



# REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE

MINISTÉRIO DA SAÚDE

Second Health Sector  
Rehabilitation and Development Project  
Grant #TF 029888



## FINAL DESIGN REPORT for Maliana Referral Hospital

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## 1.00 INTRODUCTION

### 1.01 EXISTING MALIANA HOSPITAL

The existing Maliana Hospital consists of various buildings in varying states of disrepair. The new Hospital for Maliana is proposed to be built on the front of the existing hospital site currently occupied by a number of peace keeping force personnel. Beyond the buildings in use and others are totally destroyed and beyond repair.

It is understood is that all current occupants of the site will vacate all premises and remove equipment and demountables in preparation for construction works.



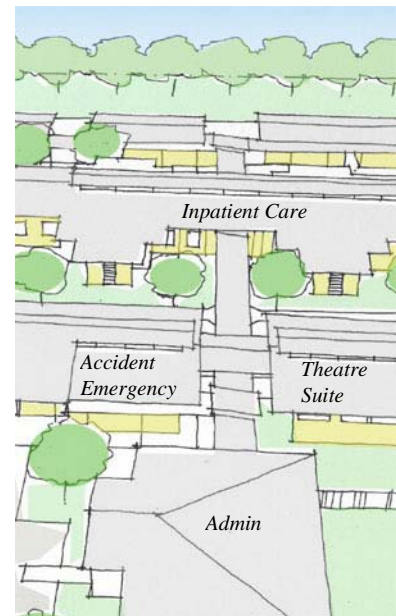
*Typical views of existing structures*

## 2.00 HEALTH PLANNING

The key health planning principles established in preliminary design have been accepted at both MoH and User Group levels. Formal acceptance by user groups of the Health Planning Principles in the Final Design Drawings No.2 has been achieved. Only minor changes have been requested during the review of the Final Design Drawings and are noted in schedule in Appendix 8.05 in this report.

The need to focus planning on controlling recurrent cost in the operation of the future Maliana Hospital and all of the proposed hospitals has been highlighted by the consultancy team as well as the World Bank architectural consultant. The consultancy team identified in the Preliminary Design Report the difficulty of achieving the original Design Brief areas within the proposed construction Budget. The excessively high recurrent costs that would have been incurred by designing the hospital as detailed in the Design Brief were also identified.

Key developments in health planning that have developed since the Preliminary Design No. 2, have been of a micro scale, affecting the internal planning of the Inpatients Building. These are predominantly derived from architectural issues resulting from consultation with user groups, the PMU and from comments made by the consultants advising the World Bank.



*Concept Layout Circulation Spine*

Three Health Planning issues of note are the provision of an additional nurse's station in the maternity facility, the design of the airlock and the ward configuration in Isolation and the separation of toilets and showers in the ward ensuites.

The design of the isolation airlock approved in the Preliminary Design is not consistent with the airlock design proposed by the consultancy team and the recommendations of the World Bank Consultants. The preference to keep the airlock off the line of the main corridor, so as to ensure through building ventilation and to maintain a four bed general ward with two x 2 bed isolation wards was held by both consulting groups. While this increased building area, this option was seen as offering a more climatically suitable and sustainable design.

The inclusion of a second nurse's station, specifically for maternity, will have staffing implications for the hospital administration in the future. The dividing of nursing resources was discouraged by the consultancy team, but the request by the user groups through the PMU to create this designated station was acknowledged. In response to this inclusion, it has been recommended that the nursery be swapped with the assisted bathroom to ensure the neo-natal unit is located adjacent to the station with the most appropriately trained staff.

The segregation of the shower and toilet within the ward ensuites is a response to the requests of user groups. The consultancy team has advised the user groups and PMU that this division is not required on clinical grounds and will pose a significant capital cost increase, as well as an ongoing operational cost once in use. The duplication of fixtures, fittings and the loss of storeroom space is noted. The proposed design offers natural ventilation to both rooms and will provide an excellent level of servicing to wards. A result of this segregation has been the ability to remove the 'overflow' bathroom located off the corridor, helping to reduce the buildings overall area.

### Constraints and Opportunities In Health Planning

The cleared site has allowed for the new facility to be designed to meet the needs of hospital care for the people of Maliana for many years to come. The site allows for expansion in future years if required, as well as the possible rehabilitation of the existing Hospital ward buildings at the rear of the site. As most of the buildings currently in use by the existing hospital are at the rear of the proposed hospital site, it is envisaged that most can continue to be used during the construction phase, minimising disruption to service delivery while the new hospital is being built.

The proposed site also facilitates the standardisation of the design of health services and equipment between Maliana and the other referral hospitals.

## 2.01 DESIGN BRIEF

A key item identified by the Consultancy Team in the Preliminary Stages of the project has been the inappropriate nature of the Design Brief. The brief rigidly employs Australian and British standards for design, engineering, environmental and schedules of accommodation and makes little allowance for neither existing delivery of health services in East Timor, nor the limited resources of the MoH for the initial capital and ongoing expenses. The development of a Revised Schedule of Areas was performed and presented to the MoH and has served as the basis for the approved Preliminary Design and the proposed Final Design.



*Accident/Emergency Department*

The proposed Final Design seeks to offer a sustainable and appropriate health facility that can be achieved within the allocated initial budget, as well as in the future. The new hospital facilities must be able to operate within a very tight budget climate, and be able to be initially managed with a restricted experienced clinical resource that will need time to mature in the coming years





Other issues including maintenance of building facilities, medical equipment and future clinical services have been further considered during the development of the Preliminary Design

## 2.02 RESPONSE TO THE DESIGN BRIEF & USER CONSULTATION

### Summary of the Extent of Service Proposed in Final Design

Maliana Hospital will provide a comprehensive range of health care and referral services which will include:

- A 24 Bed Inpatient Care Facility for medical, surgical and maternity patients, including patients requiring isolation or high dependency care. The beds will be organised in five x four bed wards, two x two bed wards and two x two bed Isolation wards each with dedicated bathroom facilities. The shower and toilet are to be in separate cubicles within ward ensuites. This bed configuration will be flexible and cater for the different mixes of male and female patients and different nursing needs.
- A Maternity Unit, which is allocated as part of the inpatient care facility. This is a revision to the briefing document which, by implication of shared facilities, collocated the Maternity unit with the clinical services block. The maternity unit will consist of a birthing unit with its dedicated bathroom, associated service facilities and an antenatal education room, which can also double as a labour room. A secondary nurse's station is proposed in this facility and the nursery will also be positioned in this precinct.
- An Operating Suite and Sterile Supply Unit. The operating suite will consist of one operating room, two recovery spaces and all supply and support facilities. The sterile supply unit will service the operating suite and be the sterile supply source for the rest of the hospital.
- An Accident and Emergency Department, which provides for resuscitation, minor procedures and general practice medical care. It can provide a 24 hour service and is monitored by the security office close by.
- An X-Ray facility, which has a static and mobile capacity. It is conveniently located within the emergency department and can be made operational 24 hours per day when required.
- A Laboratory Unit, which provides outpatient specimen collection facilities and basic laboratory analysis.
- An Out-patient Unit providing a range of outpatient clinical medical, nursing and therapy services including vaccination, physiotherapy, pathology and dental. Provision is also made for patient education and other public health programmes.
- A Pharmacy Unit providing dispensing facilities and some bulk storage of drugs and medical supplies.
- Medical Records, available 24 hours and located within the Accident and Emergency Department
- Medical, nursing and general hospital administrative, meeting/training, communication and support activities.
- A Mortuary Unit with refrigerated storage facilities.
- A Kitchen Unit
- A Laundry Unit.
- Other Non-clinical Support Services such as Housekeeping, General Stores Procurement and Storage, and Maintenance and Gardening.
- A waste disposal building and an incinerator.
- An on-site generator and fuel supply facility.

## 3.00 MEDICAL EQUIPMENT BRIEF

### 3.01 MEDICAL EQUIPMENT REVIEW

An estimate of the current replacement cost for each item can be undertaken if required by the PMU and/or MoH.

## Maliana Hospital

- Approximately 180 items recorded.
- Approximately 37% classified as “poor” or “unserviceable”.

## Summary of Findings

The findings of the equipment review are similar for each site assessed. The following points apply generally and are illustrated by specific examples where appropriate.

- There is a considerable installed base of Medical Equipment at the facilities assessed. In total, about 37% of the items are in “poor” or “unserviceable” condition.

*This highlights a significant potential requirement for replacement medical equipment.*

- There are a number of items of equipment in service that do not appear on any of the current hospital equipment lists. There are also some significant items that appear on the lists that could not be found. Further, there is no condition assessment included in any of the existing equipment lists provided.

*This highlights a requirement for the development of an effective and maintainable medical equipment register.*

- A considerable amount of equipment is still notionally in service but is problematic (and in some cases dangerous).
- There are a number of items of equipment that still have economic life but are unserviceable due to lack of simple maintenance.

*This highlights the need for establishment of a sustainable “in country” medical equipment maintenance program.*

- In some cases equipment that was virtually brand new was found in cupboards and stores. In a number of instances it was not being used because the staff had not been adequately trained in its use. This highlights the importance of user training when equipment is procured (or donated). All equipment must be provided with basic user training in operation and maintenance procedures.
- In other cases new equipment was just being stored with no apparent urgency to commission it to service.
- Little evidence was found of operator manuals or even basic instruction sheets for Medical Equipment.
- There was no evidence of forward planning of equipment requirements (i.e. no “wish lists” for medical equipment have been provided.)

## Recommendations

1. That Stakeholder consultation for Medical Equipment include the following Considerations:

- Needs analysis/development of “Wish List”/ prioritisation Clinical Services Plan needs to be undertaken before equipment lists can be finalised.
- Sustainability i.e. ongoing support costs/ consumables/ maintenance/ training.

2. That the budget component for medical equipment be defined as a matter of urgency:



*Store room full of medical equipment*



- A preliminary estimate of equipment needs for the “generic” 24 bed unit design described in the Design Brief has demonstrated that the procurement budget for medical equipment is far short of this estimate.
3. That Procurement Planning consider the following general principles:
    - Medical Equipment should be low maintenance, robust equipment. (Maintenance difficulties in Timor-Leste have been well documented elsewhere).
    - It may be better to dispose of some identified items rather than repair.
    - There is a need to remove unserviceable equipment from site – A Policy in this regard may need to be developed.
    - Coordination with PMT, of procurement from other sources (e.g. *WHO, other potential donors (St. John of God)*).
    - Standardisation (e.g. x-ray processors – multiple bench top better than single sophisticated). Standardisation of equipment models (where possible) across all sites will assist with maintenance plans and may also offer “economy of scale” advantages at procurement – both for capital purchase and for ongoing consumable supply.
    - Purchase sophisticated equipment with maintenance contracts.
    - Establish a library of user manuals and service manuals.
    - Include both basic maintenance and user/operator training as part of the equipment commissioning programs.
  4. That Donation Guidelines be (re)developed as a simple language document.
  5. That operational procedure to enforce equipment donation guidelines is implemented. This will facilitate the MoH to coordinate and manage the equipment donations as part of a sustainable Medical Equipment Plan.
  6. That a Medical Equipment Disposal Plan needs to be developed. This will require a centrally coordinated process for disposal of equipment with operational procedures to ensure that, when a piece of equipment reaches the end of its economic life, it is; removed from service; noted as such on the equipment register; and disposed of in an appropriate manner. The practice of storing unrepairable equipment “just in case” should cease.
  7. That a formal Equipment Register be developed as part of the equipment planning exercise. This will assist in the development of equipment plans during and post the redevelopment project, so that MoH can specify precisely its equipment needs and the conditions under which MoH will accept medical equipment donations.
  8. That the establishment of at least a basic level of technical maintenance services becomes a MoH priority. This will extend the economic life of equipment, result in better performance during that economic life and provide a degree of safety in the use of the equipment. It will also assist in reducing recurrent costs. It is preferable that MoH establish a local centrally managed service facility rather than relying on overseas operators.
  9. That training needs be assessed for staff for the new equipment to be purchased for hospitals that don't have this type of equipment such, as x-ray, operating theatre monitors, anaesthetic machines etc. A training program must developed at least 8 months prior to the hospitals being opened which will allow training for doctors, nurses and ancillary staff to be conducted either in DILI or in the districts. Training on x-ray equipment alone takes approximately 2 months and this will allow doctors and nurses to take basic x-rays only, in a safe manner.



## 4.00 ARCHITECTURAL

### 4.01 DESIGN BRIEF REVIEW

The Preliminary Design incorporated the proposed adjustments to the scope of the Design Brief so as to propose a fully sustainable and appropriate health facility that can be achieved within the budgetary constraints. There has been no variation to the functions proposed in the Amended Design Brief and the Amended Preliminary Design No. 2. Building areas have been controlled so as to remain almost exactly as per the QS estimate prepared in May 2004 .

#### Oecussi Referral Hospital : Areas Review

Design Stage	Total Internal Areas (sqm)	Total Covered Areas (sqm)	Total (sqm)
Design Brief	2,120	700	2,820
Amended Brief	1,560	118	1,678
QS Review 24.05.04 (Budget Estimate)	1,773	544	2,317
Preliminary Design No. 2	1,844	931	2,775
Final Design	1,776	1060	2,836

The Final Design proposes a total internal area of 1776sqm compared to the 2,120 sqm proposed in the original Design Brief. The reduction in total internal areas required under the Preliminary Design Approval has almost been achieved with the Proposed Final Design being only 3sqm over the required 1773sqm. The use by the Quantity Surveyor of the 1:200 scaled plans and elevations, as opposed to numerical areas, in the preparation of budget estimates has ensured estimates accurately reflect proposed areas.

Covered areas come to a total of approximately 1060 sqm., which is almost 360sqm over the original Design Brief. The difference is predominantly due to the pavilion style of design proposed by the consultancy team as opposed to a more centralised strategy suggested by the Design Brief. The provision of covered areas in the accepted Final Design has been reviewed by both user groups and the PMU and reductions made. During the preparation of construction documents the extent of and budget estimates for covered areas will be closely monitored and if necessary further reductions made as required to ensure budget constraints are met.

The schedule of adjusted hospital services and their proposed areas are detailed in the area sheets bound into the Final Design Drawings.

### 4.02 DEVELOPMENT OF GENERAL BUILDING SYSTEMS AND MATERIAL SELECTION

The general building strategies proposed in the Preliminary Design have been further developed with inputs from the Structural Engineer, Services Designers and the Quantity Surveyor. The pavilion style of buildings connected by covered walkways and deep verandas has been well received.

The gable roofs of all main buildings have been set at 17.5 degree pitch. Where natural light and ventilation is required a high level roof light has been included in the design. These simpler roof forms allow for ease of construction as well as for future expansion to the ends of the buildings. Most buildings employ a 3m springing point.

The windows are to be an adjustable glass and metal louvre system in most cases rising from a 1m sill to a 2600 head approximately allowing the windows to be adjusted as required. All windows are to be fitted with flyscreens. Where sills are below 1m it is proposed that metal louvre blades may be substituted for the standard glass blades to inhibit sun penetration and give greater privacy to building occupants.

The priority to design all buildings to be climatically appropriate and where possible naturally ventilated is held by, the design brief, World Bank Consultants as well as the consultancy team. The





inefficiencies of louvres for air conditioned spaces have been noted, but the need to ensure the buildings ability to operate during AC down times and the priority to standardise building elements has justified their continued inclusion.

Walkways have been simplified from the preliminary design to a lightly barrelled design. This maximises path cover and provides lower eaves to protect users. This simple construction system is to be repeated as roofs for both the bin store and generator / fuel tank buildings.

Sun shading will be required predominantly on the western and eastern facades and is to be a simple free standing metal post and frame system set off approximately 600 from the building line. Where high level windows require shading a similar screen system will be bracketed off the wall framing.

### Summary of proposed materials

<b>Structural</b>	<b>Material / Substrate</b>	<b>Finish</b>
<b>Wall Framing</b>	Cold Formed - Formed Stud Framing 75mm and 90mm	Factory cold galvanised
<b>Roof Framing</b>	All steel construction	
<b>Rafters</b>	Hot Rolled steel profiles to Engineers specification. Where exposed at eaves sections to be taper cut.	Site Painted with rust inhibiting paint system.
<b>Purlins</b>	Cold Formed C and Z purlins	Factory cold galvanised
	Rectangular Hollow Section purlins where exposed at building eaves	Factory cold galvanised and site painted with rust inhibiting paint system.
<b>Ceiling Framing</b>	Cold formed steel battens	Factory cold galvanised
<b>Floors</b>	On ground concrete slabs with edge beams	Where exposed, slabs to be clear sealed to limit staining and dust release.
<b>Insulation</b>	All external walls are to be insulated with insulation batts. Roofs are to be insulated with combined sisalation and insulation blankets. -	

<b>External Finishes</b>	<b>Material / Substrate</b>	<b>Finish</b>
<b>Walls</b>	Metal Wall Sheeting. Profiled steel sheeting in Colorbond is proposed. Cladding is to run both vertically and horizontally to add visual interest to the project.	Prefinished
<b>Feature Walls</b>	Compressed Fibre Cement. Where recesses in the plan occur external wall linis are to be of a 9mm butt jointed CFC product allowing for feature colours to be paint applied.	Painted
<b>Roof</b>	Metal Roof Sheeting. Deep profiled steel sheeting such as Stramit Longspan 0.42BMT in Colorbond is proposed. Cladding is to run both vertically and horizontally to add visual interest to the project.	Prefinished
<b>Soffits</b>	Generally building eaves to be unlined. Where roofs are over waiting or	Prefinished



	work areas roofs to be insulated and soffits of ply or prefinished profiled metal sheeting.	
<b>Sunshading</b>	Freestanding metal posts approximately 600 from building line. Screens to be made of metal perforated sheet over steel angle frames.	Site Painted with rust inhibiting paint system.
<b>Floors</b>	Generally external floors to be broom finished concrete with a paint on sealant to minimise staining and cement dust release.	Where exposed, slabs to be clear sealed to limit staining and dust release.

<b>Internal Finishes</b>	<b>Material / Substrate</b>	<b>Finish / Notes</b>
<b>Walls</b>	High Impact areas: 9mm water resistant fibre cement with corner guards. Low impact Areas: 6mm water resistant fibre cement.	Painted
<b>Walls – Wet Areas and Clean Rooms</b>	9mm water resistant fibre cement sheeting or Resin or Laminate Panel.	Painted.  Prefinished.
<b>Floors</b>	Ceramic Tiles. It is proposed to use ceramic floor tiles in all internal areas including clinical spaces.	Ceramic Tiles Nom. 200 x 200 square
<b>Skirtings</b>	Ceramic Tile Skirtings. Coving if required.	Ceramic Tiles Nom. 200 x 200 square
<b>Windows</b>	Adjustable Aluminium framed Louvre system. Glass and metal louvre blades with external aluminium fly screens.	Factory Finished.
<b>Doors</b>	Solid Core door leaves. Vision panels and hardware as noted in Design Drawings	Painted.
<b>Door Frames</b>	Pressed Steel Frames	Painted
<b>Ceilings</b>	9mm ply to both flat suspended and raked ceilings	Painted

<b>Fixtures / Fittings</b>	<b>Material / Substrate</b>	<b>Finish / Notes</b>
<b>Wet Benches</b>	Stainless Steel benches and upstands on ply substrates on stainless shs frames	Integral
<b>Dry Benches</b>	Laminate on painted shs steel frames	
<b>Hydraulics</b>		
<b>Toilet Pan</b>	Stainless Steel	European style pans without cisterns
<b>Hand Basin</b>	Stainless Steel wall hung on galvanised metal fixing brackets	
<b>Mandi</b>	Stainless Steel wall hung on galvanised metal fixing brackets	
<b>Electrical</b>		
<b>Lighting</b>	Internal to be T5 low energy lighting.	
<b>Ceiling Fans</b>	Electrical Ceiling fans	



### 4.03 DEVELOPMENT OF FINAL DESIGN: INTERNAL PLANNING

The internal planning of all hospital buildings presented in the Amended Preliminary Design No. 2 has been well received by both user groups and World Bank Reviews. Other than detailed planning issues relating to the 1:50 layouts almost all

Feedback from the Maliana and Maubisse regional hospitals User Groups and the MoH have provided the main direction for design development. The strong consistency between feedback from both the Maubisse and Maliana User Groups has suggested that there will be parallels in the general concerns and aspirations between regions.

#### **Building 1: Administration**

There has been no change to the Administration building planning since the Amended Preliminary Design No.2.

#### **Building 2: Outpatients**

Following the re-orientation of Administration confirmed in the Amended Preliminary Design No.2, the internal planning of this building has been adjusted. A deeper eave and veranda along the northern elevation provides greater covered waiting area and also allows covered access to the new facilities, block requested by users, at the eastern end of the building. The area of specimen collection room has been increased as requested during reviews and the laboratory has a designated locker room / air lock for staff. No changes to the other functions included within the building.

#### **Building 3: Accident and Emergency**

Following from reviews and structural standardisation, the plan has been enlarged slightly to allow for a larger X ray room and a wider space allocated for the resuscitation bays. The two staff toilets in this building have been replaced by a single people with disability bathroom providing a toilet and shower. There is also now inclusion of a services cupboard opening off the covered link to secure the tanks for reticulated medical gases as required.

#### **Building 4: Operating Theatre**

There has been a very minor detail change to the Operating Theatre building since the Amended Preliminary Design No.2.

#### **Building 5: Inpatients**

There have been a number of changes to the planning of this building since the Amended Preliminary Design No. 2. This has been primarily driven by the need to reduce the total area of the building. The design of the Isolation facilities as already noted in Health Planning as well as the changes to Maternity and the general ward ensuites. Other minor internal replanning of Inpatients service areas including the reduction in area of training room and inclusion of baby baths in both this room and the maternity suite. The main corridor has been narrowed by approximately 200mm to reduce building area and the location and size of the staff rest room has been adjusted.

#### **Building 6: Mortuary**

There has been no change to the Mortuary building planning since the Amended Preliminary Design.

#### **Building 7: Laundry and Store**

There has been no change to this building planning since the Amended Preliminary Design.

#### **Building 8: Kitchen**

There has been no change to the Kitchen building planning since the Amended Preliminary Design.

#### **Building 9: Support Services**

There has been no change to the Support Services building planning since the Amended Preliminary Design.



### Building 10: Staff Recreation Area

The internal planning of this building has been modified to allow for a male and female locker room, wc's and shower cubicles.

### Building 11: Visiting Relatives and Public Area

Minor adjustment to the area of the main covered area as well as the inclusion of two laundry sinks and bench space to the wall behind the male and female WCs.

### Building 12: Incinerator

To be relocated to adjacent to the new Bin Store, Building 14.

### Building 13: Generator and Fuel Store

The generator building employs a similar structural system to the covered walkways over a ground slab. Enclosed on three sides with metal fencing mesh the wall facing the ward areas of the hospital is to be of either solid masonry or heavily insulated metal framed and clad wall.

The Fuel Tank is to be installed on a concrete slab with nominal 600 high concrete bunding around the perimeter. The roof over will be a continuation of the generator building. The tank will not be enclosed with fencing mesh.

### Building 14: Bin Store

Identified in the original Design Brief, this services building has been designed and located on the site for the Final Design. Employing the same structural system used for the covered walkways this light steel framed structure will provide shade and enclosure to the waste storage bins.

Allowance in plan areas has been made for the use of a standard bin such as a 120 litre upright Sulo bin or similar which can be provided colour coded so as to identify what type of waste it is to be used for.

A wash out bay has been included in the bin store to facilitate regular maintenance of bins.

## 4.04 PROVISION OF TOILETS and HAND DRYING

Location	Toilets	Shower / Bath	Handbasin	Laundry Sinks
1.0 Administration	1 x staff unisex	NA	1 x type 2	NA
2.0 Outpatients	1 x male 1 x female 1 x PWD 1 x clinical	NA	2 x type 3 9 x type 1	NA
3.0 Accident and Emergency	1 x PWD	1 x Sh.	8 x type 1	NA
4.0 Operating Theatre	1 x male staff 1 x female staff	1 x male Sh. 1 x female Sh.	3 x type 1	NA
5.0 Inpatients	1 x staff unisex 1 x PWD 9 x wards	9 x wards	10 x type 2 18 x type 1	NA
6.0 Mortuary	NA	NA	NA	NA
7.0 Laundry	1 x male staff 1 x female staff	NA	1 x type 3	2
8.0 Kitchen	NA	NA	NA	NA
9.0 Services	NA	NA	NA	NA
10.0 Staff Facilities	1 x male 1 x female	1 x male Sh. 1 x female Sh.	1 x male 1 x female	NA
11.0 Relatives Facilities	1 x male 1 x female	NA		2
12.0 Incinerator	NA	NA	NA	NA
13.0 Generator	NA	NA	NA	NA
14.0 Bin Store	NA	NA	NA	NA



**Hand Basin Ensemble Type 1** – As depicted in the architectural drawings. A wall panel, wall mounted basin, exposed waste pipe, lever tap (cold water only), soap dispenser, glove dispenser, towel dispenser.

**Hand Basin Ensemble Type 2** – As depicted in the architectural drawings but without the glove dispenser. A stainless steel mirror is to be positioned in its place.

**Hand Basin Ensemble Type 3** – As depicted in the architectural drawings but without towel dispenser. This is to be confirmed during documentation phase.

Hand washing is acknowledged in the Brief as a priority in the establishing of good clinical practice and the positioning of hand basins has been to help facilitate this objective. The need to dry hands and the method to be employed has been reviewed by the consultancy team. Refer Appendix 8.04 Analysis of Hand Drying Options. The PMU and World Bank Consultants have all indicated a preference for the continuous fabric hand towel system. The ability of the Hospital to manage and maintain this system of hand drying must be seriously considered by the MoH.

## 4.05 DESIGNING FOR FUTURE EXPANSION

The site master plan and the design of individual buildings have all been further developed and reviewed with future expansion as a key priority. This has been illustrated in the Final Design No. 2 Drawings.

The simplification of roof forms, establishment of building structural grids and the minor adjusting of internal planning in most buildings allows for future expansion as either a gradual process of incremental expansion or as a substantial staged redevelopment. Future expansion requires minimal demolition of existing facilities and in most cases simply requires the removal of non structural wall framing and linings. Where highly serviced buildings such as the Operating Theatre may be extended, internal planning has allowed for walls and rooms containing services to be located so as to be retained and will not need duplication in future buildings.

## 4.06 SUNSHADING ANALYSIS

The buildings have been analysed using computer modelling of sun penetration. In most instances the deep 1500 eaves to the northern and southern elevations ensure minimal sun penetration before 8am and in almost all cases no penetration afterwards. Where this is a problem, such as in the wards building where low sills allows sun in, it is proposed that metal louvres are to be used instead of the standard glass louvres, to act as shading while still allowing air circulation.

Where solar penetration is experienced on western and eastern elevations, in particularly the Administration building, a system of freestanding metal posts supporting steel angle frames covered with perforated metal mesh is proposed. Able to block the sun yet allow ventilation, these frames will also be easily fabricated and have the capacity to be locally produced.

# 5.00 ENGINEERING

## 5.01 CIVIL ENGINEERING

### Earthworks

Detailed topographic survey for Maliana Hospital site has been completed. The site has a slight fall across the site that will not require major earthworks to establish suitable building platforms. From a visual inspection of the site by the project manager it is assumed that hard rock should not be encountered in the bulk excavation and that the works will be able to be preformed with earth moving plant currently available in Dili.





Building platforms will be set out to establish balanced cut and fill operations with the platform required to be compacted by controlled watering and rolling to obtain 98% standard compaction under building slabs. A reduced standard of compaction may be acceptable for general platform areas.

Cut and fill batters will be constructed to allow ease of maintenance and to reduce the risk of scour. Depending on site conditions these batters should be no steeper than 1 vertical: 3 horizontal. Use of retaining structure will be limited to areas where building proximity does not allow batters to be established. No retaining structures are proposed for this site.

### **Stormwater Drainage**

Stormwater will be controlled over the site via a system of open grass lined drains. Stone pitched open channels will be introduced where higher flows are to be contained or where there is insufficient area available for the grass lined drain.

All embankments will be provided with cut-off drains to control flows and reduce scour on the embankment face.

The open drains will require small box culverts where pedestrian paths cross the channel.

Concrete invert crossings are proposed where the drains cross the internal service road. These styles of road crossing provide a low cost solution with a very low maintenance requirement. They also reduce the total depth of drain compared to a more traditional culvert solution, which is important at this site because of the very limited fall available over the site. A piped or in-situ box culvert is proposed for the entry road crossing of the table drain.

Site drainage design will be coordinated with requirements for absorption/transpiration trenches required for the site sewage disposal system. Initial discussions have been held with the Hydraulics Engineer to coordinate this issue.

Design flows will be based on 1 in 10 year events for open drains and 1 in 2 year events for culvert capacity. Stormwater from the site will be discharged to the nearest available existing drainage feature.

All building platforms, embankments and other areas affected by the works should be topsoiled and grassed to control surface erosion.

### **Roadways**

Vehicle access and pedestrian access will be provided to the site. Pedestrian access will be included in the landscaping design for each site, with a network of concrete paths and covered walkways to be developed to match pedestrian flows.

The main vehicle access and emergency vehicle access will be provided from the existing road to the North of the site. Service vehicles to the laundry, kitchen and morgue will be provided with access off the existing gravel road adjacent to the site. There will be limited provision for onsite parking to accommodate 8 vehicles, motor bikes plus an emergency vehicle. Layouts allow for future expansion of parking meeting expected increases in private vehicle usage.

Roadways will be constructed using compacted road base as the small quantities and anticipated low traffic volumes would not justify the high cost of mobilising bitumen spray equipment to the necessary site. Roads will be provided with flush kerb. Kerb and channel will be provided for necessary drainage control.



## 5.02 STRUCTURAL ENGINEERING

### DESIGN STANDARDS

There has been no change to the design standards proposed in the Amended Preliminary Design Report

### PROPOSED CONSTRUCTION SYSTEMS

Locally available construction materials of quality suitable for inclusion in this project are limited to imported products, typically sourced from Australia, Indonesia or Singapore.

Although most existing construction in Maliana utilises rendered masonry, we are proposing the use of light weight steel framing for the following reasons established in the Preliminary Design Report.

#### Floor Slab and Footings

Designs have been completed for reinforced concrete raft slabs for each building on the site. The design assumes a Class M site as discussed in the Preliminary Design Report. This design will be confirmed once geotechnical investigation reports are received.

The slab is 100 mm thick with 400 mm deep integral beams on a grid of approximately 6 metres (max). Localised slab thickenings are provided to slab set downs, concentrated load points and localised column loads which may not coincide with beams.

A concrete grade of 25 MPa is proposed.

### BUILDING FRAMING

#### Roof Sheeting

Roofing comprises deep corrugated profiled steel sheeting supported off cold formed C purlins. Deep profiled sheeting is preferred because of superior span capabilities and better rainwater discharge capacities when compared to more traditional corrugated roofing. The cost differential of less than \$2/m<sup>2</sup> is considered good value when compared to the superior profile characteristics.

#### Purlins

The steel sheeting is supported off cold formed galvanised steel C purlins in the plane of the main roof beams. The design is standardised on the use of C15012. Although a smaller section is feasible for internal spans, the use of a consistent purlin depth allows other battening and ceiling details to be standardised across the project. A 150 mm deep profile is required for the barge detail proposed in the architectural design.

#### Frames

The main rafters are 150 or 180 Universal Beams or Parallel Flange Channels, depending on the building and location. These are provided on a 3 to 5 metre grid depending on Architectural requirements.

The rafters are supported by SHS columns to be built into walls.

#### Barge and Eaves Details

Architectural design of the buildings requires a large eaves and barge overhang. Because of the scale of the buildings, it is also desirable to limit the depth of framing to these elements. It is also proposed that the eaves and barge soffit be unlined to reduce costs and limit requirements for ongoing maintenance.

Structural framing for these elements was required to meet the following criteria:

- Minimal framing depth,
- No ledges for bird or insect nesting,
- Purlins to be within the depth of the rafter element,



- Provide adequate strength and stiffness for design loading conditions (wind and maintenance live loads),
- Limit/remove requirements for on site welding.

The fabricated T (eaves) and cantilever RHS (barge) detail developed in conjunction with use of light gauge RHS purlins of the exposed roofing elements meets these criteria.

### **Bracing**

The principal bracing for the building superstructure will be provided by using the plywood ceiling and wall linings proposed by the current Architectural design. A final design and layout of these elements will be undertaken as part of the final documentation.

Bracing for the Staff Shelter will utilise portal action of the main frames in the direction of these frames and portal action with RHS beams to be provided at the knee of the main frames for rigidity in the transverse direction.

### **Walls**

Roof loads will be carried to the slab via RHS columns built into light weight steel framed walls. These walls will be utilised to brace the buildings. External walls will utilise a 92 mm deep steel stud. End walls will rely on lateral support of the studs at eaves height either by bracing through framed ceilings or via a steel RHS sub frame build into the walls. Internal walls will utilise a 75 mm stud, supported laterally by framed ceilings or via a steel RHS sub frame build into the walls.

External walls will require secondary support elements around large openings. These will be RHS members built into and supporting the wall studs.

### **Ceiling**

Air conditioned rooms will be provided with a flat framed ceiling to reduce the room volume and thus reduce the size and operating costs for air conditioners. This framed ceiling will consist of light weight steel purlins supported off the stud walls. Hanging beams, supported from the main rafters, will be used to provide intermediate support to longer span ceiling joists. Detailed sizing for ceiling framing elements will be undertaken in conjunction with the documentation phase.

Areas not required to be air conditioned will be provided with a raked ceiling supported off the roof purlins via a system of steel battens. The design requires this ceiling to be below the main rafter to remove any boxing and reduce the number of ledges etc which may collect dust or be a cleaning hazard.

## **6.00 BUILDING SERVICES**

### **6.01 MECHANICAL**

#### **Air Conditioning Systems**

Air conditioning will on a room by room/area basis and will be by proprietary Split Systems, selected for energy efficiency. Refer Appendix 8.01 for system analysis. The extent of air conditioning has been determined during the design phase. Areas to be air conditioned includes the offices in Administration, Pharmacy, the Laboratory, Consulting rooms, the entire Operating Theatre Building, X-ray, Maternity, the kitchen office and the Mortuary should be serviced by split air conditioning systems.

It is proposed that if possible the Operating Theatre be fitted with specialised air conditioning systems. These air conditioning systems will conform to Australian Standards with high quality filtration and a High Efficiency Particle Arrestance (HEPA) filter fitted to the air outlet in the Operating Theatre. The system will be designed to operate on 100% outside air or, when conditions permit, a mixture of outside air and return air. The use of a mixture of outside air will reduce running costs.



The Operating Theatre will be kept at a positive pressure of +15 Pa to the adjacent spaces with a pressure gradient of +15 Pa per room to outside.

It is also proposed that all systems in the Operating Theatres be fitted with dual compressors and refrigerant circuits to allow operation, albeit at reduced capacity, in the event of a component failure.

Air conditioners will be fitted with a comprehensive set of operating controls with such features as valves to compressors, charging ports, etc to facilitate maintenance.

### Proposed Extent Of Air Conditioning

Building	Room No.s
01 Administration	01-03 Meeting 01-04 Admissions Discharge 01-05 Resource Room 01-08 Office Director Of Nursing 01-09 Office Director of Services 01-10 Office Director of Hospital
02 OPD	02-05 Laboratory 02-06 Pathology Collection 02-10 Consulting Room 1 02-11 Consulting Room 2 02-12 Consulting Room 3 02-13 Consulting Room 4 02-14 Dental 02-16 Treatment Room 02-17 Pharmacy
03 A & E	03-07 Procedures Room 03-10 Consulting Room 1 03-11 Consulting Room 2 03-16 X-Ray Dark Room 03-17 X-Ray Room
04 OT	All of OT building to be AC
05 Inpatients	05-13 Birthing Suite 05-15 Training 05-16 Nursery 05-27 <i>Treatment Room</i>
06 Mortuary	06-01 Cold Room
07 Laundry	na
08 Kitchen	06-08 Office

### Ventilation Systems

Because of local climatic conditions of Maliana, it is suggested that in occupied areas that are not air conditioned (emergency and wards etc), ceiling fans be considered to supplement the passive ventilation of the building design during summer periods. This will be further developed during the documentation phase. Ceiling fans are reliable, require little maintenance and are inexpensive to purchase and operate.

Louvred windows should adequately control internal temperature conditions during cooler periods of the year, considering the inherent insulating properties designed within the building structures.

### Exhaust Systems

Exhaust systems will be provided in locations such as Laboratory fume cupboards and over high heat loads such as large fixed sterilizers and the Kitchen stoves. Exhaust fans are also being considered for ward ensembles activated by movement sensors to ensure adequate air removal as well as in the Isolation facility where it is a priority that air be removed directly from the wards.

Roof ventilators are proposed over WCs and in the Inpatients Building to vent the corridors.



## Gas Installations

These will be considered in detail during the documentation phase, however the following facilities will require piped bottled gas: - Kitchen, Laundry.

## Medical Gas

Medical Gas (Oxygen) will be locally reticulate to the Operating Theatre and Recovery Room, the Accident and Emergency Resuscitation Bays, and the Maternity Unit Birthing Suite. Enclosures will be adjacent to each building and reticulation to relevant areas will be by integrated pipes to defined points of supply. It is not proposed to reticulate medical gas between buildings.

The gas will be supplied in the appropriate bottles, provided by a contracted supplier. A centralised storage area of 3 square metres will be provided in the services precinct from which the bottles can be distributed on campus.

Discussions held with a Dili based supplier, has revealed that bulk, on site storage maybe the preferred option, depending on geographic location of each hospital facility.

## 6.02 ELECTRICAL

### Design and Wiring Standards

For this hospital, and other hospitals included in this project, it is intended that electrical systems be designed in accordance with Australian Standards, which are mandated in the Building Code of Australia. The building works will be designed in accordance with the requirements of the Building Code of Australia.

### Electrical Supply from the Supply Authority Service

Similar to other areas in Timor-Leste, Electrical Power from the Supply Authority for Maliana is only made available at certain times of the day and then for a very limited time.

The hospital, which will have an estimated peak load demand in the order of 30kVA, will have a direct connection from the Supply Authority. For the safe and efficient operation of the hospital, on site power generation is essential.

### Consumers Mains, Sub-Mains, Distribution Boards, Switchboards, Earthing and Metering

#### Electrical Cable Distribution

The covered walkways, which connect all of the buildings on the site, will be used as the main services truck routes. The electrical cables distribution will generally be in cable containment ducts running immediately adjacent to the roofs of the walkways.

#### Main Distribution Boards

These will be mounted on concrete plinths located in separate building modules. Distribution Boards should be provided with a master key/lock system for increased security and safety.

#### Buildings Distribution Boards

All Building Distribution Boards will be positioned in safe accessible locations and should be manufactured and installed to Australian Standards.





## General Building Lighting

All buildings will be fitted with new high efficiency light fittings complying with relevant Australian Standards so as to provide adequate luminance levels and greatly reduce maintenance and running costs. Refer Appendix 8.02 for system analysis. It is intended that two lighting systems be provided, one for general illumination, and the other a system of low intensity light to allow safe movement at night. Medical task lighting will also be necessary at bedside positions and in clinical areas operating 24 hours.

The high cost of electricity from both the local supply grid and on site generation prioritises the inclusion of power saving devices where possible. Preliminary costings indicate a strong benefit from the installation of movement sensors in all service rooms, bathrooms and ensuites. Able to eliminate switches, sensors are robust able to be set for a designated on-period (nom. 15mins) and while representing a significant capital cost are expected to heavily reduce power needs and provide savings with a pay back period of around two years. This option is to be further investigated during documentation.

## Emergency Lighting and Exit Signs

It is proposed that self contained illuminated exit signs be installed in all buildings at locations to be determined. It is proposed to limit the system to self contained illuminated exit signs at the ends of major corridors and other strategic locations within the buildings.

## External and Security Lighting

A review of the location of security lighting and the need of high mast or area lighting for some areas such as the entry to emergency and the car parking will be performed during documentation. Consideration will also be given to lighting along walkways to assist with safe movement at night. A minimum amount of external building security lighting will also be required. Freestanding solar pillar lights are being investigated so as to minimise cabling and power consumption.

## Medical Lighting Systems

The operating theatre light will be selected under the equipment selection criteria; the electrical contract will provide power wiring and switching and allow wiring the UPS facility. Examination rooms will be supplied with examination lights where required.

## Power Circuits

Power circuits will be provided on an as required basis. It is proposed that a double G.P.O (general purpose outlet) be placed adjacent to every bed and that power outlets be provided to eliminate the need to run power cords across floors, especially at doorways. All power circuits will be protected by residual current devices with high sensitivity devices installed in accordance with the requirements of Australian Standard AS3003:2003; Electrical installations – Patient areas of Hospitals, medical and dental practices and dialyzing locations.

## Power to Specific Equipment

Power to larger items of plant will be run on separate circuits. Where the plant is moveable, or relocatable under normal use, it will be connected via switched socket outlets. Where the item is fixed e.g. operating theatre air conditioning units, it will be hard wired with an isolator installed adjacent to the unit.

## Medical Earthing and Protection Systems

Earthing will generally be in accordance with the requirements of AS3000 "Wiring Rules". Inpatient care units earthing will be in accordance with the requirements of AS3003:2003; Electrical installations – Patient areas of Hospitals, medical and dental practices and dialyzing locations.



## Standby Power/ On Site Generation

Diesel Generator Sets will be installed to provide the Standby Power. The size and configuration of the power generation arrangement will be based on the following options, which will be developed during the Final Design Stage.

- Option 1  
Use of two generating sets sized at about 66% and 33% of full load
- Option 2  
Use of one generator sized at 100% of estimated maximum load with battery charger, storage cells and inverters.

Irrespective of the final solution selected for power generation, the system should be fully automated to allow for the changeover between mains supply and the standby generators, depending upon demand and availability of power from either source.

The generators will need to be housed in their own enclosure to protect them from the weather and to minimise noise. This enclosure should be designed as a separate building, rather than a proprietary enclosure supplied by the generator manufacturer. This option should cost less and afford greater access to the generating set/s for service and maintenance.

## Uninterrupted Power Supplies (UPS)

It is proposed that where needed a UPS (or a number of units) will be provided to serve microprocessor based equipment and sensitive and critical installations, such as the operating theatre lights, and a limited number of power points, e.g. to serve anaesthetic equipment. The extent and exact capacity of the UPS can be determined once an equipment schedule is established in detail.

### Preliminary Schedule of UPS

Location	Preserved Functions	Power Demand
Administration	2 x computers 4 x lights communications	
Outpatients	Laboratory lighting x 4 Laboratory power x 2 computers Laboratory power x 2 refrigerators Pharmacy AC	
Accident and Emergency	Security x 2 lights Security x radio and comms A & E lighting and Equip.	3kVa
Operating Theatre	To be operational	10kVa
Inpatients	6 x lighting 10 x GPO	
Kitchen	General	5kVa
Laundry	4 x lights	
Mortuary		1.5kVa
Essential Services	Water Pump and sewerage	5kVa
<b>Preliminary Estimate of UPS required.</b>		Approx 25kVa

## Design for Improved Operating Costs and Energy Efficiency

It has been established that the cost of power from the electricity Authority is 20 cents per kW/Hr. Dependent upon the cost of diesel fuel, the cost of power from the hospital diesel generating sets will be in the order of 20 – 25 cents per kW/Hr.

These costs are relatively high. In order to minimise the cost of power it will be necessary to select equipment and light fittings which are very efficient.

It is proposed for example that the use of T5 fluorescent lamps along with the associated control gear will offer an energy saving of about 25%, as well as having an increased lamp life (about double) and



greatly improved lumen maintenance. There is an increased capital cost associated with this option; however the simple payback period will be in the order of four years at current costing. The increasingly popular acceptance of these lamps is driving costs down, although the present difference in cost is significant. Movement sensors discussed above are also ways in designing for reduced power consumption.

Careful selection and specification of air conditioning equipment and system design can also result in efficiency improvements of 25%, or better. Common supply of equipment for all hospitals should again result in overall cost savings.

### **Equipment Selection and Standardization**

The refurbishment and new works at Maliana Hospital will be let as a separate construction contract however it is intended to standardise equipment that is common to each of the hospitals under the project, in order to gain advantage of quantity discounts on initial supply costs and stocking/replacement requirements. Standardization of equipment will also offer advantages in ongoing maintenance and training for maintenance staff.

### **Integrated Voice/Data Cabling Systems; PABX/Phone System**

It is desirable to at least install wiring for future telephone and data reticulation. It is preferable that this wiring be built into the structures at the time of construction, rather than add in the future, when they would have to run on the surface, with the attendant aesthetic problems, difficulty in cleaning, etc.

A simple PABX system is inexpensive and the installation of such a system would greatly facilitate efficient operation of the hospital. Without an efficient communication system the hospital could not be integrated into any disaster response system.

### **Nurse Call / Paging**

It is desirable to install a simple nurse / help / fire call system throughout the hospital. If funds do not allow the installation as part of this project, it is suggested that wiring or conducting be installed to allow installation at a later date. This could alert doctors and specialized staff to an emergency when they may be elsewhere in the hospital, or off site but still in the general area. Preliminary costing indicate a simple push button alarm system with its own back up battery supply may be viable.

We strongly recommend the installation of a simple paging system. A basic 5 watt system would be adequate to cover the entire hospital site. Should greater coverage be required a 15watt system can be employed giving coverage of approximately a 5km radius.

Even though coverage is restricted, the consultancy team strongly discourages the use of mobile phones as a method of hospital communication.

The consultancy team does not propose nurse call systems to individual beds in any locations of the hospital.

### **Security System**

A master key system and key locks to drug cabinets and the like is recommended, however any electronic security alarm system can not be justified. Other more sophisticated security and surveillance systems, (e.g. CCTV) are not considered necessary at this time.

### **Fire Protection and Warning System**

Under Australian Building Codes, Fire Hydrants and Hose Reels are only required if the floor area of any one building is greater than 500 square metres. As none of the intended buildings for the hospital exceed this area, hydrants and hose reels are not required.



Due to the nature of construction of the proposed hospital and the relative ease of escape, it is difficult to justify the general installation of an automatic fire detection and alarm system. But specific high risk areas could be considered.

The consultancy team proposes to install centrally located first aid hose reels to provide a degree of fire fighting potential to the complex. This system will draw upon existing supply tanks and will not require duplication of tanks.

Appropriate types of Fire Extinguishers will be installed for each area relative to its usage. Locations will be defined on the bidding documents. Specialized portable extinguishers will also be required in generator room, kitchen and the like.

### **Lightning Protection**

Lightening Protection will be designed to the appropriate Australian Standards but with factors associated with the particular location in Timor-Leste considered.

## **6.03 HYDRAULICS**

### **Soil and Waste Drainage**

It is proposed that the soil and waste drainage systems be designed in accordance with the recommendations outlined by the World Health Organization and generally in accordance, wherever possible, to Australian Standards. A number of systems are available for the treatment of waste. Refer Appendix 8.03 for system analysis.

### **Rainwater Drainage**

All roof surface water will be collected in rubble drains and carried off site via an open drain system. It is not intended to provide gutters or down pipes for control of roof run off. These could be easily installed in the future should rainwater collection become a priority for the MoH.

### **Water Supply**

Water supply will be provided from a reliable off site source. The current water shortage experienced in Maliana and the inability of the municipal water supply to meet the town's needs confirms the need for the existing bore to be reconditioned or an entirely new bore be sunk should this be more cost effective. Water will need to filter and be treated using carbon/submicron filters, which will be installed to provide potable water to laboratories, kitchens, operating theatre and other areas deemed necessary. All buildings should be provided with isolation valves.

### **Domestic Cold Water Supply**

Domestic water services will be provided to nominated buildings, using water pipes manufactured from ABS or PEX material. This should result in a service life of well in excess of twenty years. The extent and locations of supply are identified in the Final Design Details.

### **Non-Potable Cold Water Supplies**

Non-potable cold water supplies will be provided to all buildings requiring a water supply. The extent and locations of supply are identified in the Final Design Details.

### **Domestic Hot Water Supplies**

No reticulated hot water supplies will be provided. Localised hot water will be provided if necessary at selected locations. This is to be confirmed in documentation phase.



## Fire Service

No independent water supply for fire fighting is proposed. Refer above for detailed comment.

## 7.00 PRELIMINARY COSTING

The following costing has been upgraded from those tabled in the original issue of this document. Costing for Maliana has been based upon detailed costings prepared for Oecussi. This will be further developed during the preparation of bidding documentation, at which time the costing can be based upon more detailed information.

