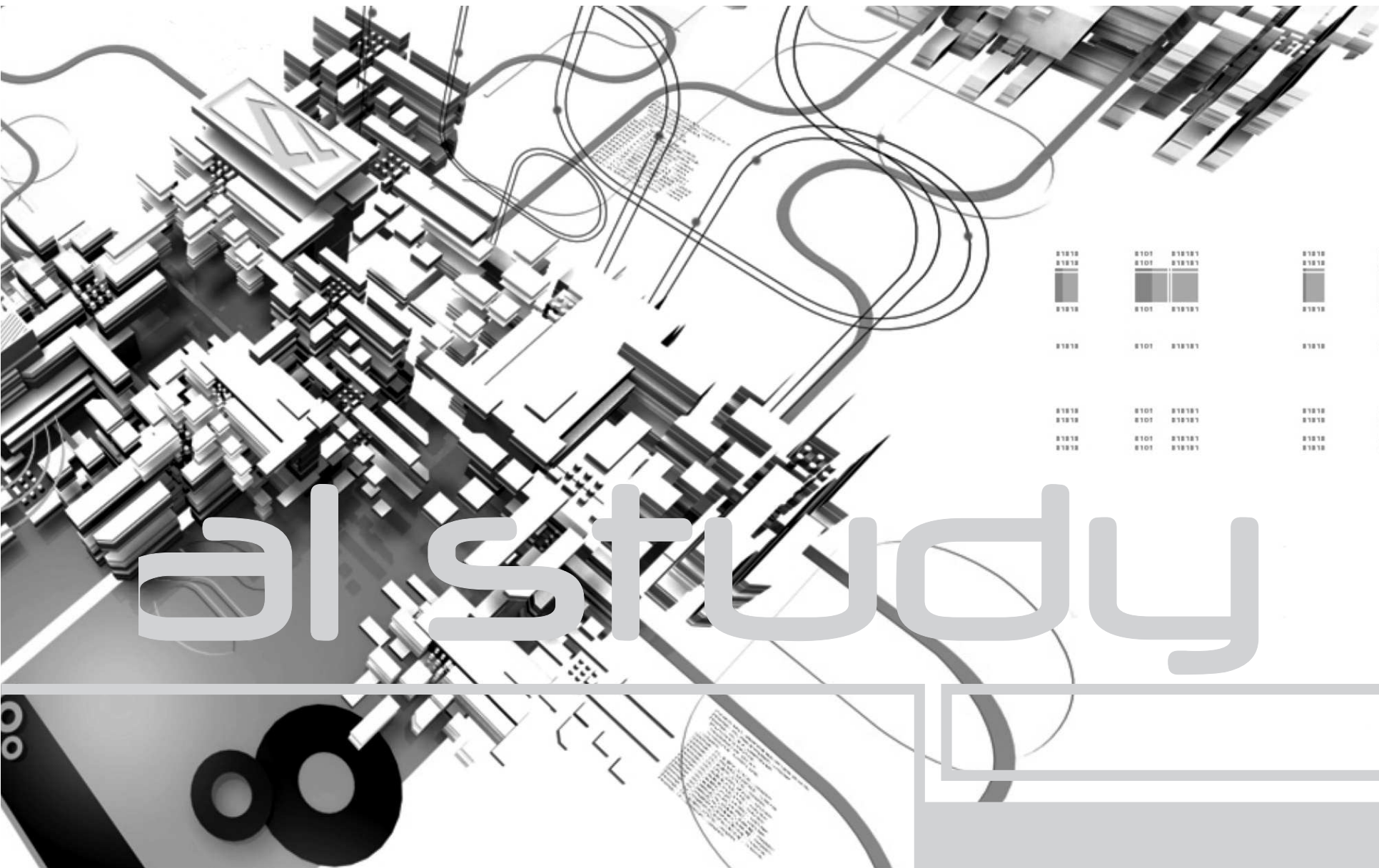




09-01

technic





al study



materials

[concrete]

concrete is selected as the primary structure
all concrete will be off-shutter with finishes ranging from smooth
to rough

a grey concrete mix will be used throughout the project.

- [advantages]
- good thermal storage
 - can achieve large spans
 - easily molded into desired profiles
 - different finishes possible

- [disadvantages]
- sand and cement is a non-renewable resource
 - insitu concrete cannot be recycled



93-03



[granite crush]

granite crush will be used as a floor coverage
externally along the public walkway to define
between spaces of pedestrian access



[fibre c" cladding system]

is a concrete panel reinforced with glassfibres
which combines the advantages of concrete and glassfibres in
one product: it is as solid, mouldable and durable as concrete, but
thanks to the glassfibres also thin-walled, fireproof and light-
weight.

The use of high-grade raw materials consisting of purely mineral
substances and glassfibres guarantees optimum product quality.
The amount of re-used materials is increasing. As FibreC is based
on purely organic substances, as opposed to most other products
available on the market, the material can be completely recycled.



