INTEGRATING HEALTHCARE

HOSMAC INDIA PRIVATE LIMITED

Proposed 150 Bed Hospital at Gelephu

for
HEALTH INFRASTRUCTURE
DEVELOPMENT DIVISION,
DMS, MoH,
THIMPHU

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EXISTING SITE PLAN

SITE SNAPS

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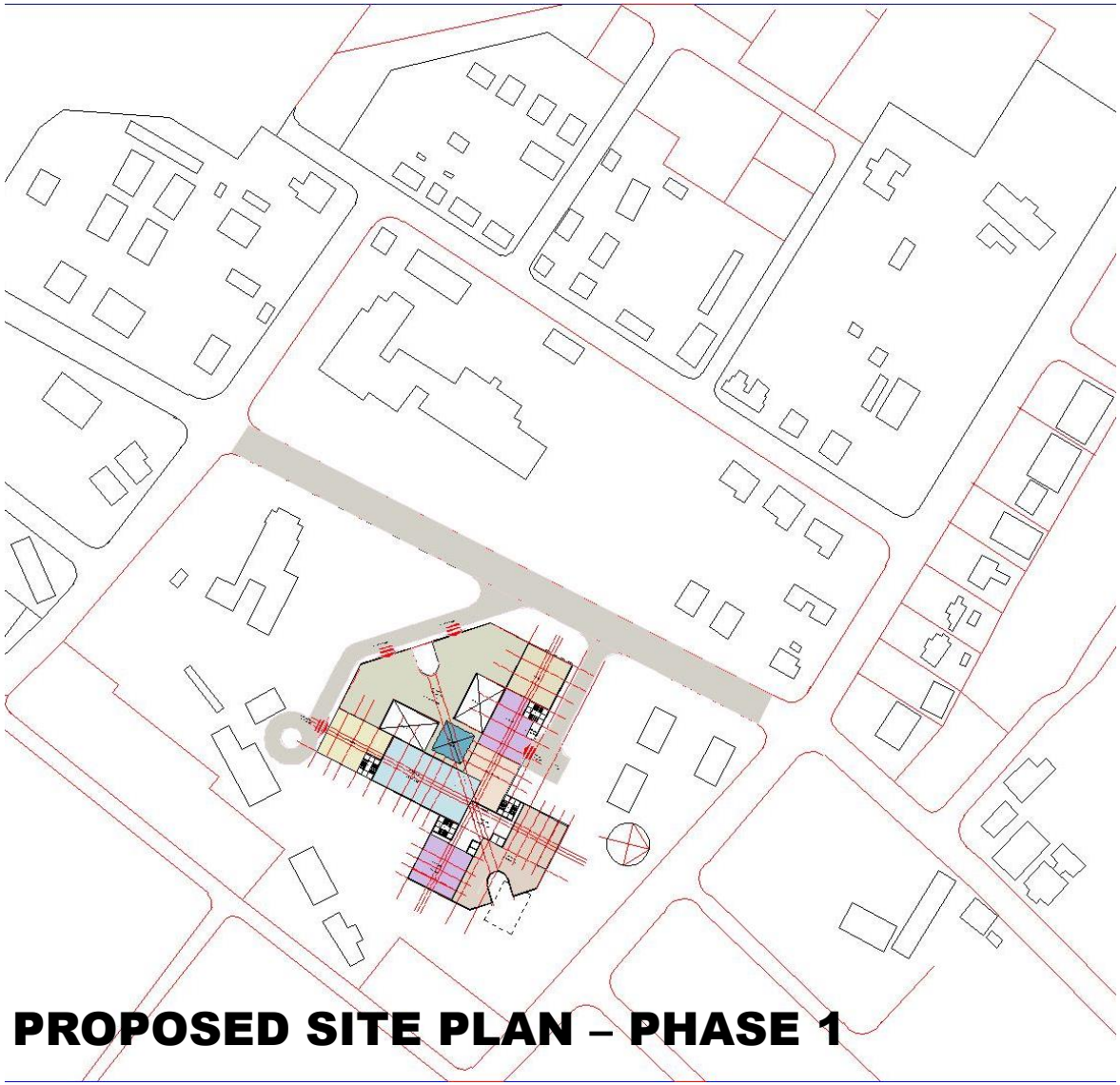
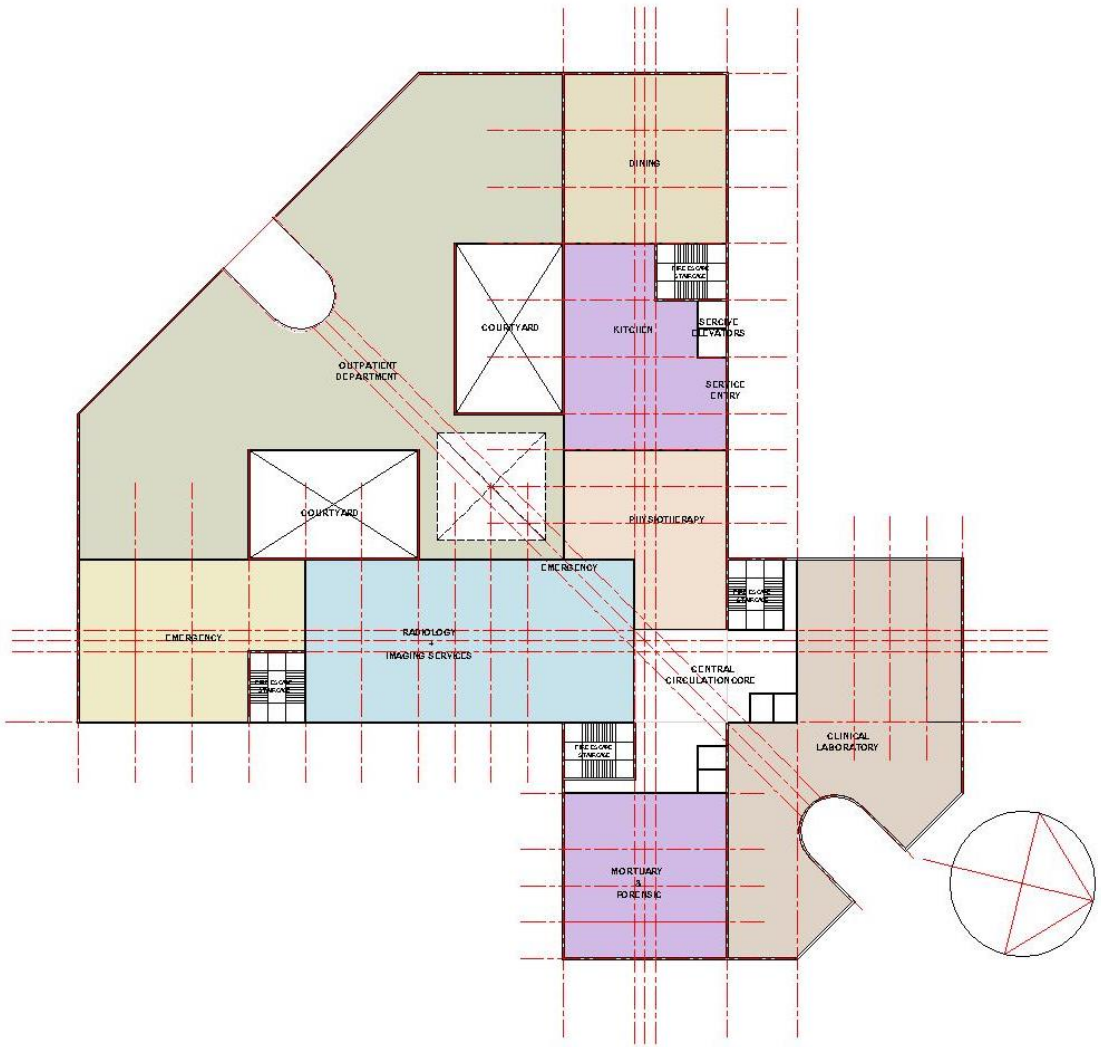
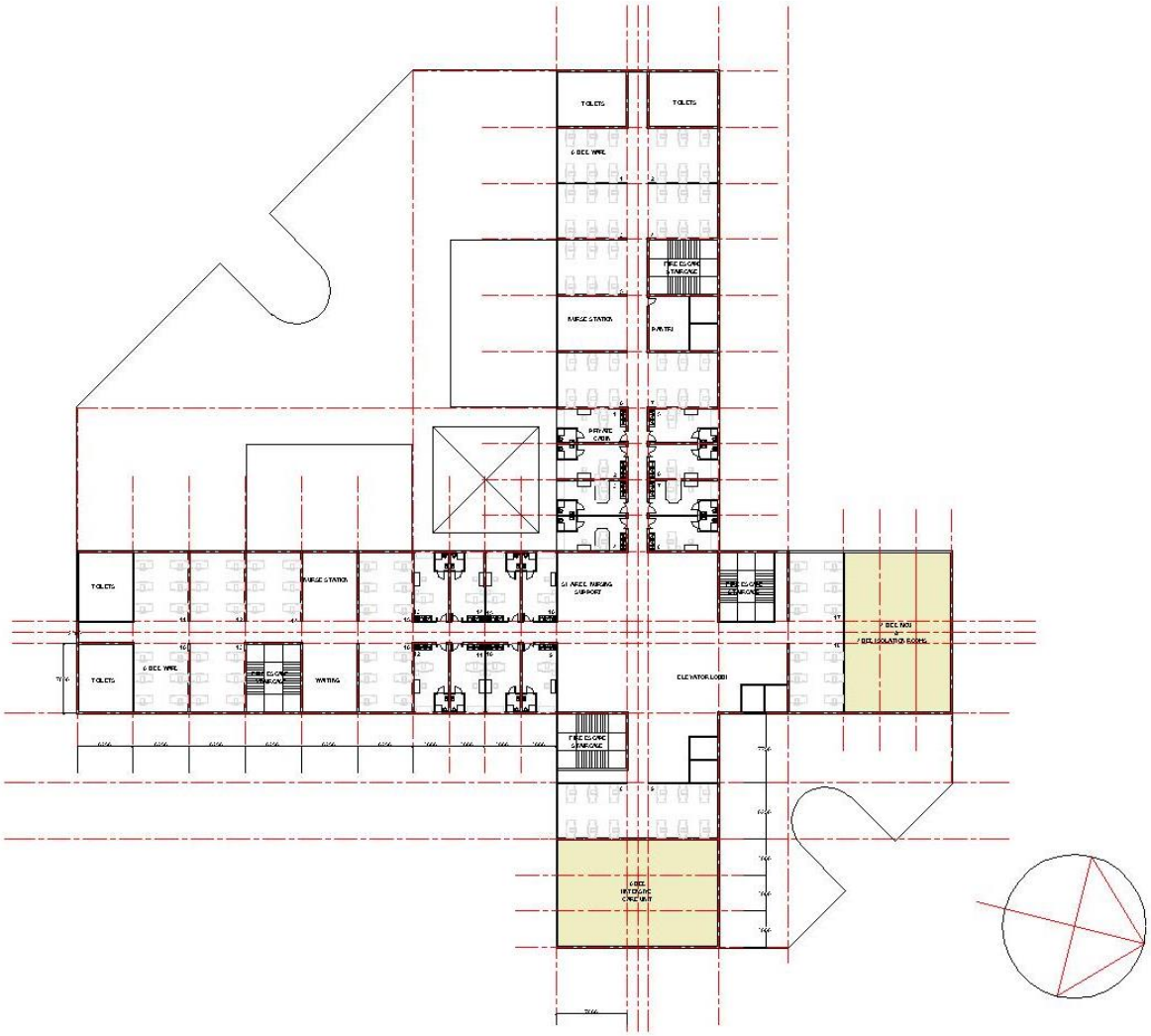


