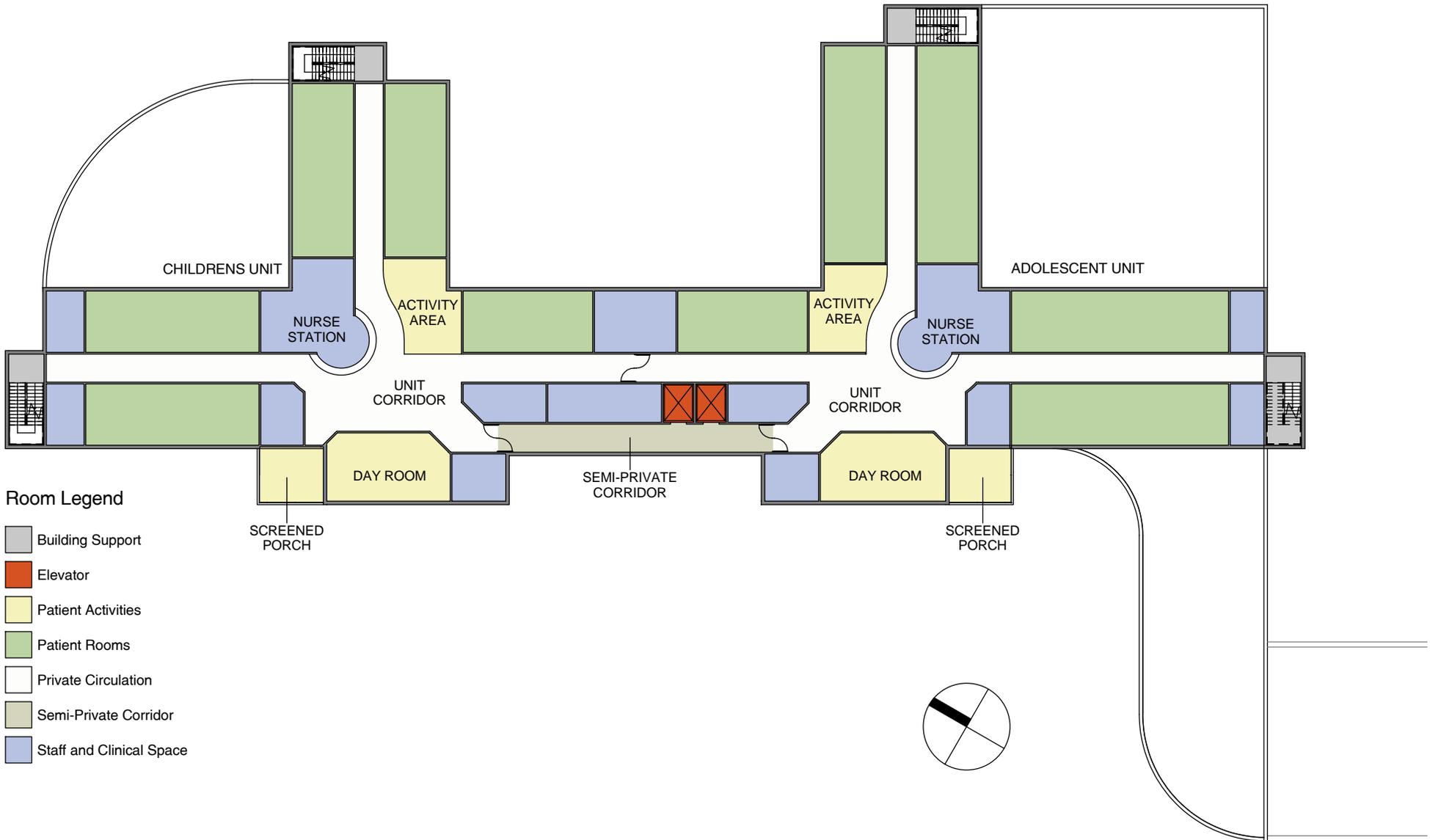
SITE PLAN

MAY 5, 2009
 EXPANSION FEASIBILITY STUDY











Room Legend

- Building Support
- Elevator
- Patient Activities
- Patient Rooms
- Private Circulation
- Semi-Private Corridor
- Staff and Clinical Space