94 >>



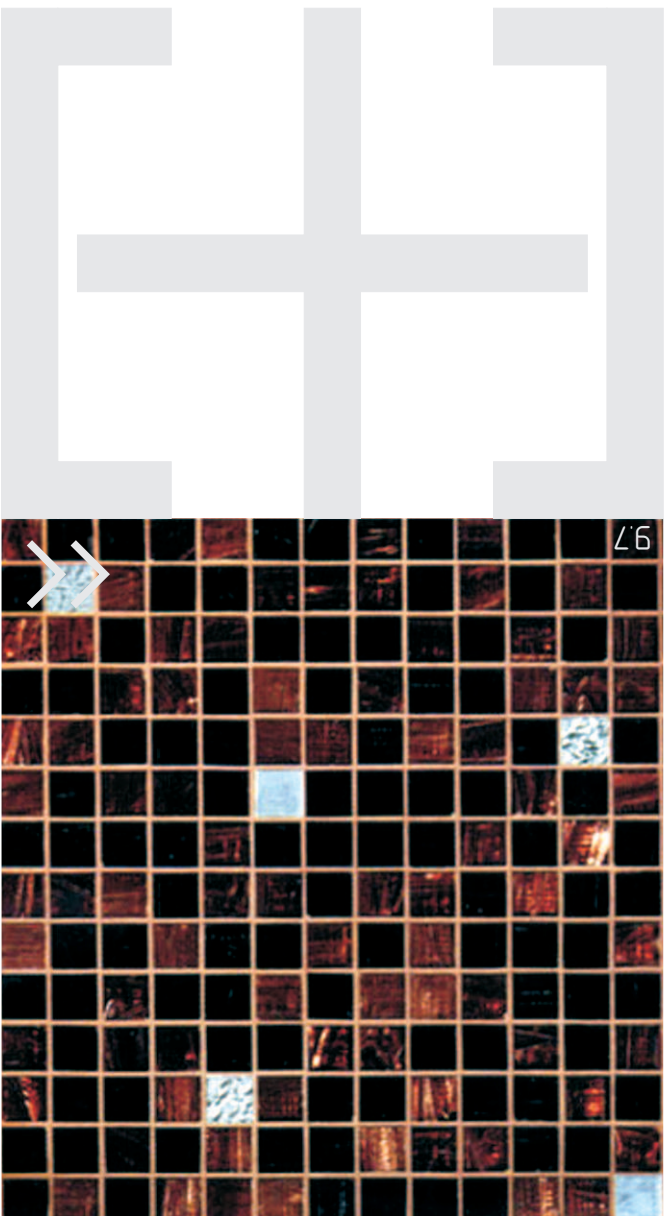
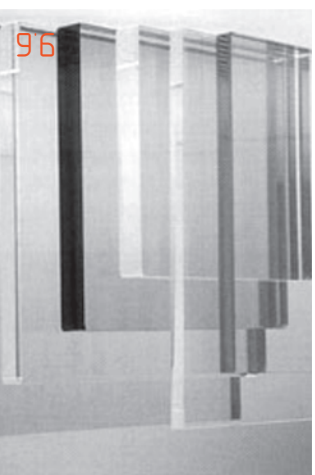
[timber cladding]

timber refers back to the landscape and is used as a link between man and the natural environment. the architect envisages the natural flow of pedestrians through the forest of verticals as if one were in a forest. timber buildings are perceived as temporary erections, this couples with the idea that people form the most important element of the building



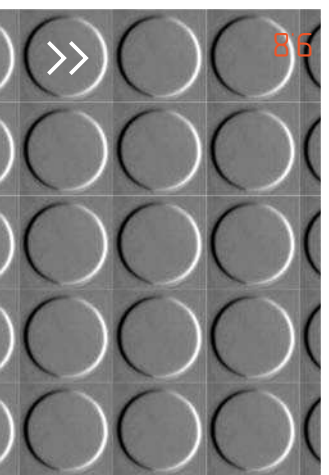
[glazing]

glass gives us the ideal opportunity to allow natural daylight into the building and onto the southern areas of the site. it allows for merging of the outdoors and indoors and frames the landscape in and creates natural works of art when inside the building as well as framing the internals of the building when viewed from the outside. shading devices depending on the orientation of the facades eliminates the disadvantages associated with glass.



[finishes]

finishes to floors and selected walls are aimed to reflect the industrial nature of the area as well as the artistic patterns achievable by mosaics. all mosaic art work is to be carried out by local artisans or ceramic design students from the TUT campus and is in itself to be made an event for pretoria locals and visitors to the center.



09-05

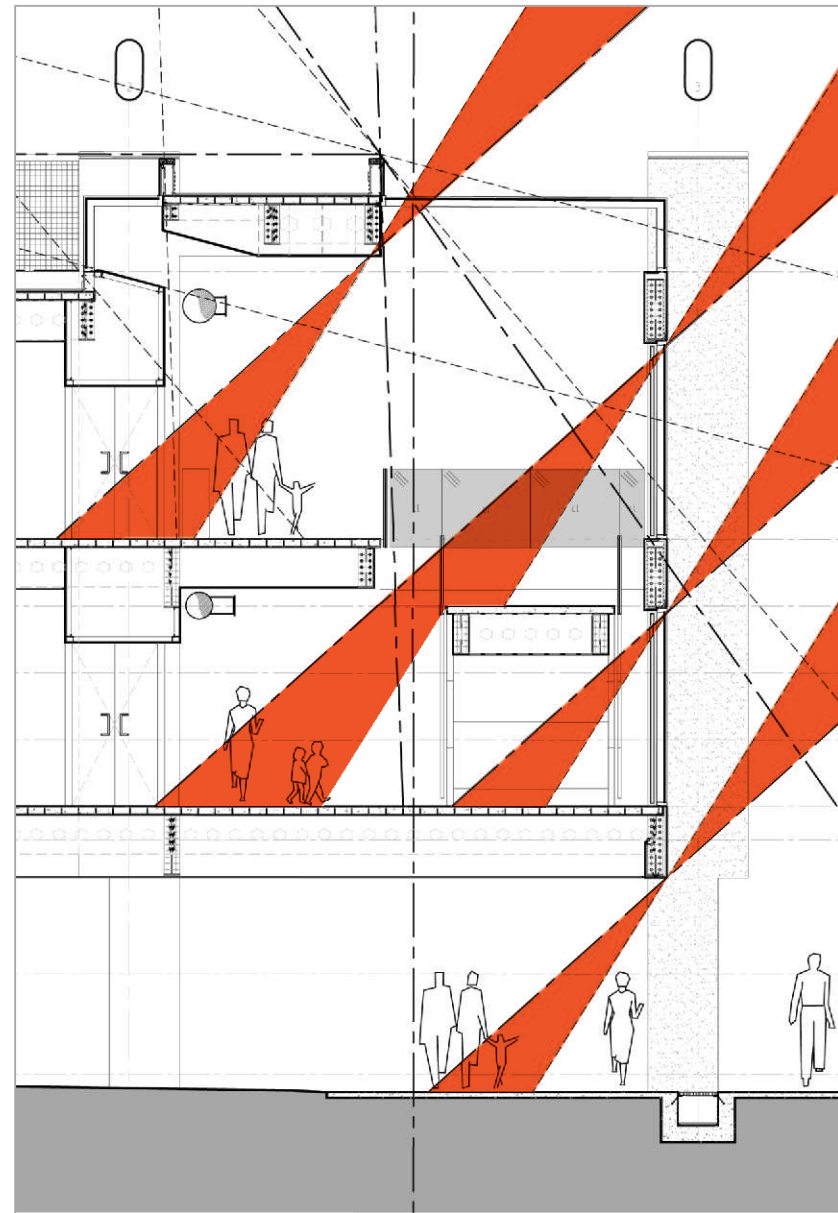
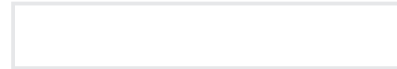
[natural day lighting]