PROPOSED SITE PLAN – PHASE 1



GROUND FLOOR PLAN– PHASE 1



FIRST FLOOR PLAN – PHASE 1

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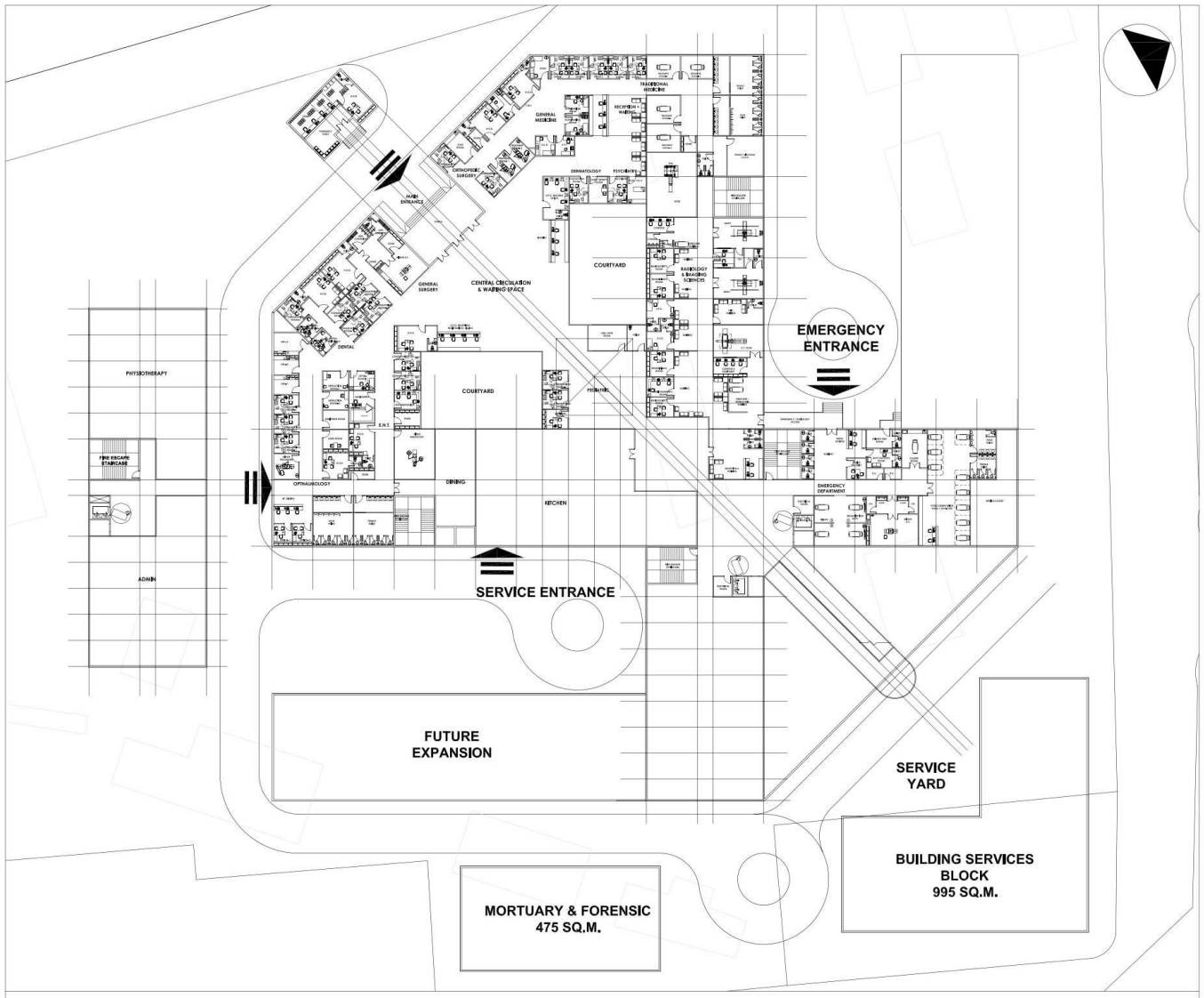

