

5.0 APPENDIX

5.1. Checklist for Cardiac Hybrid OR, Cardiac Catherization/ Electrophysiology Lab

	Yes	No
1. EGRESS, ACCESS AND TRAFFIC PATTERNS		
A. Egress: Cardiac Catheterization Laboratories shall be designed and perform as Surgical Operating Rooms as operative procedures are performed, and egress to these rooms shall meet the following traffic patterns standards which should be designated to clearly define specific areas. The separation of “unrestricted”, “semi-restricted”, and “restricted” space is required and defined as follows:		
B. Unrestricted Area: Street clothes are permitted and traffic is not limited		
C. Semi-restricted Area: This area includes the peripheral support areas of the Laboratories. This includes the corridors leading to the restricting area and is limited to personnel wearing surgical attire. Cover all head and facial hair (you may wear a jumpsuit designed to totally cover outside apparel).		
D. Restricted Area: This includes the Laboratories where operative procedures will occur. Surgical attire, shoe covers, masks, and hair coverings are required.		
E. Staff Traffic: Ideally there are two approved patterns of traffic flow for the staff. One pattern is from the staff lockers/lounge through the semi-restricted corridor to the Scrub Stations and then into the individual Laboratories with exit through the semi-restricted corridor. The second pattern of staff traffic is from the staff lockers/lounge directly into the clean core area to the Scrub Stations and then into the individual Laboratories. Possible exceptions to the flow are the “circulators”, who retrieve supplies and equipment from the clean core.		
F. Patient Traffic: The patients are brought into the Laboratories from the Preparation Area on a gurney. Patients entering the Laboratories should have a clean gown, clean linens, and their hair covered. After the procedure the patient are transported through the semi-restricted corridor and taken to a Recovery Area.		

	Yes	No
G. Traffic Patterns: Traffic pattern policies and procedures shall be clearly defined and traffic control practices enforced. The Laboratories should be made secure. Movement of personnel should be kept at a minimum during the invasive procedure. Clean and sterile supplies should be separated from contaminated supplies, equipment and waste. Staff must have a clear understanding of equipment range of motion and possible collision points.		
2. MOVEABLE EQUIPMENT AND CARTS		
A. Case Carts: Case carts are to be utilized in operative procedures (implantations) and brought to the Laboratories via the clean core area on a dedicated cart lift or transferred to a clean case cart where the procedure is completed. These carts are returned to SPS (SPD) in a closed fashion. In the event that SPS (SPD) is not located below the Laboratories, an alternative traffic pattern for the case carts must be established that isolates the clean and soiled case cart traffic.		
B. Linens: Linens are brought into the Laboratory area by way of the semi-restricted corridor. Soiled linen is bagged and removed from the Laboratories via the semi-restricted corridor.		
C. Heart Pumps: When performing TAVR/TAVI and other cardiac procedures a Cardiopulmonary bypass (CPB) pump shall be readily available for use. Normally the pump is staged within the procedure room however in some instances it is located in the restricted corridor just outside the procedure room.		
3. POLICIES AND PROCEDURES		
A. Policies and procedures for Surgical Attire: Policies and procedures should be developed, reviewed periodically and readily available for the Laboratories where surgical attire must be worn, appropriate attire within the defined areas and cover apparel outside the Laboratories. This also includes the selection and use of surgical gowns and drapes for the operative procedure.		
B. FDA-compliant Surgical Hand Antiseptic Agent: The surgical hand antiseptic agent must be approved by the facility's Infection Control Personnel and used for all surgical scrubs in the Laboratories.		
C. Policies and Procedures for Surgical Hand Antisepsis: Policies and procedures should be developed, reviewed periodically and readily available in the Laboratories.		

	Yes	No
D. Policies and Procedures for Maintaining a Sterile Field: Policies and procedures should be developed, reviewed periodically and readily available in the Laboratories. Included are policies for scrubbed persons functioning within the sterile field, sterile draping, transfer methods of items for the sterile field and constant surveillance of the sterile field.		
E. Electrosurgery: Policies and procedures should be developed, reviewed periodically and readily available in the Laboratories for electrosurgical units. Proper care, training, competency, exposure to smoke plume generated should be minimized (smoke evacuation system utilizes) and tracking of the unit.		
F. Policies and Procedures for Sponge, Sharps and Instrument Counts: Policies and procedures should be developed, reviewed periodically and readily available in the Laboratories.		
G. Waste Disposal: Hazardous waste must be identified and disposed of in a manner consistent with federal laws in the Laboratories.		
H. Quality Control Program: A Quality Assurance/Performance Improvement Program must be in place for the Laboratory procedures.		
I. Environmental Cleaning and Disinfection: The environmental cleaning and disinfection of the Laboratories is consistent with AORN Standards (after each case and terminal cleaning at the end of the day) with policies and procedures written, reviewed periodically, and readily available in the Laboratory's practice setting.		
J. Patient Skin Antisepsis: Patients undergoing open Class I surgical procedures below the chin should have two preoperative showers with chlorhexidine gluconate (CHG) before the procedure (when appropriate). Hair removal should follow AORN Guidelines. Personnel should receive education and competency of skin preparation, application and skin assessment. Policies and procedures should be in place for skin preparation and readily available in the Laboratory setting.		
K. Skin Quality Management Program: A Quality Management Program should be in place to evaluate skin care and identify any problems or areas for improvement in the Laboratories.		
L. Anesthesia Equipment: The Cardiac Catheterization and Electrophysiology Laboratories utilizing anesthesia equipment should follow the Occupational Safety and Health Administration for the use of anesthesia gases and equipment. This includes the removal of gases from the environment (anesthesia scavenging system is required).		

	Yes	No
M. Instrument Care; Contaminated instruments must be contained during transport from the Laboratories and should be transported in a timely manner to a designated area for decontamination. Appropriate case carts and metal transportation carts should be provided that prevent contaminated instruments from being carried by hand through an open corridor.		
N. Fire Safety: A written fire prevention and management plan should be developed. A pre-procedure fire risk assessment must be completed and documented prior to any operative procedures.		
O. Waste Disposal: Hazardous waste must be identified and disposed of in a manner consistent with federal laws in the Laboratories		
P. The Clinical Interventionalist should be consulted with prior to the design concept phase so that the type imaging modality can be identified and test fitted into the proposed room together with a reflected ceiling layout to identify any conflict.		
4. THE BUILT ENVIRONMENT		
A. Design Criteria Guidelines: 1. New Construction: Operating Room Guidelines shall comply with and follow FGI Guidelines for Surgery and CATH-EP Labs. For Transfemoral Aortic Valve Replacement (TAVR) procedures in Cardiac Catheterization Laboratories, Cardiothoracic Surgery Room specifications are required. 2. Renovation Projects: Laboratories will be evaluated on an individual case by case basis. 3. MEP and Electrical requirements shall be pursuant to the NEC and AHJ 4. Minimum 25 air changes per hour with four low returns preferable, three absolute minimum.		
B. Provide laminar flow to extend beyond the sterile surgical field.		

	Yes	No
<p><u>C. Specific Architectural Requirements:</u></p> <p>1. Cardiac Procedure Hybrid Room:</p> <ul style="list-style-type: none"> • Absolute Minimum for Existing Facilities: 850 net square feet (78.7 net square meters) (28'-0" x 30'-4"), 24'-0" min dimension • New and Existing Facilities: 900 net square feet (83.61 net square meters) (29'-0" x 31'-0"), 24'-0" min dimension. • Interstitial space above the finished ceiling line is a must to adequately install and distribute MEP infrastructure. • Reconstructed sites will be evaluated on an individual basis. <p>2. Control Room: 190 net square feet preferred, 120 NSF minimum</p> <p>3. Equipment Room: Minimum 120 net square feet and accessible from the Control Room or the restricted corridor and not accessible from the procedure room.</p> <p>4. Lead-lined walls, doors and window frames including leaded glass vision view panels. Physicist shielding report shall be submitted and approved by VAMC Chief Facilities Engineer prior to installation.</p> <p>5. Scrub station located adjacent to the entry door of the Laboratory</p> <p>6. Clean section (supply space) for surgical supplies, equipment, case carts, etc.</p> <p>7. Area under the procedure table is restricted space and cannot be used to store equipment</p> <p>8. Area at the end of the table is restricted space due to table movement</p> <p>9. Ceiling Access Panels: Minimum two foot by two foot for installation and maintenance of medical gases, electrical and data utilities to ceiling mounted booms, except in facilities having interstitial floor construction.</p> <p>10. The finished ceiling height minimum of 9'-6" feet clear. The ceiling shall be sealed, washable and homogeneous.</p> <p>11. HVAC ductwork shall be fabricated of stainless steel</p> <p>12. Flooring: Seamless membrane with minimum six inch high flash coving, sealed at intersection with wall surface.</p> <p>13. Imaging equipment, ceiling booms, ceiling mounted lights, ceiling mounted utilities, hanging lead facial shield must be coordinated to prevent collision</p> <p>14. Minimum 25 air changes per hour with four low returns preferable, three absolute minimum.</p>		
<p><u>D. Surgical Lighting:</u></p> <p>Lighting should be in working order and adequate for illumination of the invasive field. General lighting and specialty lighting should be on separate circuits. Surgical lights must have a critical feature of reaching across the procedure table. General room lighting can be incandescent or fluorescent and must have the ability to dim.</p>		