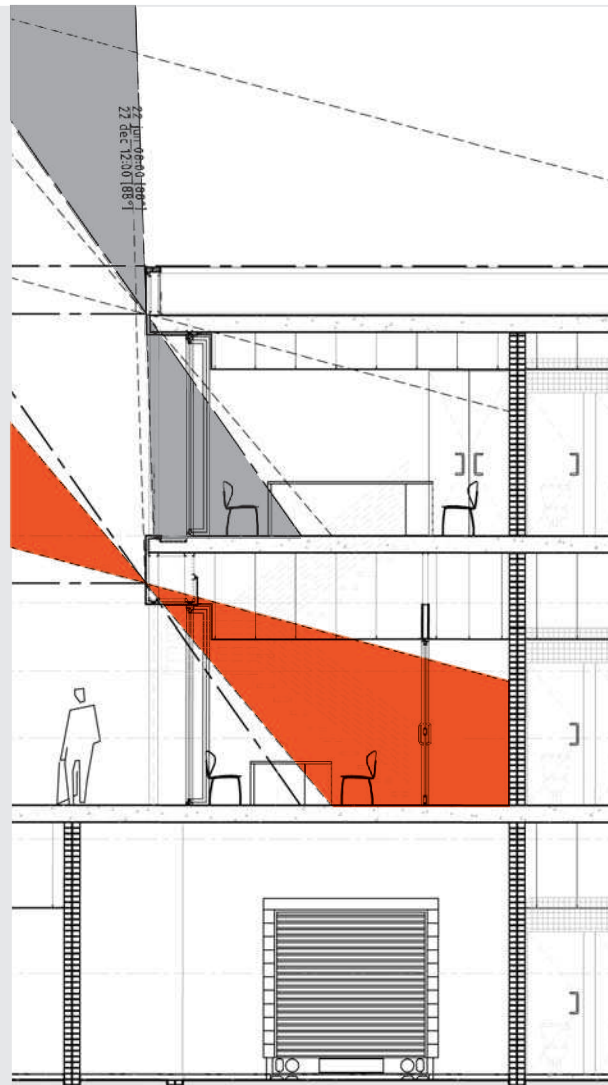
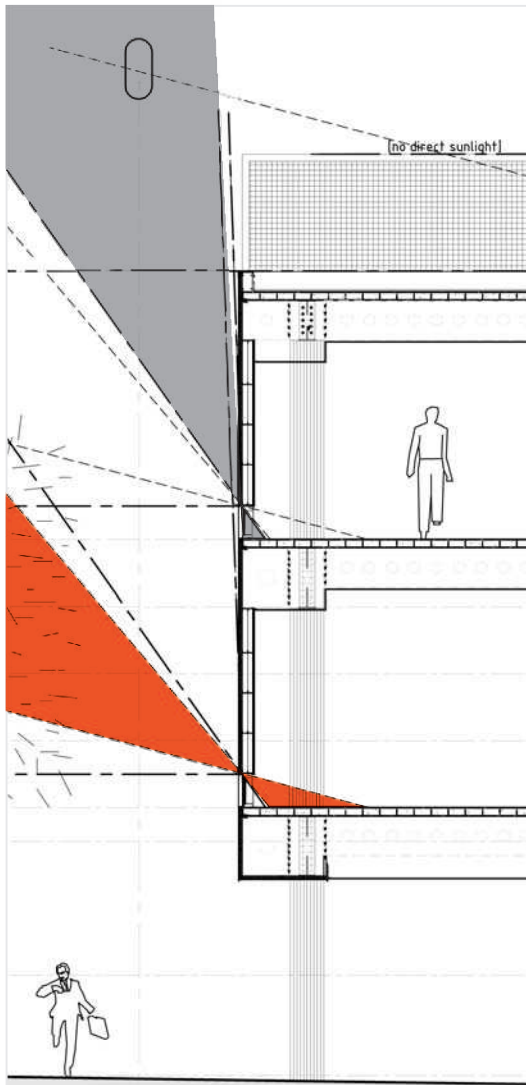
the site is long and narrow with [307m x 48m] as a result the design, influenced by its site and context has a long south eastern and north western facades.

the south eastern facade is primarily large glazed openings in order to maximise the use of southern light and allows natural lighting into the circulation spine and filters into the gallery/studios which can be controlled within the galleries by moveable screens which close the gallery/studios entrance and therefore allow less light in when the facade is exposed to the easterly sun in the mornings. this facade is however protected by the large existing trees along the site.

the galleries and offices are orientated north westerly and this constitutes a problem in the afternoon. minimal gallery lighting was needed and therefore a band window was incorporated at the foot of the extreme wall to connect the gallery with its context. this proved to be problematic as the lighting levels internally would fluctuate as the western sun hit

the facade in the afternoon. these problems were investigated and correct glass would have to be selected, such as neutral tinted glass which allows a reduction in 80% in light levels within the gallery space without losing the psychologically important view to the outside.