GROUND FLOOR PLAN

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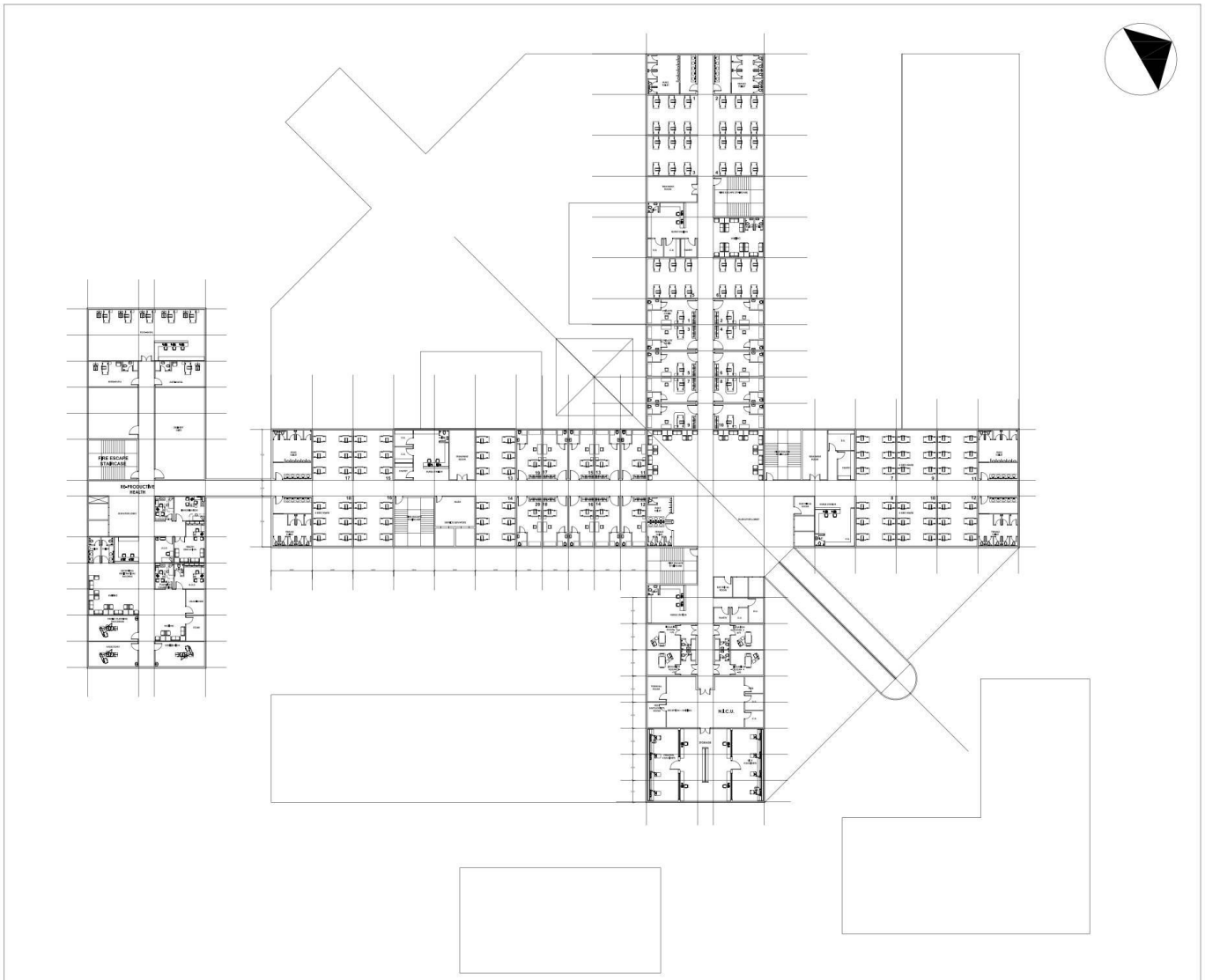
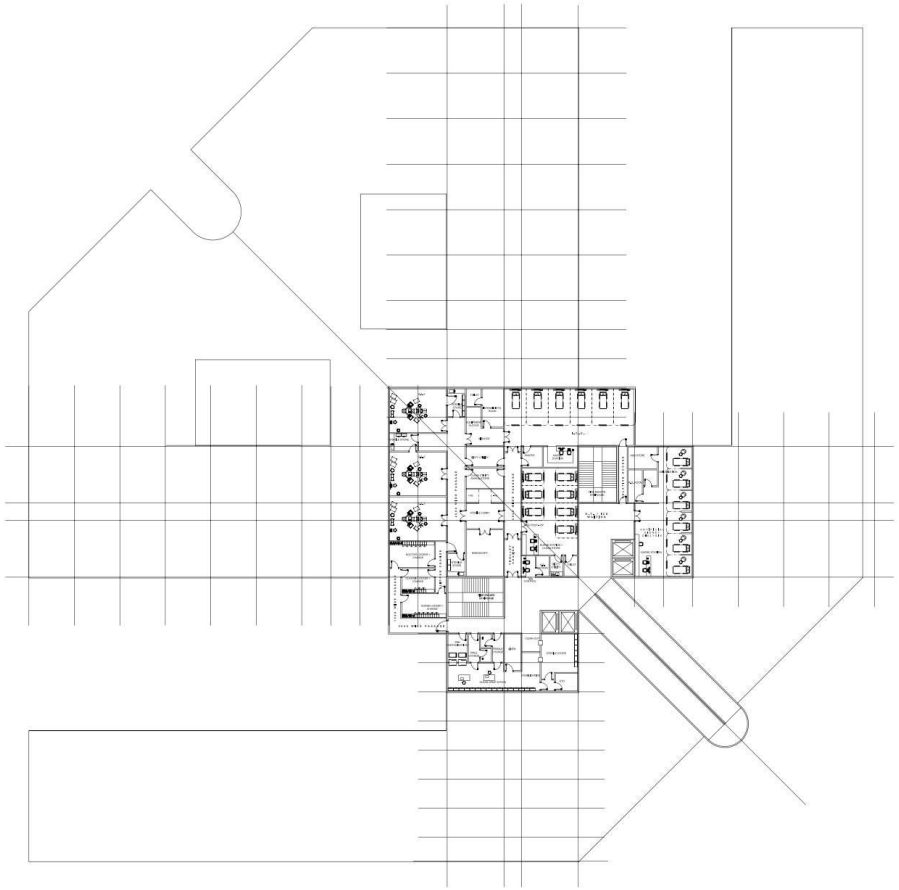


