



# **Laminate Materials**

Innovative composite solutions for Shelters,  
Container Houses and Work Camps

**SkinTec ThermoTec PanTec**

Lightweight Engineered Environmentally Friendly Composites

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IQ Tec Germany GmbH – Naundorfer Str. VIZ 100 – 01987 Schwarzheide – Germany  
[www.iq-holding.com](http://www.iq-holding.com)

# Technology Advantages

- Tailor-made glass-fiber reinforcement offers weight reduction combined with superior mechanical performance  
→ Lightweight and tough
- Thermoformable
- Diffusion-stable
- High impact, strength and stiffness performance
- Environmental friendly , i.e. 100% VOC free
- No exotherm → Thick sections
- Fast processing → short cycle times

# Production Set-Up

- 8000 sqm facility in Brandenburg/Havel
  - 2 main production lines
    - Continuous lamination. 2 mio sqm capacity
    - Press Tables
    - 3 shift
- Resin Plant in Schwarzheide
  - Resin manufacturing
  - Lamination for complicated panels
  - 24/7 operation

# Lamination Line



# PreTec Line



# Schwarzheide Operation

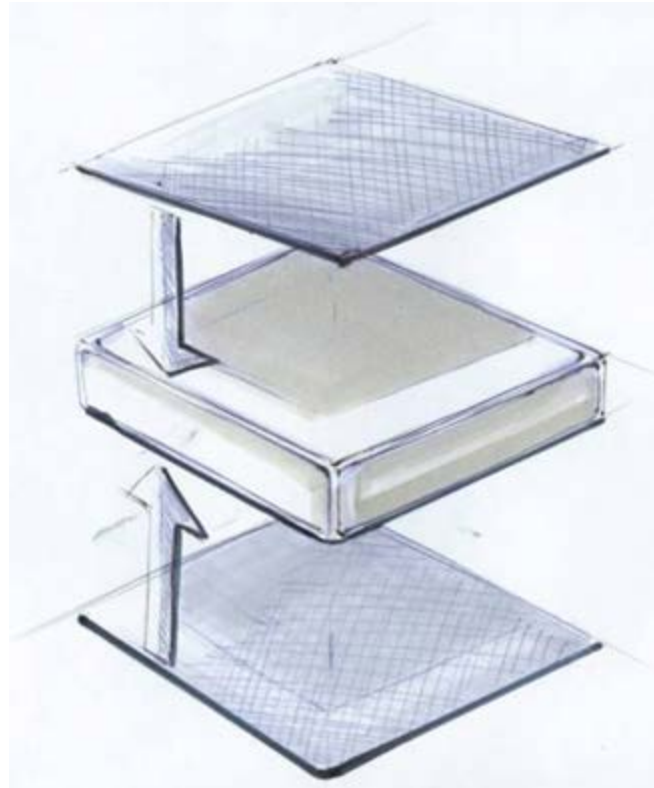




# Schwarzheide Plant



# SkinTec: Sandwich Panel Skin





# Customized Sandwich Panel Products

## Skins:

- Fiber-reinforced thermoplastic materials (e.g. SkinTec PBT)
- Fiber-reinforced thermoset materials
- Metallic surfaces
- Solid wood

## Core materials:

- Polyurethane (PU) foam
- Polyester (PET) foam
- Polystyrene (PS) foam
- Balsa wood
- Polypropylene honeycomb
- Aluminium honeycomb

**Significant weight reduction by using high performing skin.**

# ThermoTec Products

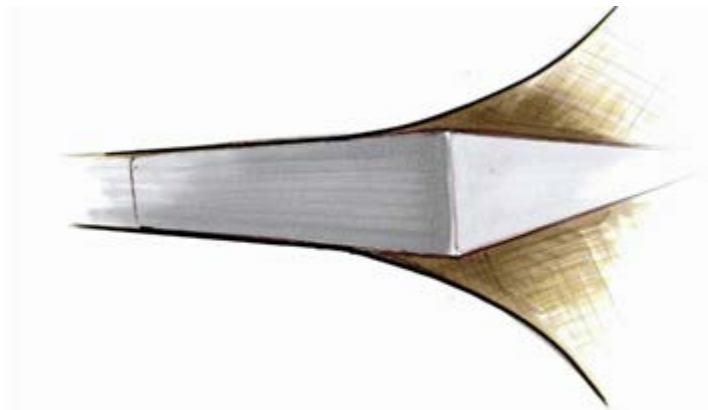
Thermally insulating sandwich panel consisting of:

## **Skins:**

- Fiber-reinforced plastic material
- Metallic surface

## **Core materials:**

- Polyurethane (PU) foam
- other insulating material



# Housing Products - Technology

## **Key issue:**

- Unique SkinTec EP laminate
- Fiber content of more than 60 wt%
- Stiff, durable and extreme lightweight IQ panels

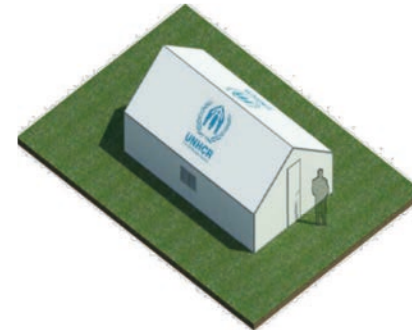
## **Advantages:**

- Panel sizes: 2.8 m x 13.5 m (9.2' x 44.3')
- Various thicknesses
- High insulation properties
- No rotting, rusting; Mold, mildew and insect resistant
- No additional vapour barrier needed

# Housing Products - Applications

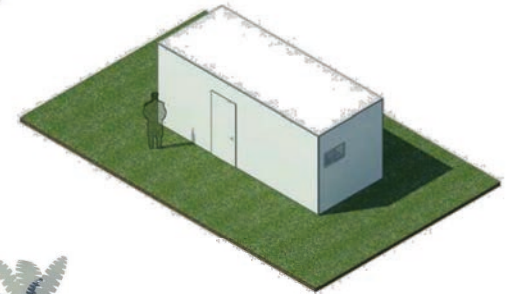
## **Shelter – IQ-AID24:**

- Quick and easy erection
- Maximum living area
- Flexible combination options



## **Container (20' and 40'):**

- Cheaper compared with steel container
- Individual construction (doors, windows)
- Cost and space saving transport



## **Simple houses:**

- Cheap, easy and quick erection
- Mold, mildew and insect resistant



## **Premium housing:**

- Fire resistant
- Stone-like touch, due to planking with fiber-reinforced plasterboard

# Shelters – Today's situation





# Shelter – IQ-AID24

## High demand:

- Increasing number of world-wide home-less
- Due to natural disasters (Drought, Flood, Earth-quakes, etc.)
- War and Riots

## Panel:

- Thickness: 30 mm
- Honeycomb core technology
- Weight: only 4.9 kg/sqm

## Construction:

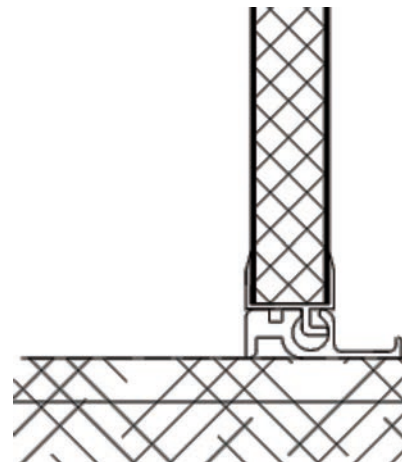
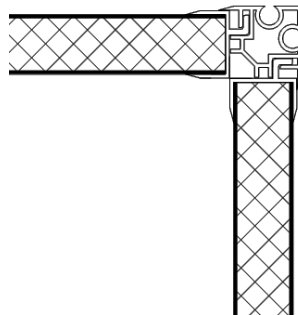
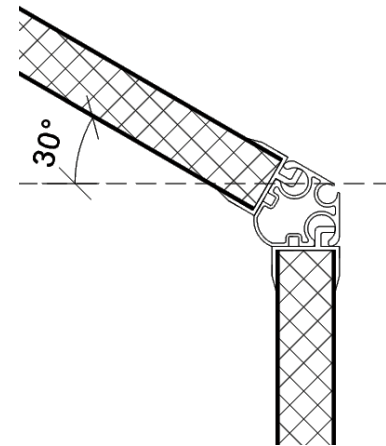
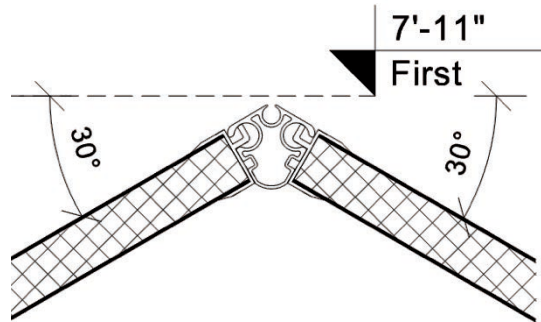
- Profile systems (FRP)
- Single shelters are combinable
- Only two non-skilled workers necessary
- No adhesives required