9.9 9.10 9.11

[Investigation into natural day lighting in galleries]

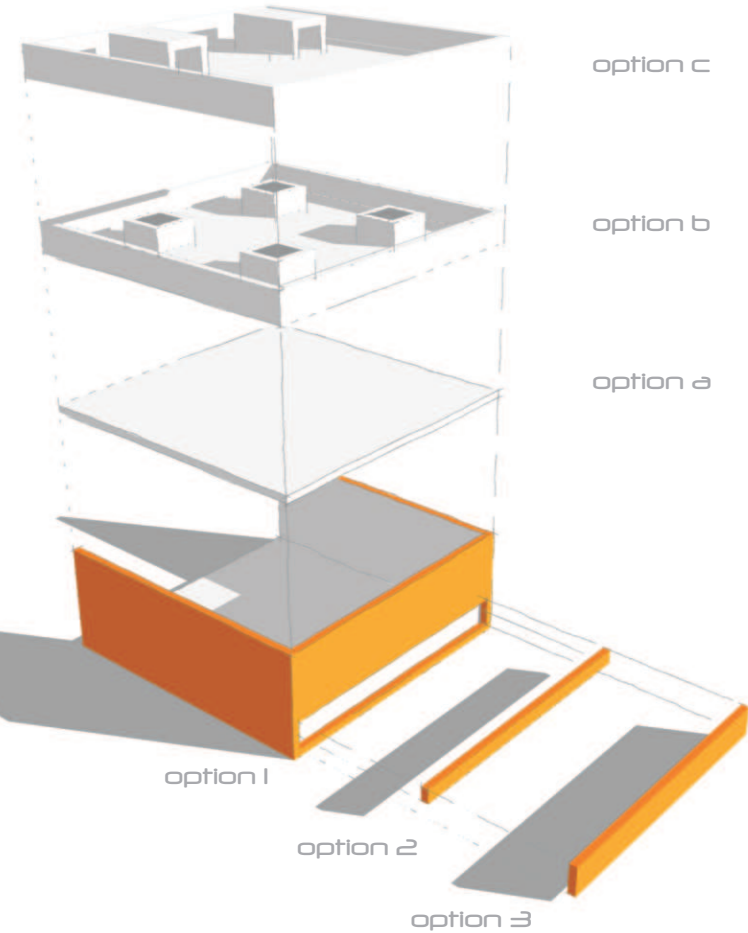
Day lighting is the use of light from the sun and sky to complement or replace electric light. Appropriate fenestration and lighting controls are used to modulate daylight admittance and to reduce electric lighting, while meeting the occupants' lighting quality and quantity requirements.

(overview)

the basis for my technical investigation into lighting (artificial and natural) is based on the need for lighting in gallery spaces combined with efficient design proposals to investigate maximum natural daylighting and minimise on artificial lighting while avoiding direct light into these spaces.

gallery spaces should be south orientated to maximise on the natural soft light achieved on these facades. although my gallery spaces face north westerly, however the entrance has been maximised with minimal

obstructions to allow the absolute maximum southern light available throughout the day, a northern slit at floor level was also allowed for. this opening ranges in height from 0mm - 500mm - 1000mm with three alternative roof light designs. lux levels were taken but these are not an accurate representation of the actual gallery space but rather a comparison within alternative envelopes.





one lux is the illuminance at the same point at a distance of 1 meter from the source. one lux uniformly distributed over one square meter of surface provides an illumination of 1 Footcandle.

If you work in meters, your results will be in lux - (1 lux = 1 lumen/square meter)

in this investigation the floor area was reduced by a ratio of ??? so therefore all lux levels have been adjusted by that factor too.



9.13

9.14

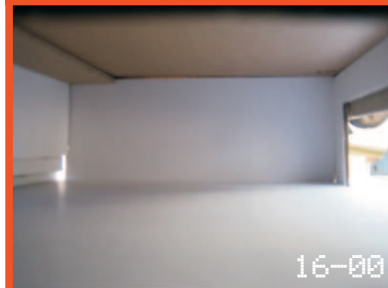
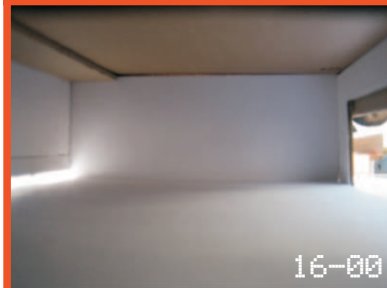
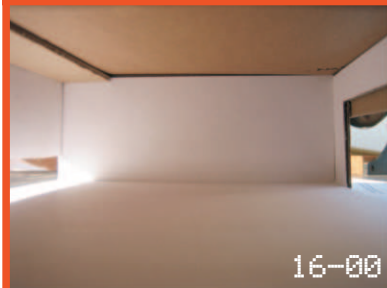
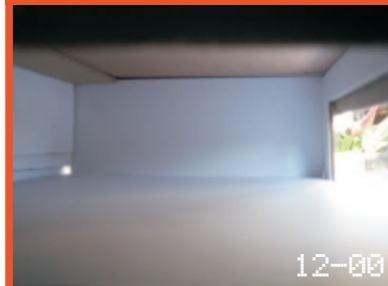
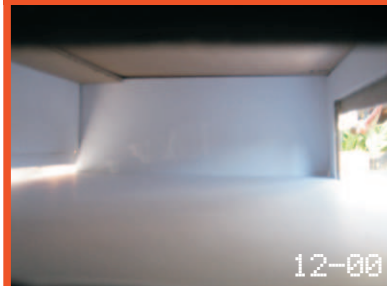
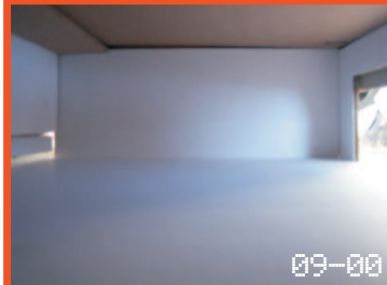
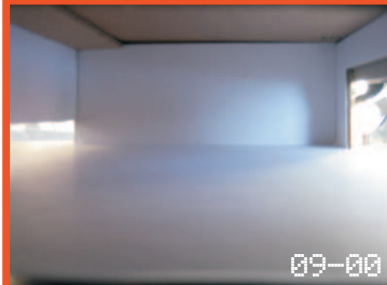