### 7.01 ESTIMATE FOR MALIANA HOSPITAL

**Note** : based upon Cost Estimate for Oecussi prepared September 2004.  
: all rates in US\$.

<u>Ref.</u>	<u>Description</u>	<u>Unit</u>	<u>Qty</u>	<u>Rate</u>	<u>Sub Total</u>	<u>Total</u>
	<b>Administration Building</b>					
	<b>Earthworks</b>					
A	Clear site and trim to levels	m <sup>2</sup>	236	2	472	
B	Selected filling in 300mm thick building pad	m <sup>3</sup>	71	10	709	
C	Excavate for ground beam	m <sup>3</sup>	10	2	19	
D	Excavate for sunscreen foundation	m <sup>3</sup>	3	2	6	
E	50mm sand bed	m <sup>2</sup>	178	1	178	
F	02mm polythene damp proof course	m <sup>2</sup>	243	1	243	
						1.628
	<b>Concrete</b>					
A	100mm Concrete ground slab	m <sup>3</sup>	18	100	1.782	
B	Attached ground beams	m <sup>3</sup>	11	100	1.130	
C	Sunscreen foundations	m <sup>3</sup>	3	100	292	
D	Steel trowel finish to ground slab	m <sup>2</sup>	144	1	144	
E	Broom finish to ground slab	m <sup>2</sup>	34	1	34	
F	Formwork to sides ground beam	m <sup>2</sup>	28	8	227	
G	Ditto to 50mm set down in floor slab	m	7	2	14	
H	SL92 mesh reinforcement	m <sup>2</sup>	178	6	1.069	
I	N12 Bar reinforcement to ground beams	t	.38	1.000	381	
J	W6 Ligatures	t	0.07	1.000	70	
K	Cast in column base plate to accurate position.	No	27	1	27	
						5.171

	<b>Structural Steel</b>					
A	75 x 75 x 3 SHS Column	t	0.64	3.000	1.921	
B	75 x 75 x 3 SHS window or sill	t	0.44	3.000	1.307	
C	150 PFC rafter	t	0.78	3.000	2.347	
D	180UB16 rafter	t	1.23	3.000	3.695	
E	75 x 50 x 2 purlin	t	0.52	3.000	1.567	
F	Attached cleats and connections	t	0.36	3.000	1.084	
G	10 x 75 x 200 base plate	No	27	10	270	





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H	C15012 Purlin	m	204	5	1.020	
J	Taper end of PFC or UB	No	19	10	190	
K	75 x 1.2mm steel stud wall frame	m <sup>2</sup>	358	23	8.232	

	<b>Roofing &amp; cladding</b>					
A	0.42BMT Stramit Longspan Zinalume roofing	m2	314	13	3,920	
B	0.42BMT Stramit Longspan Colorbond cladding	m2	229	13	2,858	
C	Raking cutting on last	m	47	2	94	
D	9mm CFC cladding	m2	6	35	210	
E	Combined sisalation and insulation blanket to roof	m2	160	6	961	
F	Sisalation and fixing over purlins	m2	45	3	135	
G	Sisalation and fixing to steel wall framing	m2	229	3	686	
H	Insulation batts and fixing inside wall framing	m2	229	4	914	
J	Ridge flashing	m	22	12	269	
K	Apron flashing with cover flashing	m	19	24	456	
L	Flashing at junction of cladding and roofing	m	76	12	912	
M	Corner flashing to cladding	m	32	12	389	
N	Trim to window	m	108	8	864	
						12,668

	<b>Windows &amp; doors</b>					
A	Breezeway Altair adjustable louvred windows with locking rail	m2	48	110	5,293	
B	Aluminium framed fixed & sliding windows	m2	3	80	240	
C	Aluminium framed aluminium gauze flyscreens	m2	48	75	3,609	
D	Remote controller for high level windows	No	2	100	200	
E	Steel door frame to suit 820 x 2040 door	No	7	56	392	
F	Ditto to suit pair of 820 x 2040 doors	No	1	65	65	
G	820 x 2040 Solid core door	No	9	100	900	
H	Mortice lock and lever furniture	No	6	100	600	
J	Rebated ditto	No	1	120	120	
K	Indicator bolt with emergency release	No	1	50	50	
L	Overhead door closer	No	2	220	440	
M	150mm Flush bolt	No	4	20	80	
N	150 x 820 Stainless steel kick plate	No	10	45	450	
						12,439
	<b>Metalwork</b>					
A	75 x 75 x 3 SHS in sunscreen frame	t	0.57	3,000	1,711	
B	Expanded metal welded to frame	m2	26	75	1,944	
C	2700mm Long bench seat to waiting	No	2	120	240	



	area					
						3,895
	<b>Finishes</b>					
A	6mm Fibre cement wall lining	m2	386	16	6,182	
B	40 x 40 x 3 Aluminium corner guard	m	10	5	48	
C	9mm Raking plywood ceiling fixed to top hat section battens	m2	40	30	1,206	
D	9mm Plywood ceiling on suspension system max 1600 high	m2	108	35	3,780	
E	Cornice	m	132	5	660	
F	Waterproof wet area floors	m2	4	18	65	
G	Ceramic floor tiles	m2	144	12	1,728	
H	Ceramic tile skirting	m	123	3	370	
						14,039
	<b>Joinery</b>					
A	Reception counter	m	3	450	1,350	
B	Kitchen bench unit	m	2	350	630	
C	750 x 1500 Laminated plywood backing board to basin	No	1	25	25	
D	600 x 300 Overhead shelving unit (OB1)	m	4	100	360	
E	600 x 300 Overhead kitchen cupboard (OB3)	m	2	80	144	
F	750 x 750 Bench (Type 8)	m	7	250	1,650	
G	1200 x 1200 Pinboard (PB1)	No	5	50	250	
H	1500 x 900 Whiteboard (WB3)	No	3	60	180	
	<b>Accessories</b>					
J	Toilet roll holder	No	1	20	20	
K	Rotating towel dispenser (includes part cost of rewinder)	No	1	400	400	
L	Soap dispenser	No	1	22	22	
						5,031
	<b>Hydraulics</b>					
A	WC suite	No	1	560	560	
B	600 x 500 x 900 High stainless steel Mandi bathing reservoir	No	1	420	420	
C	Basin Type 3	No	1	650	650	
D	1000 Long stainless steel kitchen sink and drainer	No	1	600	600	
E	Hot water cylinder	No	1	300	300	
						2,530
	<b>Painting</b>					
	<u>Prepare, prime &amp; paint two coats acrylic paint on the following :-</u>					
A	Suspended ceilings 3m above FFL	m2	108	6	648	
B	Raking ceilings maximum 5m above FFL	m2	40	6	241	
C	Fibre cement walls internally	m2	386	6	2,318	
D	Ditto externally	m2	6	7	42	
E	Flush doors	m2	34	7	238	


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F	Structural steelwork	m2	47	7	330	
G	Steel door frame n.e. 250mm girth	m	52	2	104	
						3,921
	<b>Electrical &amp; Mechanical Installations</b>					
A	Note floor areas are inside walls					
B	Electrical installation	m2	144	70	10,080	
C	Mechanical installation	m2	108	150	16,200	
						26,280
	Building No 1 - Administration Cost of building					\$ 109,232
	Cost per m2	US\$	759			
	Building No 2 - Outpatients	m2	281	759		213,355
	Building No 3 - Accident/Emergency	m2	275	759		208,346
	Building No 4 - Operating Theatre	m2	186	759		141,174
	Building No 5 - Inpatients	m2	535	609		325,559
	Building No 6 - Mortuary	m2	49	609	29,597	
	Cold Room	No	1	15,000	15,000	
						44,597
	Building No 7 - Laundry	m2	126	609		76,734
	Building No 8 - Kitchen	m2	84	609	51,156	
	Cold Room	No	1	15,000	15,000	
						66,156
	Building No 9 - Support Building	m2	40	609		24,360
	Building No 10 - Staff recreation area	m2	72	609		43,848
	Building No 11 - Visiting Relatives	m2	54	609		32,886
	Building No 12 - Incinerator	No	1	10,000		10,000
	Building No 13 - Generator	No	1	120,000		120,000
	Building No 14 - Bin storage	No	1	6,000		6,000
	<b>Sub Total for All Buildings</b>					\$ 1,422,247
	<b>External Works</b>					
	<b>Roads and carparks</b>					
A	Bitumen road	m2	747	35	26,145	
B	Concrete kerb	m	344	25	8,600	34,745
	<b>Footpaths and covered ways</b>					
A	Footpath	m2	543	30	16,299	
B	Covered ways	m2	166	70	11,592	27,891
	<b>Sewage</b>					
A	100mm Sewer	m	422	30	12,660	
B	100 Bend	No	83	16	1,328	



MALIANA REFERRAL HOSPITAL FINAL DESIGN REPORT

C	100 Junction	No	32	18	576		
D	Inspection opening	No	7	75	525		
E	Sewage treatment plant	No	1	40,000	40,000	55,089	
	<b>Water reticulation</b>						
A	Note : assume there is a water supply on site						
B	50mm Water main	m	340	14	4,760		
C	25mm Ditto	m	85	10	850		
D	50mm Gate valve	No	6	75	450		
E	25mm Ditto	No	11	50	550		
F	15mm Bib tap	No	8	35	280		
G	Water treatment plant	No	1	10,000	10,000	16,890	
	<b>Electrical reticulation</b>						
A	Cable in conduit in trench	m	169	42	7,098		
B	Cable in cable tray in covered way	m	125	46	5,750	12,848	
	<b>Fencing</b>						
A	Security fence	m	345	45	15,525		
B	Single gate	No	1	75	75		
C	Double gate	No	1	160	160	15,760	
						1,585,470	
	Contingency	%	7.50			118,910	
						1,704,380	
	Overheads & profit	%	15.00			255,657	
	<b>OECUSSI HOSPITAL - ESTIMATED CONSTRUCTION COST</b>				<b>US\$</b>	<b>1,960,037</b>	
<p><i>The Final Design Budget estimated construction cost for Maliana has been projected as being US\$2m. The increase on the Oecussi figure reflects an anticipated increase in transportation costs of approximately 15% . Other key cost variations will occur in site preparation and clearing to allow for an increased extent of demolition as well as in the need to re-establish the on site water supply by reconditioning the existing bore or through the provision of an entirely new bore, depending on which option is most cost effective.</i></p>							
	<b>Cost per m2</b>	<b>US\$</b>	1,061				



## 8.00 APPENDIX

### 8.01 AIR CONDITIONING ANALYSIS

Comparison of Options available;

#### 1. Purpose built air conditioning plant

Relative installed cost = Base x 4.5+

Running and maintenance cost = Base x 2

Advantages:

- Provides conditioned outside air
- Provides room pressurisation, thus minimising the possibility of Contaminated air entering the conditioned space.
- Air supplied into room via HEPA filters eliminating virtually all airborne contaminants, can be arranged to discharge over patient thus providing "Laminar flow"
- Good temperature control, can be upgraded to include humidity control.
- Relative easily sterilised.
- Complies with international best practice and Australian Standards for operating theatres.
- Quiet in operation.

Disadvantages:

- Higher capital cost.
- No "off the shelf" replacement, requires attention of refrigeration mechanic if breakdown. Unit should be designed with two separate refrigeration circuits to provide a level of redundant in the event of a component failure.

#### 2. Split wall mounted /cassette type air conditioner

Relative installed cost = Base x 2

Running and maintenance cost = Base x 1

Advantages:

- Lower capital cost

Disadvantages:

- No outside air introduced without use of an auxiliary outside air fan and filter.
- Outside air fan required to provide positive pressure
- Poor quality filtration, filters only designed to intercept large particulates to stop coils being blocked.
- Very difficult to clean and sterilise.
- Quiet in operation

#### 3. Room air conditioners

Relative installed cost = Base x 1

Running and maintenance cost = Base x 1

Advantages:

- Lower capital cost
- If a standardised unit selected for all projects spare chassis can be kept in central store with quick changeover in case of breakdown using semi skilled personnel.

Disadvantages:

- No outside air introduced without use of an auxiliary outside air fan and filter.
- Outside air fan required to provide positive pressure
- Poor quality filtration, filters only designed to intercept large particulates to stop coils being blocked.



- Very difficult to clean and sterilise.
- Noisy in operation, especially as units age.

### **Recommendation:**

This office strongly recommends the use of Option 1 in high use operating theatres or areas where persons with highly infectious diseases may be treated.

A case for option 2 (or 3, if monetary conditions dictate) could be made in operating theatres with low use or are used for "first aid" purposes. Auxiliary outside air fans and filters required.

We recommend that option 2 (or 3, if monetary conditions dictate) be used in other air conditioned areas. Should the unit be contaminated by exposure to highly infectious diseases special procedures must be in place to allow effective decontamination without undue risk to decontaminating personnel. Where whole buildings are to be air conditioned consideration should be made to using central ducted systems, these offer the advantage of:

- being able to supply adequate amounts of outside air,
- provide good filtration,
- quiet in operation.
- Having fewer components maintenance costs should be reduced.
- Better aesthetics.

## **8.02 INTERNAL LIGHTING SYSTEMS ANALYSIS**

Options available:

### **Incandescent**

Not recommended due to low efficacy of about 13 lumens per watt.

Advantages:

- Low capital cost.

Disadvantages:

- Short life\* (Typically 1000 -1500 hours) and much shorter if subject to over voltage. \* = rated lamp life is point in time when 50% lamps failed.
- High energy consumption, about seven time higher than high quality fluorescent, therefore greater fuel consumption.
- If incandescent lamps used there will be a need to increase the size of the generator.

### **Fluorescent**

Fluorescent lighting systems are currently available with three main types of fluorescent lamps:

- 36 W. Standard halophosphor (T8 or T12)
  - 2,850 lumens initial light output
  - 7,500 hours rated life
  - poor lumen depreciation, about 70% initial lumens at end of life
  - inexpensive to purchase
  - Ballast used in standard fitting use up to 10 Watts, therefore total power used per lamp is 46 Watts.
  - Requires use of starter switches and capacitors, both of which required periodic replacement.
- 36W. T8 Tri-phosphor
  - 3,350 lumens initial light output
  - 15,000 hours rated life
  - good lumen depreciation, approximately 85% initial lumens at end of life
  - lamp and fitting about 16% more expensive than halophosphor equivalent, using iron cored ballast
  - Low loss ballasts use about 5.5 Watts per lamp, therefore total power used power lamp is 41.5 Watts per lamp. At additional cost electronic ballast, which will reduce power consumption, is available.





- Requires use of starter switches and capacitors, both of which required periodic replacement.
- 28 W. T5 Tri-phosphor
  - 2,900 lumens initial light output
  - 20,000 hours rated life
  - excellent lumen depreciation, approximately 90% initial lumens at end of life
  - lamp and fitting up to 300% more expensive than T8 tri phosphor equivalent
  - Lamps operate with electronic ballast at high frequency ( 40 -100 kHz) eliminating any “flicker”
  - Electronic ballasts for this lamp use about 1.5 Watts per lamp, therefore total power used power lamp is about 30.5 Watts per lamp.

We now make a comparison between the 36W. T8 Tri-phosphor lamp and the 28 W. T5 Tri-phosphor lamp.

#### Efficacy

36 W. T8 3,350 lumens / 41.5 W. power consumption = 80.7 lumens / Watt  
 28 W. T5 2,900 lumens / 30.5 W. power consumption = 95 lumens / Watt

#### Cost comparison.

Assumes an installation with 100 single lamp fittings and 100 low brightness twin lamp louvred troffers.

#### Capital cost

##### T8 36 W.

100 x (1 x 36) @ USD \$ 18.20	=	1,820.00
100 x (2 x 36) @ USD \$ 81.20	=	<u>8,120.00</u>
Total	=	9,940.00

##### T5 28W

100 x (1 x 28) @ USD \$ 51.10	=	5,110.00
100 x (2 x 28) @ USD \$ 128.80	=	<u>12,880.00</u>
Total	=	17,990.00

The fittings using the T5 fittings is therefore \$8,050.00 more expensive than the fittings with the T8 lamps. Using the T8 lamps will require a larger generator at additional cost viz.

#### Generator cost:

Total max. demand using T8 lamps ( 300 x 41.5 / 1000) = 12.4 kW  
 Total max. demand using T5 lamps ( 300 x 30.5 / 1000) = 9.15 kW

The generator, if T5 lamps are chosen could be 3.25kW smaller in size; this will represent a capital saving of about \$ 1,875. 00(@ \$ 577/kW)

The net increase in capital cost will therefore be \$ 8,050.00, less the increased generator cost of \$ 1,875. 00 = \$ 6,175.00

Running Cost, Assume 2,500 hours per annum.

##### T8 36 W.

300 lamps x 30.5 W x 2,500 hrs / 1000 (to kW) x 20<sup>c</sup> kWhr. / 100 = \$ 6,225 p.a.

##### T5 28W

300 lamps x 41.5 W x 2,500 hrs / 1000 (to kW) x 20<sup>c</sup> kWhr. / 100 = \$ 4,575 p.a.

Annual saving in running cost = \$ 1,650.00

Simple pay back period \$ 6175 / \$ 1,650 = 3.7 years

Other benefits in using the T5 lamps include the elimination of the use of starter switches, thus reducing maintenance costs.

The longer rated life will again reduce maintenance costs.

In the event of a lamp failing the lamp will switch eliminating annoying "flicker"

The T5 lamp. And associated control gear will operate at normal lighting levels over a wide range of voltage fluctuations.

### Recommendation.

We recommend that T5 type fluorescent light fittings be used for general internal illumination as they offer reduced life cycle costs..

There is an increase in initial capital cost to use these fittings however running costs are reduced and importantly fuel consumption is reduced.

There is an associated decrease in green house gas emissions.

There is a greatly reduced need for maintenance (long lamp life, no capacitors no starter switches).

There are environmental benefits in that the T5 type of lamps contains significantly less mercury than alternatives.

## 8.03 HAND DRYING OPTIONS ANALYSIS

System	Clinical Review	Capital Cost	Waste / Maintenance	Comments
<b>Fabric Towel on Rail</b>	- not acceptable due to high risk of cross infection	- rail \$2.00USD - Towel x 3 Nom \$2.00 each.	- able to be laundered in hospital laundry - towels easily stolen or used for other purposes requiring regular replacement	- to be avoided in all clinical areas.
<b>Paper Towel on Roll</b>	- lower risk of cross infection - long paper rolls can be hard to rip	- Dispenser approx. \$20USD - Paper Towels \$2.00 USD	- paper towel consumption greater than needed due to ripping - waste generated is high and requires regular collection.	- the waste generated and the cost of maintaining the supply of paper towels is high
<b>Folded Paper Towels</b>	- better than paper rolls	- Dispenser approx. \$70USD - Paper Towels \$4.00 USD	- paper towels are more costly than the rolls - waste generated is high and requires regular collection.	- the waste generated and the cost of maintaining the supply of paper towels is high
<b>Continuous Fabric Towel</b>	- if properly maintained low risk of cross infection	- dispenser approx \$150.00 USD - towels x 3 approx \$18.00 USD each.	- towels can laundered in hospital laundry if commercial washers and dryers are to be installed. - A roller / unroller is required costing \$5,000 USD	- when towels ripped they can be easily cut down into cleaning cloths. - Preliminary estimates indicate towels need to be replaced every 12months.



## 8.04 WASTE WATER TREATMENT & DISPOSAL OPTIONS

Throughout the course of this project one of the concerns has related to the handling of waste water and sewerage. Various options have been identified and these have been along conventional means normally adopted:

Two options are :

1. Packaged sewerage treatment plant;
2. Septic systems.

Packaged plants incur an initial capital cost, along with ongoing maintenance costs. These costs are significant and normally require a degree of technical expertise in carrying out maintenance operations.

Septic systems are cheap to install, however, they have limited capacity and require large areas for transpiration / absorption trenches. Liquid waste also leaches into underlying water tables. Further, there is a need to pump out septic tanks when required, which employs specialised equipment. This would be difficult in remote District locations.

Further research has explored the potential use of passive waste treatment systems.

Various systems are available, however, it would appear the technological approach by research groups or companies is fundamentally the same; design solutions are at various degrees of refinement and therefore have no established performance criteria.

However, there are systems available, which have been tested and trialed with sufficient supporting performance data.

Further, these systems have been installed in developing countries fully operational and catering for large community infrastructures.

Accordingly it appears passive systems satisfy the criteria, critical to the outcomes of this project.

These are listed below :

- Low initial capital cost;
- Technology is at a level where there is a low reliance on imported materials;
- Construction can largely utilise local labour;
- System can be maintained by local maintenance staff;
- System has the capacity to manage variable solid waste materials, food waste and normal hospital chemical waste;
- Minimises periodic solid waste disposal in terms of volume and frequency;
- Liquid waste disposal falls within acceptable international standards, thus minimising environmental effects;
- Minimises special requirements for plant installation.

Systems that substantially satisfies this criteria are available in Australia and Asia.

Australian Systems are certified to relevant Australian Standards, whilst Asian Based systems may not be certified to an acceptable government regulatory requirement.

Building documentation shall then stipulate performance criteria, along with the provision of supporting certification by regulatory authorities.

## SCHEDULE OF DRAWINGS

DRAWING NUMBER	DRAWING NAME
FD03.00.00	Cover Sheet
FD03.00.01	Site Survey
FD03.00.02	Buildings to be Demolished
FD03.00.03	Overall Siteplan
FD03.00.04	Site Plan
FD03.00.05	Site Roof Plan
FD03.00.10	Future Site Plan
FD03.GEN.10	Room Elevation Legends
FD03.GEN.11	Room Elevation Legends / Typical Details
FD03.01.01	Administration Plans / Elevations
FD03.01.10	Administration – Public Waiting / Reception / Meeting Room Elevations
FD03.01.11	Administration – Admissions & Discharge / Resource / Clerical Area Room Elevations
FD03.02.01	Outpatients / Community Health Plans / Elevations
FD03.02.02	Outpatients / Community Health and Accident & Emergency / Operating Theatre Elevation
FD03.02.10	Outpatients – Reception / Lockers / Pathology / Specimen Collection Room Elevs.
FD03.02.11	Outpatients – Consulting Rooms 1, 2, 3, 4 / Dental Consulting / Store Room Elevs.
FD03.02.12	Outpatients – Treatment Room / Pharmacy Room Elevations
FD03.(03-04).01	Accident & Emergency / Operating Theatre Floor Plan / Roof Plan
FD03.(03-04).02	Accident & Emergency / Operating Theatre Elevations / Sections
FD03.03.10	Accident & Emergency – Triage / Security Room Elevations
FD03.03.11	Accident & Emergency – Resuscitation / Clean / Dirty Utility Room Elevations
FD03.03.12	Accident & Emergency – Procedure / Consulting Rooms / Store Room Elevations
FD03.03.13	Accident & Emergency - X-Ray Processing / X-Ray / Medical Records Room Elevs.
FD03.04.10	Operating Theatre – Reception & Write-Up / Holding & Recovery Room Elevations
FD03.04.11	Operating Theatre – Operating Theatre Room Elevations
FD03.04.12	Operating Theatre – Wash Up & Decontamination / Clean Up & Instrument Wash / Sterile Pack Area Room Elevations
FD03.04.13	Operating Theatre - Sterile Stock / Scrub-Up / Anaesthetic Work Area Room Elevs.
FD03.05.01	Inpatient Care / Maternity Floor Plan / Roof Plan
FD03.05.02	Inpatient Care / Maternity Elevations / Sections
FD03.05.03	Inpatient Care Sections
FD03.05.04	Inpatient Care Sections
FD03.05.10	Inpatient Care / Maternity – Nurses Station/ Assisted Bath / Nursery Room Elevations
FD03.05.11	Inpatient Care / Maternity – Training Room / Clean & Dirty Utility Room Elevations
FD03.05.12	Inpatient Care / Maternity – Treatment Room / Store Elevations
FD03.05.13	Inpatient Care / Maternity – Six Bed Ward Room Elevations
FD03.(06-09).01	Mortuary / Laundry / Kitchen / Support Floor Plan/ Roof Plan
FD03.(06-09).02	Mortuary / Laundry / Kitchen / Support Elevations / Sections
FD03.(10-11).01	Staff Rec./ Visiting Relatives/ Public Toilets Plans / Elevations
FD03.(13-14).01	Generator Set / Fuel Tank & Bin Storage Plans / Elevations
FD03.GEN.01	Design Consideration
FD03.GEN.02	Design Consideration



# REPÚBLICA DEMOCRÁTICA DE TIMOR LESTE

MINISTÉRIO DA SAÚDE

Second Health Sector  
Rehabilitation and Development Project  
Grant #TF 029888

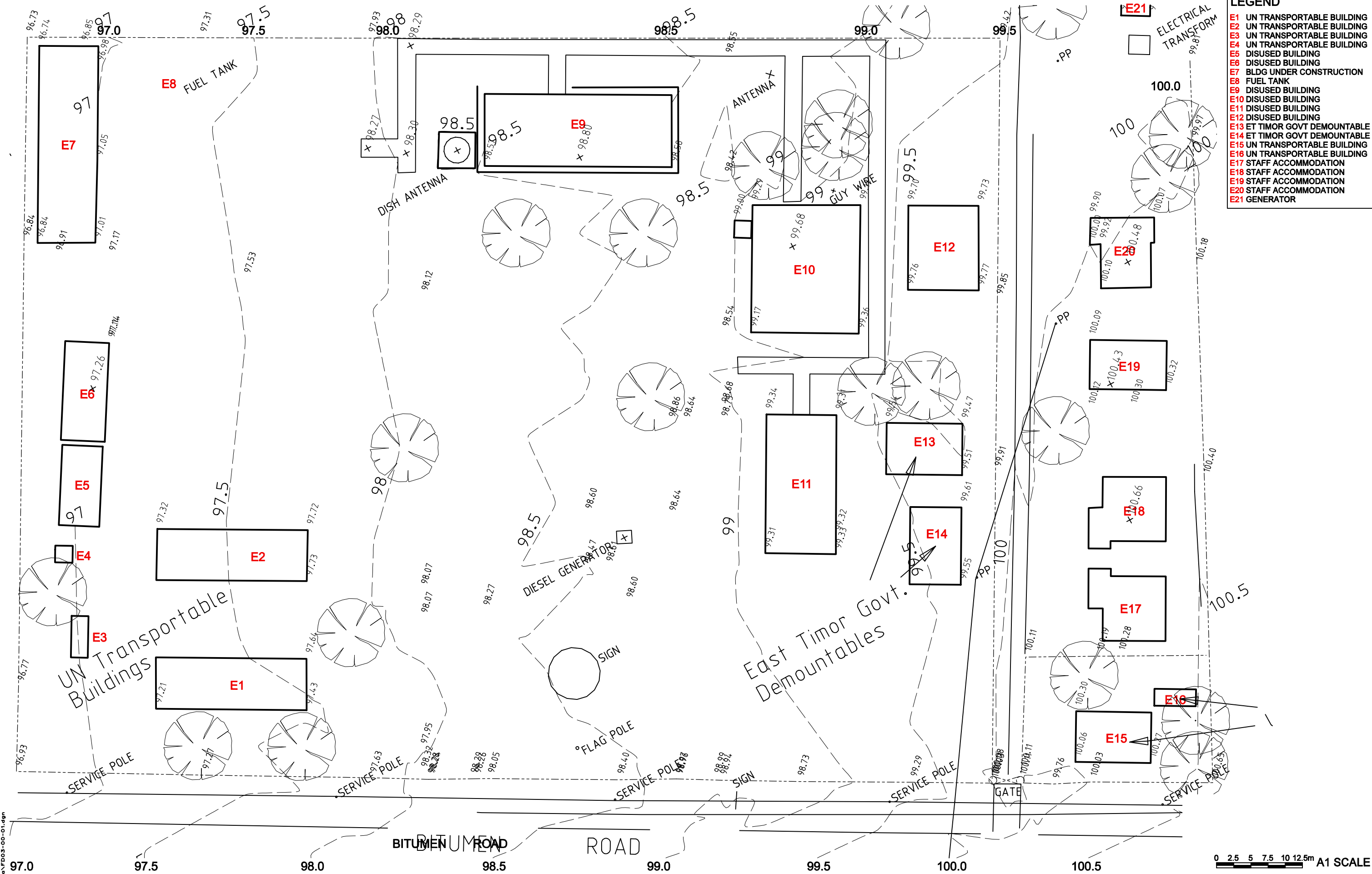


**FINAL DESIGN**

for

**Maliana Referral Hospital**

- LEGEND**
- E1 UN TRANSPORTABLE BUILDING
  - E2 UN TRANSPORTABLE BUILDING
  - E3 UN TRANSPORTABLE BUILDING
  - E4 UN TRANSPORTABLE BUILDING
  - E5 DISUSED BUILDING
  - E6 DISUSED BUILDING
  - E7 BLDG UNDER CONSTRUCTION
  - E8 FUEL TANK
  - E9 DISUSED BUILDING
  - E10 DISUSED BUILDING
  - E11 DISUSED BUILDING
  - E12 DISUSED BUILDING
  - E13 ET TIMOR GOV'T DEMOUNTABLE
  - E14 ET TIMOR GOV'T DEMOUNTABLE
  - E15 UN TRANSPORTABLE BUILDING
  - E16 UN TRANSPORTABLE BUILDING
  - E17 STAFF ACCOMMODATION
  - E18 STAFF ACCOMMODATION
  - E19 STAFF ACCOMMODATION
  - E20 STAFF ACCOMMODATION
  - E21 GENERATOR



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JAMES  
CUBITT  
architects



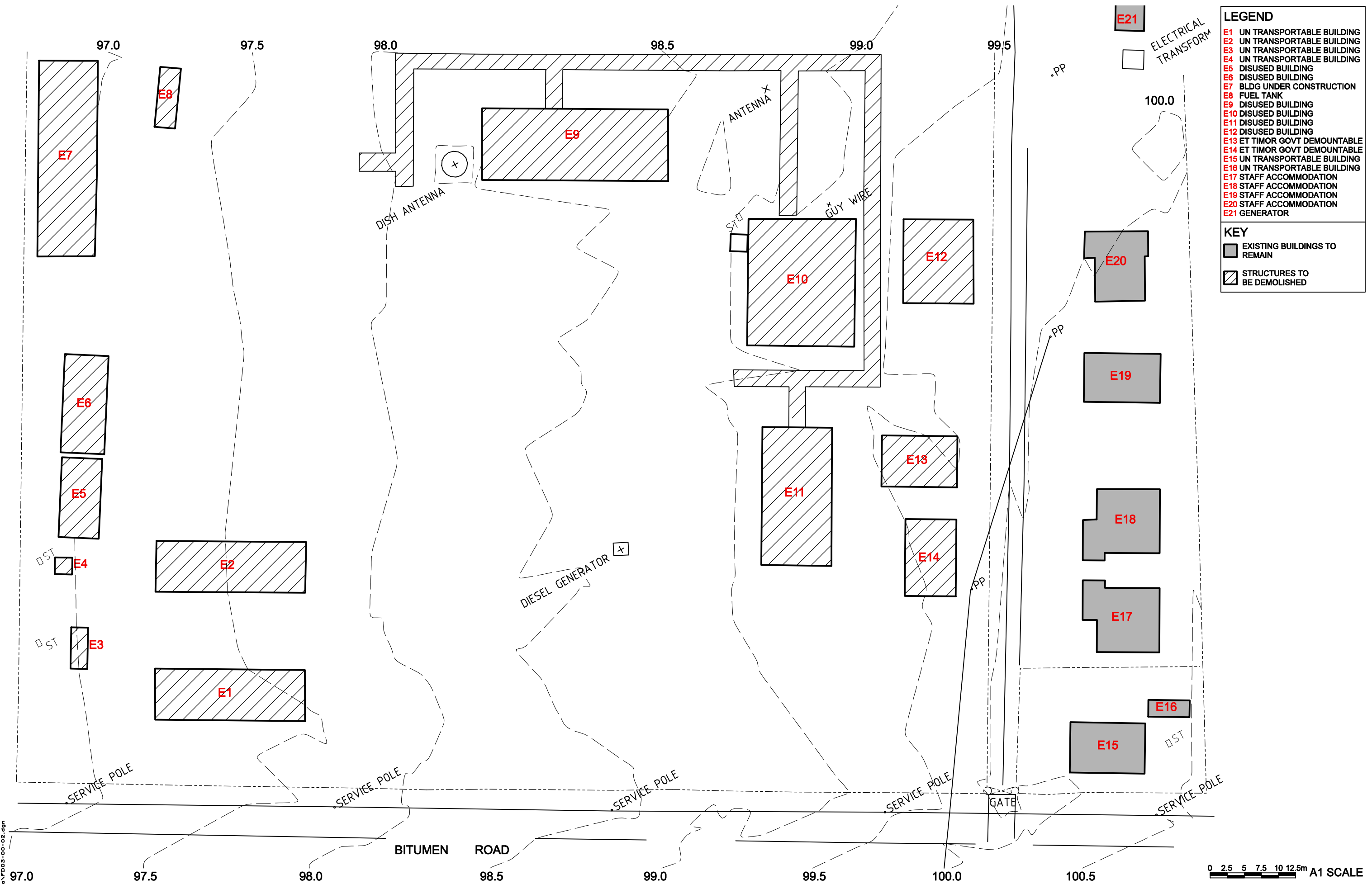
MALIANA REFERRAL HOSPITAL  
SITE SURVEY



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F	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:500 @ A3
E	AMENDED PRELIMINARY DESIGN No. 2	Dwg No. FD03.00.01
D	REVIEW	Issue H

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**LEGEND**

- E1 UN TRANSPORTABLE BUILDING
- E2 UN TRANSPORTABLE BUILDING
- E3 UN TRANSPORTABLE BUILDING
- E4 UN TRANSPORTABLE BUILDING
- E5 DISUSED BUILDING
- E6 DISUSED BUILDING
- E7 BLDG UNDER CONSTRUCTION
- E8 FUEL TANK
- E9 DISUSED BUILDING
- E10 DISUSED BUILDING
- E11 DISUSED BUILDING
- E12 DISUSED BUILDING
- E13 ET TIMOR GOV'T DEMOUNTABLE
- E14 ET TIMOR GOV'T DEMOUNTABLE
- E15 UN TRANSPORTABLE BUILDING
- E16 UN TRANSPORTABLE BUILDING
- E17 STAFF ACCOMMODATION
- E18 STAFF ACCOMMODATION
- E19 STAFF ACCOMMODATION
- E20 STAFF ACCOMMODATION
- E21 GENERATOR

**KEY**

- EXISTING BUILDINGS TO REMAIN
- STRUCTURES TO BE DEMOLISHED

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**JAMES CUBITT architects**



# MALIANA REFERRAL HOSPITAL

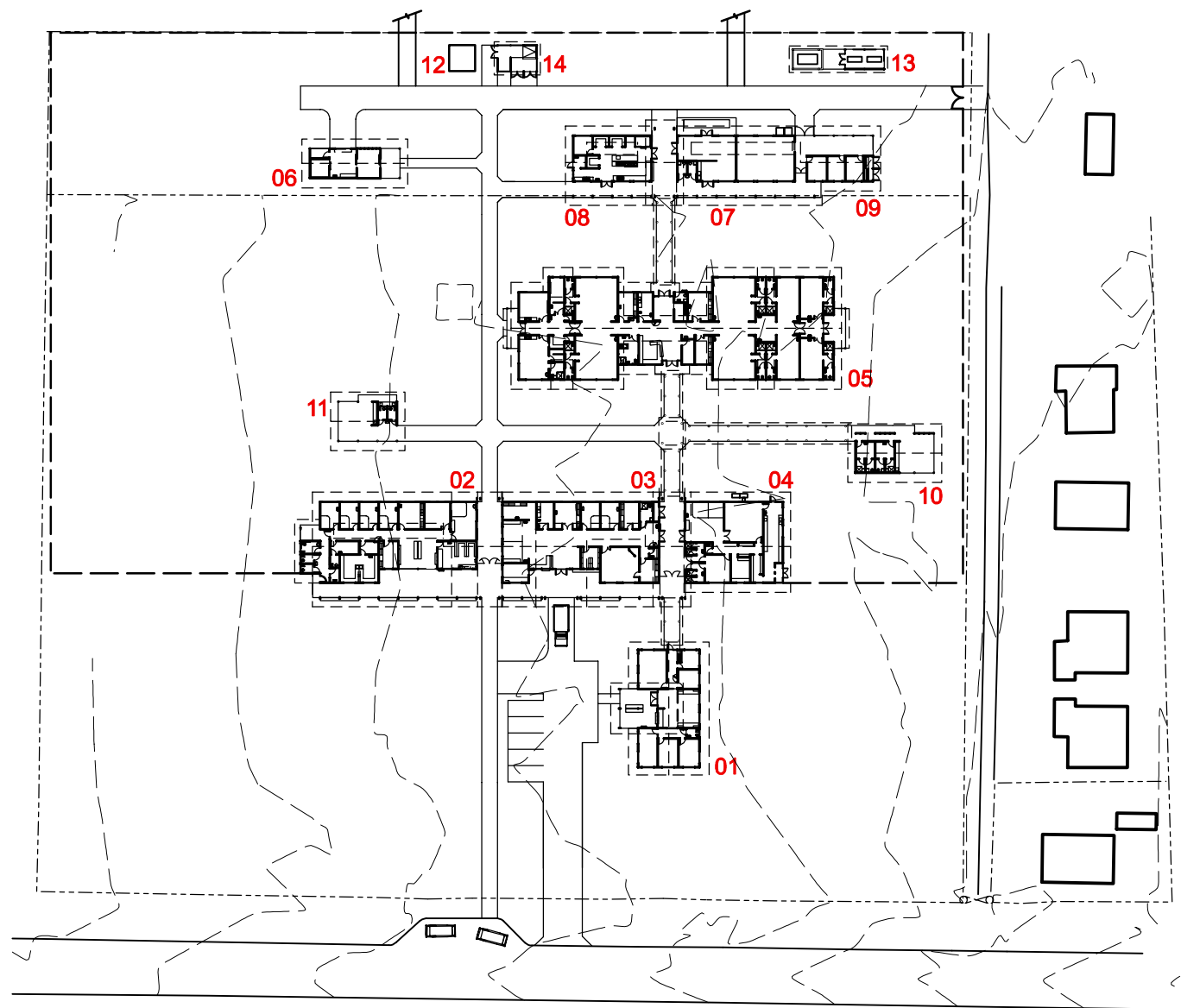
## STRUCTURES TO BE DEMOLISHED



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C	AMENDED PRELIMINARY DESIGN	FD03.00.02
		Issue G

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- LEGEND**
- 01 ADMINISTRATION BUILDING
  - 02 OUTPATIENTS DEPARTMENT / COMMUNITY HEALTH
  - 03 ACCIDENT / EMERGENCY DEPARTMENT
  - 04 OPERATING THEATRE SUITE
  - 05 INPATIENT CARE
  - 06 MORTUARY
  - 07 LAUNDRY
  - 08 KITCHEN
  - 09 SUPPORT BUILDING
  - 10 STAFF RECREATION AREA
  - 11 VISITING RELATIVES / PUBLIC TOILETS
  - 12 INCINERATOR
  - 13 GENERATOR SET / FUEL TANK
  - 14 BIN STORAGE
- LEGEND**
- EXISTING BUILDINGS
- E15 UN TRANSPORTABLE BUILDING
  - E16 UN TRANSPORTABLE BUILDING
  - E17 STAFF ACCOMMODATION
  - E18 STAFF ACCOMMODATION
  - E19 STAFF ACCOMMODATION
  - E20 STAFF ACCOMMODATION
  - E21 GENERATOR
- LEGEND**
- EXISTING BUILDING
  - NEW BUILDING

0 2.5 5 7.5 10 12.5m A1 SCALE

# MALIANA REFERRAL HOSPITAL

## OVERALL SITE PLAN

**JAMES CUBITT**  
architects



F	FINAL DESIGN	Date: 19/11/04
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B	CLIENT REVIEW No. 2	FD03.00.03 <span style="float: right;">F</span>

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- LEGEND**
- 01 ADMINISTRATION BUILDING
  - 02 OUTPATIENTS DEPARTMENT / COMMUNITY HEALTH
  - 03 ACCIDENT / EMERGENCY DEPARTMENT
  - 04 OPERATING THEATRE SUITE
  - 05 INPATIENT CARE
  - 06 MORTUARY
  - 07 LAUNDRY
  - 08 KITCHEN
  - 09 SUPPORT BUILDING
  - 10 STAFF RECREATION AREA
  - 11 VISITING RELATIVES / PUBLIC TOILETS
  - 12 INCINERATOR
  - 13 GENERATOR SET / FUEL TANK
  - 14 BIN STORAGE
- LEGEND**  
EXISTING BUILDINGS
- E15 UN TRANSPORTABLE BUILDING
  - E16 UN TRANSPORTABLE BUILDING
  - E17 STAFF ACCOMMODATION
  - E18 STAFF ACCOMMODATION
  - E19 STAFF ACCOMMODATION
  - E20 STAFF ACCOMMODATION
  - E21 GENERATOR
- LEGEND**
- EXISTING BUILDING
  - NEW BUILDING

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CUBITT  
architects



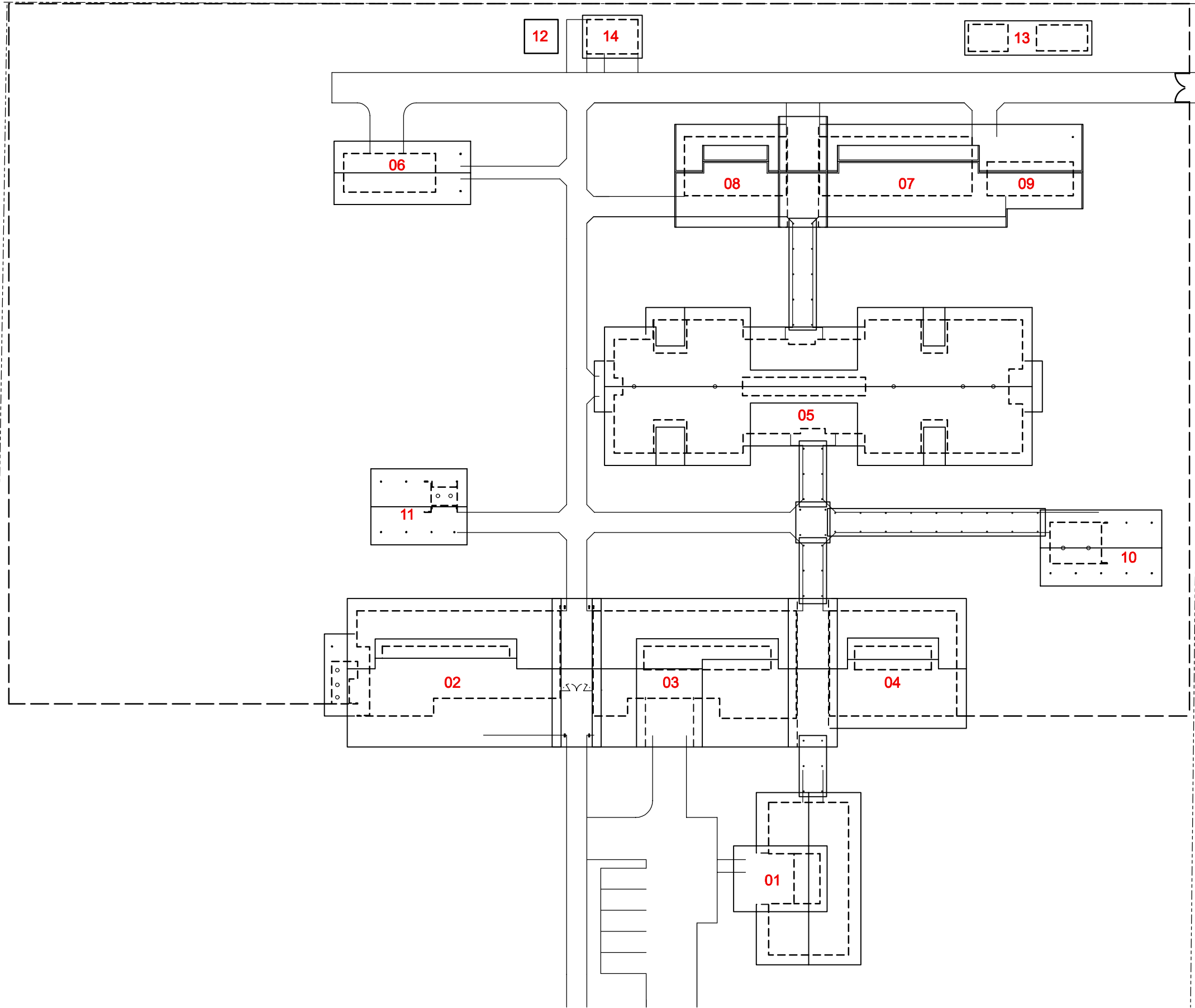
# MALIANA REFERRAL HOSPITAL

## SITE PLAN

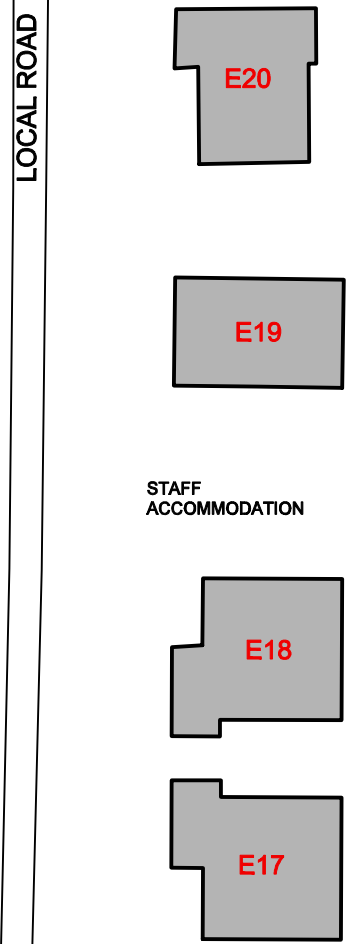


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- LEGEND**
- 01 ADMINISTRATION BUILDING
  - 02 OUTPATIENTS DEPARTMENT / COMMUNITY HEALTH
  - 03 ACCIDENT / EMERGENCY DEPARTMENT
  - 04 OPERATING THEATRE SUITE
  - 05 INPATIENT CARE
  - 06 MORTUARY
  - 07 LAUNDRY
  - 08 KITCHEN
  - 09 SUPPORT BUILDING
  - 10 STAFF RECREATION AREA
  - 11 VISITING RELATIVES / PUBLIC TOILETS
  - 12 INCINERATOR
  - 13 GENERATOR SET / FUEL TANK
  - 14 BIN STORAGE
- LEGEND**  
EXISTING BUILDINGS
- E15 UN TRANSPORTABLE BUILDING
  - E16 UN TRANSPORTABLE BUILDING
  - E17 STAFF ACCOMMODATION
  - E18 STAFF ACCOMMODATION
  - E19 STAFF ACCOMMODATION
  - E20 STAFF ACCOMMODATION
  - E21 GENERATOR
- LEGEND**
- EXISTING BUILDING
  - NEW BUILDING



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JAMES  
CUBITT  
architects



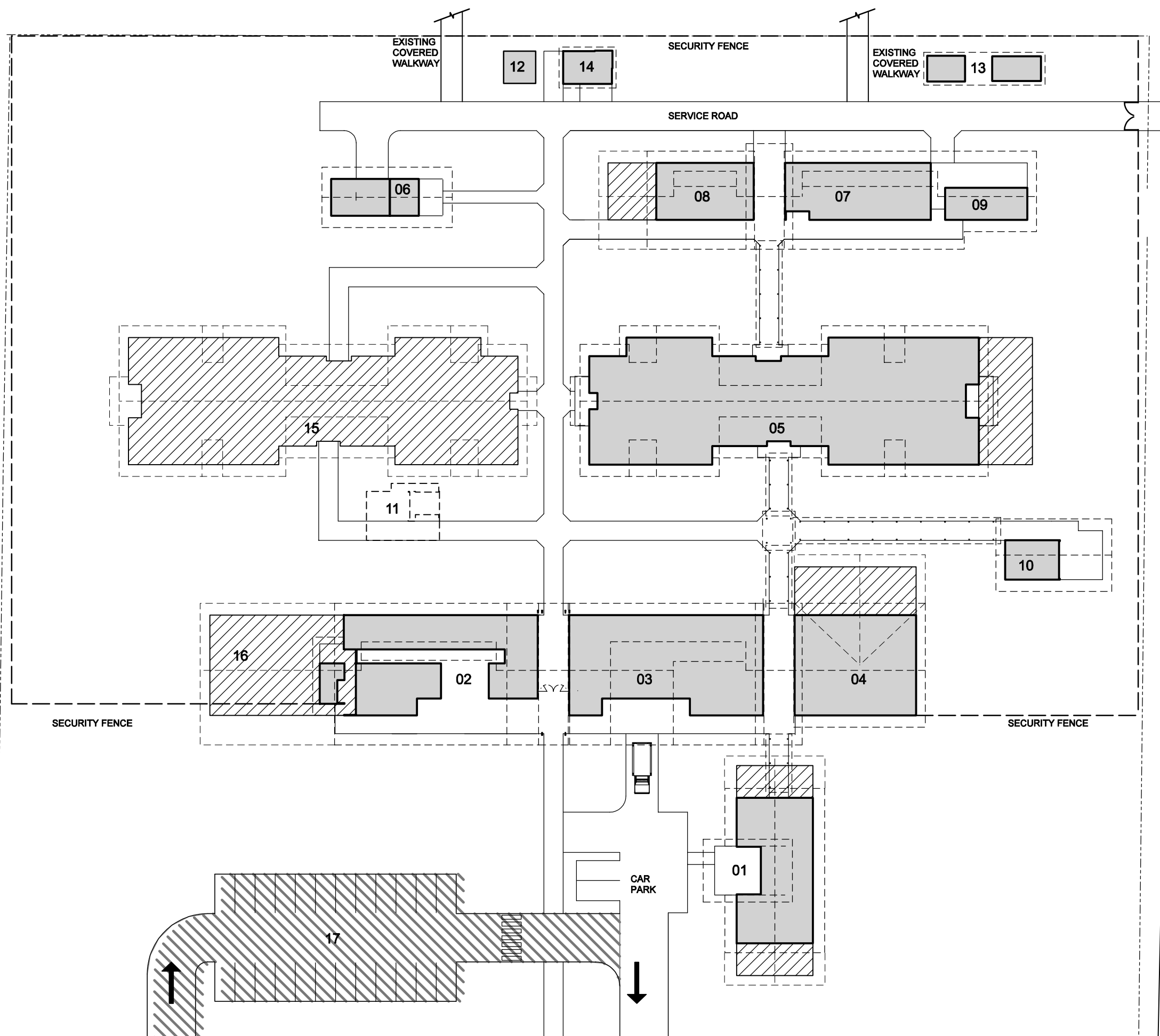
MALIANA REFERRAL HOSPITAL  
SITE ROOF PLAN



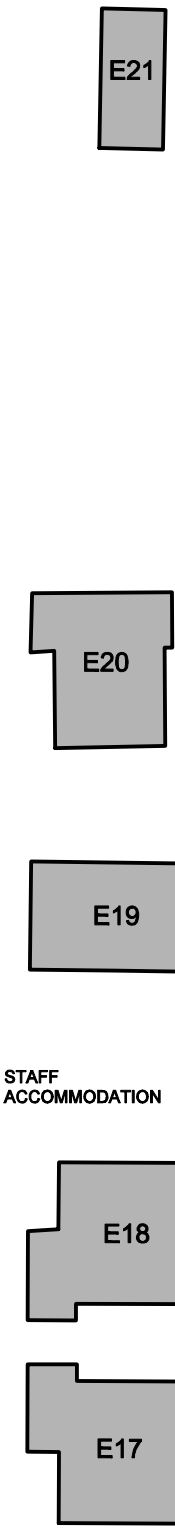
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C	AMENDED PRELIMINARY DESIGN	Dwg No.
B	DEVELOPED PRELIMINARY DESIGN	FD03.00.05
		Issue F

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- LEGEND**
- 01 ADMINISTRATION BUILDING  
EXTEND NOM. 4m TO NORTH  
EXTEND NOM. 4m TO SOUTH  
MAINTAIN RIDGE LINE
  - 02 OUTPATIENTS DEPARTMENT /  
COMMUNITY HEALTH
  - 03 ACCIDENT / EMERGENCY DEPARTMENT  
EXPAND TO WEST 4m
  - 04 OPERATING THEATRE SUITE  
EXPAND TO NORTH 6m TO INCLUDE 1 ADDITIONAL  
OPERATING THEATRE AND ENLARGE RECOVERY AREA  
AND SUPPORT
  - 05 INPATIENT CARE  
EXPAND TO EAST BOTH ISOLATION WARDS TO BE  
4 BED WARDS ADD ADDITIONAL 2 x 4 BED WARDS  
TAKING TOTAL BEDS UP FROM 24 TO 36
  - 06 MORTUARY  
LOCATION IN FUTURE HOSPITAL TO BE REVIEWED
  - 07 LAUNDRY  
UNCHANGED
  - 08 KITCHEN  
FUTURE EXPANSION
  - 09 SUPPORT BUILDING  
UNCHANGED
  - 10 STAFF RECREATION AREA  
EXPAND TO BE 16m LONG INCLUDE STAFF  
LOCKER ROOMS AND WC + SHOWER FACILITIES
  - 11 VISITING RELATIVES / PUBLIC TOILETS  
ORIENTATION TO BE REVIEWED
  - 12 INCINERATOR
  - 13 GENERATOR SET / FUEL TANK
  - 14 BIN STORAGE
  - 15 NEW INPATIENT CARE 2
  - 16 NEW OUTPATIENTS DEPARTMENT 2
  - 17 CARPARKING



LOCAL ROAD



STAFF ACCOMMODATION

0 2.5 5 7.5 10 12.5m A1 SCALE

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MALIANA REFERRAL HOSPITAL  
FUTURE SITE PLAN



Date: 19/11/04	
D FINAL DESIGN	Scale: 1:250 @ A1
C PRE-QUAL PRELIMINARY DESIGN	Scale: 1:500 @ A3
B AMENDED PRELIMINARY DESIGN No. 2	Dwg No.
A AMENDED PRELIMINARY DESIGN	FD03.00.10
	Issue D

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LEGEND	
B1	BASIN TYPE 1: ENSEMBLE TO COMPRISE BASIN, LEVER MIXER TAP WITH FIXED GOOSENECK OUTLET, ALL MOUNTED ON LAMINATED PLYWOOD BACKING BOARD 750 WIDE x 1500 HIGH, UNDERSIDE 300 ABOVE FFL. SOAP, PAPER TOWEL AND GLOVE DISPENSERS TO BE MOUNTED ABOVE BASIN.
B2	BASIN TYPE 2: ENSEMBLE TO COMPRISE BASIN, CAPSTAN MIXER TAP WITH FIXED SPOUT OUTLET, ALL MOUNTED ON LAMINATED PLYWOOD BACKING BOARD 750 WIDE x 1500 HIGH, UNDERSIDE 300 ABOVE FFL. SOAP, PAPER TOWEL AND GLOVE DISPENSERS TO BE MOUNTED ABOVE BASIN.
B3	BASIN TYPE 3
BED	BED
BENCH 1	BENCH TYPE 1: LAMINATED BENCH TOP 900 HIGH x 600 DEEP x LENGTH AS SHOWN ON PLAN, OPEN UNDER. SUPPORTED ON 35mm SQUARE HOLLOW SECTIONS FRAMING WITH LEGS AT MAX. 1800 CENTRES WITH ADJUSTABLE FEET.
BENCH 2	BENCH TYPE 2: LAMINATED BENCH TOP 750 HIGH x 600 DEEP x LENGTH AS SHOWN ON PLAN. SUPPORTED ON 35mm SQUARE HOLLOW SECTIONS FRAMING WITH LEGS AT MAX. 1800 CENTRES + ADJ. FEET.
BENCH 3	BENCH TYPE 3: LAMINATED BENCH TOP 750 HIGH x 600 DEEP x LENGTH AS SHOWN ON PLAN WITH 350 HIGH x 300 WIDE COUNTER ON TOP FRONT. SUPPORTED ON 35mm SQUARE HOLLOW SECTIONS FRAMING WITH LEGS AT MAX. 1800 CENTRES WITH ADJUSTABLE FEET.
BENCH 4	BENCH TYPE 4: STAINLESS STEEL BENCH 900 HIGH x 600 DEEP x LENGTH AS SHOWN ON PLAN. SUPPORTED ON 35mm SQUARE HOLLOW SECTION FRAMING WITH LEGS AT MAXIMUM 1800 CENTRES + ADJ. FEET.
BENCH 5	BENCH TYPE 5: LAMINATED BENCH TOP 900 HIGH x 600 DEEP x LENGTH AS SHOWN ON PLAN. SUPPORTED ON UNDER BENCH CUPBOARDS.
BENCH 6	BENCH TYPE 6: LAMINATED BENCH TOP 750 HIGH x 900 DEEP x LENGTH AS SHOWN ON PLAN WITH 300 HIGH x 300 WIDE COUNTER ON TOP FRONT. SUPPORTED ON 35mm SQUARE HOLLOW SECTION FRAMING WITH LEGS AT MAXIMUM 1800 CENTRES WITH ADJUSTABLE FEET.
BENCH 7	BENCH TYPE 7: DOUBLE SIDED LAMINATED BENCH TOP 900 HIGH x 1200 DEEP x LENGTH AS SHOWN ON PLAN. SUPPORTED ON 35mm SQUARE HOLLOW SECTION FRAMING WITH LEGS AT MAXIMUM 1800 CENTRES.
BENCH 8	BENCH TYPE 8: LAMINATED BENCH TOP 750 HEIGHT x 750 DEEP x LENGTH AS SHOWN ON PLAN. SUPPORTED ON 35mm SQUARE HOLLOW SECTIONS FRAMING WITH LEGS AT MAX. 1800 CENTRES.
BENCH 9	BENCH TYPE 9: BABY BATHING
BIN	WASTE BIN
BL	BEDSIDE LOCKER
BLIND	BLIND WINDOW
BOOK	BOOK SHELVES LAMINATED CARCASE 2100 HIGH x 900 WIDE x 450 DEEP ON 150 HIGH PLINTH AND FIVE ADJUSTABLE SHELVES.
BPBR	BED PAN AND BOTTLE RACK
BSP	BED HEAD SERVICES PANEL. LAMINATED SERVICES DUCT CONTAINING PIPED GASES, POWER AND SIGNAL CABLES TO OUTLETS ON MEDICAL SERVICES PANELS SERVING PATIENT AREAS.
BT	BEDSIDE TABLE
C1	CUPBOARD TYPE 1: 2100 HIGH x 900 WIDE x 600 DEEP LAMINATED CUPBOARD WITH DOUBLE LOCKABLE DOORS. 6 ADJUSTABLE SHELVES.
CG1	CORNER GUARD TYPE 1: 100 x 100 x 1350 HIGH STAINLESS STEEL CORNER GUARD.
CG2	CORNER GUARD TYPE 2: 100 x 100 x 1350 HIGH STAINLESS STEEL CORNER GUARD.
CH	CHAIR
COT	COT
COUCH	PATIENT COUCH
CS	CLEANERS SINK: ENSEMBLE TO COMPRISE SINK, WALL MOUNTED LEVER MIXER TAP WITH SWIVEL GOOSENECK OUTLET, ALL MOUNTED ON LAMINATED PLYWOOD BACKING BOARD 900 WIDE x 1500 HIGH UNDERSIDE 300 ABOVE FINISHED FLOOR LEVEL.
CT1	CURTAIN TRACK TYPE 1: CUBICLE CURTAIN TRACK UNDERSIDE 2100 ABOVE FINISHED FLOOR LEVEL.
DDS	DANGEROUS DRUGS SAFE