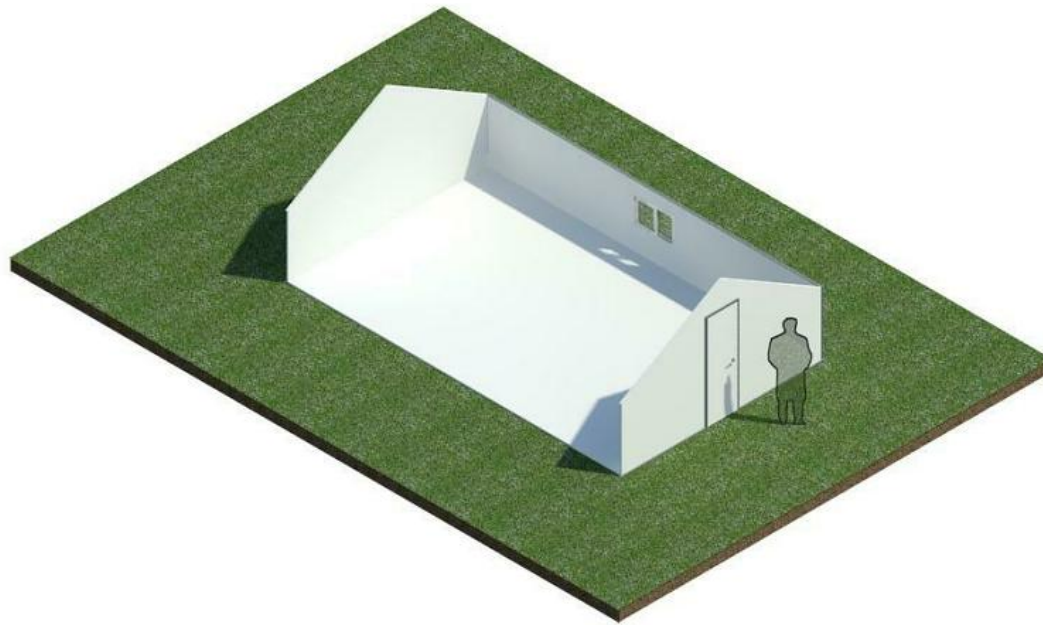
# Shelter – IQ-AID24

Profile systems:



# Shelter – IQ-AID24

Assembly of shelters:



# Shelter – IQ-AID24

## Advantages:

- Quick and easy erection
- Good insulation properties
- Wind and water resistant
- Mildew, rot and UV resistant
- Maximum living area
- Flexible combination options
- Structural performance
- Windows and doors are already included
- One wall is made out of one panel, so no leakages are possible
- Shelters can be re-used without any degradation



# Container – 20' and 40'

## High demand:

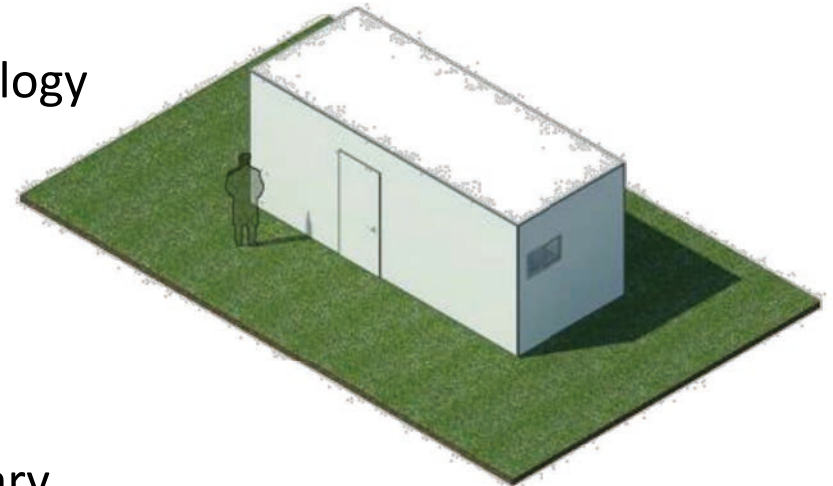
- Increasing number of global construction-projects
- Need of living area and offices for high-skilled workers
- Flexible and high quality systems needed

## Panel:

- Thickness: 30 or 100 mm
- EPS foam or Honeycomb core technology
- Extremely lightweight panels

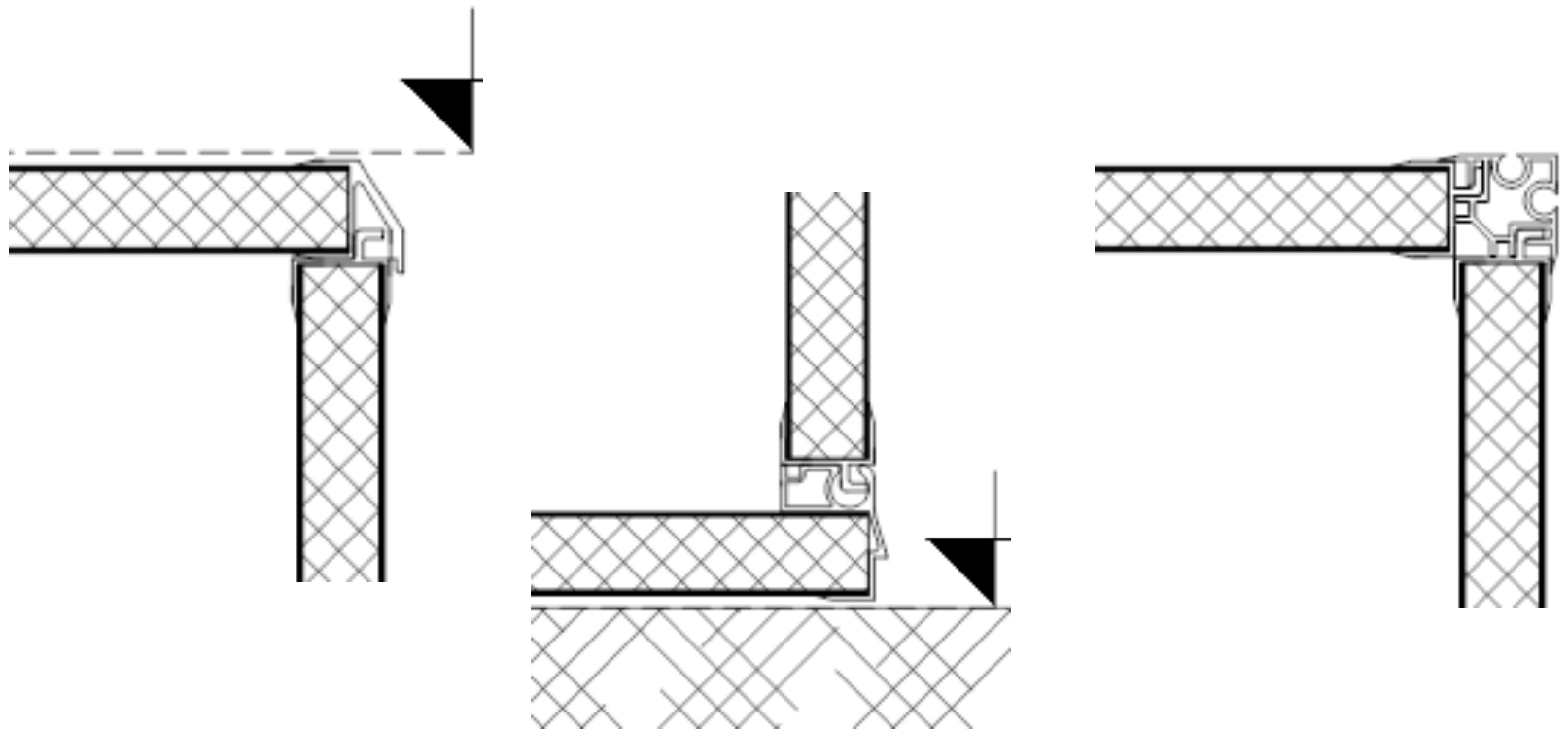
## Construction:

- Profile systems (FRP) - Interlocking
- Profile included in panel
- Only two non-skilled workers necessary
- No adhesives required



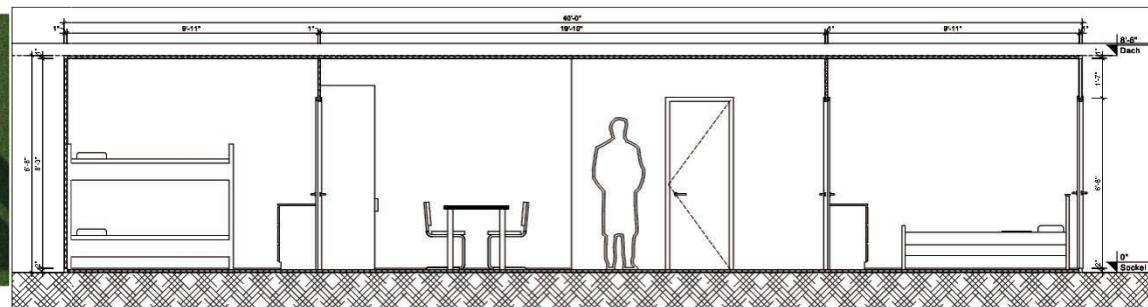
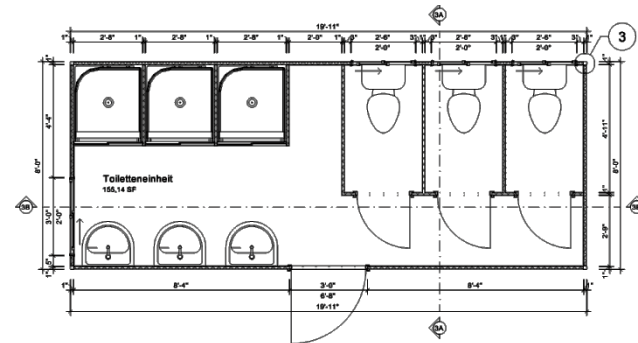
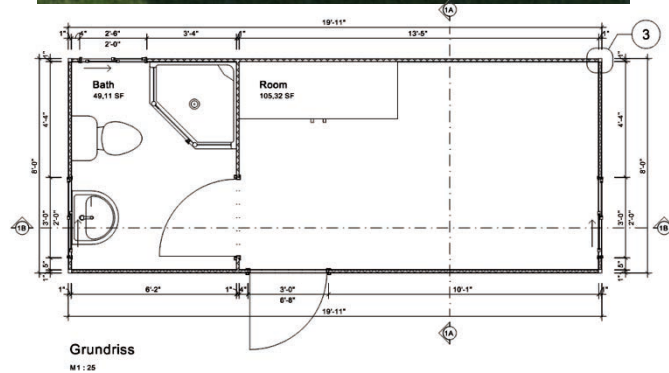
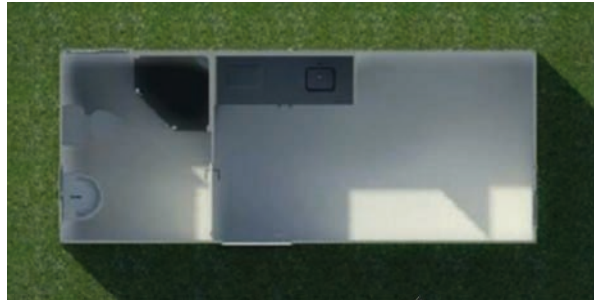
# Container – 20' and 40'

