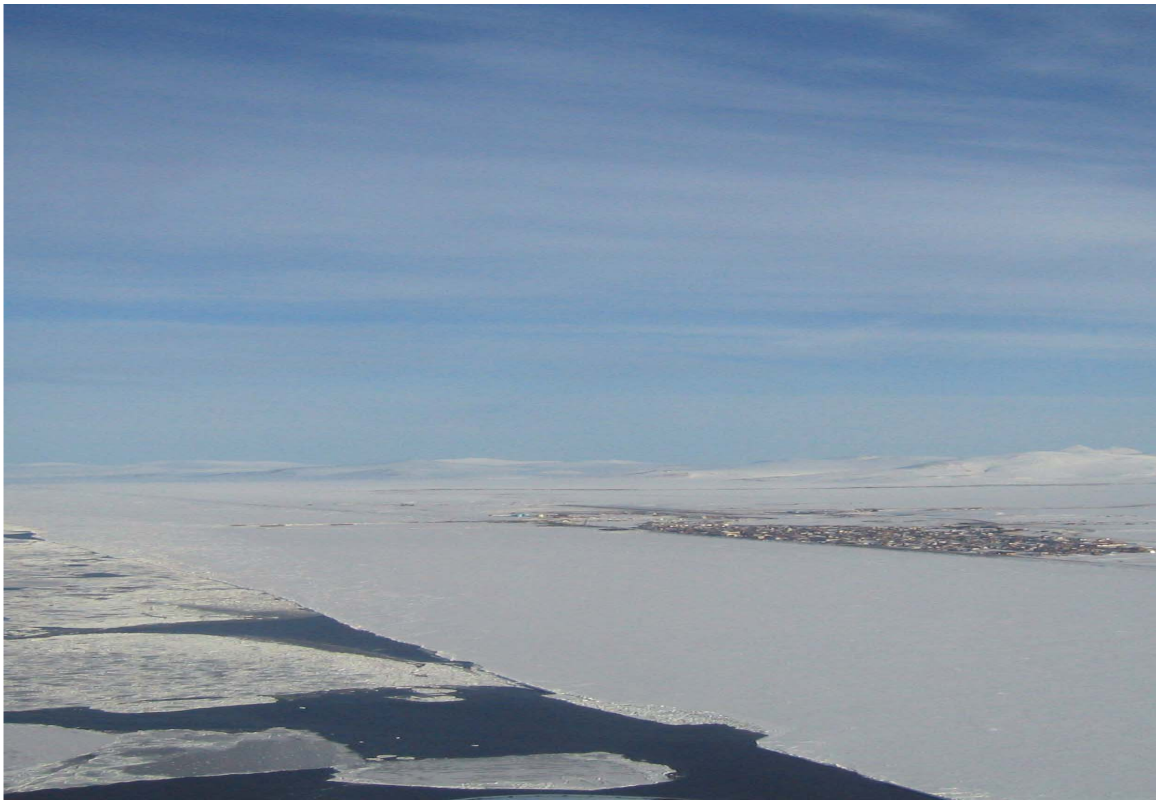


Site Relocation and Alternate Concept Development

for the

NORTON SOUND REGIONAL HOSPITAL NOME, ALASKA

October 6, 2006

TABLE OF CONTENTS

INTRODUCTION

This report documents and summarizes the activities and conclusions resulting from the Site Relocation and Alternate Concept Development phase of design services for the Norton Sound Regional Hospital. A design team kick-off meeting was held in Anchorage on August 14-15, 2006 to begin exploring new conceptual design ideas related to the relocation of the proposed facility. A work session was subsequently held in Nome on August 24, 2006 with Site Planning & Construction Committee members, hospital staff, and design team members. The focus of this meeting was to up-date participants on the status of the design effort, summarize potential cost reduction strategies, and begin to test design assumptions.

Over the course of five weeks, the design team investigated several planning options for locating the hospital upon the lower site. Three different building schemes emerged as the most viable concepts. The new concepts were presented to the NSHC Site Planning and Construction Committee in Nome on September 29, 2006. Design analysis of each scheme is presented in the body of this report. Minutes from all planning meetings are contained in the Appendix.

HISTORY

The groundwork for this project, laid during previous design phases, is summarized in the brief timeline below. They include:

- Program Verification & Regional Travel – Report Submitted 5/31/05

  Program Verification
  1. This task included interviews with NSHC staff members over 4 days in Nome. Over 50 departments and services were represented. Follow-up interviews were conducted to finalize outstanding program issues.

  Regional Travel
  2. The design team visited Brevig Mission, Elim, Unalakleet, Gambell, Savoonga and Shishmaref. In addition representatives from Teller, White Mountain, St. Michael, Koyuk, Shaktookil and Wales participated at one of these villages.

- Site Development & Concept Plan – Report Submitted 8/17/05

  1. Based on direction given to the design team by the Owner's Capital Projects representative, the facility was to be located on the upper portion of the NSHC-owned 38.9-acre parcel (located north of By-Pass Road). Four concepts were developed based on the draft POR dated March 22, 2005. They were designated as Earth, Ice, Sea, and Sky.
  2. A week-long series of meetings were held in Nome to evaluate the merits of each concept in terms of medical planning, site response, etc. Meeting participants included the NSRH Site Planning Committee, Medical Staff,

Kawerak Staff, City of Nome representatives, the Executive Committee, the Denali Commission, and IHS representatives.
3. Based on feed back from these meetings, the “Earth” concept was selected to be developed into a Schematic Design.

- Schematic Design, Quality Control Review & Value Engineering
  Schematic Design Submitted 12/09/05
  Value Engineering Study Report Submitted 1/30/06

  1. The Schematic Design was completed. Its approximate cost was estimated to be $148 million.
  2. The concept was also evaluated in terms of Quality Control and Value Engineering during a series of meetings in Seattle.

The completed schematic design of the Norton Sound Regional Hospital was presented to IHS headquarters staff on January 25, 2006. Over the course of four weeks, review comments were addressed, and the medical planning and departmental adjacencies agreed upon.

In February 2006, The IHS informed Norton Sound Health Corporation that construction funding, if provided, would support a facility of 144,270bgsf with a construction value in the range of $100 million. The NSHC Site Planning & Construction Committee met with the design team to discuss options and opportunities to bring the construction budget in line with the IHS design to budget, including the study of alternative building layouts on the lower portion of the site. The purpose of this conceptual study is to develop two additional design alternatives with an approximate construction budget of $95 million, with additional funds reserved for construction contingency and phased construction.

II. PROJECT GOALS

KEY GOALS

The concepts included in this report are based on our understanding of Norton Sound Health Corporation's mission, values and beliefs. Utilizing the insights gained from the staff interactions in Nome, key goals were identified that are to be considered when evaluating the proposed designs.

The key goals are as follows:

- Provide a modern facility that provides state of the art environment of care
- Contribute to staff satisfaction, retention and recruitment
- Create a healing environment for patients
- Acknowledge the cultural needs of staff and users
- Respond to the climate using appropriate arctic construction means and methods
- Be respectful to the environment
- Provide a significant amenity to the city of Nome
- Respond to budget constraints

PROGRAM

The building program calls for a comprehensive health facility serving the constituents of Norton Sound. The primary users of the facility are native Alaskans living in the 15 villages around Norton Sound as well as Nome residents. The new hospital will be central to this dispersed network of villages, and must anticipate the requirements of healthcare delivery for healthcare providers, consumers and family members. The Program of Requirements (POR) has been utilized to develop spatial relationships based on our understanding of NSHC operational needs and from perspective gained from other medical facilities.

Building on prior work shops with NSRH staff, the following program and planning criteria remain essential to the building organization:

Entry/Access
- On-grade transfer from vehicle to entry
- Emergency Department access without vertical patient transfer

Wayfinding
- Easily identifiable entry point to building
- Orientation "landmarks" for patients/visitors within building
- Shared waiting, single point of contact for admitting
- Separation of service and public traffic flow

Critical Adjacencies
- Access to ancillary services by both inpatient and ambulatory users
- Emergency adjacent to inpatient unit for staff cross coverage
- Co-locate 24-hour activities to limit occupied areas after hours

- Locate occupied staff areas, public waiting to take advantage of views and daylight
- Provide "back of house" access to ancillary departments for service and inpatients

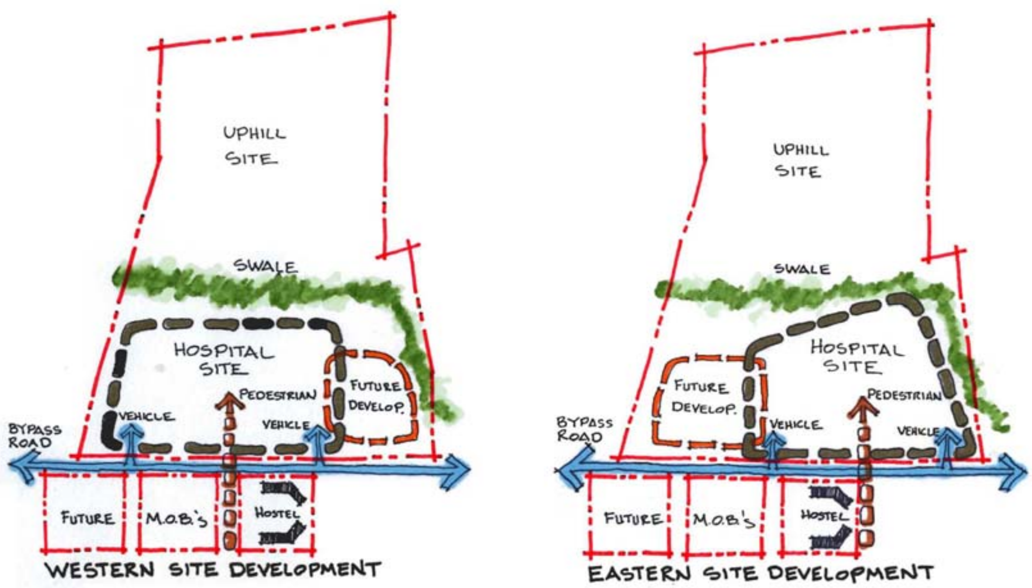
Growth Strategies

- Locate "soft space" adjacent to ancillary services to allow expansion in place
- Place administrative uses that may be relocated out of building adjacent to ambulatory

SITE ANALYSIS AND DEVELOPMENT CONCEPTS

The site is ideally located in terms of its relationship to the town of Nome. The site is easily accessible from developed portions of town and is within blocks of the school. The site has the opportunity to create a strong physical and visual bond to the community that, through creative site planning, can become a very positive influence on future development.

Development of the lower site presents two options for locating the hospital, parking and access roads: develop the West side or develop the East side.



Western Site Development:

Development of the western portion of the lower site would locate the hospital in the center of the development zone, west of the existing access road. Patient and staff vehicles enter the site using the existing access road, located at the intersection of Bypass Road and "N" Street. Emergency and service vehicles enter the site at the intersection of Bypass Road and "L" Street. Pedestrian access from the south would cross Bypass road near the intersection at "M" Street. Future site development is reserved on the portion of the site east of the existing access road.

Eastern Site Development:
Development of the eastern portion of the lower site would locate the hospital just below the swale, roughly straddling the existing access road. Patient and staff vehicles enter at the intersection of Bypass Road and "O" Street. Emergency and service vehicles enter the site at the intersection of Bypass Road and "M" Street. Pedestrian access from the "city blocks" to the south would cross Bypass Road near the intersection at "N" Street. Future site development is placed to the west of the lower site.

Overall site development philosophy is twofold; first, saving the site by reducing construction impacts as well as designing buildings and roads to fit the site makes sense in terms of costs and benefit to the Owner; second, an understanding of the site and what it has to offer, including orientation, views, and easy direct access for Nome residents, provides clues as to how the buildings are to be designed and how they fit into the landscape. The concepts included in this report attempt to bring the programmatic requirements into alignment with the physical attributes of the site.

Several key ideas will shape the final design:

- Utilizing south-facing slopes to best advantage by locating the primary entrance on the South
- Utilize view opportunities to set the tone for the building; its orientation and setting, as well as providing public spaces, such as dining rooms and waiting areas, and offices with scenic vistas
- Integrate the building configuration to fit the natural topography of the site, allowing the building and parking areas to be set onto the site to mitigate disruption to the tundra

Site and environmental conditions are discussed in Section IV – Site.

MATERIALS SELECTIONS AND SYSTEMS INTEGRATION

There are a number of possible choices for the materials, assemblies and systems to be integrated into the new hospital. We have included narrative overviews of possible exterior and interior materials, and discussions from each of the major sub-consultants to provide insight into the range of possible alternatives to consider.

Products and systems utilized in the hospital will be evaluated against the following objectives:

- Energy Efficiency
- Long-term performance
- Maintenance requirements

- Capable of erection in inclement weather
- In-place first cost
- Transportability (i.e. not fragile, easily shipped and handled)

BALANCING PROJECT GOALS

Project goals provide a yardstick for measuring the success of differing concepts and are the rational basis for evaluating the success of design alternatives. Shared goals identify what's important for this project to achieve so that everyone on the project team can contribute toward the same result. A wealth of relevant information was gathered during earlier design phases and remains valid. Building upon the work completed to date, we have assembled project priorities that will shape the design. As the project proceeds into the Schematic Design Phase, NSHC staff will be called upon again to provide additional input and to evaluate our proposed concept. They will be part of the process of balancing and prioritizing critical project goals.

This project should:

- Be the Center of healthcare for Norton Sound Health Corporation
- Respond to healthcare needs at all levels
- Incorporate new technologies
- Be flexible to respond to program changes
- Provide for easy upgrade to systems and equipment

- Contribute to staff satisfaction, retention and recruitment
- Staff will inhabit this space consistently and for long periods of time
- Safe, efficient workplace
- Comfortable spaces
- Amenity spaces for staff respite
- Access to daylight
- Views

- Create a healing environment for patients
- Dignity for patient
- Clear wayfinding
- Anticipate personal belongings
- Daylighting, views, materials

- Be respectful of the environment
- Incorporate sustainability
- Energy conservation
- Life cycle costs
- Minimize impact on tundra

- Acknowledge the cultural realities of the staff and users of the facility
- Importance of the extended family

- Distance to villages
- Cultural sensitivities

- Utilize appropriate construction means and methods
- Durability
- Local maintenance
- Material availability
- Seasonal construction schedule
- Phased funding/construction

- Respond to the climate
- Utilize sound arctic design practices
- Recognize seasonal changes in solar access
- Preserve permafrost

- Respond to budget constraints
- Utilize materials that provide durability and beauty economically
- Balance first-cost with long term maintenance and operations costs

ISSUES FOR CONSIDERATION

As the concepts presented in this study are evaluated a number of issues related to both Medical Planning and Building Siting need to be considered.

Medical Planning Issues

- Where possible provide "soft space" adjoining I occupancies to allow for future flexibility
- Evaluate which programmed spaces need to be located at the lowest level
- Look for opportunities for reduced circulation and shared services
- Establish desired number and location of entries including the main visitor entry, ER, service, and staff.

Building Siting Issues

- Site access points for utilities, pedestrians, and vehicles (including ambulance, visitor, staff, and service)
- Determine minimum and optimum number of parking stalls. Establish preferred location and number of parking areas. Provide for snow storage.
- Building orientation with respect to relationship to town, views, access, and snow drifting
- Determine cost implications of ER entry at first floor level
- Evaluate ramping system alternatives
- Determine setback from Bypass Road to the south and wetlands to the north
- Consider options for building expansion
- Develop Campus Master Plan

Exterior Entrance Ramp Analysis and Design

To ensure that the permafrost remains frozen and to prevent snow drifts from developing against the building, the lowest occupied level of the building will be located approximately 10 feet above the gravel pad. The air space underneath the building will allow heat to dissipate and allow wind to scour the underside.

It is feasible that a small portion of the building be located at grade, however such an area should be small and designed and located in such a way as to mitigate thawing of the permafrost and drifting snow. A visitor entrance on the South side can be designed to meet these requirements with stair and elevator access to the upper levels. Such a south facing visitor entrance is suggested for all proposed design concepts.

However, building access for emergency ambulance service and building service is not effectively and efficiently served by an entrance at grade. Such an entrance requires a fairly large area compromising thaw and snow drift issues and such areas also require elevators and stairs which may not be located in areas that properly serve the levels above, either requiring the expense of separate elevators or the compromise of the building functions. Furthermore, elevator service for all medical emergency functions and building service functions is not considered to be an acceptable alternative to the direct access that can be provided by some type of ramped drive access. Cost considerations therefore require that the simplest and most direct means be developed for any ramped drive access.

GENERAL

The previous design effort, completed in December, 2005 estimated construction cost in excess of $148 million dollars. The IHS Budget Summary from January, 2006, established a construction budget of $100,443,764, estimated to the mid-point of construction. The disparity between the design estimate and the construction budget has focused the design team to economize and re-evaluate the design to sharply reduce cost, without sacrificing program area. The current effort will identify and analyze cost reduction strategies that allow NSHC to meet a "design-to" budget of 95-million dollars while providing all of the programs and square footage requirements identified in the July 2006 Program of Requirements (P.O.R.) A summary sheet of all programmed areas from the P.O.R. is included in the Appendix for reference.

These Concept Designs will focus on the lower (south) portion of the 38.9-acre parcel below the drainage swale. This portion of the site slopes generally from north to south. A preferred concept (Scheme A) with two basic site options (East site and West site) has been developed. Two additional building concepts have been developed (Scheme B and Scheme C) which explore alternative approaches to construction type and medical planning adjacencies. The general building shell concept has been developed in response to various cost reduction strategies while keeping in mind the importance of the less tangible but no less important goals of cultural relevance, employee retention, and good medical planning.

The goal of conceptual design is to lay the foundation for a comprehensive solution that addresses the key components of medical planning, site responsiveness, appropriate systems for available budget, and cultural relevance for the region. The concept design is intended to foster a dialog with NSHC, allowing the design team to balance competing needs in light of owner priorities. The Schematic Design will incorporate comments and discussion from owner/user groups, additional geotechnical investigations, etc. to forge an appropriate detailed design response.

COST REDUCTION STRATEGIES - GENERAL

Throughout the design process a number of general cost reduction strategies will be kept in mind as the facility design becomes more refined. Generally, our strategy to keep the project within budget falls into three categories:

1. Building Envelope
    - Minimize enclosed volume (efficiency of form)
    - Appropriate construction types for occupancy served
    - Evaluate appropriate location and amount of glazing (percent of solid vs. glazed openings)
    - Appropriate cladding materials (weigh first cost vs. life-cycle cost)
2. Siting
    - Reduce gravel pads for parking, roadways, construction/building pad

- Manage length of utility connections
- Keep snow and water away from building

3. Program
    - Efficiency improvements above IHS grossing factors
    - Note: the Space Summary sheet from the July 2006, P.O.R. is reproduced in the Appendix for reference

COST REDUCTION STRATEGIES - SITE

The first of these strategies identified, is to locate the facility such that utility extension costs are minimized. This means that the facility could be located on either the lower portion of the 38.9 acre site, south of the drainage swale or potentially on the six city blocks south of By Pass road. After preliminary consideration, the city blocks site does not appear to be a viable option. Future expansion and parking would be more difficult due to size limitations and existing drainage issues identified would likely be costly to solve. The options presented in this report have focused on the south portion of the larger acre site.

Additional geotechnical investigation is planned for November of 2006 with a number of soil borings planned for the lower portion of the site. It is important to further identify the depth of bedrock and percentage of water in the permafrost. The earlier geotechnical borings suggested bedrock was at greater depth on the lower site. While shallow bedrock means shorter pilings it may also mean that the depth of the gravel pad under the structure will need to increase to provide lateral stability to the piles. This is particularly true in ice-rich permafrost. An important goal is to keep the structure as low as possible to minimize ramping requirements.

COST REDUCTION STRATEGIES – CONSTRUCTION TYPE

The second major strategy identified is to look at the facility as a combination of Ambulatory Clinic space and Hospital space. The building will consist of two distinct construction types as defined by the International Building Code. The clinic portion of the building will be Type II-B construction. This allows the structural frame, walls and partitions, floor construction, and roof construction to be non-combustible, non-rated construction. Cost savings can be realized by reducing materials and labor required to fire-protect these elements. All portions of the building will be protected by an automatic fire suppression system.

The Hospital portion of the building will be of Type II-A construction. The structural frame, floor construction, and roof construction will require one-hour fire protection.

The combination of building construction types will necessitate a fire barrier wall separating the two portions. This does not mean however, that the fire wall cannot have penetrations. In fact, openings in this separation wall can easily be protected by fire doors or shutters allowing the facility to function as one building.

Cost saving that can be realized by constructing independent clinic and hospital components, including:

- Reduce costs associated with fire proofing of structural elements in clinic building
- Reduce floor-to-floor heights in clinic structure, allowing less square footage of wall to construct, heat and maintain
- Independent mechanical systems for each component (less expensive plenum return system can be used in the clinic and the clinic will not require humidification)
- Structural elements may be lighter in weight (i.e. bar joists in lieu of beams)

CONCEPT EVALUATION

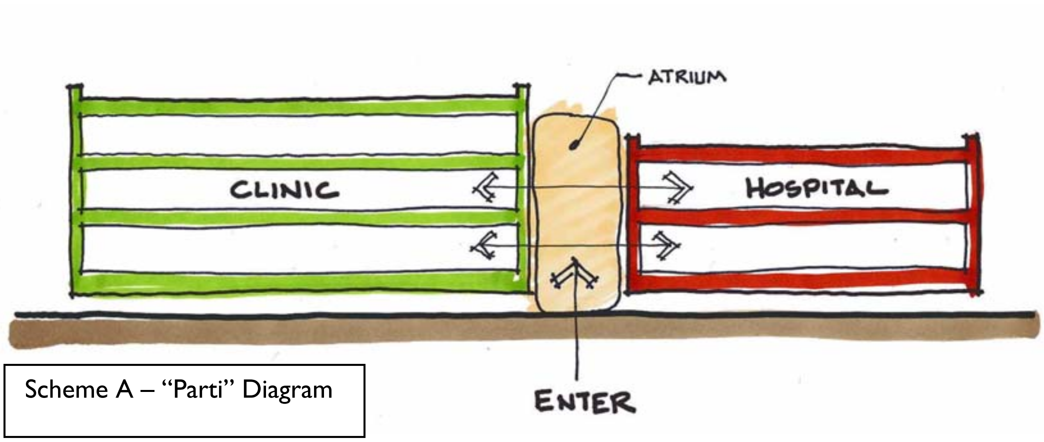
Development of alternative concepts for this study investigated three different organizational ideas for the building. A three-story solution was identified early as the most likely construction scenario, offering the most effective balance between construction efficiency, cost, compactness of form and planning flexibility. The three conceptual schemes are described below and identified as:

- CONCEPT A (Primary Concept)
- CONCEPT B (Alternate Concept)
- CONCEPT C (Alternate Concept)

CONCEPT A

Overview

Concept A approaches the facility as two distinct identities: "hospital" and "clinic". The two elements are joined by a common entry/lobby/circulation element. By developing the two parts as independent buildings, the clinic will be defined as B2 occupancy, type II-B construction and the hospital will be I2, type II-A. The construction of the clinic will be less expensive than the hospital, as fireproofing of the structural frame will not be required, structural framing systems may be lighter, and floor to floor heights may be reduced.
Independent mechanical systems appropriate to each occupancy type will be provided, allowing the clinic to function during business hours, while the hospital remains occupied 24hrs/day.



Scheme A – "Parti" Diagram

The diagram above illustrates the central idea behind Scheme A: reduce construction cost by building as much program space as possible within a three-story clinic, with an adjacent two-story space serving functions normally associated with a hospital with a connecting element that allows both sides to function as one building. A 2-hour fire barrier will be required to separate the clinic and hospital occupancies.

A regular structural grid is developed, with building depths reduced to allow light to penetrate further into the floor plan and to aid in the scouring of snow from beneath the raised structure. Narrow building depth can, however, impact the overall building efficiency, requiring more circulation space than a more compact, deeper footprint.

Medical Planning

The hospital occupancy is stacked on two floors, with the Emergency Department and major ancillary services (Diagnostic Imaging, Lab, and Pharmacy) on level 1, and the inpatient beds (Acute Care and Labor & Delivery) directly above. A service/patient transfer elevator and a stair tie the two floors vertically.

The clinic occupancy occurs on three floors. The first floor includes service functions such as Property Supply, Facility Management, Housekeeping, and Employee Facilities. Also on level 1 is Dietary, including kitchen and public dining. Level 2 is the main clinic floor, with Primary Care, Ambulatory, and Dental. Level 3 also contains some clinical functions (Audiology, PT, Public Health Nursing) but is mainly Administrative and village health services, with limited patient traffic.

<u>Strengths of this scheme include:</u>

- Maximizes area located in Clinic occupancy for construction cost savings
- Narrow width facilitates scouring under the building
- First floor includes spaces that need a higher floor to floor height (ER, Dietary, Property Supply, Mechanical)
- Second and third floor includes spaces that work well with a lower floor to floor height

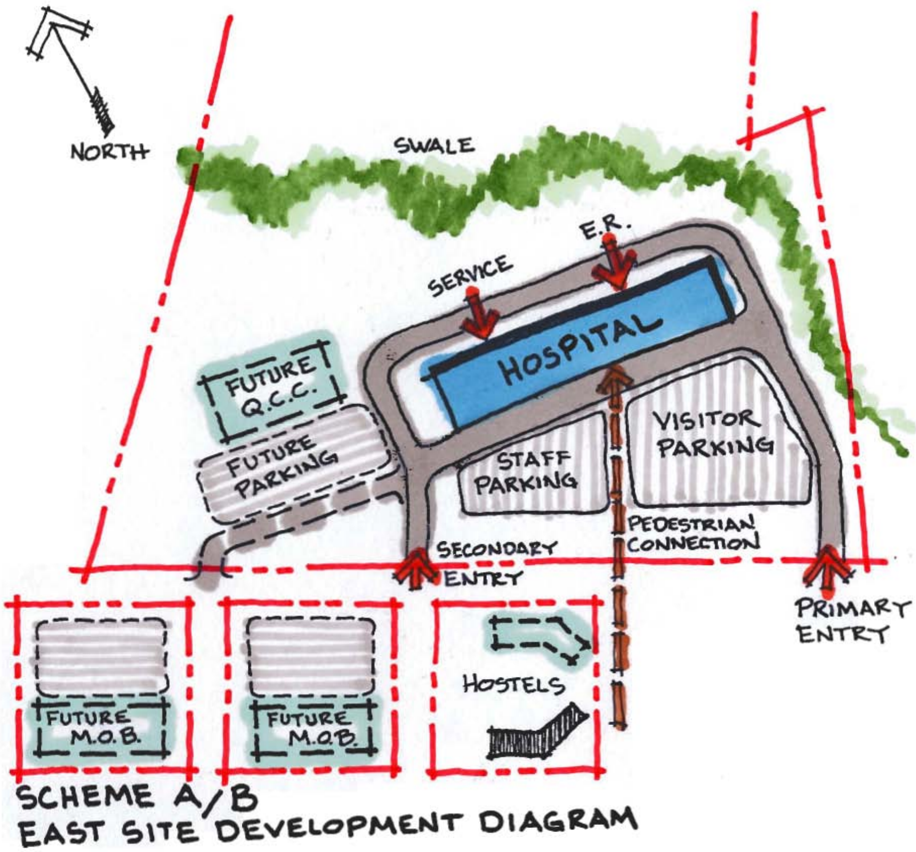
- Easy separation of mechanical ventilation system for the two occupancy types
- Acute care beds stacked directly above ED and ancillaries, allowing direct access without passing through public spaces
- Primary Care and Acute Care adjacent on same floor for easy physician access
- Acute care beds raised up one floor for added privacy, better views to landscape
- Non-patient, administrative functions located on top floor, away from main patient circulation

Issues to resolve in this scheme include:

- Insure easy access for patient travel between Primary Care (level 2 Clinic) and ancillary services (level 1 Hospital)
- Limited expansion in place possibilities on I occupancy side.
- Distance and travel path from services (Property Supply, Linen, Housekeeping) on clinic side to main inpatient users on hospital side.
- Provide safe and convenient patient travel up to level 2 (Primary Care) from main entry on grade level.

Site Plan: Scheme A – Development upon Eastern portion of site

Site Development for scheme "A" at the eastern portion of the lower site would locate the hospital just below the swale, roughly straddling the existing access road. The uphill side of the building on the north is preserved as a natural amenity to provide views from acute care and dietary to the berry picking fields and the mountains beyond. The long axis of the building faces due south to capture the sweeping views of Norton Sound and to provide an at-grade entry on the vehicle side of the building. Patient and staff vehicles enter at the intersection of Bypass Road and "O" Street. Emergency and service vehicles enter the site at the intersection of Bypass Road and "M" Street. ER entrance is placed at the east side of the north façade with the service entrance on the west side of the north façade. Pedestrian access from the "city blocks" to the South would cross Bypass road near the intersection at "N" Street. The area west of the building is preserved for future medical programs, potentially including a Q.C.C. Future campus development for medical office buildings (M.O.B.'s) and staff housing can be accommodated within the three "city blocks" located across Bypass Road.