LEGEND	
DOOR 1	DOOR TYPE 1: 820 SOLID CORE DOOR. KEY OPERATED OUTSIDE, ALWAYS OPERABLE INSIDE. LEVER HANDLES, KICK PLATE OUTSIDE.
DOOR 2	DOOR TYPE 2: 2 x 820 SOLID CORE DOUBLE DOORS. LEVER HANDLES, CLOSERS, SELECTOR, KICK PLATES BOTH SIDES.
DOOR 3	DOOR TYPE 3: 820 SOLID CORE DOOR. PASSAGE SET. LEVER HANDLES, CLOSER, KICK PLATES BOTH SIDES. 600 WIDE x 900 HIGH VISION PANEL CENTRED ON WIDTH OF DOOR AND UNDERSIDE 1000 ABOVE FFL.
DOOR 4	DOOR TYPE 4: 820 SOLID CORE DOOR. KEY OPERATED OUTSIDE, ALWAYS OPERABLE INSIDE. LEVER HANDLES, KICK PLATE OUTSIDE. 600 WIDE x 900 HIGH VISION PANEL CENTRED ON WIDTH OF DOOR AND UNDERSIDE 1000 ABOVE FINISHED FLOOR LEVEL.
DOOR 5	DOOR TYPE 5: 820 SOLID CORE DOOR. KEY OPERATED OUTSIDE, ALWAYS OPERABLE INSIDE. LEVER HANDLES, KICK PLATE OUTSIDE LIGHT PROOF SEAL.
DOOR 6	DOOR TYPE 6: 1350 SOLID CORE LEAF AND A HALF DOOR. KEY OPERATED OUTSIDE, ALWAYS OPERABLE INSIDE. LEVER HANDLES, REBATED LOCKSET, FLUSH BOLTS, KICK PLATES.
DOOR 7	DOOR TYPE 7: 820 SOLID CORE DOOR. PULL HANDLE, PUSH PLATE. KICK PLATES BOTH SIDES, CLOSER, 600 WIDE x 900 HIGH VISION PANEL CENTRED ON WIDTH OF DOOR AND UNDERSIDE 1000 ABOVE FINISHED FLOOR LEVEL.
DOOR 8	DOOR TYPE 8: 2 x 820 SOLID CORE DOUBLE DOORS. LOCK AND BOLTS, KEY OPERATED OUTSIDE ALWAYS OPERABLE INSIDE. LEVER HANDLES, CLOSERS, SELECTOR, KICK PLATES BOTH SIDES.
DOOR 9	DOOR TYPE 9: 820 SOLID CORE DOOR. INDICATOR BOLT WITH EMERGENCY RELEASE TOILET DOOR.
EL1	EXAMINATION LAMP TYPE 1: SMALL WALL MOUNTED EXAMINATION LAMP.
ER1	EQUIPMENT RAIL TYPE 1: 1200 LONG MOUNTED 1500 ABOVE FFL.
ER2	EQUIPMENT RAIL TYPE 2: 1200 LONG MOUNTED 300 ABOVE FFL.
FC2	FILING CABINET 2 DRAWER
FC3	FILING CABINET 3 DRAWER
FC4	FILING CABINET 4 DRAWER
FILM P	FILM PROCESSOR
FRIDGE	FRIDGE AS SPECIFIED
FS1	FORMS SLOT TYPE 1: PLYWOOD CARCASE 350 HIGH x 400 WIDE x 200 DEEP. HEIGHT DIVIDED INTO SIX EQUAL SPACES FOR STORAGE/ DISPENSING OF STANDARD FORMS.
GOWNING	GOWNING SHELF: LAMINATED SHELF TOP 1050 ABOVE FFL.
HUF	HOSE UNION FILTERED
M	S.S. MIRROR AND SHELF (900 x 600)
MN	MANDI TOILET AND BATHING RESERVOIR. STAINLESS STEEL 600 x 500 x 900 TUB ON SHS FRAME
MON1	MONITOR TYPE 1: PATIENT MONITOR MOUNTED ON EQUIPMENT RAIL ABOVE BED.
MR1	MAXIBIN RACK TYPE 1: WALL MOUNTED MAXIBIN RACK NOMINAL SIZE 600 HIGH x 450 WIDE UNDERSIDE 1200 ABOVE FINISHED FLOOR LEVEL.
MSP1	MEDICAL SERVICES PANEL TYPE 1: EACH COMPRISING 10 GPOS, NURSE CALL, STAFF CALL, OXYGEN, AIR, SUCTION, DATA, LIGHT SWITCHES. (TO BE CONFIRMED BY CLIENT)
MSP2	MEDICAL SERVICES PANEL TYPE 2
OB1	OVER BENCH TYPE 1: OPEN SHELVING 900 WIDE x 600 HIGH x 300 DEEP CARCASE UNDERSIDE 1300 AFFL. ONE ADJUSTABLE SHELF.
OB2	OVER BENCH TYPE 2: OPEN SHELVING 450 WIDE x 600 HIGH x 300 DEEP CARCASE UNDERSIDE 1300 AFFL. ONE ADJUSTABLE SHELF.
OB3	OVER BENCH TYPE 3: CUPBOARD 900 WIDE x 600 HIGH x 300 DEEP CARCASE UNDERSIDE 1300 AFFL. TWO DOORS AND ONE ADJUSTABLE SHELF.
OB4	OVER BENCH TYPE 4: CUPBOARD 450 WIDE x 600 HIGH x 300 DEEP CARCASE UNDERSIDE 1300 ABOVE FFL. ONE DOOR ADJUSTABLE SHELF.
OB5	OVER BENCH TYPE 5: DOUBLE SIDED OPEN SHELVING 900 WIDE x 600 HIGH x 300 DEEP CARCASE UNDERSIDE 1300 AFFL. ONE ADJUSTABLE SHELF.
OB6	OVER BENCH TYPE 6: CUPBOARD 900 WIDE x 400 HIGH x 300 DEEP. 1400 AFFL.
PB1	PIN BOARD TYPE 1: 1200 WIDE x 1200 HIGH
PROJ	PROJECTION SCREEN, RETRACTING, CEILING MOUNTED
PT	PATIENT TROLLEY

LEGEND	
RT	RESUS TROLLEY
SBB	SUCTION BOTTLE BRACKET WALL MOUNTED 450 ABOVE FFL
SCREEN 1	SCREEN TYPE 1: 900 WIDE x 900 HIGH SILL AT 900 ABOVE FINISHED FLOOR LEVEL. REBATED LEAD LINED FRAME WITH LEAD EQUIVALENT GLASS.
S1	SHELVING TYPE 1: BUILT IN LAMINATED SHELVING AS SET OUT ON PLANS. FIXED SHELVES 350 HIGH STARTING 350 ABOVE FFL. TOP OF UNIT AT 1800 ABOVE FFL.
S2	SHELVING TYPE 2: OPEN CONTINUOUS LAMINATED SHELVING SUPPORTED ON BRACKETS AS SET OUT ON PLANS. FIXED SHELVES 300 HIGH STARTING 300 ABOVE FFL. TOP OF UNIT AT 1800 ABOVE FFL.
S3	SHELVING TYPE 3: BUILT IN LAMINATED SHELVING AS SET OUT ON PLANS. FIXED SHELVES 400 WIDE x 400 DEEP x 350 HIGH, 350 ABOVE FFL. TOP OF UNIT AT 1800 ABOVE FFL.
SH	SLOP HOPPER
SPHYG	SPHYGMONANOMETER, WALL MOUNTED BRACKET.
SSS1	STAINLESS STEEL SINK TYPE 1: 400 LONG x 400 WIDE x 400 DEEP STAINLESS STEEL SINK WITH SWIVEL GOOSENECK OUTLET.
SSS2	STAINLESS STEEL SINK TYPE 2: PROPRIETARY SINK AND DRAINER
ST	STOOL
SUT	SCRUB UP TROUGH: STAINLESS STEEL TROUGH WITH INTEGRAL SPLASHBACK / 150 WIDE SHELF AT 1500 ABOVE FINISHED FLOOR LEVEL. THREE SETS OF LEVEL MIXER TAPS WITH FIXED GOOSENECK OUTLETS.
SWP	STANDING WASTE PIPE
TR	TOWEL RAIL, 450 LONG MOUNTED 900 ABOVE FINISHED FLOOR LEVEL 200mm HIGH TILED SKIRTING
TS	UNDER BENCH TYPE 1: 450 WIDE x 600 HIGH x 500 DEEP MOBILE DRAWER UNIT, TOP TWO DRAWERS 120 DEEP AND BALANCE OF BOTTOM DRAWER FOR FILING. ALL DRAWERS WITH SATIN STAINLESS STEEL "D" PULL HANDLES.
UB1	UNDER BENCH TYPE 2: 450 WIDE x 600 HIGH x 450 DEEP MOBILE DRAWER UNIT, TOP TWO DRAWERS 75 DEEP AND BOTTOM THREE DRAWERS 150 DEEP, ALL DRAWERS WITH SATIN STAINLESS STEEL "D" PULL HANDLES.
UB2	UNDER BENCH TYPE 3: 450 WIDE x 550 DEEP BUILT IN DRAWER UNIT TO SUIT 900 HIGH BENCH. FIVE EQUAL DRAWERS EACH WITH SATIN STAINLESS STEEL "D" PULL HANDLES.
UB3	UNDER BENCH TYPE 4: 900 WIDE x 550 DEEP BUILT IN OPEN SHELVING UNIT WITH ONE ADJUSTABLE SHELF TO SUIT 900 HIGH BENCH, WITH 150 HIGH PLINTH.
UB4	UNDER BENCH TYPE 5: 900 WIDE x 550 DEEP BUILT IN CUPBOARD UNIT TO SUIT 900 HIGH BENCH. ONE ADJUSTABLE SHELF AND TWO EQUAL DOORS EACH WITH SATIN STAINLESS STEEL "D" PULL HANDLES, WITH 150 HIGH PLINTH.
UB5	UNDER BENCH TYPE 6: 450 WIDE x 550 DEEP BUILT IN DRAWER UNIT TO SUIT 900 HIGH BENCH. SEVEN EQUAL DRAWERS EACH WITH SATIN STAINLESS STEEL "D" PULL HANDLES. DRAWER INSERTS TO BE AGREED WITH USER GROUP.
UB6	UNDER BENCH TYPE 7: 450 WIDE x 600 HIGH x 500 DEEP MOBILE CUPBOARD UNIT. ONE DOOR. ONE ADJUSTABLE SHELF. STAINLESS STEEL "D" PULL HANDLES.
UB7	
VP1	VISION PANEL TYPE 1: FIXED GLAZING, 600 WIDE x 1200 HIGH TOP OF FRAME TO LINE WITH TOP OF ADJACENT DOOR FRAME.
VP2	VISION PANEL TYPE 2: FIXED GLAZING, 1200 WIDE x 1200 HIGH TOP OF FRAME TO LINE WITH TOP OF ADJACENT DOOR FRAME.
WB1	WHITE BOARD TYPE 1: 1200 WIDE x 600 HIGH UNDERSIDE 1200 ABOVE FFL.
WB2	WHITE BOARD TYPE 2: 1800 WIDE x 1200 HIGH UNDERSIDE 900 ABOVE FFL.
WB3	WHITE BOARD TYPE 3: 1500 WIDE x 900 HIGH UNDERSIDE 1200 ABOVE FFL.
WC	STAINLESS STEEL WATER CLOSET
WP	WALL PROTECTION
XRV	X RAY VIEWING BOX, NUMERIC SUFFIX INDICATES NUMBER

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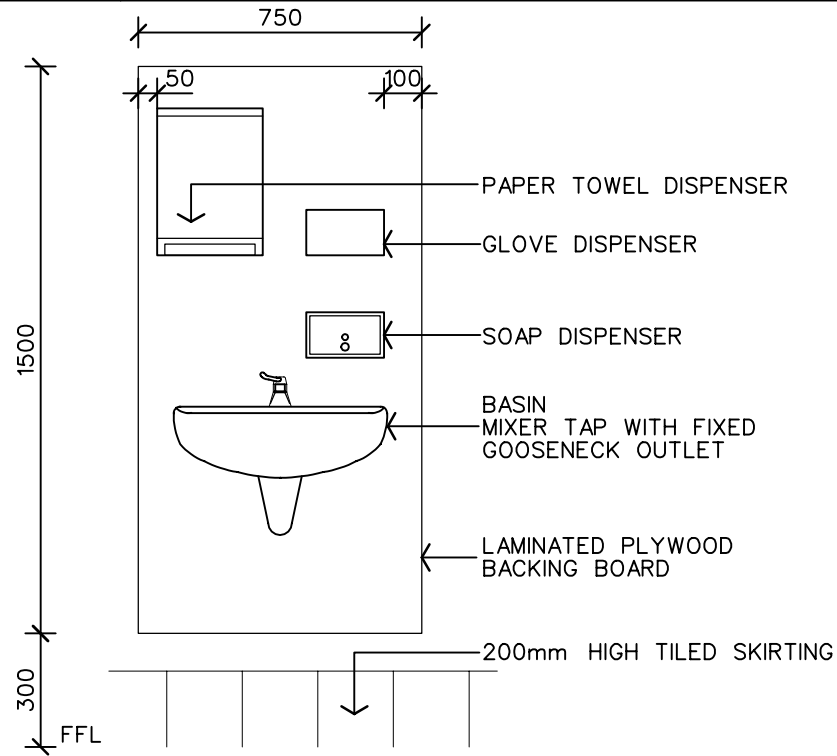
# MALIANA REFERRAL HOSPITAL ROOM ELEVATIONS LEGENDS

Date: 19/11/04

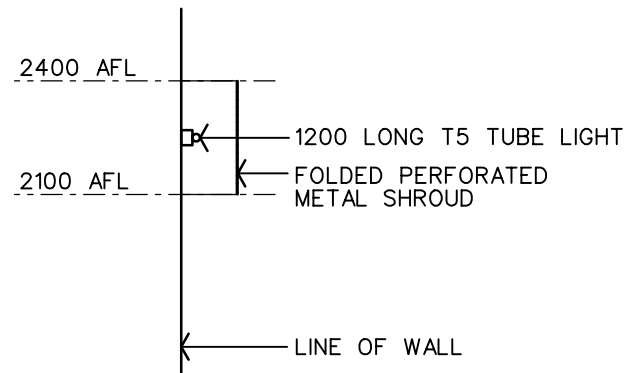
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B	FINAL DESIGN	Dwg No.	Issue
A	QS REVIEW No. 2	FD03-GEN-10	B

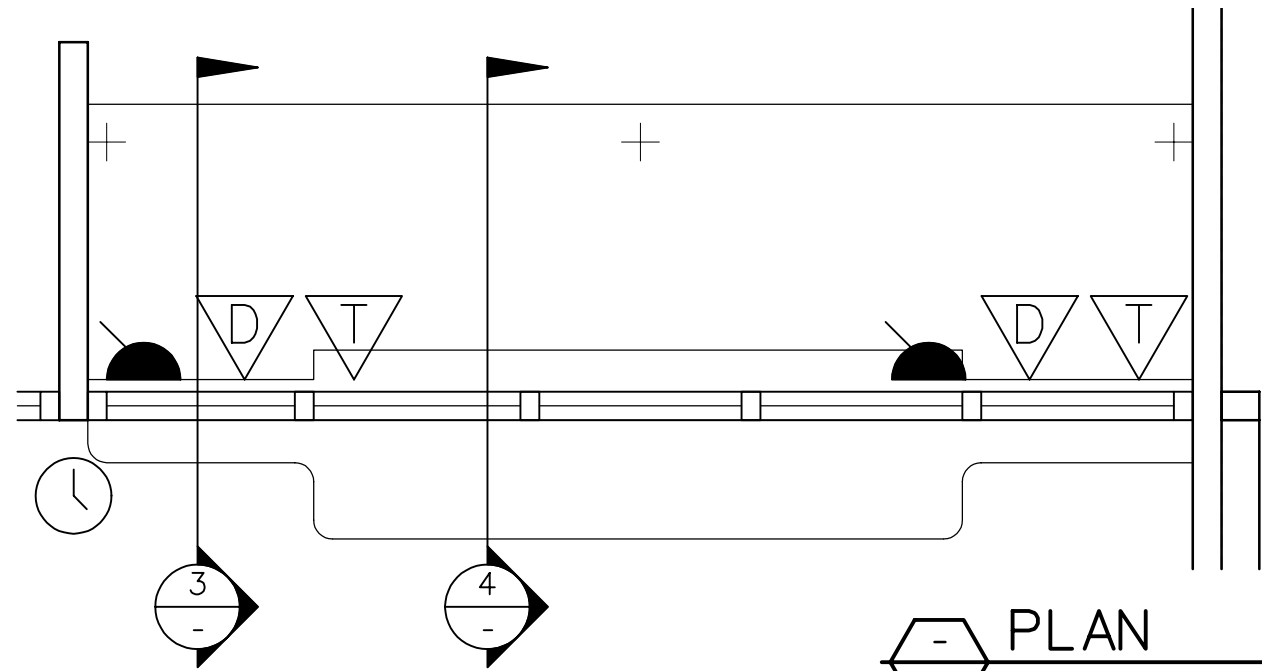
LEGEND (CONTINUED)	
	<b>DOUBLE GPO AFFIX INDICATES RELATIVE HEIGHT OF CENTRE LINE AS FOLLOWS:</b> A) 300mm ABOVE FINISHED FLOOR LEVEL B) 900mm ABOVE FINISHED FLOOR LEVEL C) 1050mm ABOVE FINISHED FLOOR LEVEL D) 1300mm ABOVE FINISHED FLOOR LEVEL
	<b>TELEPHONE OUTLET AFFIX INDICATES RELATIVE HEIGHT OF CENTRE LINE AS FOLLOWS:</b> A) 300mm ABOVE FINISHED FLOOR LEVEL B) 900mm ABOVE FINISHED FLOOR LEVEL C) 1050mm ABOVE FINISHED FLOOR LEVEL W) WALL MOUNTED 1350 ABOVE FINISHED FLOOR LEVEL
	<b>CLOCK UNDERSIDE 2200 ABOVE FINISHED FLOOR LEVEL OF FOLLOWING TYPES:</b> CL1: BATTERY OPERATED WITH SECOND HAND CL2: UPS TIME ELEAPSED



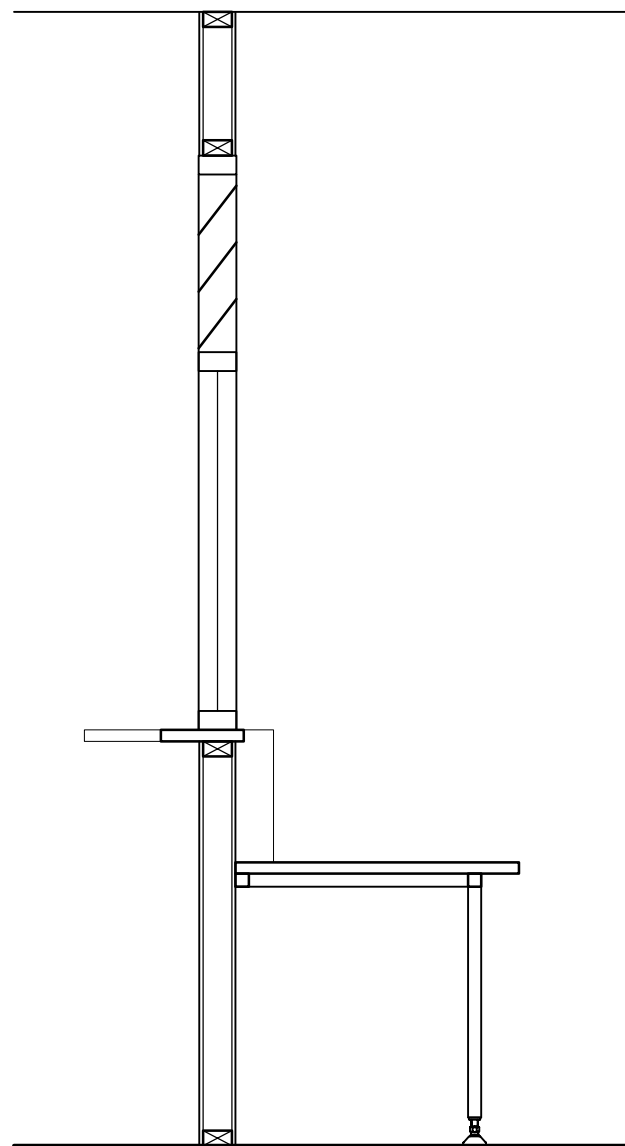
1 SECTION 1:20  
TYPICAL BASIN ENSEMBLE



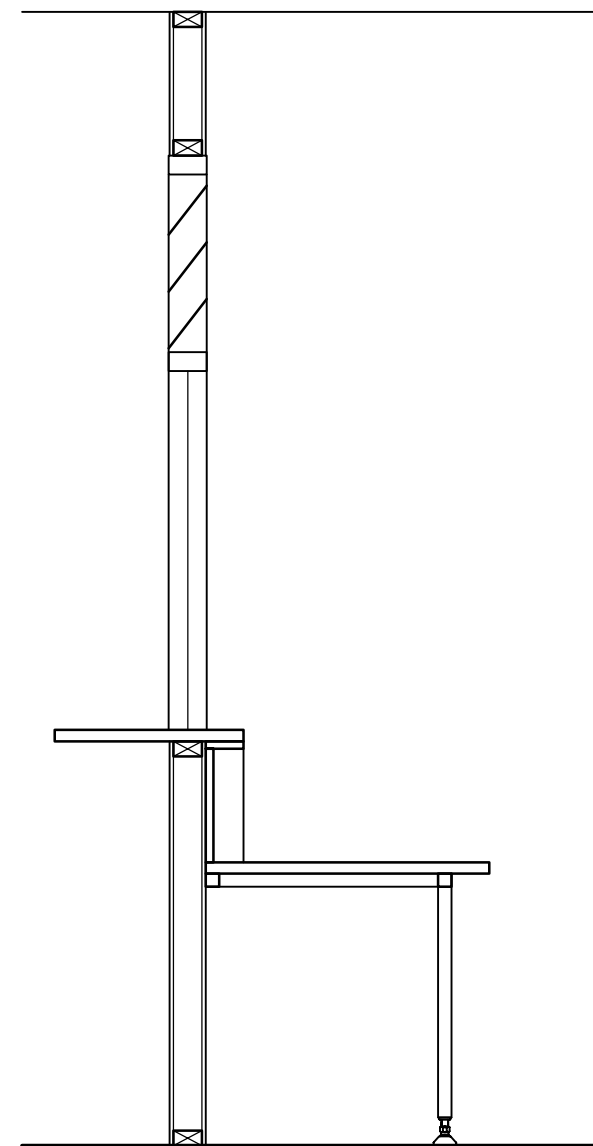
2 SECTION 1:20  
TYPICAL WALL LIGHT



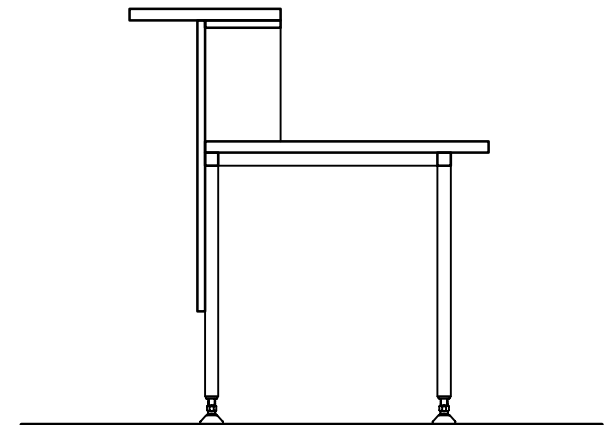
PLAN 1:50  
RECEPTION COUNTER 1



3 SECTION 1:20  
RECEPTION COUNTER 1A



4 SECTION 1:20  
RECEPTION COUNTER 1B

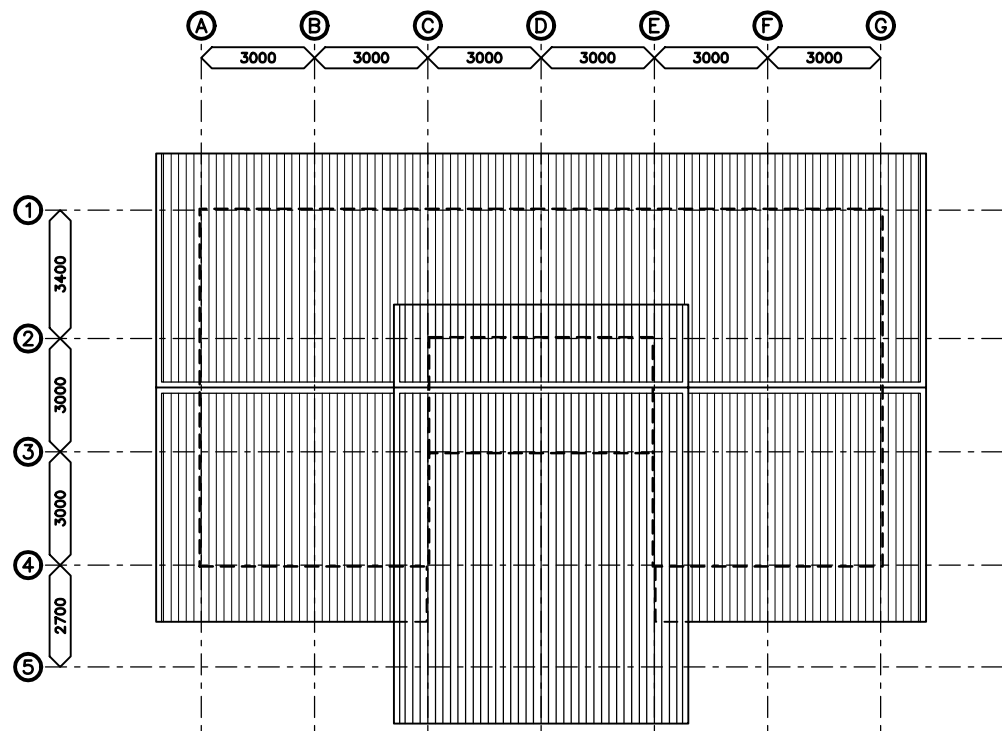


5 SECTION 1:20  
RECEPTION COUNTER 2

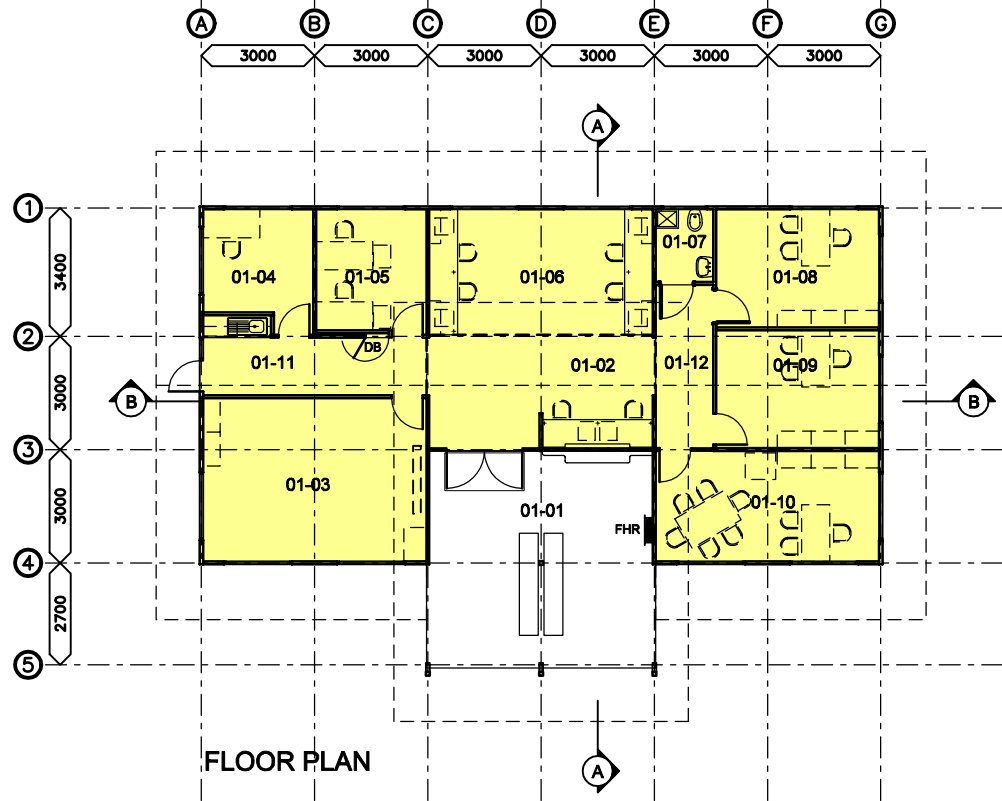
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		Date: 19/11/04	
		Scale: 1:50 @ A3	
B	FINAL DESIGN	Dwg No.	Issue
A	QS REVIEW No. 2	FD03-GEN-11	B



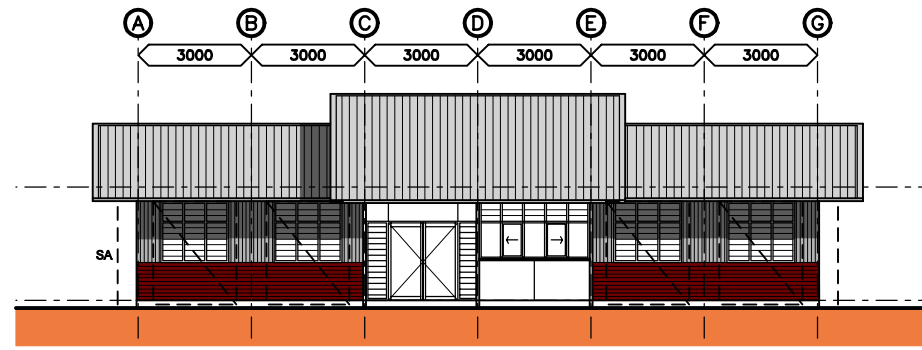


ROOF PLAN

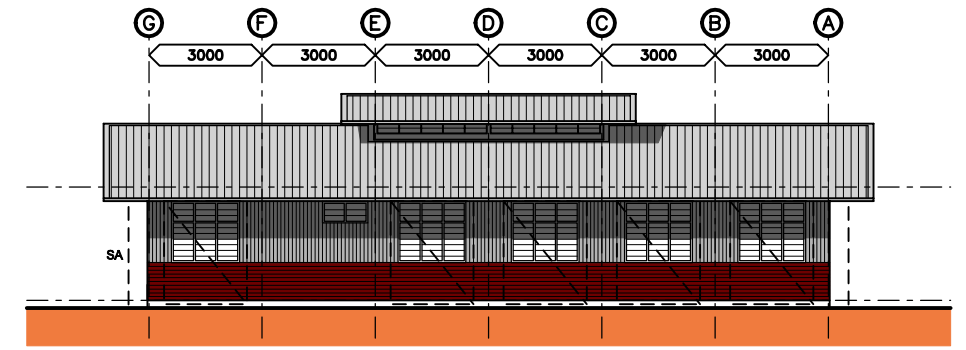


FLOOR PLAN

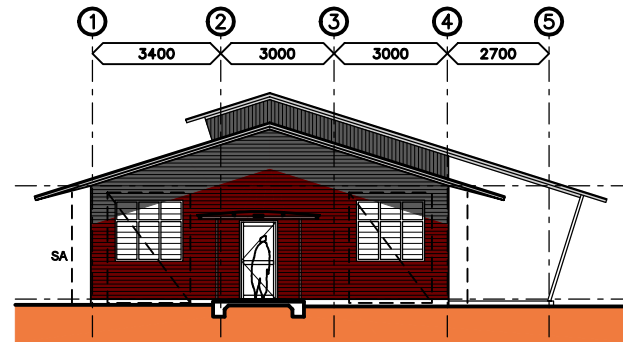
ROOM LEGEND	
ADMINISTRATION BUILDING (Gedung Administrasi)	
01-01	EXTERNAL WAITING
01-02	RECEPTION
01-03	MEETING ROOM
01-04	ADMISSION/ DISCHARGE
01-05	RESOURCE AREA
01-06	CLERICAL AREA
01-07	WC
01-08	DIRECTOR OF NURSING
01-09	CORPORATE SERVICES
01-10	HOSPITAL ADMINISTRATOR
01-11	KITCHEN / CORRIDOR
01-12	CORRIDOR



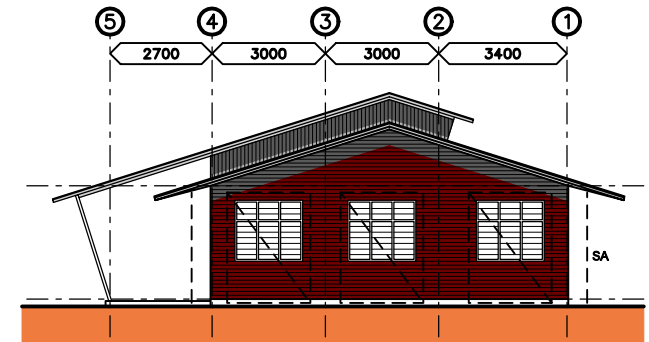
WEST ELEVATION



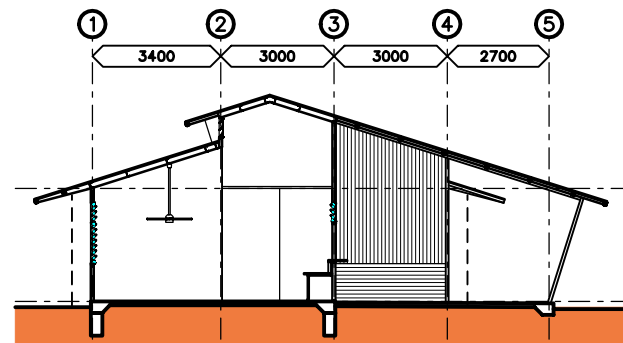
EAST ELEVATION



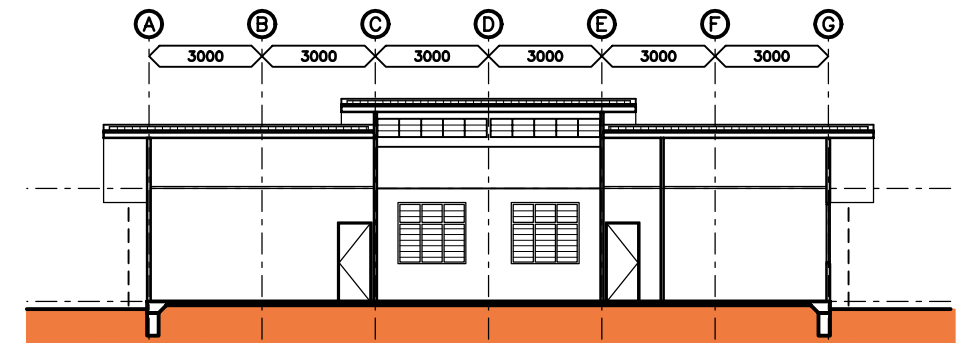
NORTH ELEVATION



SOUTH ELEVATION



SECTION A-A



SECTION B-B

0 1 2 3 4 5m A1 SCALE

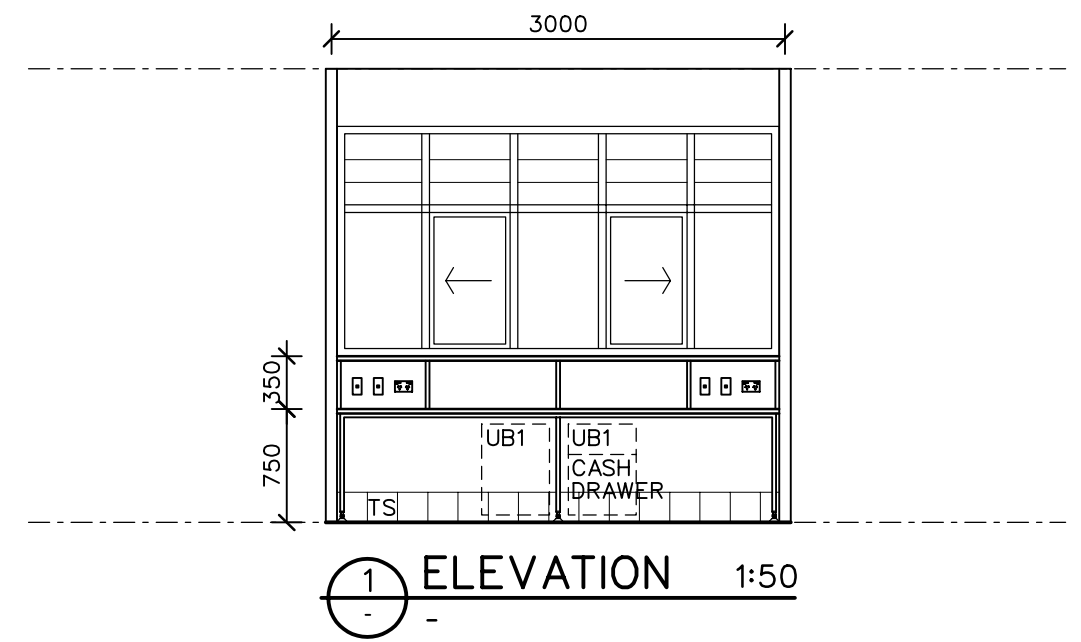
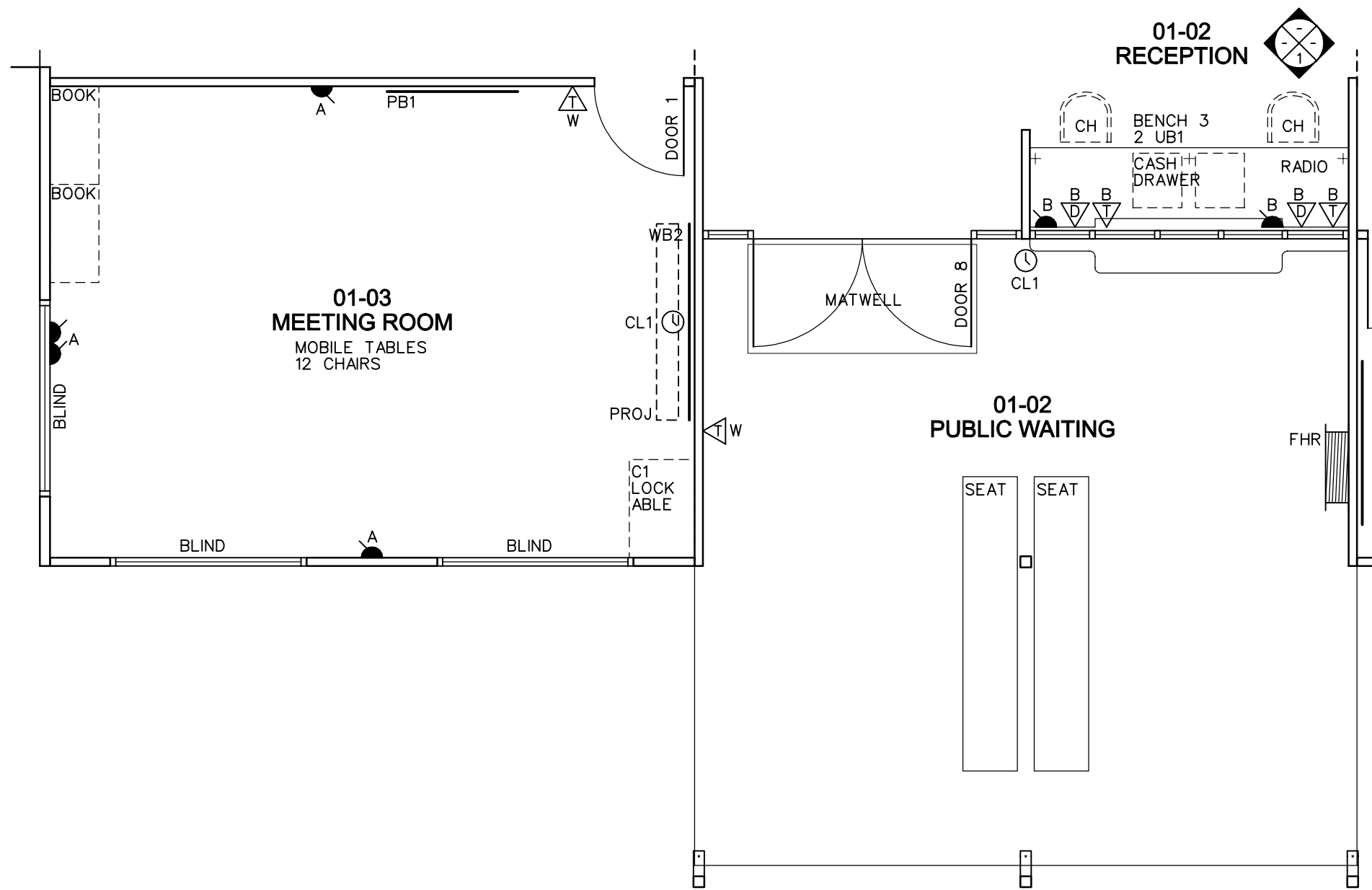
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MALIANA REFERRAL HOSPITAL  
ADMINISTRATION

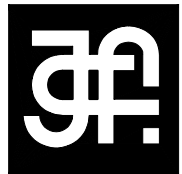


J	FINAL DESIGN	Date: 19/11/04
I	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
H	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
G	AMENDED PRELIMINARY DESIGN	Dwg No.
F	DEVELOPED PRELIMINARY DESIGN	FD03.01.01
		Issue J



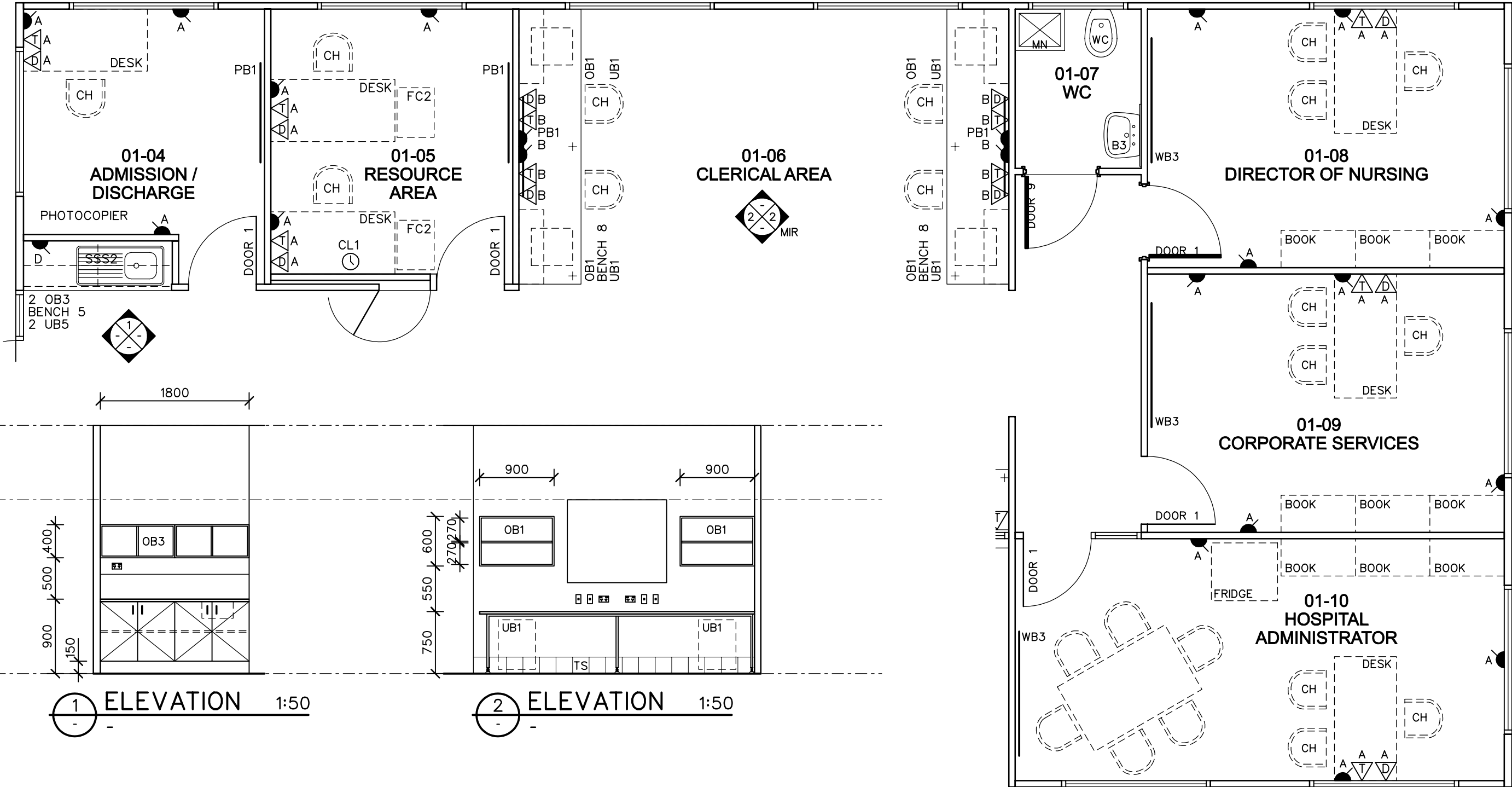
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**MALIANA REFERRAL HOSPITAL**  
**ADMINISTRATION**  
**PUBLIC WAITING /**  
**RECEPTION / MEETING ROOM**

		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.01.10	C
A	PRELIMINARY		



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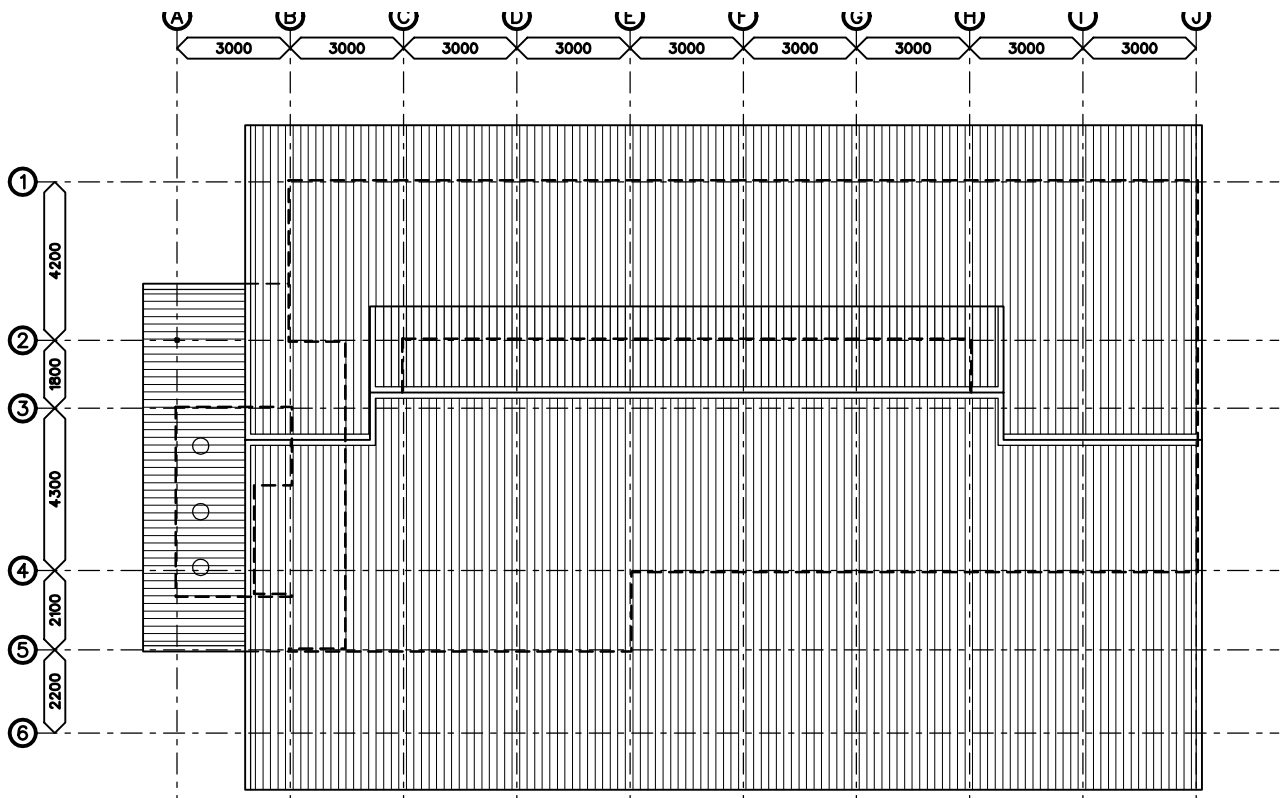
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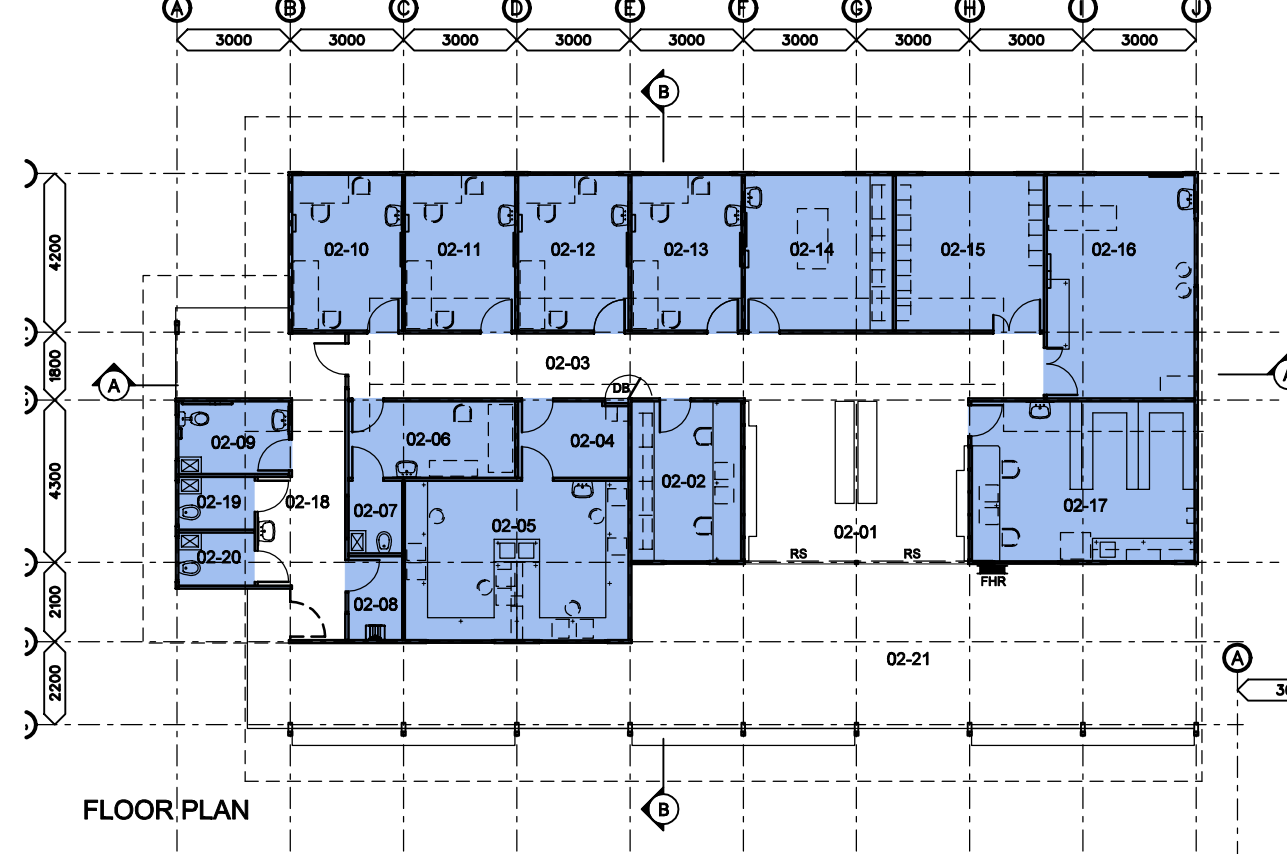
**MALIANA REFERRAL HOSPITAL**  
**ADMINISTRATION**  
**ADMISSION / DISCHARGE**  
**RESOURCE AREA / CLERICAL AREA**