	Yes	No
<p><u>E. Anesthetic Gases:</u> Potential hazards associated with the use of anesthetic gases in the Laboratories should be identified and safe practices should be established. Anesthesia gases should be located at the head of the patient with enough swing to accommodate a room switch.</p>		
<p><u>F. Booms:</u> (Preferred) Anesthesia Boom, (preferred) Utilities Boom, (required) Documentation Boom, (required) Display Monitor Boom. Booms must be either electro-magnetic (preferred) or pneumatically operated. If pneumatic, provide air compressor and air storage tank in proximal sound proof room</p>		
<p><u>G. Medical Gas and Electrical Outlets:</u> (Minimum)-Oxygen (2), Vacuum (5), Nitrous Oxide (1), Nitrogen (1) Electrical Receptacles (24) must be present in each Hybrid Cardiac OR Cath Laboratory Procedure Room</p>		

	Yes	No
<p><u>H. HVAC Criteria:</u> Proper air quality, air volume changes and air flow direction in the Laboratories must meet AORN Standards and VA HVAC Guidelines for Operative Surgical Suites. Ideally this includes the visual monitoring of temperature, humidity, and positivity in the Laboratories. Room readiness should be documented prior to case start. The following are required for operative procedures to be performed:</p> <ol style="list-style-type: none"> 1. Laminar Flow Ceiling with Laminar Flow Diffusers (clear of ceiling equipment) 2. Low Return Air (3 minimum, 4 preferred) 3. Room Pressure (+) 4. Noise Criteria (35-45) 5. RH Heating (30-60%) 6. RH Cooling (20-60%) 7. Total Air Exchanges: 20 air changes per hour minimum, (25 air changes per hour preferred). 8. Minimum Outside Air: four (4) air changes per hour minimum (five (5) air changes per hour preferred). 9. Dry Bulb Temperature Heating (75 degrees F) 10. Dry Bulb Temperature Cooling (68 degrees F) 11. Design Guide continues to recommend 25% outside air for HVAC systems 12. During an operative procedure (implants, etc), all the space from the floor itself to a distance of 15" (380 mm) above is considered contaminated. Therefore, all exhaust/return grills positioned low on the wall approximately 8" (460 mm) above the floor. The Laboratory room exhaust system should include a minimum of three (four best) low exhaust/return air grills located in opposite corners to minimize recirculation of contaminated air within the room. 		
<p><u>I. Power Systems:</u> Line-isolation monitors should be provided for each isolated power system (preferred but not required). All Laboratories should be on an un-interrupted power supply (UPS). The power requirements for an operative procedure in the Catheterization or Electrophysiology Laboratories must exceed routine Catheterization Laboratories. Electrical feeders for the main distribution point may be required to boost the power needs.</p> <ol style="list-style-type: none"> 1. Minimum One 208-volt outlet is required 2. "Code Blue" system is required in the event of a cardiac arrest summoning designated staff 3. Follow requirements of National Electrical Code and NFPA 99. 		

	Yes	No
J. <u>Procedural Table:</u> Capable to swing 90 degrees (preferred) radiotranslucent with “Slope-saddle” column design that allows for a maximum Trendelenburg/Reverse Trendelenburg of ≤ 80 degrees and simultaneous lateral tilt of ≤ 45 degrees in positioning support on the surgical table top .		

5.2. Site Tours

As an initial step to updating the Space Criteria and Design Guide for the Surgical and Endovascular Services chapter, the team embarked on a series of site visits to understand models of care and surgical program design at leading Midwestern facilities on November 12-13, 2014.

In order to inform the 2016 Design Guide and Space Planning Criteria Chapter, the following facilities were toured:

- Elmhurst Memorial Hospital in Elmhurst, Illinois
- Advocate Sherman Hospital in Elgin, Illinois
- The Center for Care and Discovery in Chicago, Illinois
- Rush University Medical Center in Chicago, Illinois
- Edward Hines, Jr. VA Hospital in Hines, Illinois

The facility managers at each tour site supplied the team with floor plans which were colorized and formatted by the SmithGroupJJR consultants.

Photographs of each facility were taken by the consultant team.

The team would like to thank the many facility staff members who took time out of their work day to tour the surgical program spaces with the VA and consultant teams and explain their models of patient care.

5.2.1. Elmhurst Memorial Hospital, Elmhurst, Illinois



Figure 5.2.1.1
Aerial of Elmhurst Memorial Hospital

Elmhurst Memorial Hospital	
Location	Elmhurst, Illinois
Total Area	866,000 sf
Floors	6
Beds	259
Operating Rooms	16
Project Cost	\$450 Million
Construction Cost	\$320 Million
Opening Date	June 2011
Owner	Elmhurst Memorial Healthcare
Architect	Albert Kahn Associates Pratt Design Studio



Figure 5.2.1.2
Main Entry of Elmhurst Memorial Hospital

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

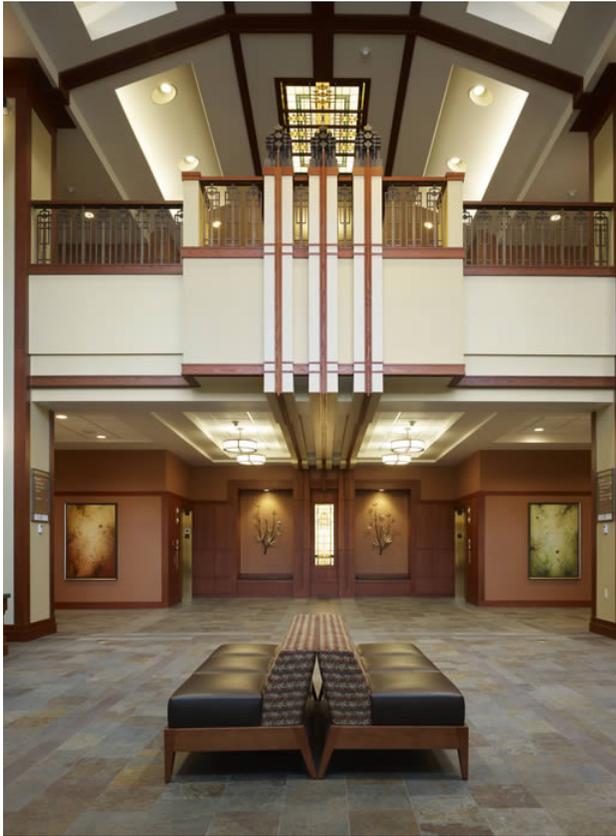


Figure 5.2.1.3
Main Lobby

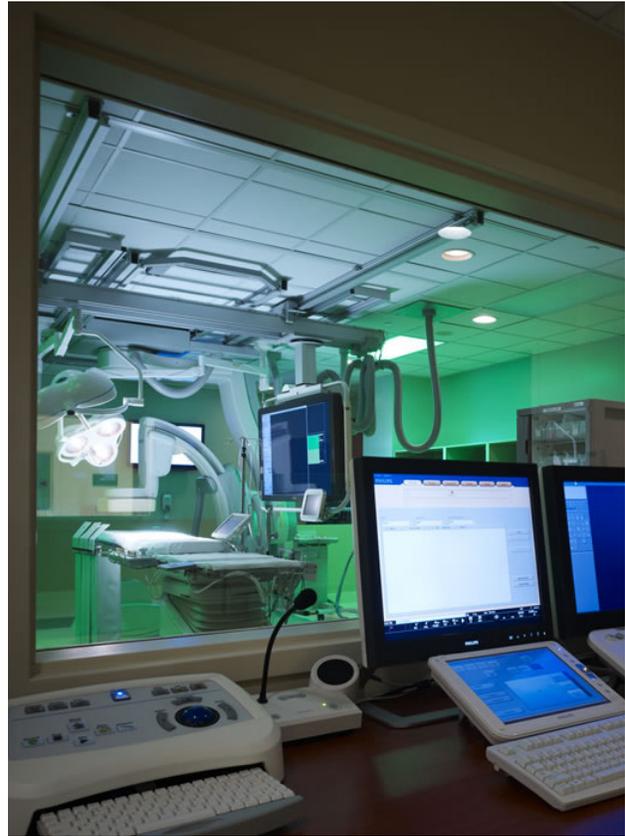


Figure 5.2.1.4
Operating Room

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system.

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, "Design: General Civil / Geotechnical / Landscape Requirements" using the existing sanitary sewer manholes. The gravity outfall will consist of PVC sewer piping. The sanitary sewer will be in accordance with NCDENR regulations and standards.

Storm Drainage Systems

Stormwater from the building will be captured and hard piped from the roof leaders to a storm drainage system that will tie into an approved BMP structure (See Stormwater Management). Runoff from all proposed impervious will drain via storm drainage pipes, or where possible through grass swales to a BMP. The drainage system will be designed to convey the 10-yr storm without surcharging or flooding the parking lots or buildings. Average storm pipe size will be 18-inch RCP.

|Stormwater Management

Stormwater management will consist of best management practices per NCDENR regulations and Department of Navy Low Impact Development (LID) Policy for Stormwater Management, to treat the stormwater runoff from the new impervious surfaces. Stormwater design will be in accordance with NCDENR criteria. Best management practices (BMP) shall be designed and implemented to meet North Carolina Department of Environment and Natural Resources (NCDENR) requirements. Stormwater management design will be coordinated and permitted through NCDENR Wilmington regional office.