09-09

option a1

option a2

option a3



22 jun

22 jun

22 jun

option a1 - 700 lux
option a2 - 580 lux
option a3 - 500 lux

option a1 - 1350 lux
option a2 - 700 lux
option a3 - 520 lux

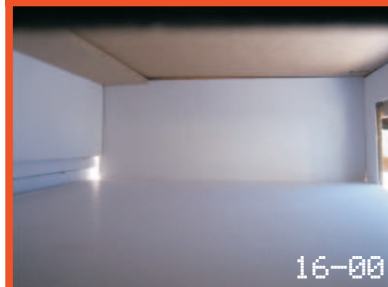
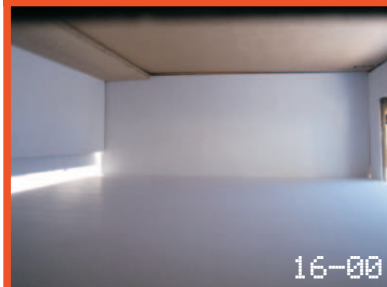
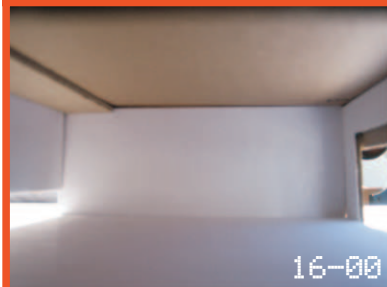
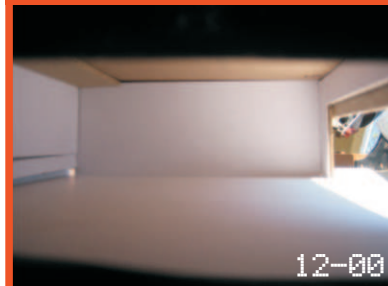
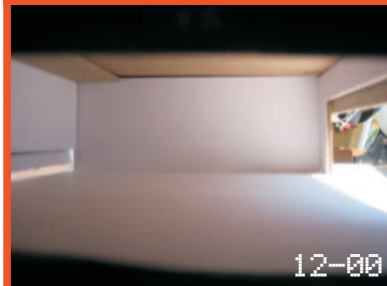
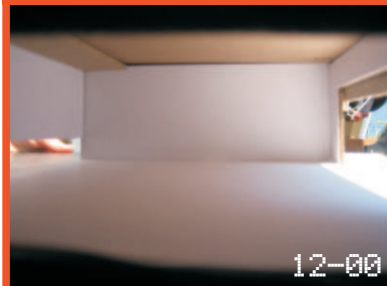
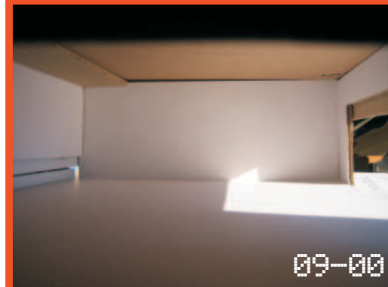
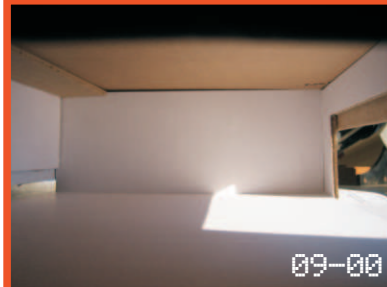
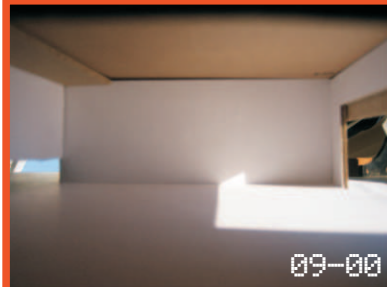
option a1 - 2650 lux
option a2 - 1200 lux
option a3 - 380 lux



option a1

option a2

option a3



22 dec

22 dec

22 dec

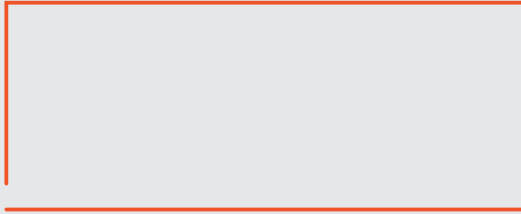
option a1 - 2050lux
option a2 - 1950 lux
option a3 - 1900 lux