		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.01.11	C
A	PRELIMINARY		

ADMINISTRATION/ MEDICAL RECORDS /ADMISSIONS & MAIN ENTRY														
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN				
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>	
<b>Staff</b>						<b>Staff</b>								
	Office: Administrator	1	12	12			Corporate Services	12		01-09	Corporate Services	3100 x 4300	13.5	
	Office: Director of Nursing	1	12	12			Director Of Nursing	12		01-08	Director of Nursing	3100 x 4300	13.5	
	Office: Medical Superintendent	1	12	12			Hospital Administrator	12		01-10	Hospital Administrator	2900 x 5900	17	
	Waiting: public	1	30	30										
	Enquiries Counter	1	8	8	with work area behind		Reception	Not Given		01-02	Reception	3000 x 5900	18	
	Office/Interview	1	9	9	admissions & discharge		Admissions / Discharge	9		01-04	Admissions / Discharge	3300 x 2900	8.5	
	Toilet: staff	2	3	6			Staff Toilet Unisex	2		01-07	WC	1500 x 1900	3	
<b>Shared Support</b>						<b>Shared Support</b>								
	Office: communications room	1	10	10	2-way radio, telephone, etc.				Relocate to A&E					
	Office: clerical	4	6	24	Open plan office behind enq. counter / 4 workstations		Workstations 4 X 4 sqm	16		01-06	Clerical Area	3300 x 5900	19.5	
	Meeting/seminar room	1	30	30	to seat up to 20 people; meetings & training		Meeting Seminar Room	24		01-03	Meeting Room	4300 x 5900	25.5	
	Photocopy Room	1	8	8	near clerical offices				Locate in clerical					
	Workroom: medical records	1	10	10	assembly/sorting/active records store				Relocate to A&E					
<b>Storage</b>						<b>Storage</b>								
	Store: files/stationery	1	10	10	adj to clerical office		Resource Area	10		01-05	Resource Area	3000 x 2900	9.5	
	Library: staff	1	10	10	adj to Conf/seminar Room		Use Meeting	Not Given						
	Store: chairs	1	5	5	for Conf/seminar Room		Not Given	Not Given						
<b>Support</b>						<b>Support</b>								
	Toilet: public	2	3	6			Not Given							
							Use Central Public Facilities	Not Given						
	TOTAL ROOM AREAS			202			TOTAL ROOM AREAS	97						
	Discounted Circulation	20%		40				19						
										01-01	External Waiting	5800 x 5900	34	
										01-11	Kitchenette / Corridor	1500 x 5900	10	
										01-12	Corridor	1500 x 4300	6.5	
<b>TOTAL ADMIN / MED RECORDS / ADMISSIONS / MAIN ENTRY</b>						<b>TOTAL ADMINISTRATION</b>				<b>TOTAL ADMINISTRATION</b>				
				<b>242</b>					<b>116</b>					<b>150</b>

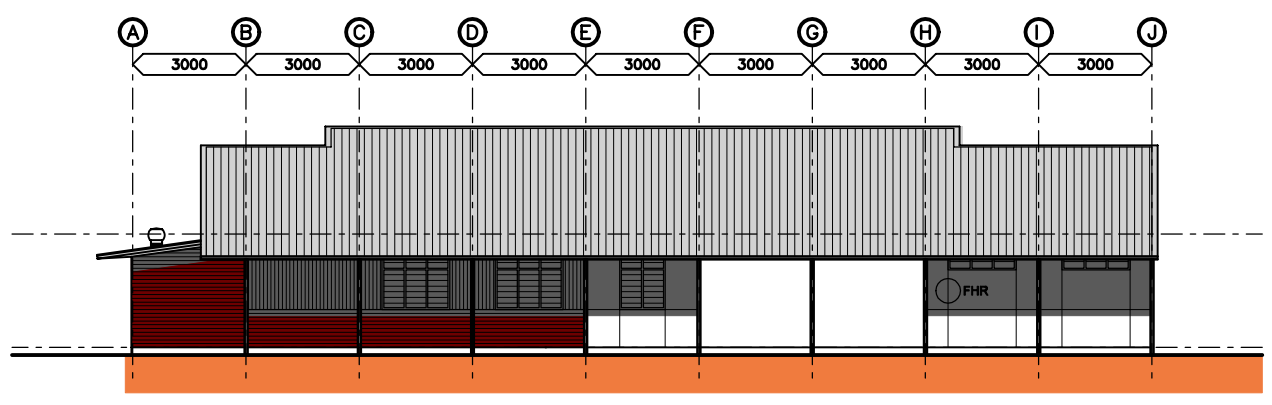


ROOF PLAN

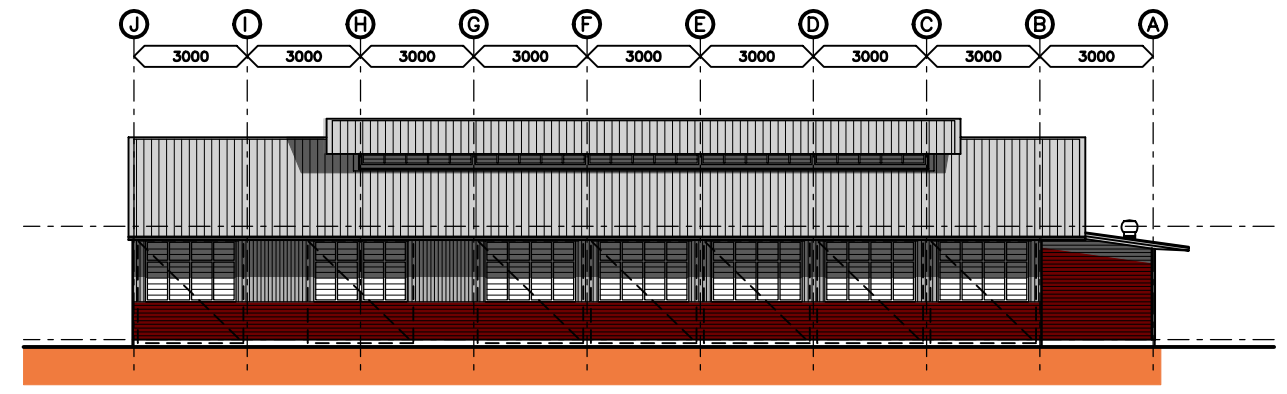


FLOOR PLAN

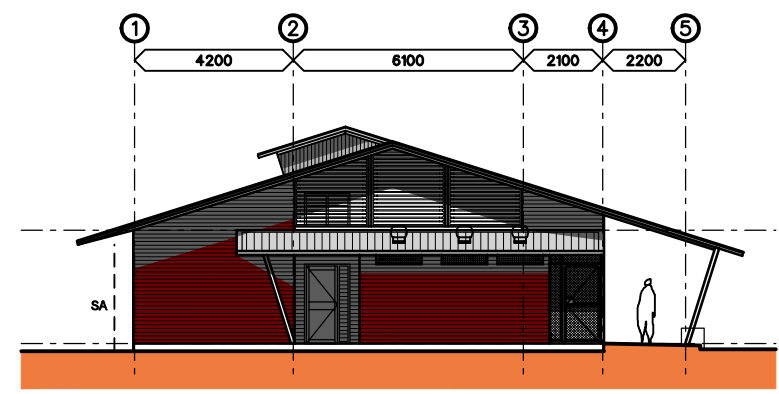
ROOM LEGEND			
OUTPATIENTS DEPARTMENT / COMMUNITY HEALTH (Departemen rawat jalan / kesehatan masyarakat)			
02-01	- Ruang resepsi	02-11	Ruang konsultant 2
02-02	INTERNAL WAITING	02-12	Ruang konsultant 3
02-03	RECEPTION	02-13	Ruang konsultant 4
02-04	CORRIDOR	02-14	DENTAL CONSULTING
02-05	LOCKERS	02-15	STORE
02-06	PATHOLOGY	02-16	Gudang
02-07	SPECIMEN COLLECTION	02-16	Ruang pelayanan
02-08	WC	02-17	Farmasi
02-08	CLEANERS	02-18	TREATMENT ROOM
02-09	WC	02-19	PHARMACY
02-10	Ruang konsultant 1	02-20	EXTERNAL CORRIDOR
		02-21	FEMALE WC
			MALE WC
			EXTERNAL WAITING



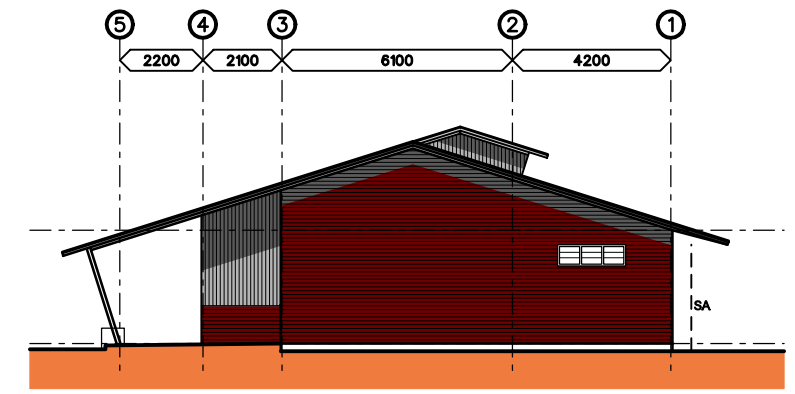
EAST ELEVATION



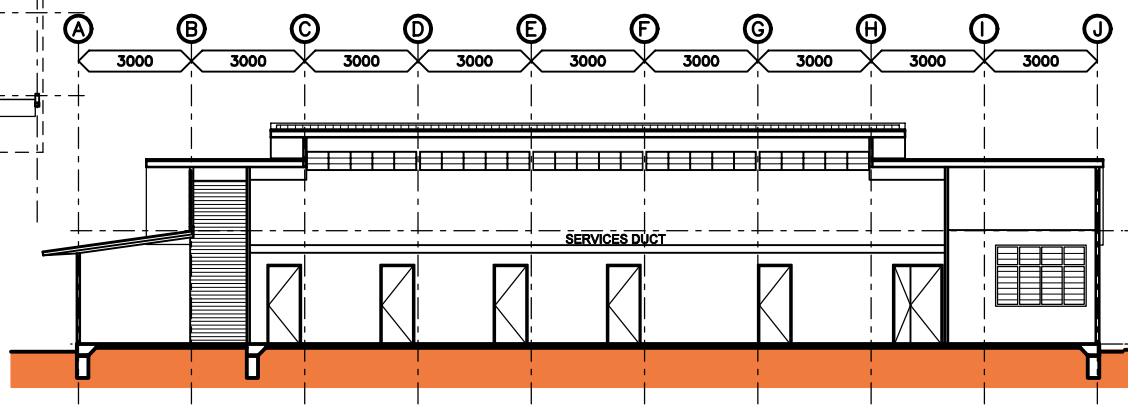
WEST ELEVATION



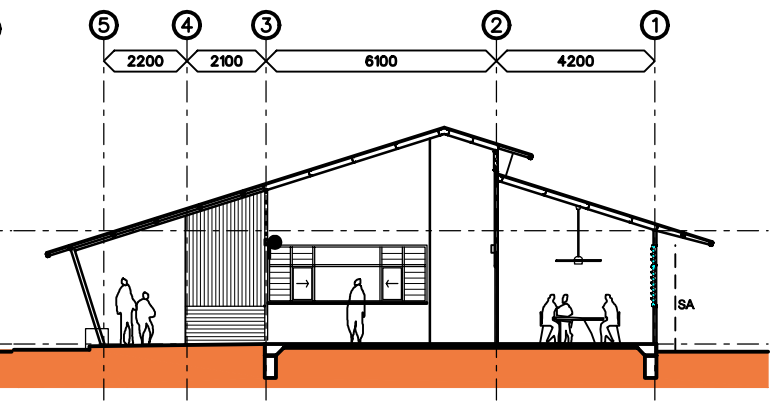
SOUTH ELEVATION



NORTH ELEVATION



SECTION A-A



SECTION B-B

0 1 2 3 4 5m A1 SCALE

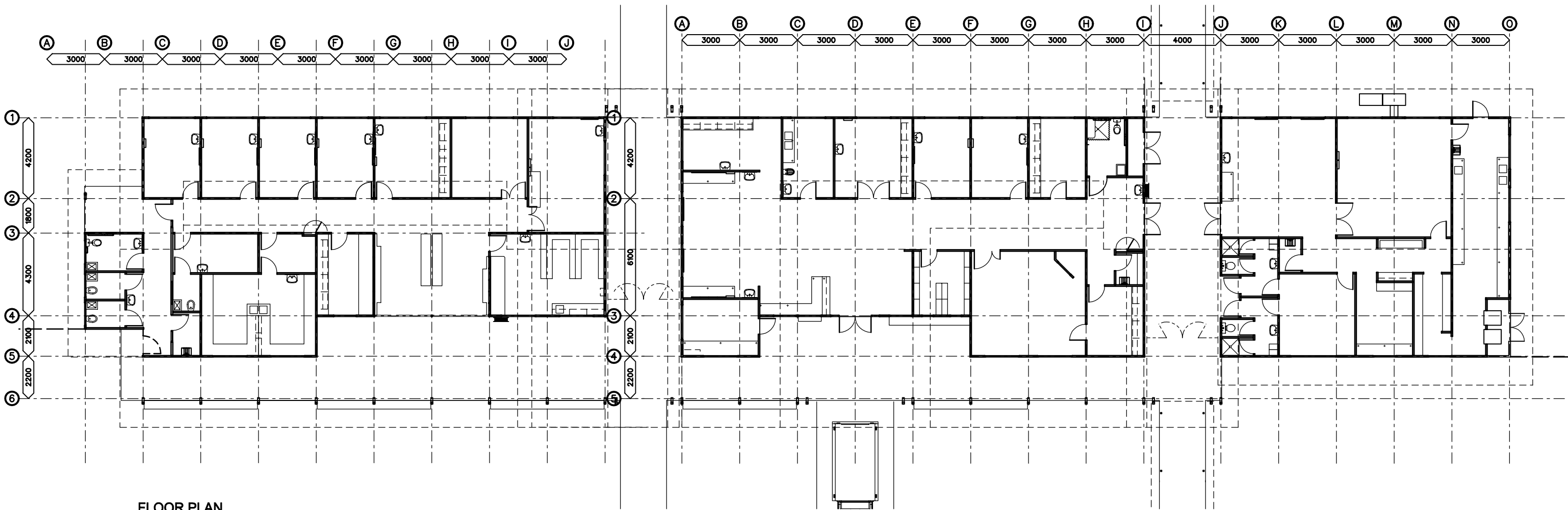


# MALIANA REFERRAL HOSPITAL

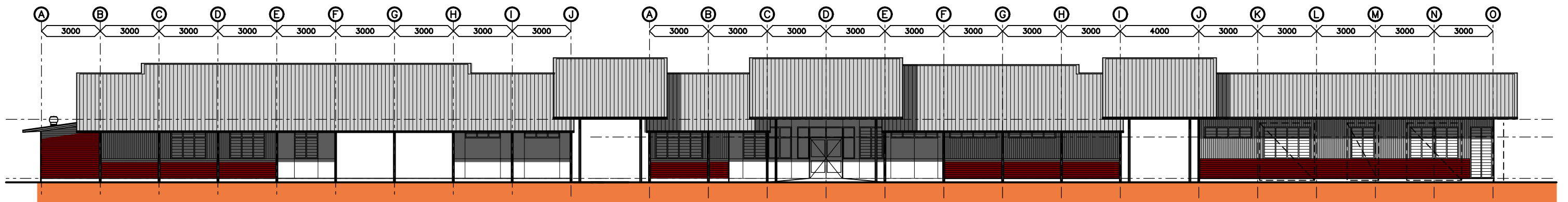
## OUTPATIENTS DEPARTMENT / COMMUNITY HEALTH



I	FINAL DESIGN	Date:	19/11/04
H	PRE-QUAL PRELIMINARY DESIGN	Scale:	1:100 @ A1
G	AMENDED PRELIMINARY DESIGN No. 2	Scale:	1:200 @ A3
G	AMENDED PRELIMINARY DESIGN	Dwg No.	Issue
F	INTERNAL CONSULTANT REVIEW	FD03.02.01	I



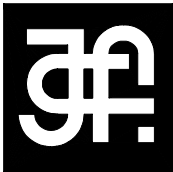
FLOOR PLAN



NORTH ELEVATION

m:\03624\pict\14\03-Maliana\FD03-02-02.dgn

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CUBITT**  
architects



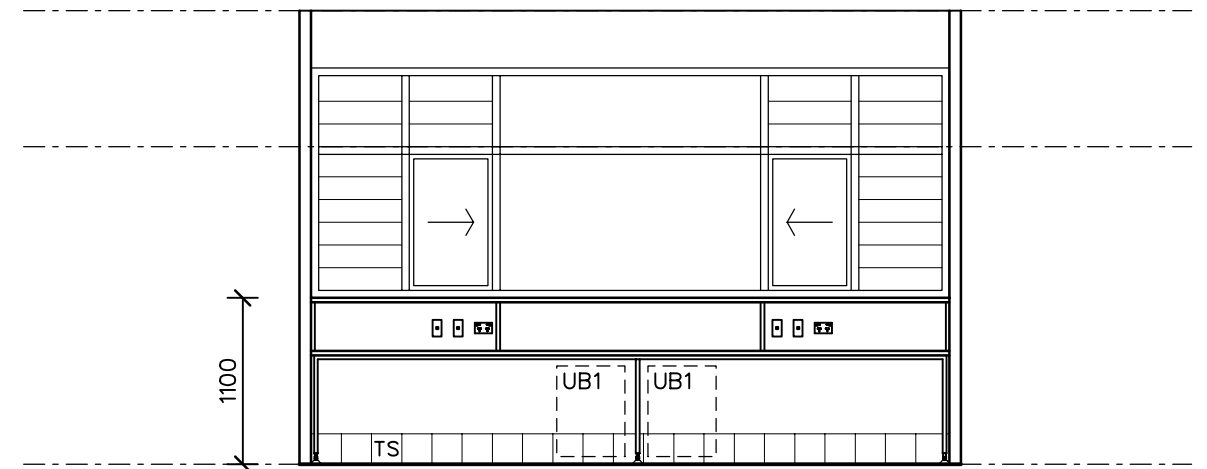
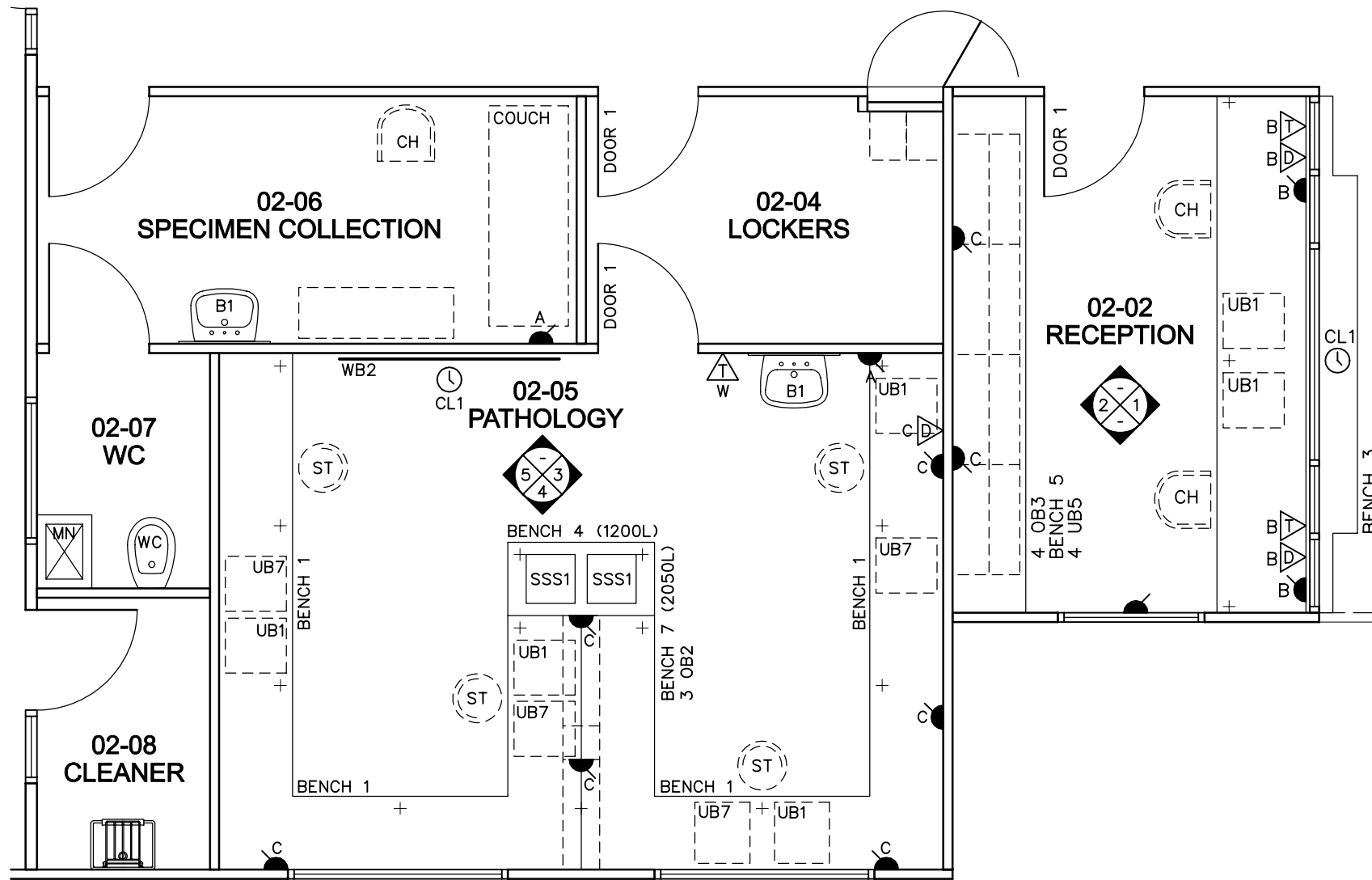
**MALIANA REFERRAL HOSPITAL  
OUTPATIENTS DEPARTMENT /  
COMMUNITY HEALTH ACCIDENT &  
EMERGENCY / OPERATING THEATRE**



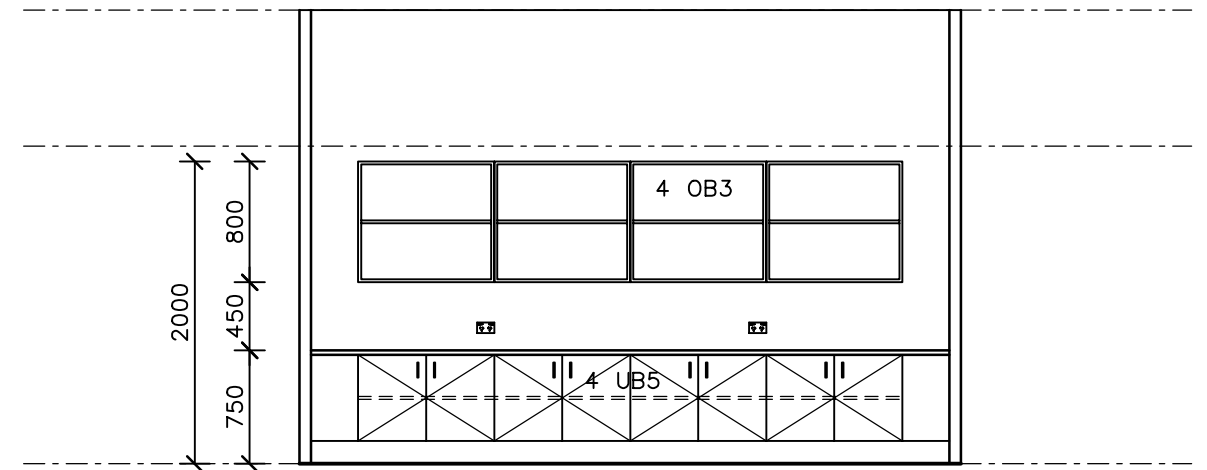
0 1 2 3 4 5m A1 SCALE

		Date: 19/11/04	
		Scale: 1:100 @ A1	
		Scale: 1:200 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	PRE-QUAL PRELIMINARY DESIGN	FD03.02.02	C
A	AMENDED PRELIMINARY DESIGN No. 2		

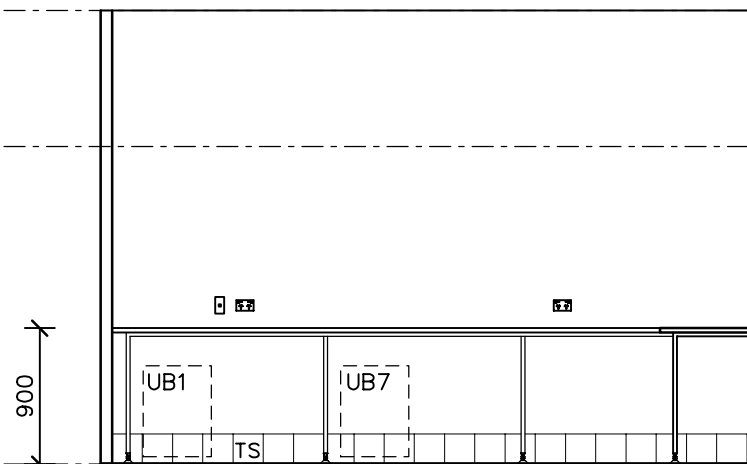




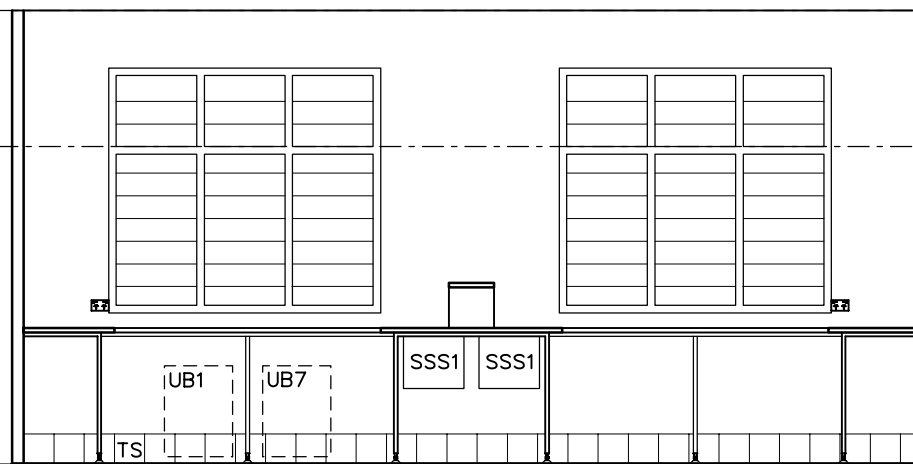
1 ELEVATION 1:50



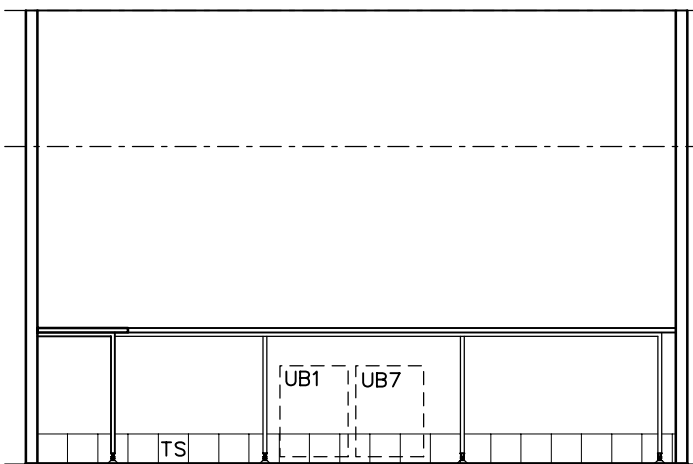
2 ELEVATION 1:50



3 ELEVATION 1:50



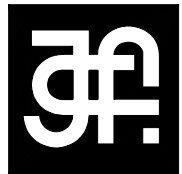
4 ELEVATION 1:50



5 ELEVATION 1:50

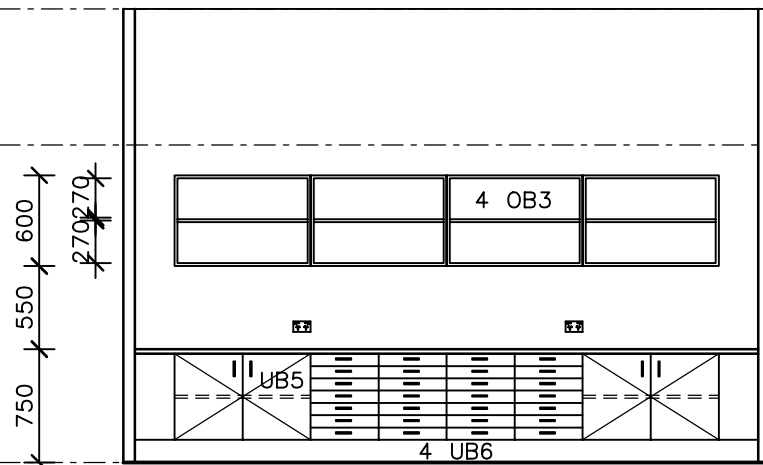
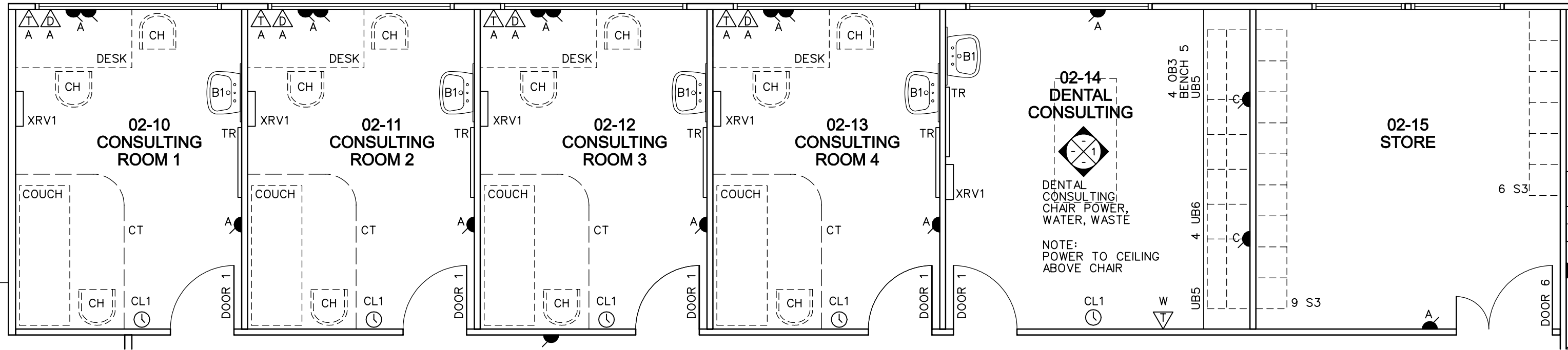
m:\03624\plot\fd03-Maliana\FD03-02-10 (A3).dgn

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CUBITT  
architects



MALIANA REFERRAL HOSPITAL  
 OUTPATIENT DEPARTMENT  
 RECEPTION / LOCKERS/ PATHOLOGY /  
 SPECIMEN COLLECTION

		Date: 19/11/04	
C	FINAL DESIGN	Scale: 1:50 @ A3	
B	QS REVIEW No. 2	Dwg No.	Issue
A	PRELIMINARY	FD03.02.10	C



1 ELEVATION 1:50

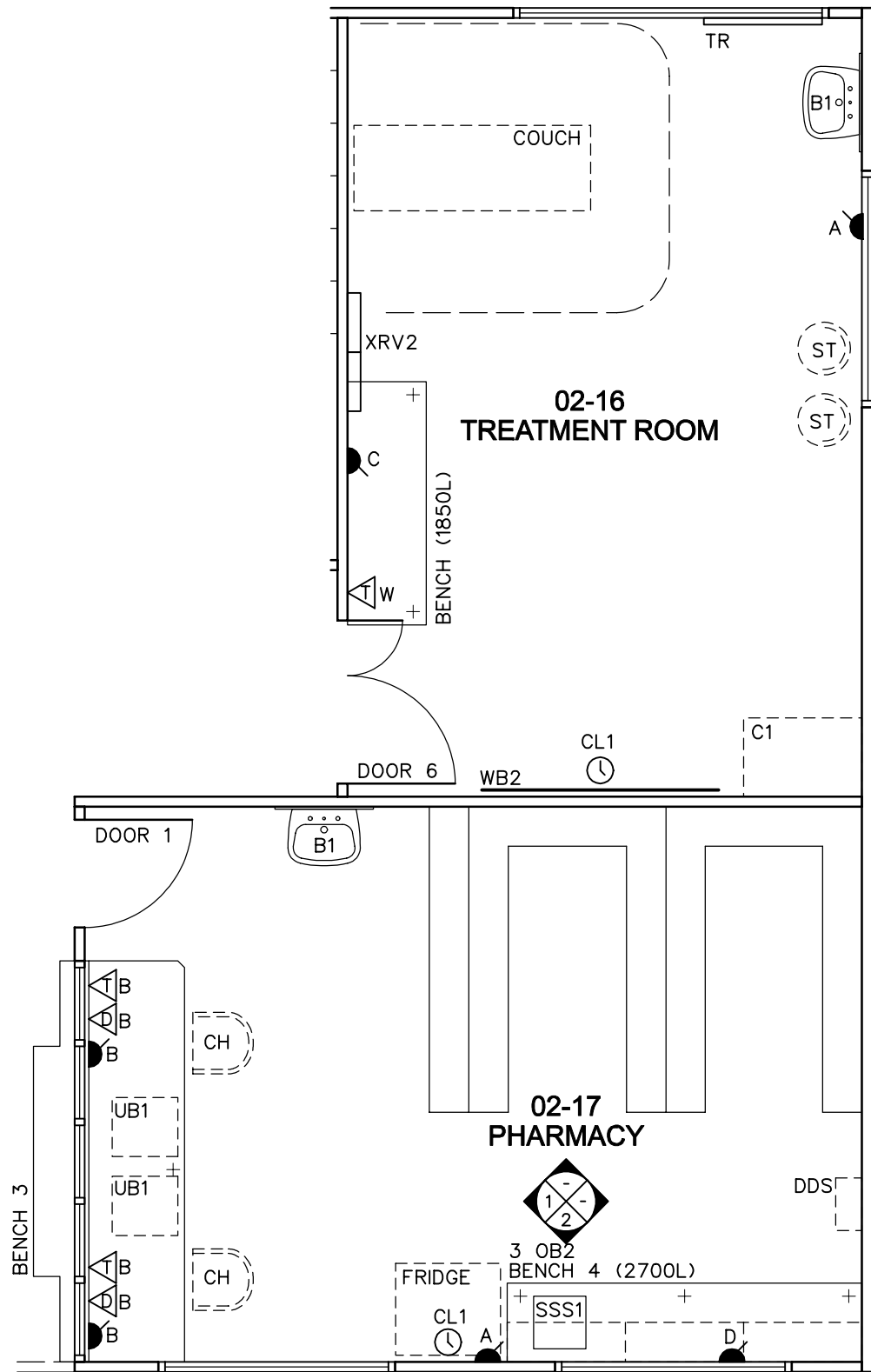
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JAMES CUBITT architects

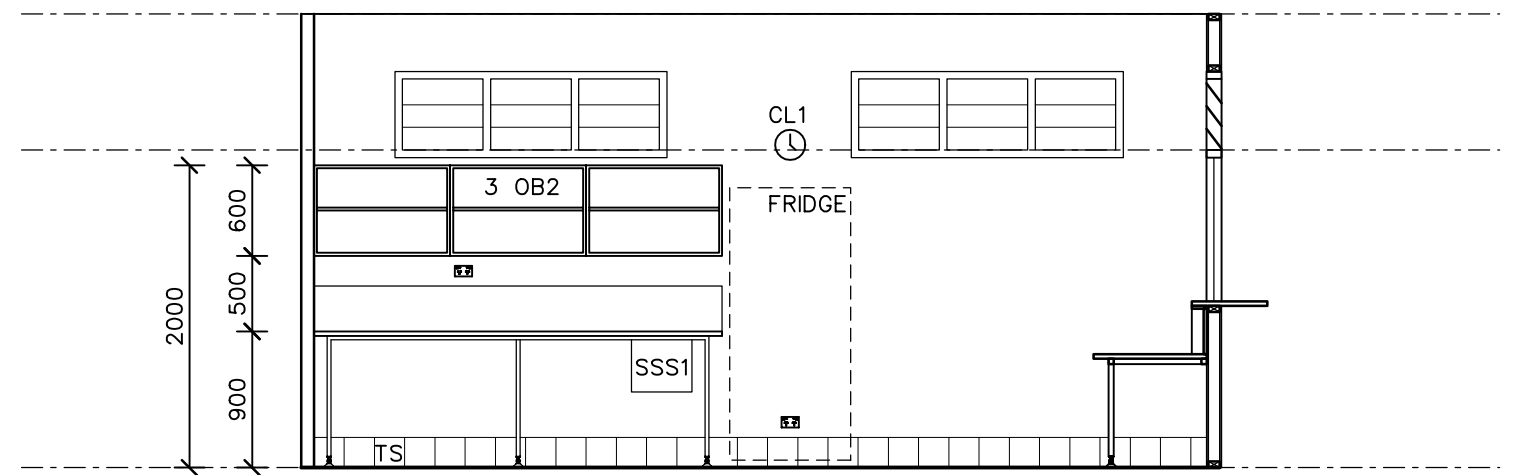


MALIANA REFERRAL HOSPITAL  
 OUTPATIENT DEPARTMENT  
 CONSULTING ROOMS 1, 2, 3, 4 /  
 DENTAL CONSULTING / STORE

		Date: 19/11/04	
		Scale:	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.02.11	C
A	PRELIMINARY		



1 ELEVATION 1:50



2 ELEVATION 1:50

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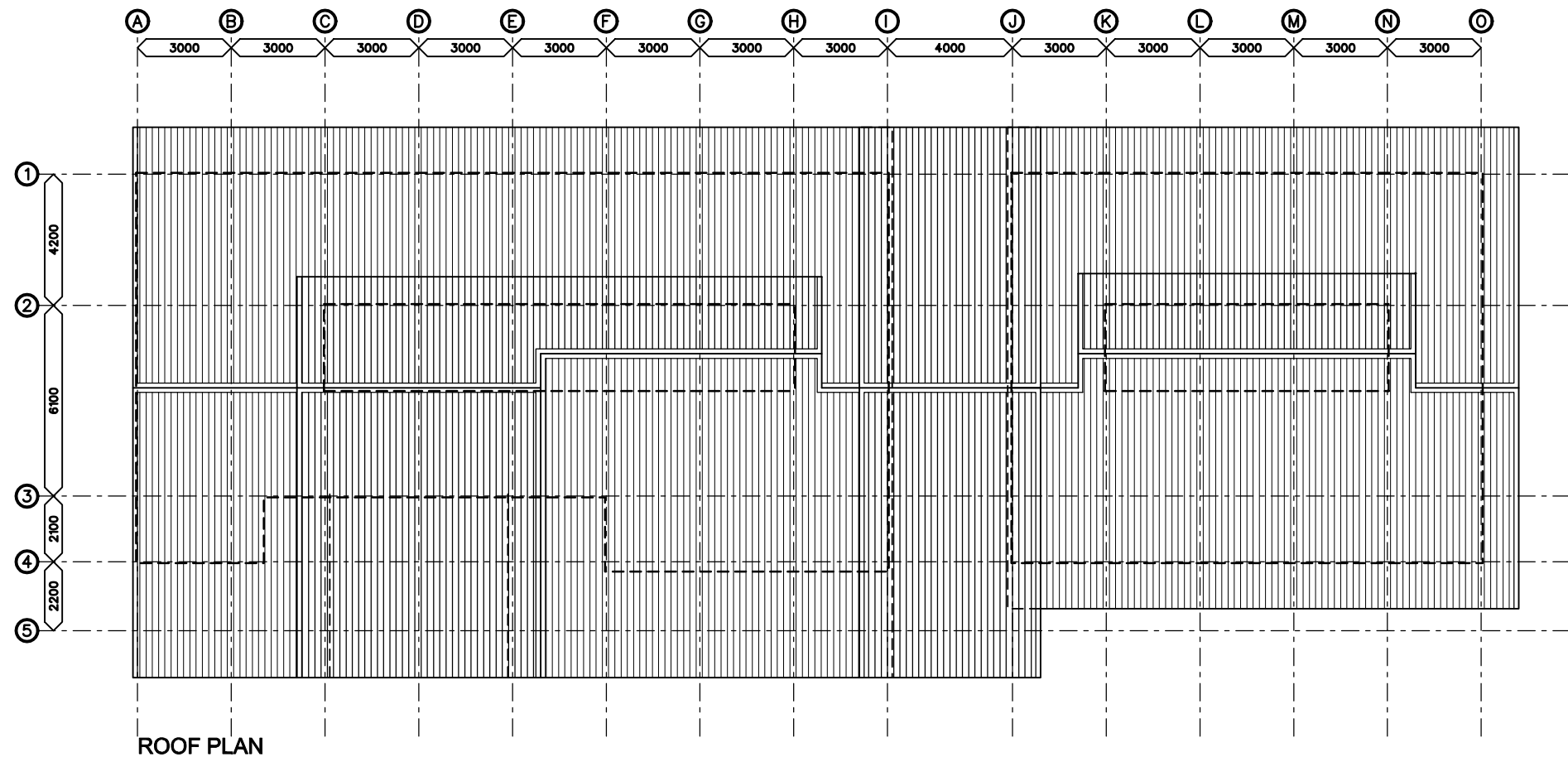
MALIANA REFERRAL HOSPITAL

OUTPATIENT DEPARTMENT  
TREATMENT ROOM / PHARMACY

		Date: 19/11/04	
		Scale:	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.02.12	C
A	PRELIMINARY		

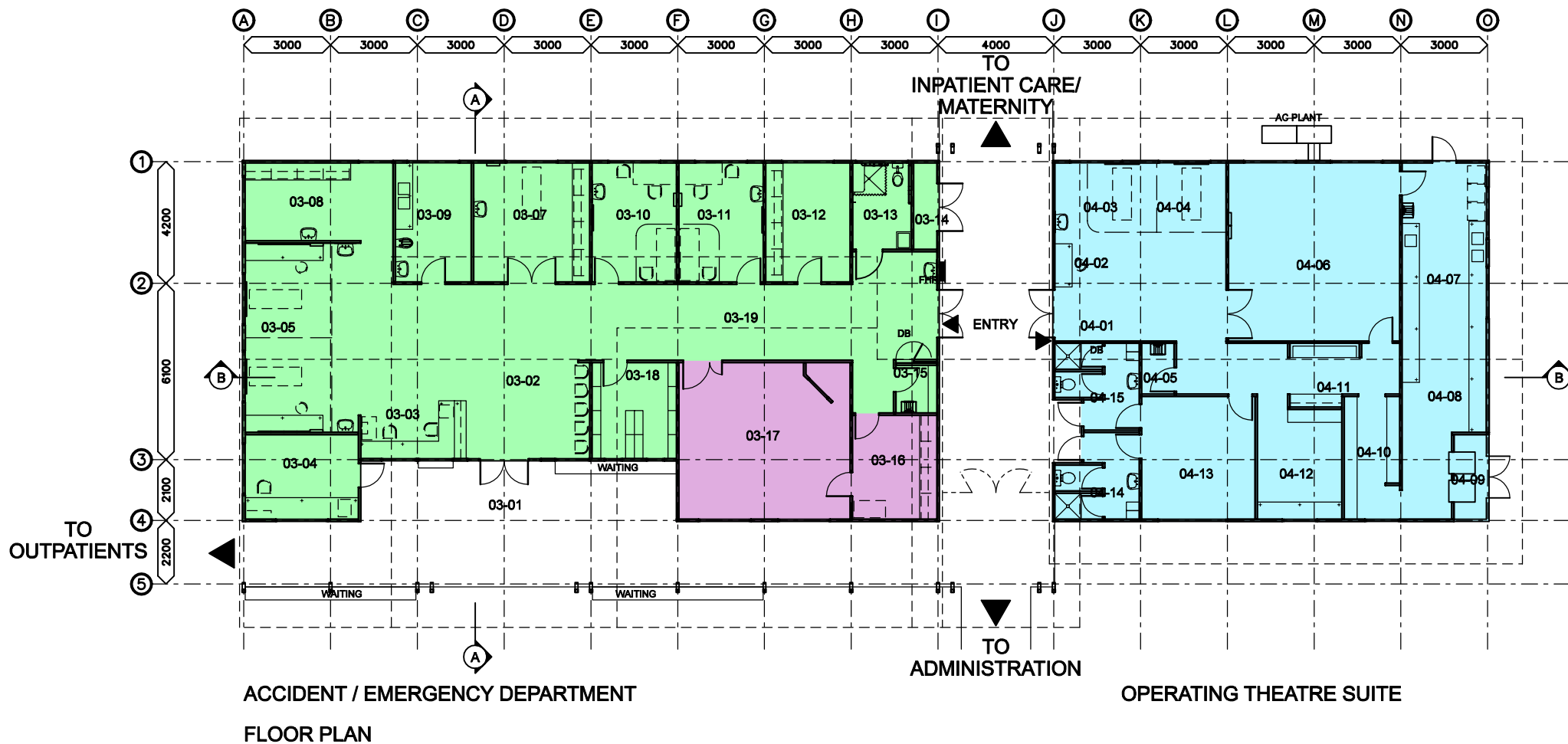
OUTPATIENT UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>													
	Consult/examination	4	12	48	nurse and doctor clinics		Consulting Examination Room 4 x 12 sqm	48		02-10	Consulting Exam. Room	2900 x 4100	12
										02-11	Consulting Exam. Room	2900 x 4100	12
										02-12	Consulting Exam. Room	2900 x 4100	12
										02-13	Consulting Exam. Room	2900 x 4100	12
	Therapy room	1	24	24	multi-purpose for physio and other therapies (visiting therapists); patient education, seminars, public health program use		Treatment Room	24		02-16	Treatment Room	3900 x 5900	23
<b>Staff</b>													
	Office: clinic	1	14	14	reception, appointments and records		Reception	9		02-02	Reception	3000 x 4100	12
<b>Storage</b>													
	Store: general	1	10	10									
	Store: equipment	1	16	16	adjacent to therapy room		Store: Combined	14		02-15	Store	3900 x 4100	16
<b>Support</b>													
	Waiting: public				undercover, verandah or similar								
	TOTAL ROOM AREAS			112									
	Discounted Circulation	15%		17				14		02-03	Corridor	1700 X 18400	31.5
<b>External Covered Area</b>													
	Waiting: public	1	60	60	undercover, verandah or similar					02-21	External Waiting	15000 x 4300	64
										02-18	External Corridor	1500 x 8100	14.5
<b>TOTAL OUTPATIENT UNIT</b>				<b>129</b>									
					shared use with Pharmacy, Lab, etc.								
										02-01	Internal Waiting	6000 x 4200	25
										02-08	Cleaner	1400 x 2000	2.5
										02-14	Dental Consulting	3900 x 4100	16
										02-19	Female WC	1400 x 2000	2.5
										02-20	Male WC	1400 x 2000	2.5
<b>TOTAL OUTPATIENT UNIT</b>				<b>129</b>		<b>TOTAL OUTPATIENT UNIT</b>	<b>109</b>		<b>TOTAL OUTPATIENTS</b>				<b>179</b>

PHARMACY UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>LABORATORY UNIT</b>													
<b>Primary</b>													
	Specimen collection	1	10	10	blood collection, incl. room for couch		Specimen Collection	8		02-06	Specimen Collection	2000 x 4400	9
	Laboratory with wet/dry designation	1	25	25	files, safety shower, washing up area		Laboratory	36		02-05	Laboratory	4200 x 5900	25
<b>Staff</b>													
	Change: staff	1	5	5						02-04	Locker Room	2900 x 2000	6
	Toilet: staff	1	3	3						02-09	PWD WC	2000 x 3000	6
<b>Storage</b>													
	Store: general	1	10	10									
<b>Support</b>													
	Waiting: public	1	6	6	sub wait - covered external verandah, overflow to OPU area								
	Toilet: patient	1	3	3						02-07	WC	1400 x 2000	2.5
	TOTAL ROOM AREAS			62				44					45.5
	Discounted Circulation	30%		19				6.5					
<b>TOTAL LABORATORY</b>				<b>81</b>									
<b>Primary</b>													
	Dispensing area: pharmacy	1	8	8			Pharmacy	21		02-17	Pharmacy	4200 x 5900	25
<b>Staff</b>													
	Preparation: pharmacy	1	20	20	c/w assembly, goods receiving, bulk store, incl. DD safe, refrig								
<b>Support</b>													
	Reception				s/w EU/OPU								
	Waiting: public				s/w OPU; covered verandah								
	TOTAL ROOM AREAS			28				24					
	Discounted Circulation	15%		4									
<b>TOTAL PHARMACY</b>				<b>32</b>				<b>24</b>					
<b>TOTAL LABORATORY</b>				<b>81</b>				<b>50.5</b>					
<b>TOTAL OUTPATIENT UNIT</b>				<b>129</b>				<b>109</b>					
								<b>184</b>			<b>TOTAL OUTPATIENTS</b>		<b>264</b>



ROOF PLAN

ROOM LEGEND	
ACCIDENT / EMERGENCY DEPARTMENT (Kecelakaan/Departemen Ujrit Gawat Darurat)	
03-01	Area untuk menunggu
03-02	Ruang resepsi
03-03	-
03-04	Kantor untuk keamanan
03-05	Ruang untuk pemasangan masker oksigen
-	-
03-07	Ruang prosedur
03-08	Ruang utilitas yang bersih
03-09	Ruang utilitas yang kotor
03-10	Ruang konsultasi 1
03-11	Ruang konsultasi 2
03-12	Gudang
03-13	Wc
03-14	-
03-15	Pembersih
03-16	Ruang proses sinar x
03-17	Ruang sinar x
03-18	Gudang untuk rekor kesehatan
03-19	-
03-01	WAITING AREA
03-02	RECEPTION
03-03	TRIAGE
03-04	SECURITY OFFICE
03-05	RESUSCITATION
-	-
03-07	PROCEDURE ROOM
03-08	CLEAN UTILITY
03-09	DIRTY UTILITY
03-10	CONSULTING ROOM 1
03-11	CONSULTING ROOM 2
03-12	STORE
03-13	WC
03-14	BOTTLE STORE
03-15	CLEANER
03-16	X-RAY PROCESSING
03-17	X-RAY ROOM
03-18	MEDICAL RECORDS
03-19	CORRIDOR
ROOM LEGEND	
OPERATING THEATRE SUITE (Ruang operasi utama)	
04-01	ENTRY CORRIDOR
04-02	RECEPTION / WRITE UP
04-03	HOLDING / REC. BAY 1 & 2
-	-
04-05	CLEANER
04-06	OPERATING THEATRE
04-07	WASH UP AND DECONTAMINATION / CLEAN UP AND INSTRUMENT WASH
-	-
04-08	STERILE PACK AREA
04-09	STERILIZER
04-10	STERILE STOCK
04-11	SCRUB-UP
04-12	ANAESTHETIC WORK AREA & EQUIPMENT STORE
-	-
04-13	STAFF ROOM
04-14	MALE BATHROOM
04-15	FEMALE BATHROOM