Erosion and Sedimentation Control

Site Visit Analysis



Figure 5.2.1.5
Operating Room

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, "Design: General Civil / Geotechnical / Landscape Requirements" using the existing sanitary sewer manholes. The gravity outfall will consist of PVC sewer piping. The sanitary sewer will

be in accordance with NCDENR regulations and standards.

Storm Drainage Systems

Stormwater from the building will be captured and hard piped from the roof leaders to a storm drainage system that will tie into an approved BMP structure (See Stormwater Management). Runoff from all proposed impervious will drain via storm drainage pipes, or where possible through grass swales to a BMP. The drainage system will be designed to convey the 10-yr storm without surcharging or flooding the parking lots or buildings. Average storm pipe size will be 18-inch RCP.

|Stormwater Management

Stormwater management will consist of best management practices per NCDENR regulations and Department of Navy Low Impact Development (LID) Policy for Stormwater Management, to treat the stormwater runoff from the new impervious surfaces. Stormwater design will be in accordance with NCDENR criteria. Best management practices (BMP) shall be designed and implemented to meet North Carolina Department of Environment and Natural Resources (NCDENR) requirements. Stormwater management design will be coordinated and permitted through NCDENR Wilmington regional office.

Erosion and Sedimentation Control

Erosion and sediment control features such as construction entrances, silt fences, temporary sediment trap(s), and inlet protection will be used to prevent silt and construction debris from being transported into the existing drainage system and offsite. All erosion and sediment control measures will be designed to meet or exceed NCDENR regulations and guidelines and will be permitted with NCDENR Land Quality section in the Wilmington regional office.

Environmental Permits

The application process for the Water, Sewer, Stormwater Management and Erosion and Sedimentation permits will consist of submissions of the permit application, maintenance agreements, financial responsibility ownership form, engineering reports, calculations, and construction drawings to Camp Lejeune Public Works Division for approval, signatures and notarization. Following the base review of the stormwater permit package, a preliminary scoping meeting between the Designer and Camp Lejeune Public Works Division rep and NCDENR reviewer(s) will be conducted to discuss the proposed methods for stormwater management facilities for the stormwater permitting process. Upon the acceptance and comment(s) from the scoping meeting a submittal package will be assembled and the Designer will submit the stormwater management permit application package, complete to NCDENR for approval. Wetlands have been found on the west side of the site adjacent to the proposed parking lots. The Environmental Engineer is in the process of requesting a site meeting with the Army Corps of Engineers to obtain a Jurisdictional Determination.

The Intraoperative Floor



Legend:

- | | |
|--|---|
| Semi-Restricted Corridor | Public Area |
| Departmental Circulation | Staff Circulation |
| Elevators / Stairs | Sterile Core (Restricted) |
| Mech. / Elec. / Tele. | Support |
| Patient Room | Central Sterile |
| Procedure Room | Emergency Department |



Key Notes:

- | | |
|---|--|
| ① General + Specialty ORs are 740-780 sf | ⑤ Minor procedure room near PACU |
| ② Cardiothoracic OR is 850 sf | ⑥ SPD on same floor as ORs |
| ③ Reduced turn-around-time related to operational improvements in flow and surgeon block time | ⑦ Utilized same Pre-op/Phase 2 Recovery beds for surgery and Cardiac cath / EP / IR procedures |
| ④ Cohorted Surgery and Invasive cardiology programs 'behind the red line' | ⑧ Pre-op/Phase 2 Recovery rooms: 12' x 12' |



Figure 5.2.1.6
Operating Room

1



Figure 5.2.1.7
Semi-Restricted Corridor

2



Figure 5.2.1.8
Scrub Sink

3



Figure 5.2.1.9
Nurse Station

4

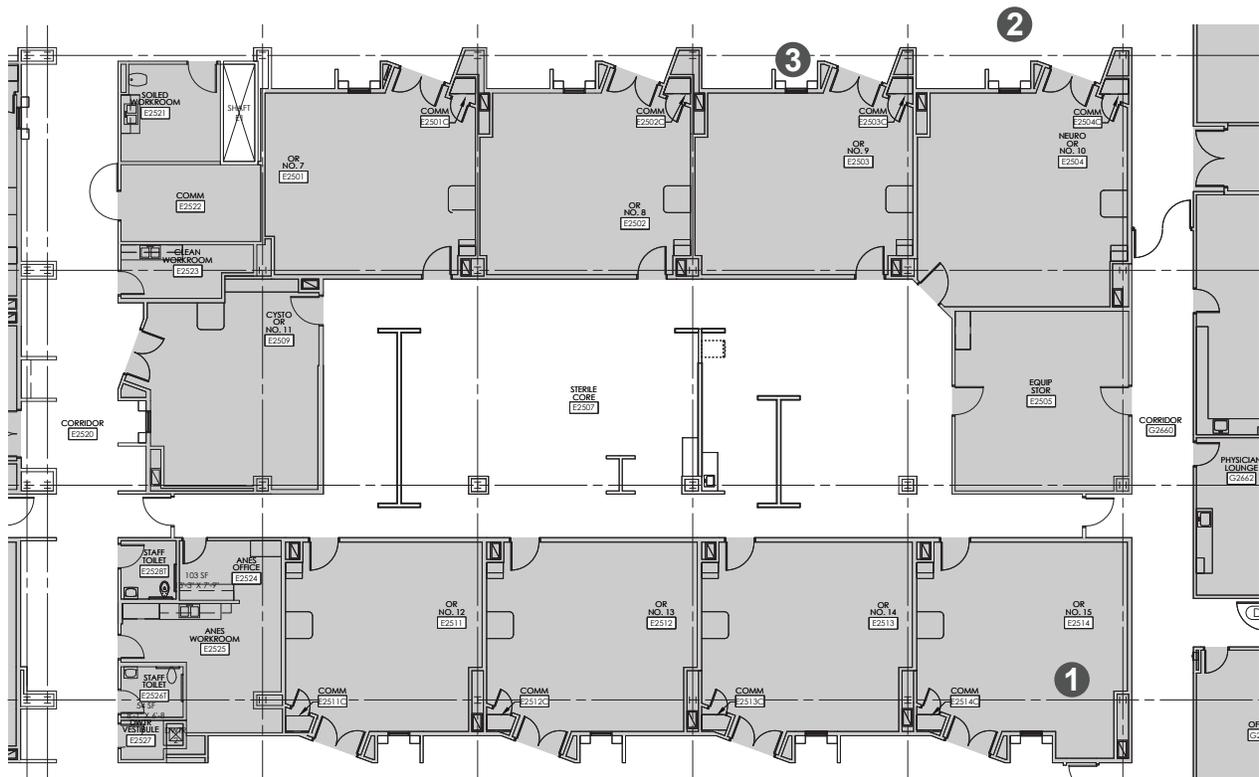


Figure 5.2.1.10
Enlarged Intraoperative Floor Plan

5.2.2. Advocate Sherman Hospital, Elgin, Illinois



Figure 5.2.2.1
Aerial of Advocate Sherman Hospital

Rush University Medical Center	
Location	Elgin, Illinois
Total Area	645,000 sf
Beds	255
Operating Rooms	12
Project Cost	\$273 Million
Construction Cost	\$230 Million
Opening Date	December 2009
Owner	Advocate Health Care
Architect	Shepley Bulfinch Loebl Schlossman & Hackl



Figure 5.2.2.2
Main Entry of Advocate Sherman Hospital

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Site Visit Analysis



Figure 5.2.2.3
Exterior View of Advocate Sherman Hospital

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, "Design: General Civil / Geotechnical / Landscape Requirements" using

the existing sanitary sewer manholes. The gravity outfall will consist of PVC sewer piping. The sanitary sewer will be in accordance with NCDENR regulations and standards.

Storm Drainage Systems

Stormwater from the building will be captured and hard piped from the roof leaders to a storm drainage system that will tie into an approved BMP structure (See Stormwater Management). Runoff from all proposed impervious will drain via storm drainage pipes, or where possible through grass swales to a BMP. The drainage system will be designed to convey the 10-yr storm without surcharging or flooding the parking lots or buildings. Average storm pipe size will be 18-inch RCP.

|Stormwater Management

Stormwater management will consist of best management practices per NCDENR regulations and Department of Navy Low Impact Development (LID) Policy for Stormwater Management, to treat the stormwater runoff from the new impervious surfaces. Stormwater design will be in accordance with NCDENR criteria. Best management practices (BMP) shall be designed and implemented to meet North Carolina Department of Environment and Natural Resources (NCDENR) requirements. Stormwater management design will be coordinated and permitted through NCDENR Wilmington regional office.

