Coffer opening 1.44m²
1.2x1.2m will shadow the next coffered ceiling with angles - longitudinal direction:
entering may be a source of glare.
Skylights with little surface to see the light.
Coffer angles:
Sun altitude 70.84° Summer solstice
Angled coffers reduce the dark shadows.
Sun altitude 53.38° Summer solstice
Sun altitude 6.6° Winter solstice
Oslo 59.9°
Sun altitude 24.7° Winter solstice

Coffer angle
8.76m²
2.25m²
10.1m²
1.97m²

Coffer opening 3.05m
Square shaped light opening of the ceiling depth to cut off direct sunlight due to
Glass area 1.44m²
Aperture diameter 1.2x1.2m

A rounded opening is easier to center and the
Coffer angle 7.69°/30.24°
Glass area 1.19m²
Coffer opening 3.4m
Circular shaped light opening
Aperture diameter 1.533m

By rounding the north edge of the coffer opening and
and coffer opening can be increased keeping with the previous angles, both the aperture

Coffer angle 15°/30°
Glass area 1.84m²

A square aperture does not use the full potential

Ref: William Lam - Sunlight as formgiver for architecture, p.144.

60° degree slope translated to the altitude of Oslo (77.9°)
45° degree slope translated to the altitude of Oslo (62.9°)

Axonometric diagrams
Cooper variation #3
Sculptural coffer variation #3

How to generate sun scoop skylights by using a sun fan/sun path
coffer opening can be increased
Sun altitude 53.38° Oslo 59.9° Summer solstice
Sun altitude 6.6° Oslo 59.9° Winter solstice

By rounding the north edge of the coffer opening and
and coffer opening can be increased
keeping with the previous angles, both the aperture

Sculptural coffer variation #2

Root block
Drainage/protection layer/water collection
Earth layer - Sedum
Direct sunlight -
Tilted glulam beam
Bottom membrane
Pressure resistant mineral wool
Roofing material
Top membrane
CLT wood
Supporting frame for skylight
CLT wood -

White glazed wooden panel -
Hybrid ventilation system
Lighting fixture

Three layered acrylic glass
Motorized for natural ventilation
Opening skylight

Transverse section of situation
Axonometric representation of the project elements

Scale 1:2000
Situation plan
Scale 1:500
Scale 1:20