ACCIDENT / EMERGENCY DEPARTMENT

OPERATING THEATRE SUITE

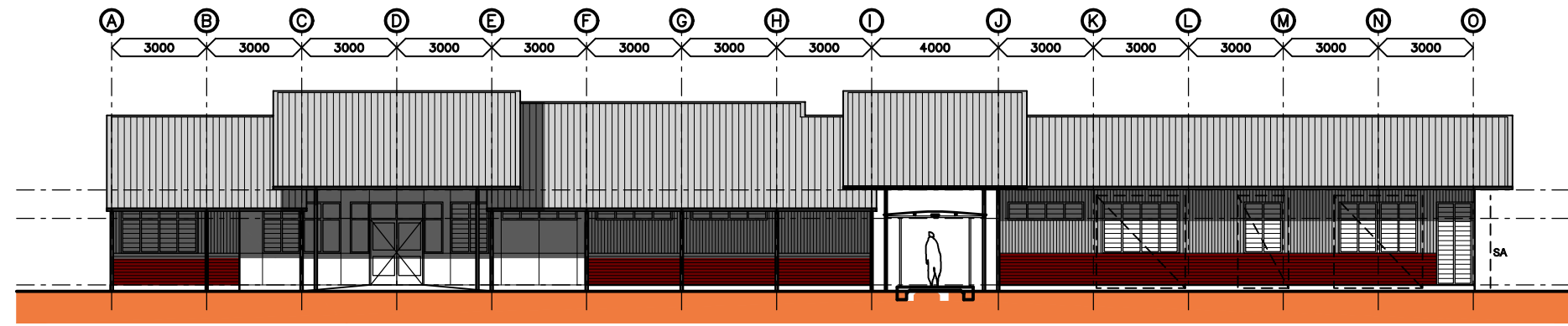
FLOOR PLAN

0 1 2 3 4 5m A1 SCALE

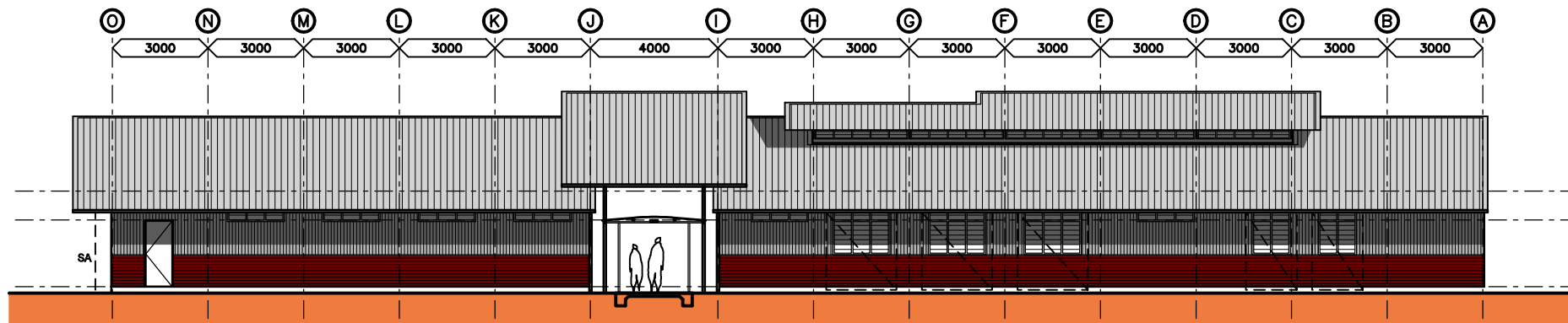


J	FINAL DESIGN	Date: 19/11/04
I	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
H	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
G	AMENDED PRELIMINARY DESIGN	Dwg No.
F	INTERNAL CONSULTANT REVIEW	Issue
		FD03.(03-04).01
		J

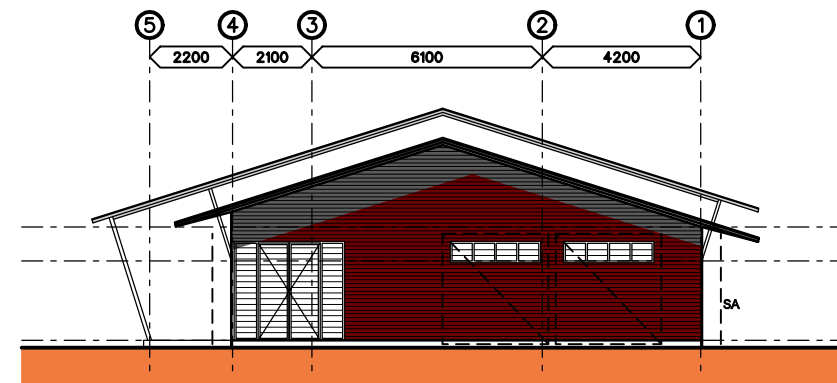
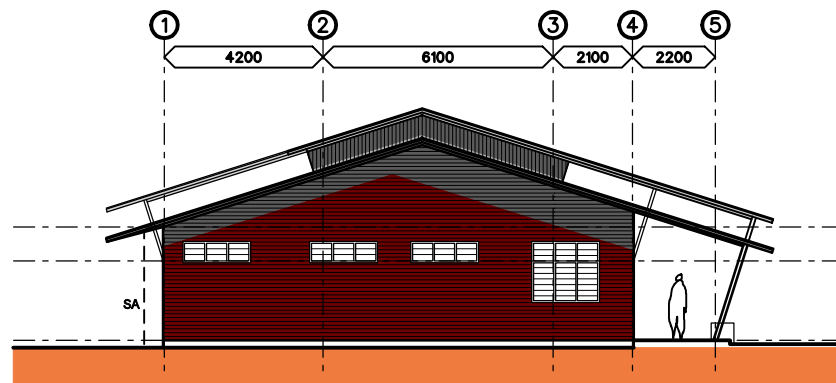




SOUTH ELEVATION

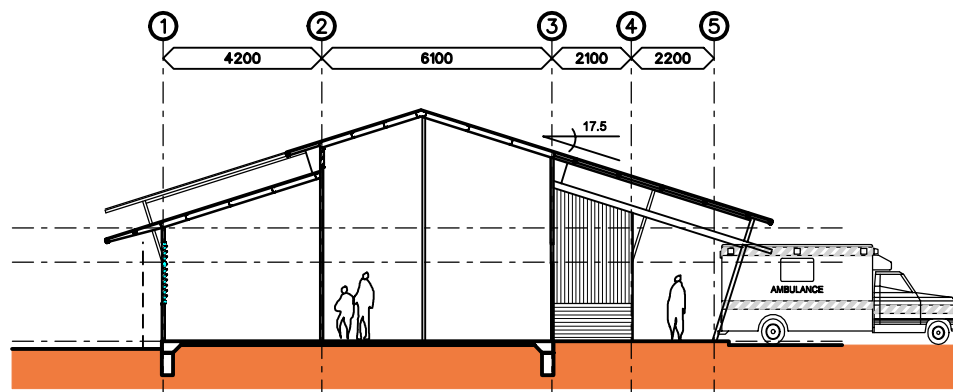


NORTH ELEVATION

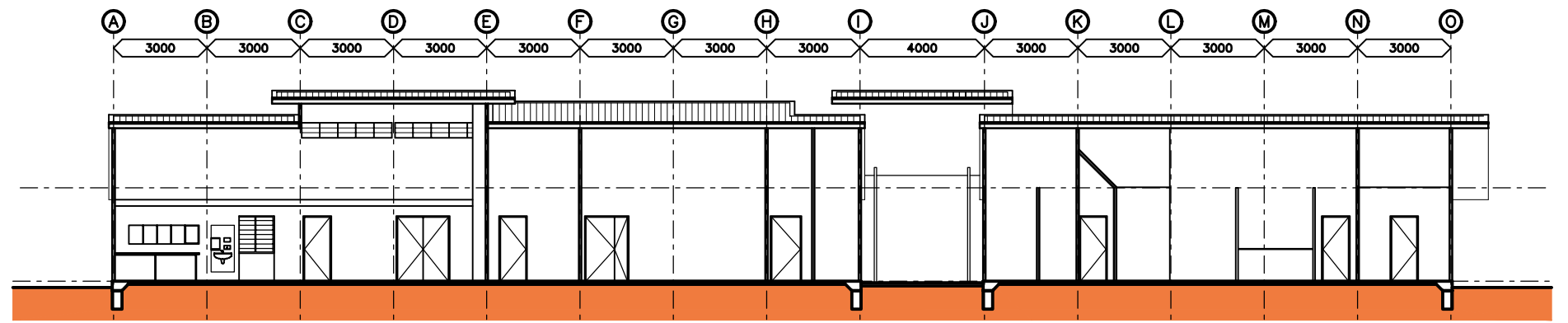


WEST ELEVATION

EAST ELEVATION



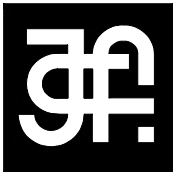
SECTION A-A



SECTION B-B

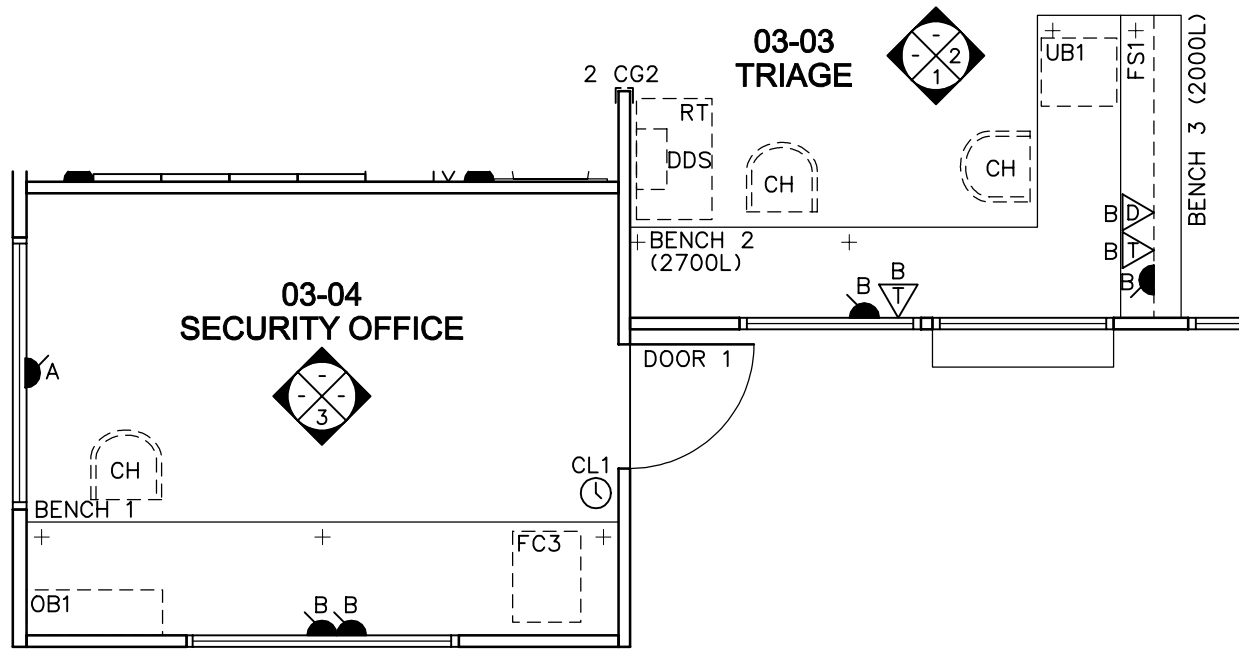
0 1 2 3 4 5m A1 SCALE

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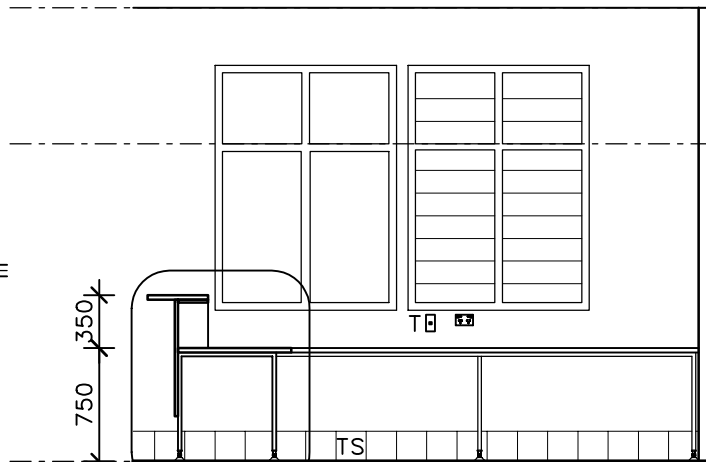


MALIANA REFERRAL HOSPITAL  
EMERGENCY DEPARTMENT/  
OPERATING THEATRE SUITE  
ELEVATIONS / SECTIONS

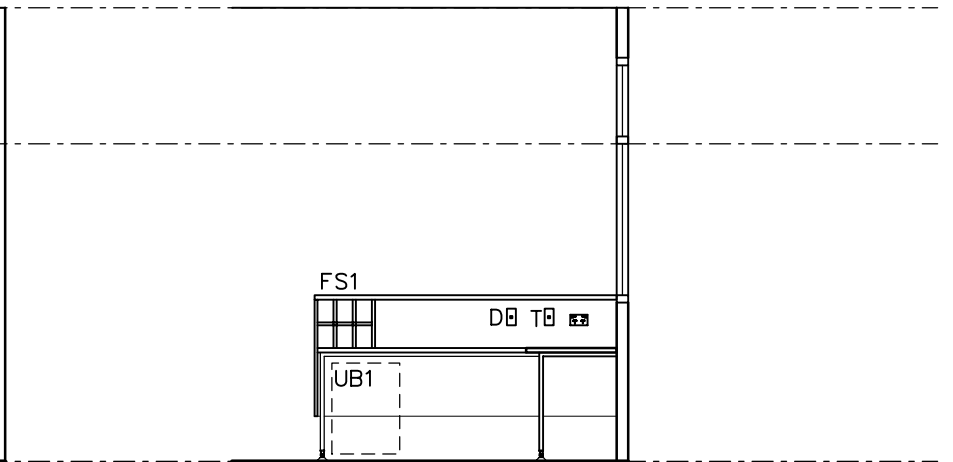
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I	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
H	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
G	AMENDED PRELIMINARY DESIGN	Dwg No.
F	INTERNAL CONSULTANT REVIEW	FD03.(03-04).02
		Issue J



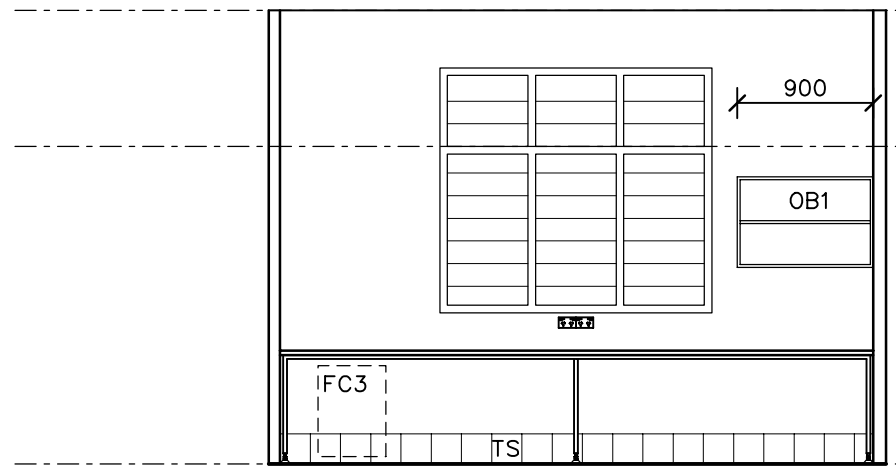
PLAN 1:50  
ROOM 03-03, 03-04



1 ELEVATION 1:50



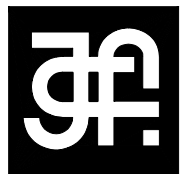
2 ELEVATION 1:50



3 ELEVATION 1:50

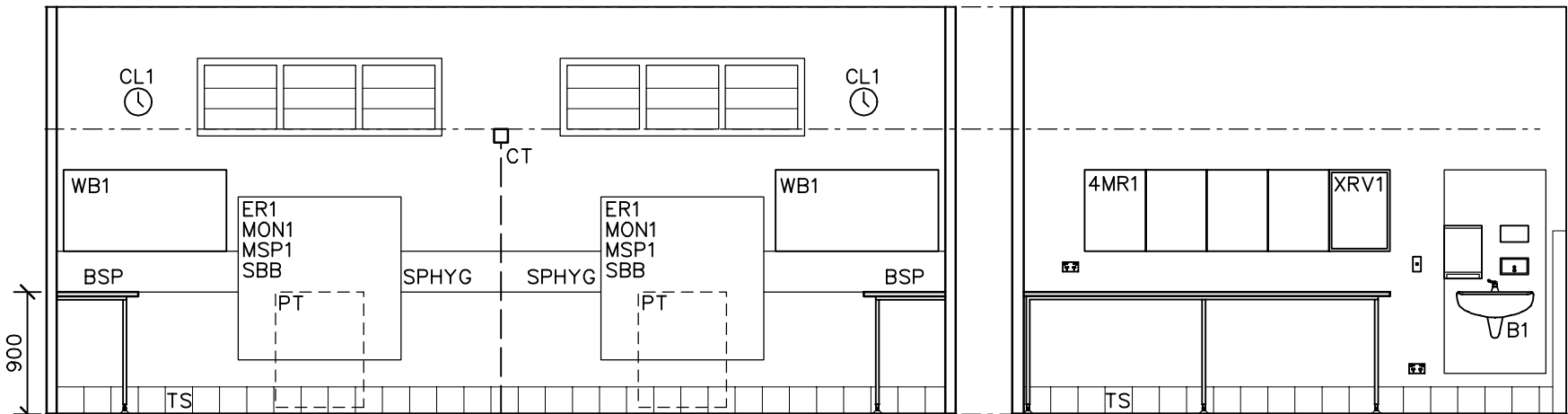
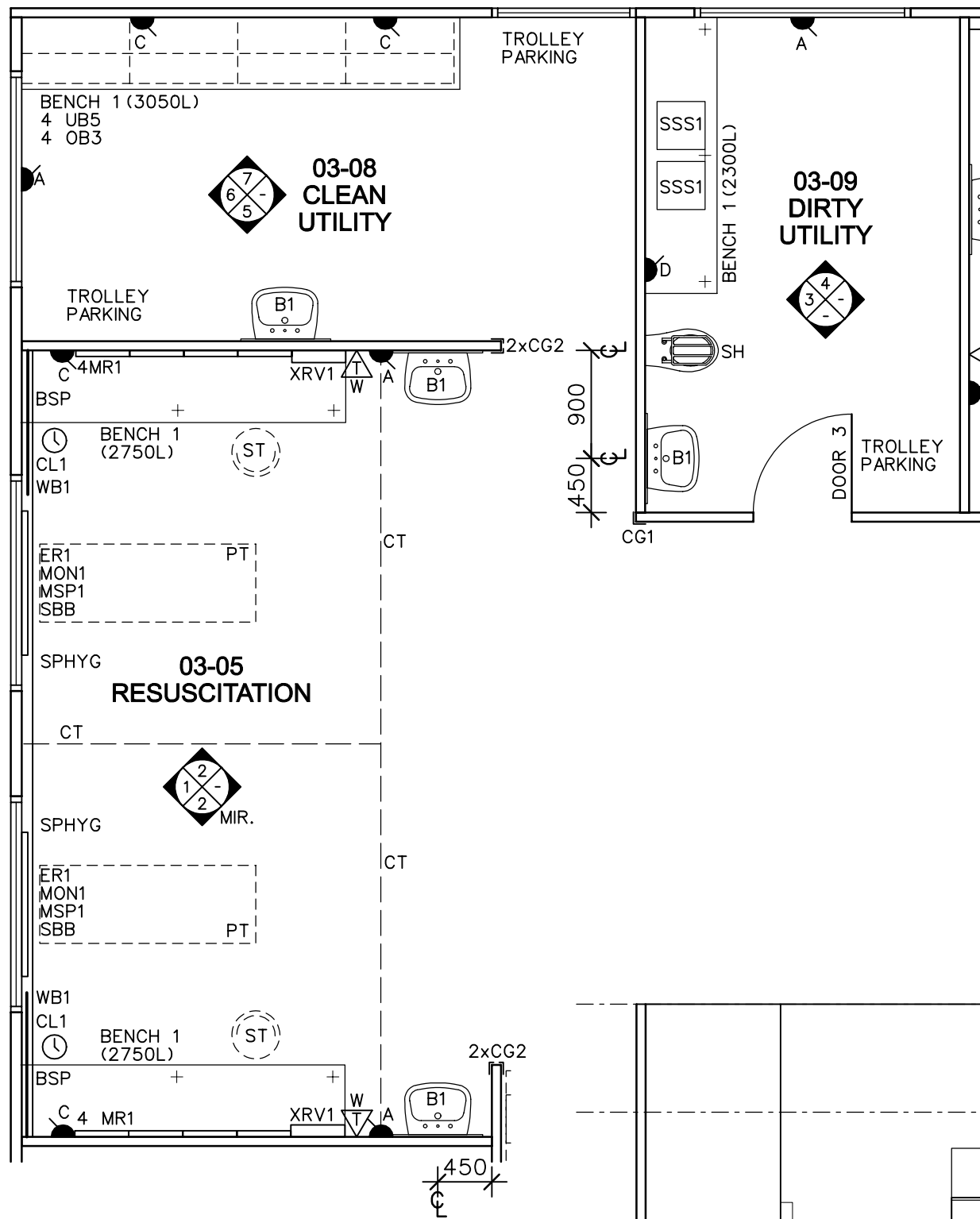
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JAMES CUBITT architects



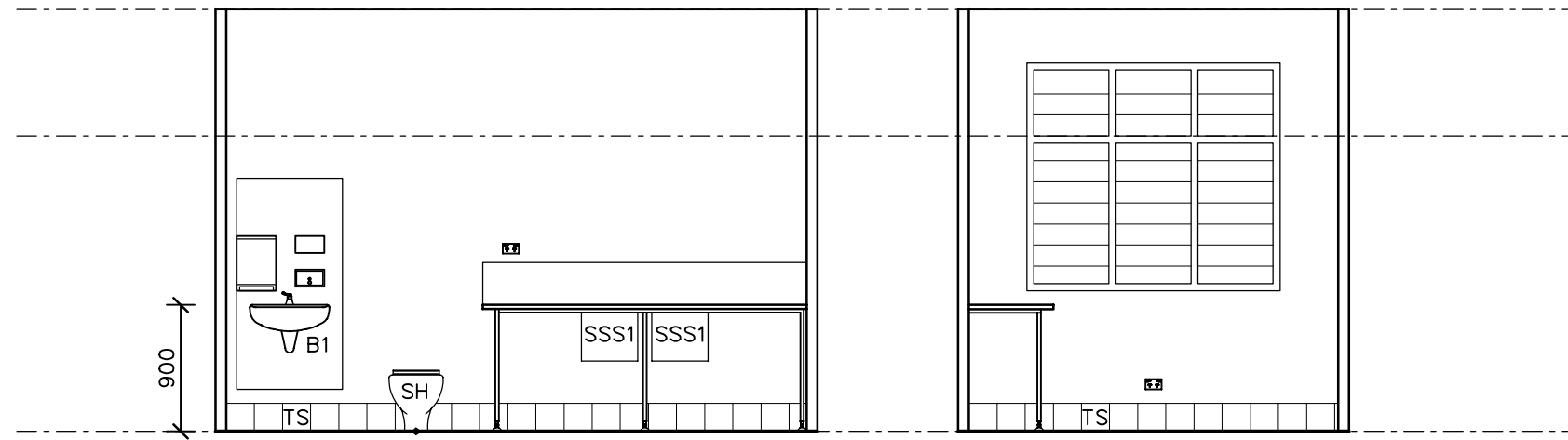
MALIANA REFERRAL HOSPITAL  
ACCIDENT / EMERGENCY DEPT.  
TRIAGE / SECURITY

		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.03.10	C
A	PRELIMINARY		



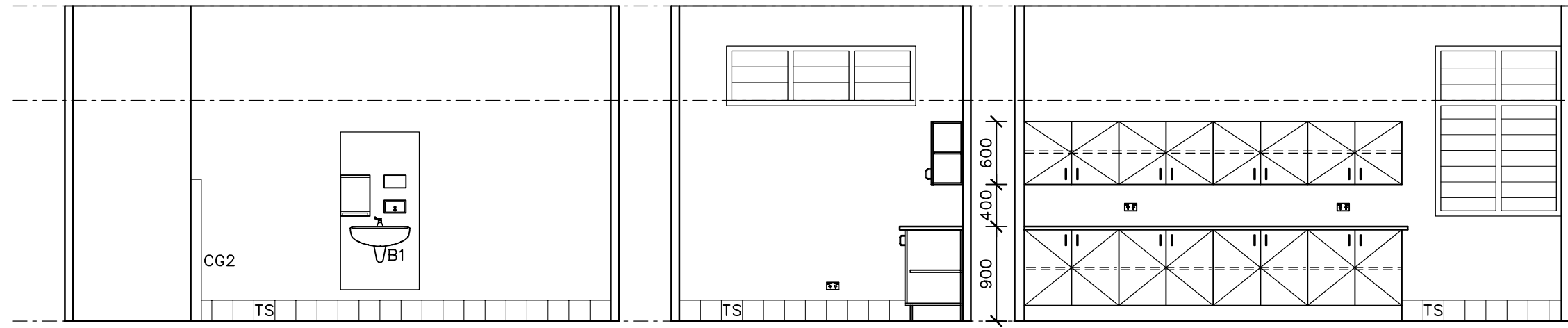
1 ELEVATION 1:50

2 ELEVATION 1:50



3 ELEVATION 1:50

4 ELEVATION 1:50



5 ELEVATION 1:50

6 ELEVATION 1:50

7 ELEVATION 1:50

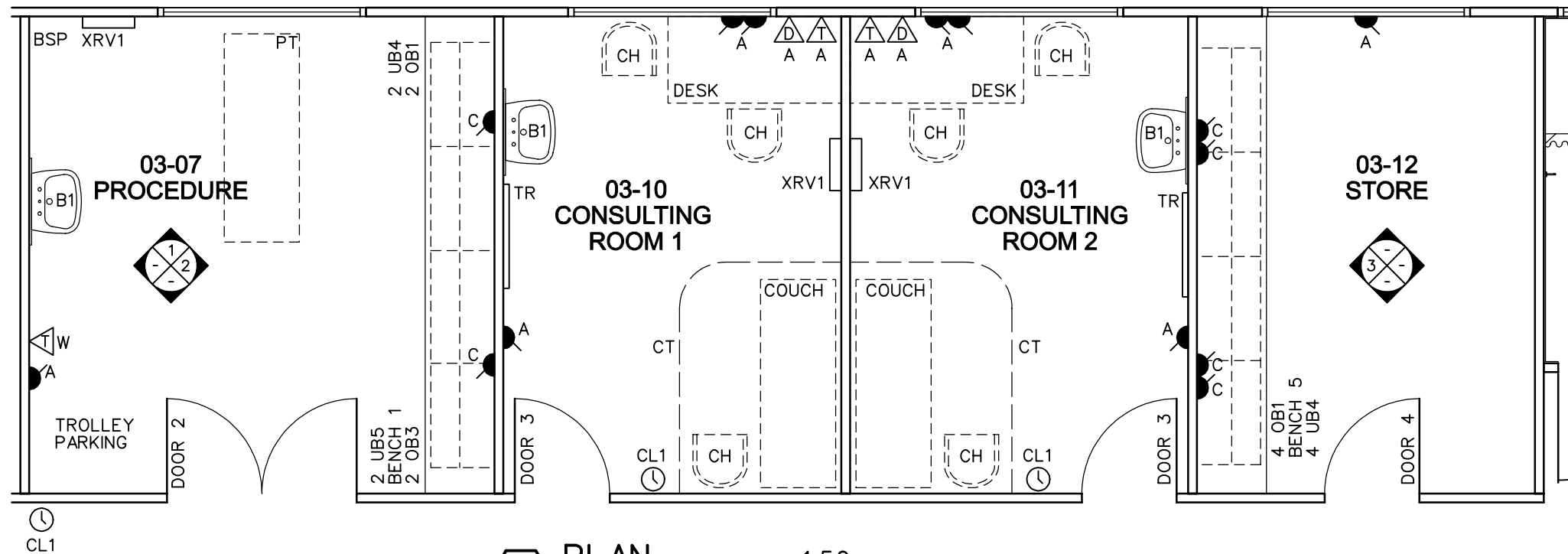
PLAN 1:50  
ROOM 03-05, 03-08, 03-09

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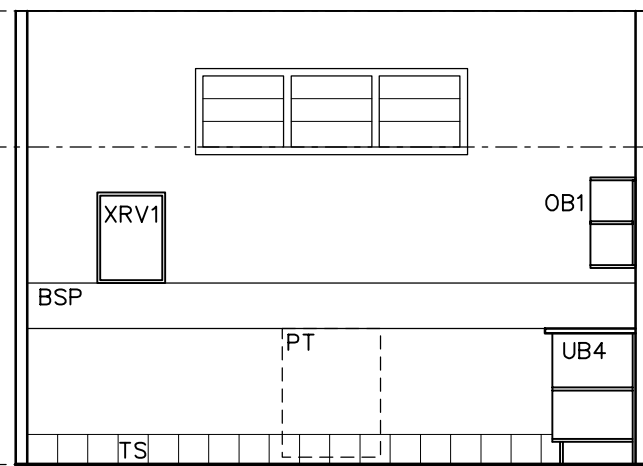


MALIANA REFERRAL HOSPITAL  
ACCIDENT / EMERGENCY DEPT.  
RESUSCITATION /  
CLEAN AND DIRTY UTILITY

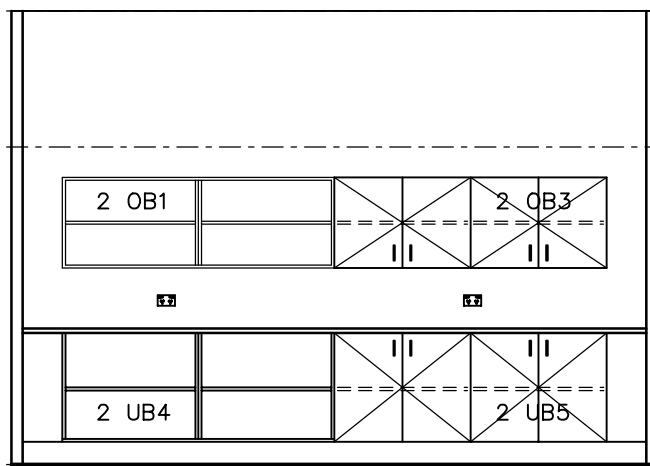
		Date: 19/11/04	
C	FINAL DESIGN	Scale: 1:50 @ A3	
B	QS REVIEW No. 2	Dwg No.	Issue
A	PRELIMINARY	FD03.03.11	C



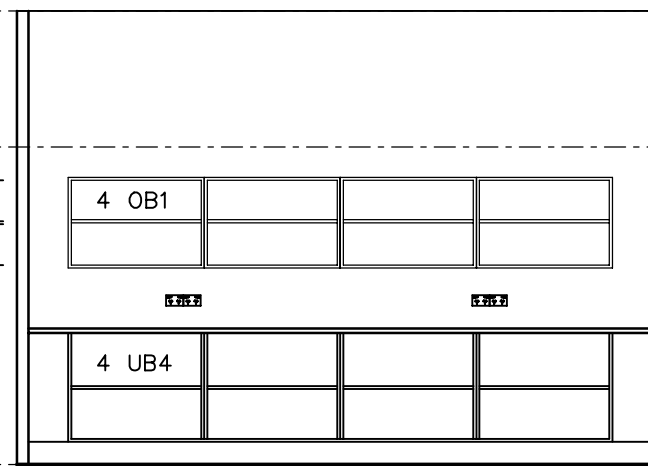
PLAN 1:50  
 ROOMS 03-07, 03-10,  
 03-11, 03-12



1 ELEVATION 1:50



2 ELEVATION 1:50



3 ELEVATION 1:50

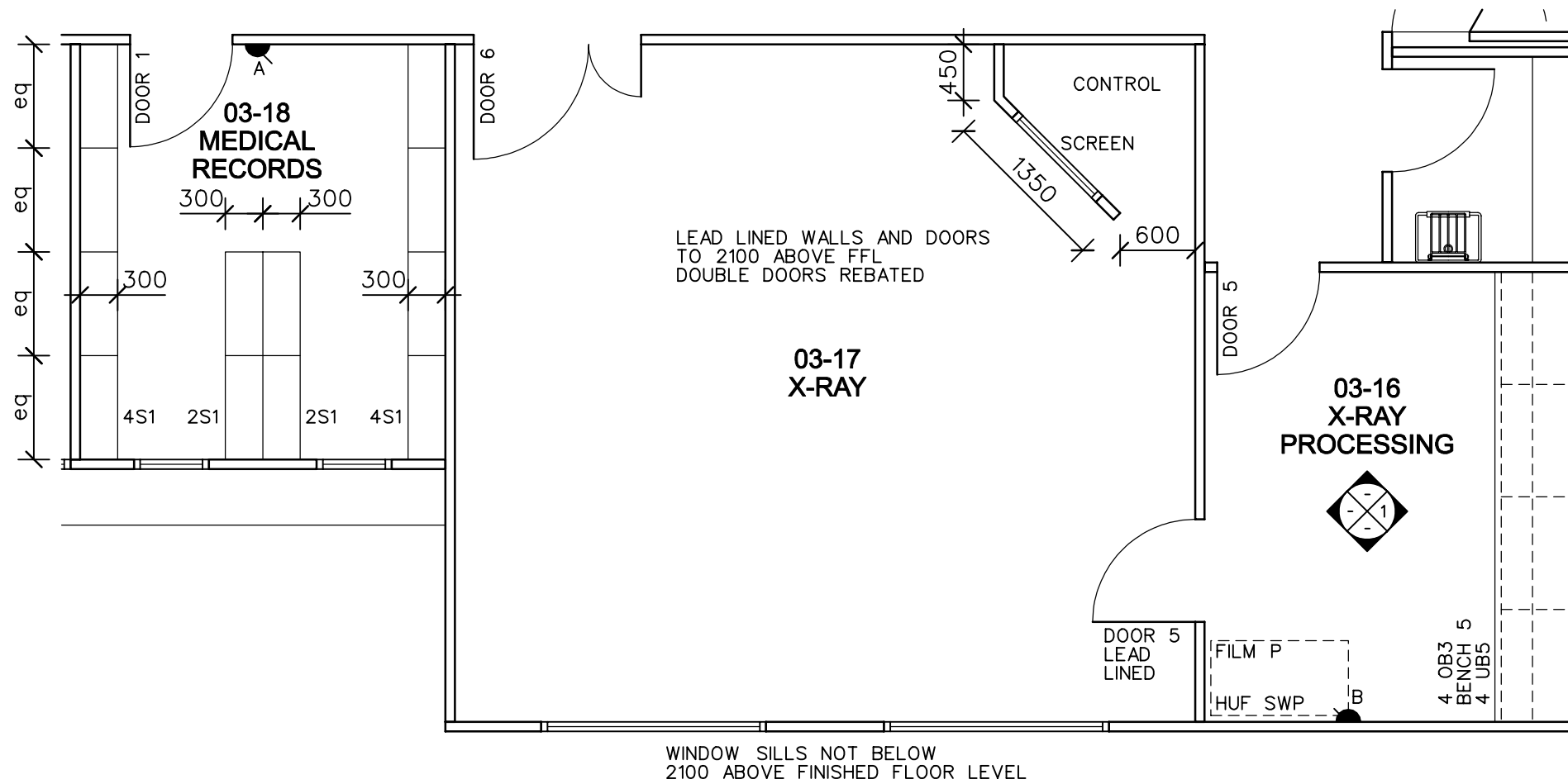
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JAMES  
 CUBITT  
 architects

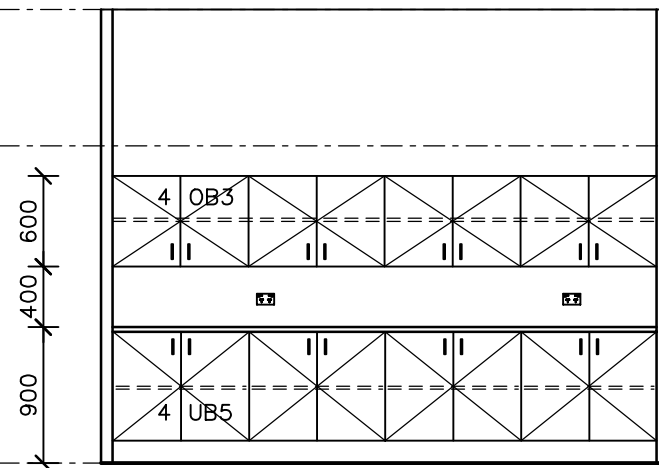


MALIANA REFERRAL HOSPITAL  
 ACCIDENT / EMERGENCY DEPT.  
 PROCEDURE / CONSULTING  
 ROOMS / STORE

		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.03.12	C
A	PRELIMINARY		



PLAN 1:50  
ROOM 03-16, 03-17, 03-18



ELEVATION 1:50

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JAMES CUBITT architects



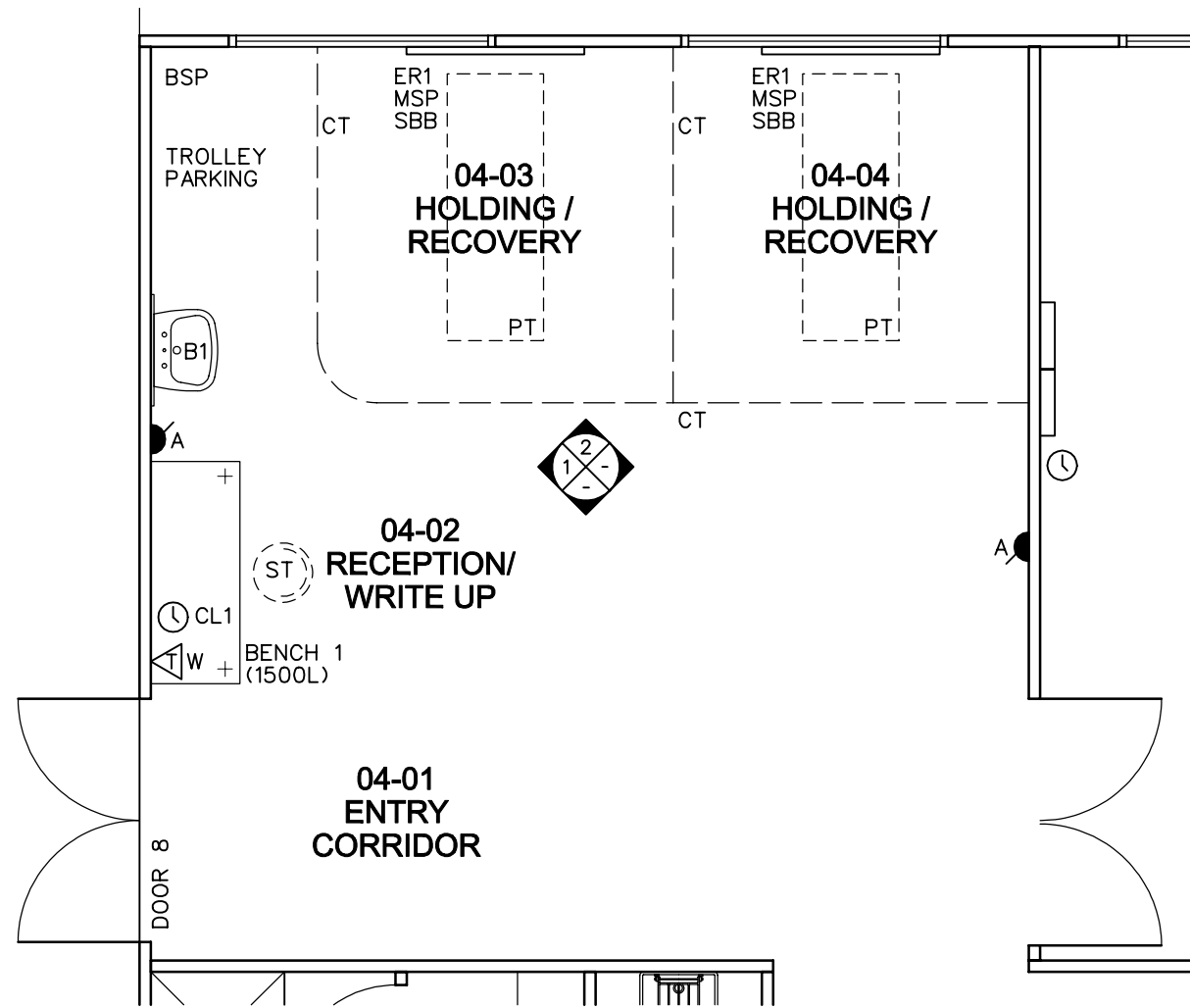
MALIANA REFERRAL HOSPITAL  
ACCIDENT / EMERGENCY DEPT.  
X-RAY PROCESSING / X-RAY /  
MEDICAL RECORDS

		Date: 19/11/04
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C	FINAL DESIGN	Dwg No.
B	QS REVIEW No. 2	Issue
A	PRELIMINARY	FD03.03.13 C

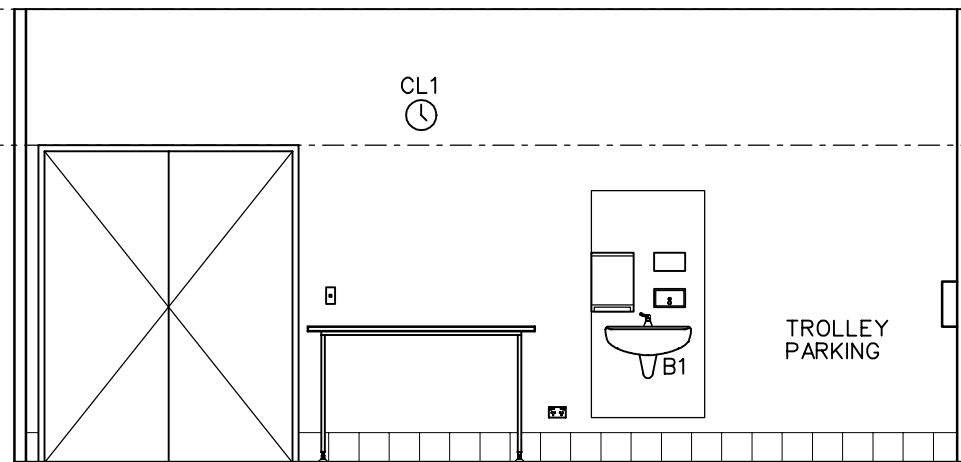
EMERGENCY UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>													
	Reception & registration				Main Entry					03-02	Reception	2900 x 5100	15
	Triage assessment area	1	8	8	near entry		Triage	8		03-03	Triage	3400 x 3300	12
	Resuscitation	1	24	24	2 bays		Resus	24		03-05	Resuscitation Bays 1 & 2	Individual Dims. 3900 x 3300	26
	Procedures room	1	16	16	dirty procedures		Procedure Room	16		03-07	Procedure Room	3900 x 4100	16.5
	Consult/interview	2	12	24			Consulting Rooms 1 & 2	24		03-10 03-11	Consulting Room 1 Consulting Room 2	4100 x 2900 4100 x 2900	12 12
	Toilet/shower: disabled	1	6	6	patient use, emergency shower		WC	4		03-13	WC	2050 x 3000	6
<b>Staff</b>													
	Staff station	1	9	9									
	Utility room: clean	1	10	12			Clean Utility	10		03-08	Clean Utility	5100 x 2700	14
	Utility room: dirty	1	8	8			Dirty Utility	8		03-09	Dirty Utility	4100 x 2600	11
	Cleaners room	1	2	2			Cleaner	2		03-15	Cleaner	1600 x 1400	2.5
	Toilet/shower: staff	1	5	5	s/w maternity unit								
	Change: staff	1	4	4	s/w maternity unit								
<b>Storage</b>													
	Store: equipment	1	12	12	c/w Store: general, specialist store		Store	12		03-12	Store	4100 x 2900	12
	Bay: mobile equipment	1	4	4	2 wheelchairs, 4 IV stands								
	Bay: linen	1	2	2	cupboard or shelves								
	Bay: trolley park	1	2	2	1 trolley								
<b>Support</b>													
	Waiting	1	12	12	adj entry doors + covered verandah								
	Toilet/shower: visitor	1	5	5									
	TOTAL ROOM AREAS			155			TOTAL ROOM AREAS	163					
	Discounted Circulation	40%		62				62		03-19	Corridor	2600 x 20000	57
	Ambulance Bay (external)	1	80	80	Covered								
							Security Office	10		03-04	Security	2900 x 3900	11.5
							Medical Records	8		03-18	Medical Records	2900 x 3300	10
										03-14	Gas Store	800 x 3000	2.5
							Ambulance	80		03-01	Waiting Area (External)	4200 x 11000	46
<b>TOTAL EMERGENCY</b>			<b>217</b>										

EMERGENCY UNIT						AMENDED DESIGN BRIEF			AMENDED FINAL DESIGN			
DESIGN BRIEF												
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes	Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>XRAY</b>												
<b>Primary</b>												
	Main X-Ray Room	1	35	35	includes control booth	X-Ray Room	28		03-17	X-Ray Room	5900 x 5400	32
	Change cubicle: patient	1	2	2	direct to x-ray room							
	Toilet: access	1	5	5	direct access to x-ray room							
<b>Staff</b>												
	Reception				s/w EU							
	Workroom: x-ray	1	16	16	sort & report; adj to darkroom							
	Darkroom	1	8	8	pass-through cupboard	X-Ray Processing	9		03-16	X-Ray Processing	2900 x 3600	10.5
<b>Storage</b>												
	Store: film	1	4	4	unexposed film & chemicals							
	Bay: mobile equipment	1	4	4	wheelchairs, IV stands				03-14	Trolley Bay	2100 x 1500	3
	Bay: linen storage	1	2	2	cupboard or shelves							
<b>Support</b>												
	Waiting: public	1	8	8	sub-wait: 3 to 4 chairs; access to change cubicles							
	TOTAL ROOM AREAS			84								
	Discounted Circulation	30%		25								
<b>TOTAL XRAY</b>				<b>109</b>								
<b>TOTAL EMERGENCY</b>				<b>217</b>								
<b>TOTAL EMERGENCY</b>							<b>228</b>		<b>TOTAL ACCIDENT &amp; EMERGENCY</b>			<b>271</b>

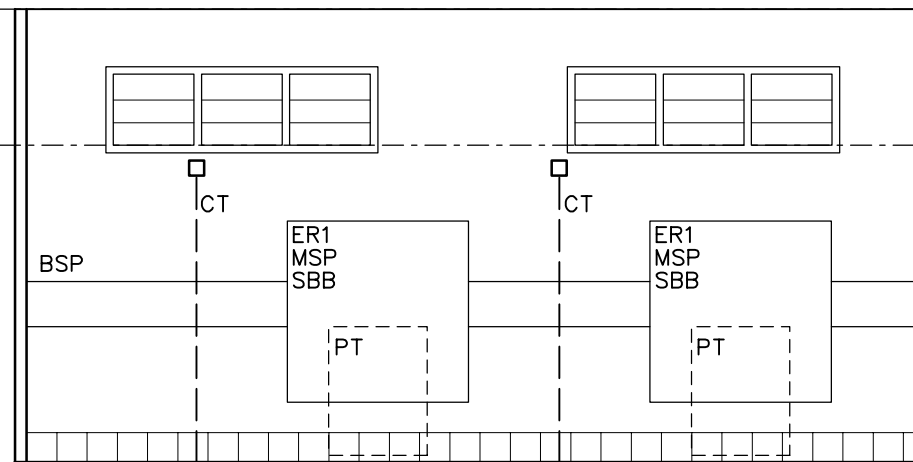




PLAN 1:50  
ROOM 04-01 - 04-04



1 ELEVATION 1:50



2 ELEVATION 1:50

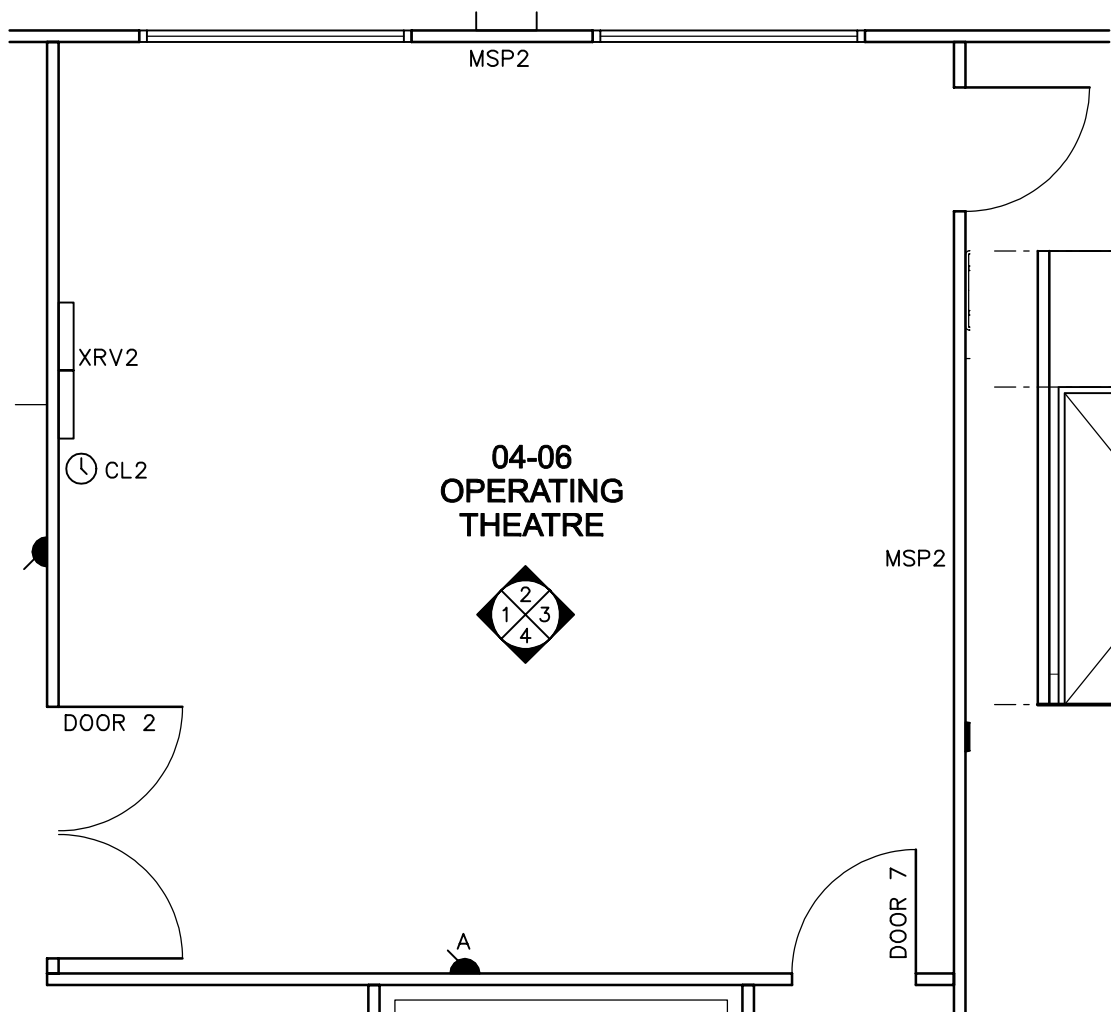
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JAMES CUBITT architects