Profile systems:



# Container – 20' and 40'

Setup-example:

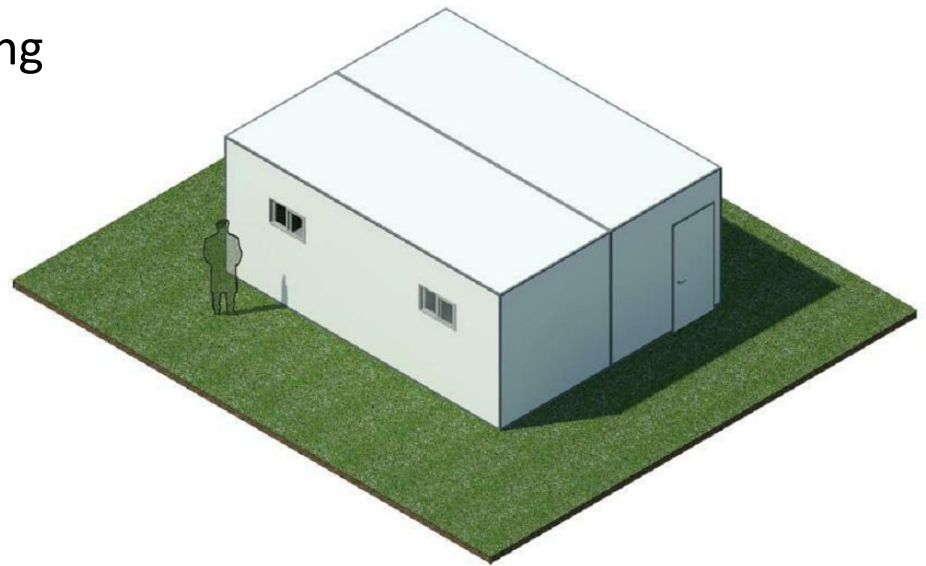




# Container – 20' and 40'

## Advantages:

- Cheaper compared with steel container
- Already perfect insulation properties
- Individual construction (doors, windows)
- Cost and space saving transport
- Lightweight product—easy handling
- High impact resistant
- Wind and water resistant
- Mildew, rot and UV resistant
- Individual dimensions possible



# Affordable houses

## High demand:

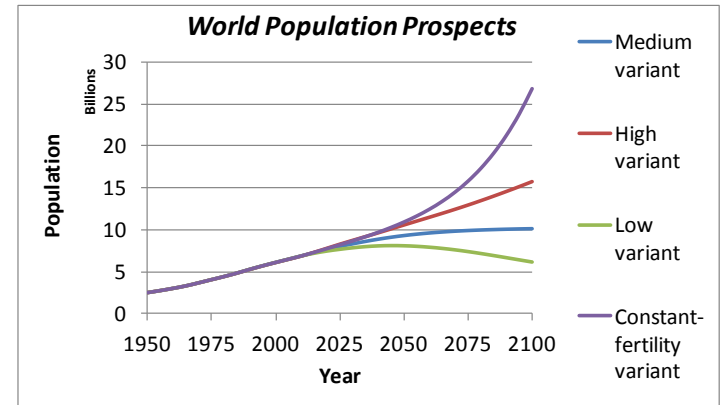
- Growing world population
- Need of living area especially in lower-middle-income economies
- Cheap, solid and comfortable houses, also for working camps

## Panel:

- Thickness: 100 mm
- EPS foam
- Extremely lightweight panels

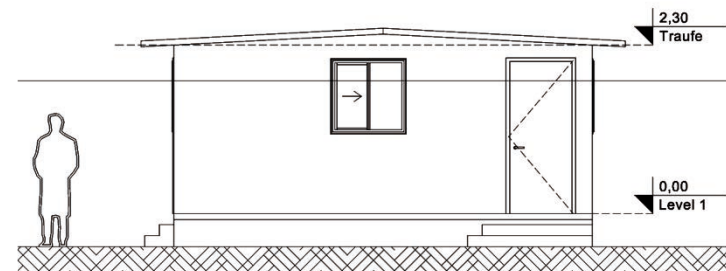
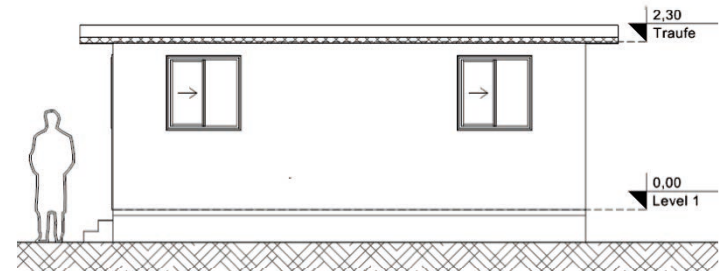
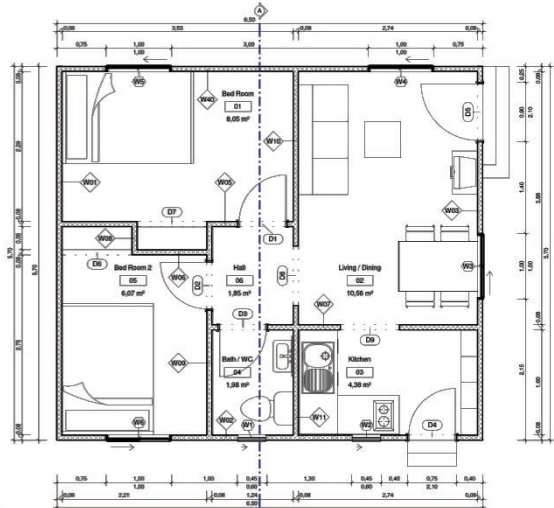
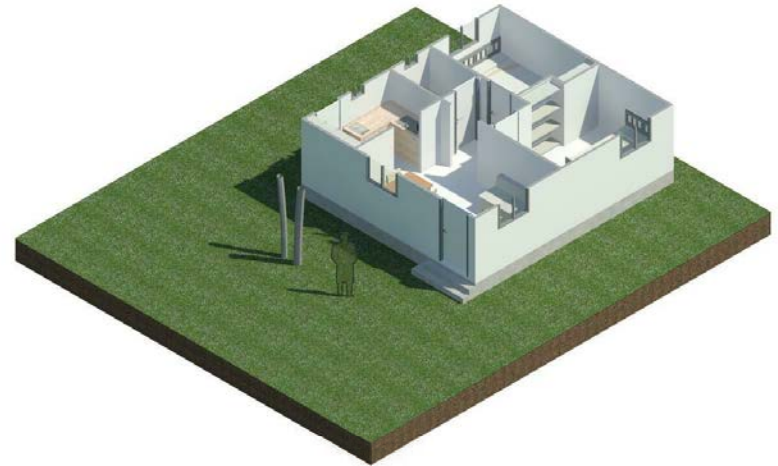
## Construction:

- Shipping of houses in modules
- Profile systems (FRP)
- Quick assembly with non-skilled worker



# Affordable houses

Setup-example:



# Affordable houses

## Advantages:

- Cheaper compared with conventional materials
- Good insulation properties
- One wall—one panel, for increased energy efficiency
- No rotting, rusting
- Mold, mildew and insect resistant
- Weather resistant (wind , water, UV)
- Individual construction (floor plan, doors, windows)
- Lightweight product—easy handling
- High impact resistant

# The easy assembly





# Prefabricated houses

## **High demand:**

- Highly insulating houses due to increased energy costs
- Panel technology without internal supporting structures

## **Panel:**

- Thickness: flexible
- EPS foam
- Fiber reinforced plasterboard planking
- Rendering possible
- Fire resistant

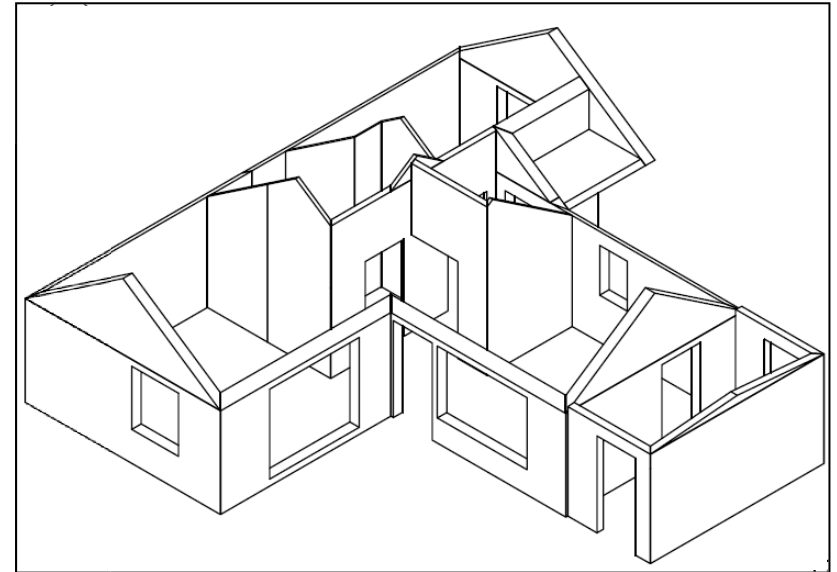
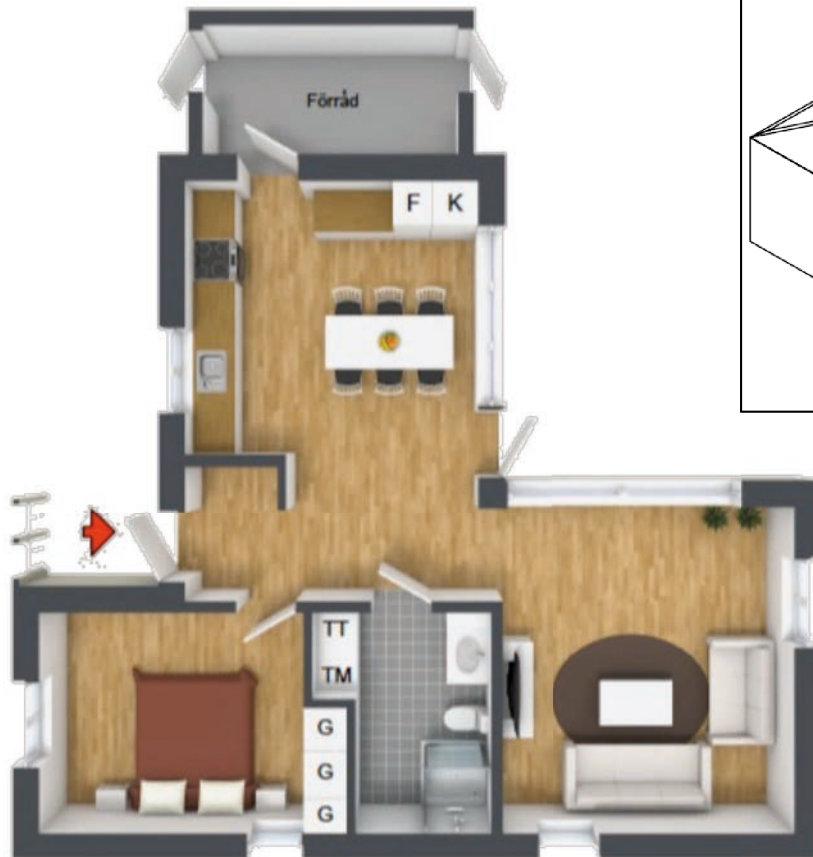
## **Construction:**