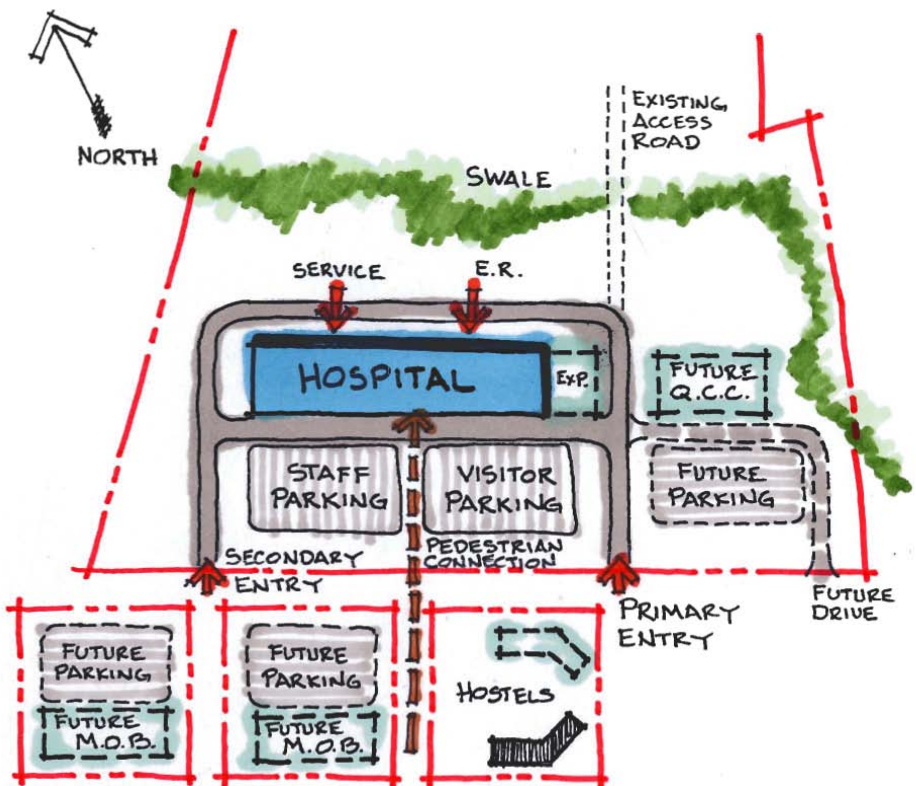


Features of scheme A - East site plan include:

- Building orientation places the main entry due south
- Building orientation roughly follows existing contours
- Building is held back more than 200-feet from Bypass Road to prevent snow drifting over the road and to limit the impact of dust generated by road traffic
- All parking is located on the south. Parking areas are divided by the pedestrian boardwalk into Staff and Visitor parking
- Northerly portion of the site is kept clear to maintain views to the mountains from First Floor Dining and Second Floor Acute Care
- South façade presents prime, unobstructed views to the water
- Main pedestrian entry aligns with “N” Street. Vehicular traffic access aligns with “M” Street and “O” street.
- Narrow face of the building faces the city
- A walkway runs to the main south entry from the intersection of Bypass Road and “L” Street.
- Expansion of the main building occurs on the west
- Main public entry is on the south with on-grade access

Site Plan: Scheme A – Development upon Western portion of site

Development of the western portion of the lower site would locate the hospital in the center of development zone, west of the existing access road. The existing access road would be improved to provide primary access for patient and staff. Emergency and service vehicles enter the site at the intersection of Bypass Road and "L" Street. ER and service entrance is provided to the first level of the building via ramp parallel to the north façade. Pedestrian access from the South would cross Bypass road near the intersection at "M" Street. Future site development is reserved on the portion of the site East of the existing access road. Campus growth to include future M.O.B.'s and/or staff housing can be accommodated within the three "city blocks" located across Bypass Road, and is within close walking proximity of the main hospital.



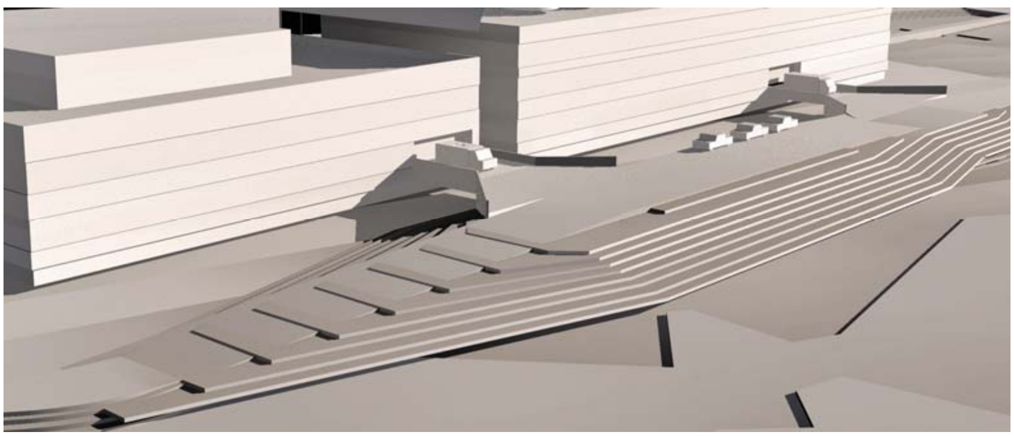
SCHEME A/B
WEST SITE DEVELOPMENT DIAGRAM

Features of scheme A - West site plan include:

- Building orientation is in alignment with Bypass Road to strengthen relationship to the City of Nome and facilities located directly across Bypass Road
- Building is approximately 200 feet from Bypass Road to minimize amount of gravel pad and roadway and length of pedestrian access

- All parking is located on the south. Parking areas are divided by the pedestrian boardwalk into Staff and Visitor parking
- Long, narrow parking lot contributes short vehicle rows: less travel distance from vehicle to front door
- Main pedestrian entry aligns with "M" Street. Vehicular traffic access aligns with "L" and "N" Streets
- Northerly portion of the site is kept clear to maintain views to the mountains from First Floor Dining and Second Floor Acute Care
- Expansion for the main building occurs on the east
- Main public entry in on the south with on-grade access

Scheme A and B, on either East or West site location depend on a ramp at the north side of the building to deliver emergency and service vehicles to the first floor level (approximately 10-feet above the pad). The proposed drive ramp access is illustrated in the massing study below.



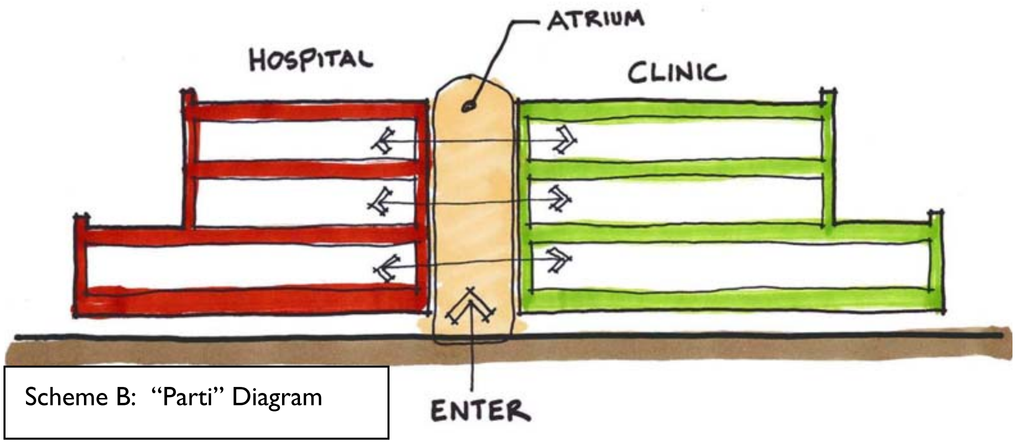
The proposed ramp access construction is a simple gravel pad with sloping sides taking advantage of the natural slope of the site. Structural connecting ramps require piling only at the point connecting to the gravel pad. These structural ramps are approximately 30 feet in length and of adequate width to provide for easy vehicle access to the entrance areas as illustrated. The maximum slope of the ramp at any point is 5 percent. This ramp scheme utilizes a readily available local resource and is more economical to construct than a steel and concrete ramp.

If staff parking is provided at the north side of the building, the ramps will provide for convenient entrances to the building at two locations.

CONCEPT B

Overview

The independent building construction type for clinic and hospital spaces is again utilized in Concept B to mange construction cost, although more space is shifted to the "Hospital" side.



Scheme B: "Parti" Diagram

Unlike the previous scheme, Concept B is three stories on both clinic and hospital side, which encloses more space in type II-A construction than is required, but provides more flexibility for future changes. By "balancing" the square footage on each side of the level 3 lobby, there is a potential to reduce circulation and improve the overall building efficiency.

Mechanical systems appropriate to each occupancy type will be provided, allowing the clinic to function during business hours, while the hospital remains occupied 24hrs/day. Working again with a similar structural grid, building depths are reduced to allow light to penetrate further into the floor plan and to aid in the scouring of snow from beneath the raised structure. Narrow building depth can, however, impact the overall building efficiency.

Medical Planning

Concept B locates the most patient-intense user, Primary Care Clinic, on level 1 to reduce patient travel distances. Along with Primary Care and Ambulatory Surgery, Diagnostic Imaging and Emergency Department are located within the hospital occupancy. Acute Care and Labor & Delivery beds are located directly above on level 2, and administrative and business services on level 3.

Across the lobby space from Primary Care on level one is Dietary, along service functions such as Property Supply, Facility Management, Housekeeping, and Employee Facilities. Above on level 2 are PT, Pharmacy, Lab, and Dental Care. Remaining clinical functions (Audiology, Eye Care, Public Health Nursing) and village health services are on level 3 of the clinic side.

<u>Strengths of this scheme include:</u>

- Primary Care at lowest level to reduce patient travel through building
- Primary Care and Emergency Department adjacent to facilitate cross-coverage by nursing staff
- Acute care beds raised up one floor for added privacy, better views to landscape

- Stacking administrative functions over Acute Care provides flexibility to add beds on level 3 in the future
- Narrow width facilities snow scouring under building

Issues to resolve in this scheme include:

- Insure easy access for patient travel between Primary Care (level 2 Clinic) and ancillary services (level 1 Hospital)
- Limited expansion in place possibilities on I occupancy side
- Distance and travel path from services (Property Supply, Linen, Housekeeping) on clinic side to main inpatient users on hospital side
- Provide safe and convenient patient travel up to level 2 (Primary Care) from main entry on grade level.

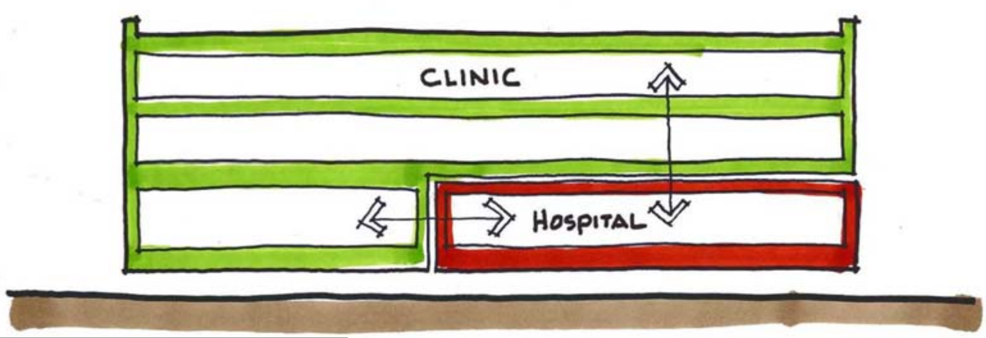
Site Planning

Scheme B utilizes the same "footprint" as scheme A with a different stacking and organizational approach. Scheme-B is workable on either of the Scheme A-East or West Site Concepts.

CONCEPT C

Overview

Concept C describes a building of three equal floor plates with increased depth and decreased length, providing a compact, efficient building envelope. All "hospital" components (Acute Care, Labor& Delivery, Emergency Department, Diagnostic Imaging) are placed on level 1, along with the service functions requiring access from the loading dock. The building may be zoned into a "bar " of type II-A construction and one of type II-B construction, however the more restrictive type II-A is greater in area than the II-B area.



Scheme C: "Parti" Diagram

Independent mechanical systems appropriate to each occupancy type will be provided, allowing the clinic to function during business hours, while the hospital remains occupied 24hrs/day.

A regular structural grid suggested in the previous schemes is again used. This time, the continuous bar is broken, and slipped past the lobby/entry component, producing a more compact plan. The increased building depth will make it more difficult for natural light to penetrate the floor plan and the ability to scour snow from beneath the raised structure will be impacted.

Medical Planning
In Concept C, all hospital occupancy spaces and service functions such as Property Supply, Facility Management, and Housekeeping are located on level 1.
The main clinical functions, including Primary Care, Ambulatory Surgery, Physical Therapy, Dental and Eye Care, are on Level 2 as well as ancillary services (Lab, Pharmacy) associated with the Primary Care Clinic. The third floor is again primarily administrative, with the addition of some clinical and staff services. Dedicated staff/service stair and elevator connect the three clinical levels without entering into the public circulation zone.

Strengths of this scheme include:

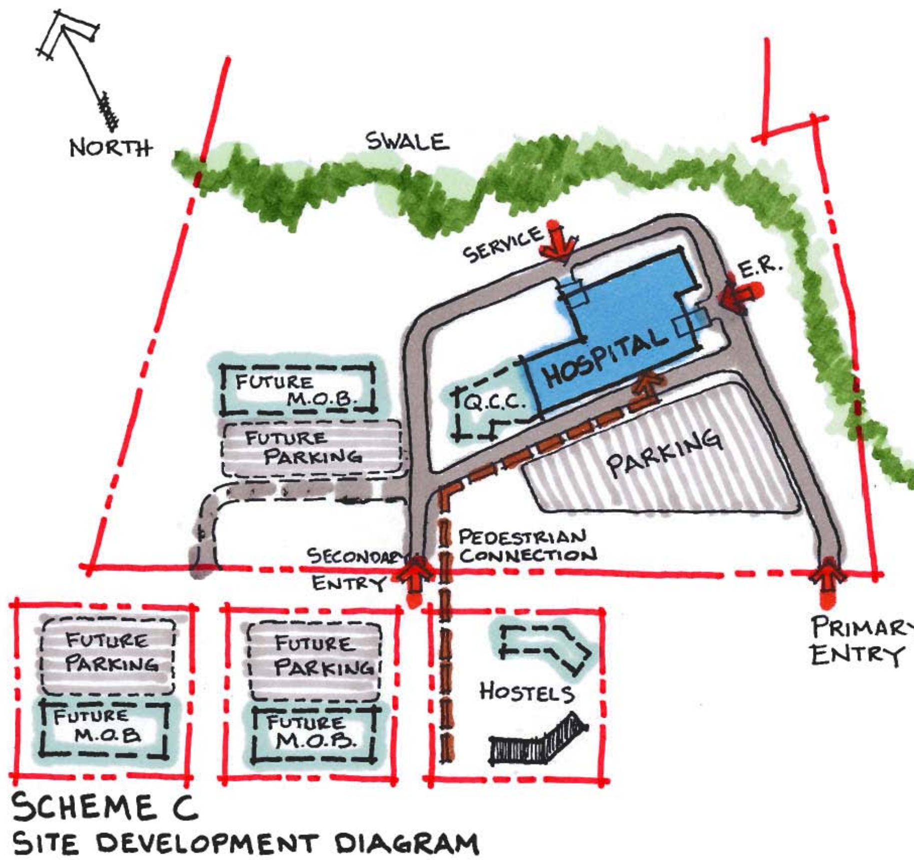
- Acute care and L&D beds located on first level, with easy access from main entry without traveling through the building.
- Direct access (no elevator transfer) between dietary and services and patient beds.
- Most outpatient and ancillary services arrayed around common lobby space on level 2.
- Non-patient, administrative functions located on top floor, away from main patient circulation.
- Compact form is energy efficient to heat

Issues to resolve in this scheme include:

- Provide safe and convenient patient travel up to level 2 (Primary Care) from main entry on grade level.
- ED and Acute Care separated by public circulation.
- Staff areas such as Employee Facilities and Facility Management are not appropriate to be located on level 3.
- Compact form does not promote snow scouring under building
- Compact form may yield more interior spaces with less access to natural light

Site Planning, Scheme-C

The Concept C site plan locates the building toward the east of the site. The area west of the building is preserved for future medical campus facilities. This scheme proposes the ER and service entrances on the north and east side, at grade with vertical transfer.



Features of scheme C site plan include:

- Building orientation places the main entry due south
- Building orientation roughly follows existing contours
- All parking is located on the south.
- Northerly portion of the site is kept clear to maintain views to the mountains
- South façade presents prime, unobstructed views to the water
- Main pedestrian entry aligns with "N" Street. Vehicular traffic access aligns with "M" Street and "O" street.
- A walkway runs to the main south entry from the intersection of Bypass Road and "L" Street.
- Expansion is limited to the west side of the building and would require driveway relocation
- Main public entry is on the south with on-grade access

EXISTING SITE CONDITIONS

The hospital site is a 38.9-acre parcel located in the northeast portion of the City of Nome, fronting the north side of East 7th Avenue (Nome Bypass Road) spanning roughly between East K Street and East O Street. A preliminary plat titled NSHC Nome Hospital Parcel, Tract A, establishes the property within Sections 25 and 36, Township 11 South, Range 34 West, Kateel River Meridian at approximately 64 degrees (°) 30 minutes (′) 02 seconds (″) north latitude and 165° 23′ 29″ west longitude.

Site Master Plan

NSHC owns the main hospital site as well as three contiguous town sites south of Bypass Road. While it was determined early on that the hospital and its associated parking would sit on the upper site to take advantage of the larger buildable site area and the panoramic views, subsequent funding realities have led to the decision that the lower site should be investigated and two new concepts developed showing the impact of the facility at that location.

Since the town sites located south of Bypass Road are already platted into city lots, they should continue to be developed into a mix of residential and smaller scale outreach programs.

Relationship to Nome

The site is ideally located in terms of its relationship to the City of Nome. It is in the eastern portion of the city on a site that overlooks downtown, with sweeping views to the south of Norton Sound and broad views to the north of the mountains. The site is easily accessible from developed portions of Nome, the airport, and is within a block of the school.

Vegetation

The Alaska vegetation type in Nome is characterized as moist tundra. The project area is a tundra meadows dominated by sedges, low berries, numerous varieties of flowering plants, and dwarf birch. Willows are scattered among the moist tussocks with dominance occurring at disturbed roadway edges. The site is a favorite berry-picking area with an abundance of blueberries, lowbush salmonberries, cranberries, and bearberries.

A band of wetlands is located across the project site, paralleling the slopes at nearly the central portion of the site. In terms of classifications, not much scientific work has been done in this part of Alaska. However, wetlands on the site have been designated and preliminary permitting has been accomplished. It is important to recognize that minimizing impacts on tundra is far superior to restoring damaged areas of the site's delicate tundra.

Views and Orientation

Views are dramatic and will set the tone for the hospital, its orientation and setting, as well as providing the public spaces, rooms and office with scenic vistas. Views are of the city of Nome, Norton Sound, and large natural expanses of tundra, including wetlands areas. Along with views, solar orientation of the site is excellent.

Daylighting

Taking advantage of natural light to improve healing rates and increase staff retention is a key goal of the project. Amount and location of glazing will be carefully considered during the Schematic Design Stage to balance the desirability of glazing with cost and long-term energy considerations.

Prevailing Winds and Snowdrifting

Snowdrifting is one of the major site design factors impacting the access, safety, and maintenance of the hospital. Prevailing winter winds come from the north and east when snow events occur. Drifts can be expected to develop on both the leeward and windward sides of the building. To promote scouring, it is recommended that the narrowest dimension of the building be located perpendicular to the prevailing wind directions. In addition, it is intended that the hospital building be elevated on piles above the construction pad to further promote scouring. This strategy is to eliminate drifting under the building which, if allowed to occur, could ultimately thaw the permafrost below.

Topography

The existing topography of the proposed hospital site slopes generally from the north-northeast end of the site toward the south-southwest. A drainage swale, likely an ancient beach line, divides the steeper upper portion of the lot from a more gradually sloping, lower section of the property. Overland sheet flow currently occurs across the undisturbed tundra surface.

PROPOSED SITE IMPROVEMENTS

Drainage

The goal of proposed drainage schemes is to rapidly drain the surface and roof runoff away from the structures and foundation piles to eliminate ponding water and reduce the potential for degrading the permafrost. The proposed improvements to the parcel will replicate the current drainage patterns to the extent possible through grading of the access roads and fill pads, and installation of culvert crossings. The hospital site drainage scheme must be compatible with the City of Nome's drainage system for the east end of town.

Soils/Earthwork

DOWL Engineers conducted a preliminary geotechnical investigation in July 2002, consisting of seven test borings. The site soils generally consist of peat, silt, silty sand, and silty gravels that vary in depth. Bedrock was encountered in most test borings at an average depth of 36 feet. The report indicates that the site is overlain by ice-rich peat and silts varying from 8 to 20 feet. The upper active layer may thaw as deep as 6 feet during warm summer months, resulting in a very weak surface that cannot support equipment or other loads. The geotechnical report suggests that the placement of gravel fill should be conducted when the active layer is still frozen.

The preliminary foundation recommendations for this project would place the building on pilings, which would be founded on the relatively shallow bedrock. This type of foundation is very stable for an area underlain by permafrost soils. The building will remain fixed, however, the surrounding gravel fills are "floating" over the permafrost and will be subject to seasonal movement. The design will present solutions to accommodate the differential movement.

The elevated building configuration poses challenges for accessing the main floor. The height differential between the parking area and the first occupied floor is approximately 10 feet. The building and parking is located on a large earthen fill pad. Access to the building from the parking is either by stairs or an at-grade entrance placed over thermo-siphons. Emergency and service vehicles access the first level by a supported pile or earthen ramp system.

The geotechnical report recommends that the structural fill be non-frost susceptible or possibly a mildly frost-susceptible gravel. Several commercial gravel sources are available in the Nome area that can meet the gradation requirements of these classifications.

The fill pad side slopes will be stabilized with seeding compatible with the Nome area to provide low-maintenance erosion prevention as well as aesthetics. Biaxial geogrid may be incorporated in the fill section to provide additional support, if necessary.

Dust Control

Airborne dust generated either by wind or from vehicular traffic is often a concern in unpaved areas of Nome. Several dust-control alternatives for the new, on-site roads and parking areas will be investigated in terms of initial cost as well as long-term maintenance.

Water and Sanitary Sewer Utilities

The existing water and sanitary sewer utilities in the northeast portion of the City of Nome consist of buried, insulated high-density polyethylene (HDPE) pipe. The circulating water main nearest to the property is 8 inches in diameter, and the gravity sewer main, near the project site, is 8-inches in diameter. We understand that an extension will be required to bring each utility from the mains located at East 6th Avenue.

Aboveground utilities are being considered because of the thaw-unstable nature of the permafrost soils underlying the site. Sewer and water piping on the north side of Nome Bypass Road will be suspended beneath an elevated boardwalk between Bypass Road and the parking pad. Between the south edge of the parking pad and the building, the piping will either be buried in the fill pad, or placed within a utilidor that is designed to withstand vehicular loading.

The water and sewer piping will be designed to the standards currently used by the Nome Joint Utility System (NJUS) with the goal of having NJUS maintain the system once it is complete. Utility easements will be required if NJUS does maintain the system. A 20-foot-wide utility easement centered on the piping should provide adequate space for operation and maintenance of the system. Utility placement, configuration, and easements will be coordinated with NJUS during the design process.

The water system design for the new facility will likely incorporate a looped, insulated system. The looped system will circulate the water to prevent freezing, which is the proven method in the city system. The looped system will encircle the building, creating a fire loop for exterior hydrants. Lines will extend from this loop to provide domestic service to the building. A circulation pump and additional heat can be incorporated in the system within the building's mechanical room. Flexible connections to the building will be integrated to account for some anticipated differential movement.

An 8-inch water main extension is anticipated to provide the flows required for fire hydrants and sprinkler systems, as well as domestic service demands. If the city system does not provide adequate flows for fire suppression, an alternative may include the design of an on-site water storage tank and fire flow pump to provide the needed capacity. Recent upgrades to the city water system have been made that may provide the flows and pressures required by the hospital fire suppression system without on-site storage.

The sanitary sewer system will be designed to match the pipe materials of the existing city system. As-built drawings indicate that the existing city sewer main is roughly 10 to 12 feet deep at the intersections of 6th Avenue and M and N streets. Preliminary calculations indicate that gravity flow can be accomplished, but trenching in the permafrost soils may be required for adequate pipe grades. An 8-inch diameter arctic pipe is anticipated for a gravity sewer system.

If a lift station/force main is necessary, a 3-inch diameter arctic pipe is anticipated for the sewer system. Heat may need to be added to the force main by either electrical heat trace or warm glycol loops to prevent the wastewater from freezing.

Preliminary estimates suggest that the capacities of the existing city water and sewer systems should be adequate for the addition of the new hospital. Hydrant flows in the project area indicate that flows greater than 1,500 gallons per minute (gpm) are possible when a diesel fire pump, located at the Recreation Center on 6th Avenue, is operating. Fire flows will be analyzed during the design process, and modifications to the city system may be required to provide adequate volumes and pressures for fire suppression. Initial conversations with the NJUS indicate that they are interested in participating in a “shared” system upgrade using contributions from the hospital, as opposed to NSHC performing a “stand-alone” improvement at the hospital site.

Circulation/Parking/Access

Site roads and parking will be developed to provide logical ingress and egress. Looped roadways and adequate turning radii will be planned for ease in Fire/Emergency vehicle access. An inside radii of 40 feet will be used to allow large tanker truck access. All parking lots and access roads shall be designed to accommodate H20 (two-axle) and HS20 (semi-trailer with tractor truck) highway loading per the American Association of State and Highway Transportation Officials (AASHTO). Efficient snow removal and storage will be a significant factor in determining parking lot and access road configurations. The number of parking spaces will be determined by NSHC needs and Indian Health Services recommendations. The site configuration will place accessible stalls and accessible pedestrian routes in accordance with the Americans with Disabilities Act (ADA).

A fire lane will provide access to all sides of the structure. The International Fire Code, Appendix D, requires that for a building more than 30 feet in height, one entire side of the structure shall have a minimum unobstructed width of 26 feet located between 15 and 30 feet from the building. These regulations are intended to provide access for aerial fire apparatus. The Nome Village Fire Department currently has a 3- to 4-story snorkel truck with a bucket for tall structures, and funding is being sought to obtain a 100-foot ladder truck.

Agency Coordination/Permits

U.S. Army Corps of Engineers (USACE)

The USACE has issued a provisional permit for fill within the project site that is classified as a wetland. This provisional permit will require coordination with the Alaska Department of Environmental Conservation (ADEC) to obtain a Section 401 Water Quality Certification, and the Office of Project Management and Permitting to obtain concurrence of the Coastal Zone Consistency Determination.

State of Alaska Department of Transportation and Public Facilities (DOT&PF)

The DOT&PF owns and maintains East 7th Avenue (Nome Bypass Road). Coordination with DOT&PF will be required for all work within the Nome Bypass Road right-of-way. Application for utility permits and driveway permits must be approved by DOT&PF. Mr. Russ Johnson, Northern Region Traffic Engineer with the DOT&PF, was contacted regarding pedestrian crossing issues.

"Nome Bypass Road (East 7th Avenue)" was built to "bypass" the town. It is a truck haul road primarily used to truck excavated rock from the Cape Nome Quarry (10 miles east of town) to the port. DOT&PF has jurisdiction over this road.

While the precise number of vehicles and/or pedestrians that cross this road on a daily basis is not known, it is estimated by DOT&PF to be fairly low. On that basis DOT&PF does not expect that installation of a pedestrian signal to stop traffic will be warranted. They do not recommend using roadway pedestrian crossing signs at this time. These items are used when "unexpected" entries into the roadway by pedestrians might occur. Most traffic will be local drivers who are well aware of the facility and potential for pedestrians.

DOT&PF recommends dedicated cross walk(s) with ADA ramps because they provide guidance for pedestrians by defining and delineating paths. The crosswalk markings on the road surface also alert road users of a pedestrian crossing point.

City of Nome/Nome Joint Utility System

Design of all civil/site features will meet the requirements of the Nome City Ordinance NCO 5.10, and approval for all utility connections will be obtained from the Nome Joint Utility.

Federal Aviation Administration (FAA)

The proposed site is located less than 20,000 horizontal feet from the Nome Airport. Structures constructed within that distance must coordinate with the FAA if they exceed a certain height, by submitting FAA Form 7460-1 *Notice of Proposed Construction or Alteration*. The FAA provided a letter of support in the earlier design effort when the facility was proposed further up the hill and a story taller. All of the proposed concepts are less than 60 feet above grade. However, we are prepared to coordinate with the FAA if deemed necessary.

Site Analysis Summary:

The proposed hospital site poses many challenges consistent with the northern coastal regions of Alaska. Arctic temperatures require water and sewer utilities to be protected from freezing, and subsurface permafrost and wetland surfaces make it necessary to specially design utilities, roads, and parking areas to prevent degrading the frozen soils.

EXTERIOR ENVELOPE

There are a number of possible choices for the materials and assemblies that will make up the exterior envelope of the new Norton Sound Regional Hospital. To evaluate these, it is helpful to establish a list of criteria that will guide the selection. Each possibility can be weighed against these criteria so that informed decisions will result. There are many components to an exterior envelope that in sum make up the structure, the skin and the openings.

Some criteria are mandatory, such as the materials and assemblies must be allowable under applicable code provisions. Most are judgment calls, covering goals such as:

- Energy efficient
- Good long term performance /durable materials that age gracefully
- Low maintenance
- Easily handled by / familiar to local labor
- Capable of erection in inclement weather
- Reasonable in-place first cost
- Supported regionally / maintainable
- Transportable (i.e. not fragile, easily shipped and handled)
- Attractive

As these criteria are considered, every effort should be made to minimize long term operating costs. Quality of material will be the best possible within construction funding limitations.

As described in the code section, we anticipate it will be designed under the IBC 2003 as adopted by the State of Alaska. The clinic portion will be classified as type II-B construction (non-combustible, non-rated), while the Hospital portion will be classified as type II-A construction (non-combustible, 1-hour rated). The entire building will have an automatic sprinkler system. The project will be raised above the permafrost, founded on driven steel piling end bearing on the underlying bedrock. A braced steel frame with non-bearing exterior walls will be utilized.

The exterior skin of a building has three major surfaces – roof, walls and floor soffit. Each of these is made up of exterior and interior finished surfaces, and internal structure. Openings such as doors windows and louvers are discussed separately.

Roofs: Pitched roofs (defined for these purposes as over 2:12 slope) have a long history of successful performance in the Nome climate, covered either with metal roofing or asphalt shingles. However, a large structure with a pitched roof develops a great deal of volume under the roof, which may not be useable. It may conflict if high enough with FAA height restrictions. Large metal roofs can dump a lot of snow and a roof designed to retain snow has to deal with the water runoff. For these reasons we suggest a low-slope (not flat) roof for the primary areas.

The minimum pitch of a low slope roof should be ¼" per foot. The most likely roofing system consists of conventional metal deck over the steel frame, with field applied vapor retarder, foam insulation and membrane. A high level of insulation, at least R 50 as a minimum is recommended.