FIRST FLOOR PLAN



SECOND FLOOR PLAN

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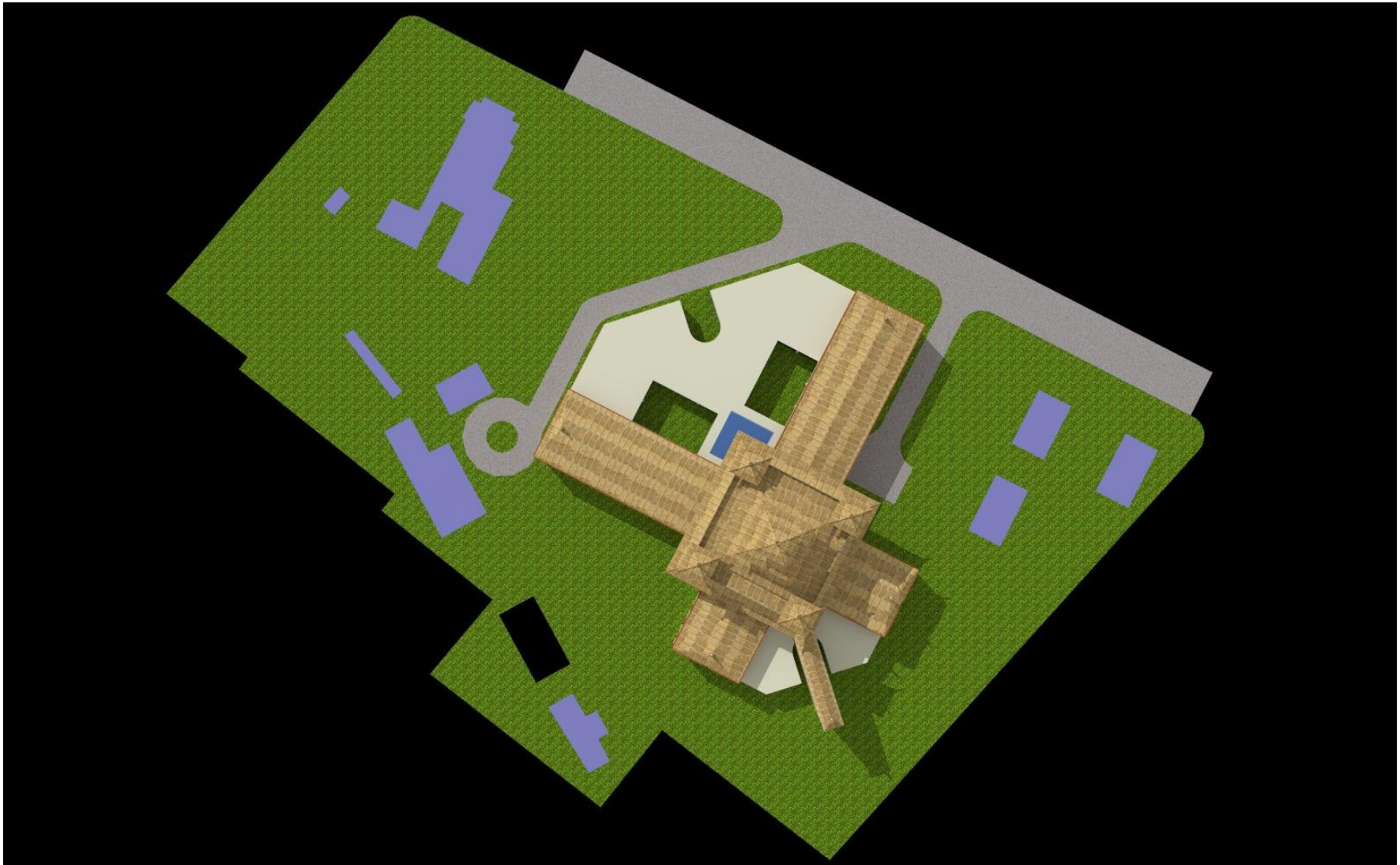