- Assembly in 1-2 days with trained workers
- One wall – one panel technology
- Individual finishing of walls (Wallpaper, plaster, simple colouring, etc. )



# Prefabricated houses

Setup-example:



# Prefabricated houses

## Advantages:

- Perfect insulation properties
- One wall—one panel, for increased energy efficiency
- Panel sizes: 2.8 m x 13.5 m
- Individual construction (floor plans, doors, windows)
- No additional vapour barrier needed
- Stone-like touch, due to planking with fiber reinforced plasterboard
- Fire resistant

# Prefabricated houses



# **Projects and Opportunities**

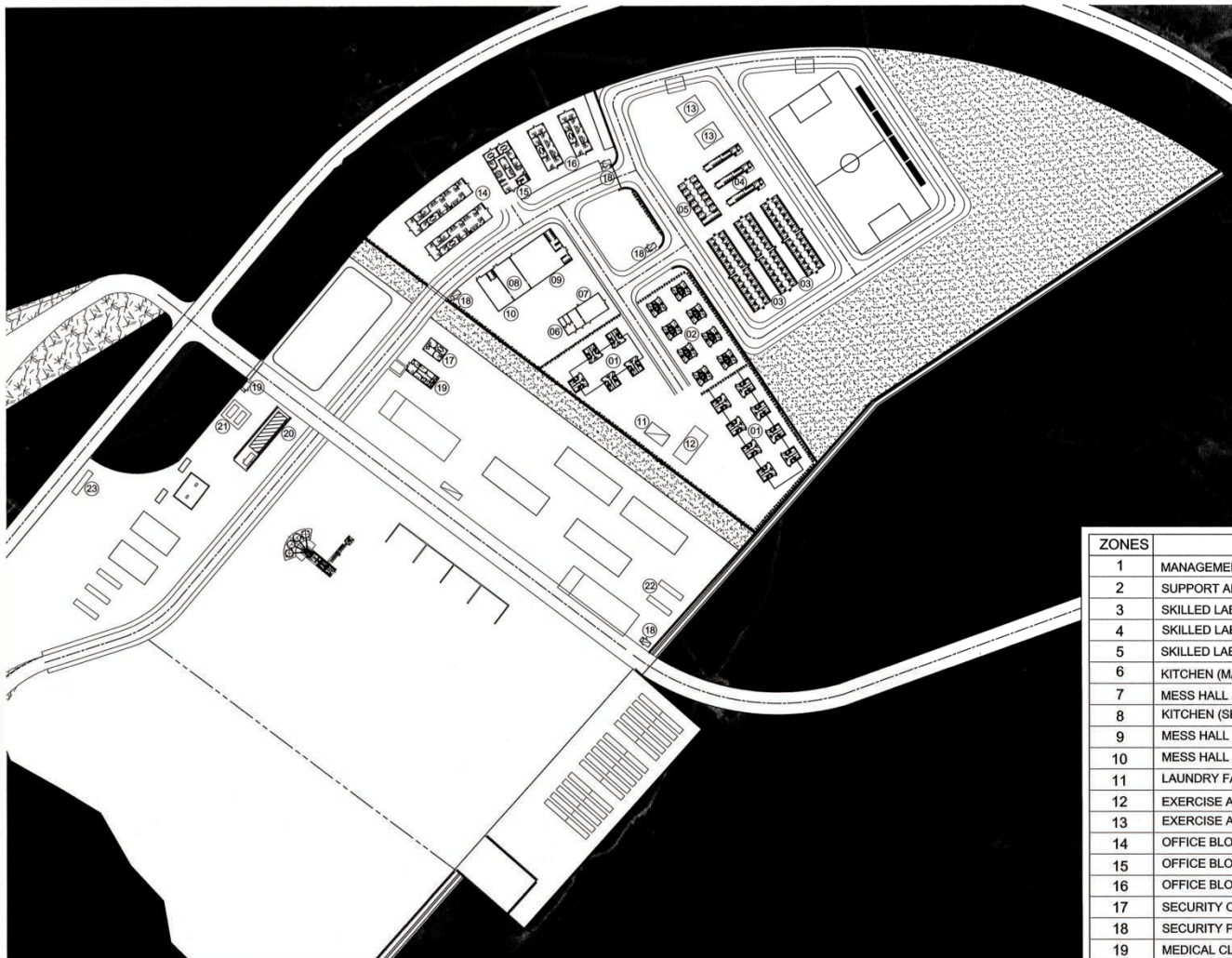
# Work Camp Systems - Example

- Camp Site Including
  - Office facilities as per table below
  - Accommodation as per table below
  - Kitchen and Dining Hall as per table below
  - Sport / Leisure
  - Security office
  - Medical Clinic
  - Laboratory – Workspace

Categories	Personnel Requiring Accommodations	Personnel Requiring Office Space	Personnel Requiring Dining
<b>Management Staff</b>	26	26	26
<b>Support Staff</b>	32	11	32
<b>Client and Client's Engineers</b>	0	14	14
<b>Skilled Labour Foremen</b>	12	12	12
<b>Skilled Labourers</b>	288	12	288
<b>Local Labour</b>	0	0	75
<b>Total</b>	<b>358</b>	<b>75</b>	<b>447</b>



# Layout

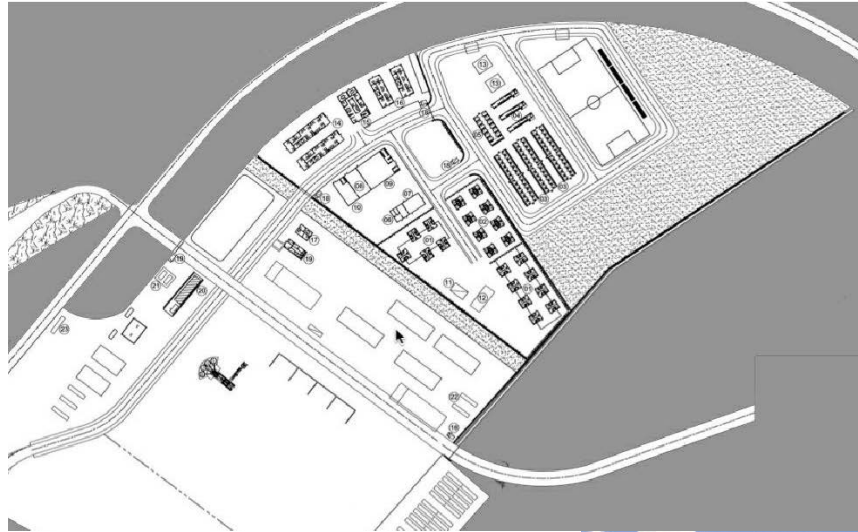


GENERAL ARRANGEMENT  
SCALE 1:1000

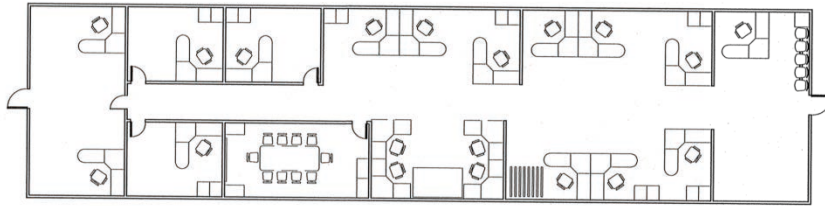
ZONES	DESCRIPTION ZONES
1	MANAGEMENT STAFF AND VISITORS HOUSING ACCOMMODATION
2	SUPPORT AND CAMP STAFF HOUSING ACCOMMODATION
3	SKILLED LABOURER HOUSING ACCOMMODATION
4	SKILLED LABOURER COMMON W/C AND LAUNDRY
5	SKILLED LABOUR FOREMEN HOUSING ACCOMMODATION
6	KITCHEN (MANAGEMENT, MANAGEMENT SUPPORT STAFF, CLIENT AND CLIENTS ENGINEER)
7	MESS HALL (MANAGEMENT, MANAGEMENT SUPPORT STAFF, CLIENT AND CLIENTS ENGINEER)
8	KITCHEN (SKILLED LABOUR STAFF, FOREMEN AND LOCAL LABOUR)
9	MESS HALL (SKILLED LABOUR STAFF AND FOREMEN)
10	MESS HALL (LOCAL LABOUR)
11	LAUNDRY FACILITIES (MANAGEMENT AND SUPPORT STAFF)
12	EXERCISE AND RECREATION BUILDING (MANAGEMENT AND SKILLED SUPPORT STAFF)
13	EXERCISE AND RECREATION BUILDING (LABOURER AND LABOUR FOREMEN)
14	OFFICE BLOCK TYPE 1 - SNC-LAVALIN
15	OFFICE BLOCK TYPE 2 - SKILLED LABOURER AND FOREMEN
16	OFFICE BLOCK TYPE 3 - CLIENT AND CLIENT'S ENGINEER
17	SECURITY OFFICE (MAIN GATE)
18	SECURITY POST
19	MEDICAL CLINIC AND DOCTOR'S ROOM
20	LABORATORY
21	GENERATORS
22	WASTEWATER TREATMENT
23	WATER FILTRATOR PLANT (BATCH PLANT AND POTABLE WATER)