Exterior Walls: These are anticipated to be non-bearing, non-rated an important factor in selection of the exterior wall system. An important issue is maintaining the integrity of the vapor retarder. Walls in hospitals must transport numerous services. Efforts will be made to keep services (such as electrical and communications) out of exterior walls where possible. Strategies we have used to carry those which must be in exterior walls include use of surface mounted services (commercial grade wiremold trimmed with wood as a chair rail for example). Another strategy is to construct a double wall, where the exterior wall is an unbroken assembly that fulfills the insulation and vapor retarder functions and the interior wall carries services and supports the interior finishes. This could be accomplished with an exterior wall of insulated metal panels and an interior wall of steel studs and gypsum board.

There is a wide range of exterior finish material possibilities. These include something as simple as the painted fiber board (such as Hardi-Plank) the NSHC facilities team is familiar with. Other possibilities include metal siding of a variety of types. This includes foam filled metal sandwich panels. Another possibility is some form of tile applied over a cementitious board. These tiles can be stone, ceramic or masonry. We are not prepared to recommend conventional wood siding, traditional masonry or pre-cast concrete as we believe they would fail the tests outlined in the criteria outlined above.

Floor soffit: Buildings supported above permafrost offer several challenges. They minimize heat flow into the frozen ground, but at some cost. The additional surface area exposed to the wind increases heat losses. Floors can feel cold, and plumbing in the floor assembly such as drain lines can freeze. These elevated floors have proven vulnerable to fire, such as the Wainwright High School which burned to the ground from a fire started under the building. The space under the building must be physically secured to control unsuitable activities, while allowing the adequate ventilation to carry off undesirable heat.

We have had good success with several different approaches. This project will have substantial services carried within the floor assembly, which suggests use of a substantial heated floor space. One way to get this is with floor trusses, insulated on the underside with something like the stressed skin foam panels. These would need a fire barrier such as gypsum board. This should be covered with a weather and damage resistant barrier such as simple pre-finished metal with exposed fasteners.

Assuming a floor structure of some combination of steel trusses and beams, a likely floor assembly would be metal deck covered with a concrete fill. This offers a stable substrate for floor finishes and very good long term performance. It can be cored as needed for service penetrations. Finishes will be as described in the section discussing interior materials and assemblies.

In each of these surfaces there will be penetrations and openings. Roof and soffit penetrations will be for services such as plumbing stacks and air intakes and exhaust. These will be detailed using good arctic engineering practice. Exterior wall openings such as windows and doors will be carefully selected using a balance of the same factors listed at the opening of this section. We believe in high performance glazing. We also believe in opening windows, and have had good success with the high end PVC windows. Doors and frames must be insulated, and selected for high levels of use as well as thermal performance. Doors do best when installed in adequately sized arctic entries.

INTERIOR FINISHES

The Norton Sound Regional Hospital must provide for state-of-the art medical planning, operational efficiency, and opportunities for future growth without losing sight of its primary mission – healing people. To this end, discussions concerning the selection of appropriate materials and finishes will be guided by several key concepts:

- Hospitals have a tendency to be disorienting. Design decisions should support improved way finding; people should know where they are and where they are going. The design team advocates the creation of reference points – or memory places – that are connected to the outside so that people can sense where they are and find there way back.
- A connection to the natural environment has a positive impact. This begins with design that takes advantage of views and day lighting through building siting and window locations. A connection to the environment can also be reinforced through material and color selections. These selections should also support the goal of creating a warm culturally familiar environment.
- Select appropriate materials that can stand up to the hospital environment. Consider how floor, wall, and ceiling finishes will be maintained over the life of the installation. One again, materials selected will be of the highest quality attainable within the limits of construction funding.

STRUCTURAL SYSTEMS

The basic structural system is a steel framed building. The roof framing is steel deck spanning over open web steel joists and steel wide flange beams. This framing allows for the greatest flexibility in the layout of the interior spaces. The roof framing is designed to resist uplift loads from the high winds. Snow drifting around any penthouses or at any roof steps is included in the design. Tube steel, steel pipe or wide flange columns are used to provide the vertical support for the roof system.

The floor framing is concrete fill over composite metal deck spanning over wide flange beams. The floor deck is composite with the steel framing to provide for increased stiffness of the floor system. Stiffness of the floor system to control vibrations is important for patient comfort. The columns supporting the roof structure support the floor framing and extend to the foundation system.

Interstitial spaces either in the ceiling spaces or beneath the floors can readily be provided by the structural system. The under floor system can be accomplished by using steel trusses supporting both the floor and the interstitial soffit framing. The soffit framing is designed for nominal live loads, mechanical equipment and piping and insulated soffit materials.

The foundations for the building are end bearing driven pipe piles. The preliminary soils report indicates bedrock between 20 and 50 feet below existing grade with high moisture content in the frozen soils above the bedrock making driven piles very feasible. To allow the installation of the piles, a working gravel pad will be required. Rigid insulation in conjunction with the gravel pad can provide the necessary thermal conditions needed to maintain the frozen grounds. The building will provide shading under the structure, which will greatly assist in maintaining the frozen condition. However at the perimeter of the building there is usually considerable heat gain at the ground level due to reflection off the building walls. To counter the heat gain additional insulation may be required.

On grade structures such as a main public entrance may be required. With the high moisture content of the soils these structures need to be handled with care. The existing soils need to be maintained in a frozen state to maintain the stability of all foundation systems. Thermal probes can be installed under the insulation in the gravel pad to extract heat building heat. Alternately, a flat loop thermal siphon can be installed under the insulation. The flat loop system generally requires less depth for installation and may also require less space for the radiator system. Both of these systems will have exposed radiator units that will need to be place in a protected location but exposed to the wind.

Bracing bays, required to resist lateral loads, are located to limit the impact on the flexibility of the overall design. The bracing extends from the roof structure down through the interstitial space to the tops of the piles. The piles transfer the lateral loads into the soils beneath the building by bending. Since the point of fixity for the piles needs to be maintained with the design parameters, the gravel pad and insulation will be critical to maintain the lateral stability of the building.

Thermal isolation from the exterior ambient winter temperature of the structural system is critical to avoid the potential of frost buildup on the interior. The design of the structural system to the piles is so that the building insulated enclosure completely surrounds the system to the greatest extent possible. The support of exterior ramps and stairs will be to limit the extent of thermal bridging by the structural systems by providing secondary supports for these items outside the thermal envelope. Thermal breaks will be provided at the pile caps to control the heat transfer across the joints.

At this time alternate structural systems such as wood and concrete are not being considered. Cast-in-place concrete construction will be expensive since both the materials and formwork will need to be shipped in and the formwork will become surplus following construction. Precast concrete is an alternate, but again the weight of the precast for shipping and handling will be expensive.

Wood framed construction has a number of restrictions imposed by the building code. Also it will limit the degree of flexibility in the architectural spaces within the building and greatly limit the flexibility for remodels in the future. Noise transmission through the building will be more difficult to control and maintaining the fire resistance of the assembly will be more difficult. Due to the limitation on spans the number of piles required will also be greater.

Steel moment frame construction instead of steel braced frames can be used to resist the lateral loads. Moment frames provide for the maximum degree of flexibility in the design of the interior spaces and exterior wall window layout. However, moment frame construction is usually more expensive due to increased weight of the structural steel framing as well as the more complex connections required to meet the ductility requirements of these frames. A much greater level of field workmanship is required to assure that the connections perform as needed and the special inspection requirements for these connections are also much mire stringent. Therefore, for a building of this size a braces frame is more economical base on material and field assembly requirements.

Access Ramps:

Access ramps may be required since the building needs to be elevated to protect the underlying permafrost. The ramps eliminate the need for on grade structures that will create snow drifts around them and necessitating continuing snow removal to maintain access to the building. The ramps will be independent of the building framing to prevent the transmission of vehicular traffic vibrations and cold through the building insulation envelope.

The ramp surface is proposed to be heavy duty steel bar grating supported on steel wide flange stringers and steel pile caps. The ramp will be supported on a pile supported abutment at the parking lot ends. The pile supported abutment will eliminate the need for hinges in the ramp system which would be common for most access ramps to grade. However, for the larger loads that will be carried by these ramps, the creation of effective long term hinges is problematic. The gravel ramp sections can easily be re-graded when necessary to maintain smooth transition to the ramp, which would be required regardless of the support condition. All ramp steel is to be low temperature steel and hot dip galvanized. To reduce the cross section of the ramp areas reinforced earth retaining walls can be used. The reinforced earth retaining structures make use of precast concrete panels for the wall surface and galvanized steel straps tied to the back face of the panels and extending into the fill section a distance approximately equal to the height of the wall. Alternately, gabion retaining walls can be used, which are composed of wire mesh cages that are filled with rocks. The face of the gabion wall would normally be slope at about 1 horizontal to 6 vertical for stability.

Design Criteria:

Roof

Snow Load	P_g = 70 psf Ground Snow Load C_e = 0.9, C_t = 1.0, I_s = 1.2 P_f = 53 psf Roof Snow Load Snow Drift per SEI/ASCE 7-02
Wind Load	V = 130 mph, 3 second gust I_w = 1.15, Exposure D
Seismic Loads	S_s = 0.5, S_1 = 0.15 S_{ds} = 0.46, S_{d1} = 0.24 Seismic Use Group IV R = 6. Omega = 2 Special Concentric Braced Frame Dynamic Analysis Procedure

Floor:

Patient Rooms:	40 psf 20 psf for Partitions
Public Rooms, Including Waiting Rooms and Corridors:	100 psf
Office Areas, Including Exam Rooms:	50 psf 20 psf for Partitions
Kitchen	150 psf

Mechanical and Laundry Rooms	150 psf
Storage and File Rooms	125 psf
High Density Storage	250 psf
Vehicle Bays	AASHTO HS20
Access Ramps	AASHTO HS20

MECHANICAL SYSTEMS

General

The scope of this project is to construct a new 144,000 gross square foot (approximate) hospital in Nome Alaska for Norton Sound Health Corporation.

The new Nome Hospital will include, but not be limited to, the following mechanical systems:
Heating generation and distribution, (heating hot water/glycol solution).
Cooling generation and distribution, (chilled water/glycol solution).
Condenser water systems and piping, (water/glycol solution).
Process and clean steam generation and distribution.
Domestic cold water distribution.
Domestic hot water generation and distribution.
Sanitary sewer and vent systems.
Storm drainage systems, if applicable.
Medical gas storage, generation, and distribution systems, (oxygen, medical air, vacuum, nitrous oxide, nitrogen).
Automatic temperature controls.
Medical gas monitoring and alarm systems.
Fuel oil storage and distribution.
Fuel oil leak detection monitoring.
Automatic fire sprinkler systems.
General and specialty exhaust systems
Air handling units.
Elevator pressurization systems, if required.

The installation of mechanical equipment to support the new hospital will include the following:

Air handling units, duct distribution, and control systems.
Fire and life safety systems, including elevator pressurization systems, as required.
Supply, return, exhaust, outside air, and relief air ductwork.

Chilled water, condenser water, heating hot water, steam/steam condensate piping, boiler feedwater piping, boiler blowdown piping, safety vent discharge piping, and heat recovery piping.
Domestic cold water, hot water, hot water return, oxygen, vacuum, medical air, nitrogen, nitrous oxide, sanitary sewer, and sanitary vent risers.
Roof drains, overflow roof drains, and storm drainage piping, if applicable.
Automatic fire sprinkler systems.
Fuel oil systems including storage tanks, piping, pumps, and leak detection systems.
Freeze protection systems including heat tracing, glycol/water solutions for chilled water, condenser water, heating hot water, and snow melting systems where applicable
Support of below ground floor piping systems from the building structure.
Flexible connections at the domestic cold water, fire line, sanitary sewer building connection points to the municipal utility systems

Design Conditions

The following design conditions in Nome, Alaska will be used to establish building heating/cooling loads and air flow requirements.

Latitude: 64° 3' North
Longitude: 165° 3'
Elevation: 13 feet above sea level

Outdoor Design Conditions:
Winter: -46°F dry bulb (ASHRAE 99%)
Summer: 86°F dry bulb
Mean Daily Range: 10°F
Average Winter Temperature: 13.1°F dry bulb

Due to the extreme cold winter environment, localized building humidification will be considered and discussed with the owner.

Codes and Regulations

This project will comply with all applicable codes and regulations including, but not limited to: the International Building Code, the International Mechanical Code, the Uniform Plumbing Code, the International Fuel Code, the International Fire Code, NFPA, and the local Water District requirements. In addition, we will review the requirements set forth in the AIA/DHHS Guidelines for the Design of Hospital and Health Care Facilities and compare them to those stated in the ASHRAE recommendations. We will incorporate the most stringent of the requirements.

Central Utility Plant

A central heating and cooling plant will be provided that will house the following equipment:

Two fuel oil-fired heating hot water boilers, each sized for 100% of the total heating load. The heating hot water boilers will serve the building space heating requirements. The heating medium will be a water / glycol solution.
Two fuel oil-fired steam boilers, each sized for 100% of the building process steam requirements
A deaerator / boiler feedwater system and boiler blowdown system
Multiple heating hot water circulation pumps. The heating hot water pumping system will be zoned by major departments or building elements. Each zone will have two pumps each sized for the total zone water flow.
Two fuel oil-fired domestic water heaters, each sized for 100% of the total domestic hot water load
Domestic hot water circulating pumps and expansion tank
Domestic and heating hot water appurtenances including air separators, expansion tanks, water treatment, etc.
Low KW per ton water-cooled centrifugal chillers, each sized for 70% of the total cooling load. The cooling medium will be a water /glycol solution. Water cooled closed circuit cooling towers will be used as the condenser for the chillers. The condenser medium will be a water/glycol solution. The cooling towers will have drain-back piping, and additional freeze protection.
Chilled water pumps, (two pumps each sized for 100% of the total chilled water flow), chilled water expansion tank, chilled water treatment
Medical air compressors
Medical vacuum pumps
An oxygen generator
Medical gas bottle storage
A steam distribution header with multiple pressure distribution and associated pressure reducing stations
A domestic water distribution header and reduced pressure backflow preventer
A domestic water booster pump system with a hydro-accumulator tank should the circulating municipal water service not have enough residual pressure to provide adequate building water pressure
An automatic fire sprinkler riser(s) with associated double detector check assembly
A fire pump and jockey pump should the circulating municipal fire line water service not have sufficient pressure to serve the building fire sprinkler system
The entire building space heating system will be on emergency power

Air Handling Units

Central station, air-handling units will be provided. The air-handling units will be located in strategically placed fan rooms and will have the following components: return air fan, relief air/outside air mixing box, (with relief, outside air and return air dampers), an air blender section to minimize stratification, a prefilter section with 30-35% efficient filters, a glycol/water heating hot water coil section, a chilled water cooling coil section, a supply air fan section, a diffuser section, a final filter section with 90-95% efficient filters, supply and return air sound attenuators, and all associated access and plenum sections. The outside air intakes and relief / exhaust air discharge outlets will be located so as to be protected from blowing snow and rain. The supply and return fans will be equipped with variable frequency drives. Variable air volume will only be used where the variable flow will not compromise the integrity of spaces requiring specific pressure relationships. The minimum airflow position set point for variable air volume terminal units will not be lower than the amount of air required to maintain minimum air change rate requirements set forth in the DHHS guidelines.

Air Distribution Systems

The air distribution system will be a combination variable air volume/constant air volume system with the supply air delivered at medium pressure/medium velocity. Terminal boxes will be utilized to provide zone temperature control. Each terminal unit will be equipped with a volume damper and actuator, a heating coil and control valve, and a vinyl or tedlar lined sound attenuator where required to reduce airborne and radiated sound levels. Variable air volume will be utilized where allowed by the DHHS guidelines. Constant volume will be utilized for areas requiring specific pressure relationships and/or air change rates. For variable air volume systems, zone temperature control will be achieved by first modulating the amount of airflow to a zone down to a preset minimum that maintains indoor air quality. Should the volume of air be reduced to the preset minimum, and a further demand for heating required, the heating coil control valve will modulate to allow water flow to the heating coil. Temperature control for constant volume systems will be accomplished by modulating the heating hot water coil control valve and allowing water to flow to the coil in response to the zone temperature sensor requirements.

Return air will be ducted back to the air handling unit in the Hospital occupancy and will be a low velocity/low pressure system. Return air plenums will be utilized at the Medical Office Building portion of the facility. Exhaust air systems will also be low pressure/low velocity.

Exhaust Systems

General exhaust systems will be provided to exhaust air from all toilet rooms, janitor's closets, soiled linen and utility rooms, and other areas required by the DHHS guidelines or requiring containment of odors. Exhaust fans will be concealed within mechanical fan rooms and fan discharges will be located a minimum of 25 feet away from any outside air intakes, operable windows or doors. Specialty exhausts and exhaust filtration will be provided as required.

Heating Systems

Heating hot water will be circulated to finned tube radiation located below all exterior glazing as a measure of condensation control. Radiant floor heating systems will be considered in select locations. Cabinet heaters will be located in all main building entry locations and high traffic zones. Steam will be circulated to mechanical equipment room unit heaters to maintain the equipment spaces above freezing.

Automatic Temperature Control Systems

The automatic temperature control system will be a microprocessor-based, direct digital system.

Plumbing and Medical Gas Systems

Domestic water service and fire line service will be extended from the site municipal circulating water service. The building services will connect to the municipal site utilities using flexible connections to protect the piping systems from permafrost heaving. Sanitary sewer systems will be provided to connect to on-site utilities designed by the project civil engineer. The sanitary sewer piping will be insulated and heat traced as required. Additionally, the main building sanitary sewer service piping will connect to the site services using flexible connectors. "Underfloor" sanitary sewer piping will be suspended from the building floor structure.

Domestic cold water isolation valves will be provided for each group of fixtures and elsewhere as necessary to minimize the impact of a water system shut-down. (This will also be true for the domestic hot water system.)

Domestic hot water will be heated to 160°F with a mixing station provided to reduce the general domestic hot water temperature to 120°F and a circulation system will be provided to ensure expedient delivery of hot water to each plumbing fixture. All domestic hot and cold water will be insulated. 160°F hot water will be delivered to the food service area for dishwashing.

Medical air compressors, medical vacuum pumps, and an oxygen generator will be provided to satisfy the space medical gas requirements as set forth in the DHHS Guidelines. All medical gas systems will be designed in accordance with NFPA 99 requirements.

Automatic Fire Sprinkler System

An automatic fire sprinkler system will be provided. A fire pump will be provided if required to ensure adequate water delivery pressure at the highest point of the hospital. A diesel fire pump will be considered. Alternately, the fire pump will be electric and will be connected to the emergency generator power supply. All appurtenances associated with the fire pump will be provided.

A glycol sprinkler system will be used to provide coverage in areas subject to freezing.

Fuel Oil Systems

A fuel oil system that utilizes Arctic #1 fuel oil will be the fuel source for the boilers as well as the emergency generators as natural gas is not available. The fuel oil tank will be designed so that the heating / domestic hot water fuel supply will have a separate fuel suction line from the fuel supply for the emergency generators. The heating suction tube will draw from a higher tank elevation than the generator suction tube. Alternatively, separate fuel oil tanks will be provided for the generators and the heating systems. Day tanks will be provided for all fuel oil-fired equipment. The storage tank will be sized, as a minimum, to provide operation for up to 96 hours to be in compliance with FEMA standards. The final storage tank size will be based on the availability and frequency of fuel oil delivery in the Nome area. Leak detection systems and containment systems will be provided to comply with EPA requirements.

ELECTRICAL SYSTEMS

Facility Description

The scope of this project is to construct a new 144,000 gross square foot (approximate) hospital in Nome Alaska for Norton Sound Health Corporation.

Code Analysis

NFPA 70	2002 National Electrical Code (NEC)
NFPA 72	2001 National Fire Alarm Code (NFC)
NFPA 99	Standard for Health Care Facilities
NFPA 110	Standard for Emergency & Standby Power Systems
IBC	2003 International Building Code
IFC	2003 International Fire Code

Site Primary Electrical Service

The electrical service will be provided by Nome Joint Utility (NJU). In addition to the requirements set forth by NJU, the service shall conform to all applicable provisions of the National Electric Code, National Electric Safety Code, City, and State ordinances and codes, and rules on file with or issued by the Public Utility Commission.

Primary Power

The normal primary service to the site will be provided via an overhead primary line to a pad mounted utility owned service transformer. If available it is recommended that a redundant utility service be provided to minimize power outages to the hospital. The pad mounted service transformer will serve a 480Y/277 volt 3 phase 4 wire service switchboard lineup. Secondary service (may) be concrete encased. Transition from below grade to building will be via flexible connection to compensate for frost heave. All contractor performed work shall comply with serving utility installation standards.

Normal Power

Secondary service will be 480Y/277V three phase four wire from pad mounted service transformer(s) to main service switchboard(s) in the main electrical room.

Emergency Generator Fuel Tank

Generators shall be provided with tank sized for a minimum 96 hour runtime and shall be of double wall fuel containment construction.

Building Electrical Service

Normal Power

Normal power will be used to serve lighting, receptacles and equipment that are not required by code or the hospital to be on emergency power. The main switchboard is anticipated to be a 4.000 amp, 480Y/277V, 3 phase, 4 wire system service and will be rated for the available fault current from the serving utility company. Both the main breaker and all branch breakers on the switchboard will have ground fault protection as required by the National Electric Code. Owner metering is recommended to record amps, volts, watts, power factor, and voltage THD on all service switchboard feeder breakers. The switchboard manufacturer will be required to provide a coordination study to confirm that breaker and fuse sizes are coordinated per National Electrical Code requirements.

Switchboard sizes (both normal and emergency) will be standardized as much as possible so maintenance personnel will be working on equipment with typical components. This will assist in familiarity with the equipment for maintenance purposes and cut down on the spare parts that need to be stocked.

The 480Y/277 volt panelboards on the floors will primarily serve lighting at 277 volts and miscellaneous mechanical equipment. A 208Y/120 volt, three phase, five wire, power distribution system will be derived from the 480Y/277 volt system.

Selected transformers with 208Y/120V secondaries shall be K-13 rated depending on load served, 50dB maximum, with 200% rated neutrals. All panelboards shall be door-in-door enclosure type.

Adequate spare capacity (15 - 20%) shall be provided in all panels to allow flexibility and change to spaces. Spare circuit breakers shall be provided should extra equipment be added, either during construction or after the facility is occupied. All normal power receptacles will have engraved faceplates with the service panel and circuit number for quick identification in the unlikely event of a tripped circuit breaker. All faceplates throughout for all receptacles and light switches will be stainless steel for durability and cleanability.

Emergency Power

The emergency power source will be derived from (2) redundant diesel generators, preliminarily sized at 900 KW each. Each generator will be connected via a 1600 Amp generator breaker to a paralleling distribution switchboard. The emergency switchboard will be a 3000 Amp, 480 volt, 3 phase 4 wire system and will be rated for the available vault circuit values. The generator breakers will have ground fault indication as required by the National Electric Code. This switchboard will serve the three code required branches of power and two optional branches, one for imaging loads and one for other owner selected loads such as heating, cooling and cooking.

A load bank is recommended to provide adequate loading on the generators during monthly testing to insure that the generators do not develop a "wet stacking" problem reducing their capacity to serve load in an emergency condition. This load bank should be located in a protected space versus located outdoors.

Current electrical codes require a hospital's emergency distribution system to be separated into a minimum of three distinct branches: Life Safety, Critical, and Essential Equipment to serve designated loads. All automatic transfer switches will have bypass isolation. The bypass isolation will allow maintenance on the transfer switches without disruption to the hospital power systems.

The 480Y/277 volt panelboards on the floors will primarily serve lighting at 277 volts and miscellaneous mechanical equipment. A 208Y/120 volt, three phase, five wire, power distribution system will be derived from the 480Y/277 volt system.

All transformers are 480V-208Y/120V secondaries Selected transformers shall be K-13 rated, 50dB maximum, with 200% rated neutrals. All panelboards shall be door-in-door enclosure type, with hinged cover and latches for both inner and outer door panels.

Adequate spare capacity (15 - 20%) shall be provided in all panels to allow flexibility and change to spaces. Spare circuit breakers shall be provided should extra equipment be added, either during construction or after the facility is occupied. All emergency power receptacles shall be red and have engraved faceplates with the service panel and circuit number for quick identification of the serving branch circuit. All faceplates throughout for all receptacles and light switches will be stainless steel for durability and cleanability.

Power for HVAC and Mechanical Loads

All HVAC equipment in the buildings will be served at 480 volts, 3-phase for motors 1/2 horsepower and up. Smaller loads will be served either at 277 volts, 120 volts,or 208V single phase. Division 16 will provide disconnects and motor starters in all cases except where Variable Frequency Drives (VFD) are specified or when specifically identified to be provided by Division 15. Refer to Division 15 equipment schedule for mechanical equipment.

Grounding System

The grounding system will be in accordance with the National Electrical Code. Building ground will consist of a 4/0 copper grid below the building bonded to the building piles building and building reinforcing steel. Building pilings will serve as ground rods. Grounding of conduit systems and panelboards will consist of a pathway through the conduit system with a redundant insulated green grounding conductor bonded at each panelboard and at intermediate pull boxes. Cable trays throughout the building will be bonded to the building reinforcing steel at multiple locations to create a low impedance signal ground in addition to being grounded at the main service. Insulated green ground wires will be installed to all receptacles. In all Voice/Data closets and Low Voltage rooms, a separate ground bus shall be provided. Each of these busses shall be tied together via a ground conductor and extended to building ground.

Lighting Systems

Building and Site lighting for this project will provide a sense of arrival and establish a sense of place by highlighting key architectural elements within the project, enhancing the night time atmosphere and allowing people to find their way safely after dark. Interior lighting will enhance the aesthetics of the facility by reinforcing architectural features, providing the functional lighting required by the various space types and light level variations with appropriate controls.

High color rendering, energy efficient, long life sources will be used throughout the project. Ease of maintenance will be considered when selecting both lighting fixtures and light sources. Lighting sources in interior spaces will be primarily fluorescent and ceramic metal halide. Incandescent lighting sources will be kept to a minimum and will be used only for accent lighting or feature decorative fixtures in public lobbies. Exterior sources will be primarily ceramic metal halide with some low level fluorescent. Every attempt will be made to minimize the number of lamp types used on the project.

Fire Alarm System

The fire alarm system will be an addressable, networked and multiplexed system. System will be monitored at 24 hour manned locations. There will likely be several manned locations to be determined in later design phases with input from the Owner and staff. It is anticipated that branch fire alarm node cabinets will be located in the electrical rooms. Smoke detectors will be located in all patient bed rooms and every thirty lineal feet in corridors. Additional detectors may be provided as program dictates. Manual pull stations will be located as required at all exits and stairwells as well as each nurses station. Fire alarm speakers will provide both alarm indication and paging on each floor. Visual alarm lights will be located in the corridor, public restrooms, waiting areas and other public areas as required by Code. Alarms will be annunciated at the telephone operator's area and at local annunciators at each

Nurse's Station. Duct smoke detectors will be provided for each Supply Fan for the purpose of fan shutdown and at the location of each smoke damper.

Cable Plant Infrastructure

The cable plant distribution model will consist of a centralized information technology distribution point or main distribution frame (MDF) space and supports rack-mounted network equipment. It is anticipated that the owner will provide a telephone switch (PBX). Connectivity from telephone switch (PBX) and network equipment to the service provider will be provided as part of the site utility work. A horizontal cabling plant system will provide support for telephone and data connections in a universal cable plant within the facility. Station drops to locations/work stations will consist of CAT 6 cables in quantities as determine by the programming requirements. Station cable will be routed in cable trays and J-hooks. In the Design Development phase, wireless systems will be compared against a standard CAT-5 cable system for feasibility.

Telecommunications Service Entrance Room (TSER)
A minimum of 150 square feet shall be provided in the building. The room shall be located on the ground floor in proximity to the point of where the conduits penetrate the building. A room dimension of 10-feet by 15-feet is preferred. Area within the TSER area shall be allocated as required to facilitate the placement of telecommunications equipment from more than one telecommunication service provider. Area within the TSER shall be allocated to facilitate the transition of any outside plant cable to inside plant.
The TSER functions as the primary telecommunications service entrance area. This area serves as the point of demarcation for incoming telecommunications services providers and is the interface point between the outside cable plant and the inside cable plant. The room contains vendor-provided transmission equipment, such as trunk terminals, protection blocks, multiplexors and fiber-optic terminals. The purpose of this room is to facilitate the termination, splicing, rearrangement and distribution of incoming telecommunications cables.

Main Distribution Frame Room (MDF)

A Main Distribution Frame Room (MDF) shall be provided on the first floor on the building. Depending on the final determination of equipment to be housed within the room, the room shall be sized at 600 square feet. The MDF will serve as the central networking, communications and computing center for the campus and shall support network operations functions. The room does not account for space for printers and paper storage. The room will provide space for uninterruptible power supply (UPS) unit and batteries to support a telephone switch (PBX) and selected server equipment. The room does account for space for computer room type air conditioning units.
The following systems may be housed in the main technology room:

- A PBX to support the building/campus voice telecommunications requirements.
- Voice mail system components.

- Station message detail recording (SMDR) system component.
- PBX system administration terminals.
- Voice system power rectifiers and battery stack(s).
- NSHC owned transmission equipment used to connect the campus to the public switched network.
- The MDF for the unshielded twisted pair (UTP) backbone cables.

- File servers and storage devices associated administrative functions.
- File servers and storage devices associated with medical department functions that must be located within the building.
- Storage area network devices associated administrative and or medical department functions that must be located within the building.
- Local area network (LAN) and wide area network (WAN) equipment, including the core network switches, routers and firewalls.
- The MDF for the optical fiber backbone cables.
- Head end equipment associated with the RF, satellite and microwave communication systems

Communications Closets

Communications closets shall be provided in the core area of the space, to facilitate cable routing within the limitations imposed by TIA/EIA guidelines. These rooms shall be sized at approximately 12'x15' for each 15,000 sq. ft. area supported. Each communications closet shall be connected to the MDF via multi-mode fiber optic cable to provide data service and Category 6 riser cable for phone service. Riser cabling shall be run in conduit. The fiber optic cable shall be protected in the conduit by innerduct.