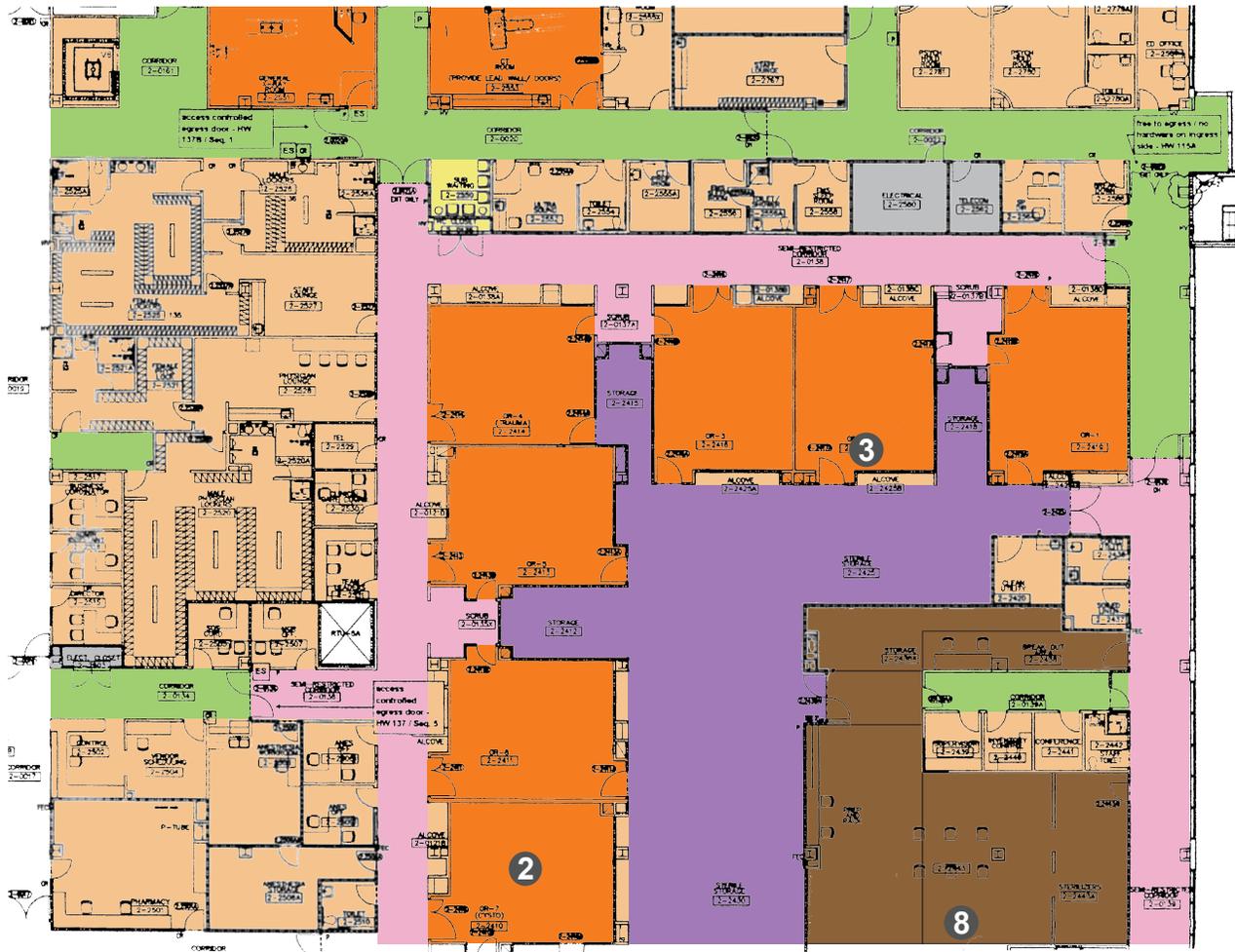
Erosion and Sedimentation Control

Erosion and sediment control features such as construction entrances, silt fences, temporary sediment trap(s), and inlet protection will be used to prevent silt and construction debris from being transported into the existing drainage system and offsite. All erosion and sediment control measures will be designed to meet or exceed NCDENR regulations and guidelines and will be permitted with NCDENR Land Quality section in the Wilmington regional office.

Environmental Permits

The application process for the Water, Sewer, Stormwater Management and Erosion and Sedimentation permits will consist of submissions of the permit application, maintenance agreements, financial responsibility ownership form, engineering reports, calculations, and construction drawings to Camp Lejeune Public Works Division for approval, signatures and notarization. Following the base review of the stormwater permit package, a preliminary scoping meeting between the Designer and Camp Lejeune Public Works Division rep and NCDENR reviewer(s) will be conducted to discuss the proposed methods for stormwater management facilities for the stormwater permitting process. Upon the acceptance and comment(s) from the scoping meeting a submittal package will be assembled and the Designer will submit the stormwater management permit application package, complete to NCDENR for approval. Wetlands have been found on the west side of the site adjacent to the proposed parking lots. The Environmental Engineer is in the process of requesting a site meeting with the Army Corps of Engineers to obtain a Jurisdictional Determination.

The Intraoperative Floor



Legend:

- | | |
|--|---|
| Semi-Restricted Corridor | Public Area |
| Departmental Circulation | Staff Circulation |
| Elevators / Stairs | Sterile Core (Restricted) |
| Mech. / Elec. / Tele. | Support |
| Patient Room | Central Sterile |
| Procedure Room | Emergency Department |