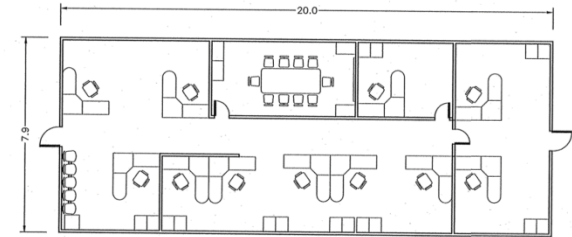
# Building Types



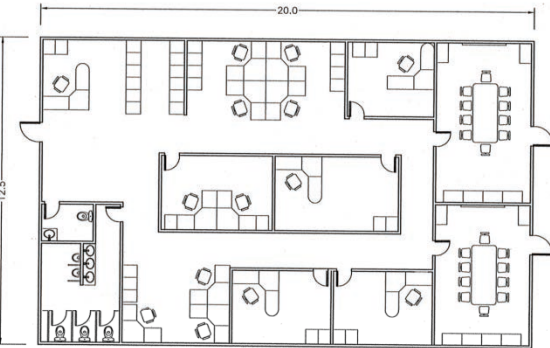
# Offices and Workspace



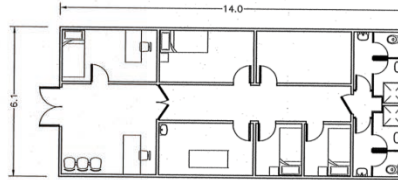
**BLOCK OFFICE TYPE 1 - SNC-LAVALIN**  
SCALE 1:100



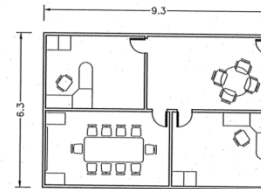
**BLOCK OFFICE TYPE 2 - SKILLED LABOURER AND FOREMEN**  
SCALE 1:100



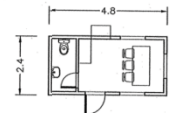
**BLOCK OFFICE TYPE 3 - CLIENT AND CLIENT'S ENGINEER**  
SCALE 1:100



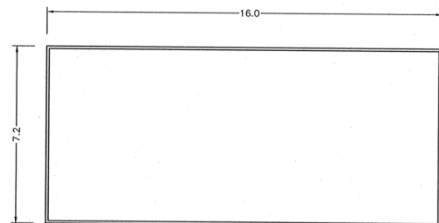
**MEDICAL CLINIC AND DOCTOR'S ROOM**  
SCALE 1:100



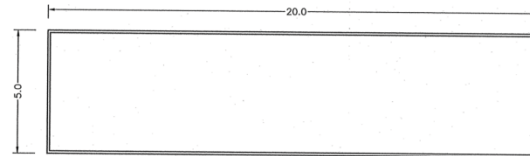
**SECURITY OFFICE (MAIN GATE)**  
SCALE 1:100



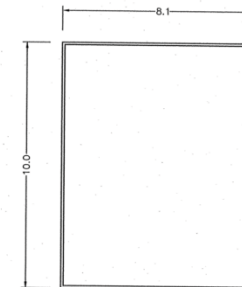
**SECURITY POST**  
SCALE 1:100



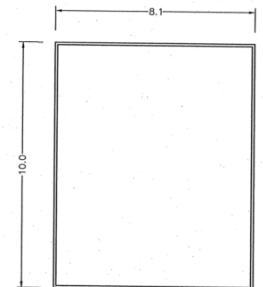
**EXERCISE AND RECREATION BUILDING (MANAGEMENT AND SUPPORT STAFF)**  
SCALE 1:100



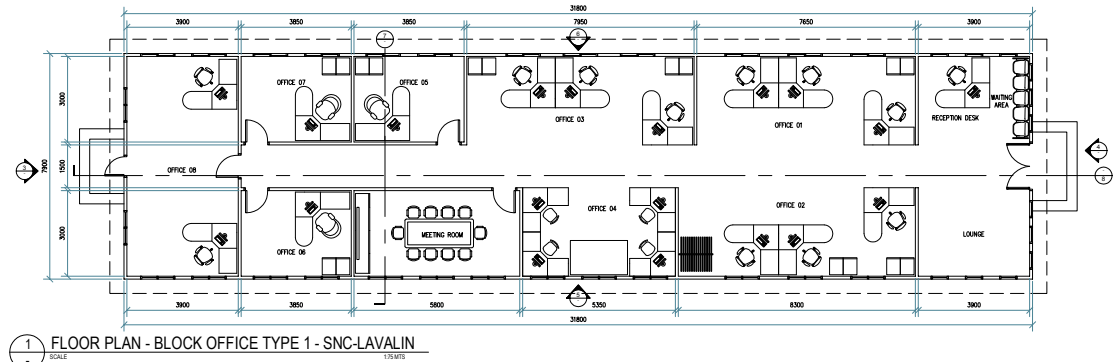
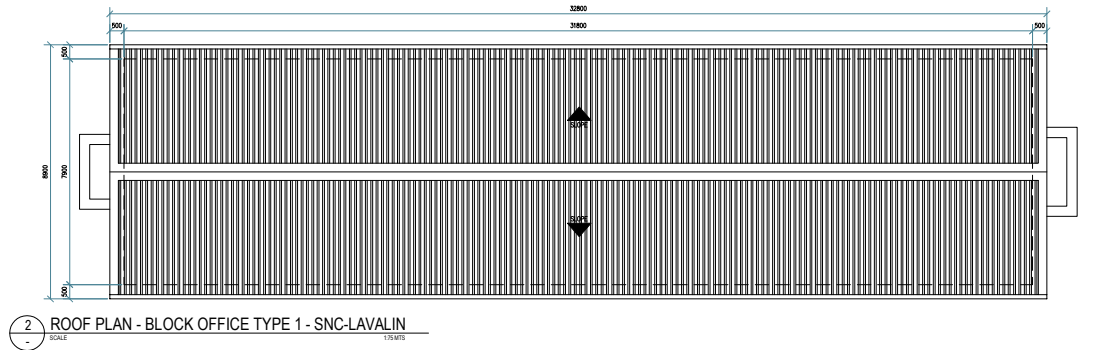
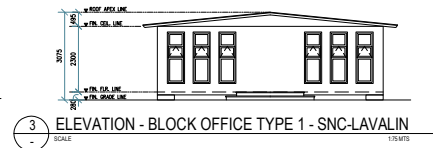
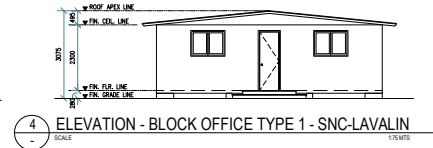
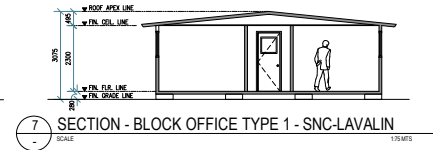
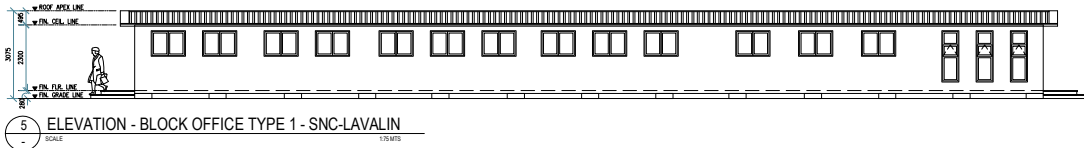
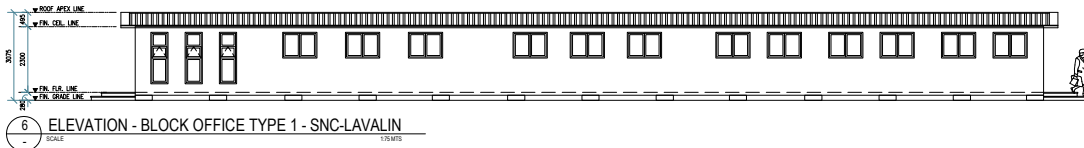
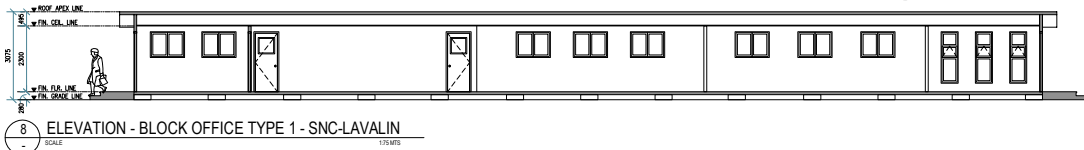
**LABORATORY**  
SCALE 1:100



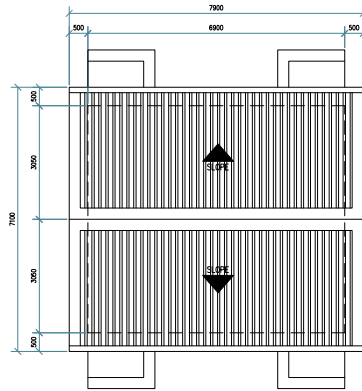
**EXERCISE AND RECREATION BUILDING (SKILLED LABOUR AND LABOUR FOREMEN)**  
SCALE 1:100