Nurse Call System

Raceway infrastructure (conduit, boxes, and power circuits), nurse call equipment and wiring will be provided under Division 16. Specific discussions need to occur with the user groups to determine features and requirements of the nurse call system, but in general, the following features are anticipated:

Systems will be audio-visual with Master Stations located at each nurse's station.
Exam rooms will be equipped with patient station, nurse assist button and code blue.
Patient rooms will be equipped with patient station, nurse assist button and code blue
Toilet and shower emergency pull cords will be installed in patient toilet/shower rooms.
Sectional dome lights will be located outside each patient room; zone dome lights located at cross-corridors.
Smoke detection annunciation tied into corridor dome light in areas where patients could be sleeping.

Connectivity with pocket pagers relaying nurse call messaging to individual pocket pagers.
Ability to connect with wireless phone system (note that phone system will need to be identified for coordination purposes).
Ability to use nurse wireless nurse locater system, if desired by NSHC.

The ambulatory surgical center and labor and delivery areas shall be considered for nurse assist and code blue call stations.

Patient and Equipment Monitoring

Raceway infrastructure will be provided for an owner-furnished patient monitoring systems. This includes physiological monitoring outlets at locations determined in the room-programming phase of the project. Where monitoring is accomplished using the universal data outlets, then data outlets will be provided at each monitoring location.

Other Electrical/Technology Systems

- Master Clock System
- Paging System
- Entertainment Television System
- Security Management System
- Critical Alarm System
- Radio Paging System
- Engineering Radio System

VII. CODE NOTES

GENERAL

Occupancy Groups:
B2 (Sec. 304) – Business Group Occupancy (Clinic – outpatient)
I2 (Sec. 308) – Institutional Group Occupancy (Hospitals)

Incidental Use Areas:
Per Table 302.1 the following incidental use areas shall be separated by 1-hour fire barriers:

Furnace room w/ over 400,000 Btu per hour input
Rooms w/ boiler over 15 psi and 10 horsepower
Refrigerant machinery rooms
Laboratories
Laundry rooms over 100 sf
Storage rooms over 100 sf
Group I-2 waste & linen collection rooms

Separated Uses:
Per Table 302.3.2, a 2-hour fire separation is required between B and I-2 occupancies.

HOSPITAL

Construction Type:
Type II-A (Table 503, 1-hour rated, non-combustible)

Allowable Height:
Per Table 503, 2 stories or 65 feet

Section 504.2 permits Table 503 limitations to be increased by 1 story and 20 feet when sprinkled throughout per Sec. 903.1.1 (NFPA 13) for a total of 3 stories and 85 feet

Allowable Area:
Per Sec. 506.1 and Table 503, (w/30 may not exceed 1.0)

$$If = 100 [(F/P) - 0.25] \cdot (w/30)$$

$$If = 100 [(465 ft / 570 ft) - 0.25] \cdot 1$$

$$If = 100 [(.81 - 0.25]$$

$$If = 56$$

Is = 200 for multi-story building

$$Aa = At + \frac{AtIf}{100} + \frac{AtIs}{100}$$

$$Aa = 15{,}000 + \frac{15{,}000 \cdot 57}{100} + \frac{15{,}000 \cdot 200}{100}$$

$$Aa = 15{,}000 + 8{,}400 + 30{,}000$$

$$Aa = 53{,}400 \text{ Per Floor}$$

Actual Area:	First Floor	18,900 sf
(Scheme A)	Second Floor	18,900
		37,800 sf

AMBULATORY CLINIC

Construction Type:

Type II-B (Table 503, non rated, non-combustible)

Allowable Height:

Per Table 503, 4 stories or 55 feet

Section 504.2 permits Table 503 limitations to be increased by 1 story and 20 feet when sprinkled throughout per Sec. 903.1.1 (NFPA 13) for a total of 5 stories and 75 feet

Allowable Area:

Per Sec. 506.1 and Table 503, (w/30 may not exceed 1.0)

$$If = 100\,[(F/P) - 0.25] \cdot (w/30)$$

$$If = 100\,[(765 \text{ ft} / 870 \text{ ft}) - 0.25] \cdot 1$$

$$If = 100\,[(.87 - 0.25]$$

$$If = 62$$

$$Is = 200 \text{ for multi-story building}$$

$$Aa = At + \frac{AtIf}{100} + \frac{AtIs}{100}$$

$$Aa = 23{,}000 + \frac{23{,}000 \cdot 62}{100} + \frac{23{,}000 \cdot 200}{100}$$

$$Aa = 23{,}000 + 14{,}260 + 46{,}000$$

$$Aa = 83{,}260 \text{ Per Floor}$$

Actual Area:	First Floor	34,650 sf
(Scheme A)	Second Floor	34,650 sf
	Third Floor	34,650 sf
		103,950 sf

VIII. RECOMMENDATIONS

The goal of this Site Relocation and Alternate Concept Development investigation has been to study the impact of relocating the Norton Sound Regional Hospital facility to the lower portion of the previously identified site. Part of this exploration has centered on the identification and evaluation of potential cost reduction strategies, as reflected in the building form and organization as well as access to the building and the location of the facility on the site.

Throughout this study, the design team has honored the commitment of the Norton Sound Health Corporation to provide a "state-of-the-art" health care facility for the region. The goals of durability and maintainability of exterior and interior finishes, functionality of spaces, provision for up-to-date technology, and the creation of warm inviting spaces for both staff and clients have remained constant.

The results of this exploration, as illustrated by various site and building configurations contained in this report, have led to the following conclusions:

Site:

The recommended site configuration places the building on the east side of the lower site is illustrated by the ***Scheme A/B – East Site Development Diagram***. Key factors influencing this recommendation include:

- Building orientation places the main entry on south side of building
- Building orientation roughly follows existing contours
- Building is held back from By-Pass Road reducing the impact of snow drifting onto the road while moderating the impact of noise and dust from it.
- Concept includes a gravel ramp with relatively short connecting bridges to the north of the facility for ER and service access. Emergency services access does not require vertical transportation of patient
- Main public entry is on grade

During the next design phase, Schematic Design, final placement of the building will be refined keeping in mind snow drifting and scouring, pedestrian and vehicular access, topography, additional geotechnical information, and opportunities for future expansion.

Building:

The recommended building configuration is illustrated by the building ***Concept A/A.1*** diagrams. Key factors influencing this recommendation include:

- Separates the facility into two distinct areas; the clinic and the hospital, and maximizes the amount of square footage contained in the less costly clinic type construction.
- Locates spaces requiring higher floor-to-floor heights on the first floor of the "clinic" building or in the "hospital" building, allowing shorter floor-to-floor heights for the second and third floors of the clinic portion of the facility.
- Emergency services access does not require vertical transportation of patient

- Narrow width with respect to wind direction facilitates scouring under the building
- Acute care beds stacked directly above ED allowing direct access without passing through public spaces
- Primary Care and Acute Care adjacent on same floor for easy physician access

The basic concept is that of two buildings, a Clinic and a Hospital that are joined by a connecting building element. During the Schematic Design the manner in which this takes physical form will be more fully explored. This straight forward approach holds the greatest potential to realize cost savings while still allowing for good medical planning decisions. At the next design phase, in-depth discussion with medical staff will be required to fully develop the building's internal organization. The design team will periodically meet with staff to inform and confirm design decisions made throughout the process of Schematic Design Development, and Construction Documents.

EXHIBITS

Scheme A- Primary Concept

- Drawing Exhibits
  Site Plans
  Floor Plans (scheme A and A.1)
- Interdepartmental Proximity Diagrams
- POR Space Comparison
- Conceptual Images

Scheme B

- Drawing Exhibits
  Floor Plans
- Interdepartmental Proximity Diagrams
- POR Space Comparison

Scheme C

- Drawing Exhibits
  Site Plan
  Floor Plans
- Interdepartmental Proximity Diagrams
- POR Space Comparison

Ramp Diagrams

Appendix

- Construction Cost Summary Sheet
  (Complete cost estimates provided under separate cover)
  Cost Summary – Scheme A
  Cost Summary – Scheme B
  Cost Summary – Gravel Ramp vs. E.R. and Service entry at grade
- P.O.R. Space Summary
- Meeting Minutes from Work Sessions
  Anchorage – (8/14/06 and 8/15/06)
  Nome – (8/24/06)
  Nome – (9/29/06)

PRIMARY SCHEME:

SCHEME A

- o Site Plans
  - A/B - East
  - A/B - West

- o Scheme – A: Floor Plans
  - Level 1
  - Level 2
  - Level 3

- o Scheme – A.1: Floor Plans
  - Level 1
  - Level 2
  - Level 3

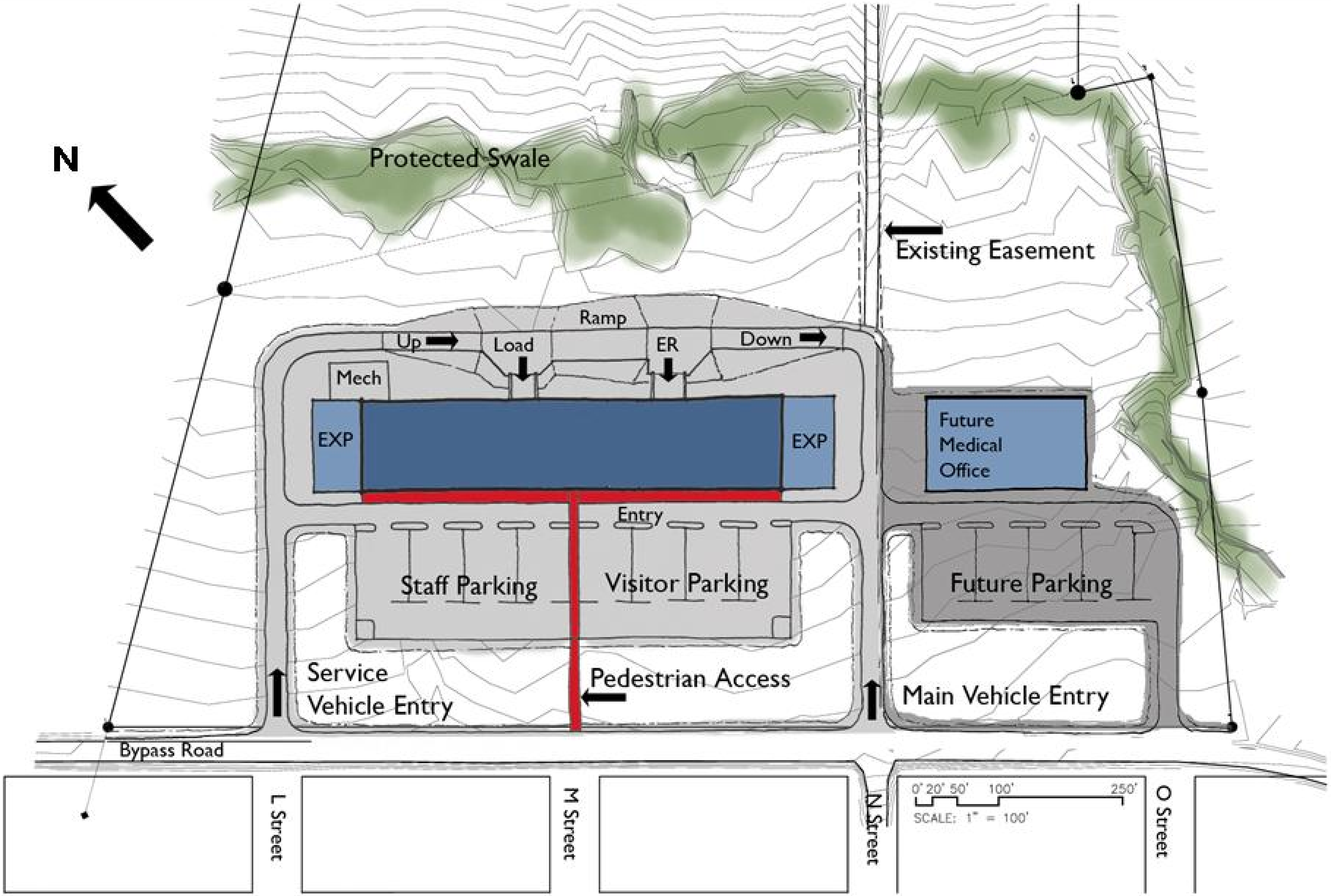
- o Adjacency Diagrams

- o Space Comparison

- o Conceptual Images
  - Site Plan
  - Scheme A – Front Perspective
  - Scheme A – Rear Perspective
  - Scheme A.1 – Southwest Perspective
  - Scheme A.1 – Southeast Perspective
  - Entry Detail

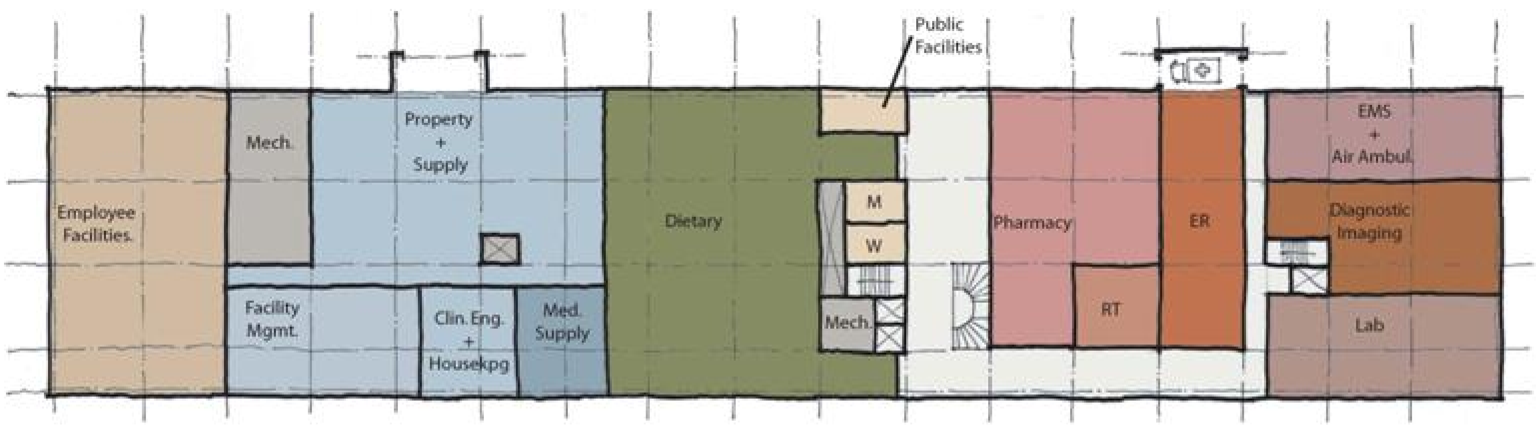
Master Site Plan Scheme A-East

Master Site Plan Scheme A-West



Scheme A Level 1

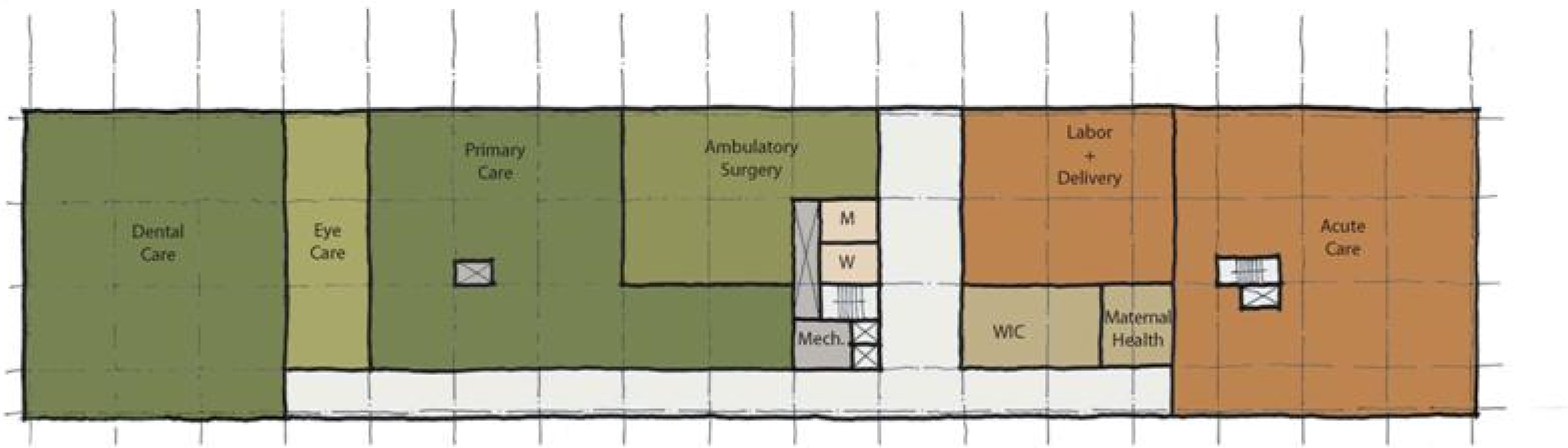
SCHEME A - LEVEL 1
NORTON SOUND REGIONAL HOSPITAL



SCHEME A
LEVEL 1

Scheme A Level 2

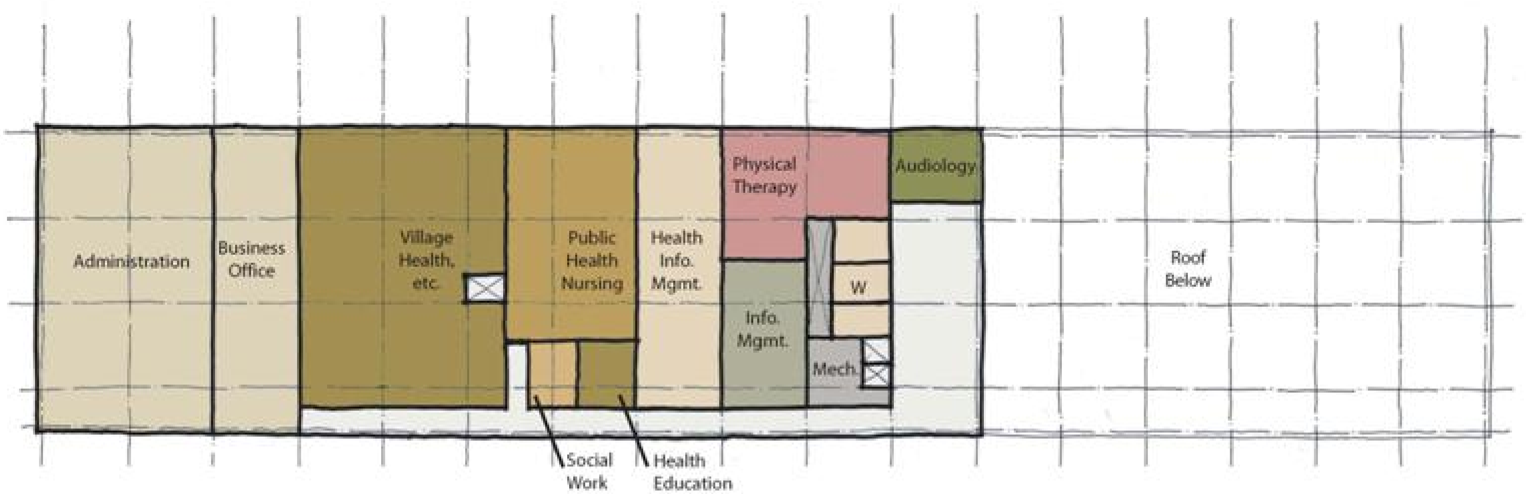
SCHEME A - LEVEL 1
NORTON SOUND REGIONAL HOSPITAL
09.22.2006



SCHEME A
LEVEL 2

Scheme A Level 3

SCHEME A - LEVEL 1
NORTON SOUND REGIONAL HOSPITAL



SCHEME A
LEVEL 3

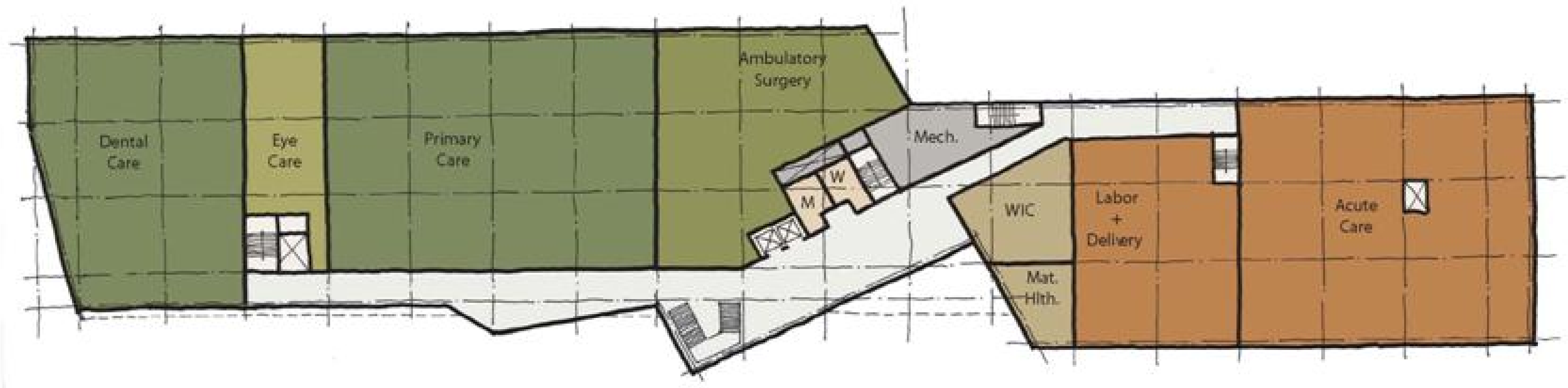
Scheme A.1 Level 1

SCHEME A - LEVEL 1
NORTON SOUND REGIONAL HOSPITAL

**SCHEME A.1
LEVEL 1**

Scheme A.1 Level 2

SCHEME A - LEVEL 2
NORTON SOUND REGIONAL HOSPITAL

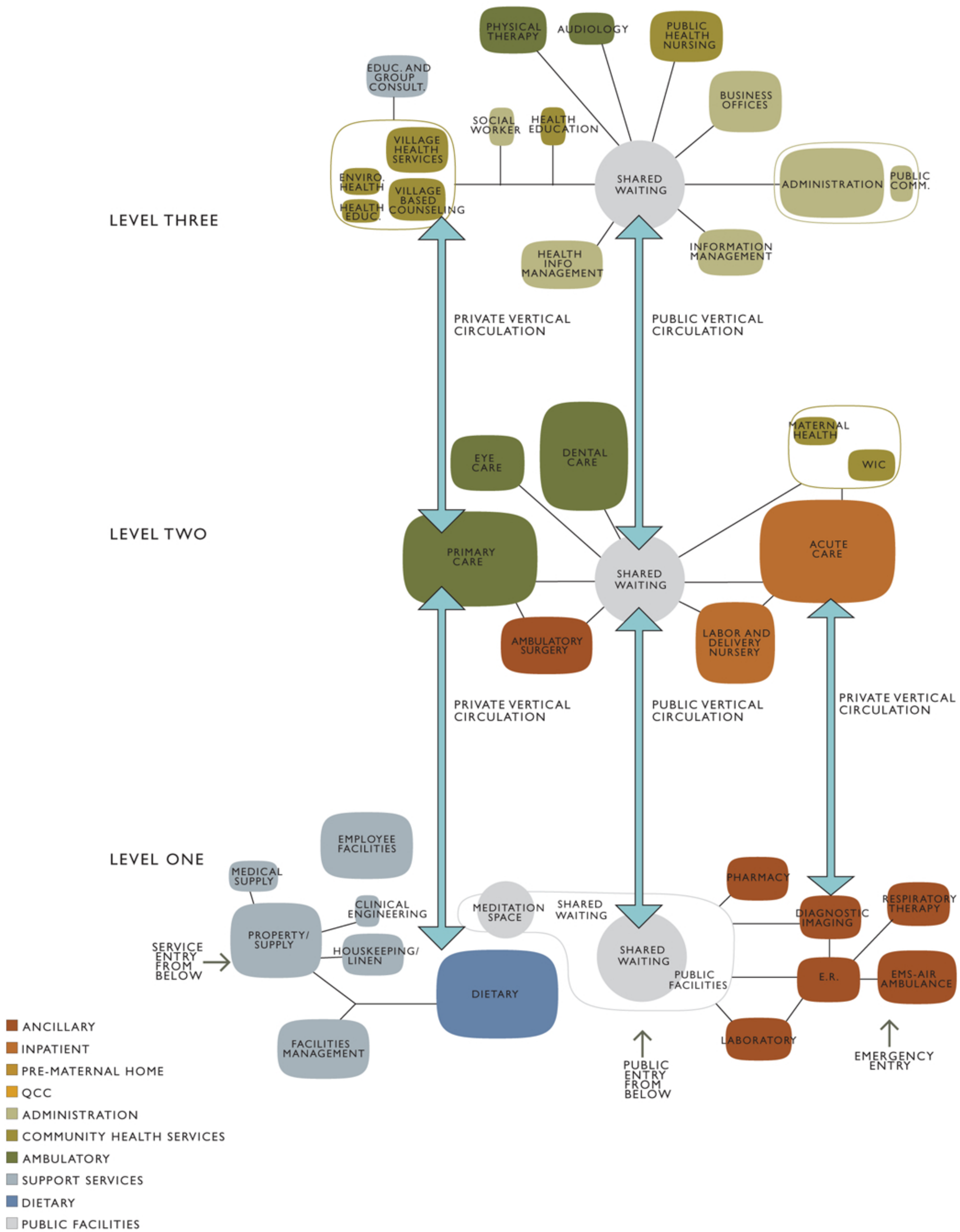


SCHEME A.1
LEVEL 2

Scheme A.1 Level 3

SCHEME A - LEVEL 3
NORTON SOUND REGIONAL HOSPITAL

SCHEME A.1
LEVEL 3


LEVEL THREE
EDUC. AND GROUP CONSULT.
VILLAGE HEALTH SERVICES
ENVIRO. HEALTH
HEALTH EDUC.
VILLAGE BASED COUNSELING
SOCIAL WORKER
HEALTH EDUCATION
PHYSICAL THERAPY
AUDIOLOGY
PUBLIC HEALTH NURSING
BUSINESS OFFICES
SHARED WAITING
ADMINISTRATION
PUBLIC COMM.
HEALTH INFO MANAGEMENT
INFORMATION MANAGEMENT
PRIVATE VERTICAL CIRCULATION
PUBLIC VERTICAL CIRCULATION
LEVEL TWO
EYE CARE
DENTAL CARE
MATERNAL HEALTH
WIC
PRIMARY CARE
SHARED WAITING
ACUTE CARE
AMBULATORY SURGERY
LABOR AND DELIVERY NURSERY
PRIVATE VERTICAL CIRCULATION
PUBLIC VERTICAL CIRCULATION
PRIVATE VERTICAL CIRCULATION
LEVEL ONE
EMPLOYEE FACILITIES
MEDICAL SUPPLY
PROPERTY/ SUPPLY
CLINICAL ENGINEERING
HOUSKEEPING/ LINEN
SERVICE ENTRY FROM BELOW
MEDITATION SPACE
SHARED WAITING
SHARED WAITING
PUBLIC FACILITIES
PHARMACY
DIAGNOSTIC IMAGING
RESPIRATORY THERAPY
E.R.
EMS-AIR AMBULANCE
LABORATORY
DIETARY
FACILITIES MANAGEMENT
PUBLIC ENTRY FROM BELOW
EMERGENCY ENTRY
ANCILLARY
INPATIENT
PRE-MATERNAL HOME
QCC
ADMINISTRATION
COMMUNITY HEALTH SERVICES
AMBULATORY
SUPPORT SERVICES
DIETARY
PUBLIC FACILITIES

SPACE COMPARISON REPORT

POR Space Allocation / Concept Plan

Building Area Summary	Approved POR		OPTION A					
			First		Second		Third	
Department	Area [SM]	Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]
ADDITIONAL SERVICES								
Ambulatory Surgery	415.80	4,470				4,470		
Dietary- HFPM Based	659.48	7,089		7,089				
EMS / Air Ambulance	220.05	2,366	2,366					
Maternal Health	71.55	769			769			
Village Health Services	112.05	1,205						1,205
WIC	118.80	1,277			1,277			
Village Based Counseling	76.95	827						827
Body Holding	43.20	464	464					
Sub-total Additional Services	1,717.88	18,467	2,830	7,089	2,046	4,470	0	2,032
ADMINISTRATION								
Administration	536.20	5,764						5,764
Business Office	232.40	2,498						2,498
Health Info Management	246.25	2,647						2,647
Information Management	177.60	1,909						1,909
Sub-total Administration	1,192.45	12,819	0	0	0	0	0	12,818
AMBULATORY								
Audiology	81.00	871						871
Dental Care	716.00	7,697				7,697		
Emergency	219.00	2,354	2,354					
Eye Care	236.00	2,537				2,537		
Primary Care	1,005.00	10,804				10,804		
Sub-total Ambulatory	2,257.00	24,263	2,354	0	0	21,038	0	871
ANCILLARY								
Diagnostic Imaging	240.00	2,580	2,580					
Laboratory	227.00	2,440	2,440					
Pharmacy	343.00	3,687	3,687					
Respiratory Therapy	81.00	871	871					
Physical Therapy	174.00	1,871						1,871
Sub-total Ancillary	1,065.00	11,449	9,578	0	0	0	0	1,871
BEHAVIORAL								
Mental Health	95.20	1,023						1,023
Social Work	39.20	421						421
Sub-total Behavioral	134.40	1,445	0	0	0	0	0	1,444
FACILITY SUPPORT								
Clinical Engineering	42.00	452		452				
Facilities Management	246.00	2,645		2,645				
Sub-total Facility Support	288.00	3,096	0	3,097	0	0	0	0