PROPOSED SITE PLAN – PHASE 1

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FRONT ELEVATION– PHASE 1

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REAR ELEVATION– PHASE 1

SIDE ELEVATION– PHASE 1

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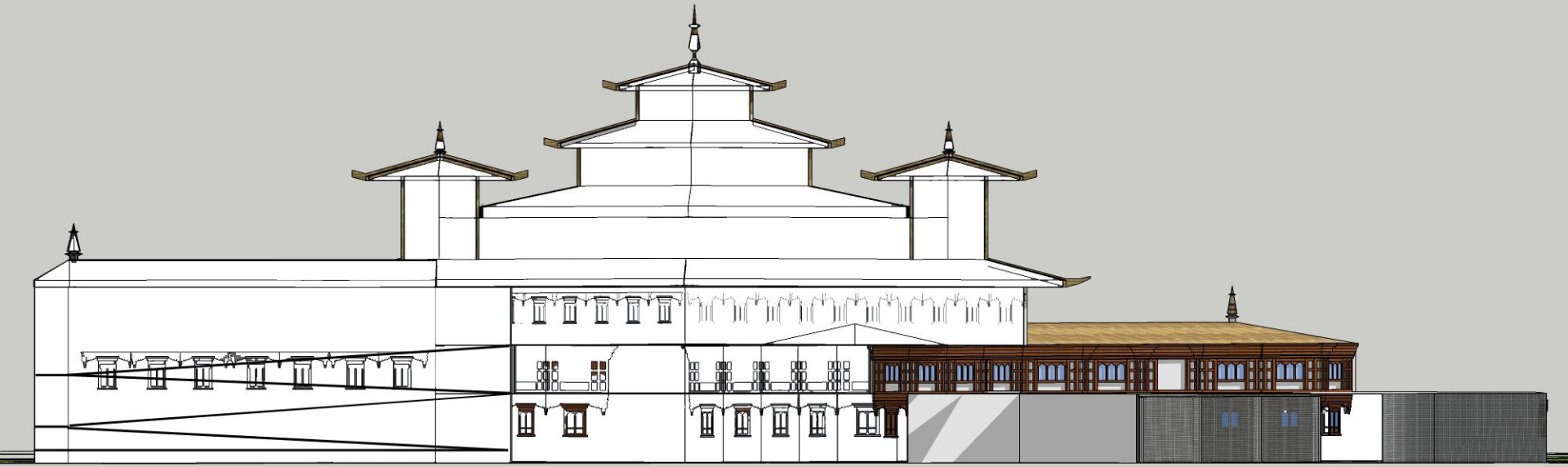
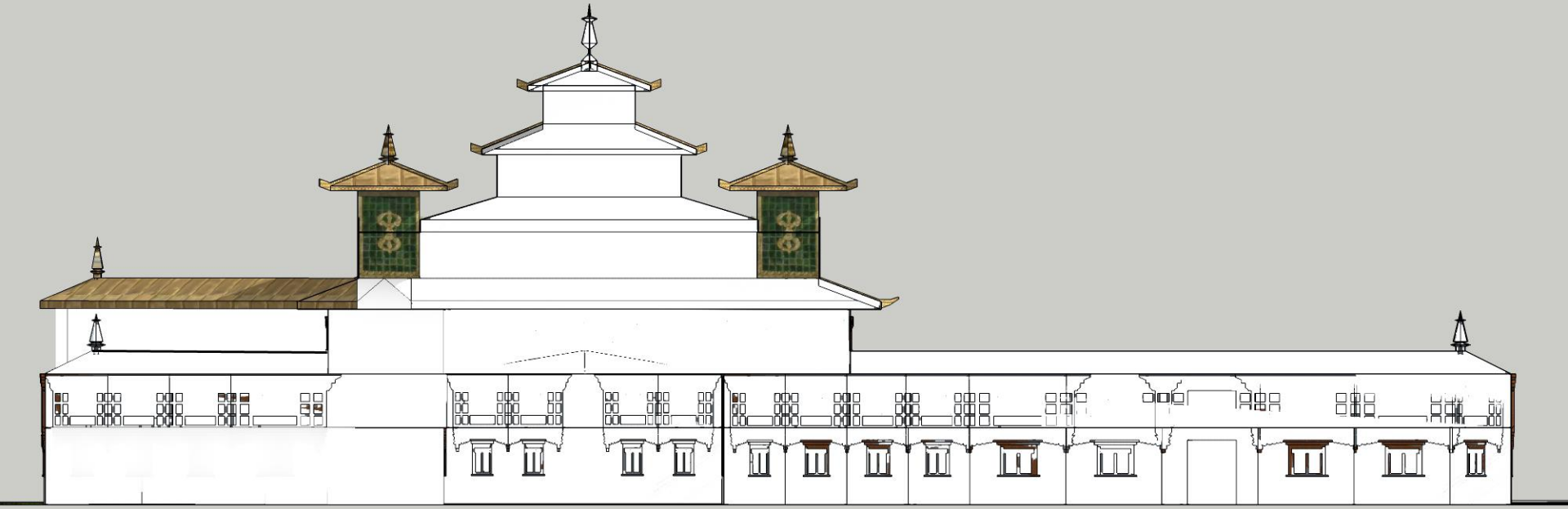
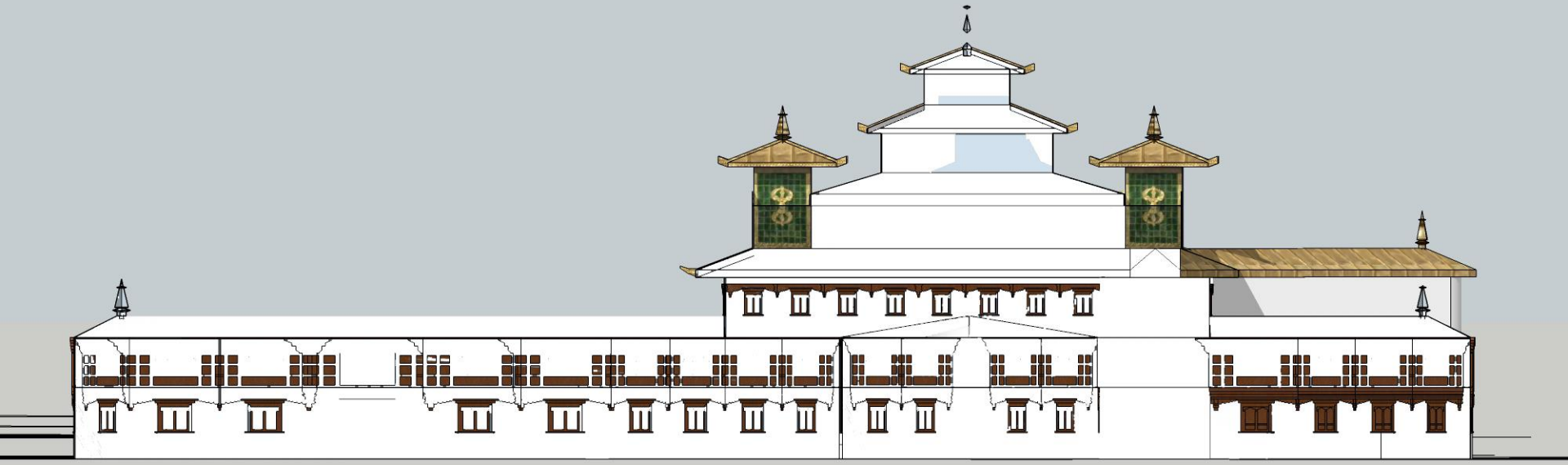
SIDE ELEVATION– PHASE 1



SECTION THRU' RAMP– PHASE 1



LONGITUDINAL SECTION 1– PHASE 1



LONGITUDINAL SECTION 2– PHASE 1

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VIEW OF ENTRANCE– PHASE 1

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VIEW– PHASE 1

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BIRDS EYE VIEW– PHASE 1

WORMS EYE VIEW– PHASE 1

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PROPOSED SITE PLAN – PHASE 2