option a1 - 1450lux
option a2 - 1300 lux
option a3 - 1250 lux

option a1 - 1150lux
option a2 - 600 lux
option a3 - 550 lux

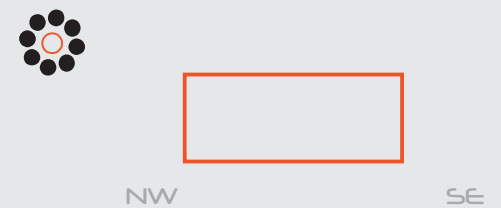
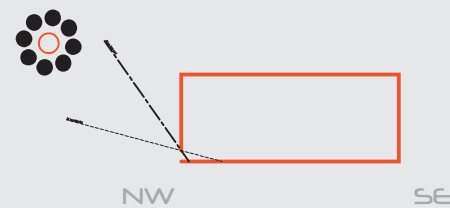
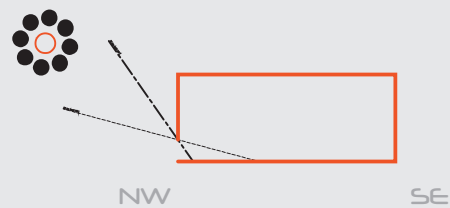
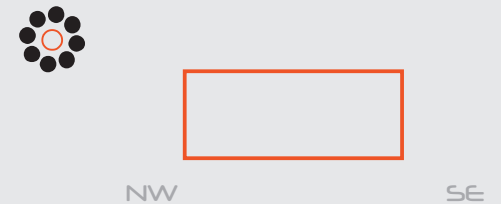
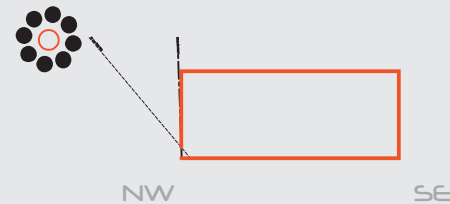
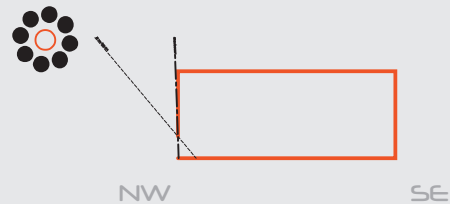
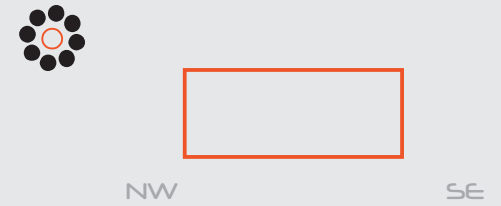
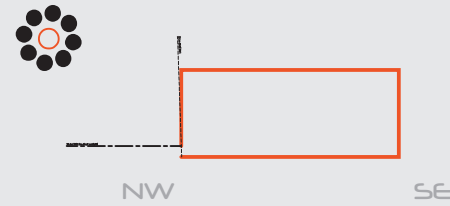
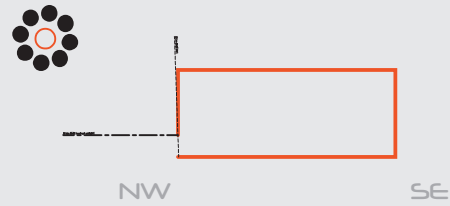


09-11



option a2

9.15	9.16	9.17	9.24	9.25	9.26
9.18	9.19	9.20	9.27	9.28	9.29
9.21	9.22	9.23	9.30	9.31	9.32



option a1

option a2

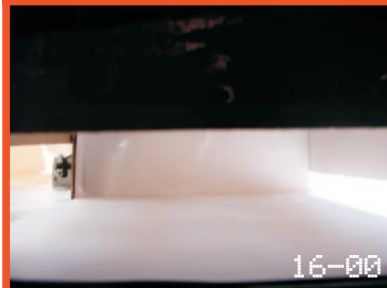
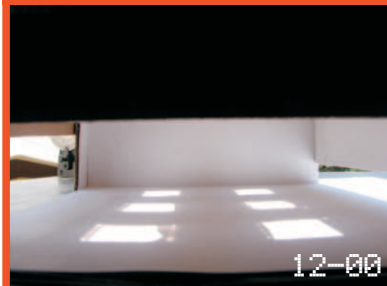
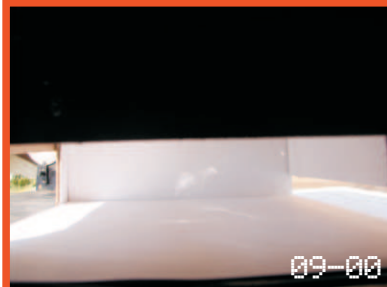
option a3

09-13

option b1	option b2	option b3
 <p>09-00</p>	 <p>09-00</p>	 <p>09-00</p>
 <p>12-00</p>	 <p>12-00</p>	 <p>12-00</p>
 <p>16-00</p>	 <p>16-00</p>	 <p>16-00</p>
22 jun	22 jun	22 jun

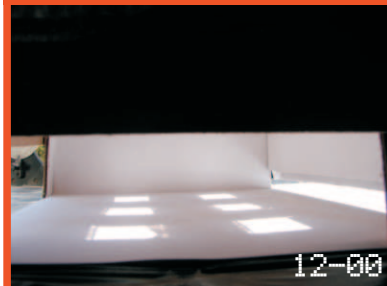
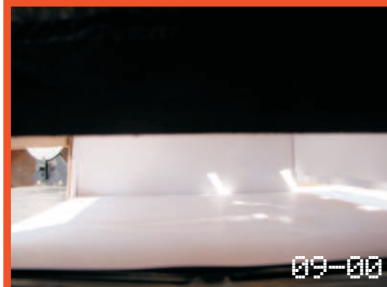
<p> option a1 - 1650lux option a2 - 1600 lux option a3 - 1550 lux </p>
<p> option a1 - 3000+lux option a2 - 3000+ lux option a3 - 2900 lux </p>
<p> option a1 - 3000+lux option a2 - 2250 lux option a3 - 1550 lux </p>

option b1



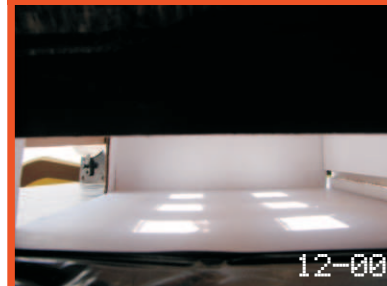
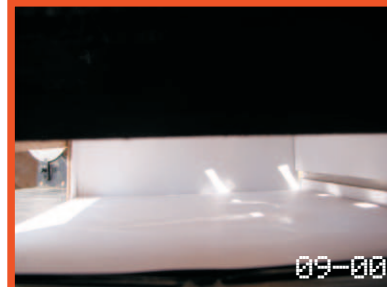
22 dec