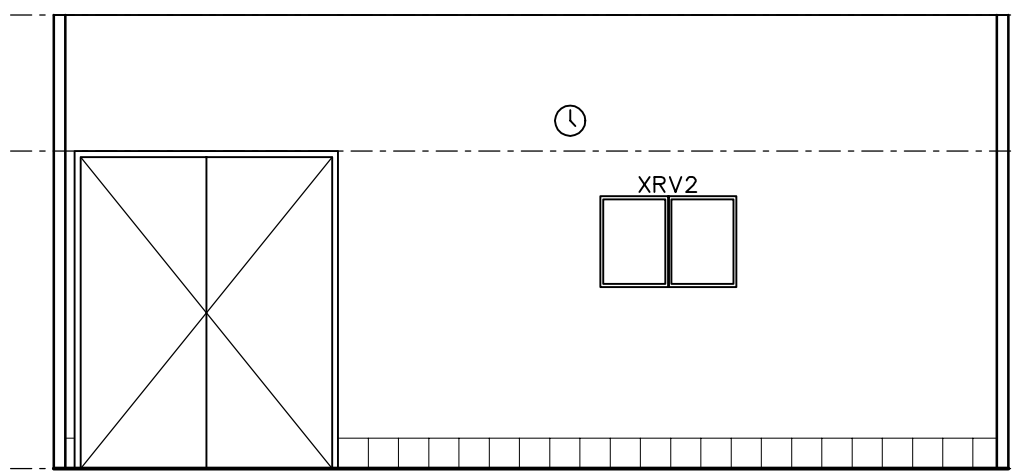


MALIANA REFERRAL HOSPITAL  
OPERATING THEATRE SUITE  
RECEPTION / WRITE UP /  
HOLDING / RECOVERY

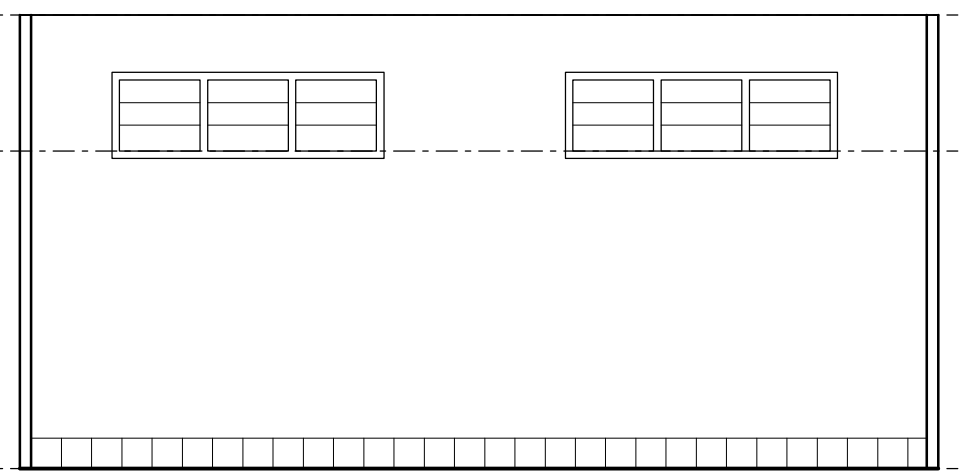
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C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.04.10	C
A	PRELIMINARY		



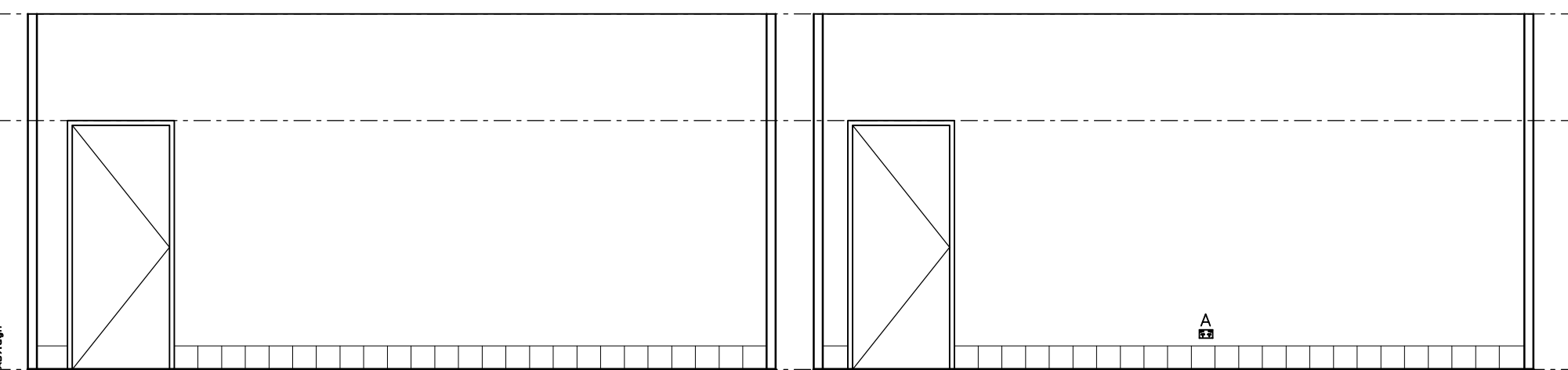
PLAN  
ROOM 04-06  
1:50



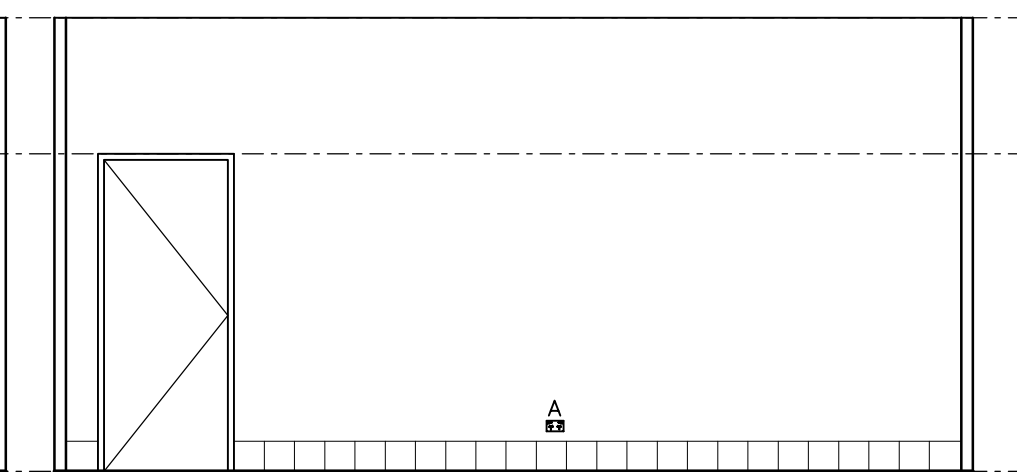
1 ELEVATION  
1:50



2 ELEVATION  
1:50



3 ELEVATION  
1:50



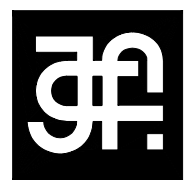
4 ELEVATION  
1:50



REFLECTED CEILING PLAN  
ROOM 04-06  
1:50

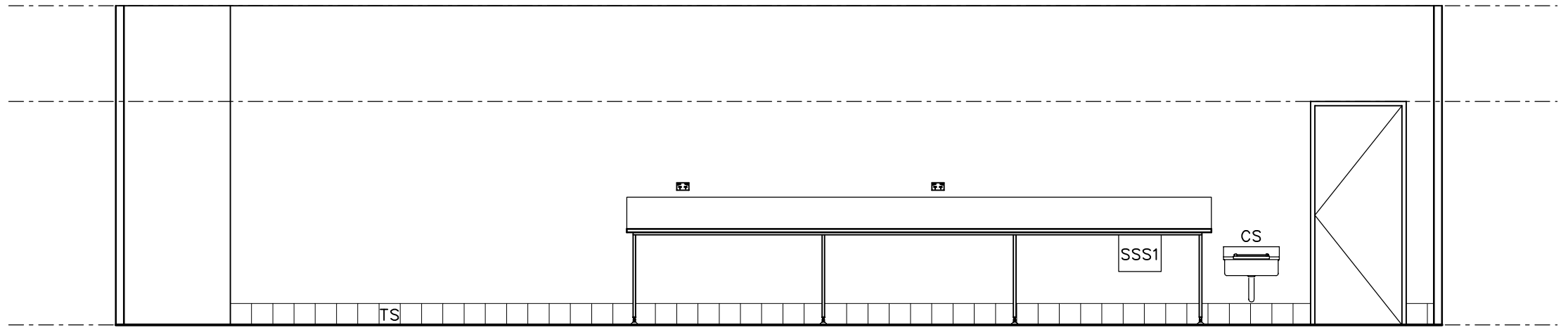
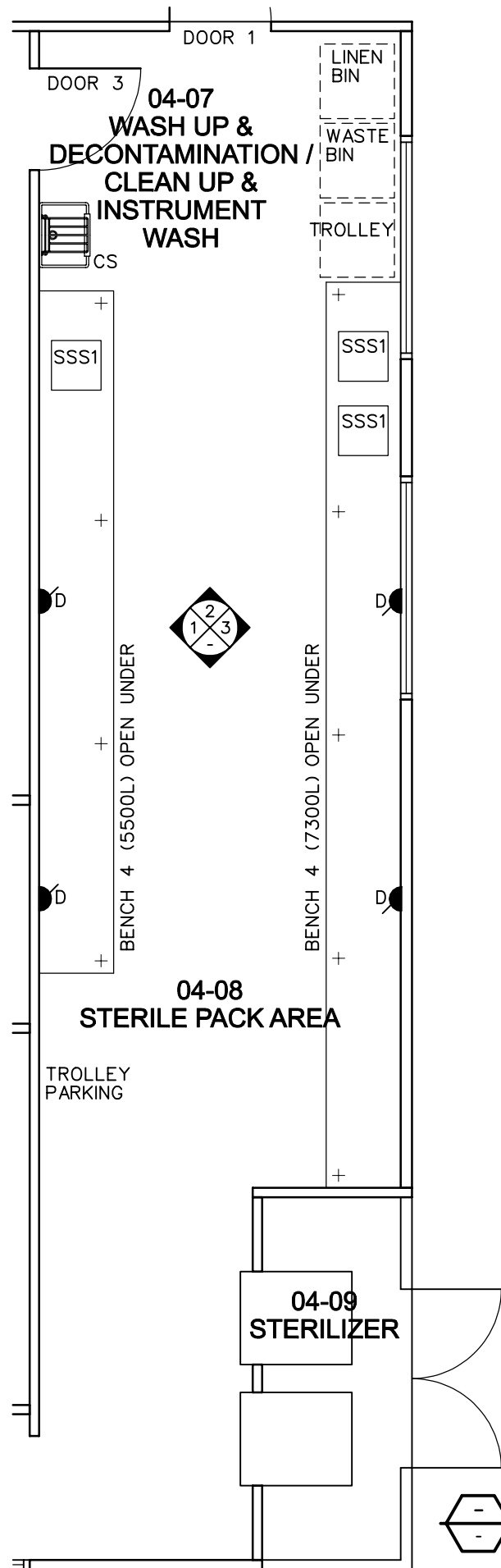
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CUBITT  
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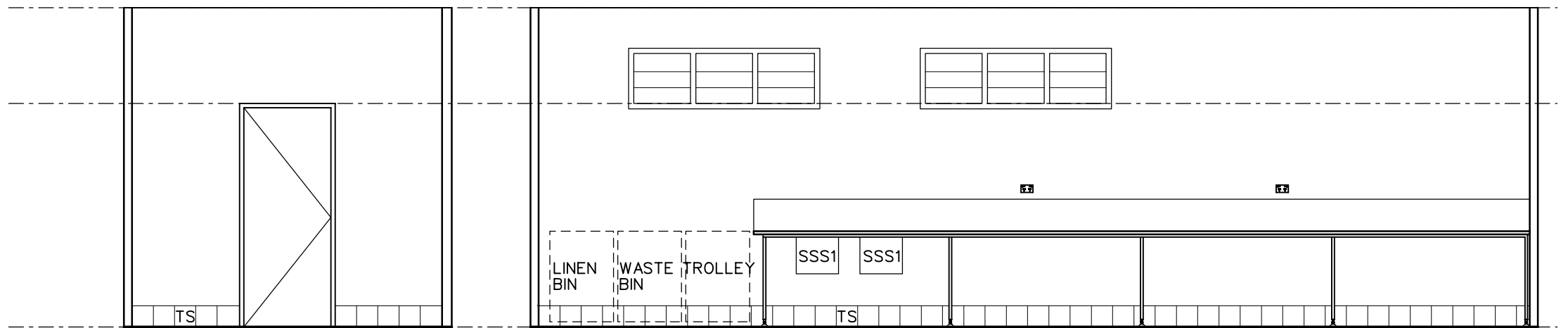


MALIANA REFERRAL HOSPITAL  
OPERATING THEATRE SUITE  
OPERATING THEATRE

		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.04.11	C
A	PRELIMINARY		



① ELEVATION 1:50



② ELEVATION 1:50

③ ELEVATION 1:50

PLAN 1:50  
ROOM 04-07, 04-08, 04-09

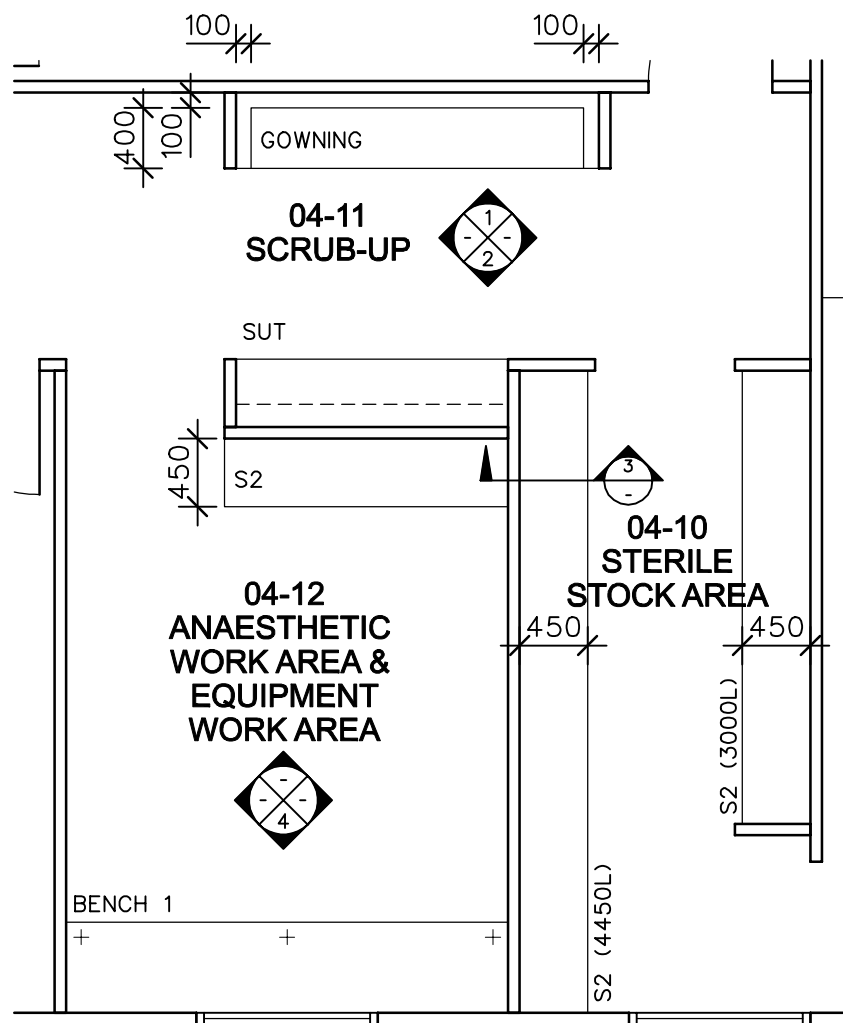
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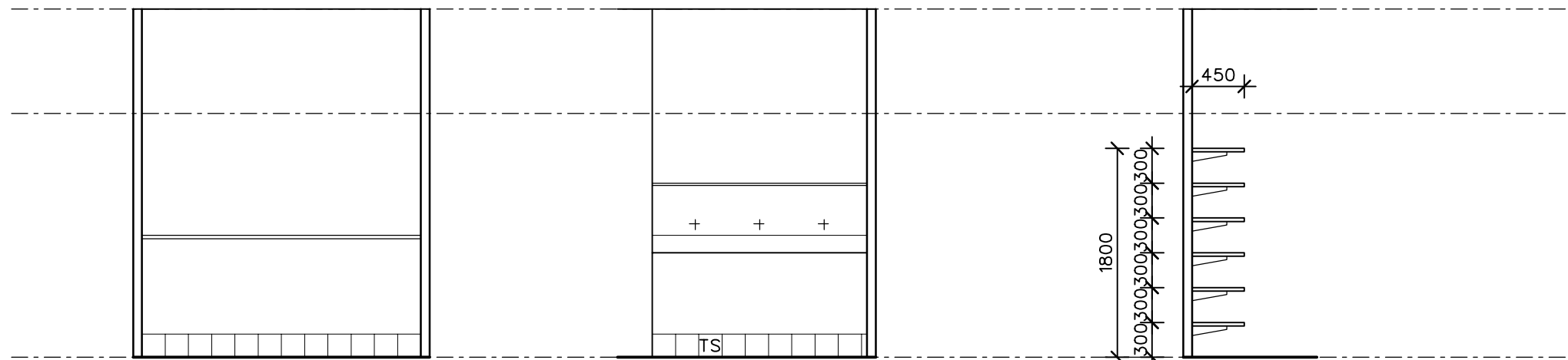


**MALIANA REFERRAL HOSPITAL**  
**OPERATING THEATRE SUITE**  
**WASH UP & DECONTAMINATION / CLEAN UP**  
**& INSTRUMENT WASH / STERILE PACK AREA**

		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.04.12	C
A	PRELIMINARY		



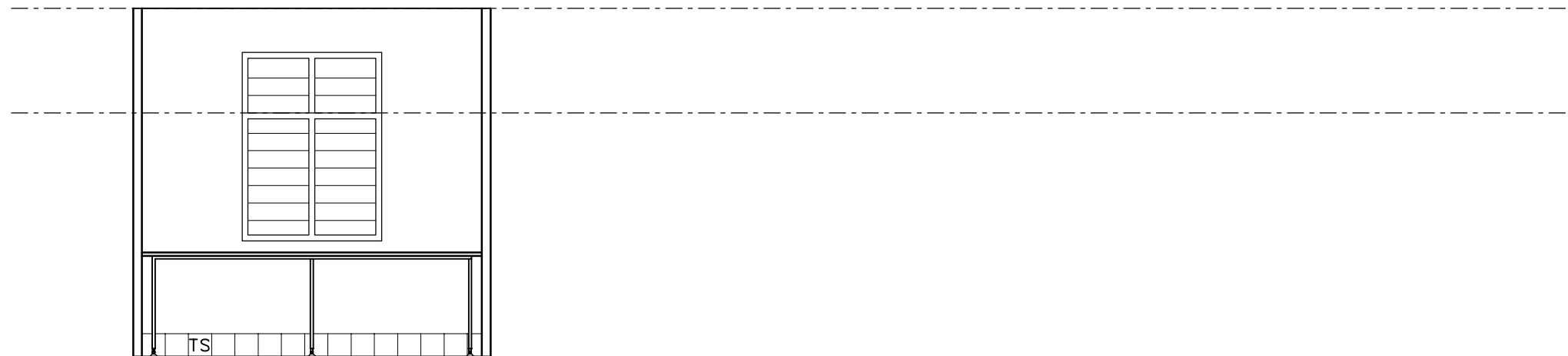
PLAN  
ROOM 04-10, 04-11  
1:50



1 ELEVATION 1:50

2 ELEVATION 1:50

3 SECTION 1:50  
S2



4 ELEVATION 1:50

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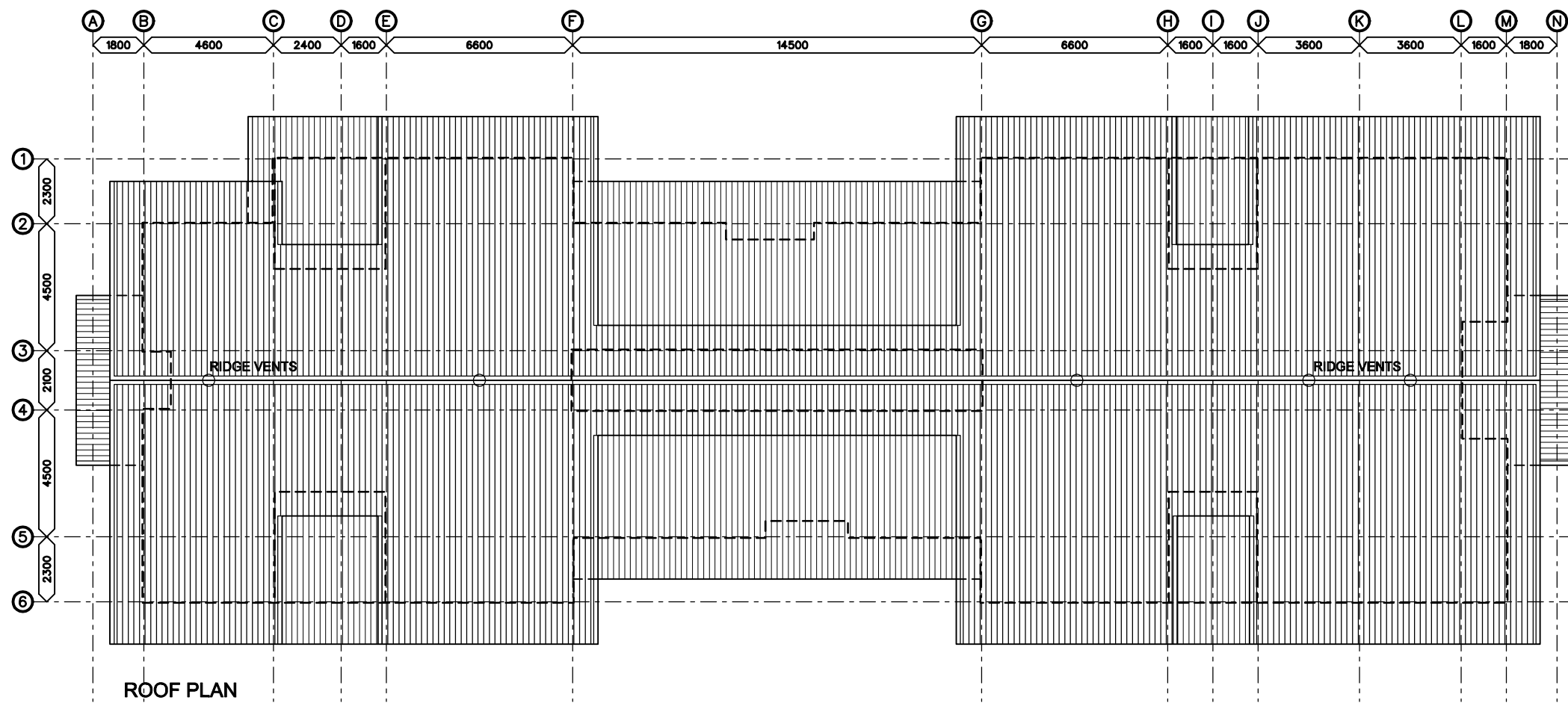
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MALIANA REFERRAL HOSPITAL  
OPERATING THEATRE SUITE  
STERILE STOCK / SCRUB-UP /  
ANAESTHETIC WORK AREA

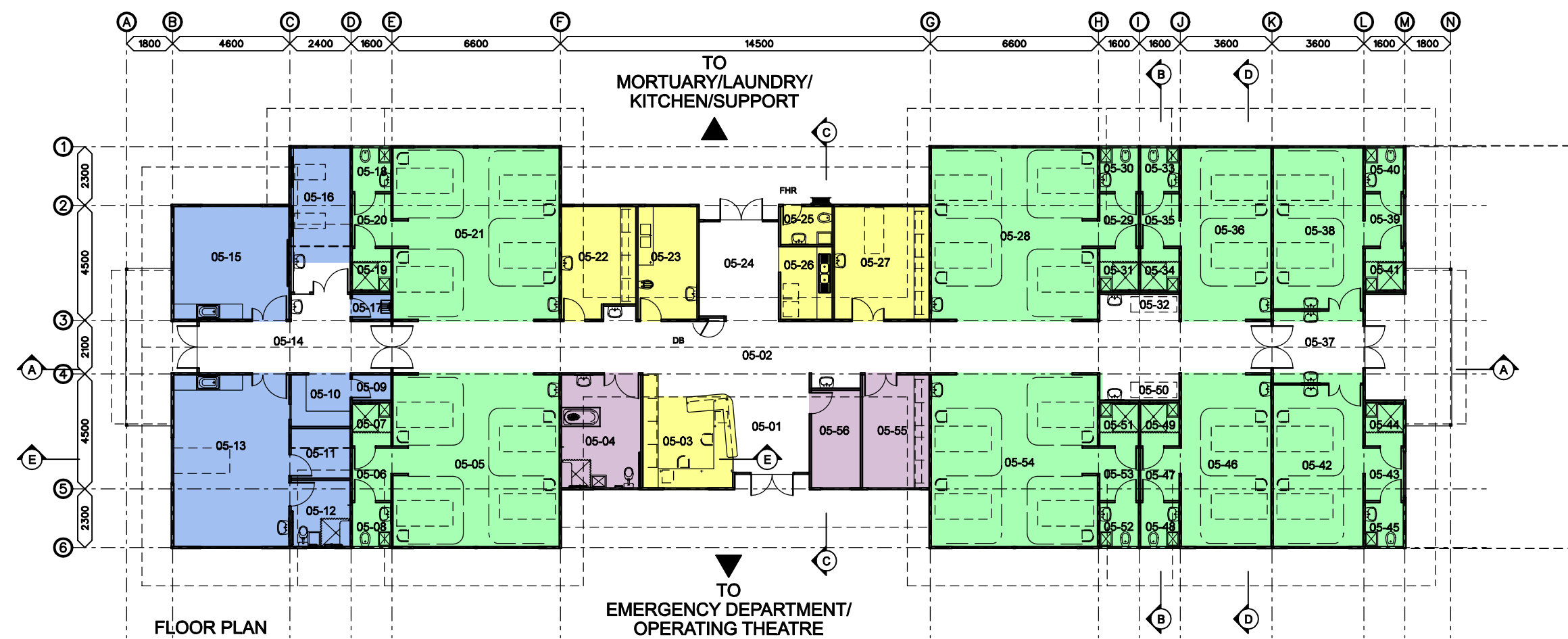
		Date: 19/11/04	
		Scale: 1:50 @ A3	
C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.04.13	C
A	PRELIMINARY		

OPERATING SUITE/STERILE SUPPLY UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>													
	Operating room	1	36	36			Operating Theatre	36		04-06	Operating Theatre	6000 x 6000	36
	Recovery: 2 bays	1	15	15			Holding / Recovery Bays	20		04-01 04-03	Entry & Holding Recovery Bay 1 and 2	6000 x 6000	36
<b>Staff</b>													
	Scrub up area	1	8	8	3 scrub points		Scrub Up	6		04-11	Scrub Up	3800 x 1800	7.5
	Trolley wash/decontamination area/cleanup/dirty utility	1	24	24	incl. disposal		Dirty	24		04-07	Wash Up Decontamination	2900 x 4600	13.5
	Packing area/setup/sterilizing area	1	24	24	flash sterilizer & autoclave		Clean	24		04-08	Sterile Pack Area	2900 x 4600	13.5
	Change: staff	2	12	24			Change: Staff 1 x Male, 1x Female	18		04-14 04-15	Male Bathroom Female Bathroom	3000 x 3000 3000 x 3000	9 9
	Toilet: staff				c/w Change								
	Shower: staff				c/w Change								
	Cleaners cupboard	1	2	2			Cleaner	2		04-05	Cleaner	1100 x 1750	2
	Work Area: staff	1	8	8	With beverage bar & refrig.		Staff Room	18		04-13	Staff Room	3900 x 4250	16.5
<b>Storage</b>													
	Store: sterile supplies	1	6	6			Sterile Stock	10		04-10	Sterile Stock	1900 x 4200	8
	Store: non-sterile supplies	1	6	6							Anaesthetic Work Area and Store		
	Store: anesthetics/equipment	1	6	6	could be an alcove		Designated Alcove	-		04-12		2900 x 3800	11
<b>Support</b>													
	Autoclave/plant				incl. in Travel and Engineering		Sterilizer	4		04-09	Sterilizer	1100 x 2900	3.5
							Write Up / Reception	2		04-02	Reception Write Up	Included in Holding Bay Area	
	TOTAL ROOM AREAS			159									
	Discounted Circulation	35%		56									
<b>TOTAL OPERATING/SSU</b>				<b>215</b>		<b>TOTAL OPERATING THEATRE</b>			<b>221</b>	<b>TOTAL OPERATING THEATRE</b>			<b>174</b>



ROOF PLAN

ROOM LEGEND	
INPATIENT CARE (Bantuan pasien / maternity)	
05-01	ENTRY
05-02	CORRIDOR
05-03	NURSE'S STATION
05-04	ASSISTED BATH
05-05	FOUR BED WARD
05-06	AIR LOCK
05-07	SHOWER
05-08	WC
05-09	SECURE STORE
05-10	MATERNITY STATION
05-11	STORE
05-12	EN-SUITE
05-13	BIRTHING SUITE
05-14	CORRIDOR
05-15	TRAINING ROOM
05-16	NURSERY
05-17	CLEANERS CUPBOARD
05-18	WC
05-19	SHOWER
05-20	AIR LOCK
05-21	FOUR BED WARD
05-22	CLEAN UTILITY
05-23	DIRTY UTILITY
05-24	TROLLEY BAY / ENTRY
05-25	EXTERNAL WC
05-26	KITCHENETTE
05-27	TREATMENT ROOM
05-28	FOUR BED WARD
05-29	AIR LOCK
05-30	WC
05-31	SHOWER
05-32	TROLLEY BAY
05-33	WC
05-34	SHOWER
05-35	AIR LOCK
05-36	TWO BED WARD
05-37	CORRIDOR
05-38	TWO BED ISOLATION
05-39	AIR LOCK
05-40	WC
05-41	SHOWER
05-42	TWO BED ISOLATION
05-43	AIRLOCK
05-44	SHOWER
05-45	WC
05-46	TWO BED WARD
05-47	AIR LOCK
05-48	WC
05-49	SHOWER
05-50	TROLLEY BAY
05-51	SHOWER
05-52	WC
05-53	AIR LOCK
05-54	FOUR BED WARD
05-55	STORE
05-56	STAFF SLEEPING



FLOOR PLAN

FUTURE WARD EXPANSION

0 1 2 3 4 5m A1 SCALE

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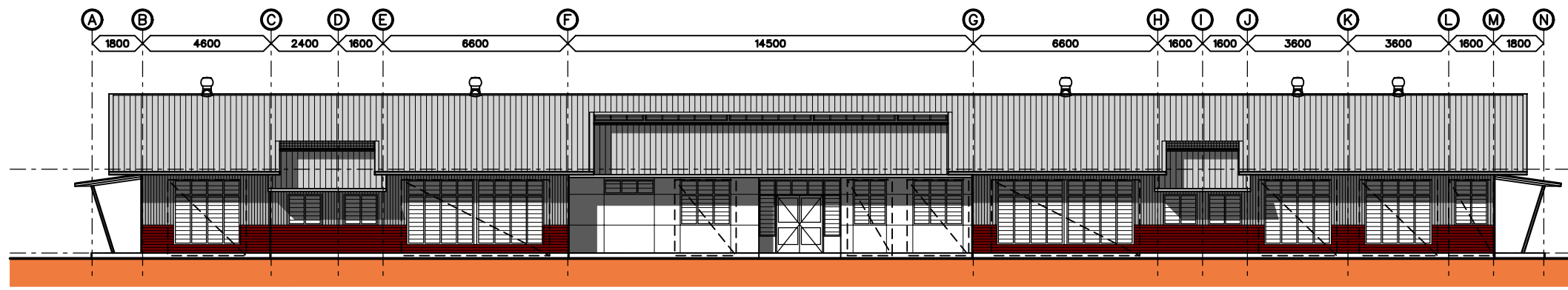
**JAMES CUBITT**  
architects



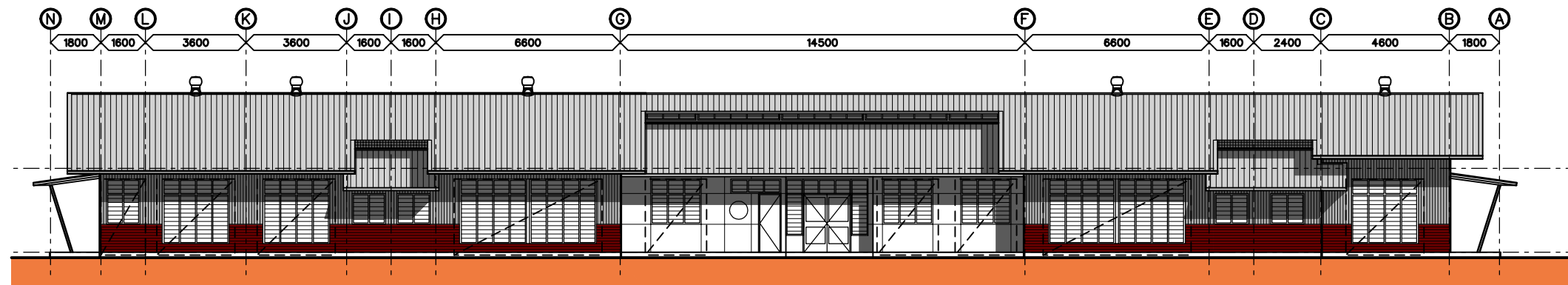
**MALIANA REFERRAL HOSPITAL**  
**INPATIENT CARE / MATERNITY**  
**FLOOR PLAN / ROOF PLAN**



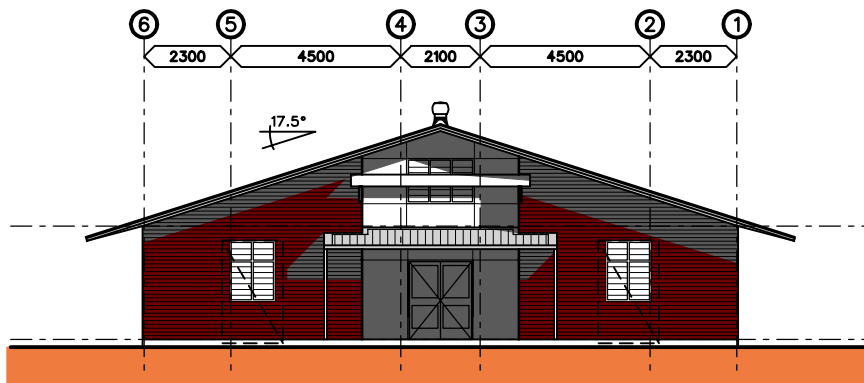
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H	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
G	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
F	AMENDED PRELIMINARY DESIGN	Dwg No.
E	INTERNAL CONSULTANT REVIEW	FD03.05.01
		Issue
		I



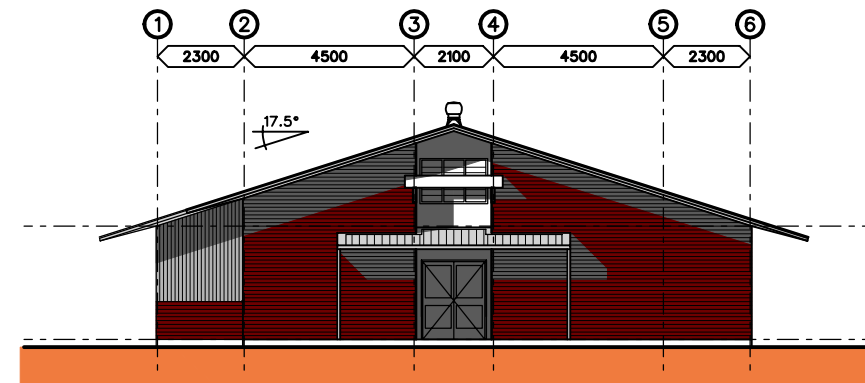
SOUTH ELEVATION



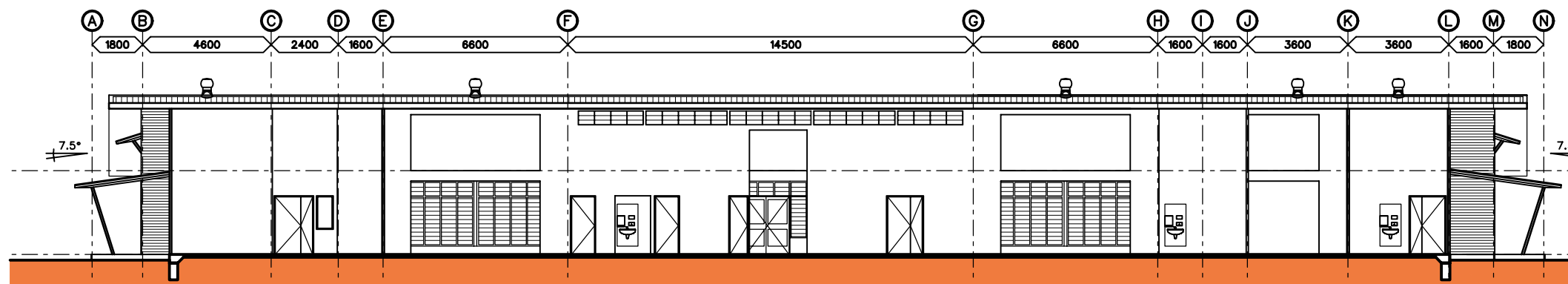
NORTH ELEVATION



EAST ELEVATION



WEST ELEVATION



SECTION A-A

0 1 2 3 4 5m A1 SCALE

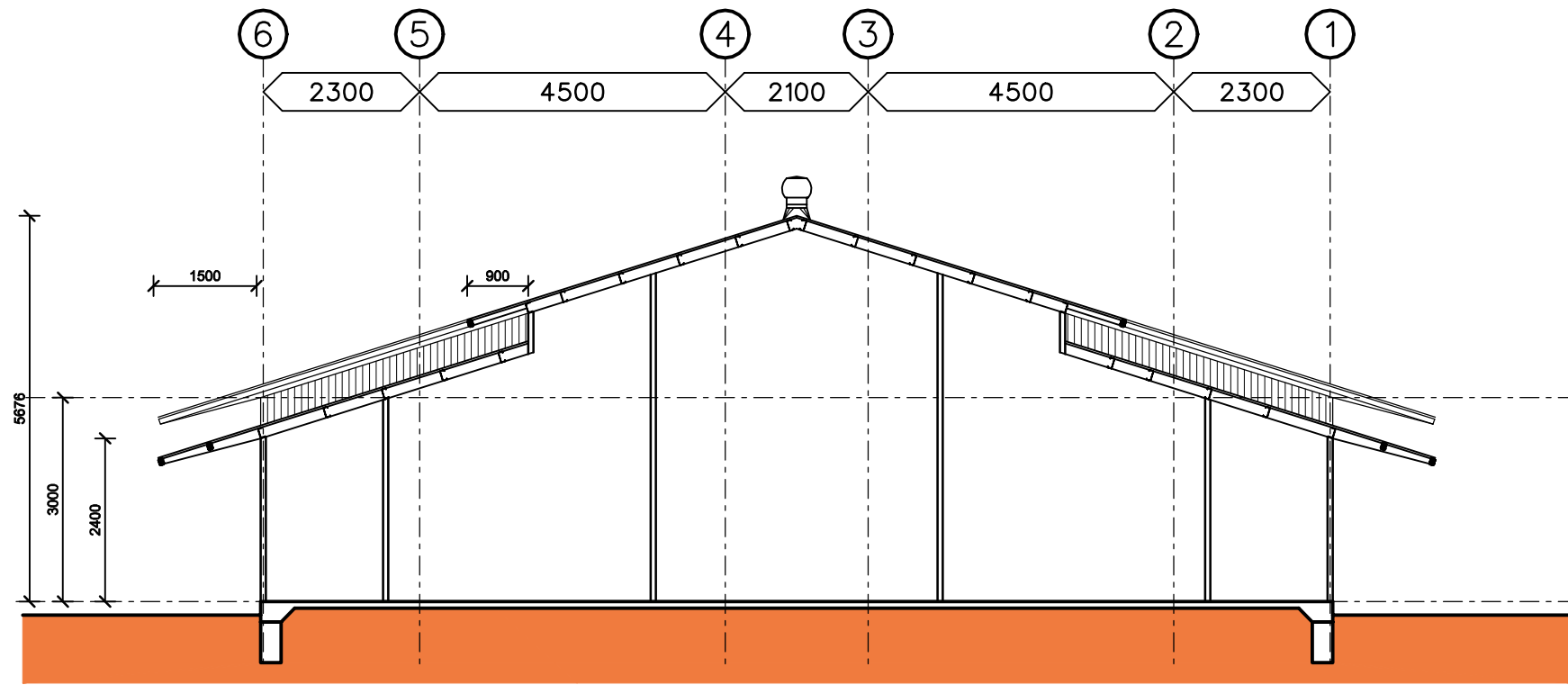
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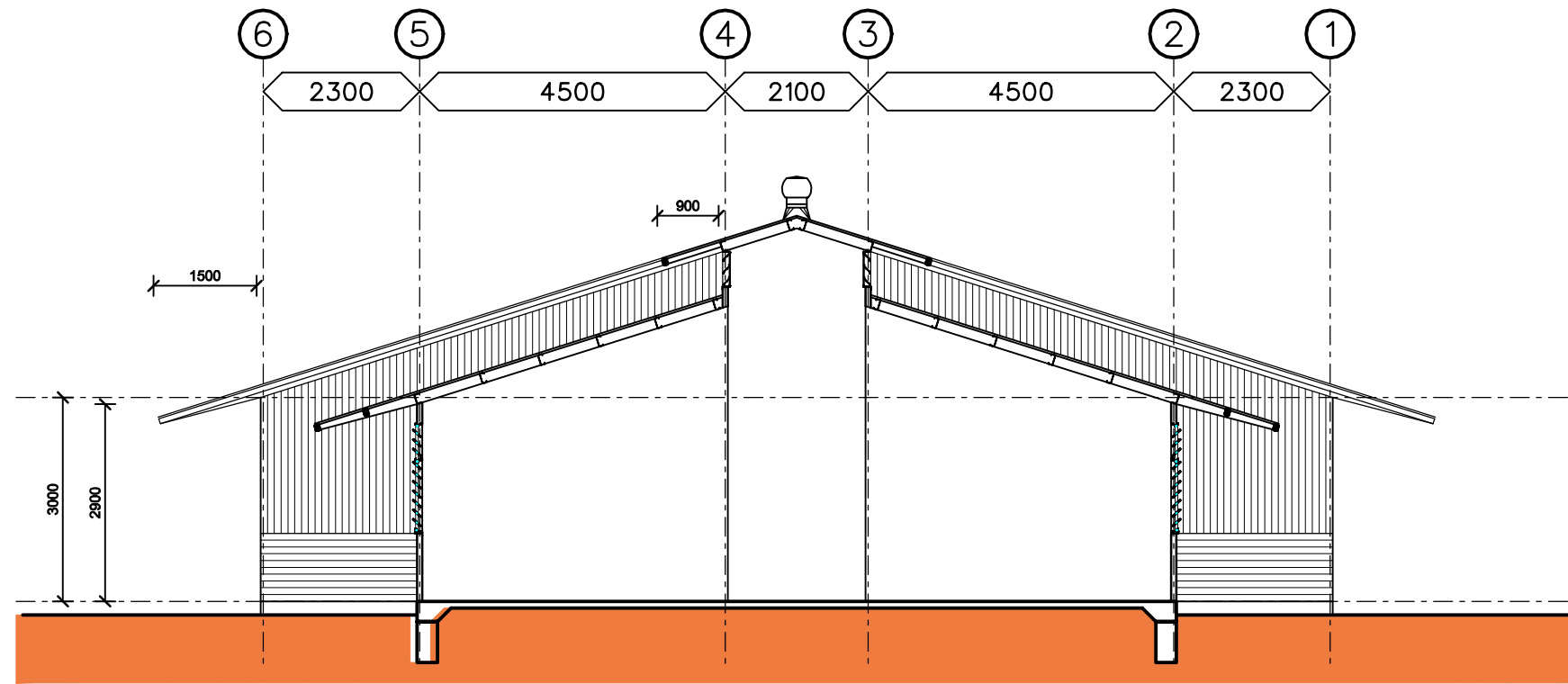
MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
ELEVATIONS / SECTIONS

I	FINAL DESIGN	Date: 19/11/04
H	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
G	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
F	AMENDED PRELIMINARY DESIGN	Dwg No.
E	INTERNAL CONSULTANT REVIEW	FD03.05.02
		Issue I





SECTION B-B



SECTION C-C

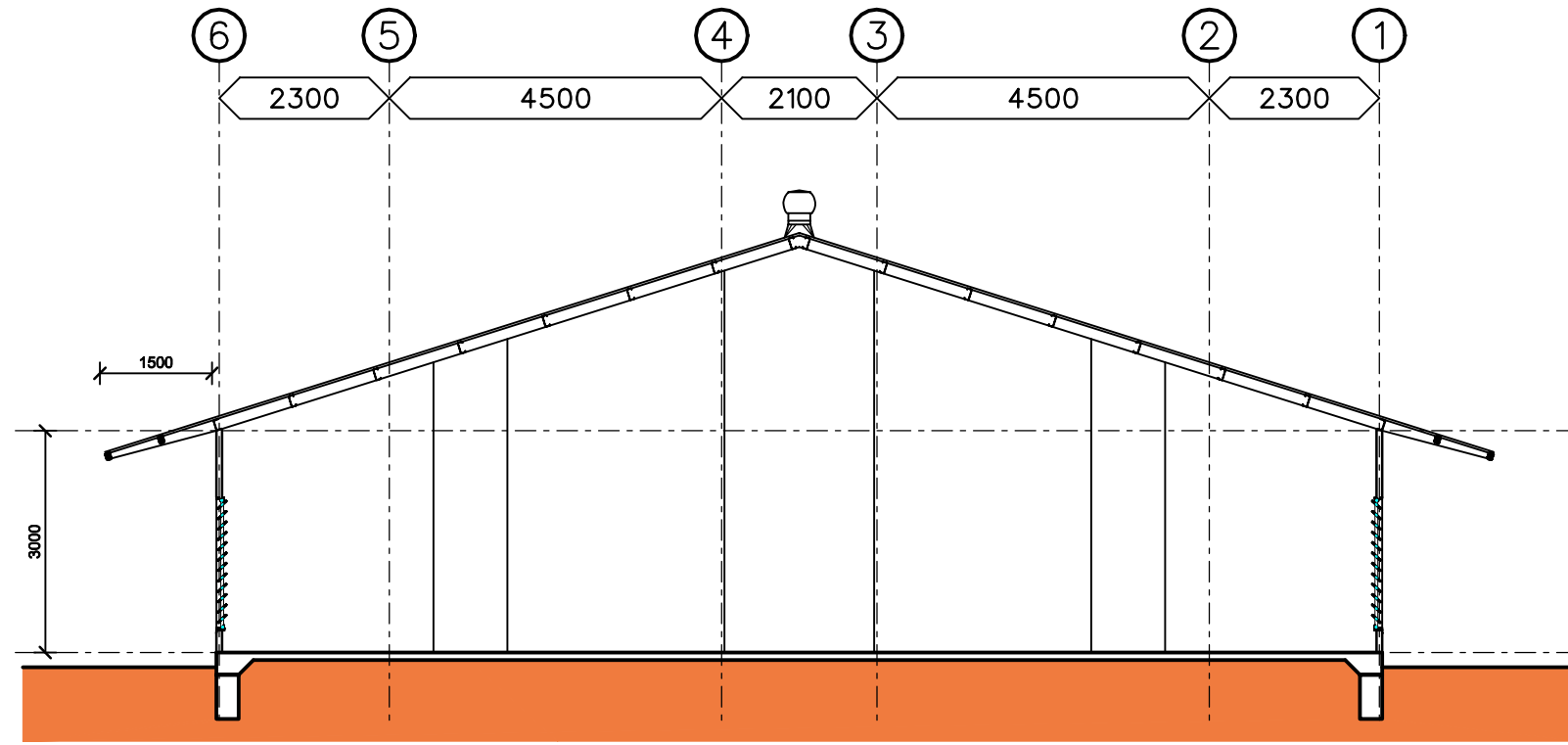
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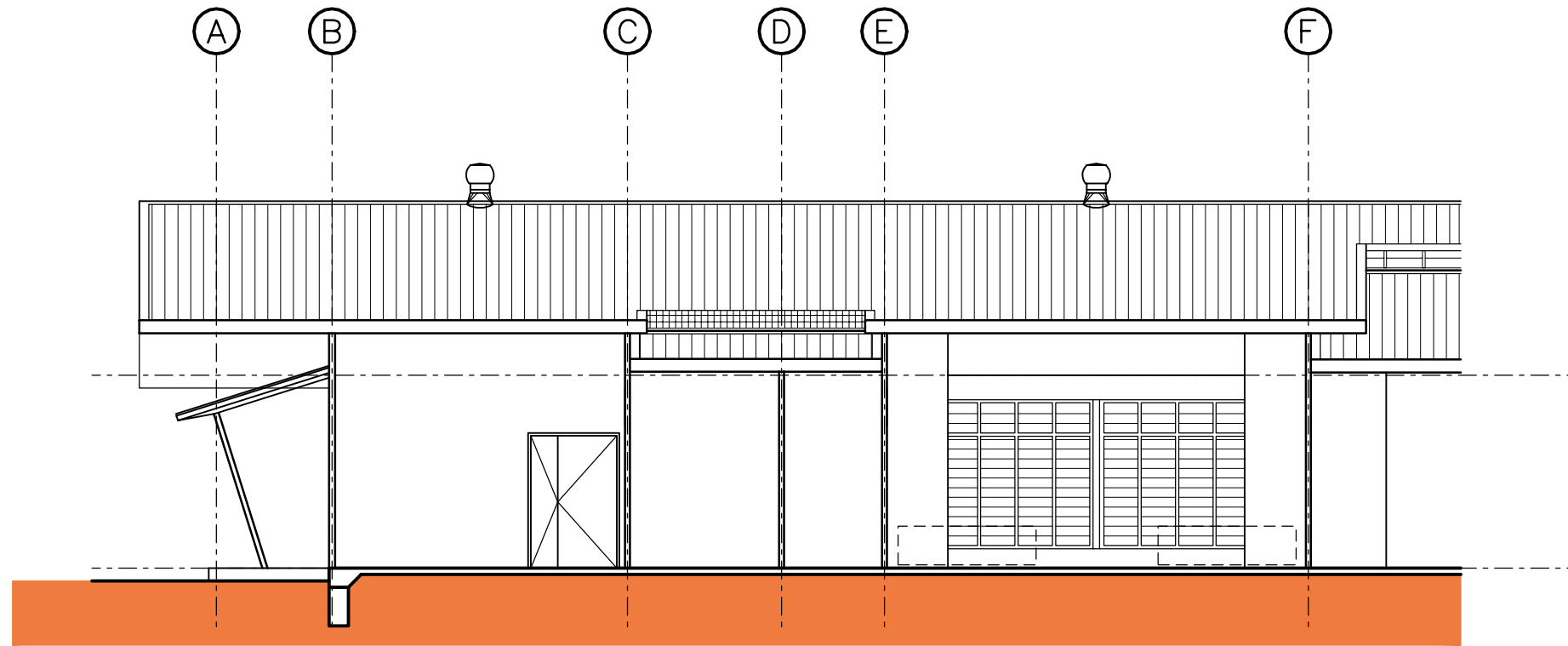


MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
SECTIONS

		Date: 19/11/04	
		Scale: 1:50 @ A1	
		Scale: 1:100 @ A3	
B	FINAL DESIGN	Dwg No.	Issue
A	PRE-QUAL PRELIMINARY DESIGN	FD03.05.03	B



SECTION D-D



SECTION E-E

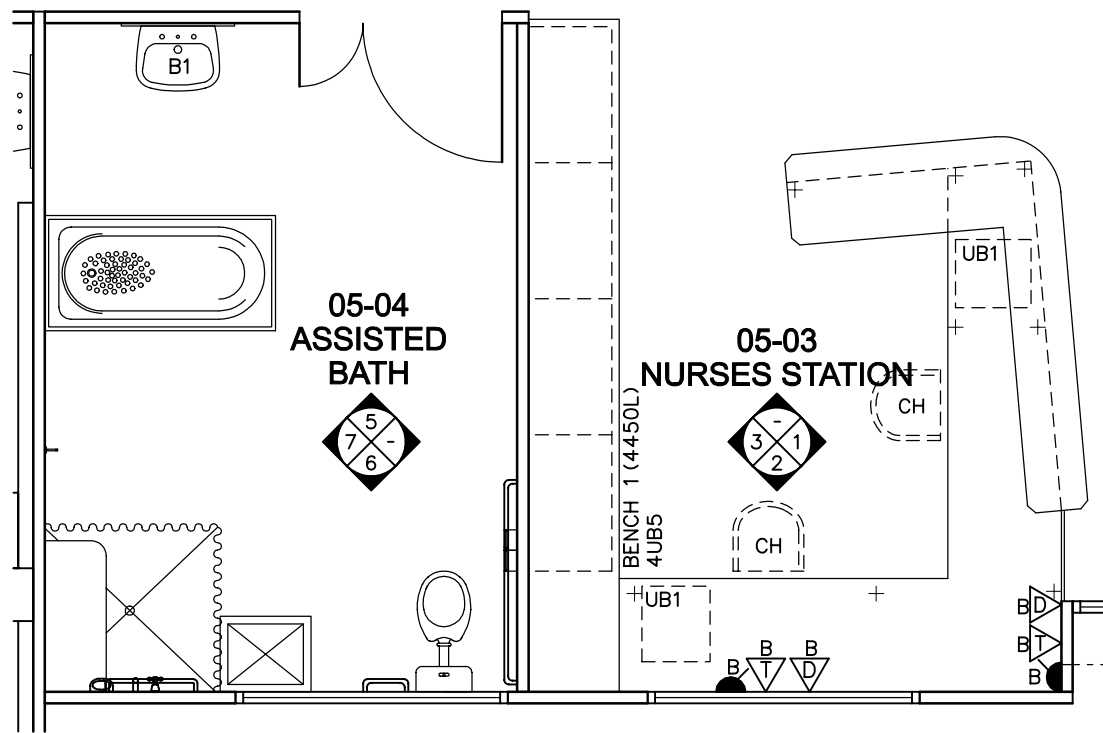
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**JAMES  
CUBITT**  
architects