Figure 5.2.2.4
Cath Lab

1

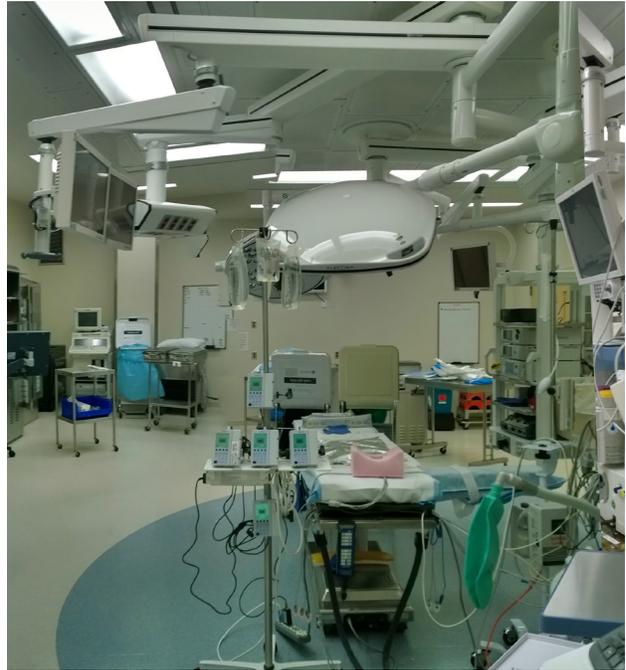


Figure 5.2.2.5
Hybrid OR

2



Figure 5.2.2.6
PACU Nurse Station

3

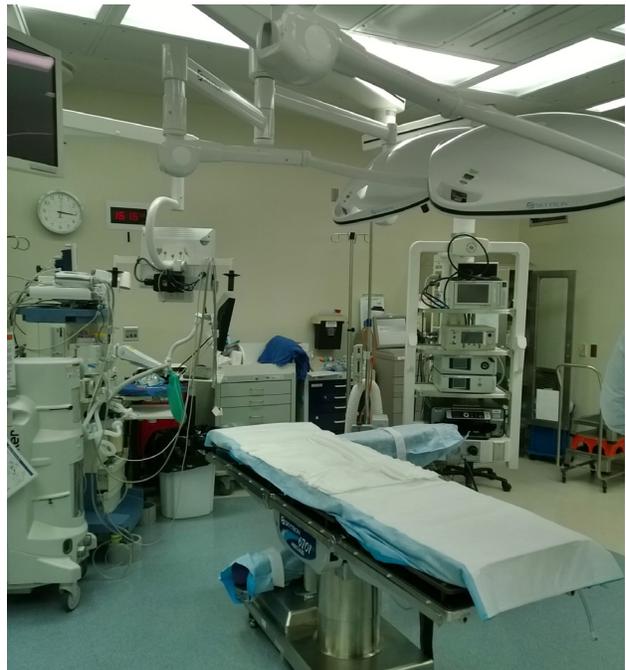


Figure 5.2.2.7
OR

4

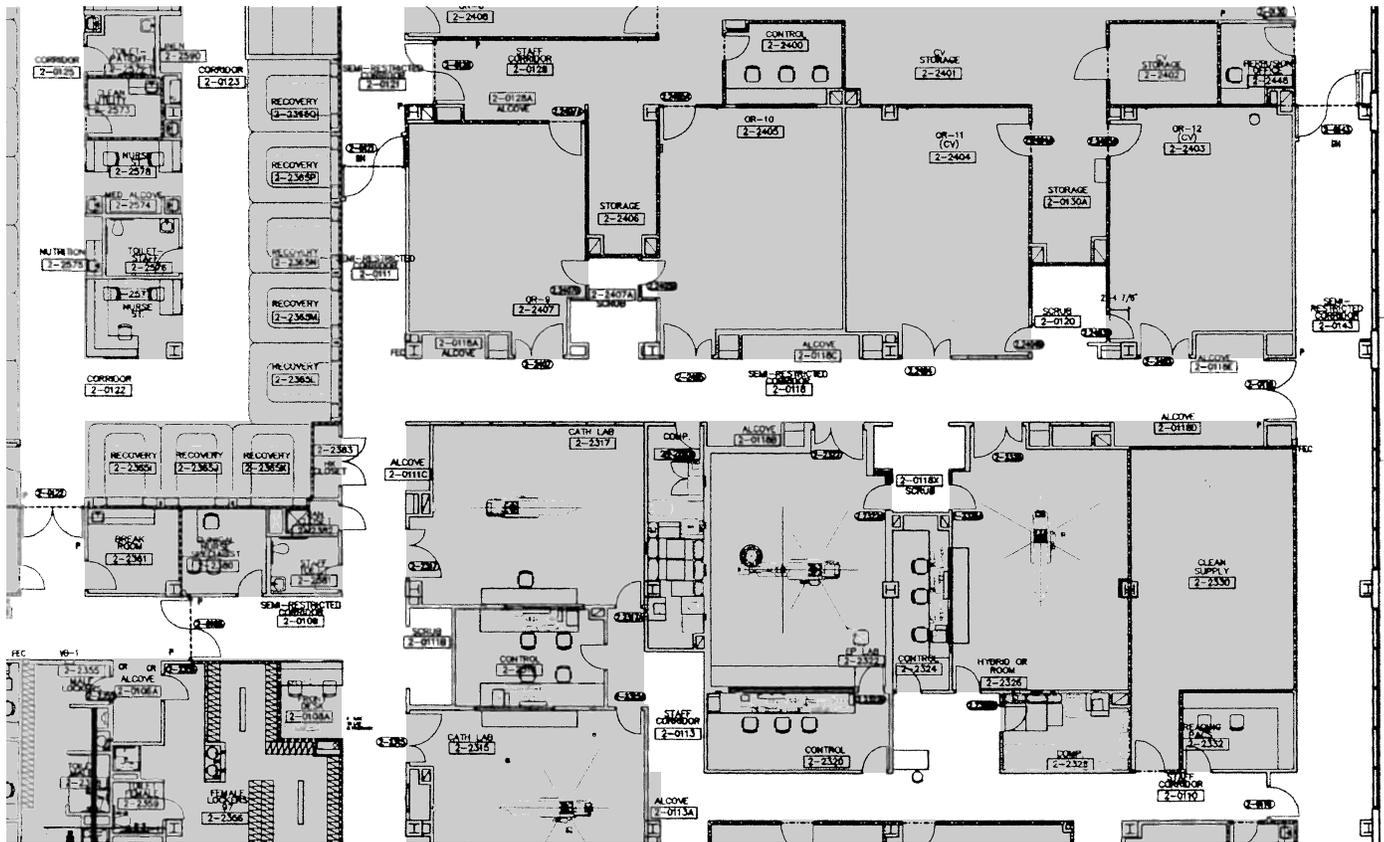


Figure 5.2.2.8
Enlarged Intraoperative Floor Plan

5.2.3. Center for Care and Discovery, Chicago, Illinois

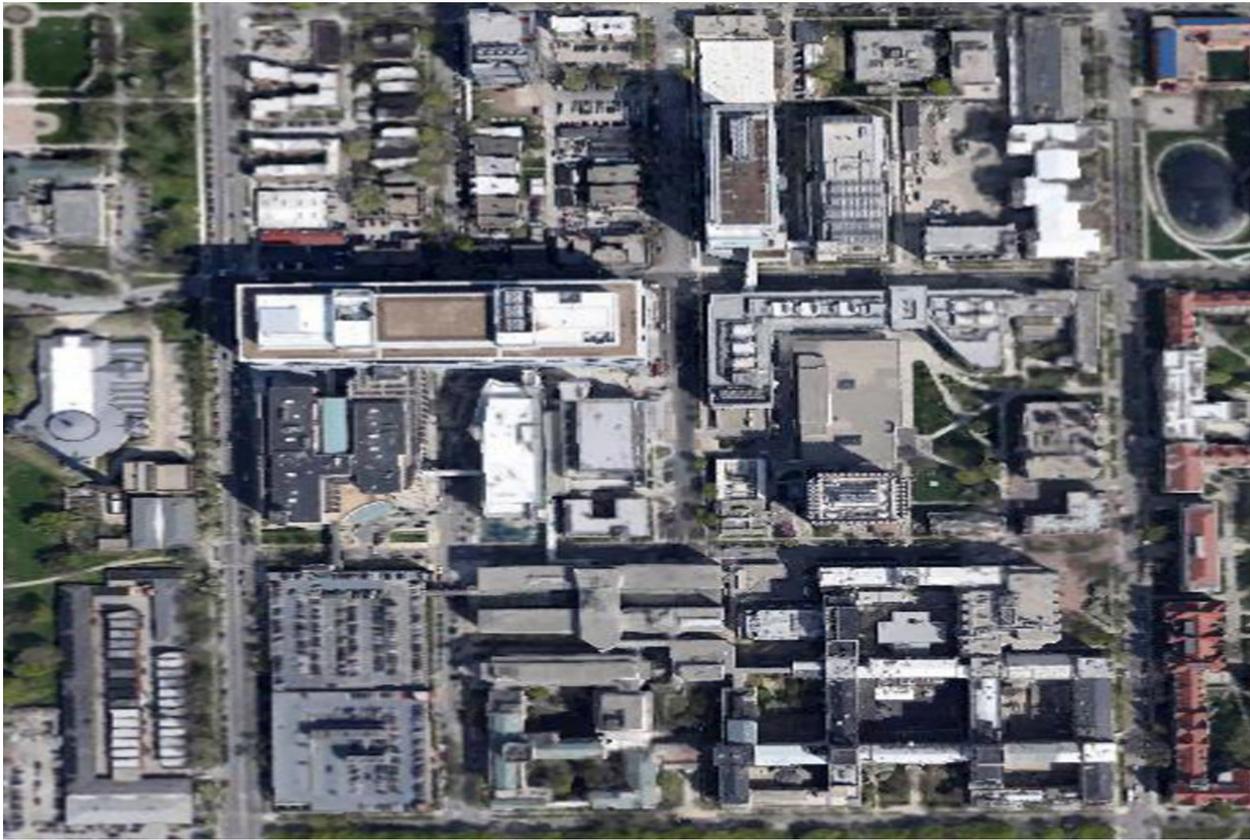


Figure 5.2.3.1
Aerial of the University of Chicago Medicine

Center for Care and Discovery	
Location	Chicago, Illinois
Total Area	1.2 Million sf
Floors	10
Beds	240
Operating Rooms	28 (including Hybrid ORs, not including GI/ENDO suites) 7 Cath/EP/IR labs
Project Cost	\$700 Million
Construction Cost	\$470 Million
Opening Date	February 2013
Owner	University of Chicago Medicine
Architect	Rafael Viñoly Architects Cannon Design



Figure 5.2.3.2
Exterior View of the Center for Care and Discovery

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATRFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system.

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, "Design: General Civil / Geotechnical / Landscape Requirements" using

Site Visit Analysis

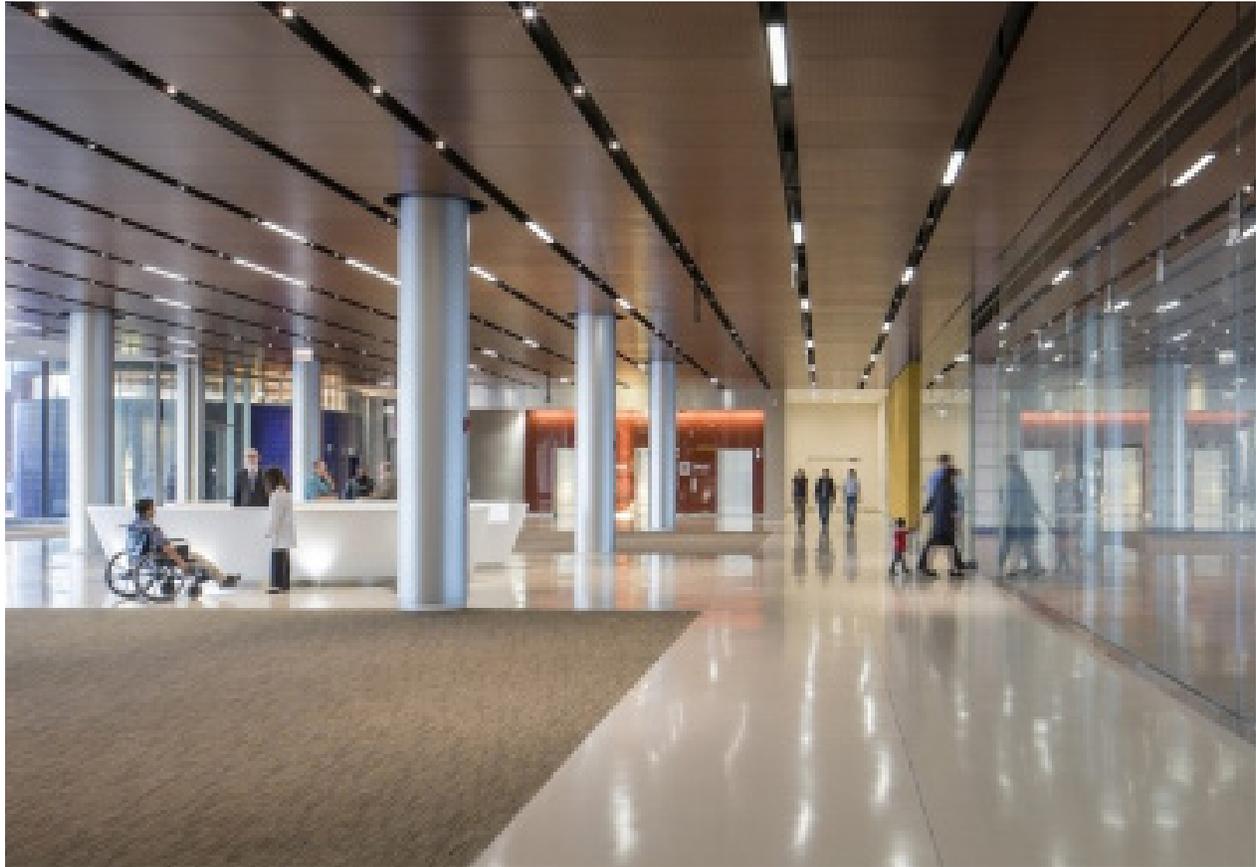


Figure 5.2.3.3
Center of Care and Discovery

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, "Design: General Civil / Geotechnical / Landscape Requirements" using

the existing sanitary sewer manholes. The gravity outfall will consist of PVC sewer piping. The sanitary sewer will be in accordance with NCDENR regulations and standards.