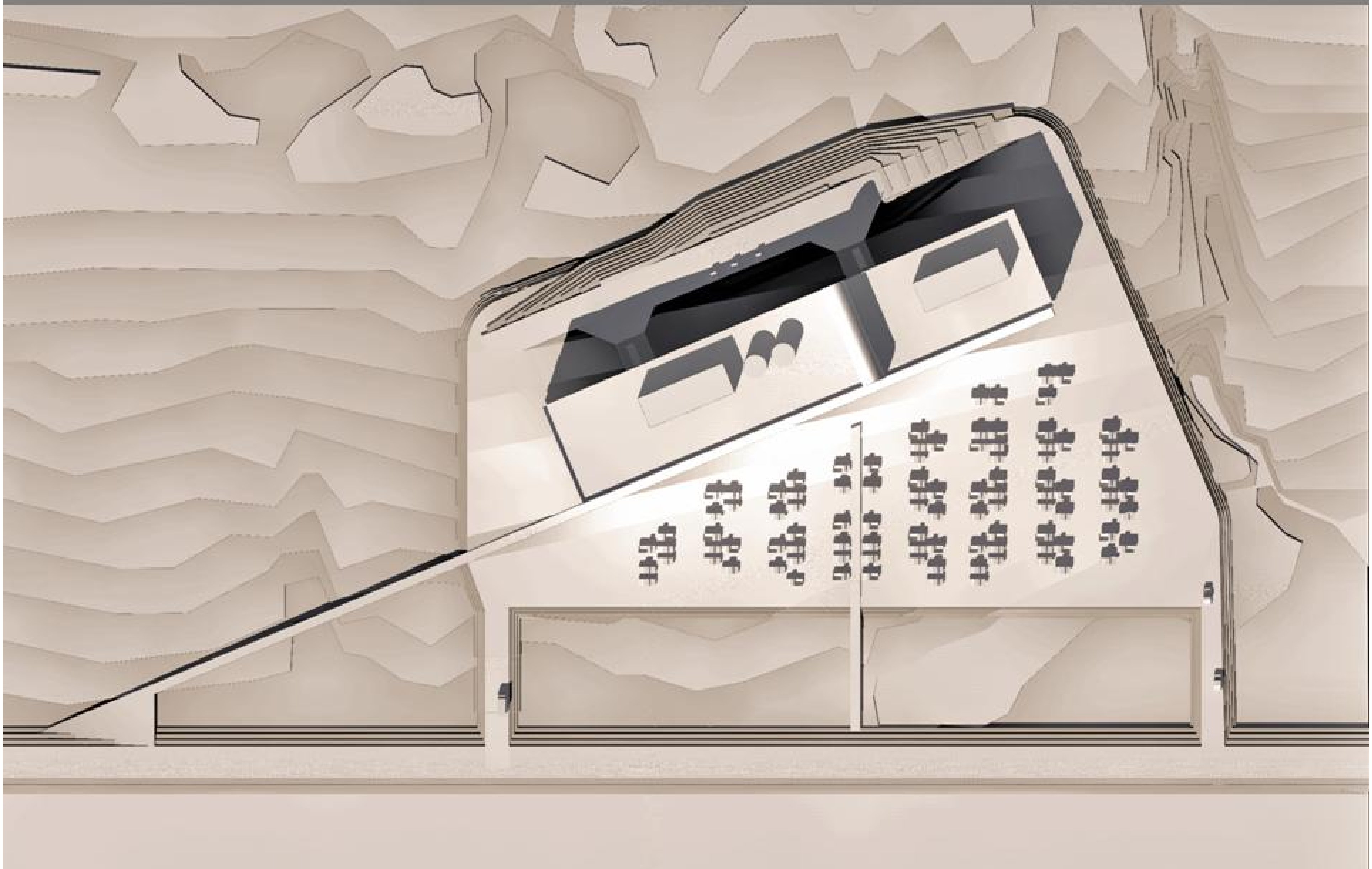
SPACE COMPARISON REPORT

POR Space Allocation / Concept Plan

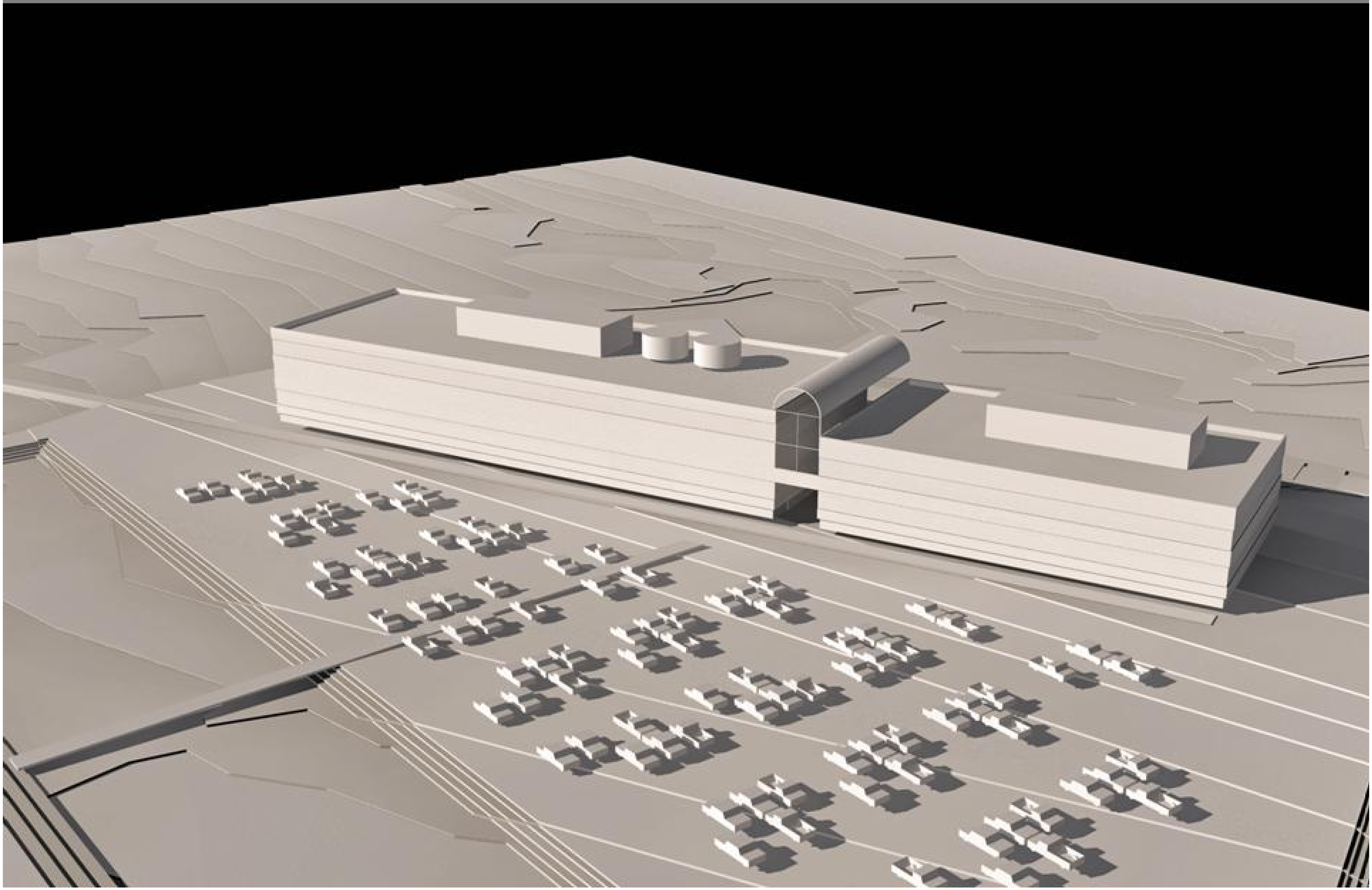
Building Area Summary	Approved POR		OPTION A					
			First		Second		Third	
Department	Area [SM]	Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]
INPATIENT								
Acute Care	849.00	9,127			9,127			
Labor & Delivery	326.00	3,505			3,505			
Sub-total Inpatient	1,175.00	12,632	0	0	12,632	0	0	0
PREVENTIVE								
Environmental Health	126.00	1,355						1,355
Health Education	57.40	617						617
Public Health Nursing	259.00	2,784						2,784
Public Health Nutrition	37.80	406						406
Sub-total Preventive	480.20	5,162	0	0	0	0	0	5,162
SUPPORT SERVICES								
Education & Group Consult	37.40	402						402
Education & Group Consult	151.00	1,623						1,623
Employee Facilities	475.92	5,116		5,116				
Housekeeping & Linen	56.00	602		602				
Housekeeping & Linen	66.00	710		710				
Medical Supply	122.00	1,312		1,312				
Property & Supply	607.00	6,525		6,525				
Public Facilities	160.20	1,722		922		400		400
Sub-total Support Services	1,675.52	18,012	0	15,187	0	400	0	2,425
NON-IHS PROGRAMS								
CAMP		0						
GOCADAN		0						
PROGRAM TOTAL								
Department Gross Area:	9,985.45	107,344	14,762	25,373	14,678	25,908	0	26,623
Bldg Circulation & Envelope (.20):	1,997.09	21,469	2,952	5,075	2,936	5,182	0	5,325
Floor Gross Area:	11,982.54	128,813	17,714	30,448	17,614	31,090	0	31,948
Major Mechanical Space (.12):	1,437.90	15,458		1,800		200		200
Building Gross Area:	13,420.44	144,270	17,714	32,248	17,614	31,290	0	32,148

BUILDING GROSS AREA	Approved POR	Option A
First Floor		49,962
Second Floor		48,903
Third Floor		32,148
Penthouse/Attic Mechanical		13,257
Crawl Space (at 50%)		
Total, Building Gross Area:	144,270	144,270

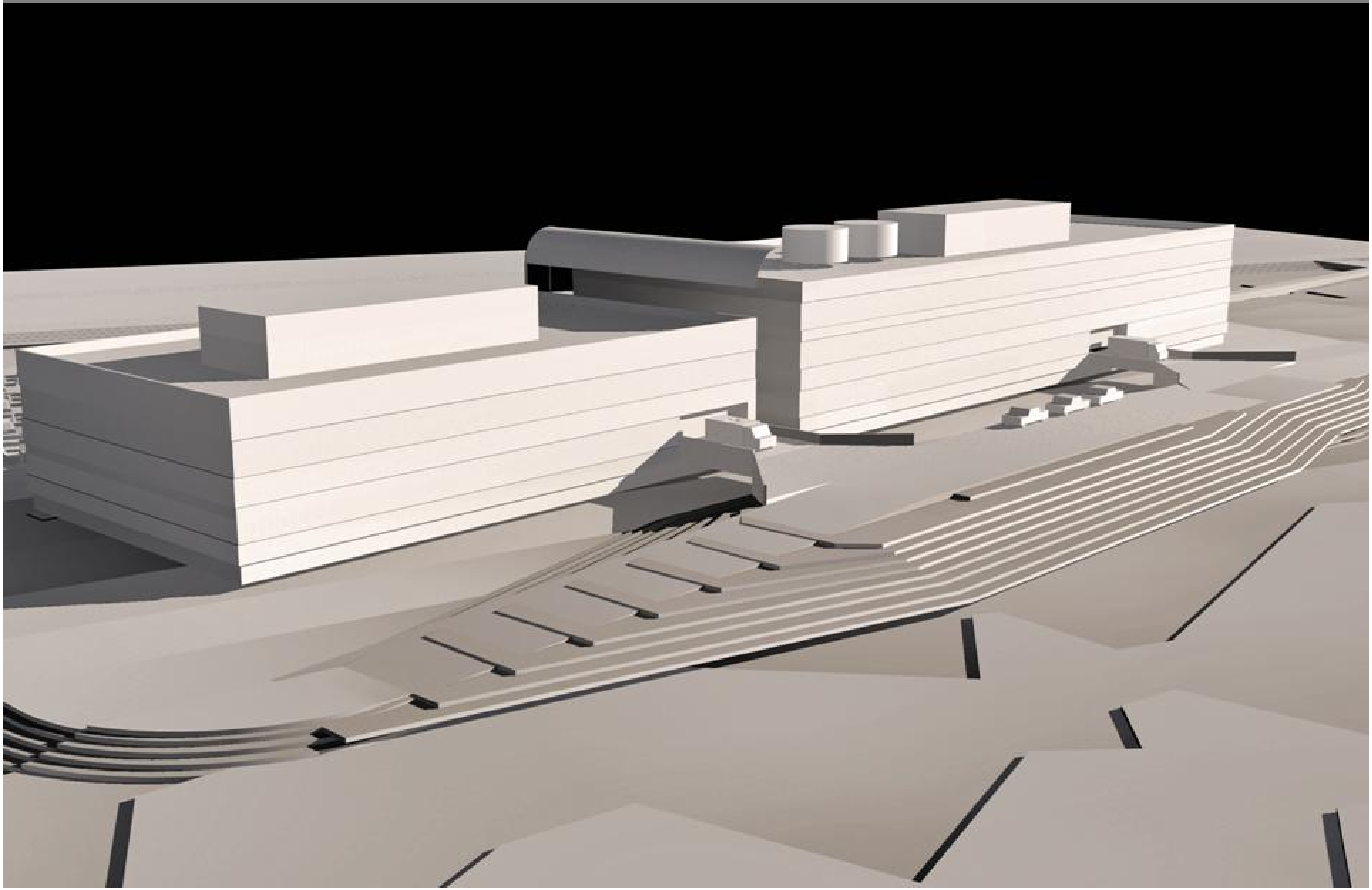
Site

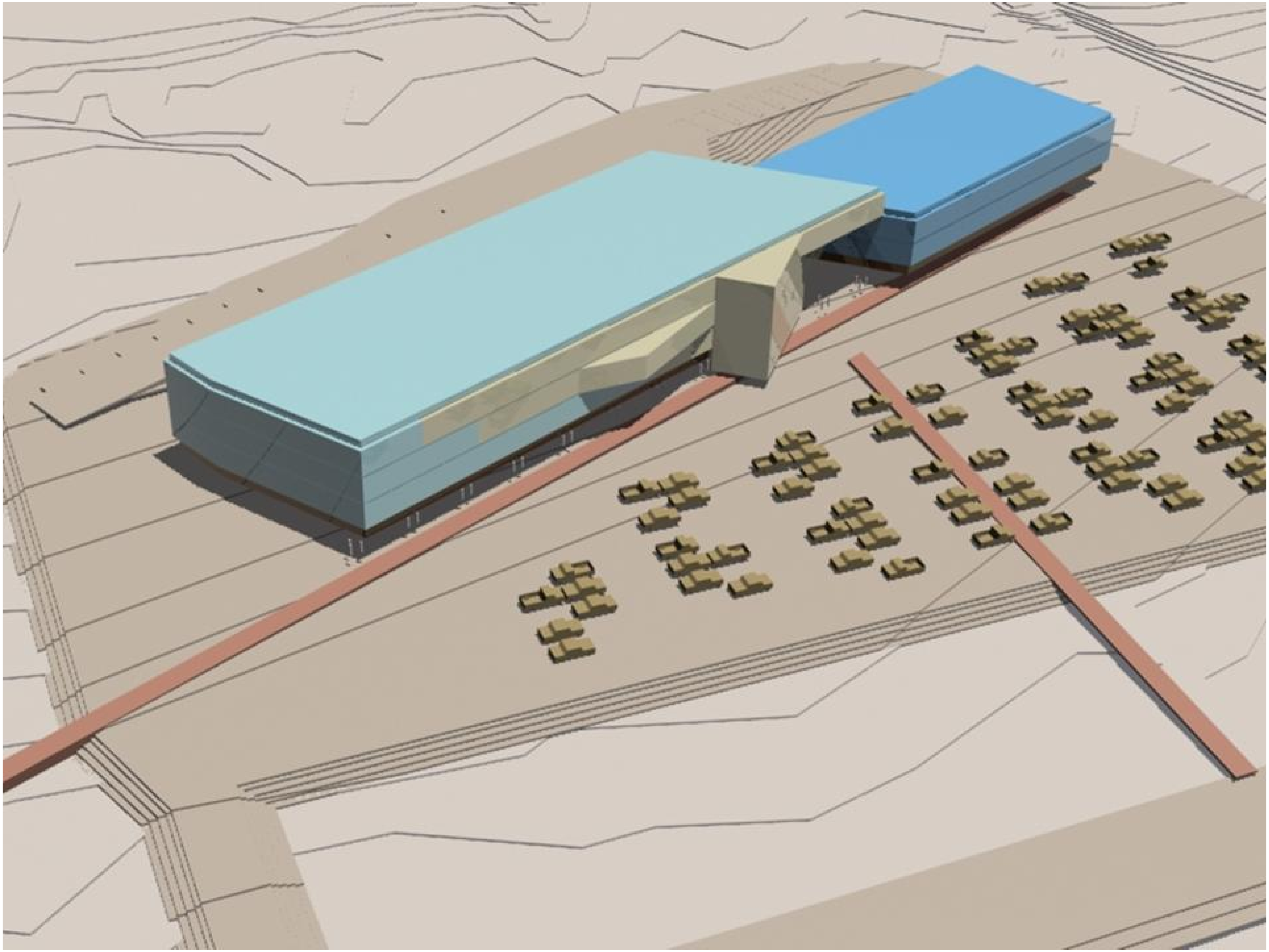


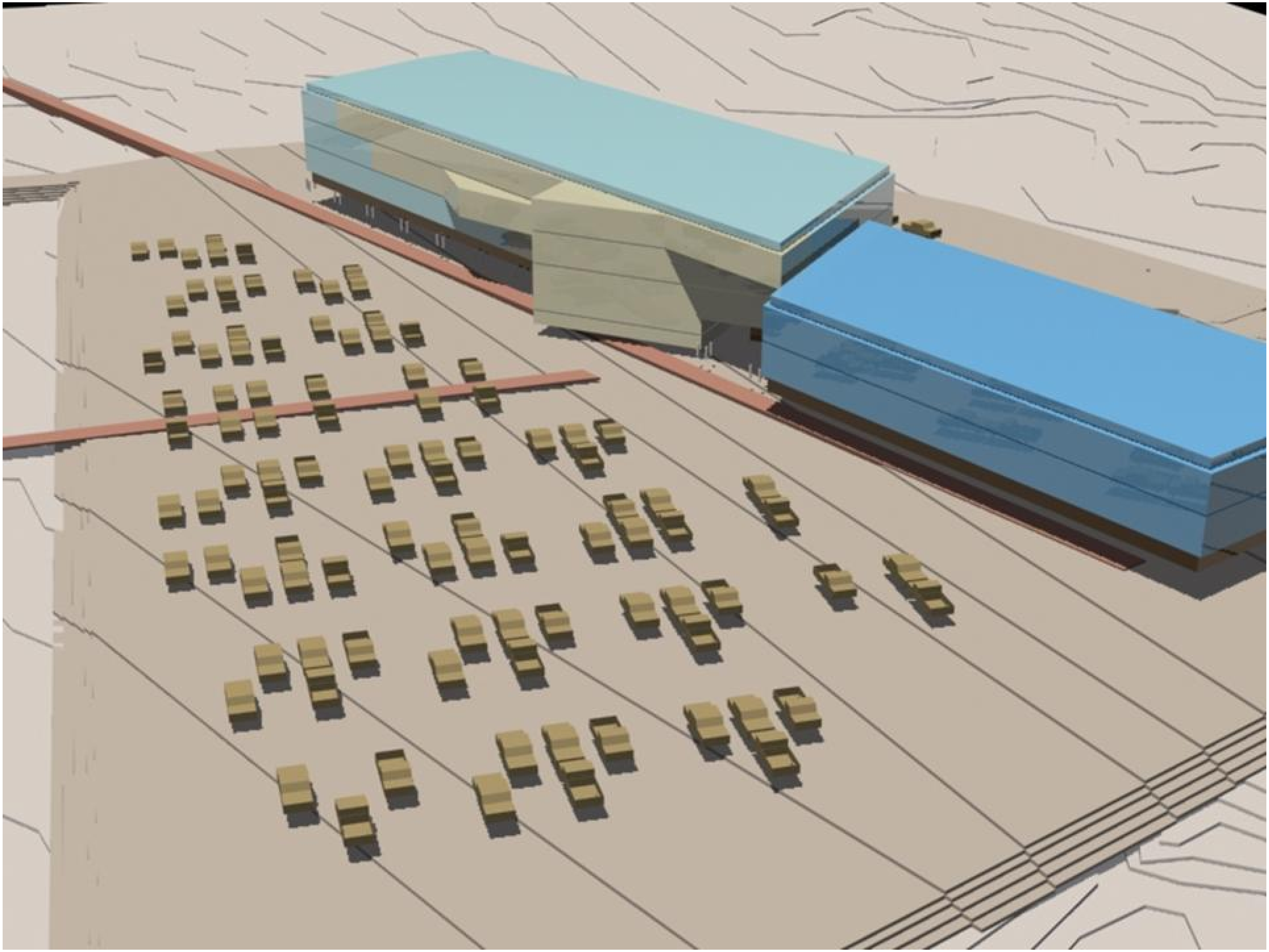
Front Perspective



Rear Perspective







Entry

SCHEME B

- Site Plan
  See Site Plan A-East and A-West
- Floor Plans
  Level 1
  Level 2
  Level 3
- Adjacency Diagrams
- Space Comparison

Scheme B Level 1

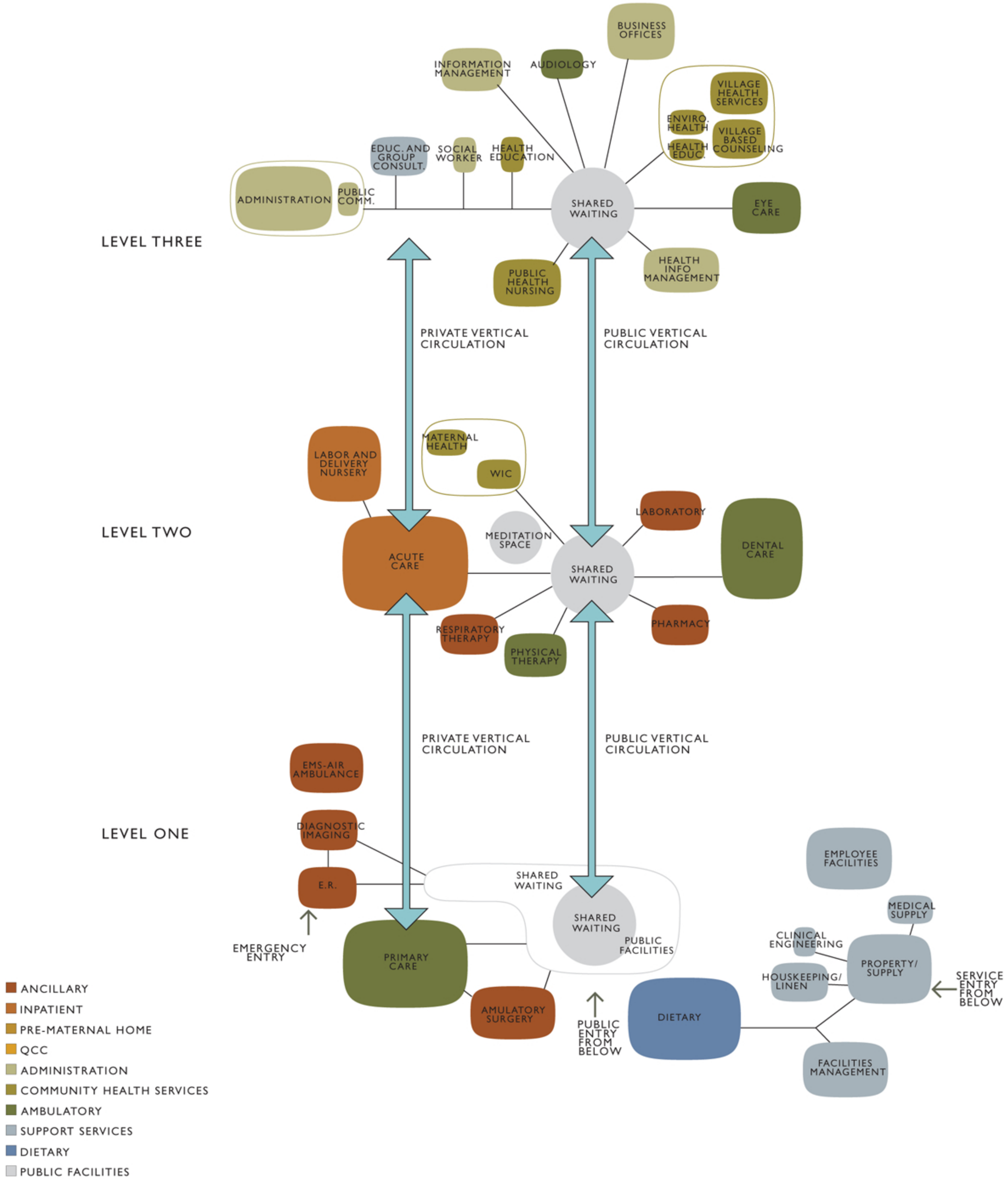
SCHEME B
LEVEL 1

Scheme B Level 2

SCHEME B
LEVEL 2

Scheme B Level 3

SCHEME B
LEVEL 3


BUSINESS OFFICES
INFORMATION MANAGEMENT
AUDIOLOGY
VILLAGE HEALTH SERVICES
ENVIRO. HEALTH
VILLAGE BASED COUNSELING
HEALTH EDUC.
EDUC. AND GROUP CONSULT.
SOCIAL WORKER
HEALTH EDUCATION
ADMINISTRATION
PUBLIC COMM.
SHARED WAITING
EYE CARE
LEVEL THREE
PUBLIC HEALTH NURSING
HEALTH INFO MANAGEMENT
PRIVATE VERTICAL CIRCULATION
PUBLIC VERTICAL CIRCULATION
LABOR AND DELIVERY NURSERY
MATERNAL HEALTH
WIC
LABORATORY
DENTAL CARE
LEVEL TWO
MEDITATION SPACE
ACUTE CARE
SHARED WAITING
PHARMACY
RESPIRATORY THERAPY
PHYSICAL THERAPY
PRIVATE VERTICAL CIRCULATION
PUBLIC VERTICAL CIRCULATION
EMS-AIR AMBULANCE
LEVEL ONE
DIAGNOSTIC IMAGING
EMPLOYEE FACILITIES
SHARED WAITING
E.R.
MEDICAL SUPPLY
CLINICAL ENGINEERING
SHARED WAITING
EMERGENCY ENTRY
PRIMARY CARE
PUBLIC FACILITIES
PROPERTY/ SUPPLY
HOUSKEEPING/ LINEN
SERVICE ENTRY FROM BELOW
AMULATORY SURGERY
PUBLIC ENTRY FROM BELOW
DIETARY
FACILITIES MANAGEMENT
ANCILLARY
INPATIENT
PRE-MATERNAL HOME
QCC
ADMINISTRATION
COMMUNITY HEALTH SERVICES
AMBULATORY
SUPPORT SERVICES
DIETARY
PUBLIC FACILITIES

SPACE COMPARISON REPORT

POR Space Allocation / Concept Plan

Building Area Summary	**Approved POR**		**OPTION B**					
			First		**Second**		**Third**	
Department	Area [SM]	Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]
ADDITIONAL SERVICES								
Ambulatory Surgery	415.80	4,470	4,470					
Dietary- HFPM Based	659.48	7,089		7,089				
EMS / Air Ambulance	220.05	2,366	2,366					
Maternal Health	71.55	769			769			
Village Health Services	112.05	1,205						1,205
WIC	118.80	1,277			1,277			
Village Based Counseling	76.95	827						827
Body Holding	43.20	464	464					
Sub-total Additional Services	1,717.88	18,467	7,300	7,089	2,046	0	0	2,032
ADMINISTRATION								
Administration	536.20	5,764					5,764	
Business Office	232.40	2,498					2,498	
Health Info Management	246.25	2,647						2,647
Information Management	177.60	1,909					1,909	
Sub-total Administration	1,192.45	12,819	0	0	0	0	10,171	2,647
AMBULATORY								
Audiology	81.00	871						871
Dental Care	716.00	7,697				7,697		
Emergency	219.00	2,354	2,354					
Eye Care	236.00	2,537						2,537
Primary Care	1,005.00	10,804	10,804					
Sub-total Ambulatory	2,257.00	24,263	13,158	0	0	7,697	0	3,408
ANCILLARY								
Diagnostic Imaging	240.00	2,580	2,580					
Laboratory	227.00	2,440				2,440		
Pharmacy	343.00	3,687				3,687		
Respiratory Therapy	81.00	871			871			
Physical Therapy	174.00	1,871			1,871			
Sub-total Ancillary	1,065.00	11,449	2,580	0	2,742	6,127	0	0
BEHAVIORAL								
Mental Health	95.20	1,023						1,023
Social Work	39.20	421						421
Sub-total Behavioral	134.40	1,445	0	0	0	0	0	1,444
FACILITY SUPPORT								
Clinical Engineering	42.00	452		452				
Facilities Management	246.00	2,645		2,645				
Sub-total Facility Support	288.00	3,096	0	3,097	0	0	0	0