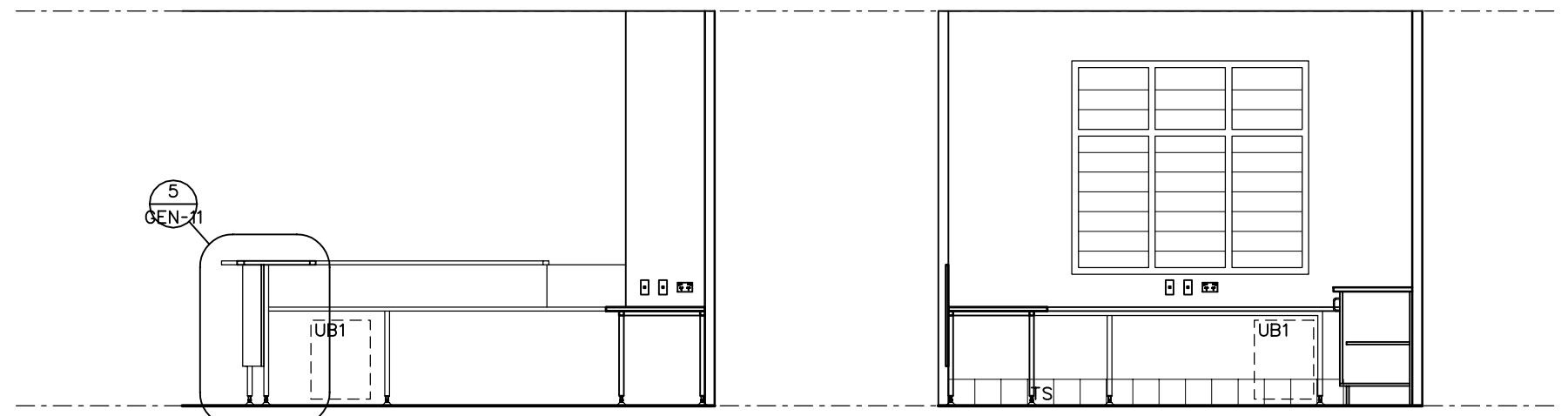


MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
SECTIONS

		Date:	19/11/04
		Scale:	1:50 @ A1
		Scale:	1:100 @ A3
B	FINAL DESIGN	Dwg No.	Issue
A	PRE-QUAL PRELIMINARY DESIGN	FD03.05.04	B

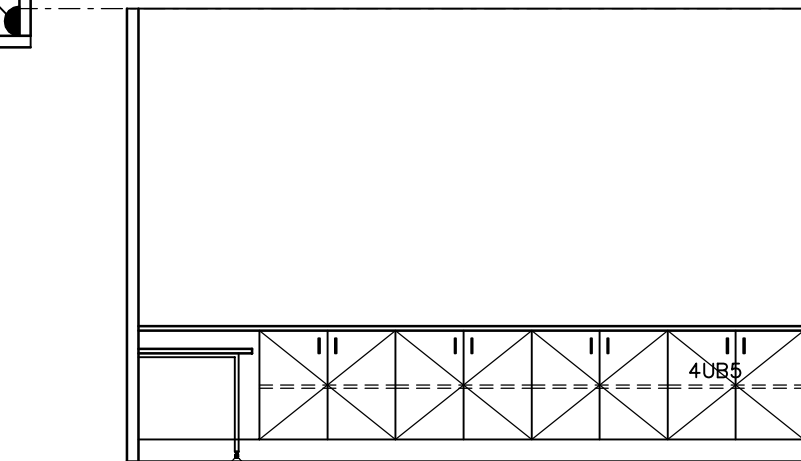


PLAN 1:50  
ROOM 05-03, 05-04

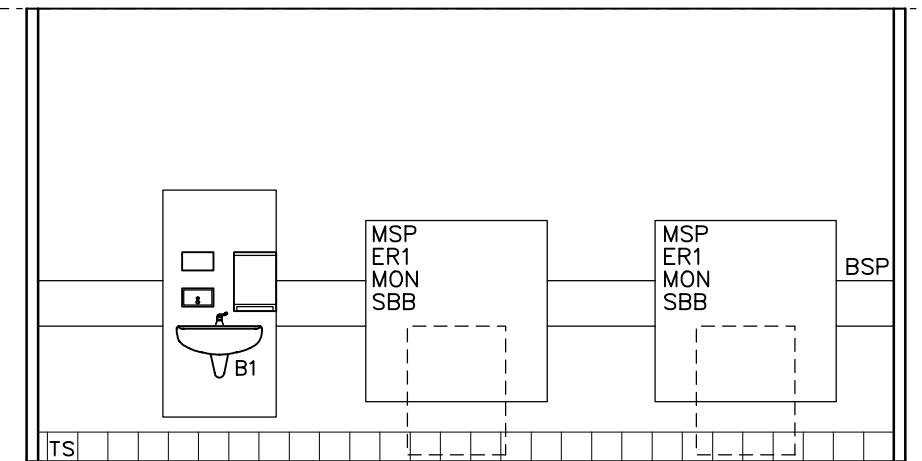


1 ELEVATION 1:50

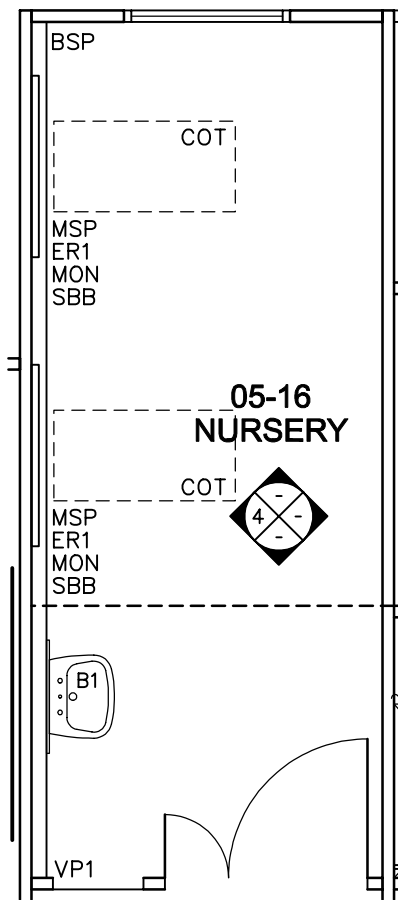
2 ELEVATION 1:50



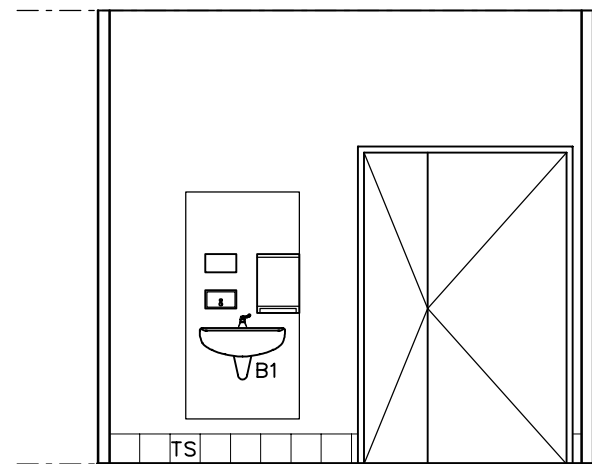
3 ELEVATION 1:50



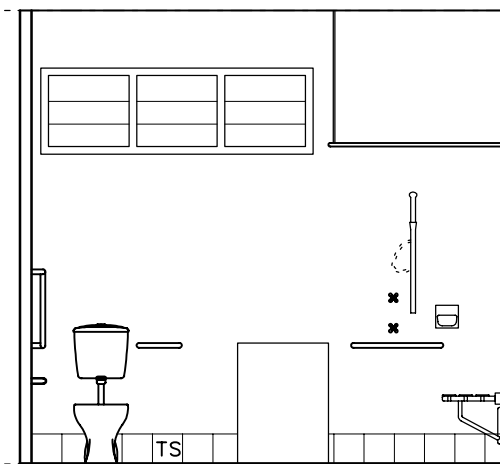
4 ELEVATION 1:50



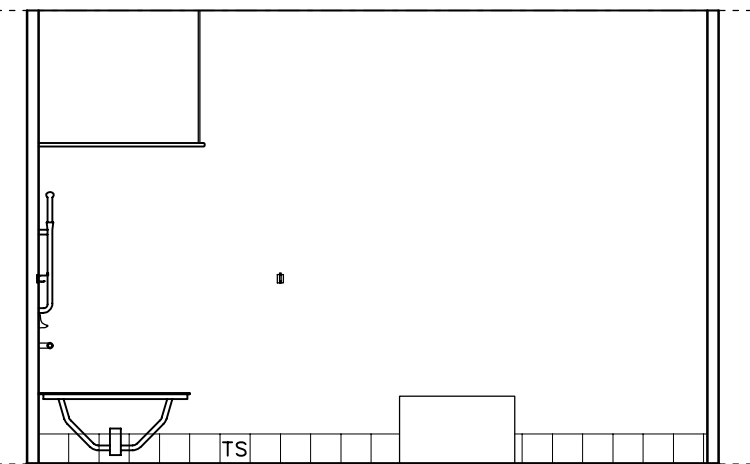
PLAN 1:50  
ROOM 05-16



5 ELEVATION 1:50



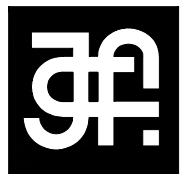
6 ELEVATION 1:50



7 ELEVATION 1:50

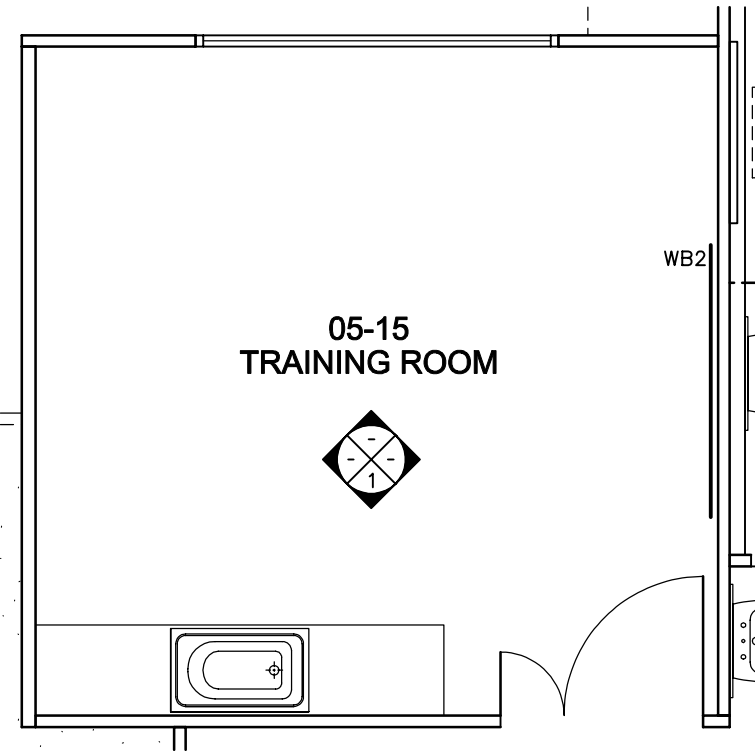
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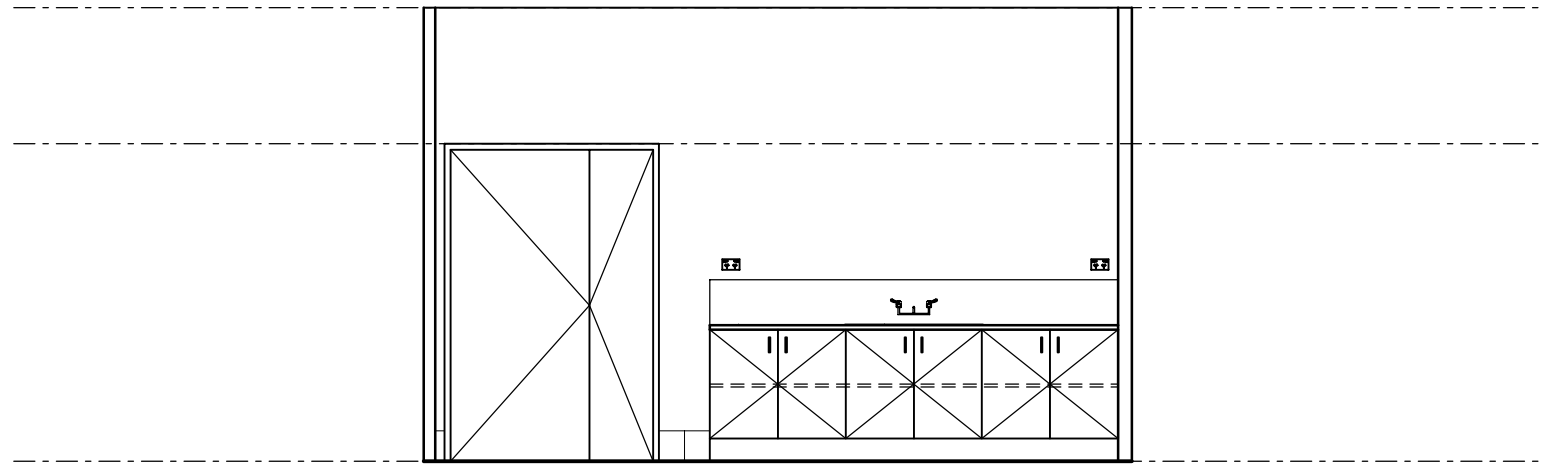


MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
NURSES STATION /  
ASSISTED BATH / NURSERY

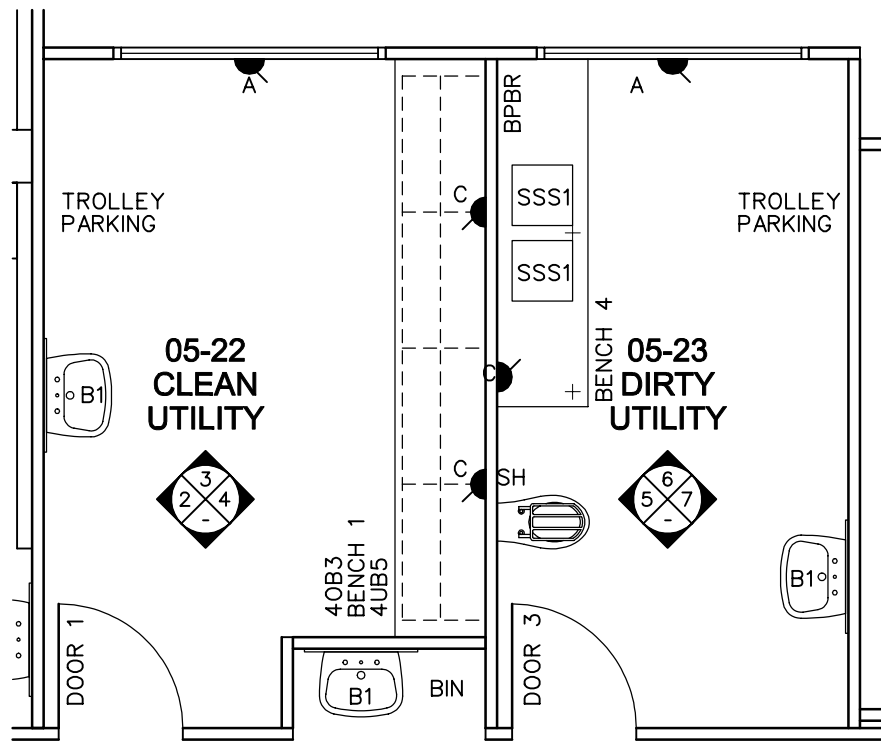
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B	QS REVIEW No. 2	FD03.05.10	C
A	PRELIMINARY		



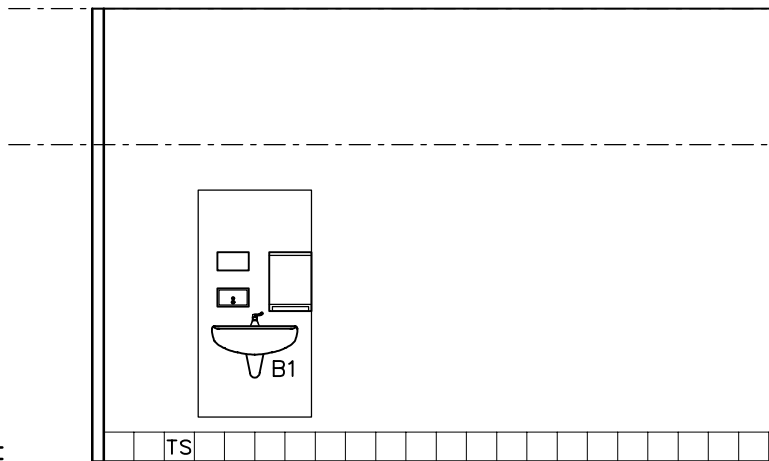
PLAN 1:50  
ROOM 05-15, 05-13 (MIR)



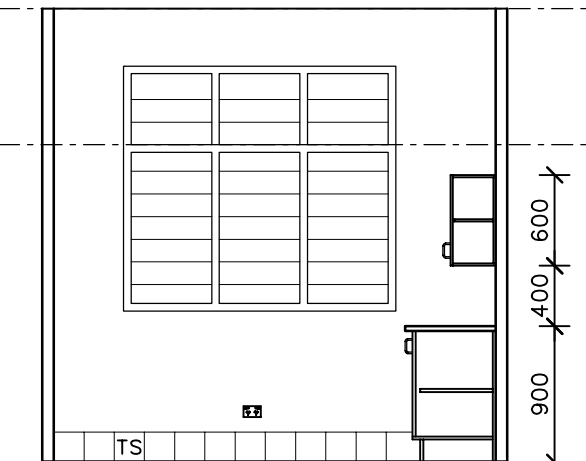
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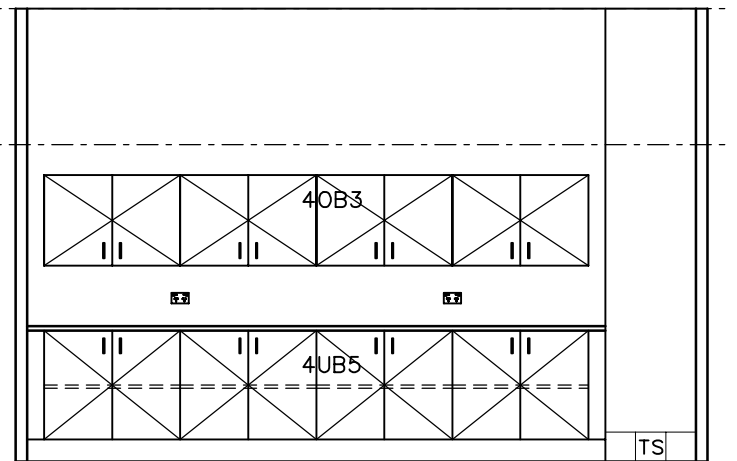
PLAN 1:50  
ROOM 05-22, 05-23



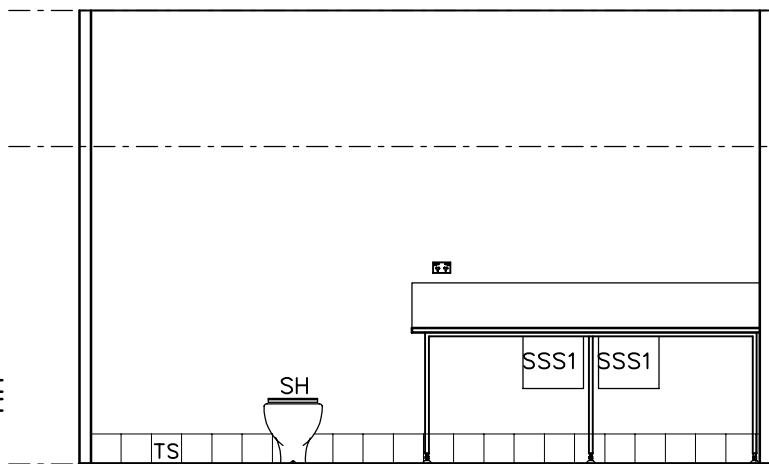
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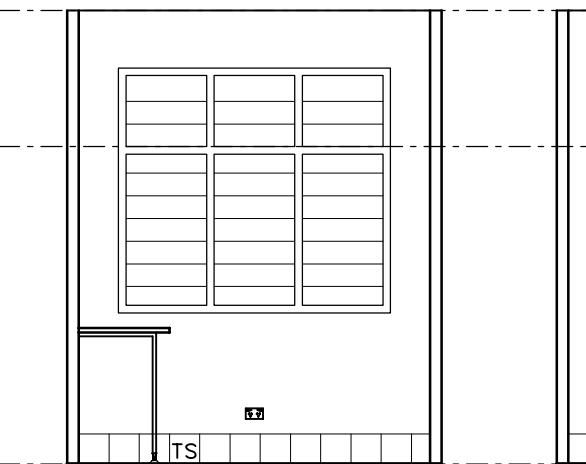
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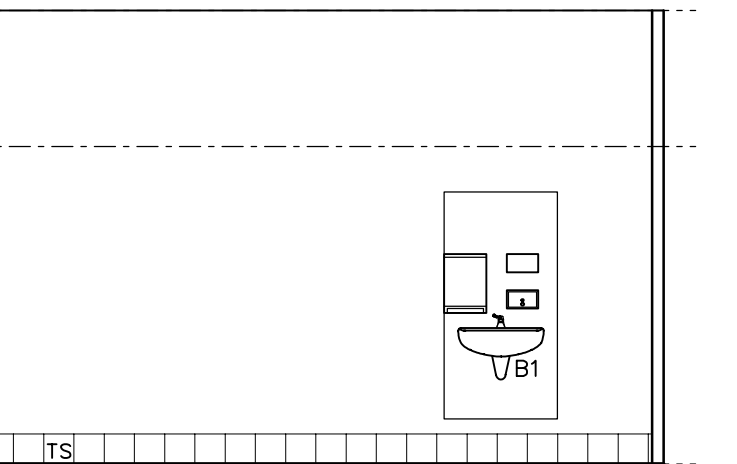
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5 ELEVATION 1:50



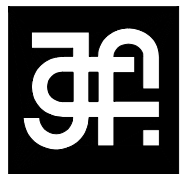
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7 ELEVATION 1:50

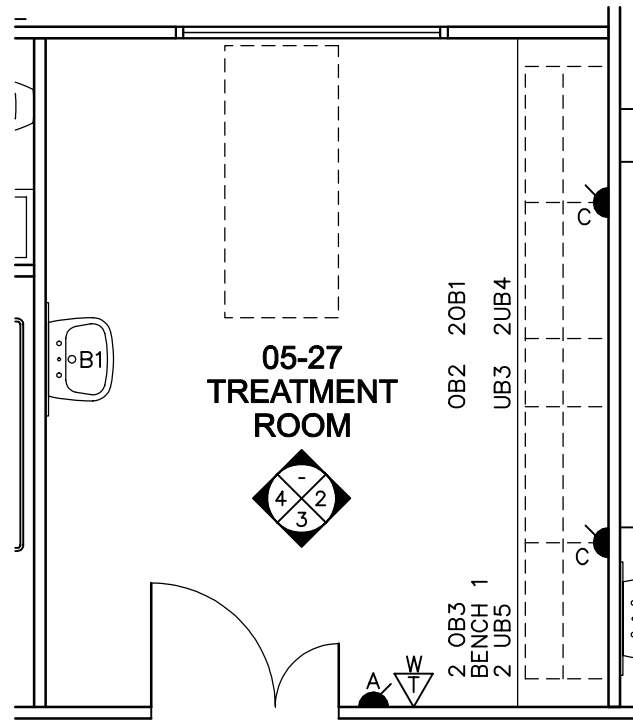
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JAMES CUBITT architects

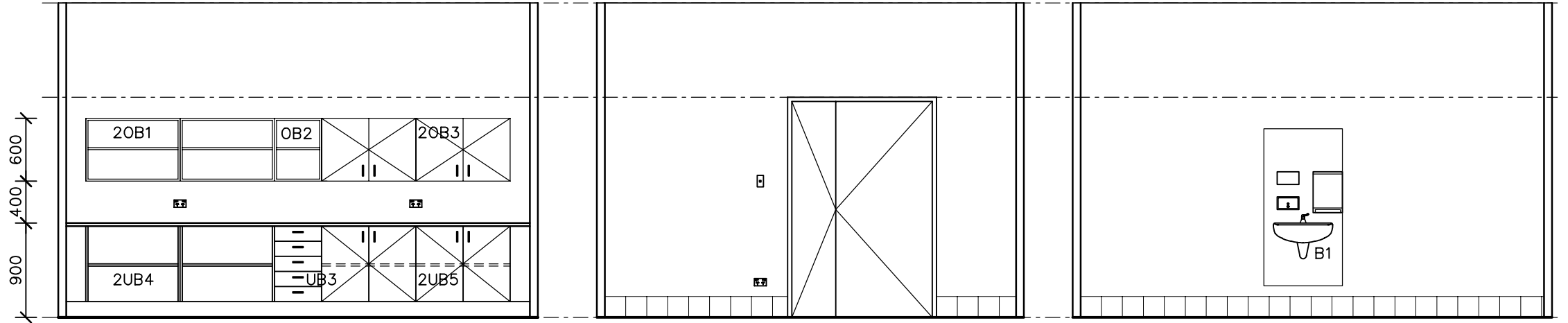


MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
TRAINING ROOM /  
CLEAN AND DIRTY UTILITY

		Date: 19/11/04	
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C	FINAL DESIGN	Dwg No.	Issue
B	QS REVIEW No. 2	FD03.05.11	C
A	PRELIMINARY		



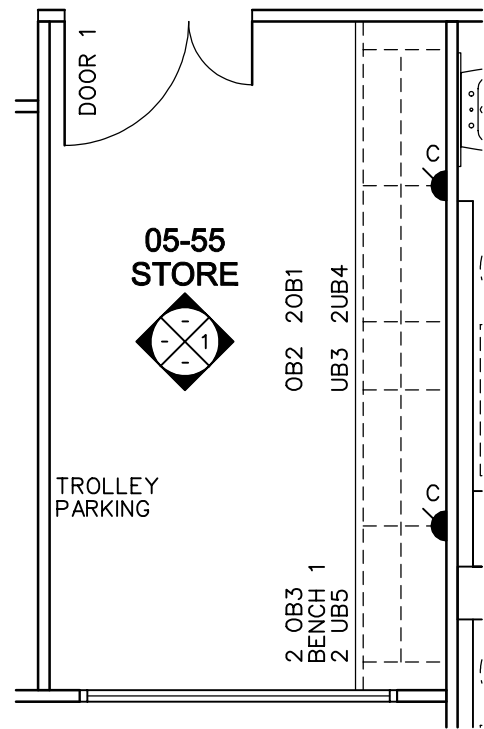
PLAN 1:50  
ROOM 05-27



2 ELEVATION 1:50

3 ELEVATION 1:50

4 ELEVATION 1:50



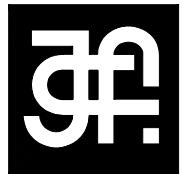
PLAN 1:50  
ROOM 05-55



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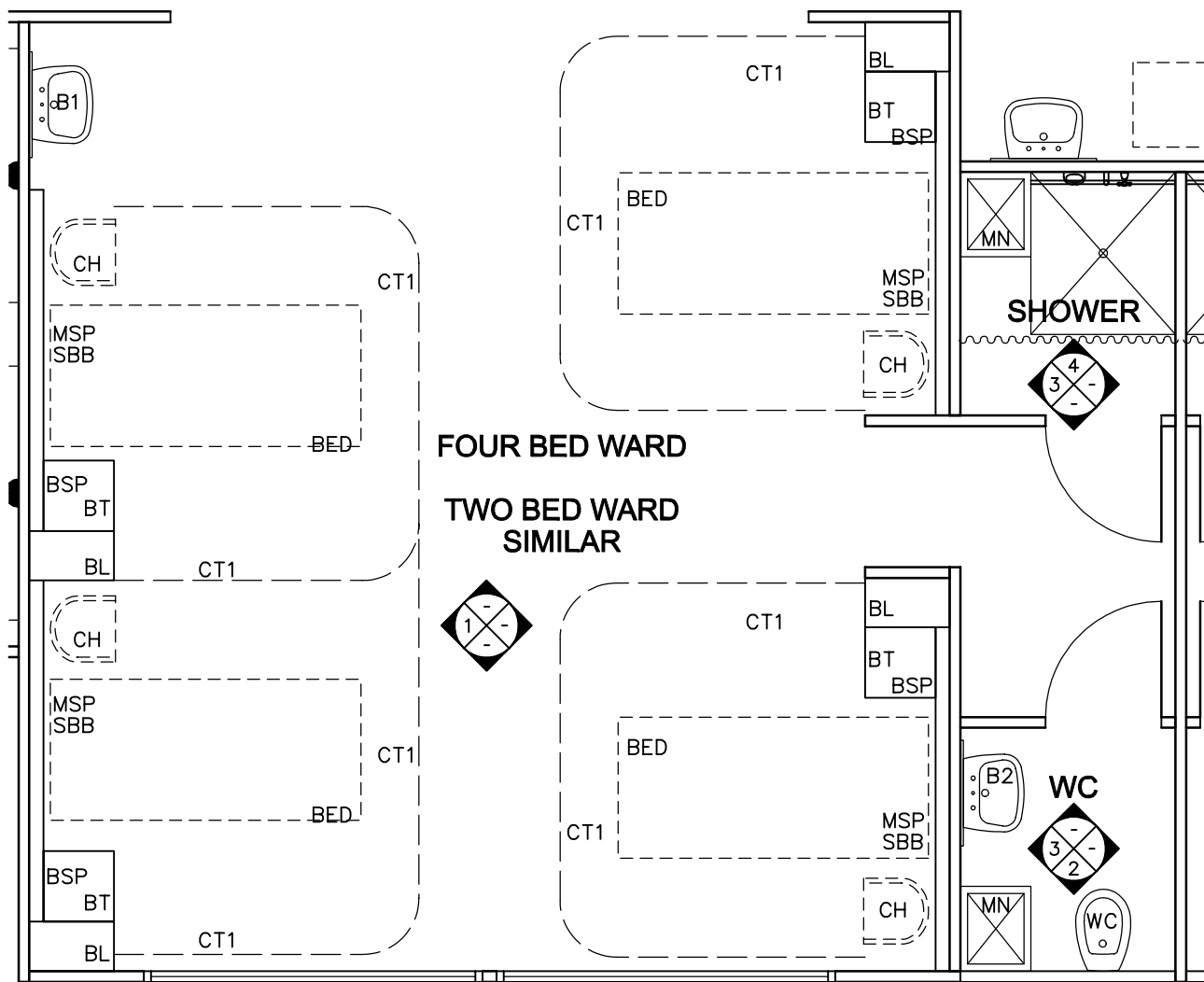
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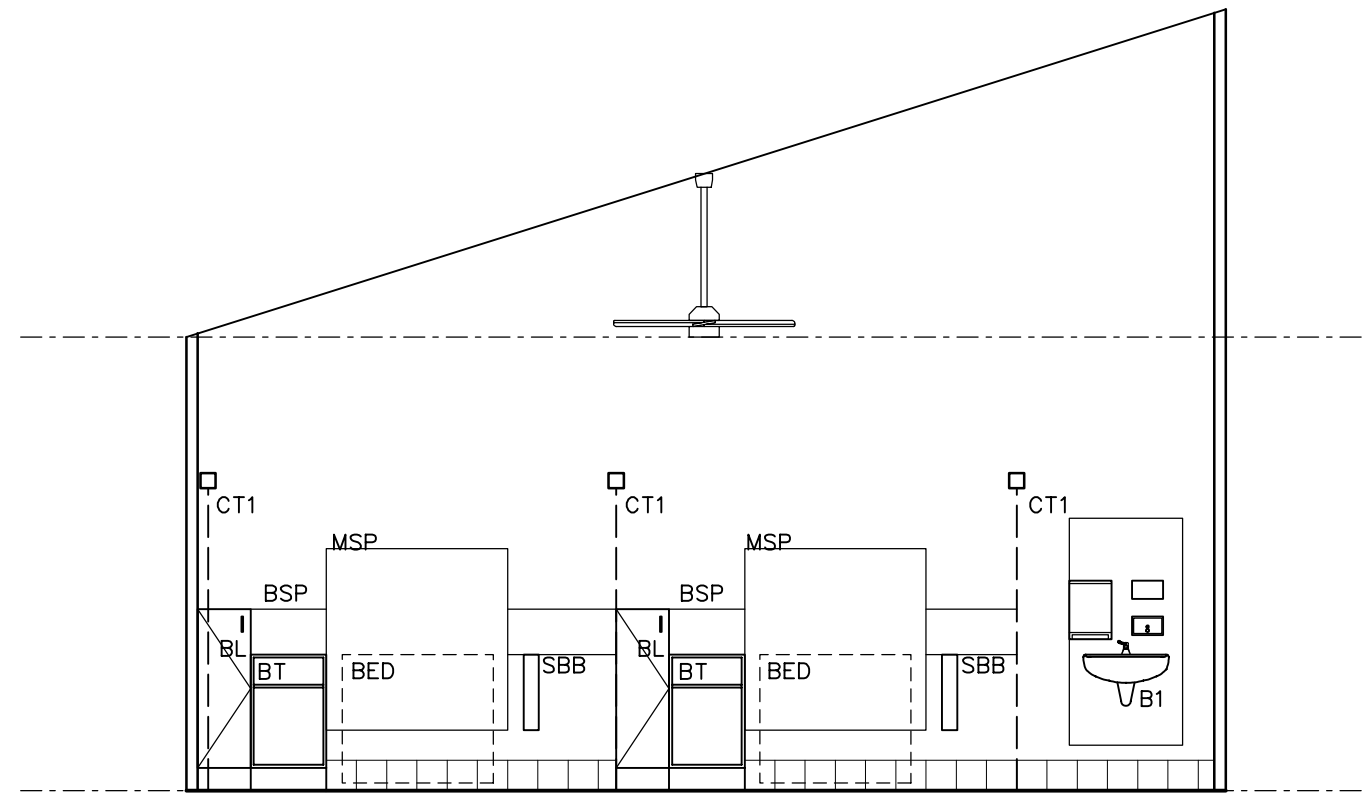


MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
TREATMENT ROOM / STORE

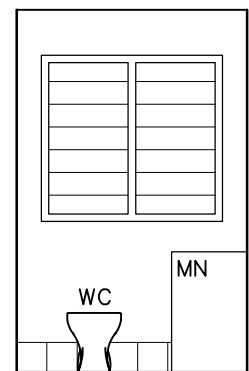
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B	QS REVIEW No. 2	FD03.05.12	C
A	PRELIMINARY		



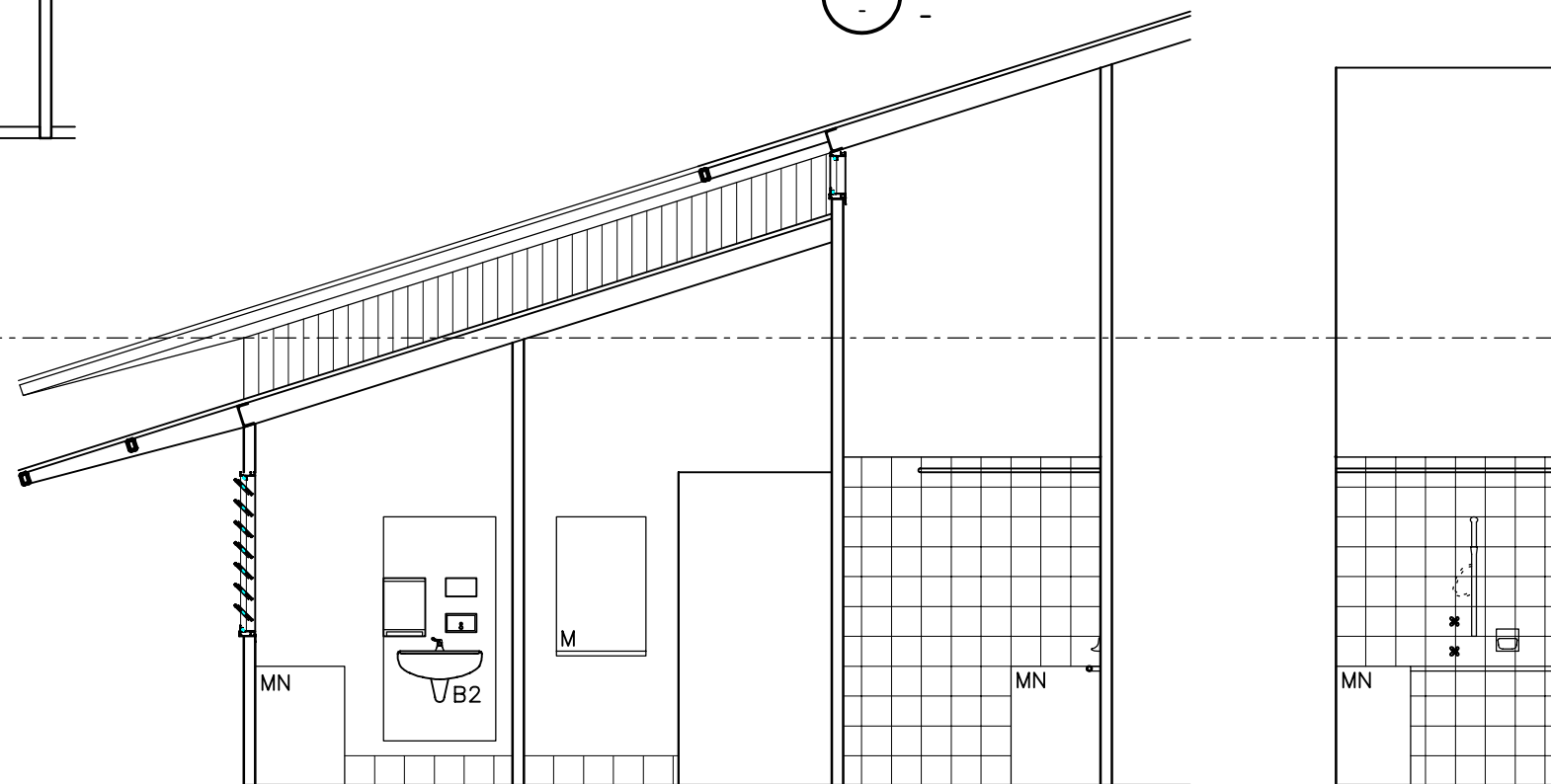
PLAN 1:50



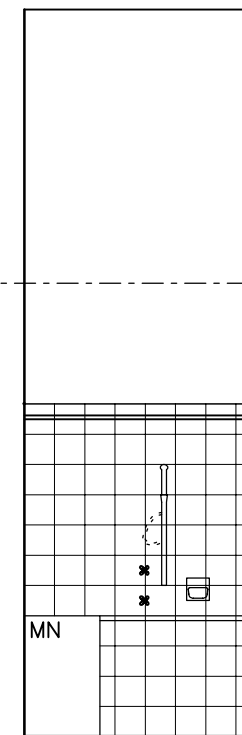
1 ELEVATION 1:50



2 ELEVATION 1:50



3 ELEVATION 1:50



4 ELEVATION 1:50

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JAMES CUBITT architects



MALIANA REFERRAL HOSPITAL  
INPATIENT CARE / MATERNITY  
SIX BED WARD

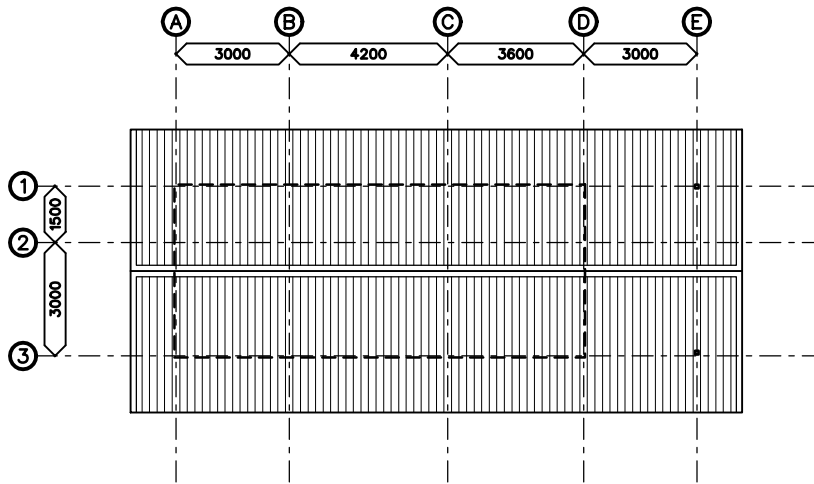
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Dwg No. FD03.05.13	Issue A
A FINAL DESIGN	

24 BED ACUTE IN-PATIENT WARD													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>													
	Patient bedroom: two-bed	2	24	48	use for isolation purposes; staff hand wash facilities in room		Isolation 2 x 24 sqm	48		05-38 05-42	Two Bed Isolation Two Bed Isolation	3500 x 6300 3500 x 6300	22 22
	Shower/wc: 2-bed rm	2	6	12	ensuite to each 2-bed room		En-suites 2 x 2 sqm	4		05-39 05-40 05-41	Air Lock WC Shower	1500 x 5600	8.5
	Patient Bedroom: 4-bed	5	38	190	swing use between specialties; staff hand wash facilities in each room		Wards 2 x 4 bed 2 x 6 bed	192		05-43 05-44 05-45 05-05 05-21 05-28 05-54	Air Lock Shower WC Four Bed Ward Four Bed Ward Four Bed Ward Four Bed Ward	1500 x 5600 6500 x 6700 6500 x 6700 6500 x 6700 6500 x 6700	8.5 44 44 44 44
	Shower/wc: 4-bed rm	5	5	25	ensuite to 4 bed rooms		Ensuites 2 x 2	4		05-36 05-46	Two Bed Ward Two Bed Ward	3500 x 6700 3500 x 6700	24 24
	Bathroom	1	15	15	for assisted bathing/toileting/pediatric use incl. baby bath, milk prep, mothercare training		Bathroom	15		05-06 05-07 05-08	Air Lock Shower WC	1500 x 5600	8.5
	Nursery	1	12	12	incl. baby bath, milk prep, mothercare training		Nursery	12		05-18 05-19 05-20	WC Shower Air Lock	1500 x 5600	8.5
	Lounge: patient	1	24	24	beverage facilities, training, seminars, patient education sessions					05-29 05-30 05-31	Air Lock WC Shower	1500 x 5600	8.5
<b>Staff</b>													
	Staff station	1	15	15			Staff Station	15		05-33 05-34 05-35	WC Shower Air Lock	1500 x 5600	8.5
	Utility room: clean	1	12	12	incl. pharmacy storage		Clean Utility	14		05-47 05-48 05-49	Air Lock WC Shower	1500 x 5600	8.5
	Utility room: dirty	1	12	12	incl. disposal		Dirty Utility	12		05-04	Assisted Bathroom	4400 x 3100	14
	Treatment room	1	14	14	incl Interview		Treatment Room	14		05-16	Nursery	4400 x 2300	10
	Toilet: staff	1	5	5	c/w Change								
	Cleaners room	1	4	4									
	Hand wash Bays	4	1	4	Spaced evenly throughout ward		Hand Wash Bays Throughout Ward 4 x 1 sqm	4					
<b>Storage</b>													
	Store: equipment	1	12	12			Store	12		05-03	Nurses Station	4450 x 3500	16
	Store: general	1	12	12						05-22	Clean Utility	2900 x 4400	12
	Bay: linen storage	2	2	4	lockable cupboards at each end of ward		Linen Bays	2		05-23	Dirty Utility	2300 x 4400	10
	Bay: resuscitation trolley	1	1	1						05-27	Treatment Room	4400 x 3700	16.5
	Bay: mobile equipment	1	4	4	wheelchairs, beds, IV stands		Mobile Equipment Store	4		05-25	External WC	2000 x 1500	3

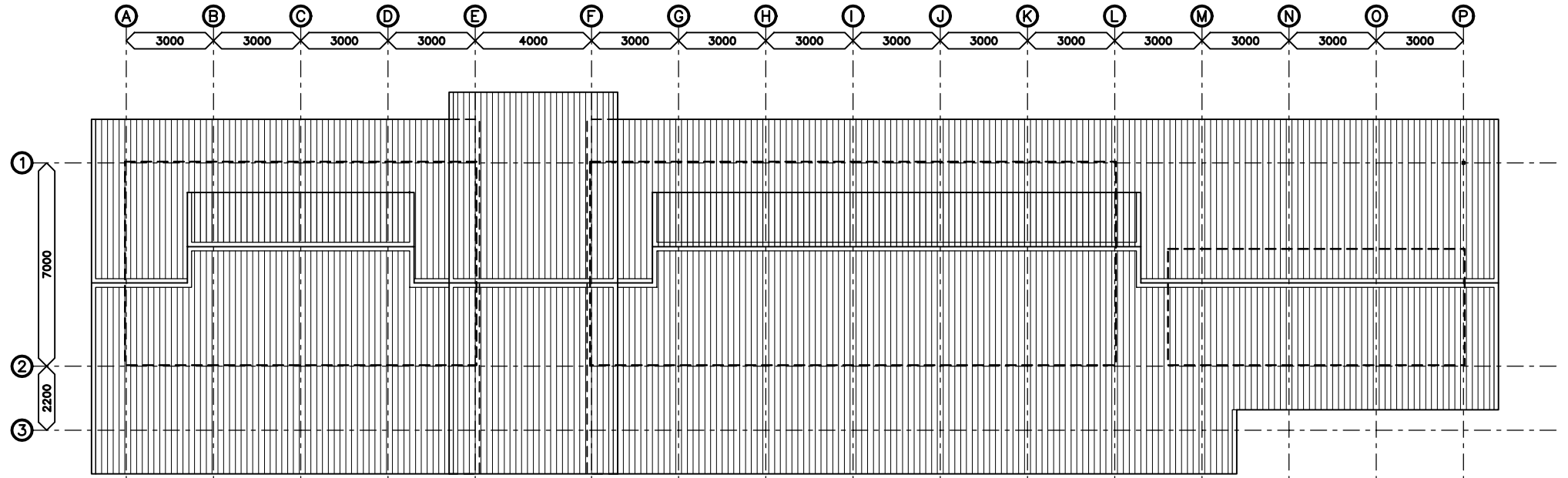


24 BED ACUTE IN-PATIENT WARD (CONTINUED)													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Support</b>													
	Kitchenette	1	6	6	meals delivery, beverages for patients, staff & relatives		Kitchenette	6		05-26	Kitchenette	2000 x 2850	5.5
	Shower/toilet: visitors	6	5	30	Use by families and visitors, accessible near entry area to ward to minimize disturbance to patients during rest hours & at night								
	TOTAL ROOM AREAS			461									
	Discounted Circulation	25%		115	single corridor ward					05-02 05-37	Corridor inc Trolley Bays Corridor	2000 x 34400 3500 x 2800	1078
	<b>HPU FUNCTIONAL AREA</b>			<b>576</b>									
	outdoor space	1	40	40	seating, room for beds, undercover e.g. verandah								
										05-01	Entry	3000 x 3900	12
										05-51	Shower		
										05-52	WC		
										05-53	Air Lock	1500 x 5600	8.5
										05-56	Staff Sleeping	1900 x 3800	7.5
<b>TOTAL INPATIENT WARD</b>				<b>576</b>		<b>TOTAL INPATIENT WARD</b>							

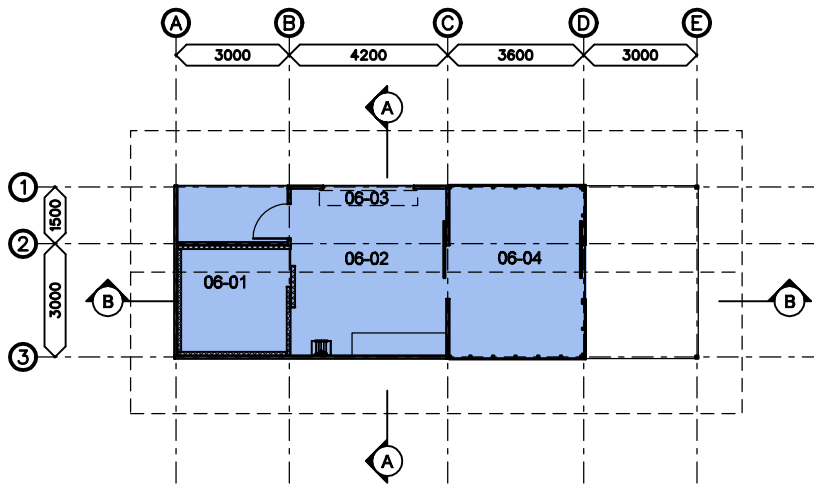
MATERNITY UNIT (DELIVERY)													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>													
	Assessment/training room	1	16	16	secondary delivery room		Training Room	15		05-15	Training Room	4400 x 4500	20
	Birthing room	1	30	30	access to ext. space		Birthing Suite	20		05-13	Birthing Suite	6700 x 4500	30
	Shower/toilet: ensuite	1	9	9	shower & toilet b/w birthing & assessment		En-suite	7		05-12	En-suite	2600 x 2300	6
<b>Staff</b>													
	Work area/utility room	1	9	9	incl. linen cupbd 1200w X 1800h					05-10 05-09	Maternity Station Secure Store	2000 x 2300 1500 x 1000	4.5 1.5
	Change: staff				use Emergency Unit facilities								
	Toilet: staff				use Emergency Unit facilities								
	Cleaners cupboard	1	2	2						05-17	Cleaners	1500 x 1000	1.5
<b>Storage</b>													
	Store: equipment	1	4	4						05-11	Store	2000 x 2300	4.5
	Bay: mobile equipment	1	2	2									
<b>Support</b>													
	Waiting: family	1	12	12	may be external - covered verandah								
	Bay: linen storage				in work area								
	Toilet: public				Emergency Unit								
	TOTAL ROOM AREAS			84			TOTAL ROOM AREAS	53					
	Discounted Circulation	35%		29						05-14	Corridor	7500 x 4300	20.5
<b>TOTAL MATERNITY (DELIVERY)</b>				<b>113</b>		<b>TOTAL MATERNITY (DELIVERY)</b>							
<b>TOTAL INPATIENT WARD</b>				<b>576</b>		<b>TOTAL INPATIENT WARD</b>							
<b>TOTAL INPATENT</b>				<b>689</b>		<b>TOTAL INPATENT</b>							<b>662</b>



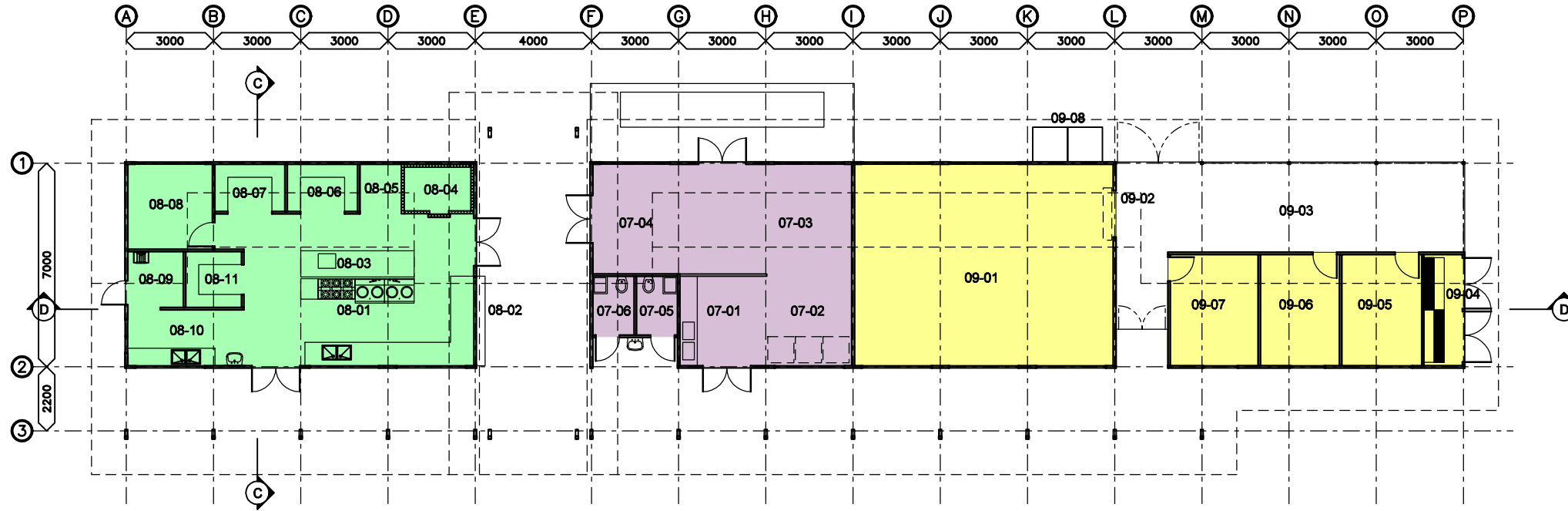
MORTUARY ROOF PLAN



SERVICES BUILDING ROOF PLAN



MORTUARY FLOOR PLAN



SERVICES BUILDING FLOOR PLAN

KITCHEN FLOOR PLAN

LAUNDRY FLOOR PLAN

SUPPORT FLOOR PLAN

ROOM LEGEND	
MORTUARY (KAMAR MAYAT)	
06-01	Ruang dingin
06-02	Area kerja
06-03	Masuknya / keluarnya barang
06-04	Ruang pandangan
	COLD ROOM
	WORK AREA
	STAFF ENTRY / DELIVERY
	VIEWING ROOM

