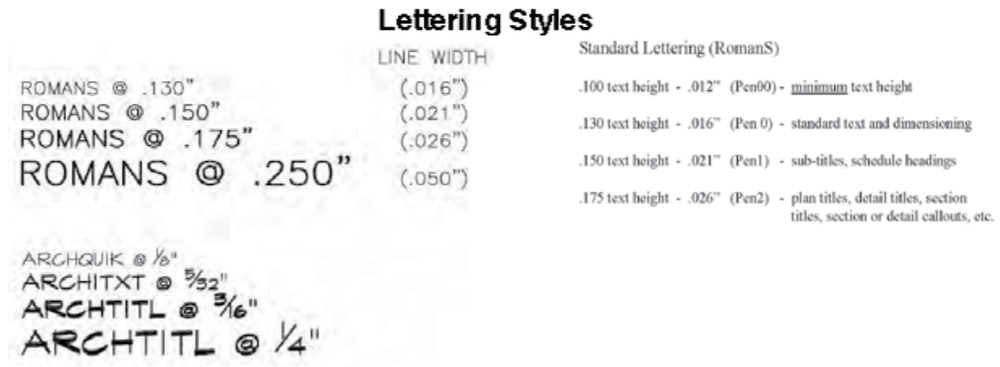
ASSIGNMENT GUIDES

– FINAL EXAM –
EARLY AND DETAILED DESIGN

Giuseppe Ridolfi, PhD

UNIVERSITÀ
DEGLI STUDI
FIRENZE
SCUOLA DI
ARCHITETTURA

In the professional use, documentation is often set in the UNI A1 format as an equivalent of the 22"x34" Full Edition for Office Use.
This format presents some interesting features. It has a good handling and can be resized to 50% in the A3 as a Portable Format for the Construction Site allowing operators to make multiple xerox copies and to mark them as they need. Adopting this solution, requires to control dimensions and styles of lettering, hatching and symbols to give both the formats a full readability.



Arch.	Standard	Metrical	Pen thickness	
3/32">	0,093"	=2,36 mm		
	0,100"	= 2,54 mm		Schedule and Charts
	0,120"	= 3 mm		
	0,130"	= 3,3 mm	0,016"	
1/8"	(0,125")	= 3,18 mm		Standard text and dimensioning
	0,150"	= 3,81 mm	0,021"	
	0,175"	= 4,4 mm	0,026"	Title for legends, notes and lists
3/16"	(0,188")	= 4,78 mm		
1/4 "	0,250"	= 6,35 mm	0,05	Major Titles (plan, detail, section) & Callout

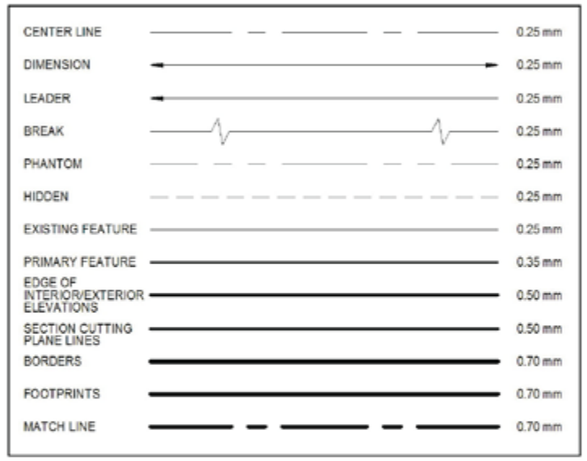
In conclusion, for UNI A1 texts we recommend these minimum hights:
2,54 mm (0,100") - pen 0,18 mm for Schedule and charts
3,81 mm (0,125") - pen 0,25 mm for standard text and dimensioning
4,44 mm (0,175") - pen 0,35 mm for title of legend, notes and lists
6,35 mm (0,250 ") -pen 0,7 mm for major titles (plan, detail, section) and call outs

i CAD Comprehensive Design for Smart Architecture
Architecture and Environment Design Lab | Master Class | prof. G. RIdolfi, PhD
FINAL ASSIGNMENT GUIDE
Early and Detailed Design

EARLY AND DETAILED DESIGN

For the final assignment, students are required to select a building they are working on in the Environmental Design Lab with one dimension not less then 40 meters. Optionally they can also select a significant part where are respected the same minimum size.

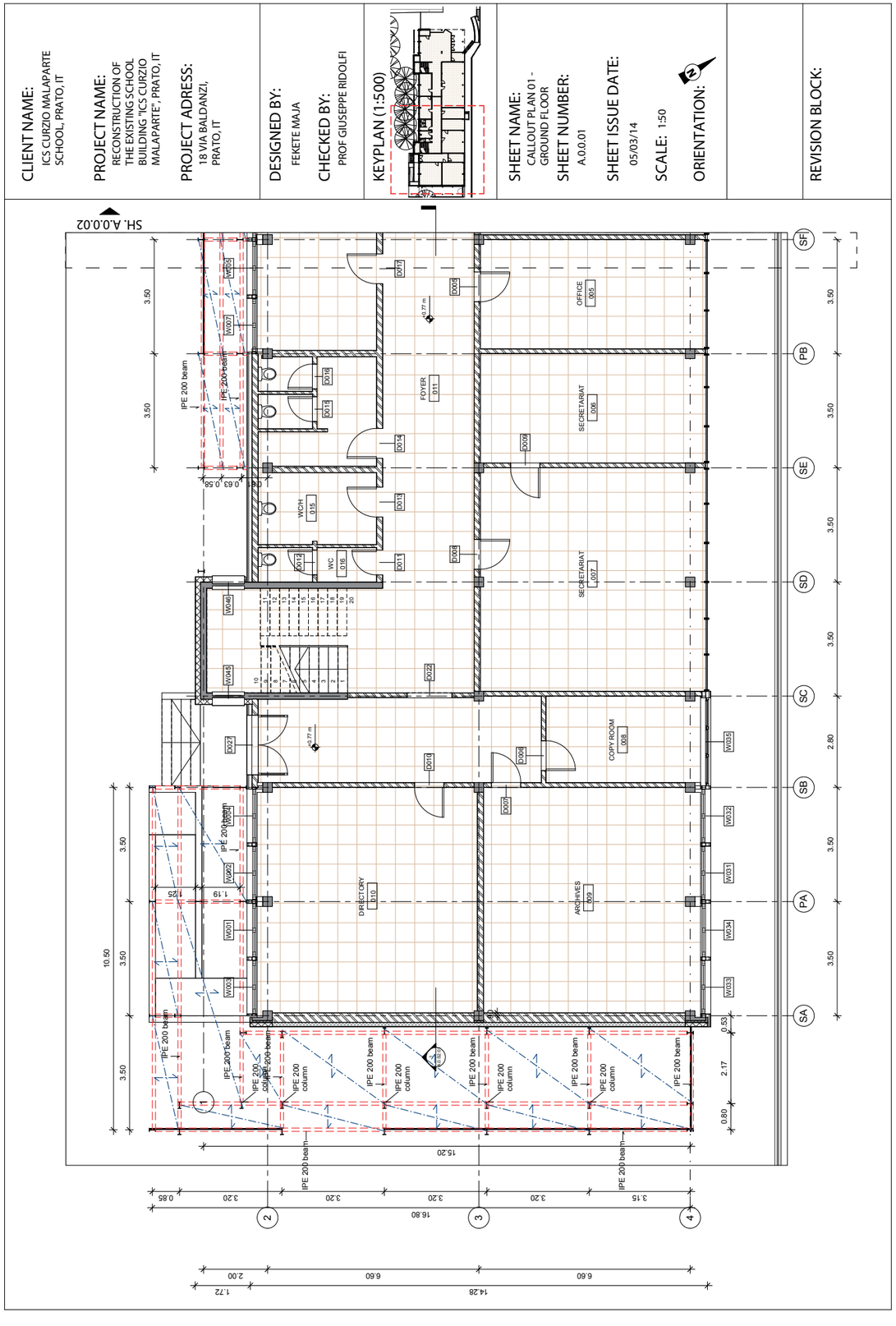
FORMAT AND STYLES



Here are some suggested family of lines and their applications considering that the original format can be scaled at 50%.

Next page. How to organize a floor plan exceeding the sheet dimension. In this case the plan was split in two parts. The continuation of the floor plan is indicated by a portion of the drawing in overlap (see dashed rectangle); by the cross reference where, in adjacency is put the drawing id (see the code A.0.0.02); indicating, in the key plan, the interested sector.

Drawings and information have to be collected in a horizontal UNI A1 binder with the option to scale it to the UNI A3 (50%) . As a consequence, dimensions of details, lines, hatches, texts, arrows and other symbols must be sized for a good readability in both sizes. Considering that in the real scale 1mm the text height has a good readability, we can assume, for the full A1, the minimum text height of 2,54 mm (0,10"). With the same approach, we could draft details at the scale of 1:25 and 1:10 that will turn in 1:50 and 1:20 on the A3 sheets maintaining a pretty good clarity. To obtain a good result it's also recommended to use a good printer and proper line weights (not less then 0,18 mm or – better – 0,25 mm). On the contrary, avoid to print out documents with empty spaces, large gaps without information; texts and symbols overly large; oversized pictures.
Before you start to work, let's define a plan of the project representation, by organizing information in an interrelated and consistent manner. These recommendations are especially useful for the Part Two – Detailed Design where call outs; codes and key plans are extremely important and required. Key plans or key sections are useful to browse documents and it is a good practice, provide them a dedicated space inside the sheet. The key plan could also be placed inside the *Title Block*.



CONTENTS

In the following list are enucleated the required drawings and given specifications of their contents.

PART ONE – PROGRAMME AND SCHEMATIC DESIGN

sheet 1) **Cover Page (Part One)**
This page must contain title, motto and icon (a meaningful picture) of the proposal.

sheet 2) **Briefing**
This page must contain the Site Analysis and the *Environmental Assessment* (see the Assignment Guide#2).
The page must represent the meaningful elements related to the Place in order to define its suitability to build, how its features can affect the building and how it could enhance the quality and contribute to the site's sense of place..