SPACE COMPARISON REPORT

POR Space Allocation / Concept Plan

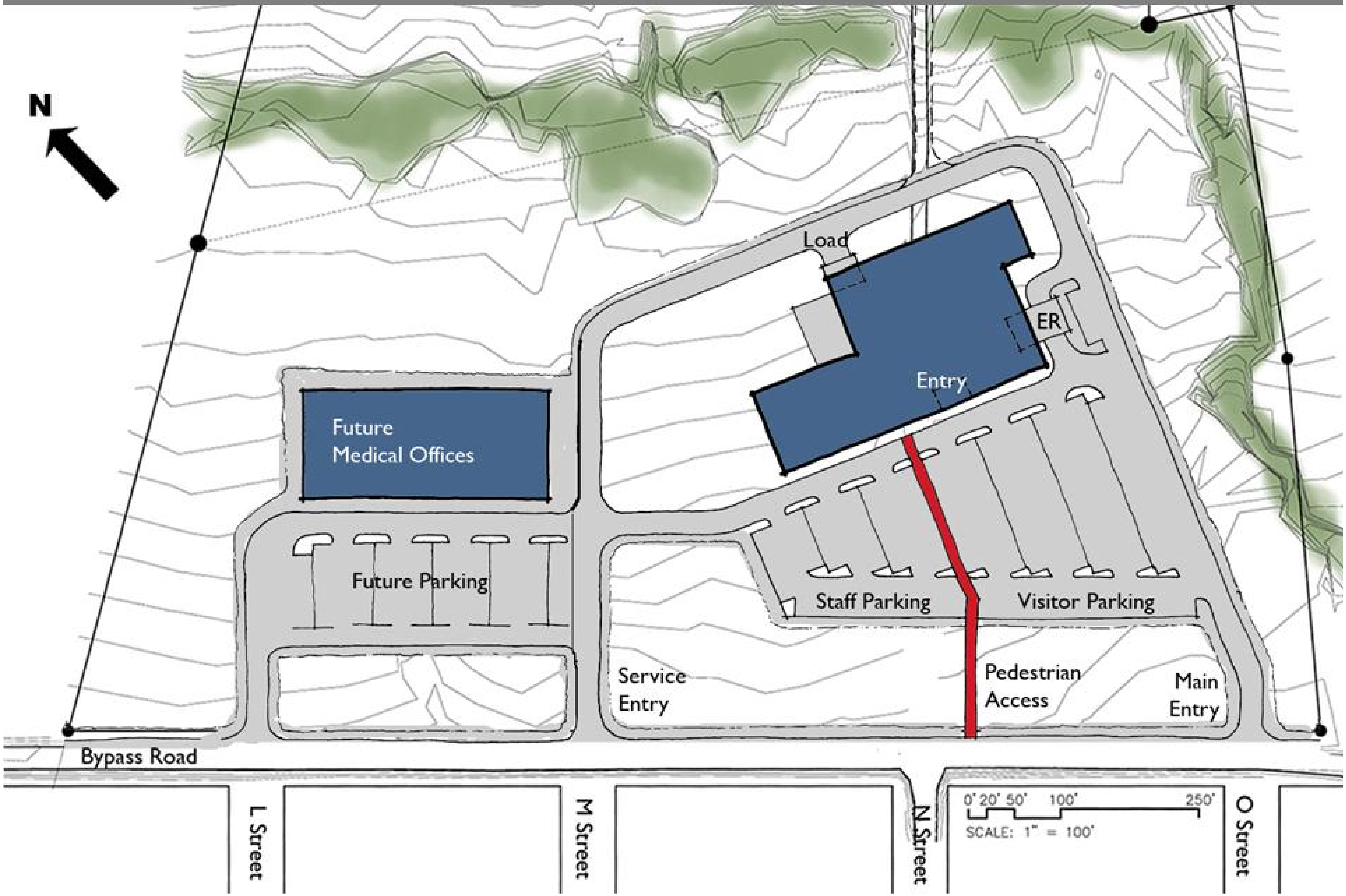
Building Area Summary	**Approved POR**		**OPTION B**					
			First		**Second**		**Third**	
Department	Area [SM]	Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]
INPATIENT								
Acute Care	849.00	9,127			9,127			
Labor & Delivery	326.00	3,505			3,505			
Sub-total Inpatient	1,175.00	12,632	0	0	12,632	0	0	0
PREVENTIVE								
Environmental Health	126.00	1,355					1,355	
Health Education	57.40	617					617	
Public Health Nursing	259.00	2,784					2,784	
Public Health Nutrition	37.80	406					406	
Sub-total Preventive	480.20	5,162	0	0	0	0	5,162	0
SUPPORT SERVICES								
Education & Group Consult	37.40	402					402	
Education & Group Consult	151.00	1,623					1,623	
Employee Facilities	475.92	5,116		2,500				2,616
Housekeeping & Linen	56.00	602		602				
Housekeeping & Linen	66.00	710		710				
Medical Supply	122.00	1,312		1,312				
Property & Supply	607.00	6,525		6,525				
Public Facilities	160.20	1,722	450			822		450
Sub-total Support Services	1,675.52	18,012	450	11,649	0	822	2,025	3,066
NON-IHS PROGRAMS								
CAMP		0						
GOCADAN		0						
PROGRAM TOTAL								
Department Gross Area:	9,985.45	107,344	23,488	21,835	17,420	14,646	17,358	12,597
Bldg Circulation & Envelope (.20):	1,997.09	21,469	4,698	4,367	3,484	2,929	3,472	2,519
Floor Gross Area:	11,982.54	128,813	28,186	26,202	20,904	17,575	20,830	15,116
Major Mechanical Space (.12):	1,437.90	15,458		2,700		200		200
Building Gross Area:	13,420.44	144,270	28,186	28,902	20,904	17,775	20,830	15,316

BUILDING GROSS AREA	**Approved POR**	**Option B**
First Floor		57,088
Second Floor		38,679
Third Floor		36,146
Penthouse/Attic Mechanical		12,357
Crawl Space (at 50%)		
Total, Building Gross Area:	144,270	144,270

SCHEME C

- Site Plan
- Floor Plans
  - Level 1
  - Level 2
  - Level 3
- Adjacency Diagrams
- Space Comparison

Master Site Plan Scheme C

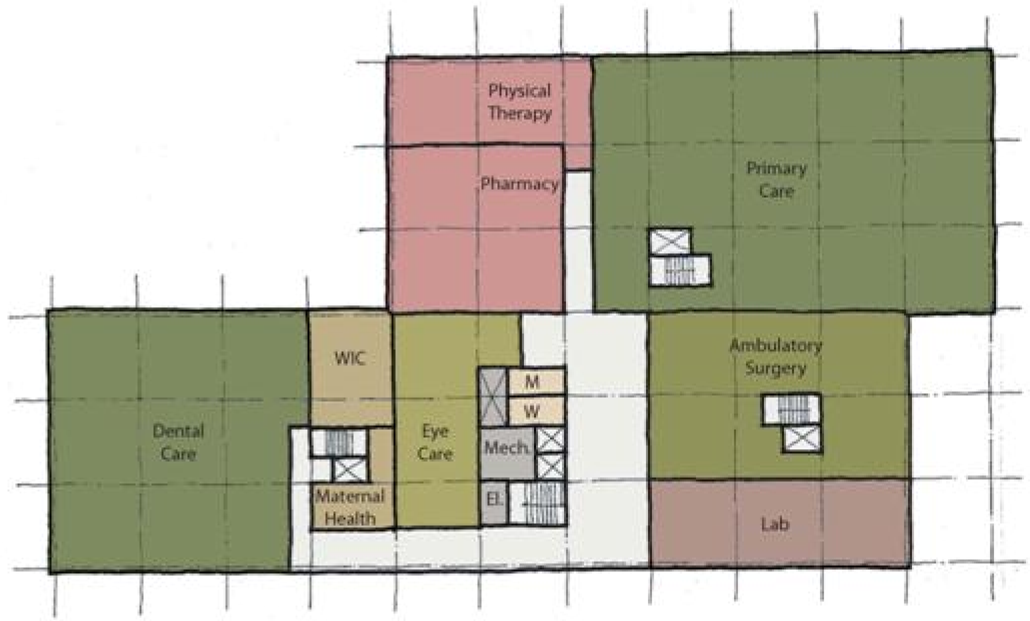


Scheme C Level 1

SCHEME C
LEVEL 1

Scheme C Level 2

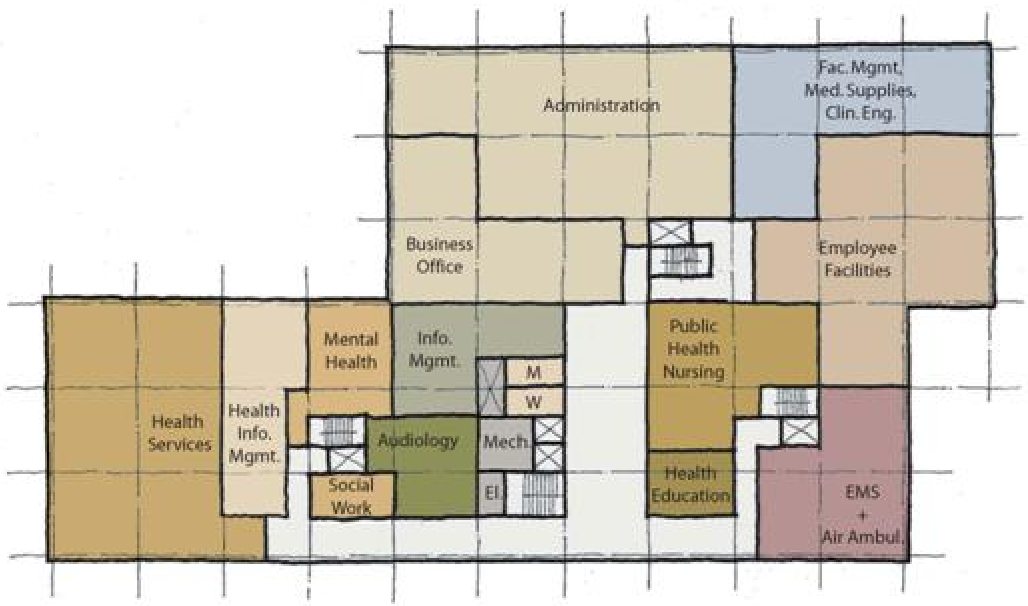
SCHEME A - LEVEL 1
NORTON SOUND REGIONAL HOSPITAL



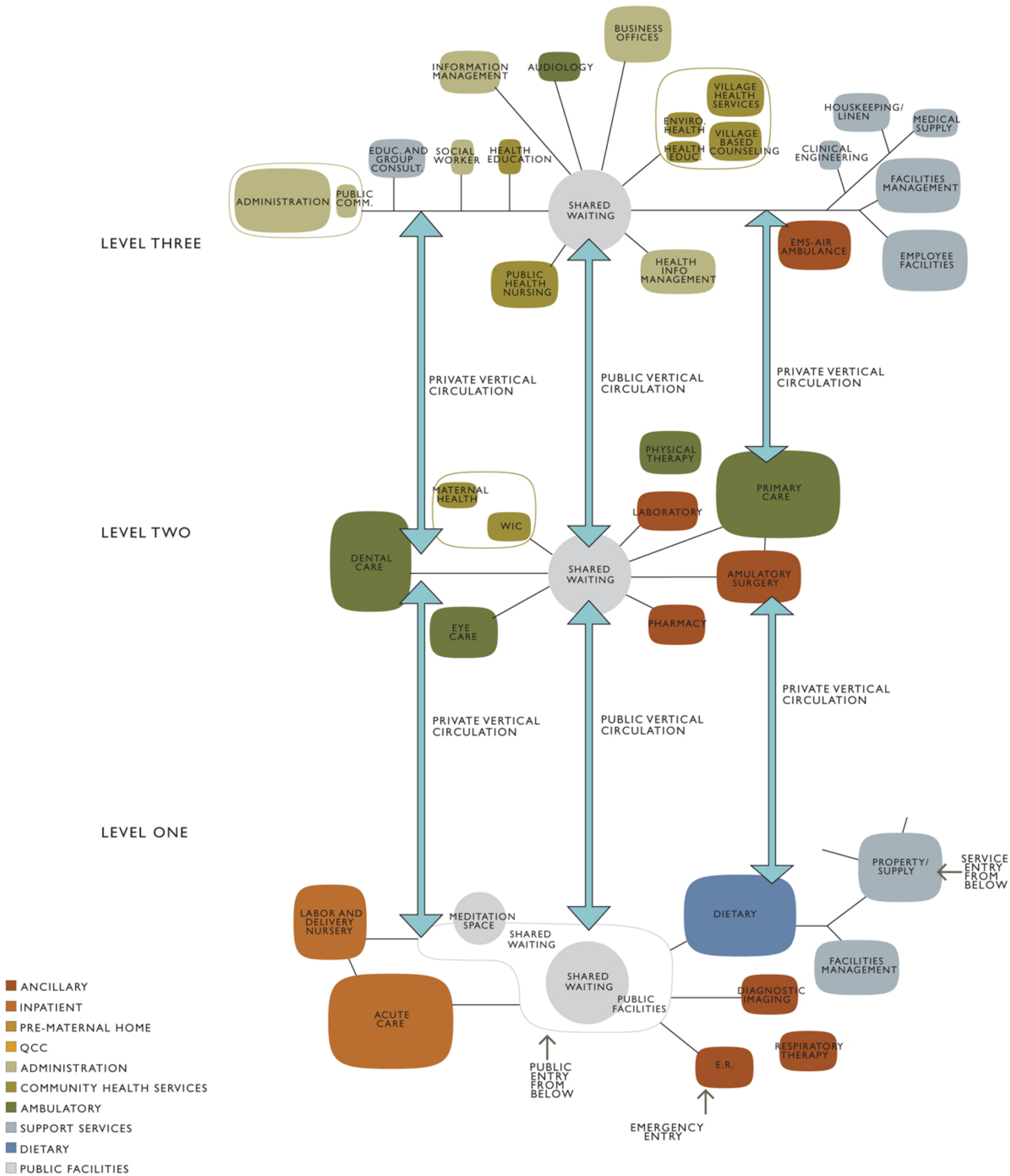
SCHEME C
LEVEL 2

Scheme C Level 3

SCHEME A - LEVEL 1
NORTON SOUND REGIONAL HOSPITAL



SCHEME C
LEVEL 3


BUSINESS OFFICES
INFORMATION MANAGEMENT
AUDIOLOGY
VILLAGE HEALTH SERVICES
ENVIRO. HEALTH
VILLAGE BASED COUNSELING
HEALTH EDUC.
HOUSKEEPING/ LINEN
MEDICAL SUPPLY
CLINICAL ENGINEERING
FACILITIES MANAGEMENT
EDUC. AND GROUP CONSULT.
SOCIAL WORKER
HEALTH EDUCATION
ADMINISTRATION
PUBLIC COMM.
SHARED WAITING
EMS-AIR AMBULANCE
EMPLOYEE FACILITIES
LEVEL THREE
PUBLIC HEALTH NURSING
HEALTH INFO MANAGEMENT
PRIVATE VERTICAL CIRCULATION
PUBLIC VERTICAL CIRCULATION
PRIVATE VERTICAL CIRCULATION
PHYSICAL THERAPY
PRIMARY CARE
MATERNAL HEALTH
LABORATORY
WIC
LEVEL TWO
DENTAL CARE
SHARED WAITING
AMULATORY SURGERY
EYE CARE
PHARMACY
PRIVATE VERTICAL CIRCULATION
PRIVATE VERTICAL CIRCULATION
PUBLIC VERTICAL CIRCULATION
LEVEL ONE
PROPERTY/ SUPPLY
SERVICE ENTRY FROM BELOW
LABOR AND DELIVERY NURSERY
MEDITATION SPACE
SHARED WAITING
DIETARY
FACILITIES MANAGEMENT
SHARED WAITING
PUBLIC FACILITIES
DIAGNOSTIC IMAGING
ACUTE CARE
RESPIRATORY THERAPY
E.R.
PUBLIC ENTRY FROM BELOW
EMERGENCY ENTRY
ANCILLARY
INPATIENT
PRE-MATERNAL HOME
QCC
ADMINISTRATION
COMMUNITY HEALTH SERVICES
AMBULATORY
SUPPORT SERVICES
DIETARY
PUBLIC FACILITIES

SPACE COMPARISON REPORT

POR Space Allocation / Concept Plan

			OPTION C					
Building Area Summary	**Approved POR**		**First**		**Second**		**Third**	
Department	Area [SM]	Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]
ADDITIONAL SERVICES								
Ambulatory Surgery	415.80	4,470				4,470		
Dietary- HFPM Based	659.48	7,089		7,089				
EMS / Air Ambulance	220.05	2,366	600					1,766
Maternal Health	71.55	769				769		
Village Health Services	112.05	1,205						1,205
WIC	118.80	1,277				1,277		
Village Based Counseling	76.95	827						827
Body Holding	43.20	464	464					
Sub-total Additional Services	1,717.88	18,467	1,064	7,089	0	6,516	0	3,798
ADMINISTRATION								
Administration	536.20	5,764						5,764
Business Office	232.40	2,498						2,498
Health Info Management	246.25	2,647						2,647
Information Management	177.60	1,909						1,909
Sub-total Administration	1,192.45	12,819	0	0	0	0	0	12,818
AMBULATORY								
Audiology	81.00	871						871
Dental Care	716.00	7,697				7,697		
Emergency	219.00	2,354	2,354					
Eye Care	236.00	2,537				2,537		
Primary Care	1,005.00	10,804				10,804		
Sub-total Ambulatory	2,257.00	24,263	2,354	0	0	21,038	0	871
ANCILLARY								
Diagnostic Imaging	240.00	2,580	2,580					
Laboratory	227.00	2,440				2,440		
Pharmacy	343.00	3,687				3,687		
Respiratory Therapy	81.00	871	871					
Physical Therapy	174.00	1,871				1,871		
Sub-total Ancillary	1,065.00	11,449	3,451	0	0	7,998	0	0
BEHAVIORAL								
Mental Health	95.20	1,023						1,023
Social Work	39.20	421						421
Sub-total Behavioral	134.40	1,445	0	0	0	0	0	1,444
FACILITY SUPPORT								
Clinical Engineering	42.00	452						452
Facilities Management	246.00	2,645		1,000				1,645
Sub-total Facility Support	288.00	3,096	0	1,000	0	0	0	2,097

SPACE COMPARISON REPORT

POR Space Allocation / Concept Plan

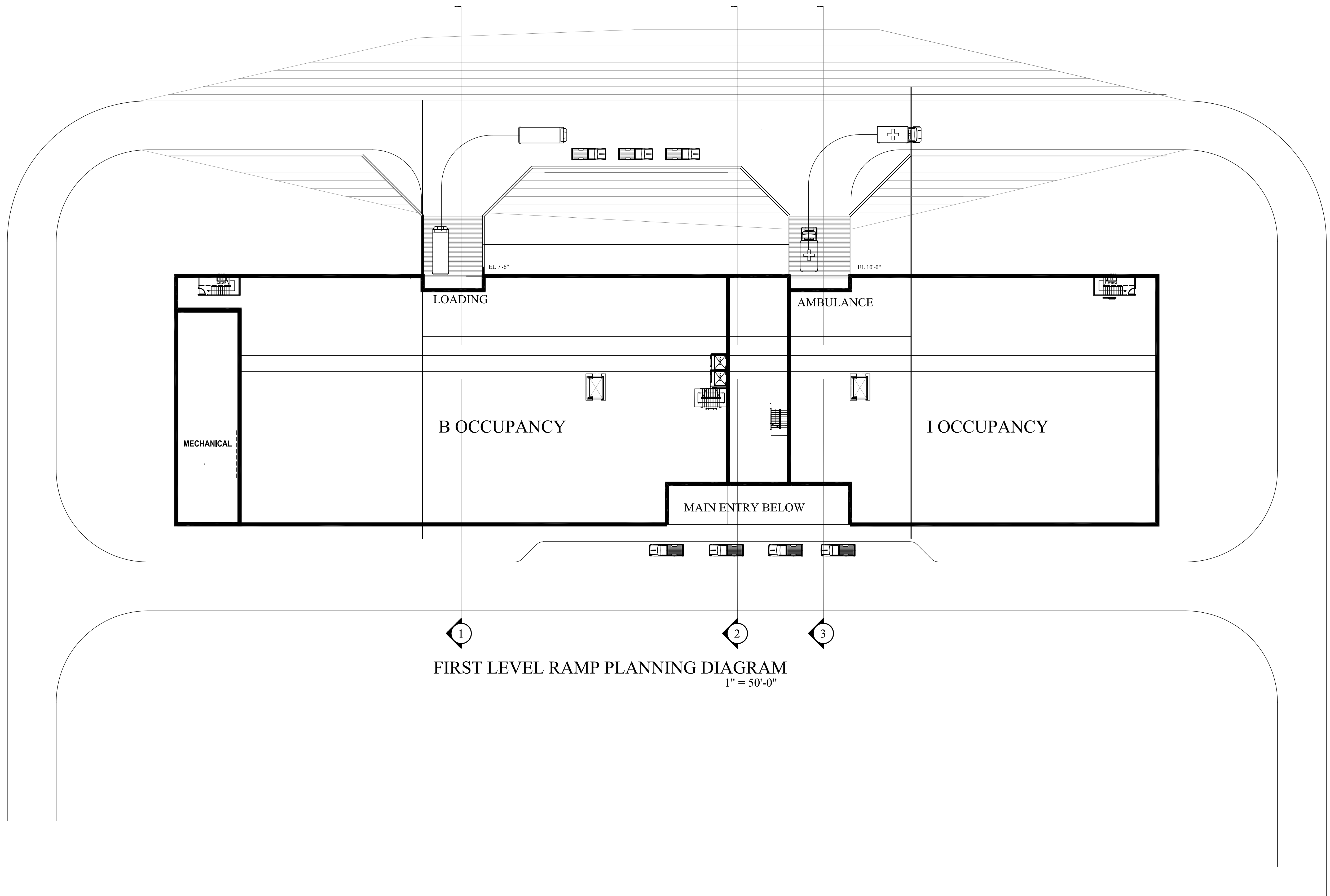
			OPTION C					
Building Area Summary	**Approved POR**		**First**		**Second**		**Third**	
Department	Area [SM]	Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]	"Hospital" Area [SF]	"Clinic" Area [SF]
INPATIENT								
Acute Care	849.00	9,127	9,127					
Labor & Delivery	326.00	3,505	3,505					
Sub-total Inpatient	1,175.00	12,632	12,632	0	0	0	0	0
PREVENTIVE								
Environmental Health	126.00	1,355						1,355
Health Education	57.40	617						617
Public Health Nursing	259.00	2,784						2,784
Public Health Nutrition	37.80	406						406
Sub-total Preventive	480.20	5,162	0	0	0	0	0	5,162
SUPPORT SERVICES								
Education & Group Consult	37.40	402						402
Education & Group Consult	151.00	1,623						1,623
Employee Facilities	475.92	5,116						5,116
Housekeeping & Linen	56.00	602		602				
Housekeeping & Linen	66.00	710		710				
Medical Supply	122.00	1,312						1,312
Property & Supply	607.00	6,525		6,525				
Public Facilities	160.20	1,722	922			400		400
Sub-total Support Services	1,675.52	18,012	922	7,837	0	400	0	8,853
NON-IHS PROGRAMS								
CAMP		0						
GOCADAN		0						
PROGRAM TOTAL								
Department Gross Area:	9,985.45	107,344	20,423	15,926	0	35,952	0	35,043
Bldg Circulation & Envelope (.20):	1,997.09	21,469	4,085	3,185	0	7,190	0	7,009
Floor Gross Area:	11,982.54	128,813	24,508	19,111	0	43,142	0	42,052
Major Mechanical Space (.12):	1,437.90	15,458		200		200		200
Building Gross Area:	13,420.44	144,270	24,508	19,311	0	43,342	0	42,252

BUILDING GROSS AREA	**Approved POR**	**Option C**
First Floor		43,819
Second Floor		43,342
Third Floor		42,252
Penthouse/Attic Mechanical		14,857
Crawl Space (at 50%)		
Total, Building Gross Area:	144,270	144,270

RAMP DIAGRAMS

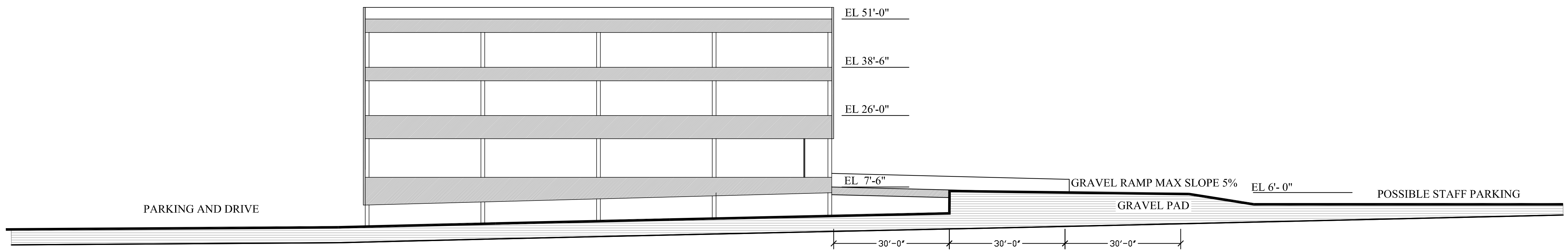
- Ramp Plan

- Ramp Sections
  Section at Loading dock
  Section at Entrance
  Section at Ambulance

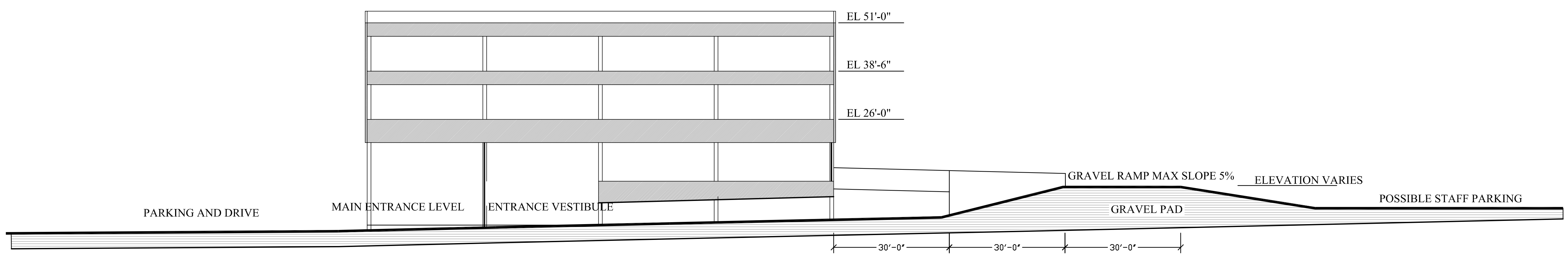


FIRST LEVEL RAMP PLANNING DIAGRAM

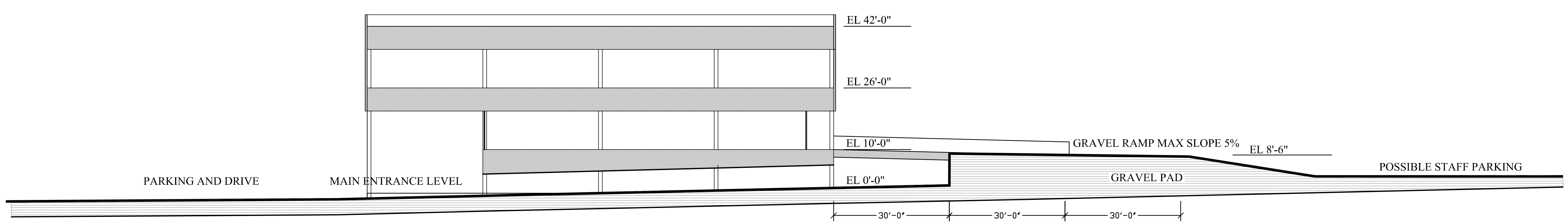
1" = 50'-0"



SITE/BUILDING SECTION @ LOADING - 1



SITE/BUILDING SECTION @ ENTRANCE - 2



SITE/BUILDING SECTION @ AMBULANCE - 3

SITE/ BUILDING RAMP SECTIONS

APPENDIX

- Construction Cost Summary
  Scheme A
  Scheme B
  Gravel Ramp vs. E.R. and Service to Grade

- P.O.R. Space Summary Sheet

- Work Session Meeting Minutes
  Anchorage (8/14/06 – 8/15/06)
  Nome (8/24/06)
  Nome (9/29/06)

ALTERNATE CONCEPT DEVELOPMENT
CONSTRUCTION COST ESTIMATE
SCHEME A

NORTON SOUND REGIONAL HOSPITAL
NOME, ALASKA

PREPARED FOR:

Kumin Associates, Inc.
808 E. Street, Suite 200
Anchorage, AK 99501

Mahlum Associates, Inc.
71 Columbia
Seattle, WA

September 28, 2006

HMS inc

4103 Minnesota Drive • Anchorage, Alaska 99503   p: 907.561.1653 • f: 907.562.0420 • e: mail@hmsalaska.com

NOTES REGARDING THE PREPARATION OF THIS ESTIMATE

INFORMATION

Level of Documents: Site relocation and alternate concept development
Date: September 13, 2006
Provided By: Kumin Associates of Anchorage, Alaska and Mahlum Associates of Seattle, Washington

NOTE: Draft report prepared by the architects and engineers, dated September 13, 2006. The estimate is based on the assumption that the engineers design the project considering that the project is 76% medical office building and 24% hospital. Changes discussed on September 27, 2006 have been incorporated into this submittal.

RATES

Pricing is based on current A.S. Title 36 labor rates, material, equipment, freight and per diem costs.

BIDDING ASSUMPTIONS

Contract: Standard construction contract without restrictive bidding clauses.
Bidding Situation: Competitive proposals from the general contractors as a project partner, plus establishing a GMP at approximately 65% complete design.
Bid Date:
Start of Construction:
Months to Complete:
} See Phased Schedule, Page 4

This project may be subject to protracted funding over many years, therefore, for purposes of this estimate, we have included costs for extended period, Divisions 1 and General Requirement costs, as this may, in our opinion, apply to this project.

EXCLUDED COSTS

1. A/E design fees
2. Administrative and management costs
3. Cultural arts
4. Furniture, fittings and equipment (except that specifically included)
5. Medical and special equipment

NOTES REGARDING THE PREPARATION OF THIS ESTIMATE (Continued)

GENERAL

When included in HMS Inc.'s scope of services, opinions or estimates of probable construction costs are prepared on the basis of HMS Inc.'s experience and qualifications and represent HMS Inc.'s judgment as a professional generally familiar with the industry. However, since HMS Inc. has no control over the cost of labor, materials, equipment or services furnished by others, over contractor's methods of determining prices, or over competitive bidding or market conditions, HMS Inc. cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from HMS Inc.'s opinions or estimates of probable construction cost.

This estimate assumes normal escalation based on the current economic climate in Alaska. No consideration has been given to the probable impact on construction costs resulting from future increased activity brought about by proposed oil/gas industry activities or additional major government spending on federally funded projects. These events will have a major local inflationary effect, the cost of which is not possible for us to estimate at this early stage.

GROSS FLOOR AREA

As the official POR (Within Exterior Walls)	**144,270 SF**	
Take Off Area Within Exterior Walls (Used in Estimate)	Hospital (I)	MOB (B)
First Floor	18,171 SF	33,080 SF
Second Floor	18,076 SF	32,097 SF
Third Floor	0 SF	32,977 SF
Penthouse/Attic Mechanical	0 SF	13,599 SF
Subtotal:	36,247 SF	111,753 SF
TOTAL GFA	**148,000 SF**	

BID ASSUMPTION

Basic Project Budget	$ 95,000,000
Add for Phased Construction	8,500,000
TOTAL:	**$ 103,500,000**

SCHEDULE

To reduce to contractor's operating cost, in this estimate Package #1 (Site Preparation Element 011 and Piling Element 024) has been separated from the remaining work; a fairly normal event for rural Alaskan construction. The general contractor's start of April 2008 will include all follow on work for 46 months to complete.