Storm Drainage Systems

Stormwater from the building will be captured and hard piped from the roof leaders to a storm drainage system that will tie into an approved BMP structure (See Stormwater Management). Runoff from all proposed impervious will drain via storm drainage pipes, or where possible through grass swales to a BMP. The drainage system will be designed to convey the 10-yr storm without surcharging or flooding the parking lots or buildings. Average storm pipe size will be 18-inch RCP.

|Stormwater Management

Stormwater management will consist of best management practices per NCDENR regulations and Department of Navy Low Impact Development (LID) Policy for Stormwater Management, to treat the stormwater runoff from the new impervious surfaces. Stormwater design will be in accordance with NCDENR criteria. Best management practices (BMP) shall be designed and implemented to meet North Carolina Department of Environment and Natural Resources (NCDENR) requirements. Stormwater management design will be coordinated and permitted through NCDENR Wilmington regional office.

Erosion and Sedimentation Control

Erosion and sediment control features such as construction entrances, silt fences, temporary sediment trap(s), and inlet protection will be used to prevent silt and construction debris from being transported into the existing drainage system and offsite. All erosion and sediment control measures will be designed to meet or exceed NCDENR regulations and guidelines and will be permitted with NCDENR Land Quality section in the Wilmington regional office.

Environmental Permits

The application process for the Water, Sewer, Stormwater Management and Erosion and Sedimentation permits will consist of submissions of the permit application, maintenance agreements, financial responsibility ownership form, engineering reports, calculations, and construction drawings to Camp Lejeune Public Works Division for approval, signatures and notarization. Following the base review of the stormwater permit package, a preliminary scoping meeting between the Designer and Camp Lejeune Public Works Division rep and NCDENR reviewer(s) will be conducted to discuss the proposed methods for stormwater management facilities for the stormwater permitting process. Upon the acceptance and comment(s) from the scoping meeting a submittal package will be assembled and the Designer will submit the stormwater management permit application package, complete to NCDENR for approval. Wetlands have been found on the west side of the site adjacent to the proposed parking lots. The Environmental Engineer is in the process of requesting a site meeting with the Army Corps of Engineers to obtain a Jurisdictional Determination.

Site Visit Analysis - Intraoperative Floor 5



Legend:

- Semi-Restricted Corridor
- Departmental Circulation
- Elevators / Stairs
- Mech. / Elec. / Tele.
- Patient Room
- Procedure Room
- Public Area
- Staff Circulation
- Sterile Core (Restricted)
- Support
- Central Sterile
- Emergency Department



Key Notes:

- ① Adequate storage for procedure rooms
- ② Flexible Pre-Recovery Phase 2 unit
- ③ Ample vertical transportation to patient care units
- ④ Prep-Recovery for Procedure zone
- ⑤ Adjacent MRI
- ⑥ Interventional Radiology rooms

Site Visit Analysis - Intraoperative Floor 6



Legend:

- Semi-Restricted Corridor
- Departmental Circulation
- Elevators / Stairs
- Mech. / Elec. / Tele.
- Patient Room
- Procedure Room
- Public Area
- Staff Circulation
- Sterile Core (Restricted)
- Support
- Central Sterile
- Emergency Department



Key Notes:

- 1** Hybrid OR
 - 2** Future expansion capability
 - 3** Decentralized clean and soiled workroom with cart storage
- 4** Clean storage
 - 5** Typical 625 nsf OR
 - 6** GI Hybrid OR
 - 7** Staff locker areas