Aspects to describe are:
- the geomorphological, socio-economic and cultural environment,
- the regulatory environment,
- characteristics of the existent building
- climate report

Results to highlight are:
- vocational use of the site
- vocational use of the existent buildings
- traces
- clusters
- nodes
- attractors/polarities
- constraints

The synthesis of the analysis should clearly and concisely highlights:
- aspects of strengths, weaknesses, opportunities, threats
- goals within a hierarchy of value
- actions to enhance strengths
- action to prevent and mitigate risks

sheet 3) **Space Programming**
This page must contain the building identity and the facility/space specifications to feed the subsequent designing phases (see the Assignment Guide#1). It includes:

- narrative and graphical representations able to give a synthetic and effective description of mission, users, main functions and connotative architectural attributes of the building;
- architectural examples and diagrammatic concept using existent buildings, solutions or architectural elements that – for valid reasons – are assumed as a reference for the proposal
- space planning spreadsheet where, for each space are been specified: space code, space denomination, metabolic equivalent (Met), level of clothing (clo), min/max surfaces, min/max highness, indoor physical requirements such as daylight factor, glazing/floor ratio, air change rate, winter/summer temperature, acoustic level, desiderable external view, direct accessibility from outside
- matrix of adjacencies, activity's clustering and weighted graphic representation of the functional layout
- constraints established by law and building codes.

sheet 4) **Sketching**
This page must describe the early design process using mass modeling and explain criteria and methodology adopted to select and define the schematic proposal. (See in textbooks: F. Levy, Bim in small scale sustainable design)

The page must present analysis and comparison, at least, of two or more alternatives.The evaluation of alternatives must be carried out in connection with goals and requirements outlined, in the previous pages, as important for the project.
In addition to these aspects the evaluation must include shading chart, thermal and daylight analysis and – extensively – a consistent a performance-based comparison of the energy behaviour.
It's also required the comparison of the layout effectivenes. (see in Class Resources: F. Brault, Space Planning; P. Nourian Syntactic Design)

PART TWO – DETAILED DESIGN

sheet 5) **Cover page (Part Two)**.
This page must describe the adopted *Title Block* and the codes to identify each drawing and its contents; the list of drawings of this part; a synopsis of the adopted notations (*Drawing Legend*) such as:

- Text styles and heights in different applications,
- abbreviations,
- symbols and graphical conventions for lines, hatches, texts, arrows, callouts, leaders, …

sheet 6) **Location and Site (Block) Plan** (scale 1:100-1:200-1:500)
This page must give a general view of the relative location of the building on the site (*Location Plan*) and include, at a more detailed scale, the *Site (Block) Plan* with the following information:

- the *datum* or the reference point of known or assumed

COMPONENTS LIST

A **STRUCTURAL COMPONENTS**

A.1 **VERTICAL**

A1_CL01 Reinforced concrete columns 30x30
A1_CL02 Reinforced concrete columns 30x40
A1_BE01 Reinforced concrete beam
A1_SC01 Steel columns HEB 200

A.2 **HORIZONTAL**

A2_FI01 Internal floor
A2_ST02 Exterior stairs
A2_FR01 Roof floor
A2_GS01 Galvanized metal support structure
A2_SB01 Steel beams IPE 140

B **VERTICAL COMPONENTS**

B.1 **EXTERIOR WALL**

B1_WE01 External wall type 1
B1_WE02 External wall type 2
B1_WE03 External wall type 3
B1_WE04 External wall type 4
B1_SD01 External shading device (wiremesh)

B.2 **INTERIOR WALL**

B2_WI01 Interior partition wall (hollowed bricks)

B **VERTICAL COMPONENTS**

WE00 EXTERIOR WALL

WE01 **Classrooms' walls**

CIP01		Concrete precast panel + ins. panel 180mm
	Cnr01	Concrete
	Ins01	Insulation layer 60mm
HBRK01		Hollow bricks 60mm
PLA01		Plaster for external15mm
CC01		Concrete column 300x300mm
	Cnr01	
INS03		Woodfibre insulation panel for external 50mm
SILL01		Travertine window sill 25mm width

WE04 **Lab walls**

CC01		Concrete column 300x300mm
	Cnr01	Concrete
CIP01		Concrete precast panel + ins. panel 180mm
SILL		Travertine window sill 25mm width
PLA01		Plaster for external 50mm
HBRK01		Hollow bricks 60mm
INS03		Woodfibre insulation panel for external 50mm
HBRK02		Hollow bricks 200mm

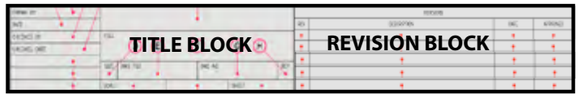
A **HORIZONTAL COMPONENTS**

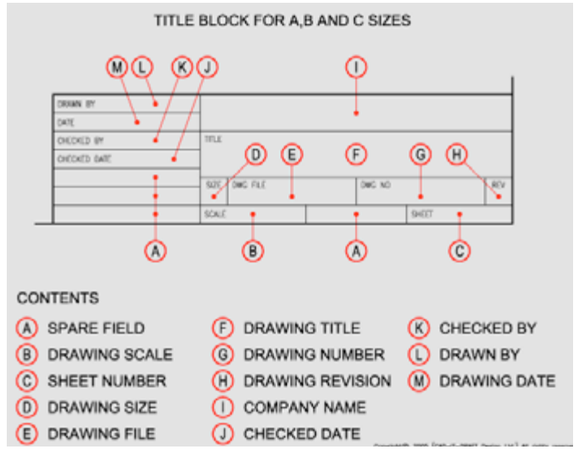
FI01 **Floors**

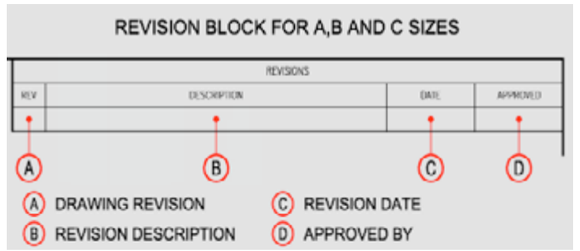
PRES01		Precast floor slab
	Cnr03	Concrete 300mm
	PreBe01	Precast beams for slabs
	CeBrk01	Bricks for slabs
CNR02		Lightened concrete subfloor
TIL01		Paving tiles 250x250mm

FR01 **Roof**

PRES01		Precast floor slab
	Cnr03	Concrete 300mm
	PreBe01	Precast beams for slabs
	CeBrk01	Bricks for slabs
VAP01		Vapour barrier for roofs 4+4mm
INS02		Polystyrene insulation panels for roofs 40mm
LCNR01		Lightened concrete for roofs 70mm

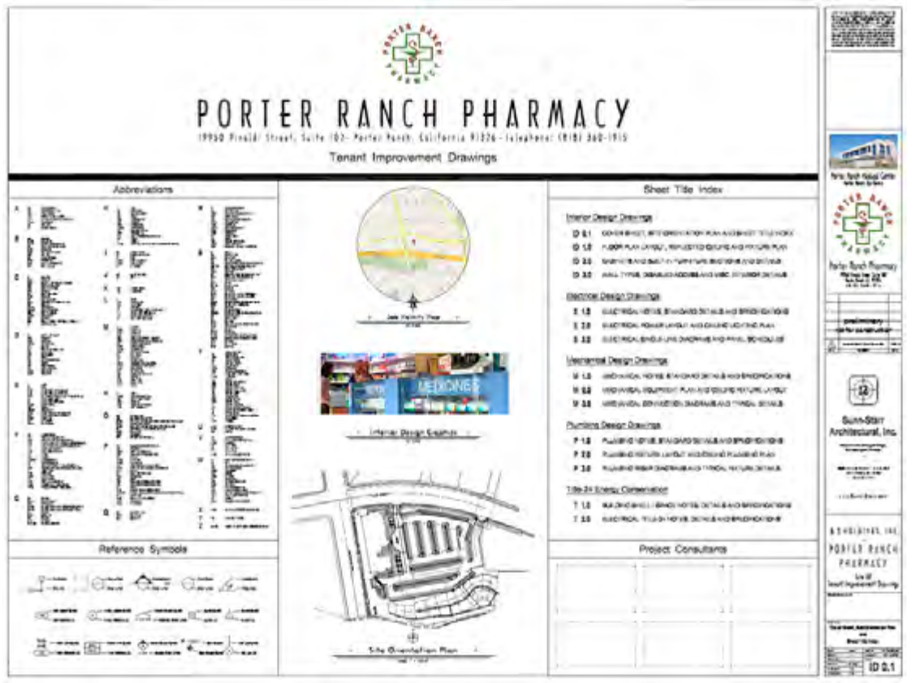




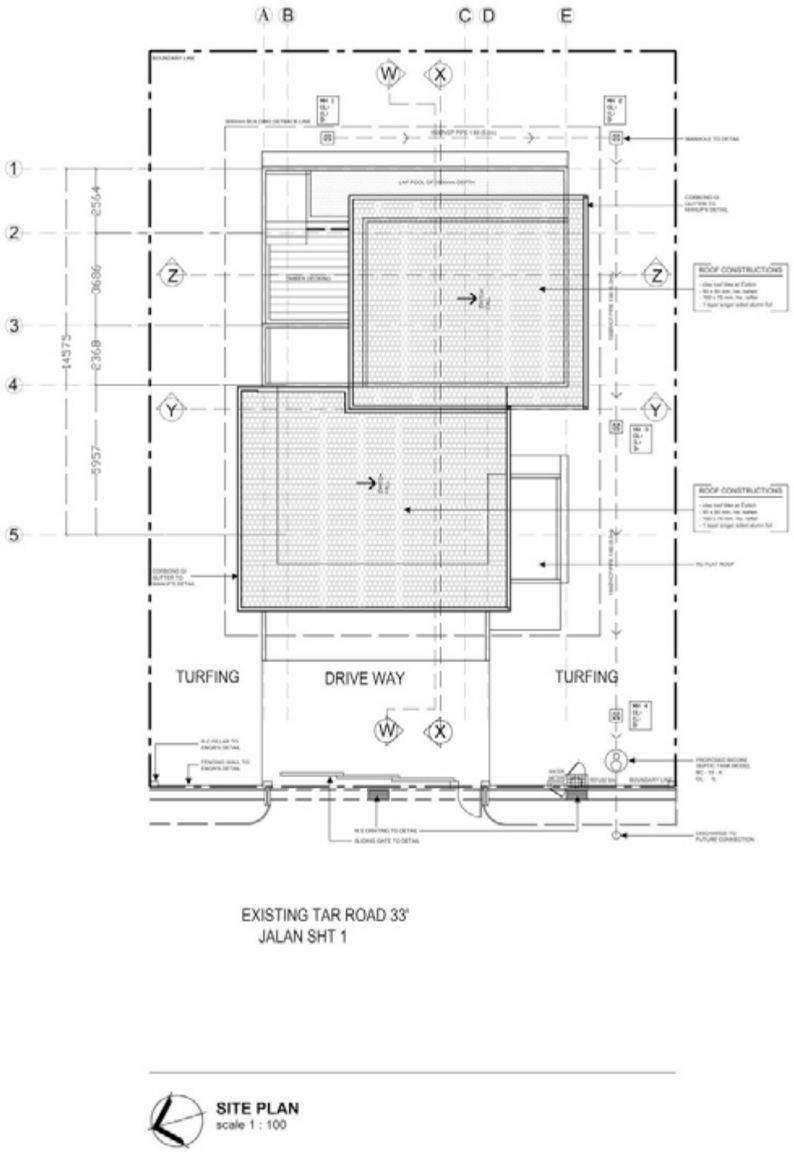


Title Block examples. It could be vertical or horizontal. In both situations it is normally aligned to the right below corner of the drawing sheet.
If the block provides enough space, it can host the key plan, north arrow, technical/material specifications, recommendation and notes. In any case a specific space is dedicated to the drawing revisions.

Below, an example of a Project Cover Page with icon/logo, project title, abbreviations, sheet list, references symbols, key plan.



height to which all other site/ building levels will refer;
- features that must be preserved e.g. trees, rocks, existing structures
- topographic contour lines
- building footprint represented through the outer walls and
- stakeouts, offsets and any other useful control (references) points
- distances from the boundaries, artifacts and other existent objects (driveways, electrical lines, sewer lines,…) to the building footprint and, if present, distances derived from easements and right
- North arrow



NOTE:

PROJECT:
CADANGAN MEMBINA SEUNIT RUMAH BANGLO TIGA TINGKAT DI ATAS PT 21, TAMAN SUBANG HEIGHTS, MUKIM DAMANSARA, DEWAN BANDARAYA PETALING JAYA, SELANGOR DARUL EHSAN

UNTUK TETUAN
LOY TUCK MAN

BIL	TARIKH	PINDAAN	DILUKIS

NAMA, TANDATANGAN, NO. K/P PEMILIK :

LOY TUCK MAN
K/P : 901230 - 14 - 3859

NO. 88, JALAN MAJU JAYA 6/7, TAMAN MAJU JAYA BARU, 53100 KUALA LUMPUR.