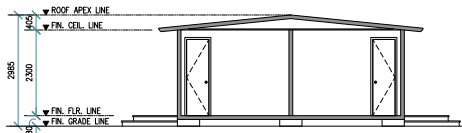
# Offices and Workspace



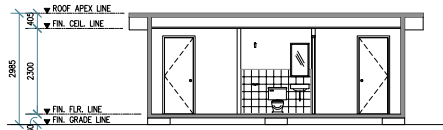
# Accommodation



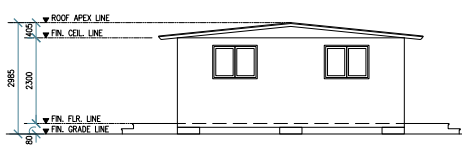
16 ROOF PLAN- SUPPORT AND CAMP STAFF ACCOMODATION  
SCALE 1:15M



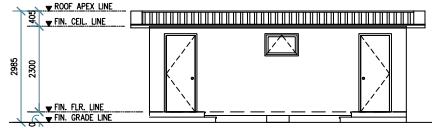
15 SECTION - SUPPORT AND CAMP STAFF ACCOMODATION  
SCALE 1:15M



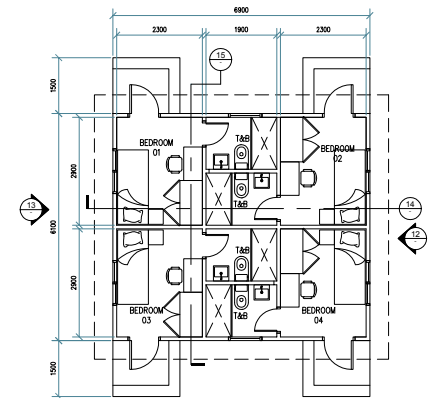
14 SECTION - SUPPORT AND CAMP STAFF ACCOMODATION  
SCALE 1:15M



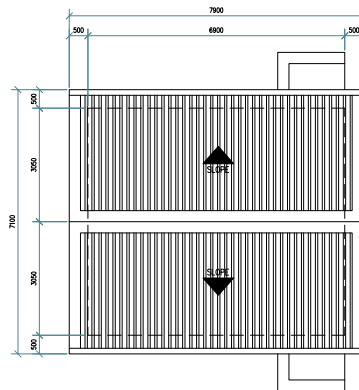
12/13 TYP. ELEVATION - SUPPORT AND CAMP STAFF ACCOMODATION  
SCALE 1:15M



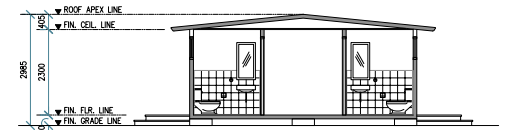
10/11 TYP. ELEVATION - SUPPORT AND CAMP STAFF ACCOMODATION  
SCALE 1:15M



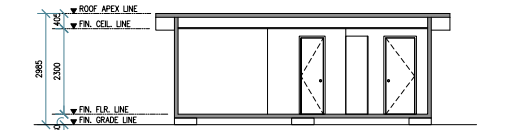
9 FLOOR PLAN - SUPPORT AND CAMP STAFF ACCOMODATION  
SCALE 1:15M



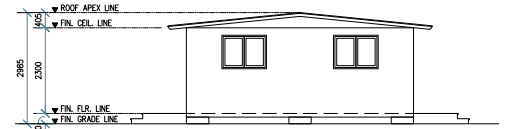
8 ROOF PLAN - MANAGEMENT STAFF AND GUEST ACCOMODATION  
SCALE 1:15M



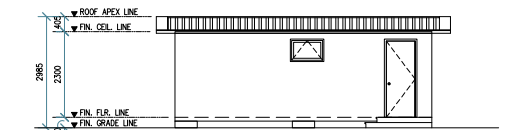
7 SECTION - MANAGEMENT STAFF AND GUEST ACCOMODATION  
SCALE 1:15M



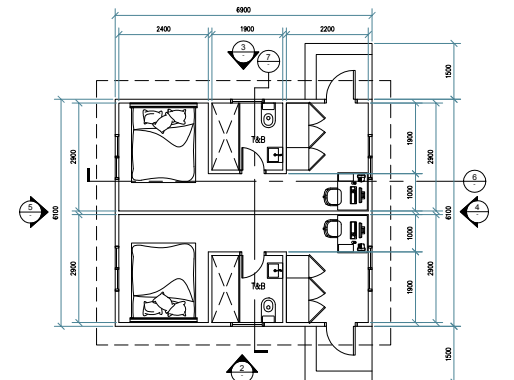
6 SECTION - MANAGEMENT STAFF AND GUEST ACCOMODATION  
SCALE 1:15M



4/5 TYP. ELEVATION - MANAGEMENT STAFF AND GUEST ACCOMODATION  
SCALE 1:15M

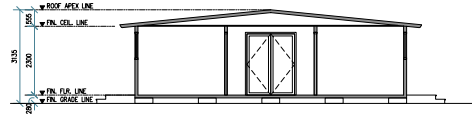


2/3 TYP. ELEVATION - MANAGEMENT STAFF AND GUEST ACCOMODATION  
SCALE 1:15M

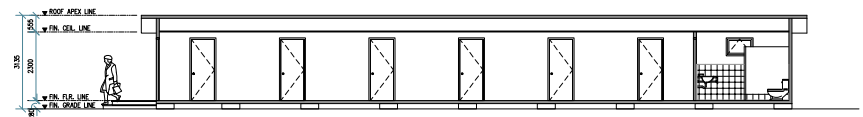


1 FLOOR PLAN - MANAGEMENT STAFF AND GUEST ACCOMODATION  
SCALE 1:15M

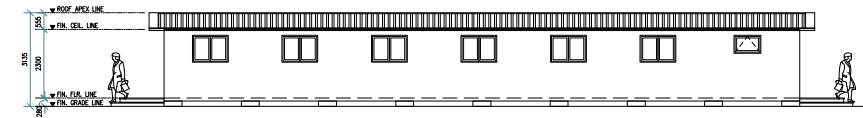
# Accommodation



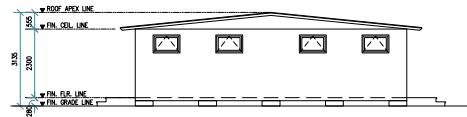
7 SECTION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



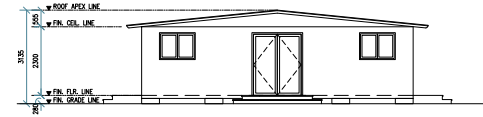
6 SECTION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



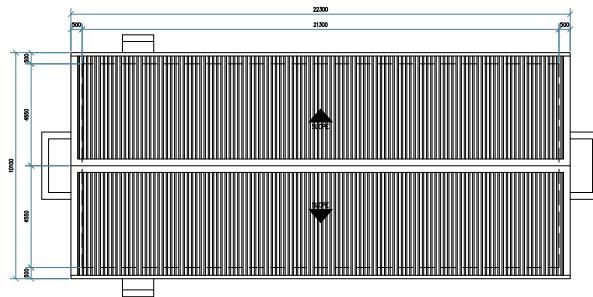
4/5 ELEVATION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



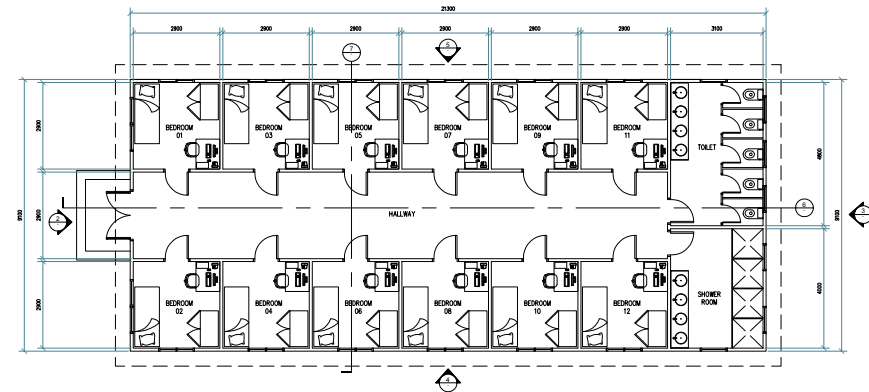
3 ELEVATION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



2 ELEVATION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



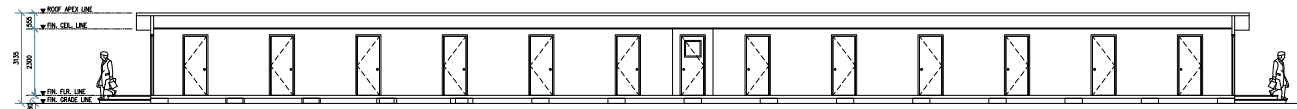
8 ROOF PLAN - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



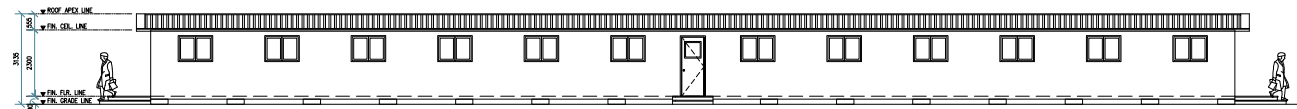
1 FLOOR PLAN - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/15 MTS



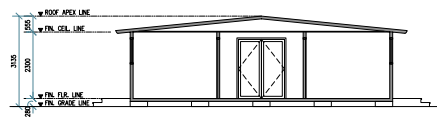
# Accommodation



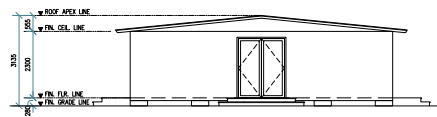
2 SECTION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/8MBS