FRONT ELEVATION– PHASE 2

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REAR ELEVATION– PHASE 2

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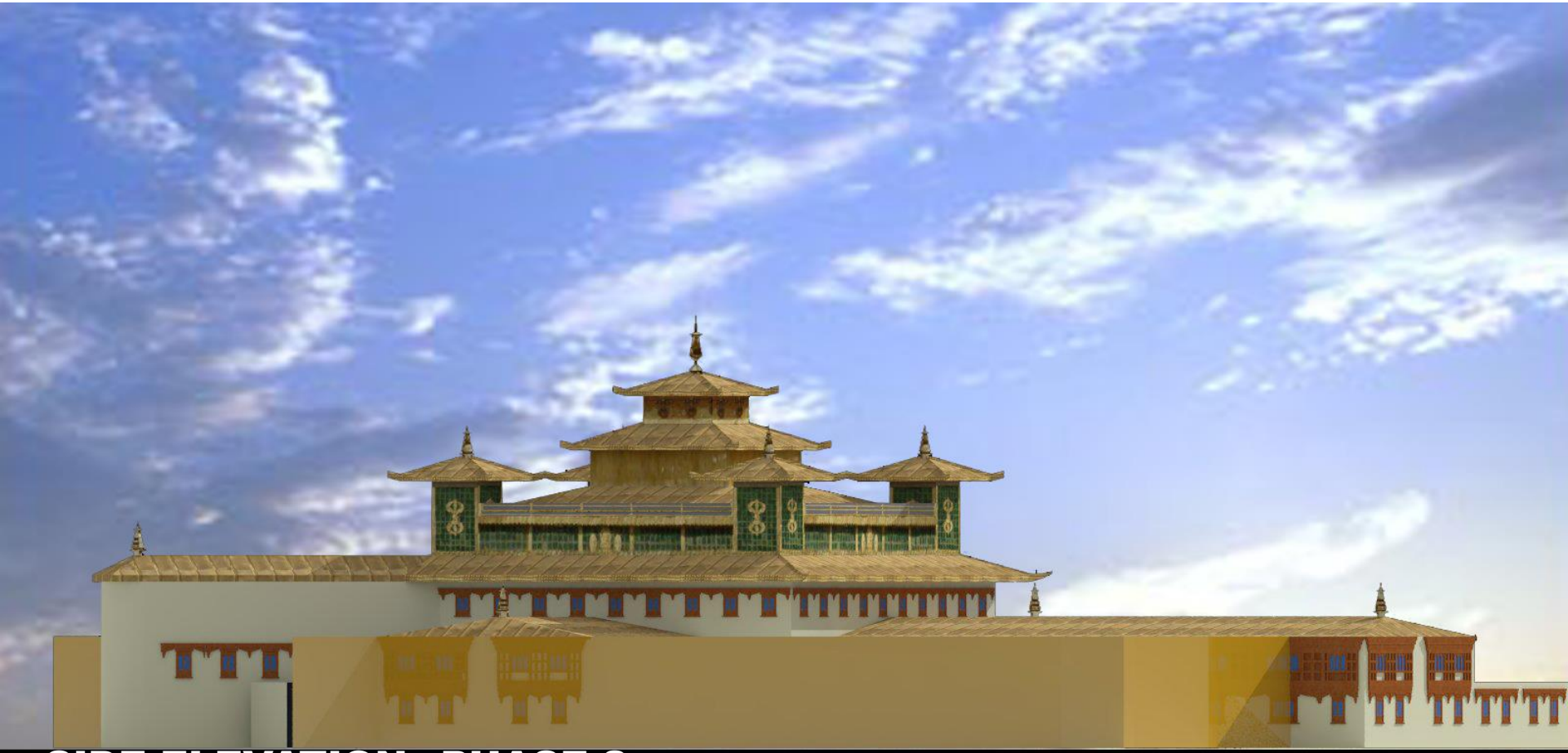

SIDE ELEVATION– PHASE 2

VALUE OF OPEN SPACE DEVELOPMENT ON SITE

CONNECTING HOSPITAL FLOORS

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ARMY GATE TO CRRI HOSPITAL

ORCHARD AND GREEN BELT

VALUE OF OPEN SPACE DEVELOPMENT ON SURROUNDING URBAN DESIGN

CASE FOR AN INTEGRATED STREETSCAPE

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THE GREEN FEATURES - ARCHITECTURE

- Building orientation allows ingress of light on the northern face
- Building profiles allow natural light & ventilation
- The proposed hospital has courtyards which can be used as solariums in winter.
- Concrete blocks with unfilled cavity shall be proposed to reduce the U-value or the heat transfer co-efficient to 20, thereby reducing the cooling loads.
- Dual air-conditioning system to be adopted – cooling as well as heating
- Considering the altitude of Bhutan, harnessing wind power may be of advantage. However annual wind intensity and direction will have to be studied.

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THE GREEN FEATURES - ENGINEERING

THE GREEN FEATURES

- Sewage treatment plant and rain-water harvesting are proposed to conserve water. The re-processed water will be utilized for make-water (air-conditioning) and for irrigation (landscaping).
- Solar chargers shall be considered to reduce the electrical loads for hot water and steam requirements.
- Hydroclaves for compression of bio-medical waste (instead of incinerators) and vermiculture for kitchen sullage are considered.
- We will avoid steel / aluminum in construction to the extent possible. Wood if amply available is preferred.
- Ground heat source system can also be adopted for heating and cooling.

Efficiency & Cost Effectiveness

- Use of green features will enable energy efficiency and cost effectiveness.
- Compact building design enables efficient use of space.
- Planning OT's, ICU's in a square enables less energy loss as there is less perimeter.

Providing Accessibility

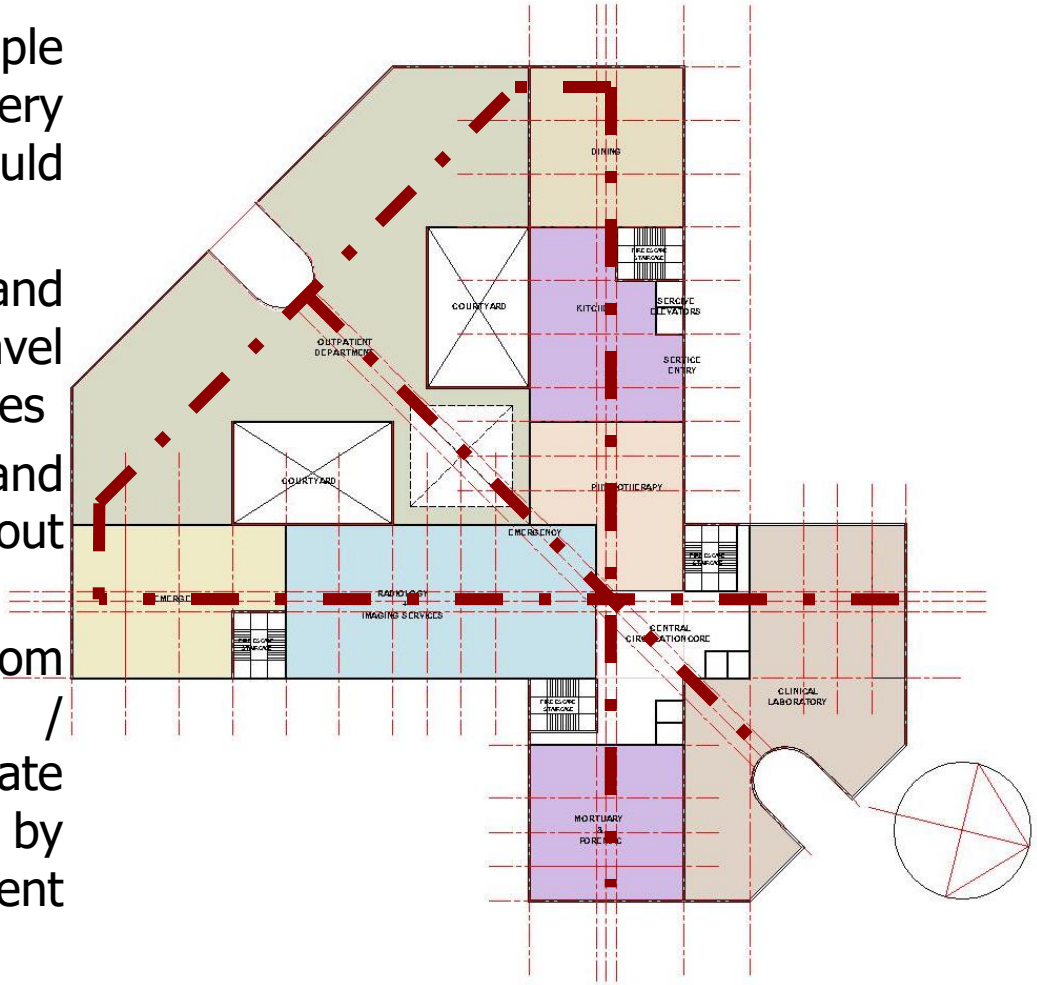
Providing accessibility to many patients with temporary or permanent handicaps helps independent patient movement through the common spaces.