PACKAGE	START	ESTIMATED DURATION	END
Package #1 - Site Preparation and Piling (Separate Contract)	October 2007	6 Months	April 2008
Package #2 - Structure, Core and Shell	April 2008	15 Months	June 2009
Package #3 - Rough-In Systems	July 2009	14 Months	August 2010
Package #4 - Complete Building and Site	July 2010	18 Months	February 2012

Project Duration (Excluding Package #1): 46 Months (April 2008 to February 2012)

HMS Project No.: 05080

COST SUMMARY

	Material/Equip.	*Labor*	*Total*
01 - SITE WORK	$ 3,304,773	$ 2,123,536	$ 5,428,309
02 - SUBSTRUCTURE	1,718,250	1,335,294	3,053,544
03 - SUPERSTRUCTURE	6,792,611	3,645,178	10,437,789
04 - EXTERIOR CLOSURE	2,433,587	2,022,655	4,456,242
05 - ROOF SYSTEMS	402,657	329,163	731,820
06 - INTERIOR CONSTRUCTION	2,160,787	2,340,358	4,501,145
07 - CONVEYING SYSTEMS	333,322	76,188	409,510
08 - MECHANICAL	7,183,835	5,599,973	12,783,808
09 - ELECTRICAL	6,682,339	4,065,634	10,747,973
10 - EQUIPMENT	1,299,380	413,995	1,713,375
11 - SPECIAL CONSTRUCTION	25,000	10,000	35,000
SUBTOTAL:	$ 32,336,541	$ 21,961,974	$ 54,298,515
12 - GENERAL REQUIREMENTS			24,825,958
SUBTOTAL:			$ 79,124,473
13 - CONTINGENCIES			22,055,947
TOTAL ESTIMATED CONSTRUCTION COST:			***$ 101,180,420***

ELEMENTAL SUMMARY

Element	*Material / Equipment*	*Labor*	*Total Material/ Equip./Labor*	*Total Cost*	*Rate $/SF Floor Area*
01 - SITE WORK				*$ 5,428,309*	*$ 37.63*
011 - Site Preparation	$ 1,642,230	$ 845,243	$ 2,487,473		17.24
012 - Site Improvements	529,820	345,221	875,041		6.07
013 - Site Mechanical	668,839	564,710	1,233,549		8.55
014 - Site Electrical	463,884	368,362	832,246		5.77
02 - SUBSTRUCTURE				*$ 3,053,544*	*$ 21.17*
021 - Standard Foundations	$ 0	$ 0	$ 0		0.00
022 - Slab on Grade	46,118	32,912	79,030		0.55
023 - Basement	0	0	0		0.00
024 - Special Foundations	1,672,132	1,302,382	2,974,514		20.62
03 - SUPERSTRUCTURE				*$ 10,437,789*	*$ 72.35*
031 - Floor Construction	$ 5,579,651	$ 3,019,868	$ 8,599,519		59.61
032 - Roof Construction	1,106,503	579,984	1,686,487		11.69
033 - Stair Construction	106,457	45,326	151,783		1.05
04 - EXTERIOR CLOSURE				*$ 4,456,242*	*$ 30.89*
041 - Exterior Walls	$ 2,186,862	$ 1,959,318	$ 4,146,180		28.74
042 - Exterior Doors and Windows	246,725	63,337	310,062		2.15
05 - ROOF SYSTEMS				*$ 731,820*	*$ 5.07*
051 - Roofing	$ 402,657	$ 329,163	$ 731,820		5.07
052 - Skylights	0	0	0		0.00
06 - INTERIOR CONSTRUCTION				*$ 4,501,145*	*$ 31.20*
061 - Partitions and Doors	$ 1,056,493	$ 1,293,320	$ 2,349,813		16.29
062 - Interior Finishes	830,670	959,227	1,789,897		12.41
063 - Specialties	273,624	87,811	361,435		2.51
07 - CONVEYING SYSTEMS	*$ 333,322*	*$ 76,188*		*$ 409,510*	*$ 2.84*

HMS Project No.: 05080

ELEMENTAL SUMMARY

Element	*Material / Equipment*	*Labor*	*Total Material/ Equip./Labor*	*Total Cost*	*Rate $/SF Floor Area*
08 - MECHANICAL				*$ 12,783,808*	*$ 88.61*
081 - Plumbing	$ 1,676,897	$ 1,855,937	$ 3,532,834		24.49
082 - HVAC	4,508,450	2,889,396	7,397,846		51.28
083 - Fire Protection	560,798	488,640	1,049,438		7.27
084 - Special Mechanical Systems	437,690	366,000	803,690		5.57
09 - ELECTRICAL				*$ 10,747,973*	*$ 74.50*
091 - Service and Distribution	$ 1,646,455	$ 1,138,078	$ 2,784,533		19.30
092 - Lighting and Power	1,703,562	1,187,946	2,891,508		20.04
093 - Special Electrical Systems	3,332,322	1,739,610	5,071,932		35.16
10 - EQUIPMENT				*$ 1,713,375*	*$ 11.88*
101 - Fixed and Movable Equipment	$ 704,800	$ 176,200	$ 881,000		6.11
102 - Furnishings	594,580	237,795	832,375		5.77
11 - SPECIAL CONSTRUCTION	*$ 25,000*	*$ 10,000*		*$ 35,000*	*$ 0.24*
SUBTOTAL DIRECT WORK:	***$ 32,336,541***	***$ 21,961,974***		***$ 54,298,515***	
12 - GENERAL REQUIREMENTS				*$ 24,825,958*	*$ 172.08*
121 - Mobilization			$ 23,250		0.16
122 - Operation Costs			19,282,396		133.65
123 - Profit			5,520,312		38.26
13 - CONTINGENCIES				*$ 22,055,947*	$ 152.88
131 - Estimator's Contingency	10.00%		$ 7,912,447		54.84
132 - Escalation Contingency	16.25%		14,143,500		98.03
TOTAL ESTIMATED CONSTRUCTION COST:				***$ 101,180,420***	$701.33 /SF
				GROSS FLOOR AREA:	144,270 * SF

(* POR Area)

ALTERNATE CONCEPT DEVELOPMENT
CONSTRUCTION COST ESTIMATE
SCHEME B

NORTON SOUND REGIONAL HOSPITAL
NOME, ALASKA

PREPARED FOR:

Kumin Associates, Inc.
808 E. Street, Suite 200
Anchorage, AK 99501

Mahlum Associates, Inc.
71 Columbia
Seattle, WA

September 28, 2006

HMS inc

4103 Minnesota Drive • Anchorage, Alaska 99503 p: 907.561.1653 • f: 907.562.0420 • e: mail@hmsalaska.com

HMS Project No.: 05080

NOTES REGARDING THE PREPARATION OF THIS ESTIMATE

INFORMATION

Level of Documents: Site relocation and alternate concept development
Date: September 13, 2006
Provided By: Kumin Associates of Anchorage, Alaska and Mahlum Associates of Seattle, Washington

NOTE: Draft report prepared by the architects and engineers, dated September 13, 2006. The estimate is based on the assumption that the engineers design the project considering that the project is 52% medical office building and 48% hospital. Changes discussed on September 27, 2006 have been incorporated into this submittal.

RATES

Pricing is based on current A.S. Title 36 labor rates, material, equipment, freight and per diem costs.

BIDDING ASSUMPTIONS

Contract: Standard construction contract without restrictive bidding clauses.
Bidding Situation: Competitive proposals from the general contractors as a project partner, plus establishing a GMP at approximately 65% complete design.
Bid Date:
Start of Construction:
Months to Complete:
} See Phased Schedule, Page 4

This project may be subject to protracted funding over many years, therefore, for purposes of this estimate, we have included costs for extended period, Divisions 1 and General Requirement costs, as this may, in our opinion, apply to this project.

EXCLUDED COSTS

1. A/E design fees
2. Administrative and management costs
3. Cultural arts
4. Furniture, fittings and equipment (except that specifically included)
5. Medical and special equipment

NOTES REGARDING THE PREPARATION OF THIS ESTIMATE (Continued)

GENERAL

When included in HMS Inc.'s scope of services, opinions or estimates of probable construction costs are prepared on the basis of HMS Inc.'s experience and qualifications and represent HMS Inc.'s judgment as a professional generally familiar with the industry. However, since HMS Inc. has no control over the cost of labor, materials, equipment or services furnished by others, over contractor's methods of determining prices, or over competitive bidding or market conditions, HMS Inc. cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from HMS Inc.'s opinions or estimates of probable construction cost.

This estimate assumes normal escalation based on the current economic climate in Alaska. No consideration has been given to the probable impact on construction costs resulting from future increased activity brought about by proposed oil/gas industry activities or additional major government spending on federally funded projects. These events will have a major local inflationary effect, the cost of which is not possible for us to estimate at this early stage.

GROSS FLOOR AREA

	Hospital (I)	MOB (B)
As the official POR (Within Exterior Walls)	**144,270 SF**	
Take Off Area Within Exterior Walls (Used in Estimate)		
First Floor	28,913 SF	29,648 SF
Second Floor	21,443 SF	18,234 SF
Third Floor	21,376 SF	15,711 SF
Penthouse/Attic Mechanical	0 SF	12,675 SF
Subtotal:	71,732 SF	76,268 SF
TOTAL GFA	**148,000 SF**	

BID ASSUMPTION

Basic Project Budget	$ 95,000,000
Add for Phased Construction	8,500,000
TOTAL:	**$ 103,500,000**

HMS Project No.: 05080

SCHEDULE

To reduce to contractor's operating cost, in this estimate Package #1 (Site Preparation Element 011 and Piling Element 024) has been separated from the remaining work; a fairly normal event for rural Alaskan construction. The general contractor's start of April 2008 will include all follow on work for 46 months to complete.

PACKAGE	START	ESTIMATED DURATION	END
Package #1 - Site Preparation and Piling (Separate Contract)	October 2007	6 Months	April 2008
Package #2 - Structure, Core and Shell	April 2008	15 Months	June 2009
Package #3 - Rough-In Systems	July 2009	14 Months	August 2010
Package #4 - Complete Building and Site	July 2010	18 Months	February 2012

Project Duration (Excluding Package #1): 46 Months (April 2008 to February 2012)

HMS Project No.: 05080

COST SUMMARY

	Material/Equip.	*Labor*	*Total*
01 - SITE WORK	$ 3,304,773	$ 2,123,536	$ 5,428,309
02 - SUBSTRUCTURE	1,718,250	1,335,294	3,053,544
03 - SUPERSTRUCTURE	6,787,107	4,159,976	10,947,083
04 - EXTERIOR CLOSURE	2,510,502	2,107,389	4,617,891
05 - ROOF SYSTEMS	453,225	371,098	824,323
06 - INTERIOR CONSTRUCTION	2,159,970	2,323,781	4,483,751
07 - CONVEYING SYSTEMS	341,836	79,609	421,445
08 - MECHANICAL	7,495,503	5,824,996	13,320,499
09 - ELECTRICAL	6,720,694	4,075,738	10,796,432
10 - EQUIPMENT	1,322,580	421,995	1,744,575
11 - SPECIAL CONSTRUCTION	25,000	10,000	35,000
SUBTOTAL:	$ 32,839,440	$ 22,833,412	$ 55,672,852
12 - GENERAL REQUIREMENTS			24,912,745
SUBTOTAL:			$ 80,585,597
13 - CONTINGENCIES			22,463,236
TOTAL ESTIMATED CONSTRUCTION COST:			***$ 103,048,833***

ELEMENTAL SUMMARY

Element	*Material / Equipment*	*Labor*	*Total Material/ Equip./Labor*	*Total Cost*	*Rate $/SF Floor Area*
01 - SITE WORK				*$ 5,428,309*	*$ 37.63*
011 - Site Preparation	$ 1,642,230	$ 845,243	$ 2,487,473		17.24
012 - Site Improvements	529,820	345,221	875,041		6.07
013 - Site Mechanical	668,839	564,710	1,233,549		8.55
014 - Site Electrical	463,884	368,362	832,246		5.77
02 - SUBSTRUCTURE				*$ 3,053,544*	*$ 21.17*
021 - Standard Foundations	$ 0	$ 0	$ 0		0.00
022 - Slab on Grade	46,118	32,912	79,030		0.55
023 - Basement	0	0	0		0.00
024 - Special Foundations	1,672,132	1,302,382	2,974,514		20.62
03 - SUPERSTRUCTURE				*$ 10,947,083*	*$ 75.88*
031 - Floor Construction	$ 5,522,939	$ 3,355,344	$ 8,878,283		61.54
032 - Roof Construction	1,188,959	770,798	1,959,757		13.58
033 - Stair Construction	75,209	33,834	109,043		0.76
04 - EXTERIOR CLOSURE				*$ 4,617,891*	*$ 32.01*
041 - Exterior Walls	$ 2,263,777	$ 2,044,052	$ 4,307,829		29.86
042 - Exterior Doors and Windows	246,725	63,337	310,062		2.15
05 - ROOF SYSTEMS				*$ 824,323*	*$ 5.71*
051 - Roofing	$ 453,225	$ 371,098	$ 824,323		5.71
052 - Skylights	0	0	0		0.00
06 - INTERIOR CONSTRUCTION				*$ 4,483,751*	*$ 31.08*
061 - Partitions and Doors	$ 1,049,262	$ 1,278,804	$ 2,328,066		16.14
062 - Interior Finishes	837,084	957,166	1,794,250		12.44
063 - Specialties	273,624	87,811	361,435		2.51
07 - CONVEYING SYSTEMS	*$ 341,836*	*$ 79,609*		*$ 421,445*	*$ 2.92*

HMS Project No.: 05080

ELEMENTAL SUMMARY

Element	*Material / Equipment*	*Labor*	*Total Material/ Equip./Labor*	*Total Cost*	*Rate $/SF Floor Area*
08 - MECHANICAL				*$ 13,320,499*	*$ 92.33*
081 - Plumbing	$ 1,712,097	$ 1,870,409	$ 3,582,506		24.83
082 - HVAC	4,648,475	3,039,235	7,687,710		53.29
083 - Fire Protection	578,480	503,752	1,082,232		7.50
084 - Special Mechanical Systems	556,451	411,600	968,051		6.71
09 - ELECTRICAL				*$ 10,796,432*	*$ 74.83*
091 - Service and Distribution	$ 1,675,205	$ 1,145,278	$ 2,820,483		19.55
092 - Lighting and Power	1,714,174	1,191,450	2,905,624		20.14
093 - Special Electrical Systems	3,331,315	1,739,010	5,070,325		35.14
10 - EQUIPMENT				*$ 1,744,575*	*$ 12.09*
101 - Fixed and Movable Equipment	$ 704,800	$ 176,200	$ 881,000		6.11
102 - Furnishings	617,780	245,795	863,575		5.99
11 - SPECIAL CONSTRUCTION	*$ 25,000*	*$ 10,000*		*$ 35,000*	*$ 0.24*
SUBTOTAL DIRECT WORK:	***$ 32,839,440***	***$ 22,833,412***		***$ 55,672,852***	
12 - GENERAL REQUIREMENTS				*$ 24,912,745*	*$ 172.68*
121 - Mobilization			$ 23,250		0.16
122 - Operation Costs			19,267,244		133.55
123 - Profit			5,622,251		38.97
13 - CONTINGENCIES				*$ 22,463,236*	$ 155.70
131 - Estimator's Contingency	10.00%		$ 8,058,560		55.86
132 - Escalation Contingency	16.25%		14,404,676		99.85
TOTAL ESTIMATED CONSTRUCTION COST:				***$ 103,048,833***	$714.28 /SF
				GROSS FLOOR AREA:	144,270 * SF

(* POR Area)

HMS Project No.: 05080

SCHEME A AND B EARTHEN RAMP AND GRADE ENTRANCE COMPARISON	*QUANTITY*	*UNIT*	*MATERIAL/EQUIP.*		*LABOR*		*TOTAL*	*TOTAL MAT./*
			RATE $	*TOTAL $*	*RATE $*	*TOTAL $*	*UNIT RATE $*	*EQUIP./LABOR $*
GRAVEL RAMP AND BRIDGE								
Ramp and bridge (cost from estimate)	21,265	SF					12.15	$ 258,370
Piling for ramps	60	EA					4365.00	261,900
SUBTOTAL:								$ 520,270
General Conditions, Overhead and Profit	40.00%							208,108
Contingencies	25.00%							182,094
TOTAL COST FOR GRAVEL RAMP AND BRIDGE:								**$ 910,472**
DROP EMERGENCY ENTRANCE AND LOADING DOCK TO GRADE (3,000 SF)								
Deduct piling	-14	EA					8300.00	-116,200
Add thermosyphons	12	EA					7500.00	90,000
Substructure	3,000	SF					28.80	86,400
Roof structure	3,000	SF					18.50	55,500
8" interior perimeter walls, concrete, furred and insulated	1,440	SF					44.50	64,080
Exterior wall system	3,200	SF					35.00	112,000

SCHEME A AND B EARTHEN RAMP AND GRADE ENTRANCE COMPARISON	*QUANTITY*	*UNIT*	*MATERIAL/EQUIP. RATE $*	*MATERIAL/EQUIP. TOTAL $*	*LABOR RATE $*	*LABOR TOTAL $*	*TOTAL UNIT RATE $*	*TOTAL MAT./ EQUIP./LABOR $*
DROP EMERGENCY ENTRANCE AND LOADING DOCK TO GRADE (3,000 SF) (Continued)								
Overhead doors	2	EA					7500.00	15,000
Roofing	3,000	SF					14.50	43,500
Increase stair travel by one flight	2	EA					12000.00	24,000
Increase elevator travel by one stop	1	STOP					18000.00	18,000
Dock leveler	1	EA					27000.00	27,000
Finishes	3,000	SF					15.00	45,000
Add Mechanical	3,000	SF					55.00	165,000
Add Electrical	3,000	SF					48.00	144,000
SUBTOTAL:								$ 773,280
General Conditions, Overhead and Profit	40.00%							309,312
Contingencies	25.00%							270,648
TOTAL DROP EMERGENCY ENTRANCE AND LOADING DOCK TO GRADE:								**$ 1,353,240**

PROGRAM OF REQUIREMENTS

INDIAN HEALTH SERVICE

Norton Sound Regional Hospital

NOME, ALASKA

(Project No. **144**)

JULY 2006

NORTON SOUND HEALTH CORPORATION
ALASKA AREA NATIVE HEALTH SERVICE
INDIAN HEALTH SERVICE
DEPARTMENT OF HEALTH AND HUMAN SERVICES

IV. SPACE SUMMARY (*HSP Building Summary*)

The net and gross areas for the proposed facility are summarized below.

	Template or Discipline	Net Square Meters	Conversion Factor	Department Gross Square Meters
Additional Services				
Ambulatory Surgery	X06	308.00	1.35	415.80
Dietary - HFPM Based	X08	488.50	1.35	659.48
EMS / Air Ambulance	X09	163.00	1.35	220.05
Maternal Health	X12	53.00	1.35	71.55
Village Health Services – *Nome Based*	X15	83.00	1.35	112.05
WIC	X16	88.00	1.35	118.80
Village Based Counseling – *Nome Based*	X17	57.00	1.35	76.95
Body Holding	X18	32.00	1.35	43.20
Administration				
Administration	AD	383.00	1.40	536.20
Business Office	BO	166.00	1.40	232.40
Health Information Management	HIM	197.00	1.25	246.25
Information Management	IM	148.00	1.20	177.60
Ambulatory				
Audiology	AU2	64.30	N/A	81.00
Dental Care	DCC15	477.10	N/A	716.00
Emergency	ER2	86.20	N/A	219.00
Eye Care	EC2	182.00	N/A	236.00
Primary Care	PCP8	693.00	N/A	1005.00
Physical Therapy *(Ancillary in HSP - Ambulatory in RRM)*	PT1	136.20	N/A	174.00
Ancillary				
Diagnostic Imaging	DI2	214.20	N/A	240.00
Laboratory	LB4	204.50	N/A	227.00
Pharmacy	PH6	286.20	N/A	343.00
Respiratory Therapy	RT2	80.90	N/A	81.00
Behavioral				
Mental Health	MH	68.00	1.40	95.20
Social Work	SW	28.00	1.40	39.20
Facility Support				
Clinical Engineering	CE1	39.10	N/A	42.00
Facility Management	FM4	205.20	N/A	246.00
Inpatient				
Acute Care	ACB14	566.20	N/A	849.00
Labor & Delivery/Nursery	LD1	227.60	N/A	326.00
Preventive				
Environmental Health	EH	90.00	1.40	126.00
Health Education	HE	41.00	1.40	57.40
Public Health Nursing	PHN	185.00	1.40	259.00

	Template or Discipline	Net Square Meters	Conversion Factor	Department Gross Square Meters
Public Health Nutrition	PNT	27.00	1.40	37.80
Support Services[4]				
Education & Group Consultation	EGC2	126.20	N/A	151.00
Education & Group Consultation	EGC	34.00	1.10	37.40
Employee Facilities	EF	396.60	1.20	475.92
Housekeeping & Linen	HL2	46.90	N/A	56.00
Housekeeping & Linen	HL	60.00	1.10	66.00
Medical Supply	MS2	98.60	N/A	122.00
Property & Supply	PS5	551.60	N/A	607.00
Public Facilities	PF	133.50	1.20	160.20

Department Gross Square Meters	**9 985**
Building Circulation & Envelope (.20)	**1 997**
Floor Gross Square Meters	**11 982**
Major Mechanical SPACE(.12)	**1 438**
Building Gross Square Meters	**13 420**

[4] Laundry, Staff Health, and Security programs are included in the approved RRM; HSP modules do not specifically address program space needs.

Memorandum

Project Name:	Norton Sound Regional Hospital Site Relocation and Concept Design	Project No:	20426.05
		Date:	8/16/2006
Subject:	Anchorage Kick-Off / Work Session		
From:	Jon Stolle, KAI	File Name:	Memo-001
Distribution:	To attendees listed below		

(revised 8-24-06)

The kick-off work session for Site Relocation and Concept Design for Norton Sound Regional Hospital was held at the office of Kumin Associates, Monday, August 14, and Tuesday, August 15, 2006. The following participated in the meetings:

Name:	Initials	Company	14-Aug	15-Aug
Angie Barr	AB	Kumin Associates	√	√
Cliff Hitchins	CH	HMS	√	√
Ralph Clampitt	RC	Kumin Associates	√	√
Alan Marugame	AM	Kumin Associates	√	√
Devon Anderson	DA	Kumin Associates	√	√
Rick Boyce	RB	ANTHC	√	
John Larsen	JL	LCG	√	√
Robert Lober	RL	Mahlum	√	√
Todd Olson	TO	Mahlum	√	√
Jon Stolle	JS	Kumin Associates	√	√
Jean Funatake	JF	Kumin Associates	√	√
Roger Marcil	RM	LCG	√	√
Dale Mossenfin	DM	IHS - Anchorage	√	
Doug Ott	DO	IHS - Anchorage	√	√
John Blees	JB	Bristol	√	√
Henry Hardnett	HH	IHS - Seattle	√	√
Calvin Hay	CH	HZA	√	

The purpose of the meeting was to begin developing a conceptual design for the lower portion of the *Nome Hospital Parcel, Tract A* that would meet the funding budget of $90-million (with $8-million escalation and $10-million contingency). Discussions focused upon identifying the key issues to be considered during the 2-day brainstorming session and issues that need to be put forth to NSHC Planning Committee. The following are notes from the meetings. General points are paraphrased and attributed to individuals by their initials.

Meeting Notes:

Reason for 90 million dollar design-to number: The Owner established this figure as a result of funding available from I.H.S., and need for more contingency as a result of uncertainty of probable construction cost.

Holding Cost to 90 million: 10 million dollars is a construction contingency. Kumin needs to design for bid to 90 million. If the bids come in slightly over (95 million) it may not be such a problem (IHS). To clarify, 90 million dollars is the construction estimate with a 10 million dollar contingency and 8-million for phasing.

Project Midpoint: Aug. 2009.
Completion date: 2012

Expectations for this phase:

The Design Team will provide the owner with a concept satisfying the P.O.R., designed within the funding limitation. Kumin has a responsibility to design this project to 90 million. To achieve this, the Design team will move the building to the lower site, scale back by eliminating any unnecessary features and streamlining the design. Strategies for cutting costs will be brainstormed during these work sessions and those having merit will be incorporated into the concept. To the extent possible, previously completed work products that are valid and appropriate to the new concept will be incorporated.

(JL) Marching orders from the Owner: Communication flows through Larsen. They will supervise coordination and provide technical representation to the Owner. (**AB)** Information should flow through Kumin to them. Kumin speaks to sub consultants not Larsen directly. **(JL)** Larsen's main objective is to help facilitate the project and its completion, make sure decision making is on track. Develop guidelines for the reviewer so as we avoid out of phase critiques and to maintain a fluid flow of information to the owner. Larsen has informed the heath corporation that we may not be able to do this to the budget. The Owner requires a solid building, no bells and whistles. This will not be designed as a 100 year building. There is a requirement to meet all P.O.R. criteria. – the I.H.S. Design guide requirements will be the baseline for expectations. Moving the building down the hill is a part of the strategy to meet the budget. The building shell needs to change and will be a problem for meeting this budget.

(RL) 30 to 40 million out of this building cannot continue without a complete re-evaluation. Adjacencies will definitely need to be changed.

(AB) Highlight where all the changes are, highlight where we are deviating. All the goals remain the same.

(DO) I am happy with the team and the talent, similar faces. He believes that it can be done. Need to take a hard look at the groupings and is glad to see the project restarting.

Document Clarification:

(RM) POR has not been signed (Date on cover July 2006). PJD and amendment have been signed. We won't move past this phase without a signed POR.

P.O.R. Mis-match

- There is 6,000 sq feet that was not supported by P.O.R. 144,200 sq ft is P.O.R. S.D. scheme was at 150, 796 sq feet (4-1/2 % over) most was mechanical space.
- Q.C.C. was not figured/counted.
- 3 non I.H.S. programs were included: Camp, Gocadan and extra major mechanical.

(RM) Design Team needs to start from scratch using P.O.R. numbers. **(RC)** dealing with family needs and gathering spaces is a culturally significant factor for the design. **(RM)** Family/Gathering spaces will need to be found within circulation spaces. **(RB)** Non-I.H.S. supported programs can only be included at Owner's cost – (what, if any additional non-I.H.S. programs to include needs to be asked at Nome meeting). (DO) Unless funded otherwise I.H.S. is buying into the amount of rooms outlined in the POR. POR rules and that translates into less in patient rooms.

Parking:
(RM) The parking space criteria utilized by IHS is advisory. IHS expects the actual number of parking spaces to be determined by the A/E in consultation with the city planner and based upon local transportation patterns/modes. – pursue the right mix and distribution with City planners and staff at Nome meeting. **(JB)** Jerry Oliver, who runs the airport parking indicates the most cars the ever have are 75-100 cars, and that's the biggest parking lot in town. **(JS)** Lots across street could be used as staging area during construction and parking to serve the hospital. **(RB)** Plan for all parking on the site and as a deductive alternate you could move it to a pad across the street. **(RM)** Inquire from ADOT the plan for bypass road: paving, dust control and pedestrian crossing. **(DO)** Show on site map where to put snow storage. This could effect parking arrangements and availability. **(JB)** Gather information on parking. Will there be shift overlap where people will be looking for parking? **(RM)** Shift work does not occur in the majority of the building. Shifts occur in acute care and the ER. The rest is 8-5. – Confirm gravel parking lot with Nome staff.

Understanding the cost of construction against the budget available:

CH provided two handouts to summarize the current cost situation. The revised schematic cost estimate (adjusted for escalation since 12/05) is $150,923,235. Three obvious areas for potential savings:

- Move the building to lower site and reduce site costs. Guesstimate for possible savings: $10-million.
- Reduce building area (not necessarily program area, but actual area the contractor has to build, including interstitial spaces, attics and wall perimeter).
- Reduce quality of building components.

Given substantial and drastic changes in these three areas, successfully scaling back the design and reducing quality alone is unlikely to yield a $90-million design. The Design Team must re-think how this building goes together – change the paradigm.

(CH) Current R.O.M. for site development is approximately $142.43/sf and 798.38 for building construction. These numbers are not a direct comparison to the 90 million. It's difficult to give a straight number with separate packages. Escalation is in excess of 5 % a year.

Discussions on alternate project delivery methods:

(TO) Put out in fewer packages.
(RC) Bid as one package with caveat for phasing.
(DO) Given the current situation there is a minimum of 4 year appropriations. The first year of appropriations is 2008.
(AB) Does this project need to be bid under IHS rules? Is there anything that prohibits it?
(RB) This will be contracted out in some way. NSHC will not be the general contractor.
(RM) LCG will be the construction manager. With Title 5, there is room to explore alternative delivery arrangements. This has to come from Norton Sound. They just need to understand what they are getting into.
(AB) Explore partnering to bring a contractor's expertise into the process. After schematics, provide for a qualifications-based contractor selection process with a GMP. Give the general a chance to bid their packages as they go. There is a huge benefit to have a contractor on line as a way of controlling cost.
(CH) The best way is to have a contractor on board, pick a quality contractor that you can work with. This is a way of keeping the project; bidding is a way of losing a project
(DO) I.H.S is open to exploring alternate project delivery, including partnering. Everything is on the table.

Other cost reduction strategies:

Provide for alternates. Alternates to reduce quality (siding, finishes) and scope (parking, site amenities) will be included. Alternates to reduce required program is not an option.

Downgrade building occupancy. Separate I-2/B. Design for Group I-2 only where necessary, provide Group B everywhere else. **(RL)** This is not traditional hospital. It's a health-care facility, mostly B occupancy**.** **(RB)** "Super-clinic". Shifting most building program to group B would mean approximately 2/3 of the building could be constructed as Type II-B (non-rated) and fireproofing of the steel would not be required. Group B would allow for a simpler mechanical system (plenum returns allowed and humidification not required).

Used mixed construction types (unprotected steel, Type II-B) wherever we can to reduce cost.

(**RC)** Compress floor-floor height as much as possible to conserve material. **(CH)** Cost for exterior wall assembly is approximately $50/sf for wall perimeter.