Figure 5.2.3.4
Cath Lab



1 **Figure 5.2.3.5**
PACU

2



Figure 5.2.3.6
Nurse Station



3 **Figure 5.2.3.7**
Control Room

4



Figure 5.2.3.9
Hybrid OR



1 **Figure 5.2.3.10**
Clean Core

2



Figure 5.2.3.11
Prep/Recovery



3 **Figure 5.2.3.12**
Control Room

4

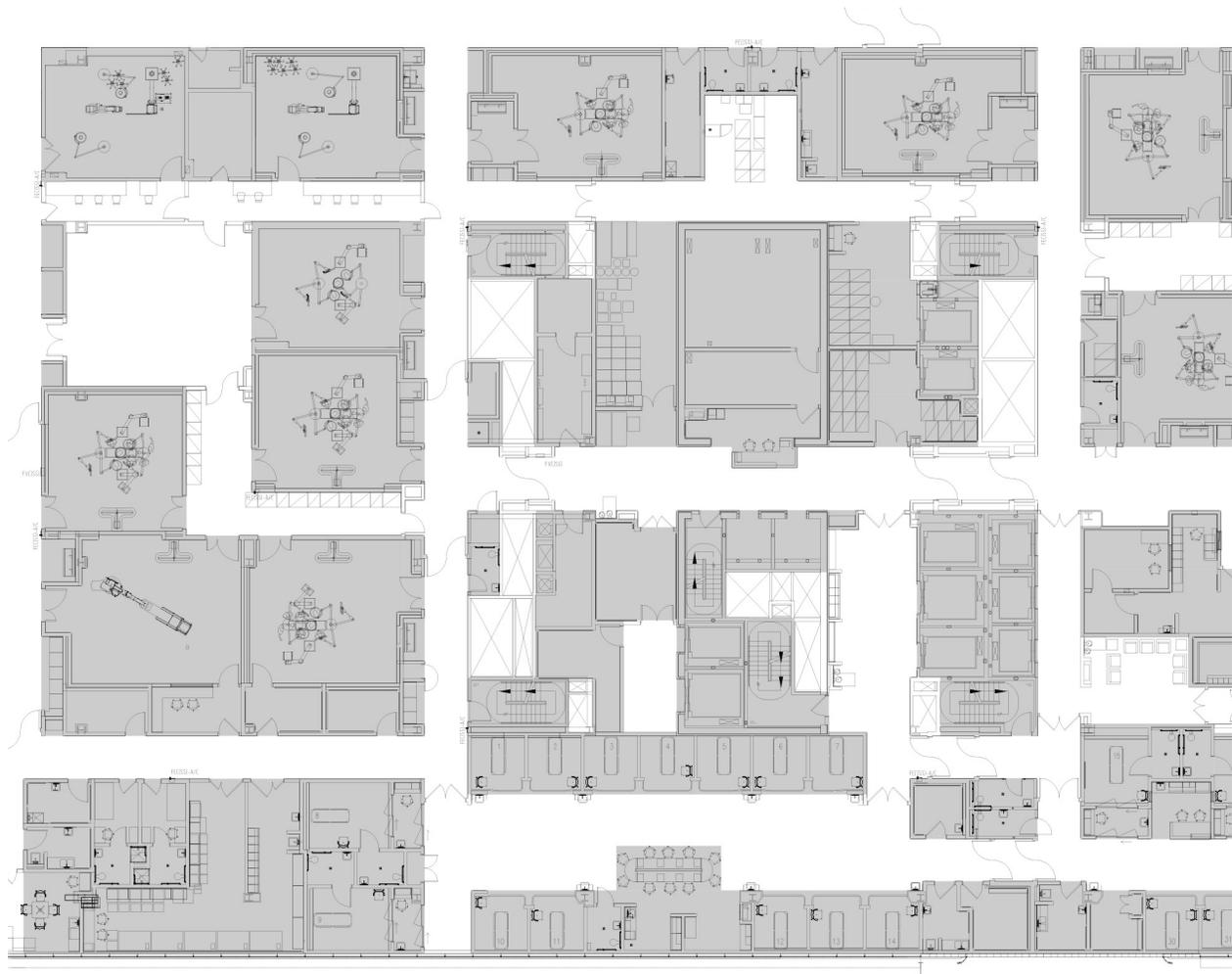


Figure 5.2.3.13
Enlarged Level 6 Intraoperative Floor Plan

5.2.4. Rush University Medical Center, Chicago, Illinois

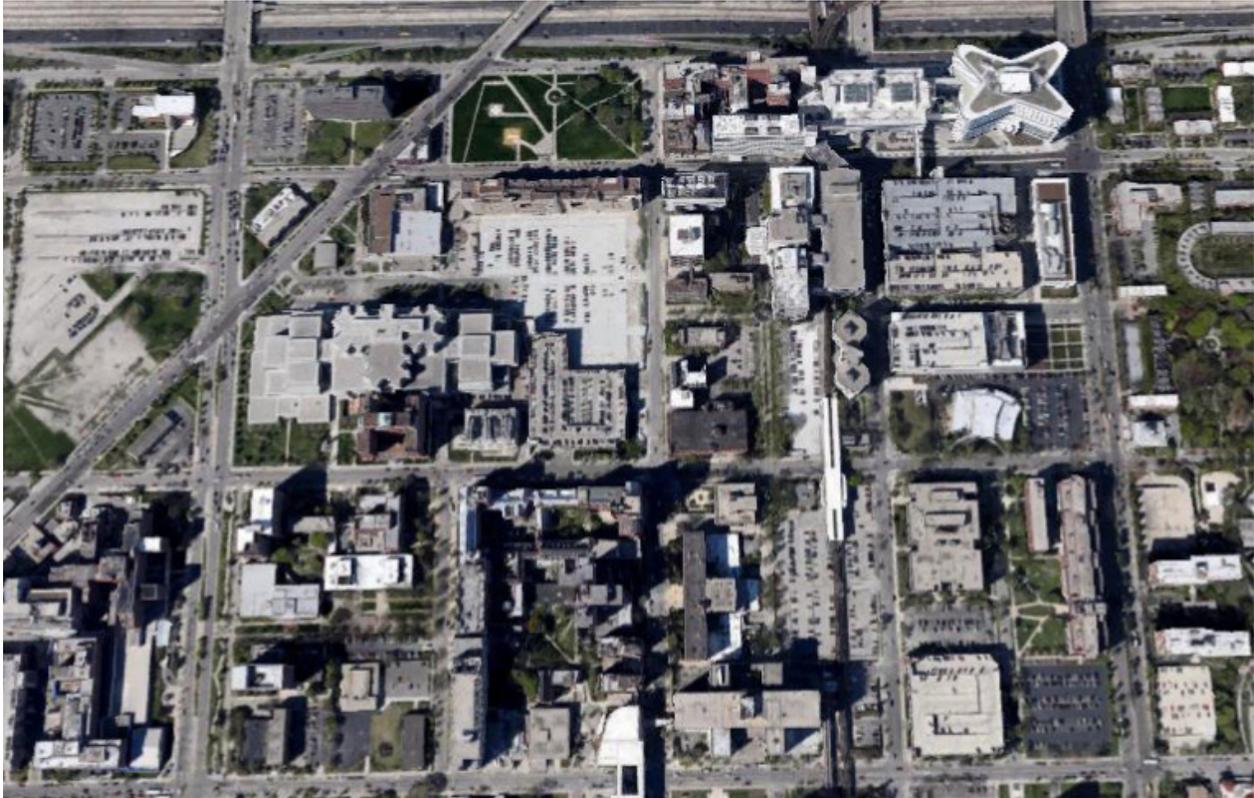


Figure 5.2.4.1
Aerial of Rush University Medical Center

Rush University Medical Center	
Location	Chicago, Illinois
Total Area	830,000 sf
Floors	14
Beds	304
Operating Rooms	28 (including Hybrid ORs, not including GI/ENDO suites) 12 Cath/EP/IR labs
Project Cost	\$654 Million
Construction Cost	\$398 Million
Opening Date	January 2012
Owner	Rush University Medical Center
Architect	Perkins + Will



Figure 5.2.4.2
Main Entry of the Rush University Medical Center

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system

Site Visit Analysis



Figure 5.2.4.3
Aerial View of Rush University Medical Center

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, “Design: General Civil / Geotechnical / Landscape Requirements” using the existing sanitary sewer manholes. The gravity outfall will consist of PVC sewer piping. The sanitary sewer will be in accordance with NCDENR regulations and standards.

Storm Drainage Systems

Stormwater from the building will be captured and hard piped from the roof leaders to a storm drainage system that will tie into an approved BMP structure (See Stormwater Management). Runoff from all proposed impervious will drain via storm drainage pipes, or where possible through grass swales to a BMP. The drainage system will be designed to convey the 10-yr storm without surcharging or flooding the parking lots or buildings. Average storm pipe size will be 18-inch RCP.

|Stormwater Management

Stormwater management will consist of best management practices per NCDENR regulations and Department of Navy Low Impact Development (LID) Policy for Stormwater Management, to treat the stormwater runoff from the new impervious surfaces. Stormwater design will be in accordance with NCDENR criteria. Best management practices (BMP) shall be designed and implemented to meet North Carolina Department of Environment and Natural Resources (NCDENR) requirements. Stormwater management design will be coordinated and permitted through NCDENR Wilmington regional office.

Erosion and Sedimentation Control

Erosion and sediment control features such as construction entrances, silt fences, temporary sediment trap(s), and inlet protection will be used to prevent silt and construction debris from being transported into the existing drainage system and offsite. All erosion and sediment control measures will be designed to meet or exceed NCDENR regulations and guidelines and will be permitted with NCDENR Land Quality section in the Wilmington regional office.

Environmental Permits

The application process for the Water, Sewer, Stormwater Management and Erosion and Sedimentation permits will consist of submissions of the permit application, maintenance agreements, financial responsibility ownership form, engineering reports, calculations, and construction drawings to Camp Lejeune Public Works Division for approval, signatures and notarization. Following the base review of the stormwater permit package, a preliminary scoping meeting between the Designer and Camp Lejeune Public Works Division rep and NCDENR reviewer(s) will be conducted to discuss the proposed methods for stormwater management facilities for the stormwater permitting process. Upon the acceptance and comment(s) from the scoping meeting a submittal package will be assembled and the Designer will submit the stormwater management permit application package, complete to NCDENR for approval. Wetlands have been found on the west side of the site adjacent to the proposed parking lots. The Environmental Engineer is in the process of requesting a site meeting with the Army Corps of Engineers to obtain a Jurisdictional Determination.

Site Visit Analysis - Level 4 Intraoperative Floor

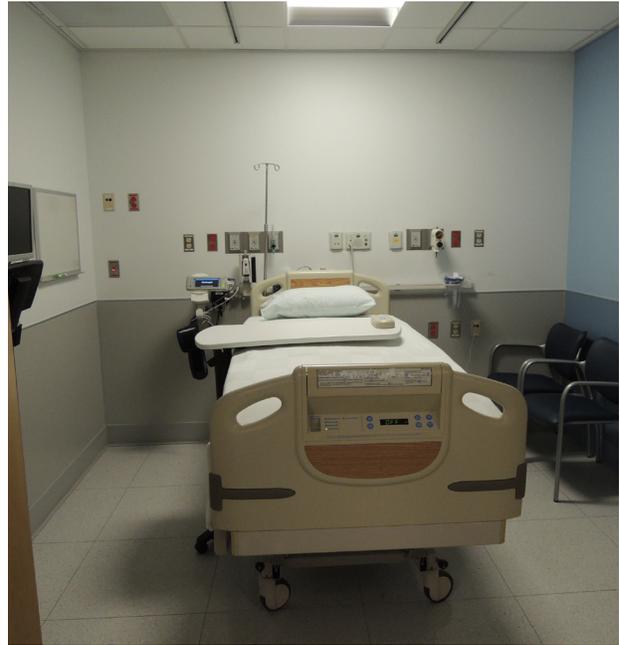


Legend:

- Semi-Restricted Corridor
- Departmental Circulation
- Elevators / Stairs
- Mech. / Elec. / Tele.
- Patient Room
- Public Area
- Staff Circulation
- Sterile Core (Restricted)
- Support
- Central Sterile
- Emergency Department



Figure 5.2.4.4
Cath Lab

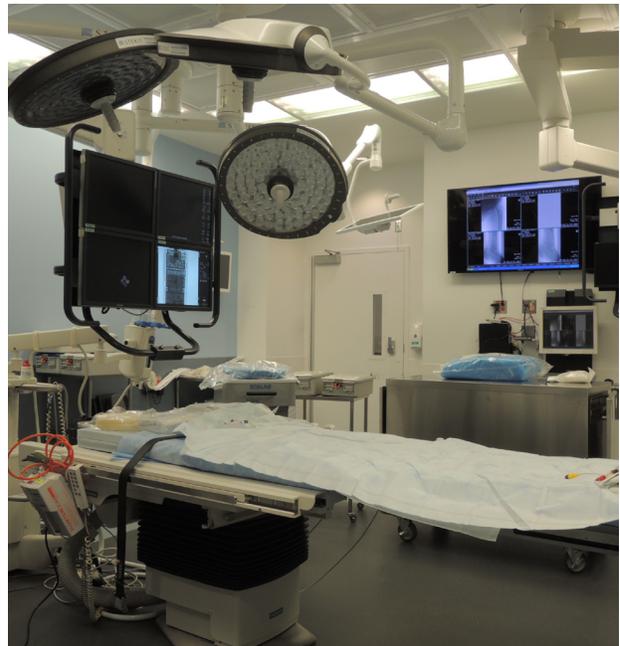


1 **Figure 5.2.4.5**
PACU

2



Figure 5.2.4.6
Public Corridor



3 **Figure 5.2.4.7**
Hybrid OR

4

5.2.5. Edward Hines Jr. VA Hospital Hines Illinois



Figure 5.2.5.1
Aerial of Edward Hines, Jr. VA Hospital

Edward Hines, Jr. VA Hospital	
Location	Hines, Illinois
Beds	471
Operating Rooms	9



Figure 5.2.5.2

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

Site Visit Analysis



Figure 5.2.5.3

View of Edward Hines, Jr. VA Hospital

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

During the S1 submittal, it was confirmed that this project will only have to comply with ATFP standards around the new building additions. Other than vehicle drop-off lanes, a minimum anti-terrorism setback distance of 82-feet will be provided between the proposed building and parking lots. A 33-foot setback distance will be maintained around the proposed building and the cooling tower yard. During heightened threat levels, proximity gates and removable bollards can be utilized to block off the drop-off lanes to maintain the 82-foot setback distance.