- Provide assisted toilets at least one on each of the opd & diagnostic floors
- Provide ramps at entrances
- Provide grab bars at appropriate locations – staircases, patient toilets
- Use of non-reflective and non-slip floors to avoid falls

Controlled Circulation

A hospital combines multiple interrelated functions of OPD, Surgery and IPD, much of this circulation should be controlled

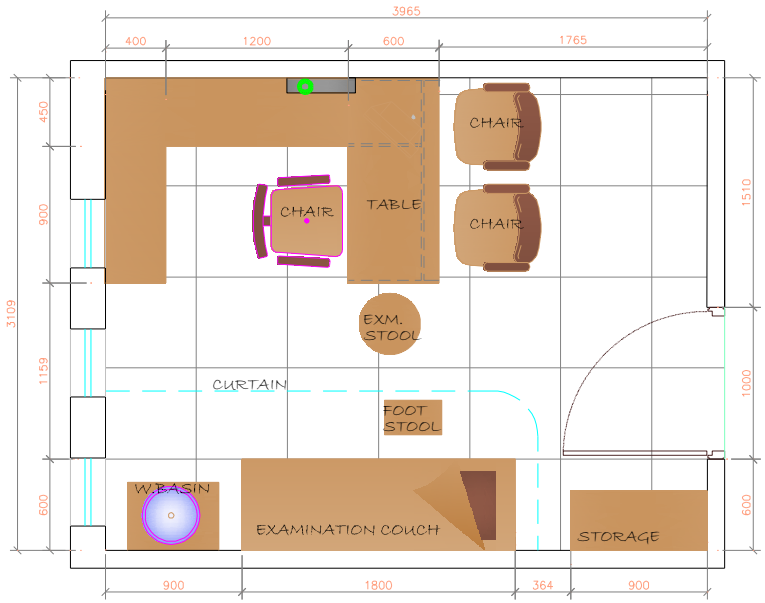
- Out-patients visiting diagnostic and treatment areas should not travel functional areas or in-patient zones
- Visitors should have a simple and direct route to in-patients without crossing functional areas
- Movement of in-patients from rooms/wards to treatment / diagnostic areas through separate corridors, other than used by visitors minimizes patient discomfort



GROUND FLOOR PLAN

Patients Privacy

Providing adequate privacy to patients during examination and discussion help patient interaction with doctors



FURNITURE LAYOUT OPTION-1

Consulting & exam Room in OPD

Privacy as well as visual supervision in ICU

Attention to way-finding

Patients, visitors, and staff all need to know where they are, what their destination is, and how to get there and return. Making spaces easy to find, identify, and use without asking for help encourages a patient's sense of competence. It maintains dignity of patients and visitors and avoids their disorientation

- Use building elements, colours, textures, pattern as well as sinages to show directions
- Avoid prominent locations and high visibility of doors to space which are not to be entered by patients
- Use simple lettering and clear contrasts in sinages

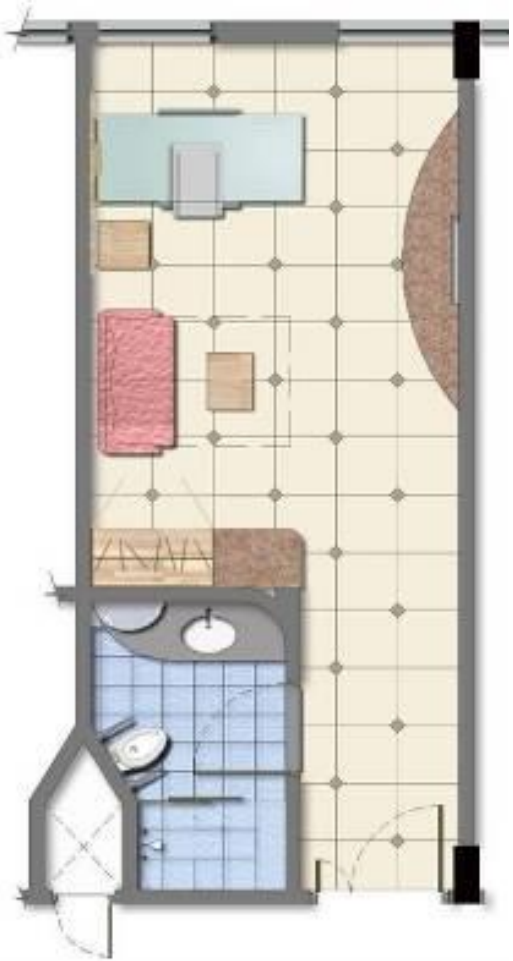
Cleanliness & Sanitation

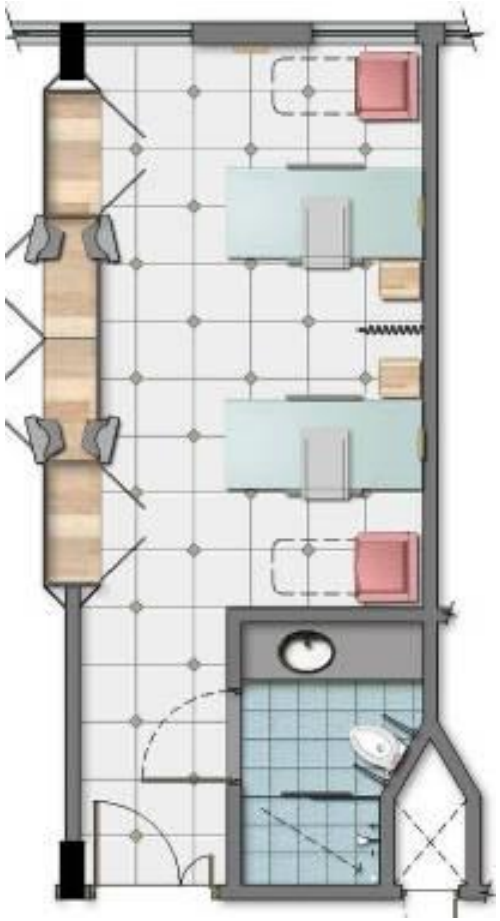
Odor-free environment is a high priority. In addition to operational practices and careful choice of furniture, design can help odor control by:

- Adequate and highly visible toilet rooms in key locations
- The use of appropriate , durable finishes for spaces
- Proper detailing of such features as doorframes, and flooring & wall finishing so as to avoid dirt-catching and hard to clean crevices and joints
- Adequate and appropriately located housekeeping spaces
- Effective ventilation, addition of air fresh component in air- conditioned spaces & cross ventilation in non AC areas

Flexibility & Expandability

A planning grid needs to be evolved to optimally fit the IPD rooms – single , twin sharing and ward units. The planning grid evolves the column grid and the service duct locations