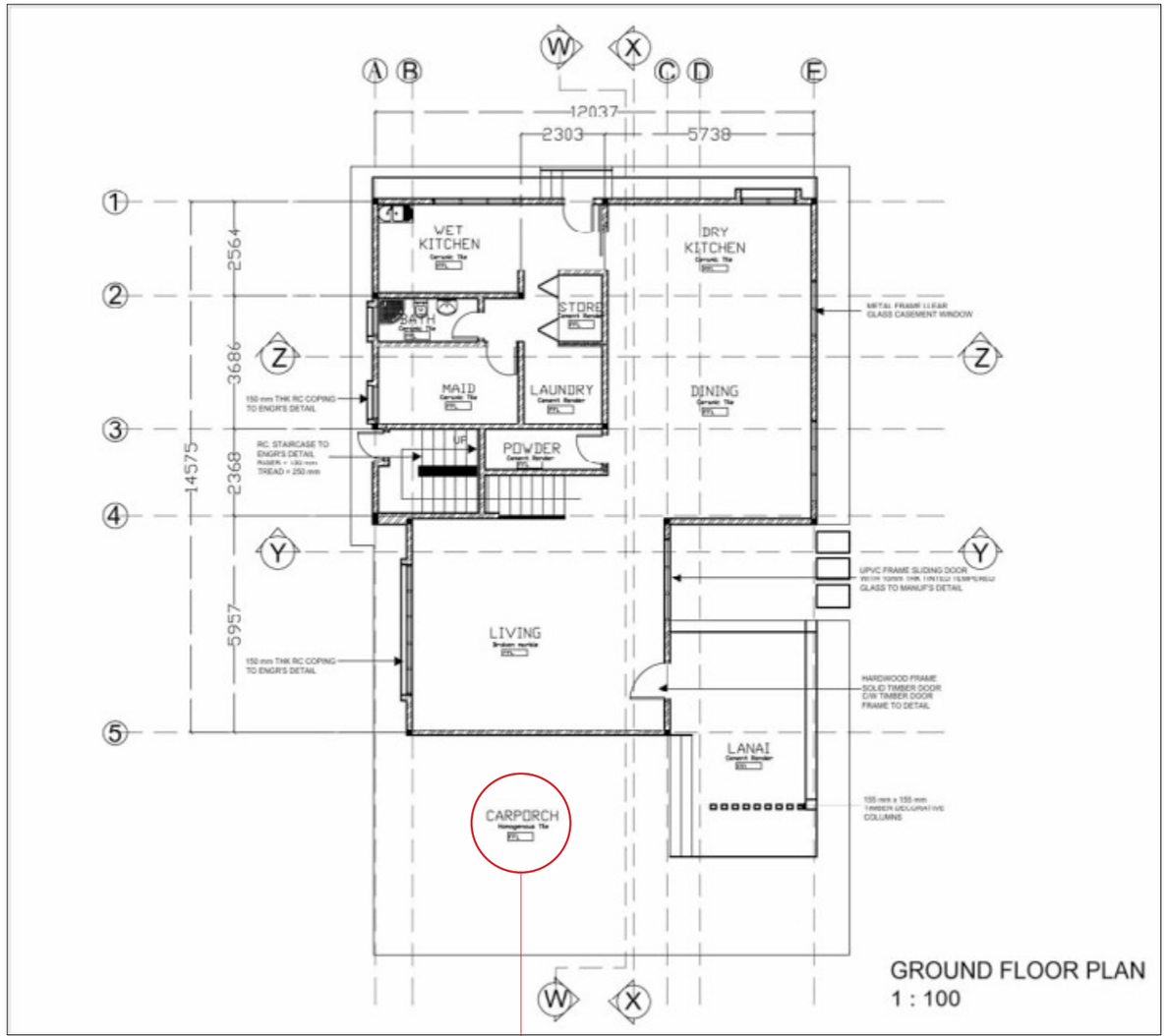
ARKITEK :

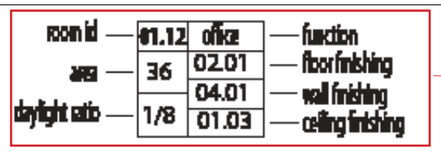
DRAWING TITLE
KEY PLAN
LOCATION PLAN
SITE PLAN

SCALE	DATE
AS SHOWN	NOVEMBER 2011
CHECKED BY: MR. JAAPAR	DRAWN BY: LOY TUCK MAN
ID NO.: 108020792	
DRAWING NO.	PINDAAN
AS302/WD_2011/WD-01	00

Location and Site Block example

sheet 7.1, …, 7.n) **Floor Plans** (scale 1:50)
This page must be organized in different sheets depending the dimension of the building and number of floors. If the bulk of the building exceeds the sheet size, divide and organize drawings using callouts. These sheets must describe all the floors including the roof with following specifications:
- general dimensioning of the building and its main coordination axis, width of the internal spaces, thickness an position of the building elements
- clear position of piers (pillars, structural blades, columns)
- clear position of fixtures
- functional specifications of each room (function and room id)





Specification of the room could also include volume, differentiation of the wall finishing, skirting type, room height,... In the room id the first number is related to the floor, the second one to the room. The first number of the finishing specifies the family of the solution, the second one the specific solution (e.g. plasterboard (family) 12mm (type)

SECTION B-B

- room physical specifications (net area, glazing/floor ratio, floor finishing, wall finishing, ceiling finishing) *
- position of internal doors and their specification *
- cutting plane lines referring to *Section Drawings*
- Callout referring to *Detail Drawings*

sheet 8.1, …, 8.n) **Elevation Drawings** (scale 1:50)
This page must be organized in different sheets depending the dimension of the building and number of views. If the bulk of the building exceeds the sheet size, divide and organize drawings using callouts. These sheets must describe:

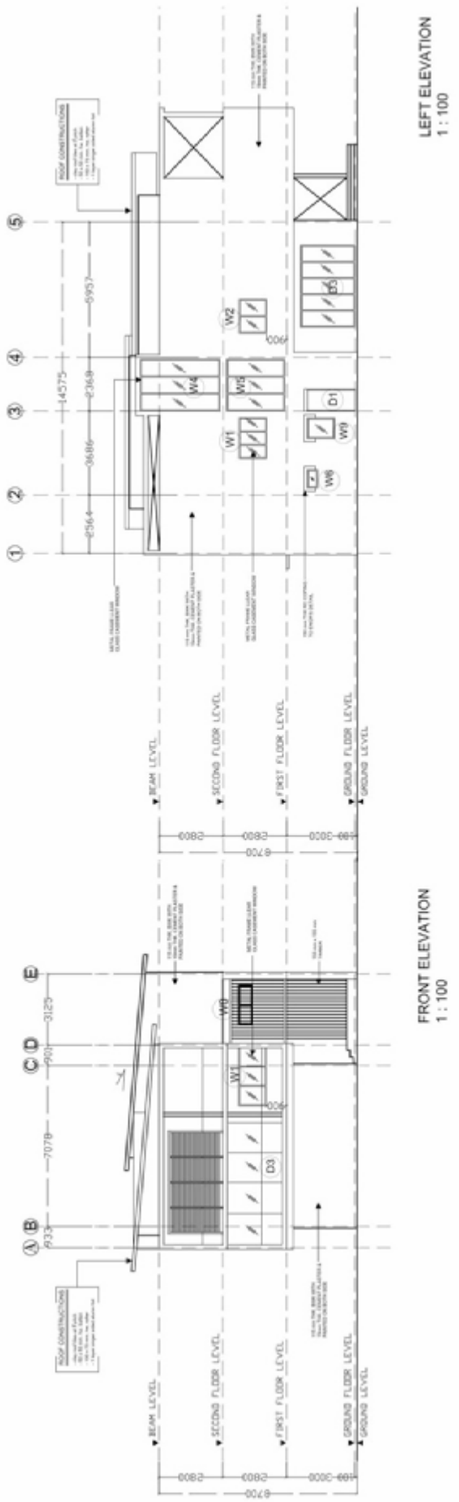
- main and detailed dimensions of the facade and its components
- location, size and identification of windows, doors and other significant elements*
- identification and finishing of the walls and/or its components *

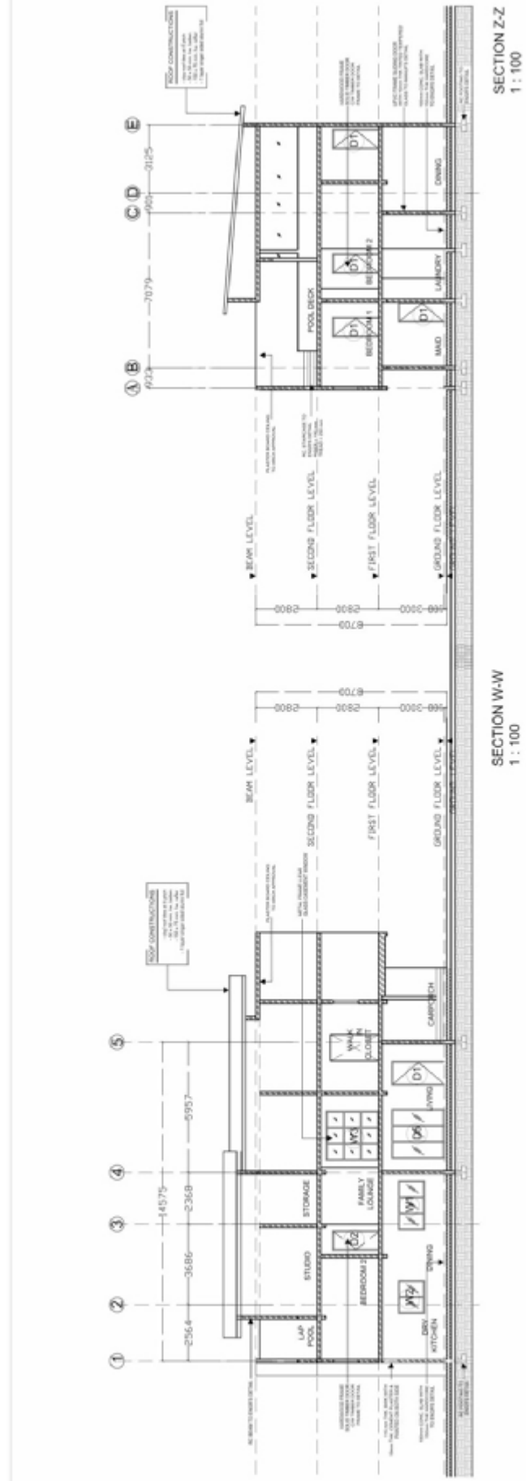
sheet 9.1, …, 9.n) **Section Drawings** (scale 1:50)
This page must be organized in different sheets depending the dimension of the building and number of views. If the bulk of the building exceeds the sheet size, divide and organize drawings using callouts. These sheets must describe:

- overall height of the building
- position of piers, beams, openings etc.
- elevation of finished floor and structural floor in relation to the datum
- floor to ceiling heights
- call out referring to *Detail Drawings*

In this example we see how the longitudinal measurements are located outside the drawing. Some measures, however, remain inside. For clarity it would be preferable to also move them out.
More correctly, the measurements from floor to ceiling were placed inside. However, the indication of the structural levels are missed. These levels represent an absolute necessity in the construction operations.
The pegs and their distances are placed at the top. However, it is frequently also the location at the bottom. Are so missed dimensions and stakouts of the total footprint and of other parts of the building.

i CAD Comprehensive Design for Smart Architecture
Architecture and Environment Design Lab | Master Class | prof. G. RIdolfi, PhD
FINAL ASSIGNMENT GUIDE
Early and Detailed Design





i CAD Comprehensive Design for Smart Architecture
Architecture and Environment Design Lab | Master Class | prof. G. RIdolfi, PhD
FINAL ASSIGNMENT GUIDE
Early and Detailed Design

UNIVERSITA' DEGLI STUDI DI FIRENZE_DIDA
Dipartimento di Architettura
Master Degree Course
Architectural Design

Environmental Lab

prof. Ridolfi
prof.Giorgi
prof. Calioti
prof. Pirazzoli

TECHNOLOGICAL ANALYSIS OF THE PROPOSED BUILDING
FINAL PROPOSAL

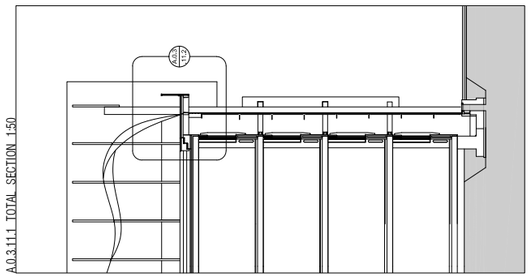
STUDENT: ROBERT KANE
11-07-2014

A.1.3.11 EXTERNAL WALL 01_PARAPET GENERAL SECTION AND DETAIL

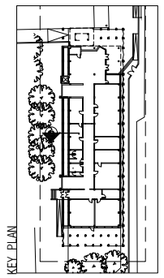
A.1.3.11

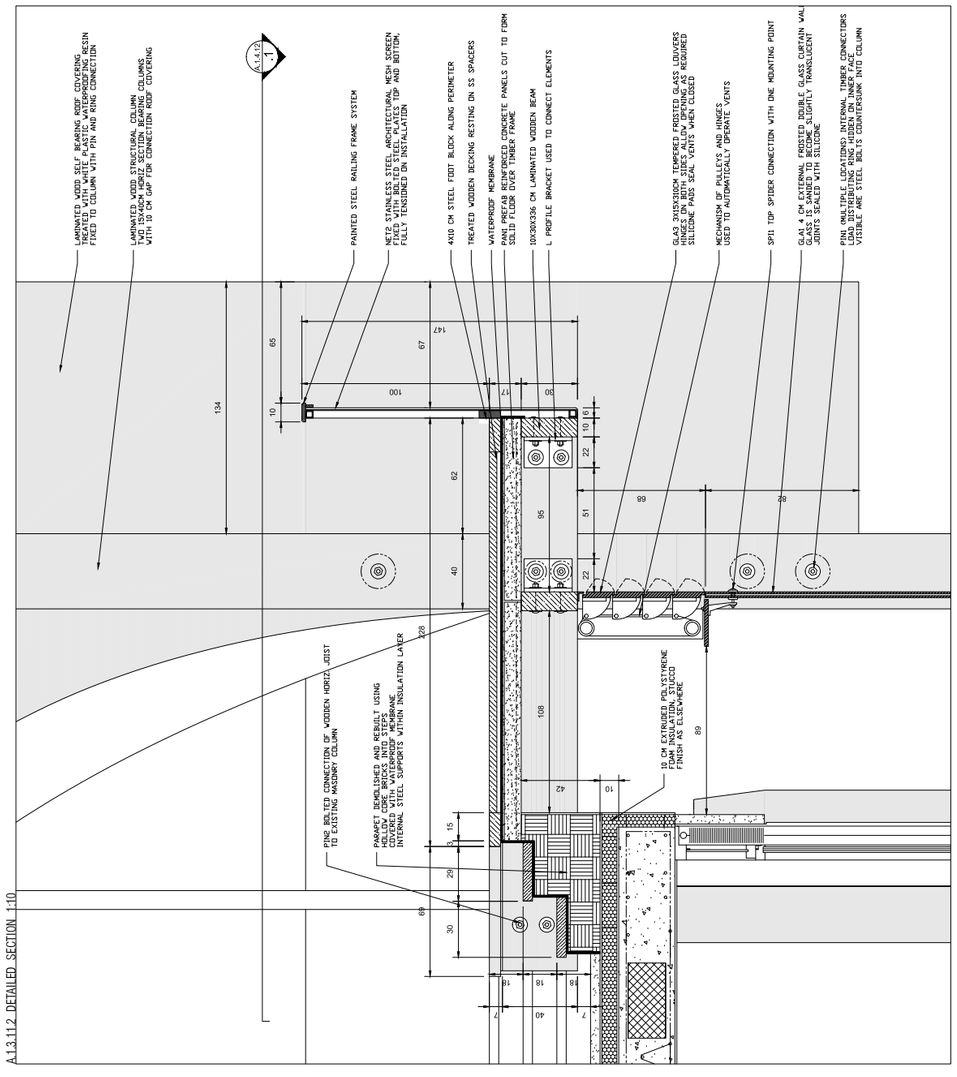
Project:
MIDDLE SCHOOL
MALAPARTE
VIA BALDANZI, 18
PRATO

A.0.3.11.1 TOTAL SECTION 1:50



KEY PLAN





sheet 10) **Structural Specification Drawings** (scale 1:100-1:50-1:25)

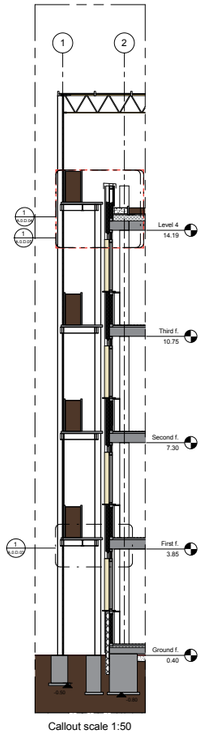
This page must describe the structural conception and the adopted technology, materials and products specifying the following aspects:

- structural grid lines plan of coordination with structural/ thermal joints, span and orientation of the slabs,
- typical structural plan with clear location, characteristics and dimensions of the structural elements * and voids
- detailed, assembly and/or exploded view drawings to illustrate joints, tolerances and other specific element of the adopted system
- description of technologies, materials and products selected **

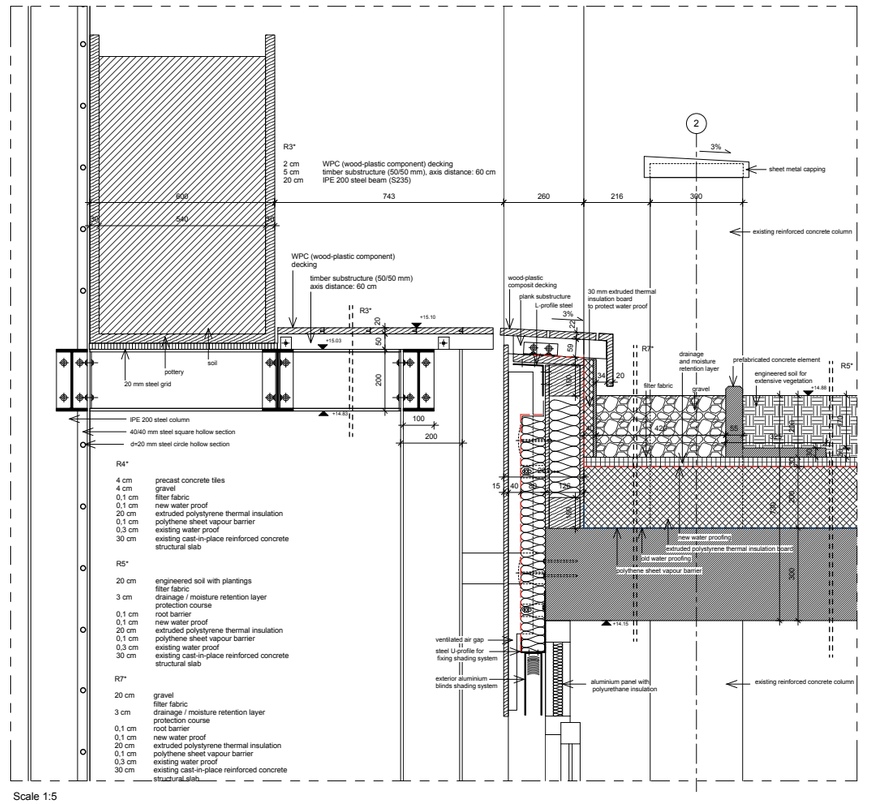
sheet 11) **Detailed Façade Drawing** (scale 1:50- -1:25)

This page must give a detailed description of one facade system adopted for the building using the following representations of:

- detailed section drawings illustrating layers of materials, joints, tolerances and other specific elements of the adopted system. Special focus must be dedicated where the façade intersects the ground level, the typical floor and the roof
- detailed, assembly and/or exploded view drawings to illustrate the construction phases of the facade as a system
- description of technologies, materials and products selected **



Callout scale 1:50



Scale 1:5

CLIENT NAME:
ICS CURZIO
MALAPARTE
SCHOOL, PRATO, IT

PROJECT NAME:
RECONSTRUCTION OF THE EXISTING SCHOOL BUILDING "ICS CURZIO MALAPARTE", PRATO, IT

PROJECT ADRESS:
18 VIA BALDANZI, PRATO, IT

DESIGNED BY:
FEKETE MAJA

CHECKED BY:
PROF GIUSEPPE RIDOLFI

KEYPLAN (1:500)