(JL) There are alternate pile installation methods which can be much more economical alternatives for pile construction. Driving piles in permafrost is better when you can obtain end-bearing piles on bedrock. Jacking forces are the primary concern for this site, hence the importance of a bond-breaking pile system. **(JB)** Soil samples at the lower site indicate bedrock between 35-45 feet, which is a good condition for end-bearing piles. **(RL)** There is some uncertainty to the quality of that bedrock. Additional sub-surface work would be required. **(JB)** October-November is a good time to drill additional holes – before massive snow drifts

Future Expansion:

(RM) Demographic information shows that Nome is not growing. Expansion of in-patient areas is highly unlikely. **(TO)** We need to think about adaptation of space, for new systems: crawlspaces that can be accommodating for the use of new technical systems and more ambulatory and out patient services. **(RB)** We would be expanding in the out patient services if any area. Don't box in the in-patient spaces. That real expansion will take place in the out patient arena.

(RL) Is there possibility of taking the building across the street where the hostel is? The area is flat with onsite utilities. **(RB)** Need to explore, ADOT was not going to make any traffic adjustments to that road. Crossing over that road is going to be relatively unrealistic until we speak with them. **(JB)** The "city blocks" site has a drainage swale that would have to be diverted or dealt with underground. There may be a zone of thawed ground where the drainage occurs. Differential settlement is a possibility.

(RL) Leave soft space around radiology. Radiology seems to be something that is always needing more space and expanding.

Break

Following the break, key issues were identified to set design priorities. Within each key issue, shared goals emerged that will be important to the design. Additional issues and unknowns were identified to be put forth to the NSHC Planning Committee. The key issues and shared goals were:

1) Site:

A. Permafrost (preservation)
B. Topography (maintain good drainage)
C. Drainage (maintains natural drainage; avoid standing water – particularly at piles).
D. Location (lower site vs. City block site)
E. Campus setting/Master Plan (Hospital, QCC, Staff Housing, Storage, Future Expansion)

F. Utility routing (above or below grade?)
G. Fire fighting considerations (coordinate with Nome VFD) (hydrant requirement)
H. Dust and traffic on Bypass Road
I. Snow storage
J. Snow drifting locations
K. Construction access and staging
L. Pedestrian access
M. Parking
N. Views
O. FAA flight path
P. Central utility plant vs. in the main building

2) Extreme Environment:

A. Wind
B. Snow
C. Solar orientation
D. Marine environment
E. Tundra

3) Budget:

A. Construction type: (provide lesser grade of construction where allowable)
B. Occupancy type: (provide I-2 only where required/Group B everywhere else)
C. Additive and/or deductive alternates
D. Floor to Floor (reduce – 15'-16' only at I-2, 12'-13' everywhere else)
E. Materials and methods (conserve)
F. Contracting methods (alternate delivery: partnering, GMP)

4) Design Objectives:

A. Building access: pedestrian, staff, ED, services (provide at lowest level)
B. Deal with outside utilities/services (uglies)
C. Disaster response
D. Maintainability & durability
E. Functional
F. Culturally sensitive
G. Wayfinding
H. Views and Windows to land and sea
I. Family spaces
J. Meditation space and healing garden
K. Welcoming/friendly
L. Medical efficiencies (combining spaces to minimize staffing)
M. Durability (50 year building)

5) Constructability:

A. Construction Season
B. Phasing (funding)
C. Barge Schedule
D. 4-year appropriation for phasing
E. Staging area
F. Height (FAA restriction and fire fighting limitations)
G. Constructability
H. Rapid enclosure
I. Local Labor for construction
J. Vapor barrier outside of framing & utilities (but on warm side of insulation)
K. Plenum return in Group B occupancies
L. Humidification – only in Group I-2 (no humidity in Group B)

Mechanical and Utilities Discussion:
Things that must go outside the building:

- Chillers
- Generator
- Fuel storage

Water tank: Not anticipating water storage tanks. In the original schematics there was no on-site water storage. **(JB)** They have enough water but they may have issues with distribution. There maybe an onsite pump station. Need to discuss if hydrants are even needed. (Question for fire chief). If the hydrants are not code driven they may not required. If so than a fire loop around the building will not be required. **(TO)** Given the sensitive nature of the current climate - hydrants even if not required by code should be there.

There was discussion of potable water and sewage storage on site as part of a wider disaster response plan. Additional discussion and investigation in Nome is required, but not to include in concepts.

Snow Drifting

(JL) No additional snow modeling required for this phase. Use general snow drift knowledge and information gathered in earlier phase for concept design. **(AB)** Specific guidance from RWDI can be brought in later (in DD) to refine the design to mitigate drifting. NSHC needs to be aware some plowing will be necessary. Design can not eliminate drifting entirely.
General Snow Drifting Rules of Thumb:

- Direction of wind during winter snow events is mostly from east
- Drifts will accumulate on leeward side
- Any vertical surface will act as a snow fence
- Collection area is approximately 30 times the height
- Control localized drifting

Design Considerations

Emphasize the importance of making important spaces distinct and obvious so that there becomes reciprocity between inside and out.

Get the ambulance on the same level as the ER.
(TO) There needs to be a protected ambulance drop-off, preferably drive in and out. Staff didn't want the ambulance to be at a different level as the ER. When patients are off loaded they need to be in a heated/covered area. **(RL)** We should at least discuss other models. It is extremely desirable and is a patient safety issue.

Entry Sequence:
(AB) Provide entrance for pedestrians that is not from a ramp. Entry should be at lowest level. **(RL)** I like the idea of brining part of the building down to level grade. There should be at least one public entrance that touches grade. **(AM)** A vestibule could be hung from structure and not touch grade. **(RC)** It is important to be able to see the entrance so that you know where to go. There needs to be a pedestrian entry into the building that is on level grade or at least at accessible without a ramp.

(DO) Medical efficiencies: important to the Norton Sound staff. Shared waiting rooms, they are looking at ways that nurses can bridge and manage more than one department. **(TO)** Nome needs to understand building flexibility is now limited in cross occupancy.

Gravel Pad/fill:
(CH) Minimize the gravel pad. This will save money. **(JB)** You might want some gravel under that building to assist with drainage. We can insulate with high density insulation if necessary. 1-inch of insulation is roughly equal to 1-feet of gravel. **(JL)** We never put fills under buildings, it's a waste of money and I don't agree that gravel is necessary. Potential of the pad was designed for a four story building. We can use cross bracing as well. I think there should be an effort to get the ground floor as low as you can. I don't believe we need that much space. Snow is not necessarily bad under a building. Has a major impact on how you bring in your pedestrian access to the building. **(TO)** Structural is using the thickness of gravel pad to resist lateral forces. The previous 5-foot pad was based on part of the building being 4-stories and may be a conservative assumption. **(JB)** Shaping gravel to promote natural drainage will contribute to preservation of the permafrost by eliminating standing water next to fill sections and around piling.

MEETING SUMMARY:

Key issues were identified and discussed to refine key considerations. The brainstorming session yielded shared project objectives and identified questions and assumptions to take to Nome:

Project Objectives:

1. Entry at lowest level
2. Public entry that touches grade
3. Minimize gravel
4. Bring building down (closer to pad and compress floor-to-floor)
5. Parking: provide the right mix and distribution on site
6. Maintain natural drainage
7. Control localized drifting
8. Provide strong pedestrian connection from town and public parking
9. Maximize views
10. Provide soft spaces for renovation/expansion (particularly at radiology)
11. Provide mixed occupancy (Group B wherever possible/I-2 where necessary)
12. Explore mixed construction types (Type II-B wherever possible)
13. Identify construction alternates

Questions/Assumptions for Nome:

1. Ambulance – same level as ER
2. Enclose & heat ambulance drop-off, or cover?
3. Master site plan (Campus)
4. Direction for "city block" site
5. Location of Q.C.C.
6. Staff housing
7. Future M.O.B.'s
8. Storage
9. Future expansion – what departments?
10. Snow plowing (who plows, frequency and where stored?)
11. Confirm gravel parking lot
12. Parking quantity (right mix and distribution)
13. City of Nome – P&Z
14. Contracting method/alternate delivery
15. Non-P.O.R. supported programs to include (with additional funding)
16. Find medical efficiencies
17. Fire department capabilities, preferred access and requirements
18. Nome disaster relief plan

(RM) There needs to be a plan to approach the city to resume meetings with planners and city government so whatever restraints come out of that process are discussed.

(AB) We need to emphasize to Nome that intentions relating to cultural sensitivity have not been lost from the conversation and remains a major importance to the design team. Acknowledge that the design team recognizes the extreme environment. Make sure they understand where we are and where we are going. I don't want them to be surprised (Nome). It's a way to get them to buy into what we have to do.

End of Day

August 15, 2006 (day 2)

The morning session focused upon discussing the cost estimate for the existing design and potential savings by moving the site to the lower portion of the parcel and simplifying the building outline. Much skepticism remains about constructing the project to the $90-million objective. However, the estimator has only performed a cursory review.

Discussion entailed about costs associated with utility runs and the potential need to share costs with the City for a new fire service run to support the sprinkler flow requirements of the facility.

Cost Change Strategies

1. Building Closer to Bypass Road
- Distributed parking around building
- Loop Road
- Reduce Gravel Fill
- No bridge
- No Boardwalk
- (1) Ramp, Closer to Grade

2. Assume 3 story building
- Shorter pile length
- Minimize pile numbers
- Compact footprint
- Compress floor-to-floor

3. Assume simpler skin
- SIP w/ covering
- Reduce Glazing

4. Reduce to 144,000 square feet

5. Balance Occupancy and Construction Type with Cost
- Simplify Construction Materials and Methods
- Medical Office Building (with small attached In-Patient Facility)
- Fireproofing

(CH) The great thing about not spraying is you don't have to go back and repair all the patches. Also have we discussed time schedule. Overall spraying is more of a scheduling and maintenance problem than anything else.

(CH) There is about 12,000 sq ft of glazing on the curtain wall. **(TO)** Getting five percent out of the glazing cost would affect the project

(TO) What are the cost impacts of going to a building split? Building footprint increases and perimeter increases? **(CH)** A building split in the middle from a three to a two floor arrangement could be a major cost benefit. Cost per square foot goes down. **(RC)** Two buildings are almost never cheaper than one. **(CH)** The quicker you can get to a three story the better. If you can just do a three story it will be actually the best. **(AM)** Go to bigger piles and fewer piles. **(CH)** 16-inches.

(TO) We have a series of program in the POR. We need to improve on the grossing factor. Get the envelope to 20% which doesn't talk to the living program. None of these help to get the area down and to get the envelope below 20%. Major mechanical came in at 15 or 18 percent and that is with a lot of it outside not being calculated into that envelope.

(CH) What about the VE, have we looked at this to see how it can help? **(DO)** In the total outcome of the items there was not a significant cost gain.

(CH) With this sq footage, at this number, it is going to be impossible to build this in 2012. This is very much a contractors market. They will have projects down the road with more money and less risk. **(CH)** The more you shrink it down the more your sq footage costs. I'm sure its going to cost more in 2012. There is a worldwide shortage of labor this drives costs along with materials.

(DO) I don't see that IHS is going to allow the program unless it's closer to the program space. The outline of the building that aligns with IHS standards is 144,000 sq ft. The only way to off set this is to bring the envelope down.

(TO) Where can the design team improve it: In the circulation and Mechanical. We will have to create a smaller footprint space with the same program. We can only set this as a goal.

(RL) There is always a discrepancy in the calculated and the actual sq footage. Cliff's estimates are going to be higher like 145,000 where ours were at 140,000.

(DO) We don't count attics towards program space. What ever we can do to minimize the spaces we will try to do.

The latest (July 2006) P.O.R. was provided. The newest P.O.R. is better organized and has been brought in line with IHS specifications. It details the department narratives. (DO) work with the providers to get the design in-sink with what they want to see. With those exceptions it's the same.

Later discussions focused upon the cost escalation, Nome visits and time needed with Fire Chief, Utility Board, and what would be presented to NSHC planning committee.

Drifting, snow storage, and utility run costs dominated discussions of utilizing the 36-lots as the potential construction site.

Discussion continued on Campus setting topic. Team analyzed lower site for laying out other future buildings such as QCC, housing, and other medical arts buildings.

End of Formal Group Meeting Session

The preceding agenda items are Kumin Associates' interpretation of the items discussed and/or decisions reached at the above referenced meeting. Any person(s) wishing to add to or otherwise change the agenda are asked to put their comments in writing to Kumin Associates, Inc. no later than 7 days after publication and distribution of the meeting minutes. After that date, the minutes will stand as written.

Memorandum

Project Name:	Norton Sound Regional Hospital Site Relocation and Concept Design	Project No:	20426.05
		Meeting Date:	8/24/06
Subject:	Nome Work Session		
From:	Jon Stolle, KAI	File Name:	Memo-002
Distribution:	To attendees listed below		
			(revised 9-22-06)

The design team traveled to Nome, Alaska on 8/24/06 to participate in a planning session with the NSHC Site Planning and Construction Committee. The purpose of the meeting was to inform and investigate potential planning constraints for the Hospital Site relocation and concept design. The meeting was held in the Nome City Hall Chambers. The following were present:

Committee Members Present:	**Title**	**Representing**
John Handelan, Chair	SPCC - Board Chair	NSHC
Berda Wilson	SPCC - Board member	NSHC
June Walunga	SPCC - Board member	NSHC
Kathy Johnson	SPCC - Board member	NSHC
Robert Keith	SPCC - Board member	NSHC
Brian James	SPCC - Board member	NSHC
Dennis Tiepelman	NSHC - President, CEO	NSHC
Staff/Guests	**Title**	**Representing**
Helen Pootoogooluk	COO	NSHC
Angie Gorn, VP	VP, Hospital Services	NSHC
Haven Harris	AVP, Hospital Services	NSHC
Carol Piscoya	VP, CHS	NSHC
Floy Gilder	Maintenance	NSHC
Cyril Lyon	Maintenance Director	NSHC
Michael Malony	Material Management	NSHC
Philip Hofstetter	Audiology	NSHC
James Burford	Audiology	NSHC
Kay Carter	Inpatient	NSHC
Christine Schultz	Social Services	NSHC
Joe Kennedy	Physical Therapy	NSHC
Stephen Verdin	Dental	NSHC
Dr. Mark Kelso	Dental	NSHC
Marcia Bryant	Lab	NSHC
Dr. David Head	Medical Staff	NSHC
Elsie Vaden	Domestic Services	NSHC
Brent Clark	EMS	NSHC
Robert Weinger	Pharmacy	NSHC

John Larsen	Owner Technical Representative	Larsen Consulting Group
Roger Marcil	Owner Technical Representative	Larsen Consulting Group
Rober Lober	Medical Design Architect	Mahlum Architects
Angie Barr	Principal-in-Charge	Kumin Associates
Jean Funatake	Project Architect	Kumin Associates
Ralph Clampitt	Project Architect	Kumin Associates
Rick Boyce		ANTHC
Michael Chard		ANTHC
Doug Ott		I.H.S.
Balla Sobocienski	Admin Office Supervisor	NSHC

Angie Barr, Principal In Charge**,** Kumin & Associates, Inc. presented a status report of activities on the New Hospital to date. The history of the project to date was summarized:

- Property of 38 acres was purchased in 2001 by NSHC. Four sites were under consideration but rejected for various reasons: contamination issues, too small, etc.
- Transition plan & site analysis was completed in 2003. This work included: *Boundary & Topographic Survey, Geotechnical Investigation, Availability of Utilities & Services, Site Development Assessment.*
- Site selection & evaluation report by Architects Alaska and Nana/DOWL was completed in April, 2004 (revised August, 2004 and December, 2004).
- The Design Team (Kumin/Mahlum) was selected in October, 2004.
- Program verification began in April, 2005. Interviews were conducted with NSHC staff members over 4-days with follow up interviews regarding programming issues. Over 50 departments and services were represented.
- April 2005 - regional travel by a number of the design team went to villages for better understanding of cultural issues. Representatives from the Design Team traveled to Brevig Mission, Elim, Unalakleet, Gambell, Savoonga and Shismaref. Representatives from Teller, White Mountain, St. Michael, Koyuk, Shaktoolik and Wales participated at some of the targeted villages.
- August 2005 - began the site development & concept plan. Directed by Owner's representative to use the upper site for the hospital. Four conceptual schemes were developed (Earth, Ice, Sea & Sky). The merits of each were presented during a week long series of meeting held in Nome. Over 4-days, the Design Team presented the four concept designs to: NSRH Site Planning Committee, NSRH "all-hands" medical staff, Kawerak, City of Nome representatives, NSHC Executive Committee and the Denali Commission. The "Earth" concept was selected by the Site Planning Committee to proceed through Schematic Design.
- Cost estimate at end of Concept phase: $159M
- Schematic Design phase (September – December, 2005).
- Quality control and value engineering meeting was held in Seattle.
- January 25, 2006: members traveled to Rockville, Maryland and it became clear that the budget was going to be $100M.
- Design Team directed to re-evaluate the preliminary design work and provide analysis for constructing the hospital upon the lower site within the I.H.S. construction budget cap.
- Kick-off meeting was held August 14-15, 20006 to verify all of the critical issues, identify common goals, and generate strategies for cost.
- Contracted to do a design for $95M, which does not include equipment.
- Draft report due to the committee on September 13 then will return back on September 18 to present two new concepts in addition to the concept that was already discussed. The final report and cost estimate will be available by September 26.

- Still plan to implement all the information that was gathered in previous meetings in concept, culturally relevant, and to meet the goals of employee retention.

Project Objectives – to save costs – Jean Funatake – Project Architect

1. Entry will be at lowest level
2. Public entry that touches grade will make it convenient for staff and visitors from the public parking spaces.
3. Minimize gravel; reduce and use insulation.
4. Bring building down closer to pad and compress floor to floor
5. Parking: provide the right mix and distribution on site. I.H.S. requires 300 parking spaces.
6. Maintain natural drainage
7. Control localized snow-drifting issues.
8. Provide strong pedestrian connection from town and public parking. Would like to keep the main entry of the building oriented toward town.
9. Maximize views towards the mountain and the ocean.
10. Provide soft spaces for renovation and expansion.
11. Provide mixed occupancy clinic and administrative stage (group B whenever possible/1-2 where necessary).
12. Explore mixed construction types (Type II-B whenever possible).
13. Building parts and pieces (modular).
14. Identify construction alternates

Cost Change Strategies – Ralph Clampitt – Project Architect

1. Move building closer to bypass road distributed parking around building- $20M savings.
    - **a.** Loop road
    - **b.** Reduce fill
    - **c.** No bridge
    - **d.** No boardwalk
    - **e.** One ramp, close to grade
2. Assume 3 story building
3. Assume simpler skin (materials)
4. Reduce to 144,000 square feet
5. Construction type (hospital standards)
    - a. Fireproofing (office portion does not need to be fireproofed).
    - b. Medical office building & hospital portion
6. Moving hospital to lower site, which is a huge cost savings due to utility hook-up issues.

Questions for feedback

1. Ambulance same level as ER
2. Enclose & heat ambulance drop off or cover
3. Location of QCC
4. Staff housing
5. Future MOB's
6. Storage
7. Future expansion – what departments?
8. Snow plowing (who plows, frequency and where stored)
9. Confirm gravel parking lot
10. Parking quantity (right mix and distribution)
11. Contracting method/alternate delivery
12. Non POR supported programs to include (with additional funding)

Comments:

John Handeland: Several of the people over the course of this development has changed, both from the staff and departmental as well as the management level personnel. The new hospital discussions have been going on for a number of years - for 10-15 years. The Board of Directors had gone through the engineering process in the past to develop a building we thought we were going to be able to fund. It was unknown to us at the time that the budget numbers had not been provided to the architects - so the architects were designing a grand building, which everybody really wanted to have, but it was based on faulty information and something that was simply not fundable. We have gone through on the programmatic side evaluating all of those things. The staff was totally involved with the process, sitting down and determining what department needed to be next for the maximum benefit and flow of patients. We went out and visited other facilities to see what their shortcomings were. . Dennis or Helen can provide past information to see what requirements had been developed for your department. Through this process as things change, there will be additional opportunity; things will have to be re-aligned. What was ideal in the initial concept probably will shift when we go through the concept again. We certainly don't want find out a year and half down the road that things will not mesh. We want to have it addressed and make sure that the program side and the dollar sides mesh.

Angie Barr: We will be back in September and will have a concept of the big space areas in a very board general way. We'll get feedback on that and confirmation, and then we'll go to another level of process. The main thing to remember, the first concept is the same program of requirement (POR) of 144,000 square feet. All departments are same size as before with few exceptions: there are a few areas that are not in the I.H.S. program of requirement. There are a few spaces in that first concept that cannot be included unless NSHC comes up with other funding. No large interior loading dock, extra patient room.

Robert Lober: Any deviations NSHC will have to fund. We will target efficiencies in design to provide all required spaces within allowable P.O.R.

Angie Barr: We can squeeze some square footage out of mechanical and circulation space. Will look at efficiencies in the design but are not looking at reducing square footage. Funding is tied into the size of the building. We want some feedback.

Joe Kennedy – Physical Therapy: Want to make sure that we do not lose storage space to store equipment. Can ruin a department's efficiency if we don't have efficient storage space.

Angie Barr: we do try to think ahead for soft space for expanding equipment. We are moving to the lower site. There has been some discussion that there is some major drainage issues, but a real plus is: shortening utilities, and closer to town. By the same token the snow drifting will probably land on the bypass road. Part of being here is just to make sure that you understand what is being done.

Berda Willson: has anyone talked to the city or DOT re: dust control, walkway, and big trucks from the mines. Concern for elders and sick people crossing that road. Has that been addressed?

Angie Barr: has not been addressed yet.

John Handeland: DOT has been working on East Front street, sidewalks through town, when all was said and done, only East Front street will be paved at this time, not the Bypass Road.

Berda Willson: I'd like the issue of the walkway to be addressed now. We need to take a stand now. You mentioned in September there would be a draft report (working progress report). The Site Planning & Construction committee can only make recommendations but approval is needed from the full board.

Robert Keith: have NSHC Board request that DOT make that bypass road be a commercial grade. Estimation is probably a 1 ½ year old: In regards to formulas: cost of construction is different from cost of living. Does that figure into the formula at all?

Angie Barr: We will have new numbers and will account for escalation and contingency on top of $90M. Estimate is through mid point of construction to 2009. The $90M is based for 2009 with additional $10M for contingency and additional $8M for escalation.

Berda Willson: Request that the shape of building be completed with good material that is durable and maintainable.

Mike Malony – Material Management: any consideration of fleet of vehicles?

Angie: No garage – not part of I.H.S. funding. Warehousing is not covered by I.H.S.
One of our tasks is to contemplate future expansion. Where do you see that future expansion? A garage is not an I.H.S. allowed item. How many parking spaces are needed? I.H.S. recommends 300 (perhaps only need 200-250?) for NSHC with heaters. Regarding the paving of the access road. It's a matter of balance. Compromise is asphalt.

Berda Willson: Kawerak is doing dust control – using chemicals versus paving.

Kathy Johnson: front entrance of the building was situated where it was solely towards the north side. Will that be taken into consideration? Concern was raised with fire trucks not being able to reach the top of the building. *Meeting was held with the Nome Volunteer Firefighters.*

Robert Lober: need direction whether QCC plans to be part of the hospital. Will affect design of hospital. I.H.S. will not fund a QCC building. Will it be attached to the hospital or dispersed in the community? Will come back to the Site Planning committee and managers with 2 concepts.

John Handeland: Questioned the Committee members to determine if the consensus of the committee is to have QCC attached to the hospital.

Dennis J. Tiepelman: Unalakleet is looking at elder care in their own community. Dispersed community members – Inupiaq people take care of their own. Concept is to bring elders to the area where they came from. Elders want home care not institutional care. I would not make that a priority - that the hospital has a QCC component.

Roger Marcil: NSHC needs to revisit the master facility plan. Invite ANTHC to address funding streams, look at elder assisted living or elder independent living.

Berda Willson: various levels, assisted living: elders need assistance. Where the elders can still take care of themselves but need assisted care. QCC is a medical facility and residents need medical attention and nursing care.

Roger Marcil: Having QCC attached to the hospital will not allow you to share staff, but they are certainly closer in case of emergencies.

Comments/Recommendations

- Strategic Plan needs to be completed by the Board.
- Encouraged to have regular exchange of information through this process.
- Direct any question and communication through Larsen Consulting Group and they will respond back to you.
- Meetings will be held with each department at a later date.
- Need more bicycle and 4-wheeler parking.
- Separate employee and public parking
- Exchange of information will be on going, including email and a web site will be developed. Formal process will be through the Site Panning and Construction Committee and full board.

- New hospital is #1 priority. Board & committee level feels participation is necessary. Do not want to lose any more time. Looking forward to opening those doors in a few short years.
- Appreciation was expressed to Larsen Consulting Group, ANTHC, Kumin Associates, Indian Health Service and Mahlum Architects for their participation in the work session.

The public work session was adjourned at 3:58 p.m.

The Site Planning and Construction Committee entered into discussion regarding the process of evaluation for Friday, August 25, 2006 with the top three firms for the RFP-NSHC-06-002 with Winchester Alaska, Livingston Slone and Larsen Consulting Group. A list of seven questions was selected for presentation by the evaluation panel.

The Site Planning and Construction Committee recessed at 5:33 p.m.

End of Formal Group Meeting Session

The preceding agenda items are Kumin Associates' interpretation of the items discussed and/or decisions reached at the above referenced meeting. Any person(s) wishing to add to or otherwise change the agenda are asked to put their comments in writing to Kumin Associates, Inc. no later than 7 days after publication and distribution of the meeting minutes. After that date, the minutes will stand as written.

Memorandum

Project Name:	Norton Sound Regional Hospital Site Relocation and Concept Design	Project No:	20426.05
		Meeting Date:	9/29/06
Subject:	Nome Concept Work Session		
From:	Jon Stolle, KAI	File Name:	Memo-003
Distribution:	To attendees listed below		

The design team traveled to Nome, Alaska on 9/28/06 to participate in a work session with the NSHC Site Planning and Construction Committee. The purpose of the meeting was to present the findings and recommendations for the Hospital site relocation and concept design. The meeting was held in the Nome City Hall Chambers. The following were present:

Committee Members Present:	**Title**	**Representing**
John Handelan, Chair	SPCC - Board Chair	NSHC
Berda Wilson	SPCC - Board member	NSHC
June Walunga	SPCC - Board member	NSHC
Kathy Johnson	SPCC - Board member	NSHC
Robert Keith	SPCC - Board member	NSHC
Brian James	SPCC - Board member	NSHC
Helen Pootoogooluk	Acting CEO	NSHC
Balla Sobocienski	Admin Office Supervisor	NSHC
Staff/Guests	**Title**	**Representing**
Angie Gorn, VP	VP, Hospital Services	NSHC
Carol Piscoya	VP, CHS	NSHC
John Larsen	Owner Technical Representative	Larsen Consulting Group
Roger Marcil	Owner Technical Representative	Larsen Consulting Group
Todd Olson	Medical Planner	Mahlum Architects
Angie Barr	Principal-in-Charge	Kumin Associates
Jon Stolle	Project Manager	Kumin Associates
Rick Boyce	Director, Health Facility Support	ANTHC
Michael Chard	Engineer, Northwest Region	ANTHC

The meeting began with a presentation by Roger Marcil, Larsen Consulting Group (LCG) summarizing the grant expenditures to date and estimated remaining funds. Roger highlighted the need to meet with the new NSHC Chief Financial Officer (CFO) to review past expenditures and direct costs to ensure all costs have been properly allocated to the project. He emphasized the need for the Corporation to update their contact information with the Denali Commission to ensure future access to grant funds. He concluded with offering to work with the new CFO to develop a budget for the remainder of the project design and construction phases. The committee expressed concern with not having a detailed accounting of costs to date, nor a budget projection that assures the design can be completed with available funds.

John Larsen, President, LCG presented the communication plan developed to inform the NSHC board and staff, and the public of progress on the project. LCG intends to use newsletters as the primary form of communication. This will be supplemented with personal presentations and a monthly progress report to the CEO. John emphasized the need to keep the project on schedule and commit to key milestone dates, such as architect presentations and responses to submittals. The committee discussed the desire to have a public presentation on the conceptual design and distribute a special newsletter throughout the region to garner public support for the project. The committee will discuss this further with the entire board.

Angie Barr, Principal In Charge**,** Kumin & Associates, Inc. (KAI) presented an overview of the design process, explaining the major activities performed in each phase of design. She emphasized the current phase (conceptual design) did not determine the shape of the building, type of construction, or internal layout. Rather, it was meant to explore the potential development of the project site to include such items as public access, utility corridors, positioning of facilities, and departmental adjacencies. She continued with a discussion of activities occurring during the schematic and design development phases, highlighting the need for staff feedback, and timely reviews and approvals of submittal documents. She concluded with a review of the design schedule and the anticipated dates for delivery of final construction documents.

Jon Stolle, Project Manager, KAI, followed with an introduction to the project site, discussing such items as potential views from the future facility and the physical aspects/limitations of the site. He then presented three differing schemes of developing the site with facilities, roads, parking areas, and public walkways. Jon emphasized the presentations were concepts and the planning committee was not expected to choose a particular concept. Rather, KAI, wanted the committee's input about the positive aspects seen among the differing concepts that could be carried over to the schematic design phase. The committee continued to emphasize their desire to have a public presentation on the conceptual design and distribute a special newsletter throughout the region to garner public support for the project.

Todd Olson, Mahlum Architects, Inc., followed with a presentation of the internal department adjacencies envisioned for each concept, discussing the strengths and weaknesses relating to staff operations, construction costs, and the environment of care. Todd discussed the allocated space complied with the Program of Requirements set by the Indian Health Service. He summarized with a discussion of the staff interaction planned for the schematic phase in validating the adjacencies and beginning to define department layouts and rooms.

KAI concluded their presentation with 3-D illustrations of the site that illustrated the site layout and building access points for the public, emergency department, and service ramp. The final presentation was a 3-D animation of viewing the developed site.

The public work session was adjourned at 10:45 a.m.

End of Formal Group Meeting Session

The preceding agenda items are Kumin Associates' interpretation of the items discussed and/or decisions reached at the above referenced meeting. Any person(s) wishing to add to or otherwise change the agenda are asked to put their comments in writing to Kumin Associates, Inc. no later than 7 days after publication and distribution of the meeting minutes. After that date, the minutes will stand as written.