Grading

The site will be cleared, grubbed and graded. The maximum slopes for earthwork cut and fill will be 3 horizontal to 1 vertical. Final site grading will be designed to minimize earthwork to the greatest extent feasible by balancing cut and fill. The site grading will utilize off-site soil to fill the site. Finish grade at the perimeter of the building will be 8-inches below the finish floor elevation. The finish floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood elevation. The site will be graded so that surface water will sheet flow away from the building and into storm drainage structures at various locations throughout the site. The parking area will be graded to sheet flow to storm drainage pipes, or where possible through grass swales.

Water Supply

Water supply services will be sized according to anticipated pressure and volume demands for both domestic water supply and fire suppression system supply. Just before entering the mechanical room, the water main will be split into two separate mains, one dedicated to fire supply and one dedicated to domestic supply (including the chillers). After passing through appropriate backflow preventers, the mains will supply domestic and fire water to the facility. A service connection with corporation stop will provide domestic water supply from the new water mains to the buildings. A minimum 6" fire supply line with a post indicator valve will be provided from the new water mains to the buildings. Fire hydrants will be located within proximity to the building and will be spaced to allow for adequate coverage per the UFC and industry standards. Each water line includes a gate valve near the connection with the water main. Gate valves will be located throughout the system to ensure no more than one hydrant will be out of service if a single line needs to be maintained. Due to the location of the proposed building, the existing fire main on the west side of the building will be relocated to maintain the existing looped system.

Sanitary Sewer

Sanitary sewer service for the project will be designed as a gravity outfall to convey sewage from the proposed building additions to the existing sewer system. The connection to these mains shall be performed in accordance with guidelines given in UFC 3-200-10N, "Design: General Civil / Geotechnical / Landscape Requirements" using the existing sanitary sewer manholes. The gravity outfall will consist of PVC sewer piping. The sanitary sewer will be in accordance with NCDENR regulations and standards.

Site Visit Analysis - Intraoperative Floor



Legend:

- Semi-Restricted Corridor
- Departmental Circulation
- Elevators / Stairs
- Mech. / Elec. / Tele.
- Patient Room
- Procedure Room
- Public Area
- Staff Circulation
- Sterile Core (Restricted)
- Support
- Central Sterile
- Emergency Department



Key Notes:

- 1** OR zone
- 2** Patient holding
- 3** Central Sterile department
- 4** Patient Prep-Recovery area
- 5** Anesthesia support
- 6** Staff support
- 7** Hybrid room
- 8** Cysto suite
- 9** Cardiac Cath



Figure A5.2.5.4
Hybrid OR

1



Figure A5.2.5.5
Prep/Recovery

2



Figure A5.2.5.6
Nurse Station

3



Figure A5.2.5.7
Staff Corridor

4

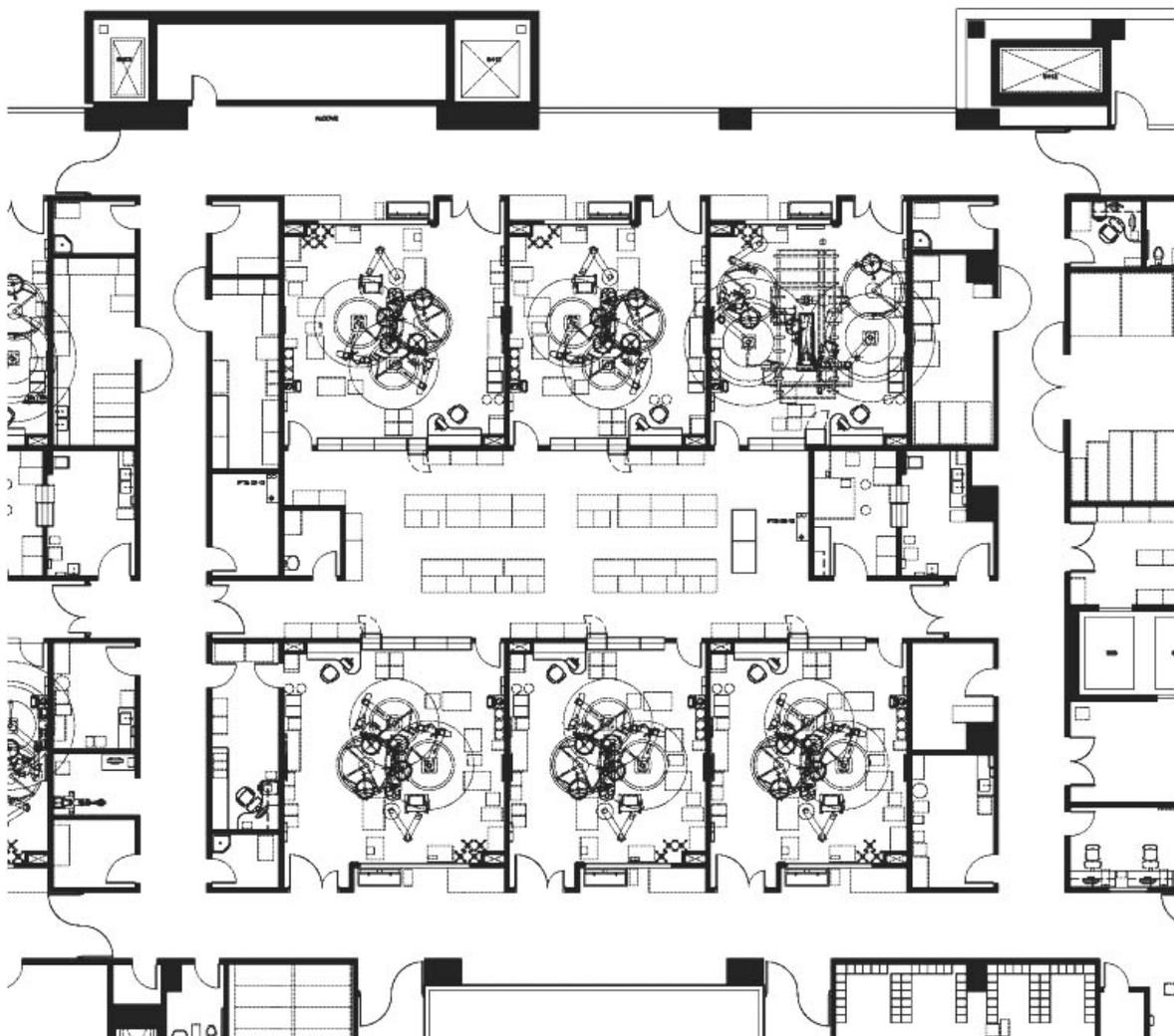
5.3. The Interventional Suite

Existing Conditions

The existing site is located within the MCB Camp Lejeune, North Carolina west of the main gate off of Brewster Boulevard. The site is approximately 100 acres and consists of buildings, driveways, parking lots, sidewalks, loading/mechanical areas, and a helicopter pad. The facility is served by an existing 8-inch and 10-inch water loop around the building which is served by a 10-inch main from Brewster Boulevard. The sanitary sewer system gravity drains through a 10" main from the west and an 8" main from the east flowing to an existing pump station located north of the facility. The force main is pumped through a 10-inch force main to Brewster Boulevard. (Existing utility information was obtained from field survey and original design drawings for the facility.)

Demolition

Site demolition includes demolition and removal of driveways, parking lots, sidewalks, trees and other miscellaneous structures in the project area. Existing utilities within the project area will be demolished and capped at the source as necessary. Arrangements will be made to minimize interruption of service from existing facilities. Any utility



interruptions will be coordinated with Lindsay Hathcock at least ten (10) days in advance.

New Site Work and Anti-Terrorism Force Protection (AT/FP)

The new site will be comprised of building additions on the south and west wings of the facility and 289 additional parking spaces distributed around the site. Parking lot shall be bituminous pavement with vehicle stall dimensions of 9 ft wide by 18 ft deep and 24 ft wide aisles. Handicap parking spaces will be provided in accordance with Uniform Federal Accessibility Standards. Two way traffic entrances will be provided for the parking lots from the existing circulation drives. Sidewalks will be constructed of 4-inch concrete and facilitate ADA compliant pedestrian movements to and from the facility. The greenway, currently being constructed, will be realigned around the proposed parking lot and will be designed in accordance with current design criteria (design criteria to be provided by NAVFAC).