SHEET NAME:
Vertical callout of the balcony top

SHEET NUMBER:
A.0.D.05

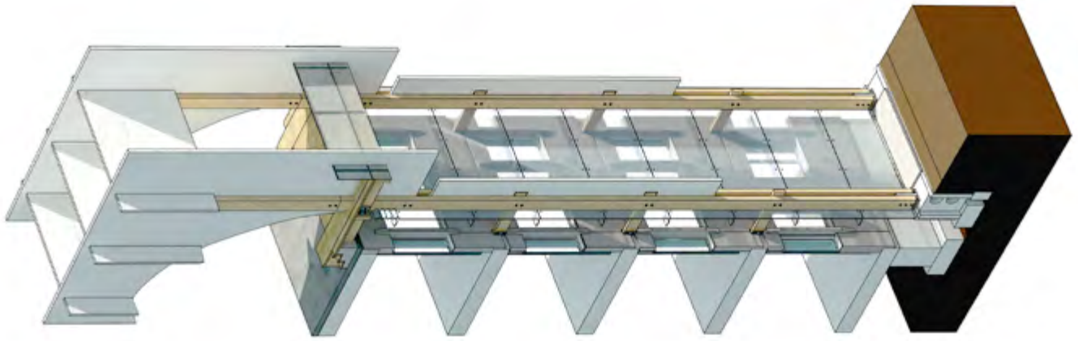
SHEET ISSUE DATE:
07/02/14

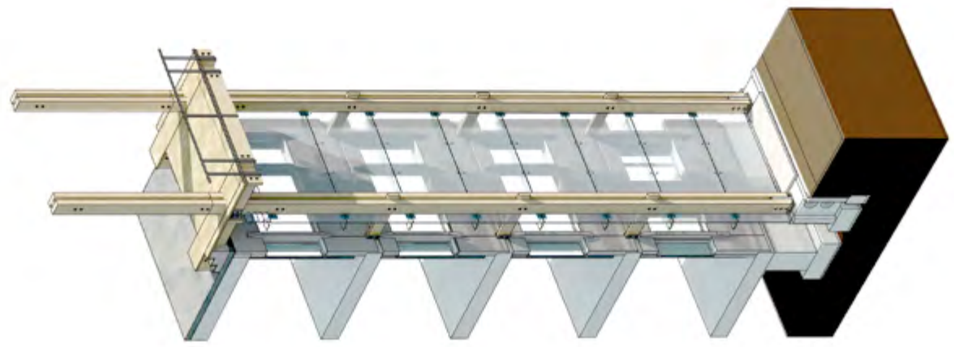
SCALE:
1:5

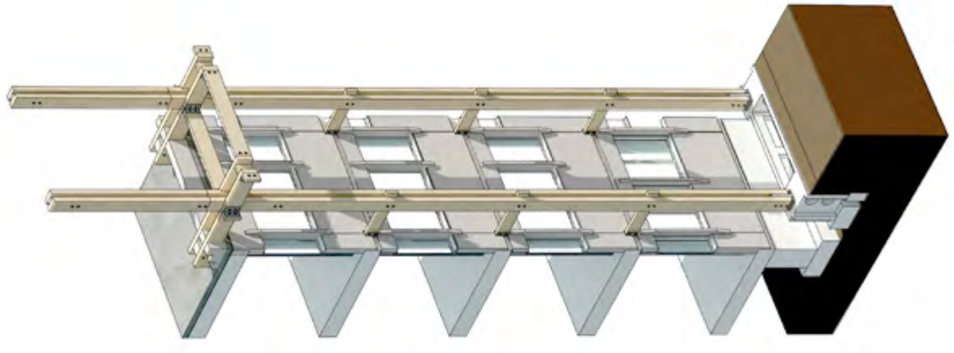
NOTES:

REVISION BLOCK:

In this page and int the following examples of assembly sequence



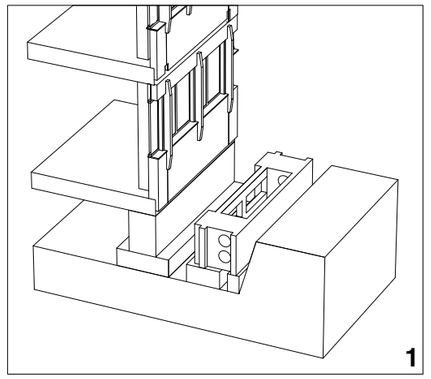


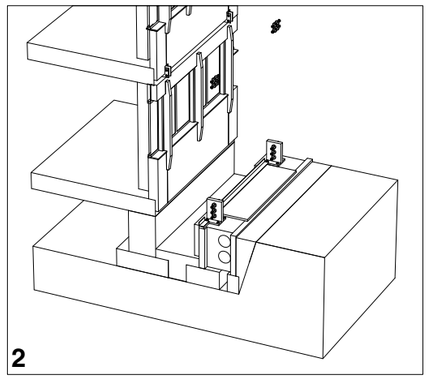


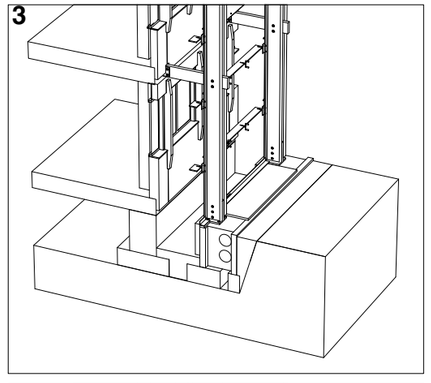
GENERAL CONSTRUCTION SEQUENCE OF SOUTH FACADE

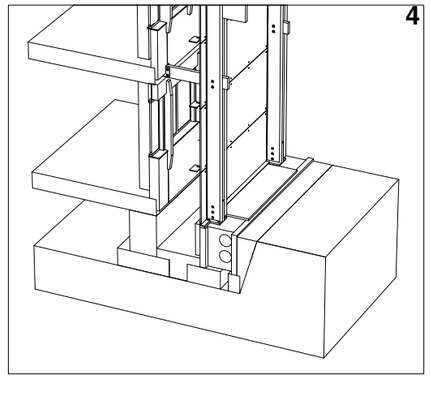
i CAD Comprehensive Design for Smart Architecture
Architecture and Environment Design Lab | Master Class | prof. G. RIdolfi, PhD
FINAL ASSIGNMENT GUIDE
Early and Detailed Design