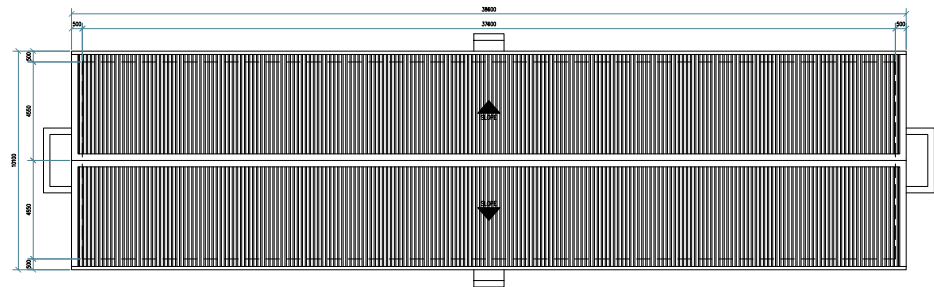
3/4 TYP. ELEVATION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/8MBS



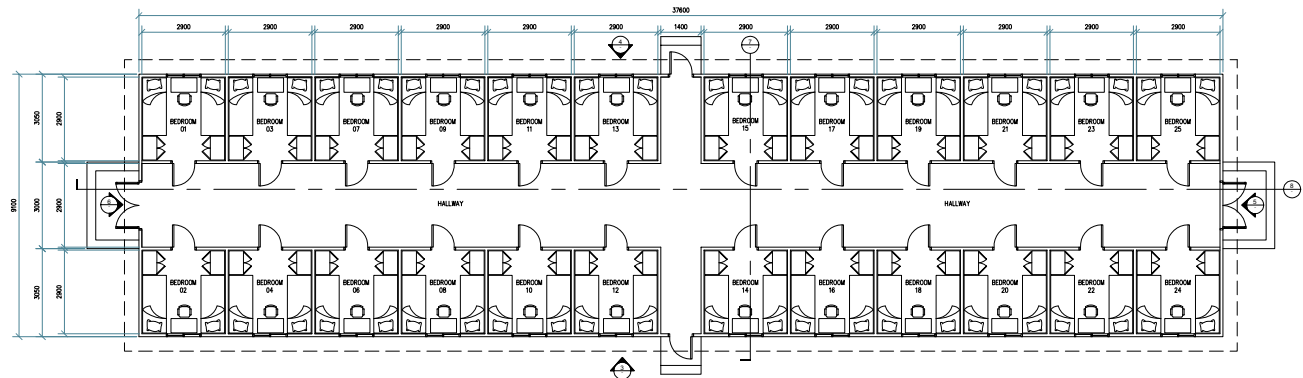
7 SECTION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/8MBS



5/6 TYP. ELEVATION - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/8MBS



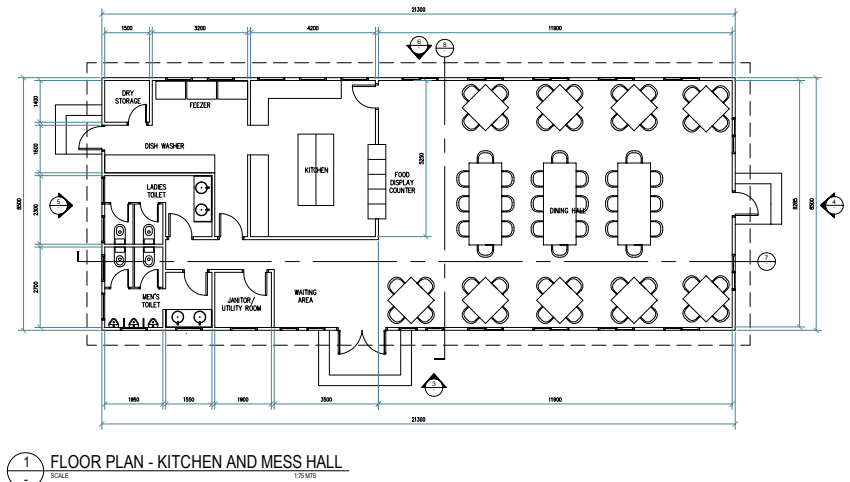
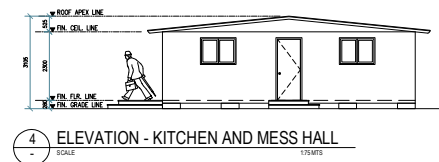
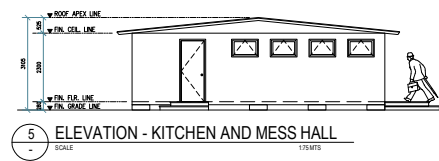
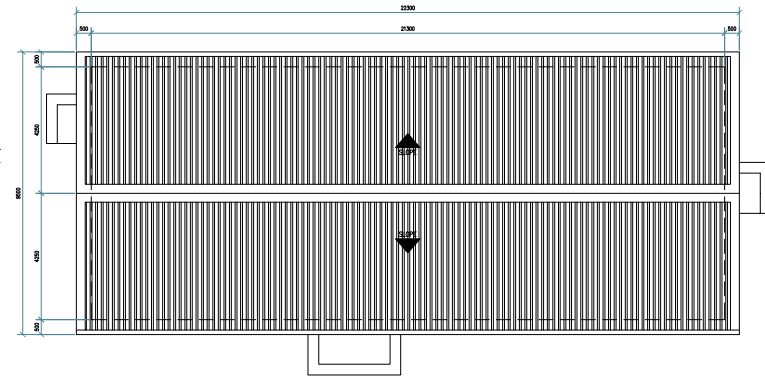
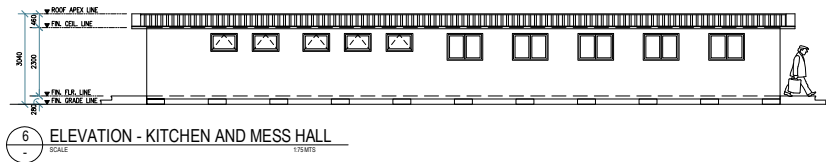
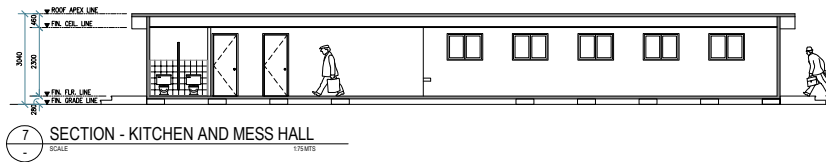
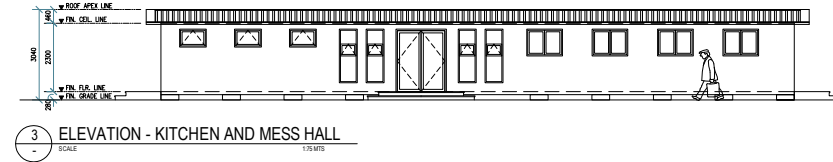
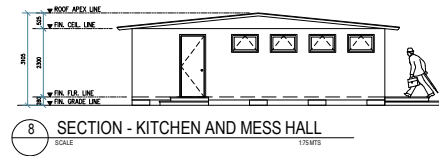
1 ROOF PLAN - SKILLED LABOURER HOUSING ACCOMMODATION  
SCALE 1/8MBS



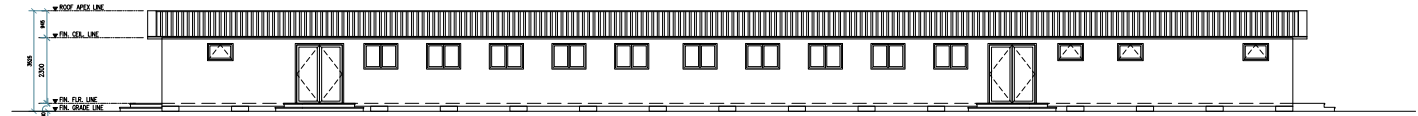
1 FLOOR PLAN - HOUSING ACCOMMODATION  
SCALE 1/8MBS