option b2



22 dec

option b3



22 dec

option a1 - 3000+lux
option a2 - 3000+lux
option a3 - 3000+lux

option a1 - 3000+lux
option a2 - 3000+lux
option a3 - 3000+lux

option a1 - 3000+lux
option a2 - 3000+lux
option a3 - 3000+lux

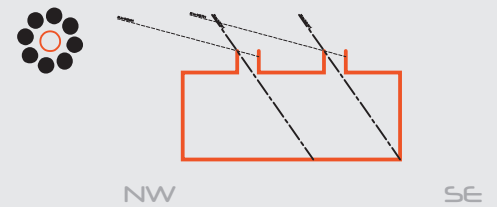
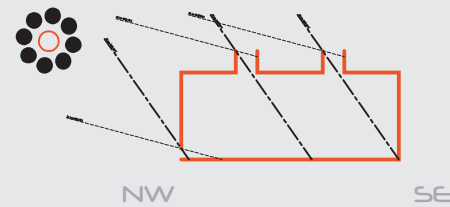
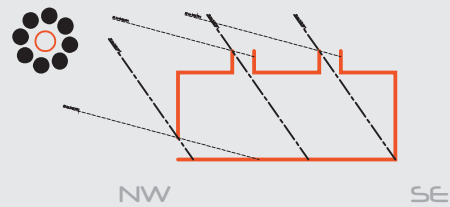
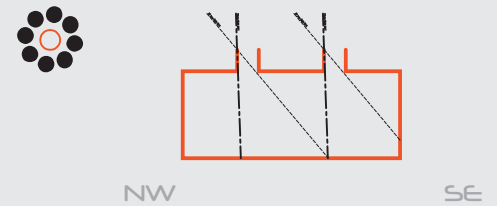
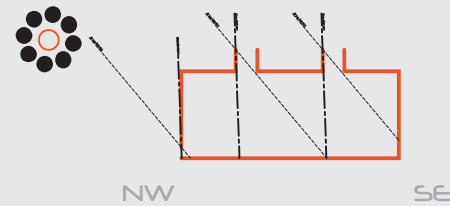
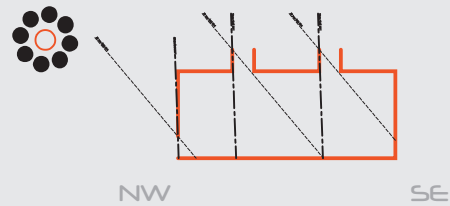
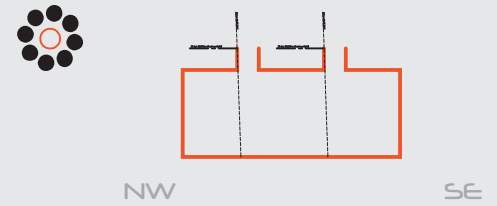
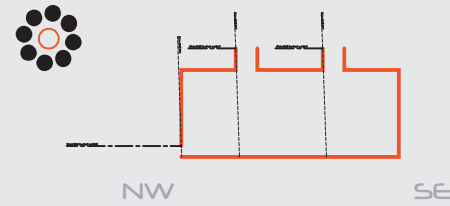
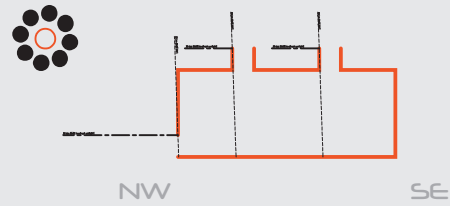


09-15



option b2

9.33	9.34	9.35	9.42	9.43	9.44
9.36	9.37	9.38	9.45	9.46	9.47
9.39	9.40	9.41	9.48	9.49	9.50



option b1

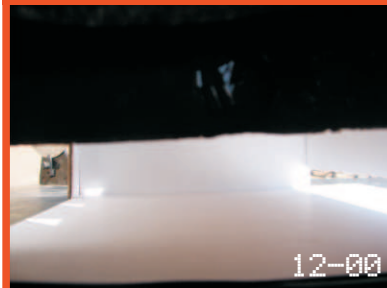
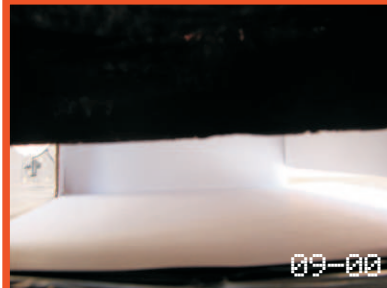
option b2

option b3



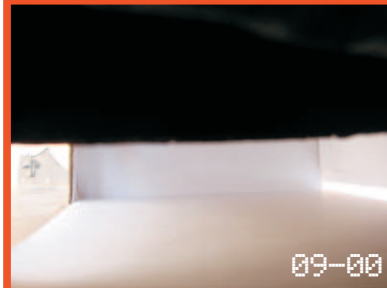
09-17

option c1



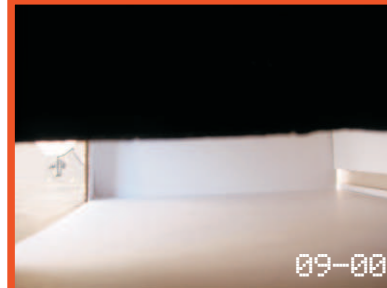
22 jun

option c2



22 jun

option c3



22 jun

option a1 - 1050 lux
option a2 - 1000 lux
option a3 - 950 lux

option a1 - 1650lux
option a2 - 1100 lux
option a3 - 1025 lux

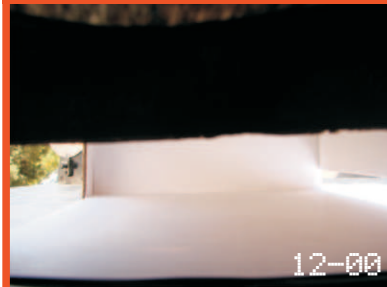
option a1 - 3000+ lux
option a2 - 2200 lux
option a3 - 1550 lux