CONSTRUCTION SEQUENCE: WALL TO GROUND

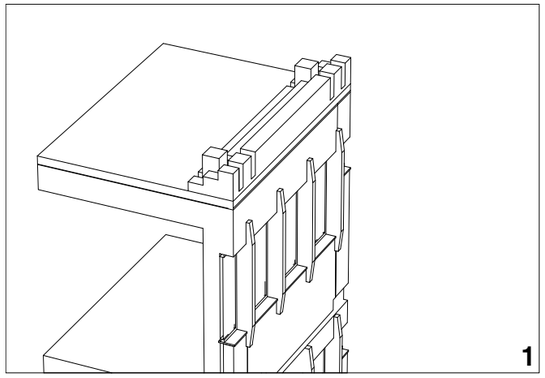


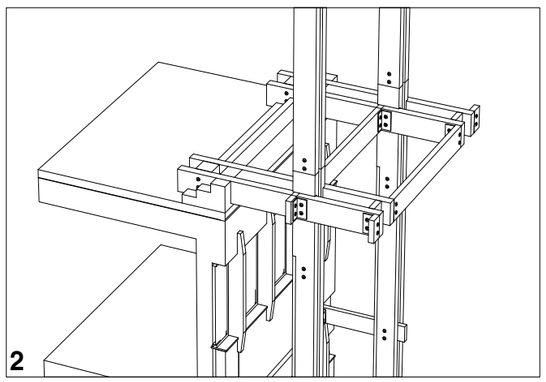


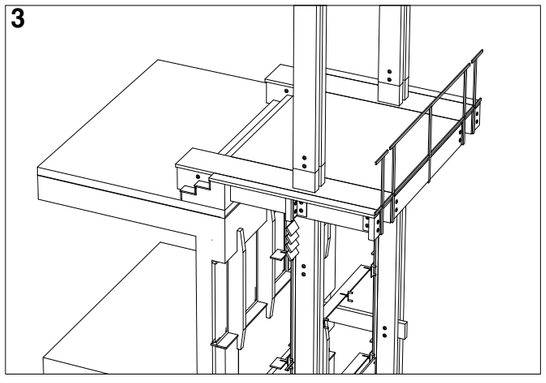


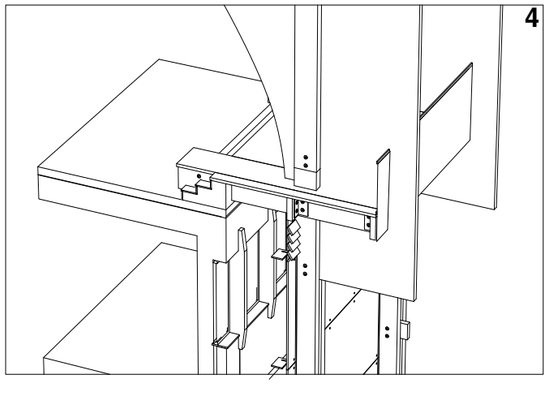


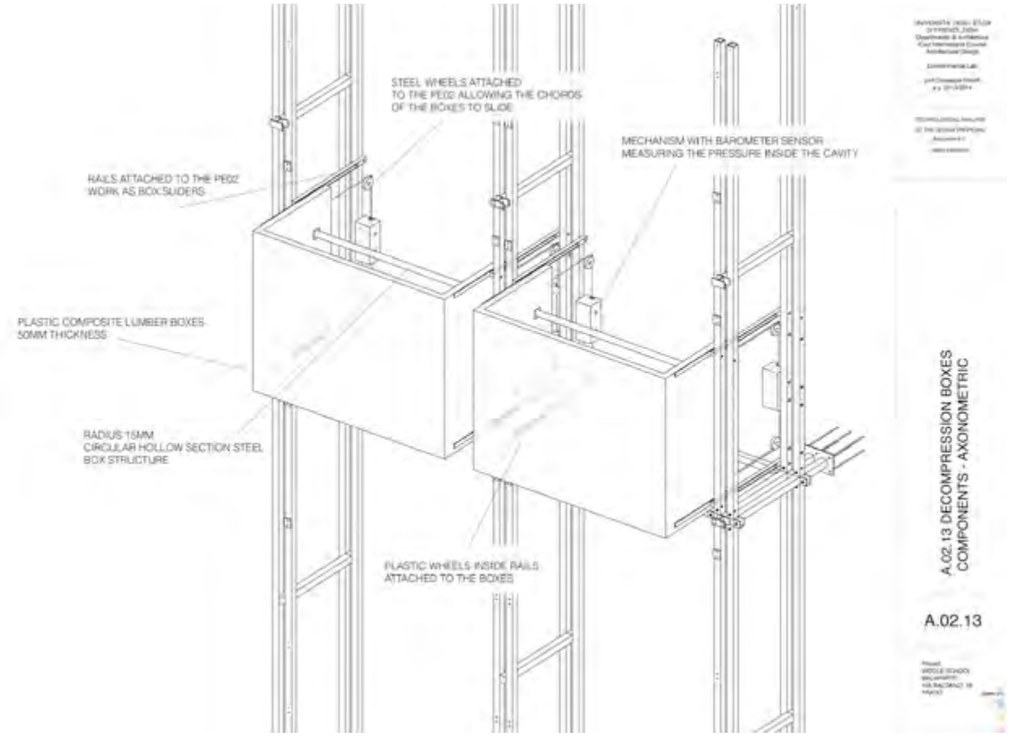
CONSTRUCTION SEQUENCE: PARAPET AREA

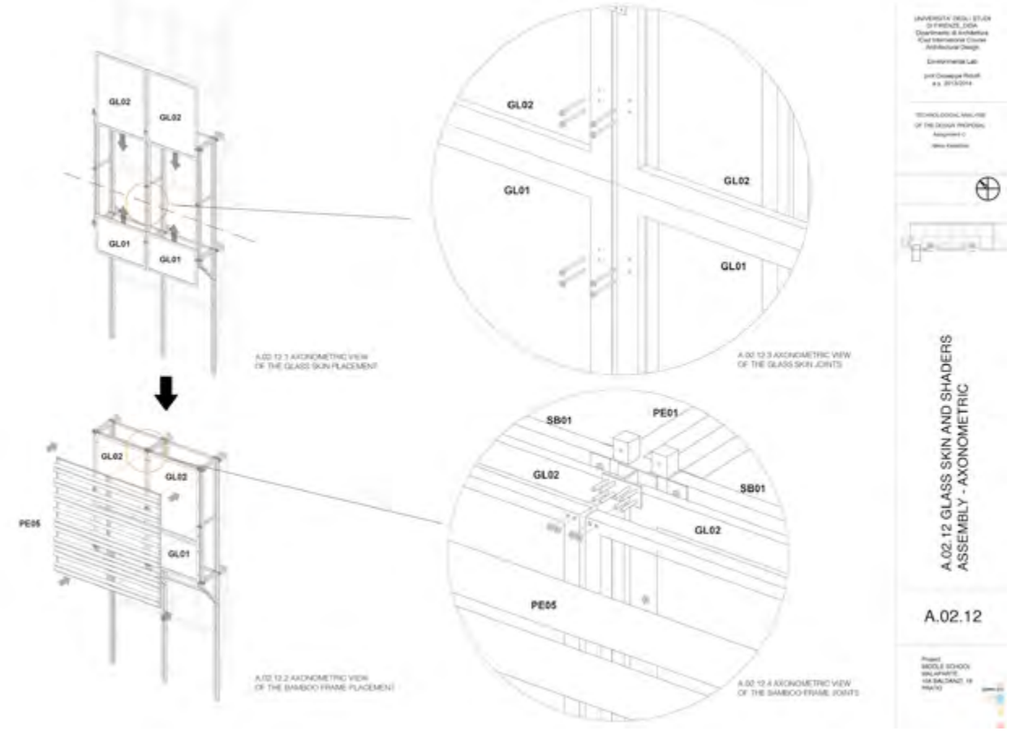


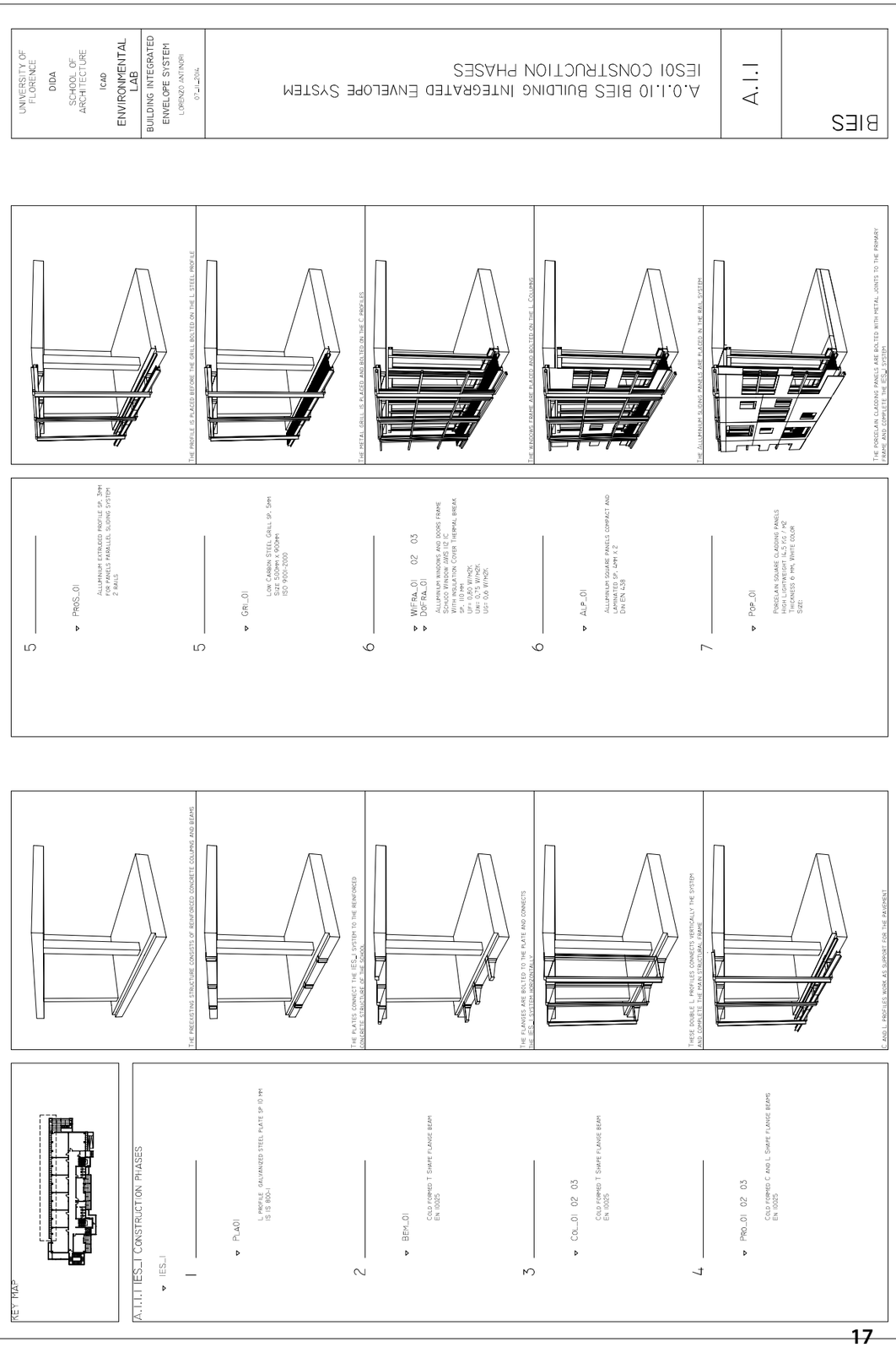







STEEL WHEELS ATTACHED TO THE PE02 ALLOWING THE CHORDS OF THE BOXES TO SLIDE
MECHANISM WITH BAROMETER SENSOR MEASURING THE PRESSURE INSIDE THE CAVITY
RAILS ATTACHED TO THE PE02 WORK AS BOX SLIDERS
PLASTIC COMPOSITE LUMBER BOXES 50MM THICKNESS
RADIUS 15MM CIRCULAR HOLLOW SECTION STEEL BOX STRUCTURE
PLASTIC WHEELS INSIDE RAILS ATTACHED TO THE BOXES
A.02.13 DECOMPRESSION BOXES COMPONENTS - AXONOMETRIC
A.02.13


GL02
GL01
PE05
SB01
PE01
A.02.12.3 AXONOMETRIC VIEW OF THE GLASS SKIN PLACEMENT
A.02.12.3 AXONOMETRIC VIEW OF THE GLASS SKIN JOINTS
A.02.12.2 AXONOMETRIC VIEW OF THE BAMBOO FRAME PLACEMENT
A.02.12.4 AXONOMETRIC VIEW OF THE BAMBOO FRAME JOINTS
A.02.12 GLASS SKIN AND SHADERS ASSEMBLY - AXONOMETRIC
A.02.12


UNIVERSITY OF FLORENCE
DIDA
SCHOOL OF ARCHITECTURE
ICAD
ENVIRONMENTAL LAB
BUILDING INTEGRATED ENVELOPE SYSTEM
LORENZO JANNONI
A.0.1.10 BIES BUILDING INTEGRATED ENVELOPE SYSTEM
IES01 CONSTRUCTION PHASES
A.1.1
BIES
THE PORCELAIN CLADDING PANELS ARE BOLTED WITH METAL JOINTS TO THE PRIMARY FRAME AND COMPLETE THE IES_4 SYSTEM
THE ALUMINUM CLADDING PANELS ARE PLACED IN THE RAIL SYSTEM
THE WINDOWS FRAME ARE PLACED AND BOLTED ON THE L COLUMNS
THE METAL GRILL IS PLACED AND BOLTED ON THE C PROFILES
THE PROFILE IS PLACED BEFORE THE GRILL BOLTED ON THE L STEEL PROFILE
5 PrOS_01 ALUMINUM EXTRUDED PROFILE SP. 3MM FOR PANELS SLIDING SYSTEM 2 RAILS
5 GRI_01 LOW CARBON STEEL GRILL SP. 5MM SIZE 5100MM X 900MM ISO 9001:2000
6 WIFRA_01 02 03 DOFRA_01 ALLUMINUM WINDOWS AND DOORS FRAME SCHUCO WINDOW AWS 112 IC WITH INSULATION COVER THERMAL BREAK PVC 60/60 Uf= 0,80 W/m2K; Uw= 0,75 W/m2K; Ug= 0,60 W/m2K;
6 ALP_01 ALUMINUM SQUARE PANELS COMPACT AND LAMINATED SP. MM 7,2 DIN EN 438
7 POR_01 PORCELAIN SQUARE CLADDING PANELS THICKLIGHTNESS 11-13 / 14 HARDNESS 6 MH/WHITE-COLOR SIZE:
A.1.1.1 IES_1 CONSTRUCTION PHASES
IES_1
1 PLA01 L PROFILE GALVANIZED STEEL PLATE SP 10 MM IS IS 800-1
2 BEHL01 COLD FORMED T SHAPE FLANGE BEAM EN 10025
3 Co_01 02 03 COLD FORMED T SHAPE FLANGE BEAM EN 10025
4 PRO_01 02 03 COLD FORMED C AND L SHAPE FLANGE BEAMS EN 10025
THESE DOUBLE L PROFILES CONNECTS VERTICALLY THE SYSTEM AND CONNECTS THE PANELS DIAGONAL HOOKS
THE FLANGES ARE BOLTED TO THE PLATE AND CONNECTS THE IES_4 SYSTEM HORIZONTALLY
THE PLATES CONNECT THE IES_4 SYSTEM TO THE REINFORCED CONCRETE STRUCTURE OF THE SCHOOL
THE PREEXISTING STRUCTURE CONSISTS OF REINFORCED CONCRETE COLUMNS AND BEAMS
C AND L PROFILES WORK AS SUPPORT FOR THE PAVEMENT
KEY MAP

sheet 12) **Stair Detail Drawing** (scale 1:20-1:10-1:5)
This page must detail one stair of the building and specify:

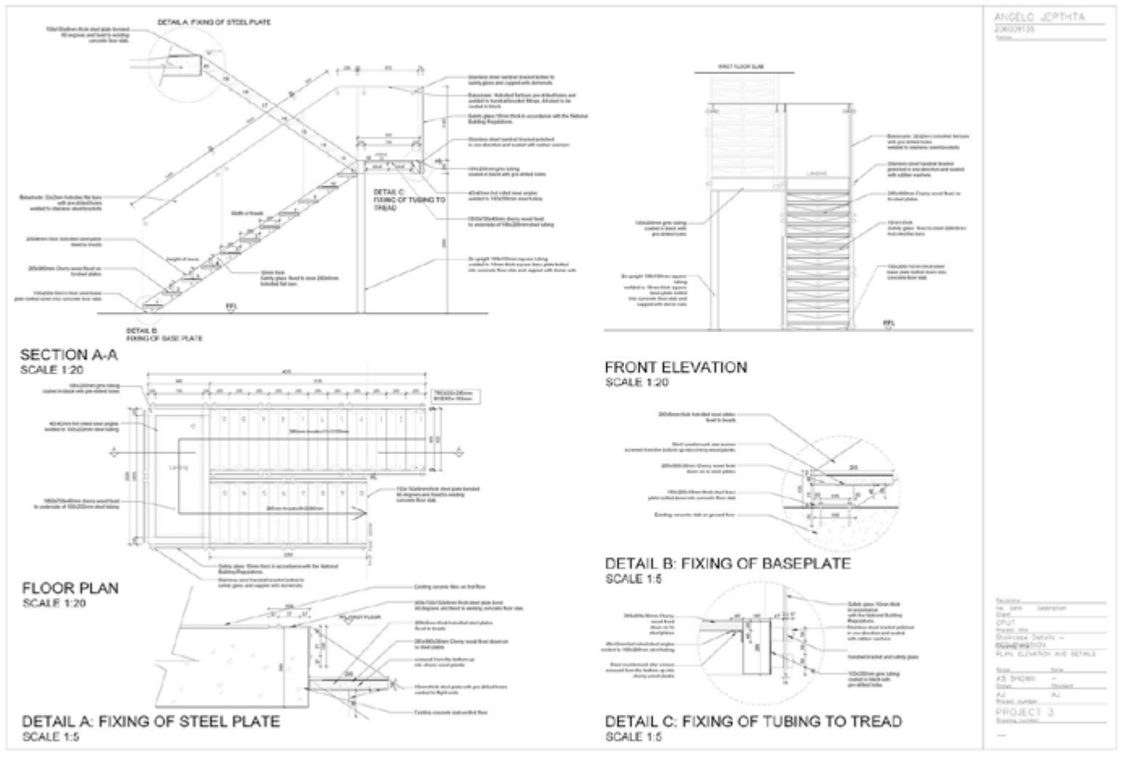
- structural footprint, main and detailed dimensioning and tolerances
- detailed drawings, assembly and/or exploded views to illustrate joints, tolerances and other specific elements (e.g. parapets, handrails) of the adopted system
- description of technologies, materials and products selected **

sheet 13.1, …, 13.n) **Material and component specifications**

This page can be organized in different sheets depending the quantity of information and must describe (at least) facade elements, floor finishing, ceilings. Information must be organized in the following sections:

- *Product Data Sheets* (PDS) including product name, photos and/or technical drawings, technical specifications, certifications, applications, features and costs (if available).
- *Bill of Material* (BOM) an inventory list containing identification number, class, brief description , total quantity of materials used in the construction. Material can be referred to assembled system, sub-assembled item or simple element/ material*
- *Doors and Windows Schedule* containing, for each item, identification number, total quantity, geometrical features, technical and material specification **

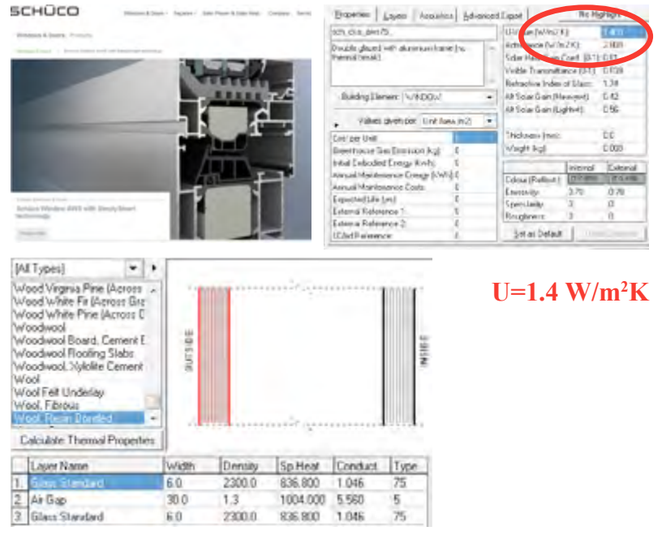
Note that in a detailed drawing of a stair it's required that each step is progressively numbered.



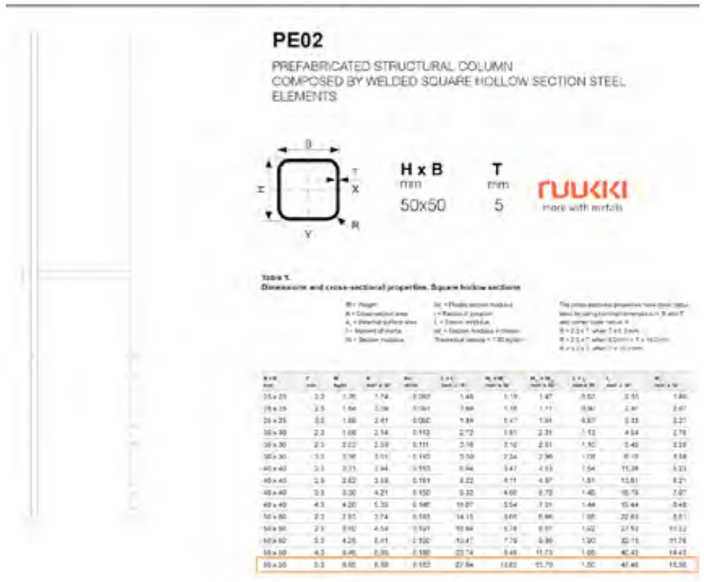
NOTES:
*) These specifications can be also expressed also combinig different elements in assembled entities (e.g. façade modules containing parapet panel, windowsill, window superior panel and eventually lateral panels; or wall/floor components containing different layers of material).

**) these specifications can be arranged or linked to the *Material and component specification* (sheet 13)

Windows: double-glazed aluminium windows with low-e layer



U=1.4 W/m²K



australmasonry

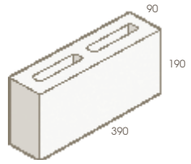
Ph: 1300 MASONRY (1300 627 667)
www.australmasonry.com.au

PRODUCT DATA SHEET

Artique 100mm Series Elegance - Honed

Product Code 10-01 H (Gympie)

Description: Elegance - Standard Veneer



Properties and Specifications	
Nominal Dimensions (Width x Height x Length mm)	100 x 200 x 400
Actual Dimensions (Width x Height x Length mm)	90 x 190 x 390
Core Volume (% overall thickness)	27
Minimum Face Shell Thickness (mm)	25
Average Block Weight (kg)	10.0 ± 0.10
Average Number per Tonne	100
Number per Pallet	180
Number per m^2	12.5
Wall Mass inc. Mortar Hollow (kg/m^2)	132
Durability (to AS4456.10)	General Purpose
Characteristic Unconfined Compressive Strength (MPa)	> 15
Fire Rating (Hollow)	60 to 240 / 60 / 60*
Fire Rating (Core Filled)	60 to 240 / 60 / 60*

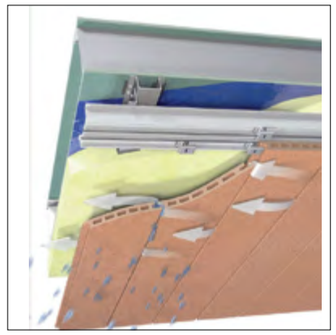
*Optimum Slenderness Ratio (Srf) of masonry, from AS3700:2001, Table 6.1, is:	
Hollow	Core Filled and Reinforced
18.0 at 60 minutes	36.0 at 60 minutes
17.0 at 90 minutes	36.0 at 90 minutes
16.0 at 120 minutes	36.0 at 120 minutes
15.5 at 180 minutes	36.0 at 180 minutes
36.0 at 240 minutes	36.0 at 240 minutes

Manufactured to AS/NZS 4455.1: 2008. Tested as per AS/NZS 4456: 2003.
Fire Resistance Levels as per AS3700:2011, derived from BRANZ and Exova Warringtonfire Aus Pty Ltd, 2012.
Acoustic opinion derived from Day Design Pty Ltd, 2012. Tested in accordance with AS 1191:2002 and AS/NZS 1276.1:1999.

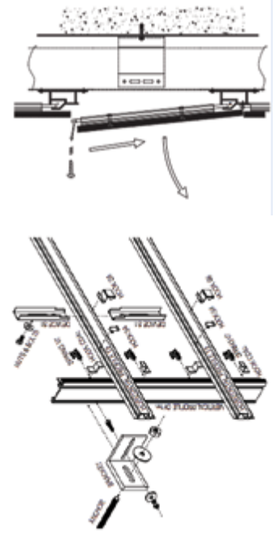
Austral Masonry Artique is a complete system consisting of two separate parts with an optional third:
1. Artique range of water resisting blocks (dramatically reduces secondary efflorescence)
2. Aus-Lock mortar additive. This works as a plasticiser, bonding agent and cement retarder slowing the setting time of the mortar giving more time to clean up. In addition, the additive will impart some waterproofing property to the mortar giving an added resistance to lime leaching.
3. Aus-Seal and Aus-Shield are an applied finsh to further enhance the product and give some self cleaning properties. Call your representative to discuss your requirements and learn more.