ROOM LEGEND	
KITCHEN (Dapur)	
08-01	-
08-02	-
08-03	Area untuk perpelapan
08-04	Rudang pendingin
08-05	Lemari es / lemari pendingin
08-06	Gudang untuk sayuran
08-07	Gudang kering
08-08	Kantor
08-09	-
08-10	-
08-11	Gudang
	COOKING AREA
	SERVERY
	PREP AREA
	COOL ROOM
	FREEZER BAY
	VEGETABLE STORE
	DRY STORE
	OFFICE
	CLEANER / BINS
	POTS SCRUB / WASH UP
	GENERAL STORE

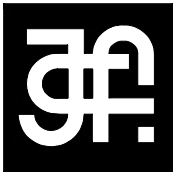
ROOM LEGEND	
LAUNDRY (Tempat cuci)	
07-01	Area kotor
07-02	Area tempat cuci
07-03	Pengerigan / besi
07-04	Tempat jemur pakaian
07-05	-
07-06	-
	DIRTY AREA
	WASH AREA
	DRYING / IRONING
	STORE: CLEAN
	MALE WC
	FEMALE WC

ROOM LEGEND	
SUPPORT BUILDING (Gedung pembantu)	
09-01	Gudang untuk perabot kantor
09-02	Area pengiriman yang baik
09-03	Bengkel
09-04	Papan untuk menghubungkan aliran listrik utama
09-05	Ruang perawatan
09-06	Ruang untuk peralatan taman
09-07	Kantor anisip
09-08	Gudang untuk area gas dan boiler
	FURNITURE STORE
	GOODS DELIVERY AREA
	WORKSHOP
	MAIN SWITCH BOARD
	MAINTENANCE ROOM
	GARDENERS STORE
	ACHIEVES OFFICE
	GAS BOTTLE STORAGE AREA

0 1 2 3 4 5m A1 SCALE

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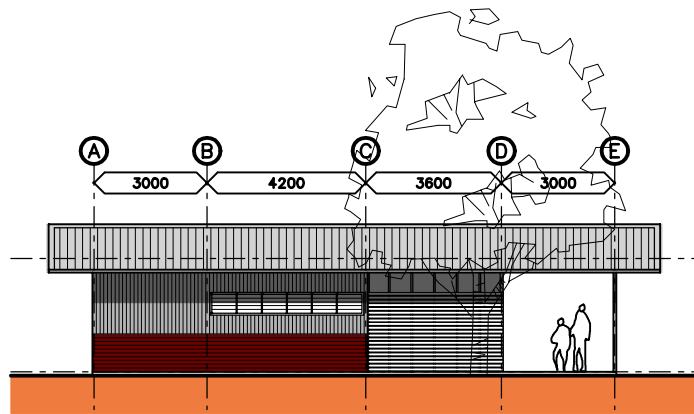
**JAMES CUBITT**  
architects



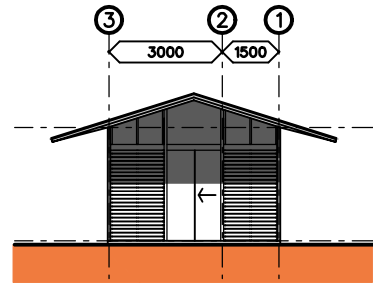
**MALIANA REFERRAL HOSPITAL**  
**MORTUARY / KITCHEN /**  
**LAUNDRY / SUPPORT**  
**FLOOR PLANS / ROOF PLANS**



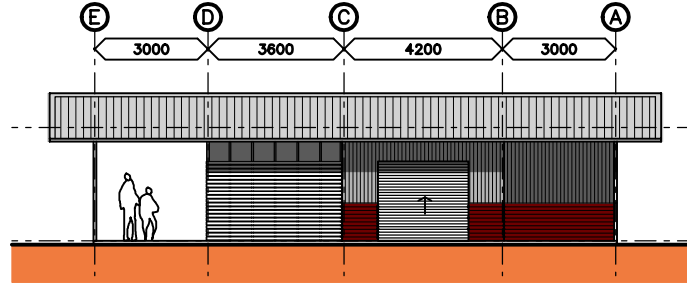
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H	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
G	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
F	AMENDED PRELIMINARY DESIGN	Dwg No.
E	INTERNAL CONSULTANT REVIEW	Issue
		FD03.(06-09).01
		I



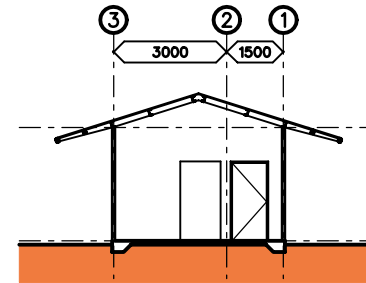
MORTUARY SOUTH ELEVATION



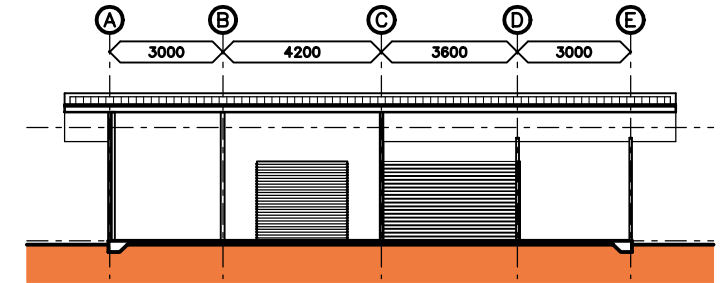
MORTUARY EAST ELEVATION



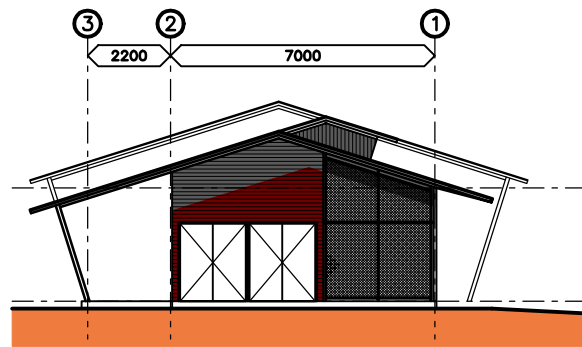
MORTUARY NORTH ELEVATION



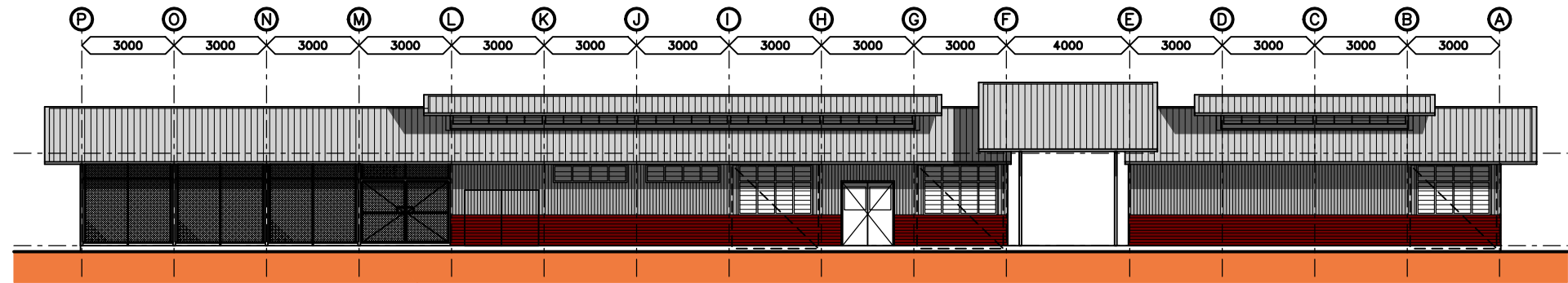
MORTUARY SECTION A-A



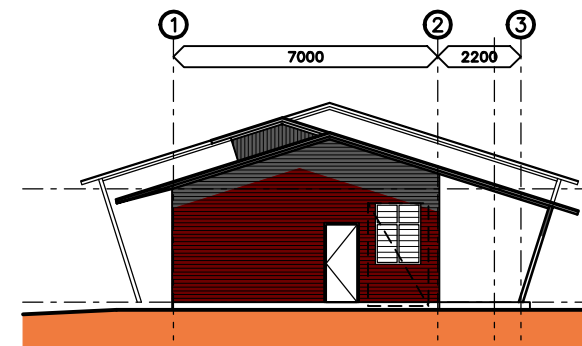
MORTUARY SECTION B-B



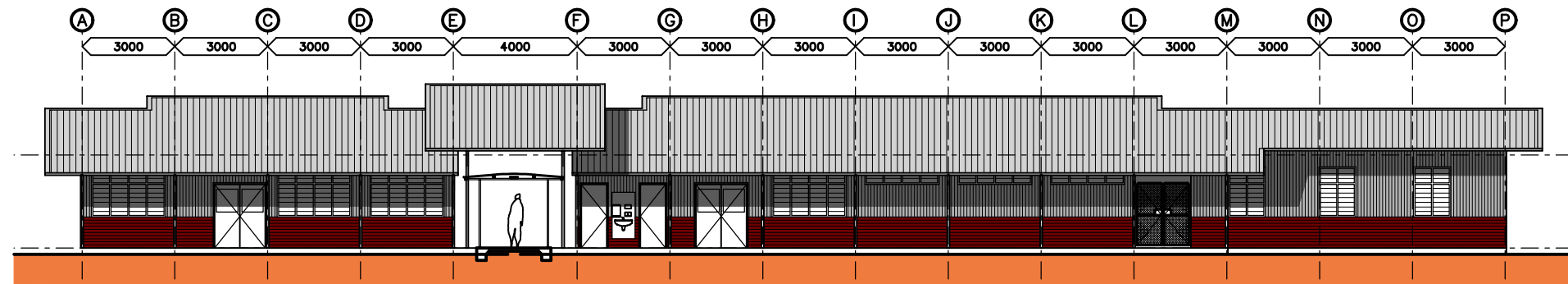
SERVICES BUILDING EAST ELEVATION



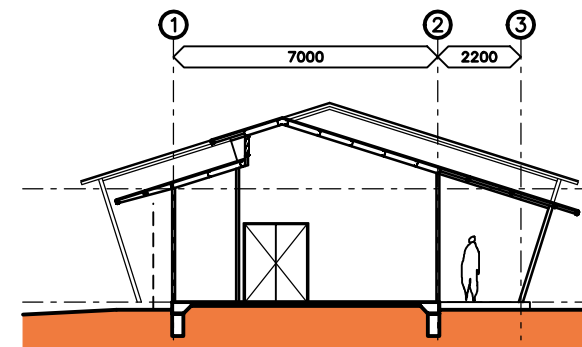
SERVICES BUILDING SOUTH ELEVATION



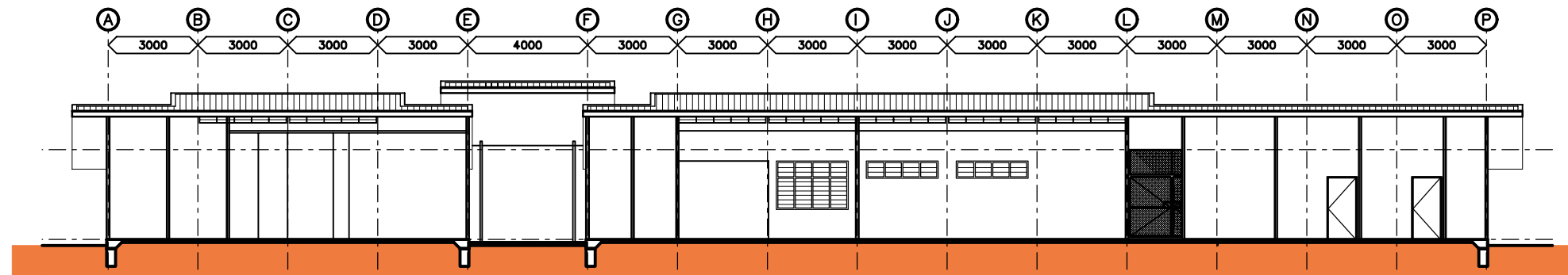
SERVICES BUILDING WEST ELEVATION



SERVICES BUILDING NORTH ELEVATION



SECTION C-C (TYPICAL)



SECTION D-D

0 1 2 3 4 5m A1 SCALE

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CUBITT**  
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**MALIANA REFERRAL HOSPITAL**  
MORTUARY / LAUNDRY /  
KITCHEN / SUPPORT  
ELEVATIONS / SECTIONS

I	FINAL DESIGN	Date: 19/11/04
H	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:100 @ A1
G	AMENDED PRELIMINARY DESIGN No. 2	Scale: 1:200 @ A3
F	AMENDED PRELIMINARY DESIGN	Dwg No.
E	INTERNAL CONSULTANT REVIEW	FD03.(06-09).02
		Issue I

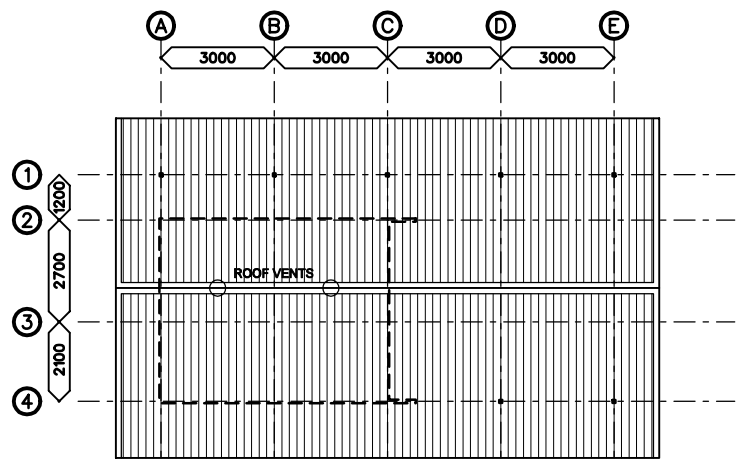
MORTUARY UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>													
	Body Holding room	1	15	15	2 drawer fridge		Cold Room	7		06-01	Cool Room	2800 x 2800	7.5
	Airlock / Lobby	1	10	10			Work Area	18		06-02	Work Area		
	Viewing room	1	10	10			Viewing Room	15		06-03	Staff Entry / Delivery	4100 x 4400	18
										06-04	Viewing Room	3600 x 4300	16
<b>Staff</b>													
	Change/shower/toilet: staff	1	8	8									
	Cleaners cupboard	1	2	2									
	TOTAL ROOM AREAS			45									
	Discounted Circulation	10%		5									
	<b>TOTAL MORTUARY</b>			<b>50</b>									
	External Covered Area												
	Waiting	1	15	15	separate from other waiting functions including outpatients								
<b>TOTAL MORTUARY</b>				<b>50</b>		<b>TOTAL MORTUARY</b>		<b>44</b>		<b>TOTAL MORTUARY</b>			<b>42</b>

LAUNDRY UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Staff</b>													
	Dirty linen holding area	1	5	5			Dirty Linen Holding Area	4		07-01	Dirty Area	3000 x 3000	9
	Washing / drying area	1	25	25			Washing Drying Area	15		07-02	Washing	3000 x 3000	9
	Ironing / folding / sorting/ sewing	1	20	20			Ironing, Folding, Sorting and Sewing	15		07-03	Drying / Ironing	4900 x 3750	18
	Clerical area	1	4	4			Clerical Area	4					
	Toilet: staff	1	3	3						07-05 07-06	Male WC Female WC	1400 x 1900 1400 x 1900	3 3
<b>Storage</b>													
	Store: uniforms	1	6	6			Store: Uniforms	6					
	Store: clean linen	1	10	10			Store Clean Linen	10		07-04	Store: Clean	4000 x 3750	15
	TOTAL ROOM AREAS			73									
	Discounted Circulation	10%		7									
	<b>TOTAL LAUNDRY</b>			<b>80</b>									
	<b>External fenced area:</b>												
	clothes drying area - washing lines, fenced										Clothes Line (External)		
	<b>TOTAL LAUNDRY</b>			<b>80</b>			<b>TOTAL LAUNDRY</b>	<b>59</b>			<b>TOTAL LAUNDRY</b>		<b>56</b>

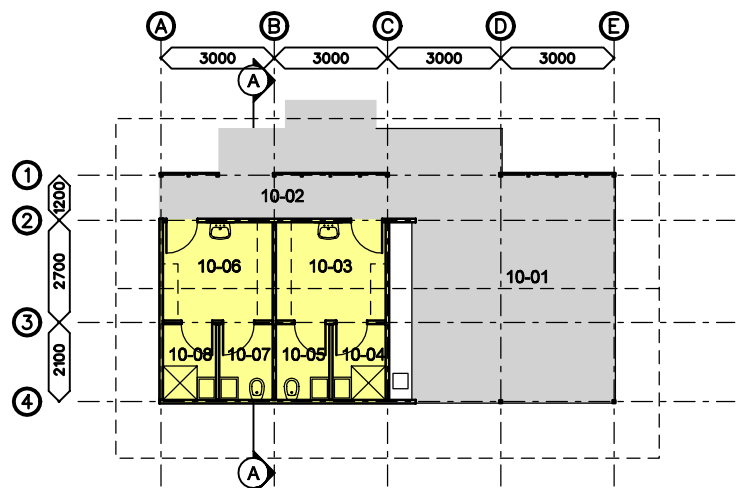
DESIGN BRIEF						AMENDED DESIGN BRIEF			AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes	Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Primary</b>												
	Kitchen	1	44	44	prep & cook 20sqm plate & tray 8sqm dishwashing 8sqm pot washing 4sqm bev prep 4sqm	Kitchen	30		08-01 08-03 08-02	Cooking Area Prep. Area Servery	5200 x 7900	41
									08-10	Pots Scrub / Wash	4000 x 1800	7.5
<b>Staff</b>												
	Clerical area	1	6	6		Clerical Area	6		08-08	Office	2900 x 2900	8.5
	Staff room	1	10	10								
	Toilet: staff	2	3	6								
<b>Storage</b>												
	Freezer area	1	6	6	chest freezer x 2	Freezer	2		08-05	Freezer Alcove	1600 x 1400	2.5
	Store: dry	1	9	9		Store: Dry	4		08-07	Dry Store	1600 x 2400	4
	Store: cool room	1	5	5	meat	Store: Cool Room	4		08-04	Cool Room	1500 x 2300	3.5
	Store: vegetable	1	5	5		Store: Vegetables	4		08-06	Vegetable Store	1600 x 2400	4
	Store: pots	1	4	4	& other equipment	Store: Pots	4		08-11	General Store	2000 x 2000	4
<b>Support</b>												
	Goods receiving	1	5	5								
	Cleaners cupboard	1	2	2		Cleaners Cupboard	2		08-09	Cleaner	2000 x 2000	4
	TOTAL ROOM AREAS			102								
	Discounted Circulation	10%		10								
<b>TOTAL KITCHEN</b>				<b>102</b>		<b>TOTAL KITCHEN</b>		<b>62</b>	<b>TOTAL KITCHEN</b>			<b>79</b>

NON-CLINICAL SUPPORT SERVICES													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
<b>Security</b>													
	Office: security	1	14	14	near hospital entry, able to view entrance driveway, etc		Relocated to A&E						
<b>Stores Unit</b>													
	Store: central cleaners	1	15	15	cleaning products & eqt								
	Store: bulk	1	30	30									
	Store: furniture	1	15	15			Store	60		09-01	Furniture Store	9000 x 6800	61
	Goods receiving/holding area	1	10	10			Goods Receiving	10		09-02	Goods Delivery Area		
	Store: archived medical records	1	12	12	on site (future), collocate with stores unit		Store	12		09-07	Archives Office	3000 x 3800	11.5
<b>Maintenance Workshop</b>													
	Workshop: maintenance	1	20	20	plus outdoor work area under cover		Store	10		09-05	Maintenance Room	2700 x 3800	10.5
	Store: maintenance & gardener	1	12	12			Store	10		09-06	Gardeners Store	2700 x 3800	10.5
										09-04	Main Switchboard	1300 x 3800	5
	TOTAL ROOM AREAS			128									
	Discounted Circulation	10%		13									
<b>TOTAL SUPPORT SERVICES</b>			<b>141</b>										
<b>External covered area</b>													
	Undercover work area	1	20	20	adjacent to workshop external in wired cage under cover		Work Area	20		09-03	Workshop (External)	12000 x 2900	36
	Store: gas bottle	1	3	3	vehicles secured in fenced compound, depending on location		Gas Store	3		09-08	Gas Bottle Storage		
	Carport: hospital vehicles	1	120	120	size depends on location & eqt; concrete slab floor weather protection required								
	Generator shed/building				secure; for collection & sorting of refuse; adjacent to incinerator; including storage area for contaminated waste								
	Hospital Incinerator												
	Waste collection area												
<b>TOTAL SUPPORT SERVICES</b>				<b>141</b>		<b>TOTAL SUPPORT SERVICES</b>			<b>112</b>	<b>TOTAL SUPPORT SERVICES</b>			<b>99</b>

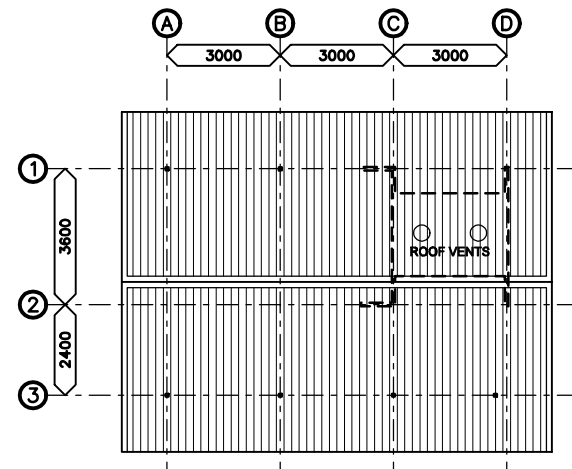




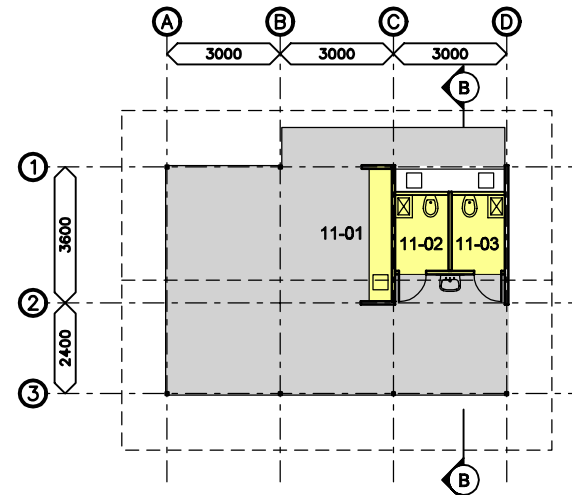
ROOF PLAN  
STAFF RECREATIONAL AREA



FLOOR PLAN  
STAFF RECREATIONAL AREA

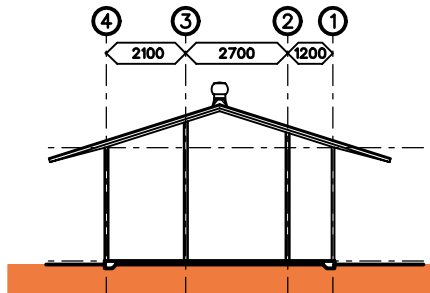


ROOF PLAN  
VISITING RELATIVES

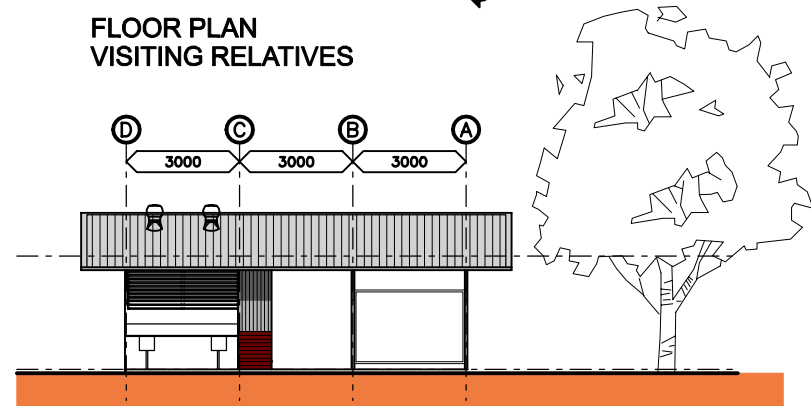


FLOOR PLAN  
VISITING RELATIVES

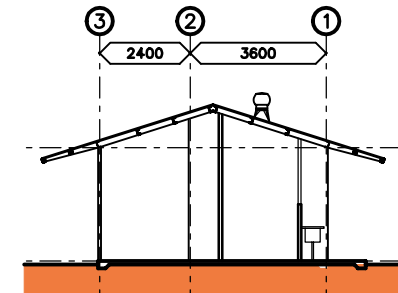
ROOM LEGEND		
STAFF RECREATION AREA (Area rekreasi untuk staf)		
10-01	-	STAFF AREA
10-02	-	CORRIDOR
10-03	-	FEMALE LOCKER ROOM
10-04	-	FEMALE SHOWER
10-05	Wc untuk staf wanita	FEMALE WC
10-06	-	FEMALE LOCKER ROOM
10-07	Wc untuk staf pria	MALE WC
10-08	-	MALE LOCKER ROOM
10-09	-	MALE SHOWER
ROOM LEGEND		
VISITING RELATIVE / PUBLIC TOILETS (Keluarga pengunjung)		
11-01	Area untuk rekreasi	RECREATION AREA
11-02	Wc untuk wanita	FEMALE WC
11-03	Wc untuk pria	MALE WC



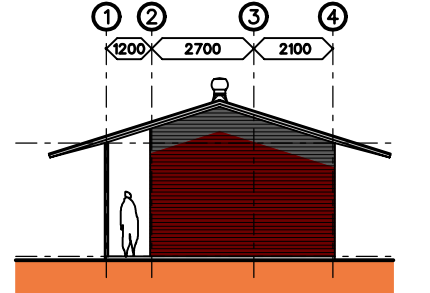
SECTION A-A  
STAFF RECREATIONAL AREA



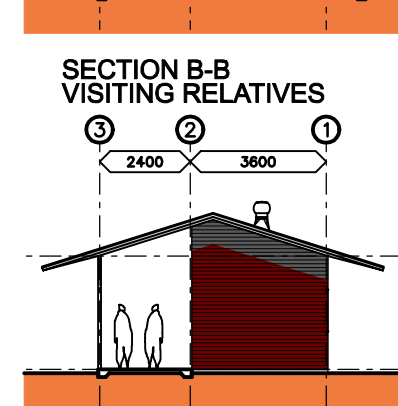
NORTH ELEVATION  
VISITING RELATIVES



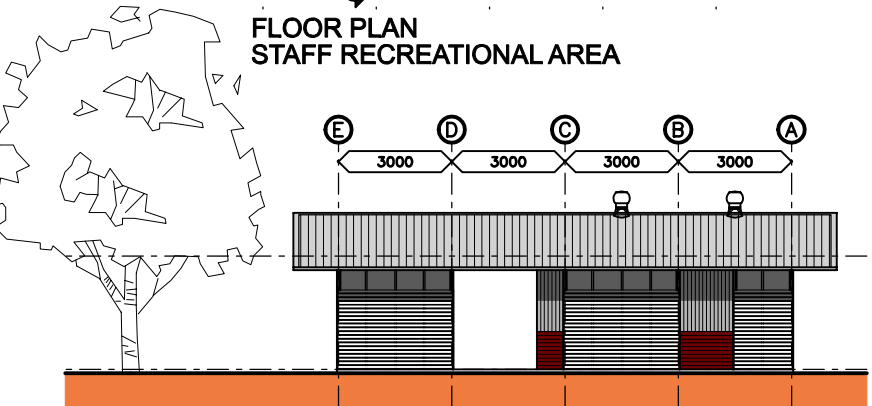
SECTION B-B  
VISITING RELATIVES



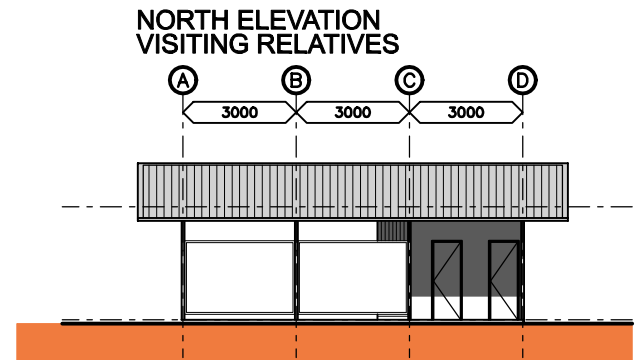
EAST ELEVATION  
STAFF RECREATIONAL AREA



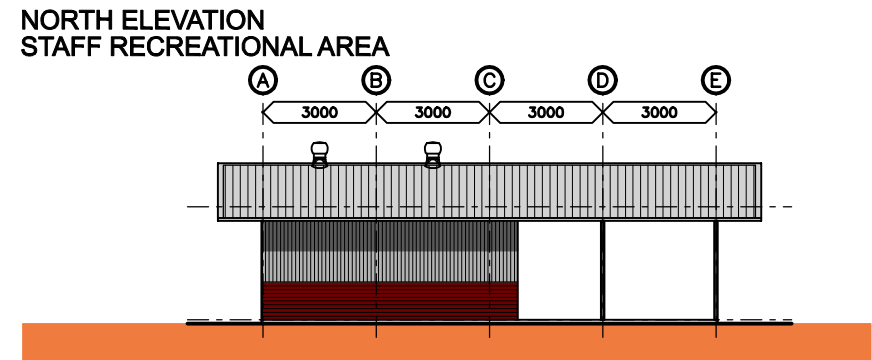
EAST ELEVATION  
VISITING RELATIVES



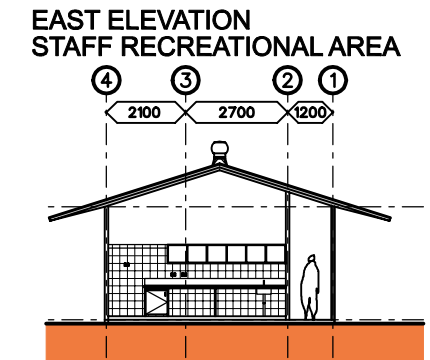
NORTH ELEVATION  
STAFF RECREATIONAL AREA



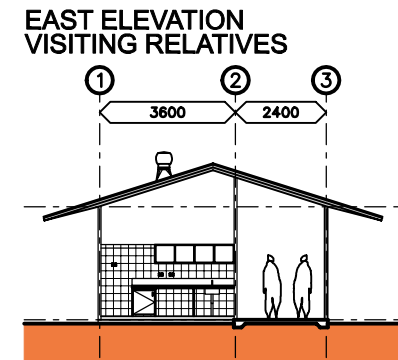
SOUTH ELEVATION  
VISITING RELATIVES



SOUTH ELEVATION  
STAFF RECREATIONAL AREA



WEST ELEVATION  
STAFF RECREATIONAL AREA



WEST ELEVATION  
VISITING RELATIVES

0 1 2 3 4 5m A1 SCALE

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STAFF RECREATIONAL AREA /  
VISITING RELATIVES/PUBLIC TOILETS

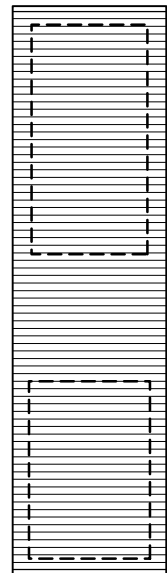


I	FINAL DESIGN	Date: 19/11/04
H	PRE-QUAL PRELIMINARY DESIGN	Scale:
G	AMENDED PRELIMINARY DESIGN No. 2	Scale:
F	AMENDED PRELIMINARY DESIGN	Dwg No.
E	INTERNAL CONSULTANT REVIEW	FD03.(10-11).01
		Issue
		I

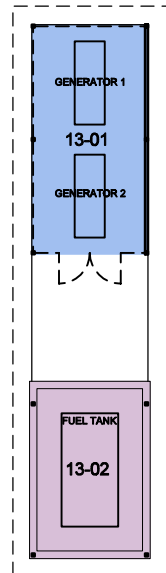
STAFF UNIT													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
	Staff room	1	15	15	access to outdoor areas		Staff Room	15		10-01	Staff Area (external)	6000 x 6000	36
	Toilet: staff	2	3	6			Staff Toilet	16		10-04	Female Shower	2000 x 1400	3
	TOTAL ROOM AREAS			21						10-05	Female WC	2000 x 1400	3
	Discounted Circulation	10%		2						10-07-	Male WC	2000 x 1400	3
	<b>TOTAL STAFF UNIT</b>			<b>23</b>						10-08	Male Shower	2000 x 1400	3
										10-02	Corridor (external)	1200 x 6000	7
										10-03	Female Locker Room	2600 x 2900	7.5
										10-06	Male Locker Room	2600 x 2900	7.5
	Undercover area	1	20	20	verandah adjacent to staff room								
	<b>TOTAL STAFF UNIT</b>			<b>23</b>			<b>TOTAL STAFF UNIT</b>	<b>34</b>			<b>TOTAL STAFF AMENITIES</b>		<b>28</b>

VISITING RELATIVES / PUBLIC TOILETS													
DESIGN BRIEF						AMENDED DESIGN BRIEF				AMENDED FINAL DESIGN			
Area	Room/Space	No.	Area m <sup>2</sup>	Total Area m <sup>2</sup>	Notes		Room/Space	Area m <sup>2</sup>	Notes	Room Number	Room Name	Dimensions mm	Area m <sup>2</sup>
										11-01	Recreational Area (External)	9000 x 6000	45
										11-02	Female WC	2000 x 1400	3
										11-03	Male WC	2000 x 1400	3
	<b>TOTAL VISITING RELATIVES / PUBLIC TOILETS</b>						<b>TOTAL VISITING RELATIVES / PUBLIC TOILETS</b>	<b>60</b>			<b>TOTAL VISITING RELATIVES / PUBLIC TOILETS</b>		<b>6</b>

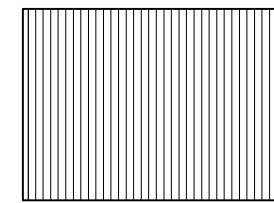
ROOM LEGEND	
GENERATOR SET / FUEL TANK	
13-01 -	GENERATORS
13-02 -	FUEL TANKS (5000L)
ROOM LEGEND	
BIN STORAGE	
14-01 -	CLEAN BIN STORE
14-02 -	DIRTY BIN STORE
14-03 -	WASH BAY



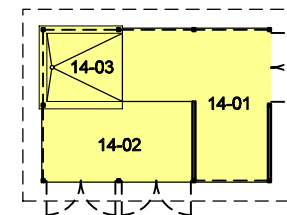
GENERATOR /  
FUEL TANK  
ROOF PLAN



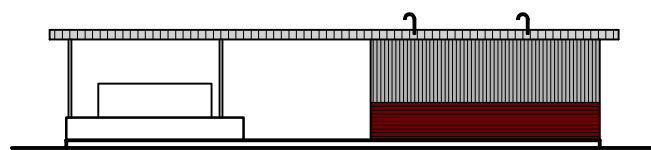
GENERATOR /  
FUEL TANK  
FLOOR PLAN



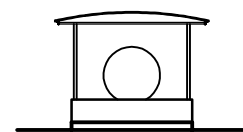
BIN STORAGE ROOF PLAN



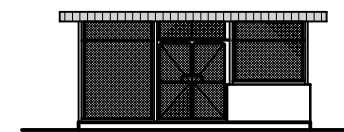
BIN STORAGE FLOOR PLAN



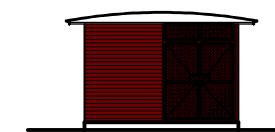
WEST ELEVATION



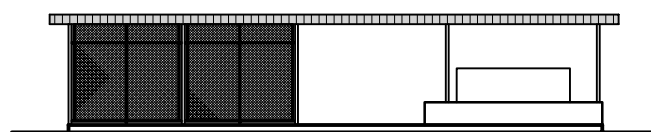
NORTH ELEVATION



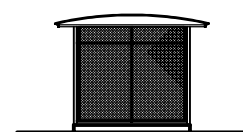
SOUTH ELEVATION



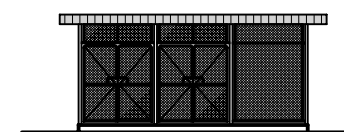
WEST ELEVATION



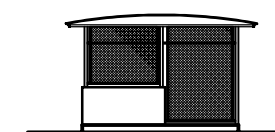
EAST ELEVATION



SOUTH ELEVATION

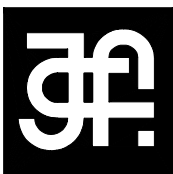


NORTH ELEVATION

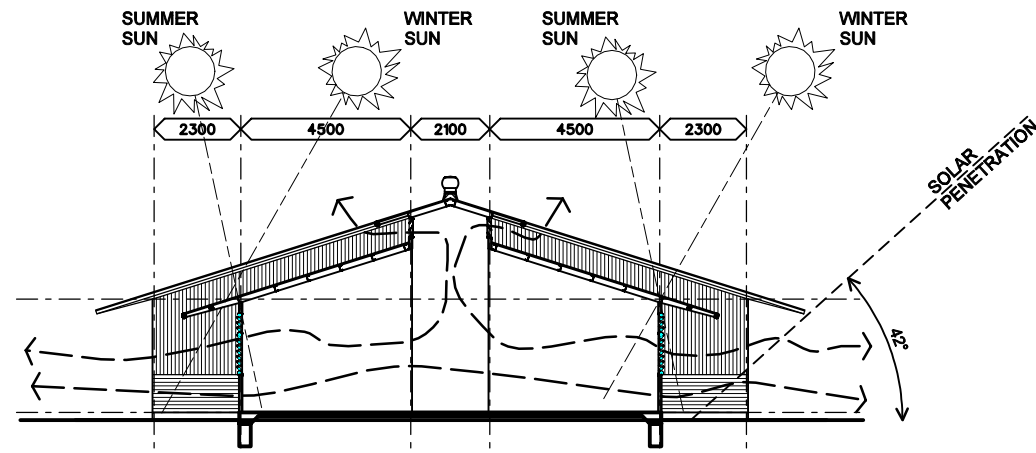


EAST ELEVATION

0 1 2 3 4 5m A1 SCALE



		Date: 19/11/04
D	FINAL DESIGN	Scale: 1:100 @ A1
C	PRE-QUAL PRELIMINARY DESIGN	Scale: 1:200 @ A3
B	AMENDED PRELIMINARY DESIGN No. 2	Dwg No.
A	PRELIMINARY	FD03.(13-14).01
		Issue D



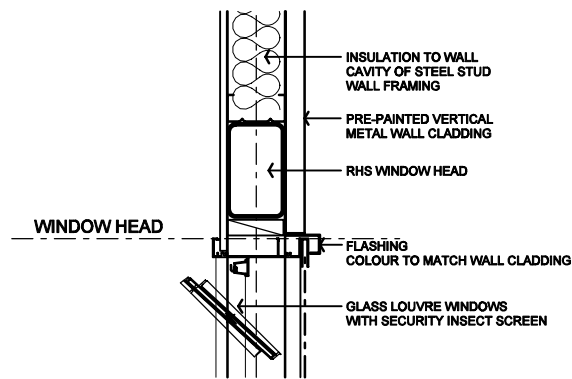
DIAGRAMMATIC CROSS SECTION 1:100

MAXIMUM WALL OPENINGS AND ROOF VENTILATION TO PROMOTE NATURAL THROUGH VENTILATION

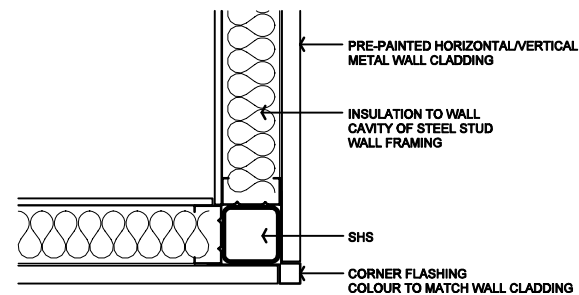
LARGE OVERHANGS TO PROVIDE MAXIMUM SHADING TO EXTERNAL WALLS

INSULATED ROOF AND WALLS TO REDUCE SOLAR HEAT GAIN INSIDE BUILDING

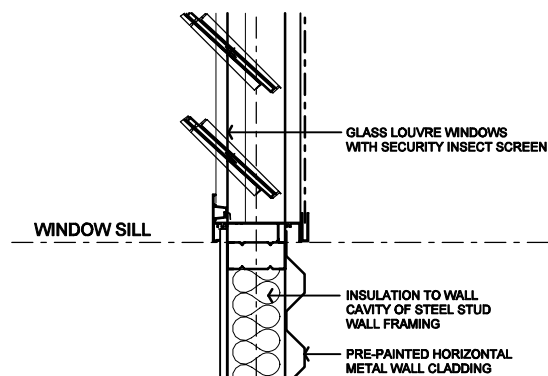
LIGHT WEIGHT CONSTRUCTION METHODS AND MATERIALS FOR EASE OF CONSTRUCTION IN ISOLATED AREAS



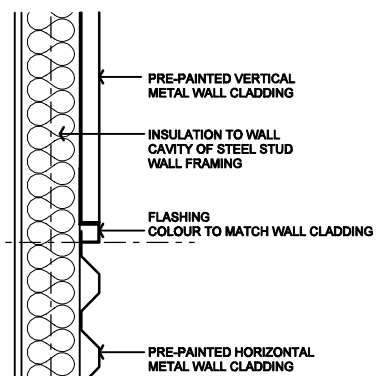
WINDOW HEAD DETAIL 1:5



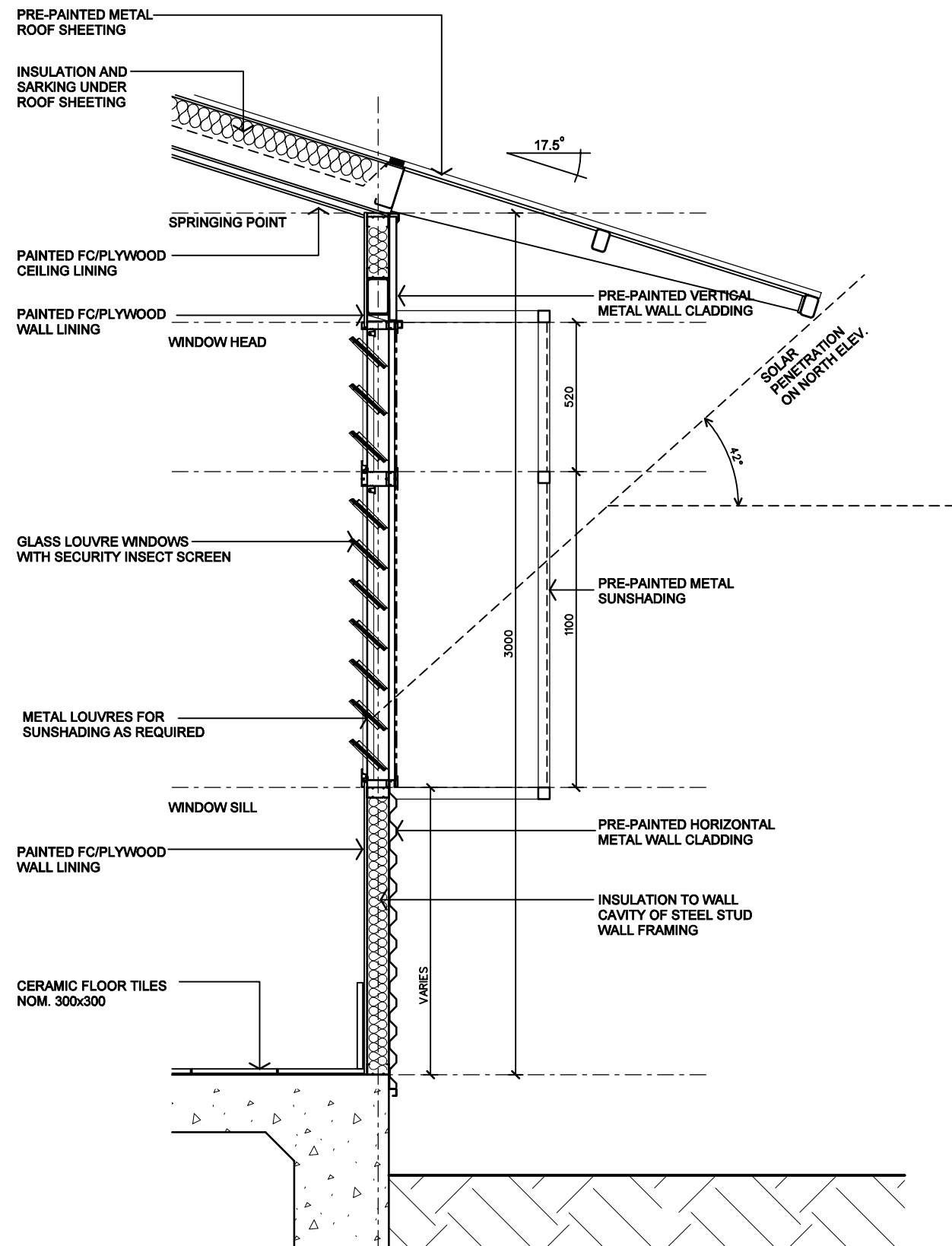
PLAN CORNER DETAIL 1:5



WINDOW SILL DETAIL 1:5



WALL CLADDING DETAIL 1:5



TYPICAL WALL DETAIL SECTION 1:10

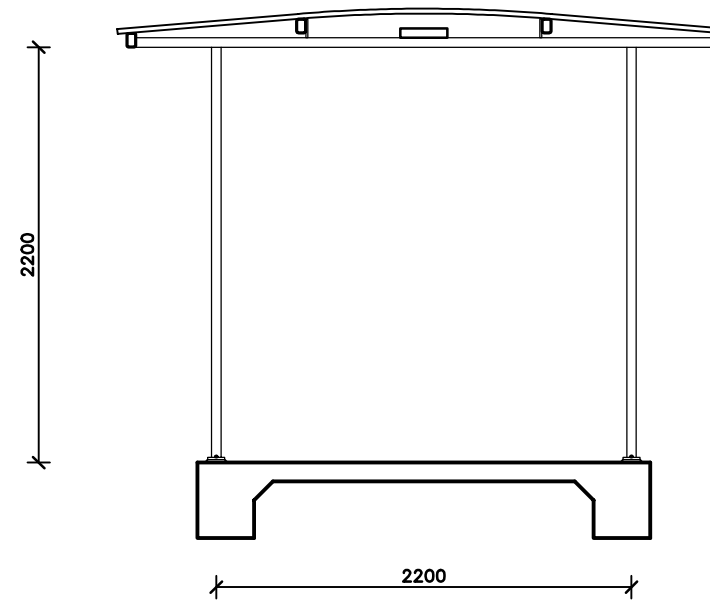
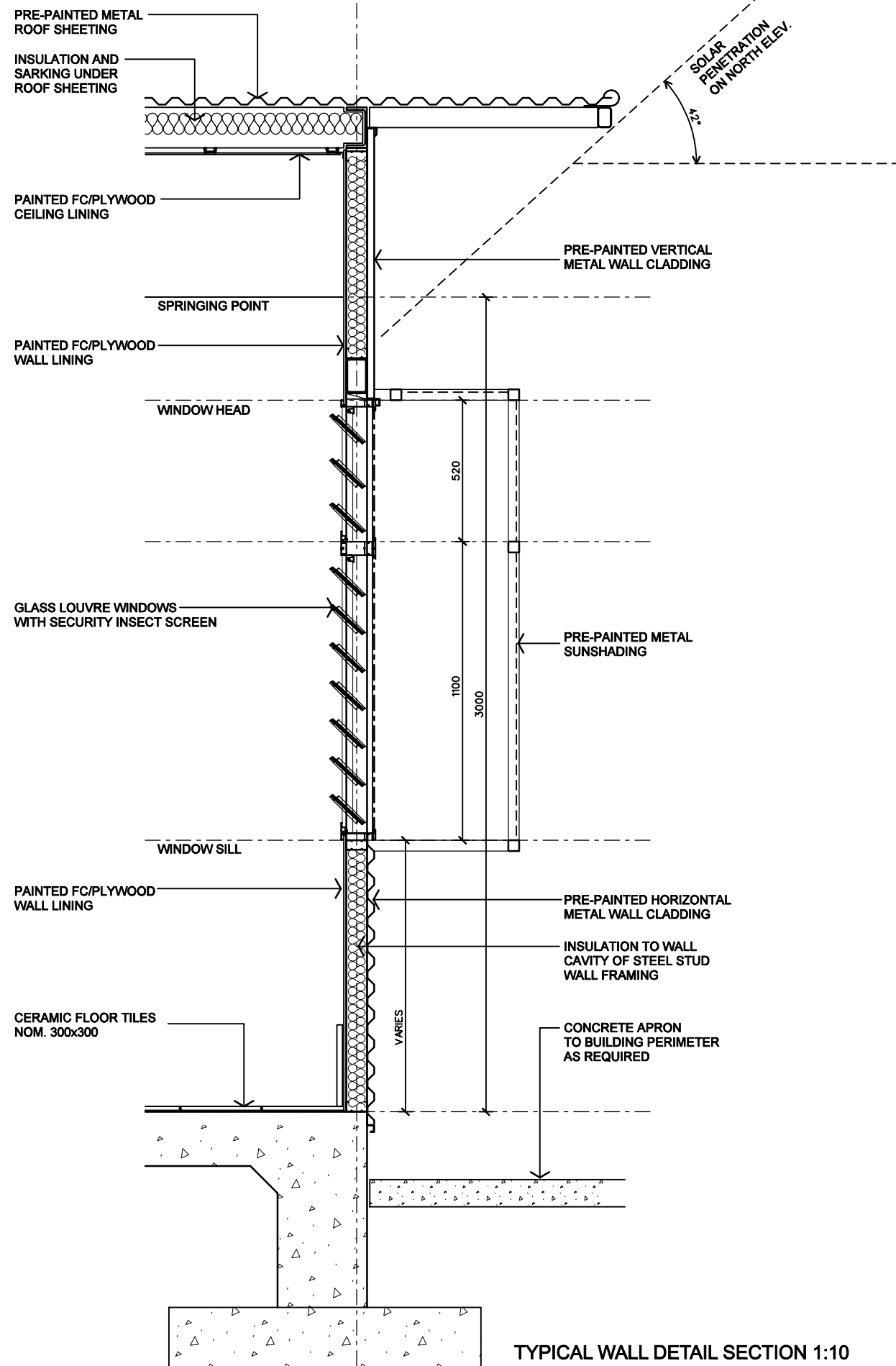
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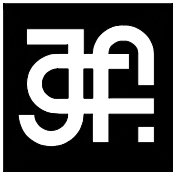
MALIANA REFERRAL HOSPITAL  
DESIGN CONSIDERATION

G	FINAL DESIGN	Date: 19/11/04
F	PRE-QUAL PRELIMINARY DESIGN	Scale: AS SHOWN @ A1
E	AMENDED PRELIMINARY DESIGN No. 2	Scale: -
D	AMENDED PRELIMINARY DESIGN	Dwg No. Issue
C	QS REVIEW No. 2	FD03.GEN.01 G



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**DESIGN CONSIDERATION**

		Date: 19/11/04
		Scale: AS SHOWN @ A1
C	FINAL DESIGN	Scale: -
B	PRE-QUAL PRELIMINARY DESIGN	Dwg No.
A	AMENDED PRELIMINARY DESIGN No. 2	FD03.GEN.02
		Issue C