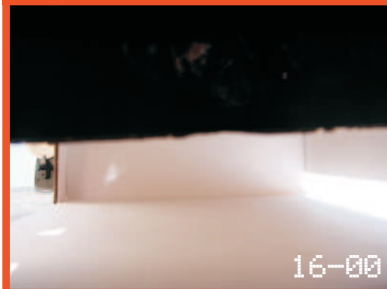
option c1



09-00



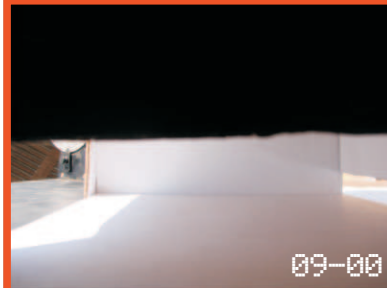
12-00



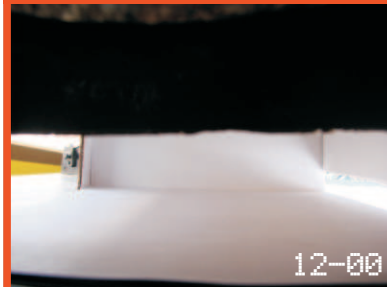
16-00

22 dec

option c2



09-00



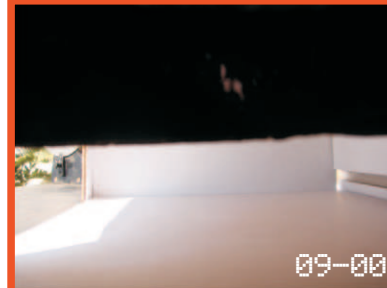
12-00



16-00

22 dec

option c3



09-00



12-00



16-00

22 dec

option a1 - 3000+ lux
option a2 - 3000+ lux
option a3 - 3000+ lux

option a1 - 1950 lux
option a2 - 1800 lux
option a3 - 1750 lux

option a1 - 2800 lux
option a2 - 1900 lux
option a3 - 1625 lux

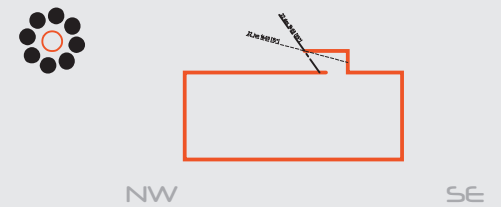
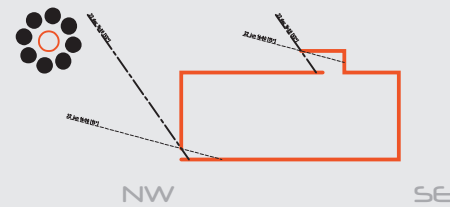
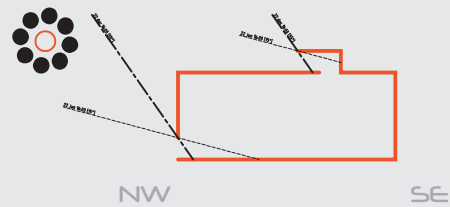
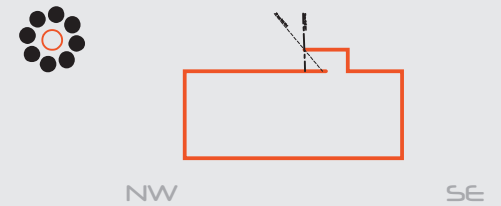
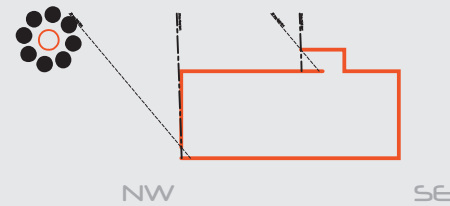
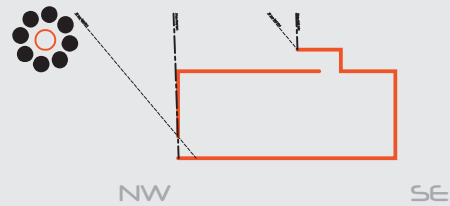
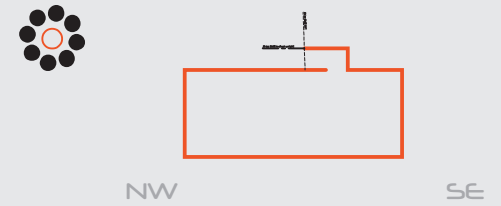
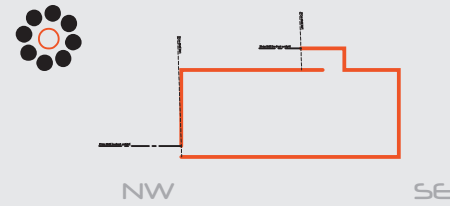
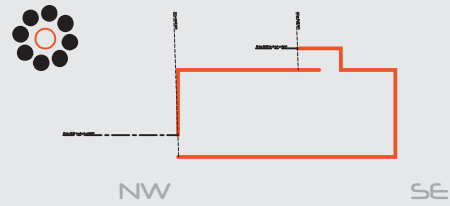


09-19



option c2

9.51	9.52	9.53	9.60	9.61	9.62
9.54	9.55	9.56	9.63	9.64	9.65
9.57	9.58	9.59	9.66	9.67	9.68



option c1

option c2

option c3