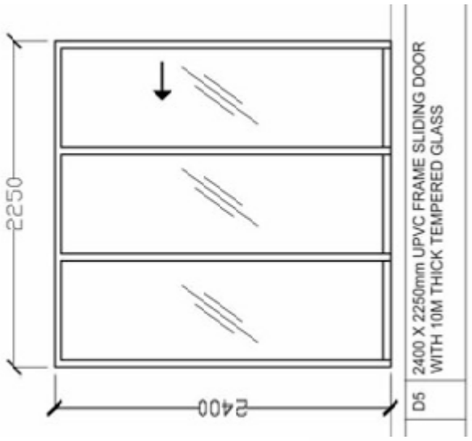
Bill of Quantity

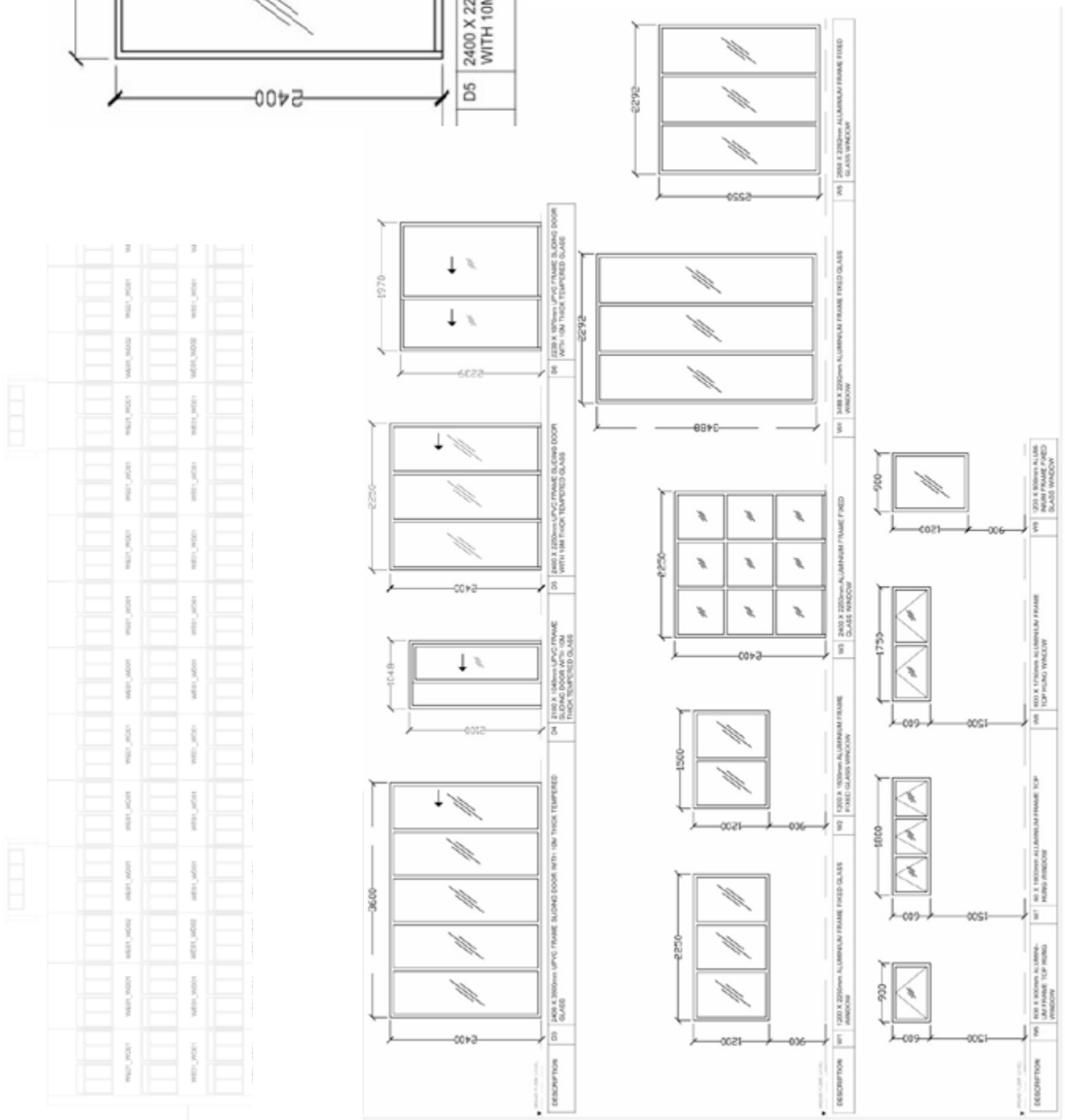
S.No.	Description of Items	Unit	Quantity	Rate	Amount
1	Earth work in excavation by mechanical means (hydraulic excavator)/manual means over areas (exceeding 30cmin depth, 1.5m in width as well as 10sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be leveled and neatly dressed.	cum	172.58	150	25,887.00
2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	cum	172.58	35	6,040.30
3	Supply & laying and compacting of 150mm thick over burnt brick aggregate 90mm to 45mm including spreading in uniform thickness, applying and brooming requisite type	cum	21.19	1400	29,664.77
	floor.				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	sqm	128.41	240	30,817.58
	Sub-Total				**92409.65**
5	Providing and laying in position cement concrete 1:4:8 of specified grade including the cost of centring and shuttering.	cum	14.46	3460.00	50,035.92
	a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120mm and minimum thickness at khurra as 65 mm.	sqm	84.61	670	56,688.70
	Sub-Total				**62335.78**
40	**Extrenal Development**	**sqm**	**32.75**	**1600**	52,400.00
41	**Boundary Wall**	**Rm**	**43.8**	**3250**	1,42,350.00
42	**Entrance gate**	**No**	**1**	**30000**	30,000.00
	Sub-Total				**2,24,750.00**
43	**Total Cost of Civil Works**				**30,85,577.81**




MATERIALS



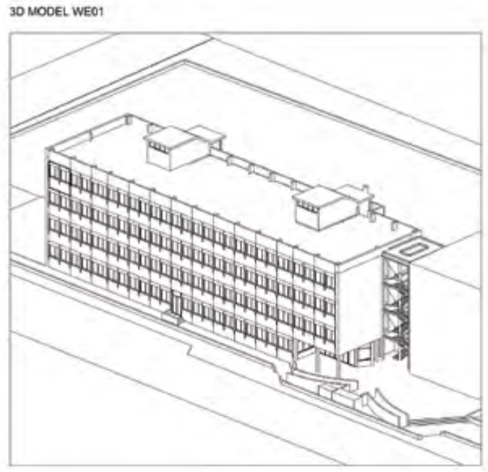


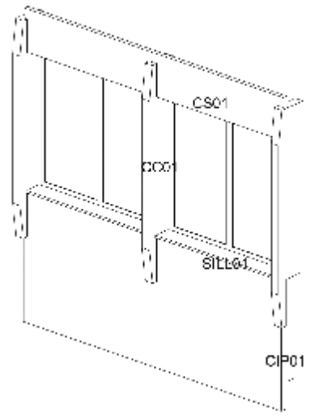


DELIVERABLES

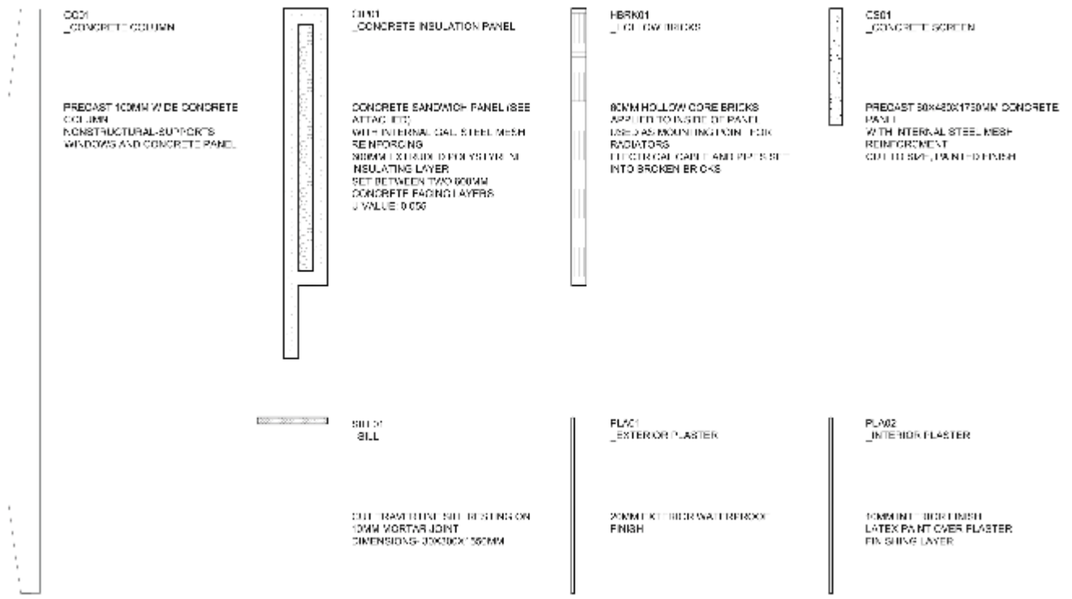
For the final exam students must submit the following items:

1. the horizontal UNI A1 binder
2. a CD/DVD containing in full resolution all the pages of the binder and other intermediate and/or source material collected or produced during the design process





An example showing the combination of different elements in one building component. This strategy can be very helpful to semplify and rationalize the Bill of Quantity and the building modeling as well.



Useful Links

Parco delle Cascine.

Masterplan delle Cascine
http://parcodellecascine.comune.fi.it/master-plan/index.html
>>> SEE: Scheda Interventi. Le Mulina

Bidding documentation for the Le Mulina requali-fication
http://www.comune.fi.it/export/sites/retecivica/comune_firenze/bandi/patrimonio.html

How to design and draw your project
Francoise Levy, BIM IN SMALL SCALE SUSTAINABLE DESIGN
http://issuu.com/jesic/docs/bim_in_small-scale_sustainable_desi

Zivan Jesic, DESIGN ENERGY SIMULATION FOR ARCHITECTS.
http://issuu.com/jesic/docs/design_energy_simulation_for_archit

G. Ridolfi. Technological analysis. Assignment Guide.
https://drive.google.com/open?id=0B9buc3ySHfibUDdtQUlNY09pNEk&authuser=0

G. Ridolfi. Technological analysis. Assignment Guide-Appendix .
https://drive.google.com/open?id=0B9buc3ySHfibTmRMV0hhX1ZmZGM&authuser=0

Previous students' work on a technological analysis of an existing school building
https://docs.google.com/file/d/0B9buc3ySHfibZEJ4amMzSktHQlk/edit

Place and built Assesment
G. Ridolfi. Briefing | Space Program & Indoor Environment
https://drive.google.com/file/d/0B9buc3ySHfibVXFpTkZVdEQ5c0k/view

G. Ridolfi. THE PLACE: Site Analysis and Environmental Assessment.
https://drive.google.com/file/d/0B9buc3ySHfibUEhaNlRvaU1oU0E/view

G. Ridolfi, View shading analysis in Parco delle Cascine using Google Earth Pro
https://vimeo.com/122990587

Previous students' works on a site assessment and bulding programming
https://drive.google.com/open?id=0B9buc3ySHfibQjlIZmdtT0cxX2s&authuser=0

Digital Terrain Model
Tutorials> DIGITAL TERRAIN MODELING AND SITE SURVEYING
http://www.mailab.biz/digital-terrain-modeling/

Tutorials> Energy modeling with Grasshopper
http://www.mailab.biz/smart_green/

Tutorials> SPACE PLANNING in early conceptual design
http://www.mailab.biz/space-planning-concept/

More advanced tools related to geographic analysis:
GRASS GIS
http://grass.osgeo.org

ARCGIS
http://www.arcgis.com

Quantum Gis
http://www.qgis.org/en/site/

Architectural Examples and more about sustainable design

Filestack> SMART & GREEN FROM RESPONSIVE ARCHITECTURES
http://issuu.com/artichoc/stacks/e9c-428624cfb4c148f0055371df06620

Functional Space Analysis
Mark Karlen, Space Planning Basics
https://books.google.it/books?id=FR1HAAAAQBAJ&printsec=frontcover&hl=it#v=onepage&q&f=false

Space Planning in Vectorworks
https://it.arch.ethz.ch/html/e29tutorials/winnt/manuals/vectorworks/Onlinemanuals/spacepl/v8tkdessp.pdf

Architectural Study Drawings
https://books.google.it/books?id=j7m53VQKStwC&printsec=frontcover&hl=it&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Cluster analysis in theory
http://www.qualtrics.com/docs/ClusterAnalysis.pdf

J. Kelly,S.Male,D. GrahamValue, Management of Construction Projects
https://books.google.it/books?id=ixNuBAAAQBAJ&printsec=frontcover&hl=it&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

HealthCare_FacilityLayout.pdf
http://labs.fme.aegean.gr/decision/images/stories/docs/HealthCare_FacilityLayout.pdf

Indoor Environmental Quality
Daylight pattern guide
http://patternguide.advancedbuildings.net/home

Comfort. Energy modeling
http://energy-models.com/comfort

Air Change Rates for typical Rooms and Buildings
http://www.engineeringtoolbox.com/air-change-rate-room-d_867.html

Daylighting | Whole Building Design Guide
http://www.wbdg.org/resources/daylighting.php

Illuminance - Recommended Light Levels
http://www.engineeringtoolbox.com/light-level-rooms-d_708.html

Measuring Light Levels | Sustainability Workshop
http://sustainabilityworkshop.autodesk.com/buildings/measuring-light-levels

Mechanical_Engineering_
http://www.gsa.gov/graphics/pbs/P100-2005_05_Mechanical_Engineering_R2-w-r-k_0Z5RDZ-i34K-pR.pdf

* * *

in addition consider to check the course official blog
[http://www.mailab.biz/smart_green]