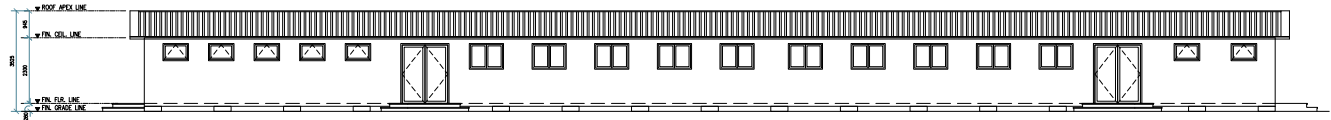
# Kitchen and Dining



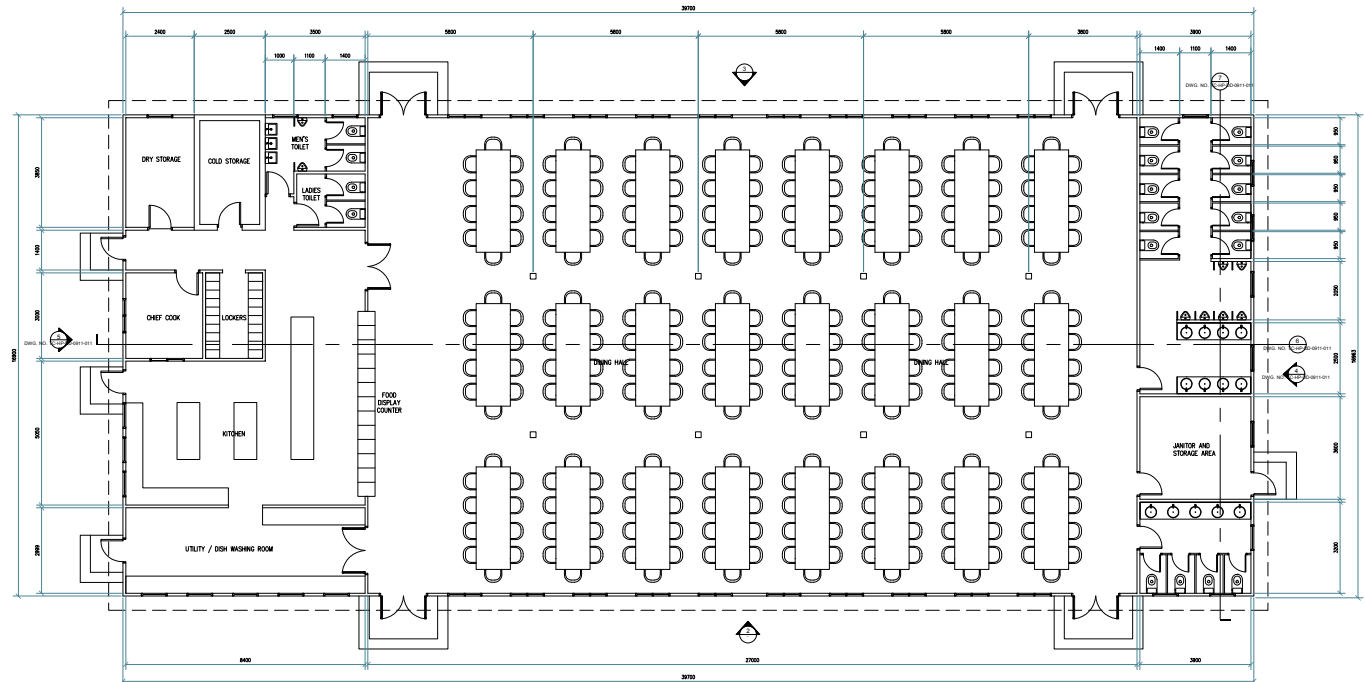
# Dining Hall



3 ELEVATION - KITCHEN AND MESS HALL  
SCALE 1/8"=1'-0"

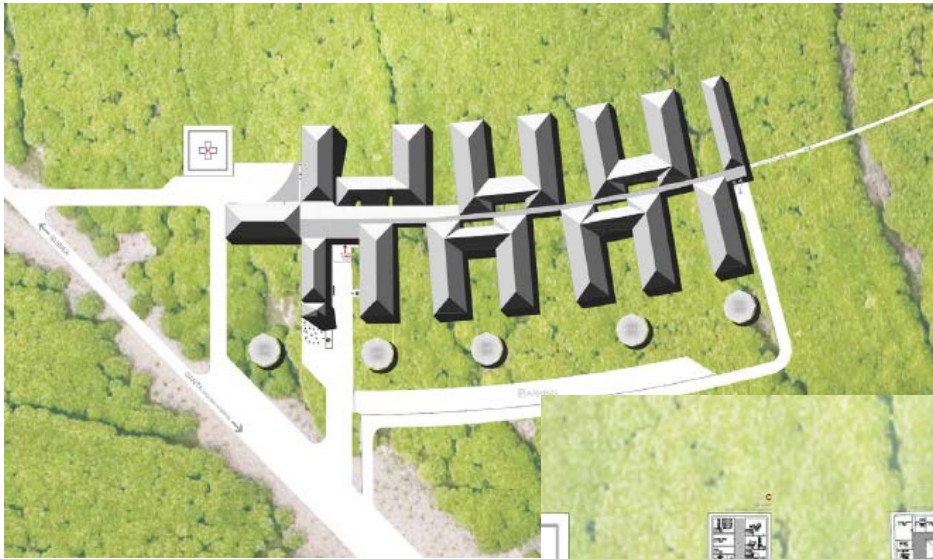


2 ELEVATION - KITCHEN AND MESS HALL  
SCALE 1/8"=1'-0"



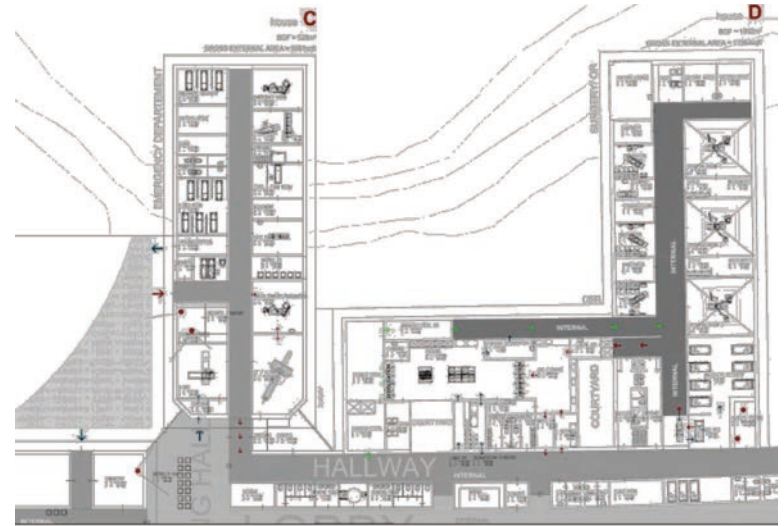
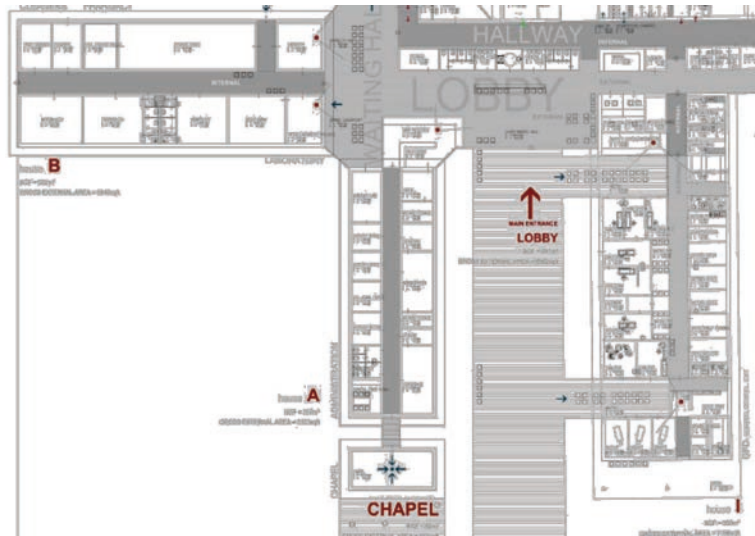
1 ELEVATION - KITCHEN AND MESS HALL  
SCALE 1/8"=1'-0"

# Affordable houses – Hospital project

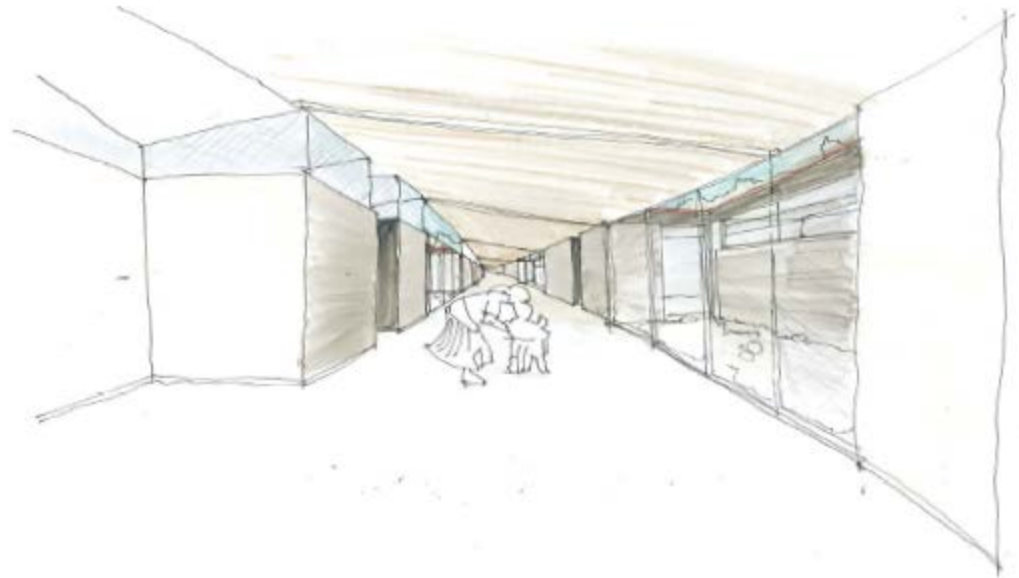




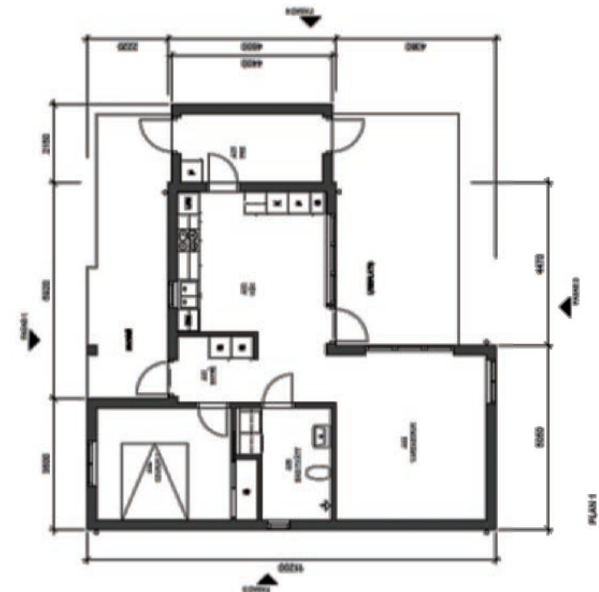
# Affordable houses – Hospital project



# Affordable houses – Hospital project

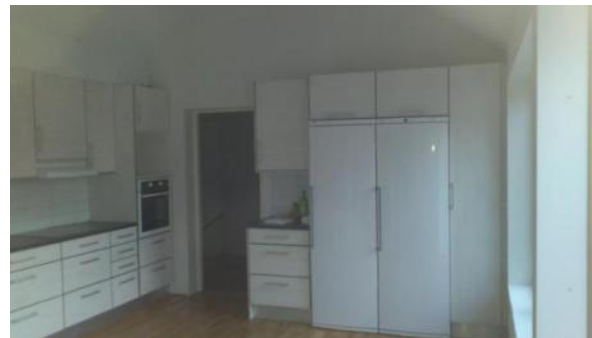


# Prefabricated Houses - Holiday resort





# Prefabricated Houses - Holiday resort





# Thank you

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