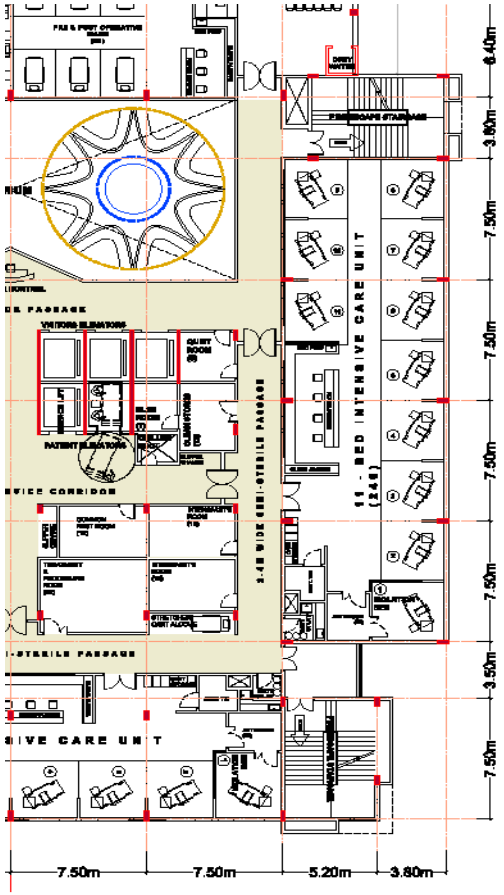




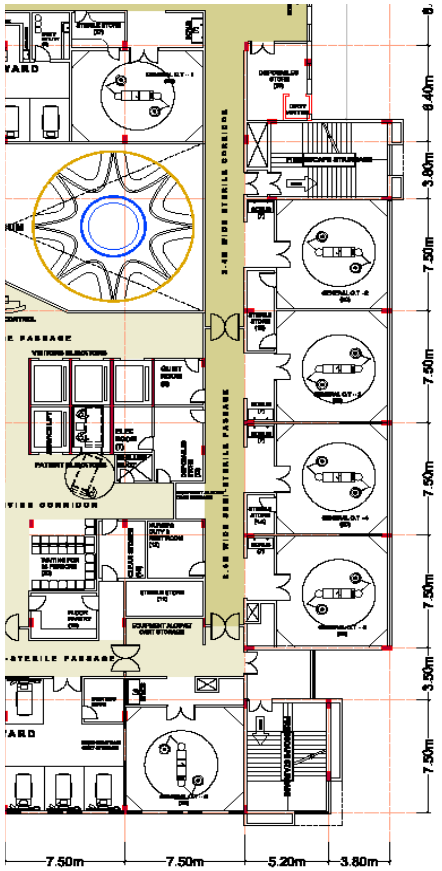
Same grid size of 3.75m x 9m used as deluxe as well as twin sharing room

Modularity in Planning

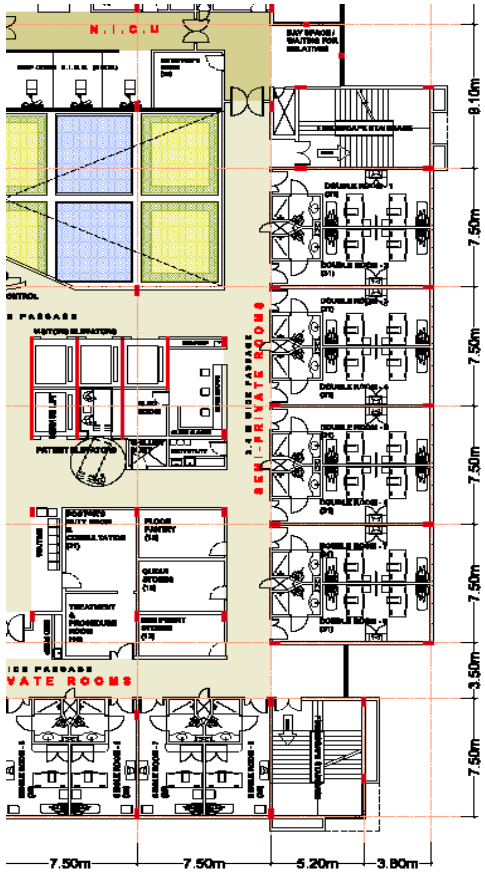
- Follow modular concepts of space planning and layout
- Use generic room sizes and plans
- Use modular and easily accessible mechanical and electrical system



ICU FLOOR



OT FLOOR



WARD FLOOR

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Design for "Patient-Centered Care"

DESIGN PARAMETERS FOR PHYSICAL COMFORT can be defined as:

- Give spaces a homelike, rather than institutional, size and scale with natural light and views of the outdoors.
- Create a warm reassuring environment by using a variety of familiar, non-reflective finishes and cheerful, varied colors and textures.
- Provide each patient a variety of spatial experiences, including access to a garden or a day space.
- Promote traditional residential qualities of privacy, choice, control, and personalization of one's immediate surroundings.
- Admitting ample natural light wherever feasible and using color-corrected lighting in interior spaces which closely approximates natural daylight.
- Providing views of the outdoors from every patient bed, and elsewhere wherever possible; photo murals of nature scenes are helpful where outdoor views are not available.

AESTHETIC

- building enables the common man to link with its scale
- designed in the vernacular style, traditional Bhutanese architecture
- central block is a square, in traditional style
- designed symmetrically about an axis, to give it a restful ambience, in keeping with its function as a hospital
- designed in complementary colors, beige, brown and green

SECURITY & SAFETY

- Minimizing entrances to the hospital to three, main, emergency and service/staff/morgue will add to its security.
- Fire-fighting system along with building management systems will add to fire safety.
- Only two entrances to the site will keep it more secure.
- Effective standard operating procedures will add to security and safety, along with staff training.
- Building services will be provided in a separate block, keeping them safe and secure.

Therapeutic Environment

Natural Light in ICU

Comfortable Rooms

Spacious lobby & waiting areas

COLORS

Colors are an integral part of the aesthetic of the building. Colors that soothe and provide solace to the patients are advised rather that striking color combinations which might cause some stress to the senses. Warm or cool colors in lighter hues and tones are always soothing.

Soothing colours in NICU

Children's play spaces

Aesthetic reception spaces

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Therapeutic Environment

A healthcare environment is therapeutic when it does all of the following:

- Supports clinical excellence in the treatment of the physical body
- Supports the psycho-social and spiritual needs of the patient, family and staff.
- Produces measurable positive effects on patients' clinical outcomes and staff effectiveness

PATIENT SAFETY

- Noise reduction
- Scalability, adaptability, flexibility
- Visibility of patients to staff
- Patients involved with care
- Standardization
- Automate where possible

Therapeutic Environment (contd.)

- Minimize fatigue
- Immediate accessibility of information, close to the point of service
- Operative/post-op complications/infections
- Events relating to medication errors
- Inpatient suicides
- Transfusion related events
- Correct tube-correct connector-correct hole
- Patient falls

PHYSICAL DESIGN FOR SUPPORT AND SAFETY

- Handrail from the bed to the bathroom
- Beds that lower to reduce the harm to patients falling
- Rubber flooring that is safer then traditional hard flooring alternatives
- Appropriate sink location to reduce risk of infection