

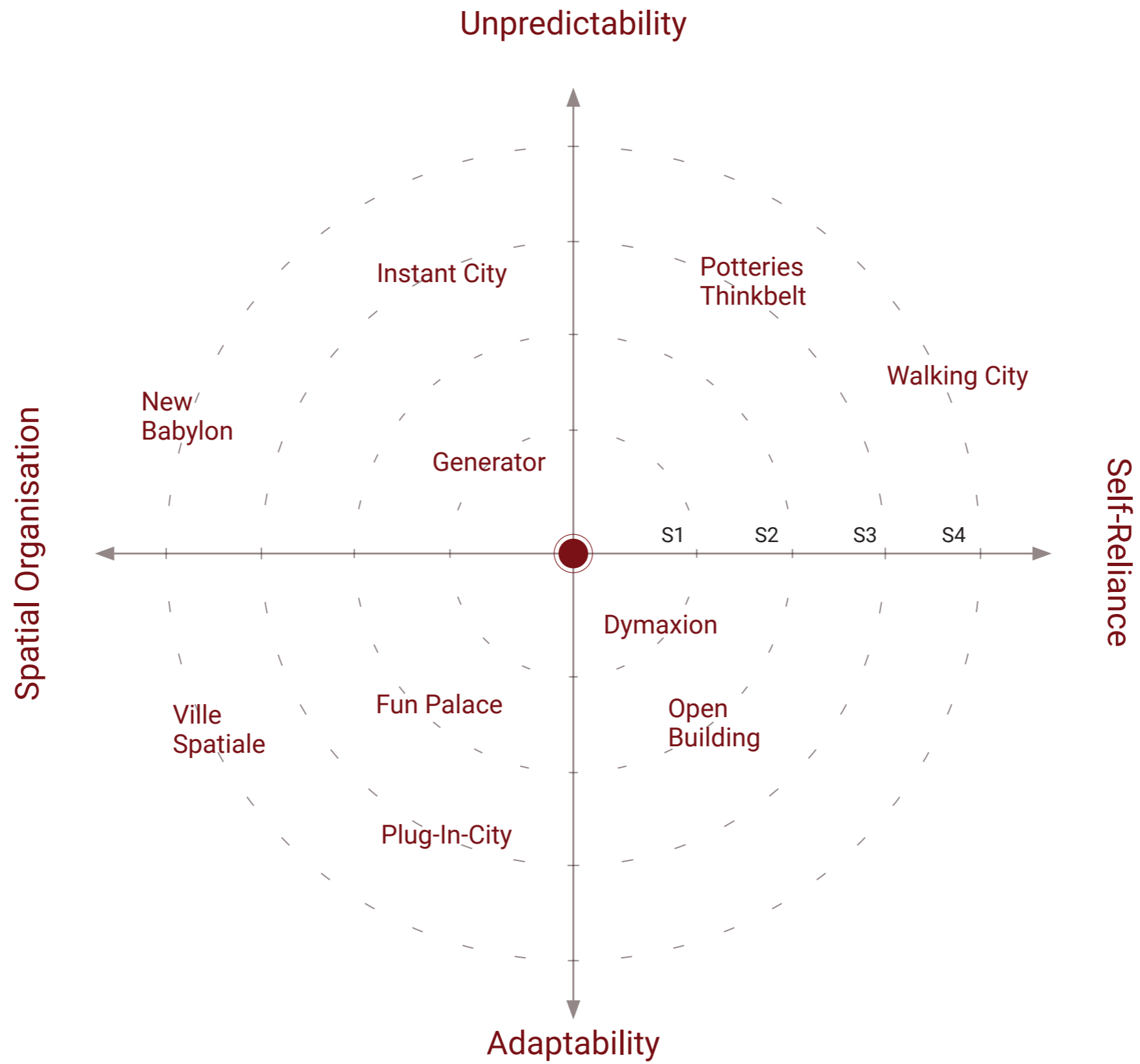
Systems in Motion

Modular Architecture for Conflict and Civilian Transition

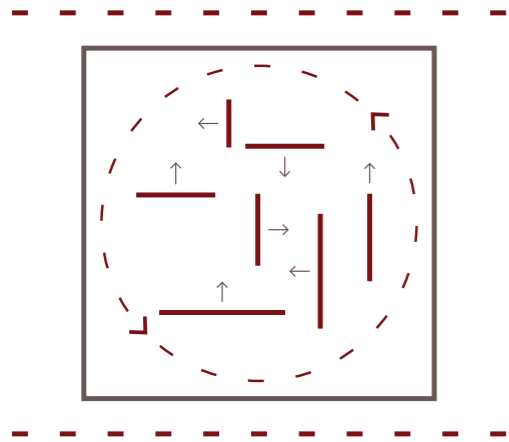
Research Question

How can Systemic Architecture inform the Multi-Scalar design of an Adaptable military base in Rūdninkai, Lithuania ?

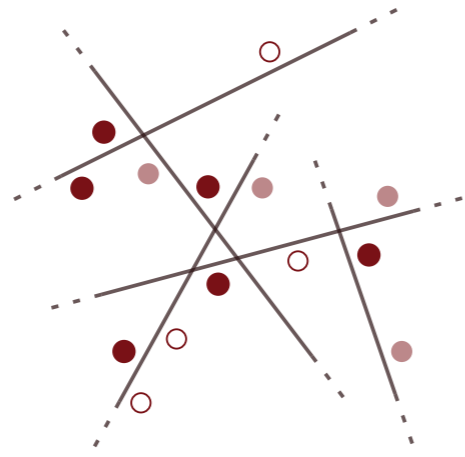
Analytical Structure



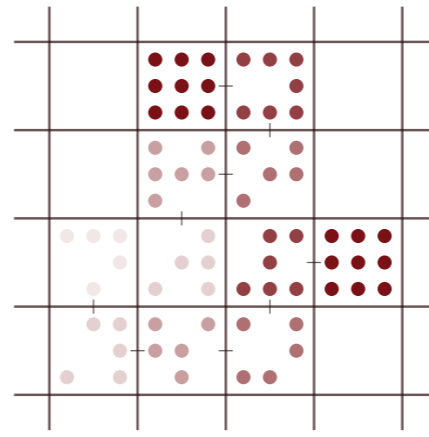
Designable Actions



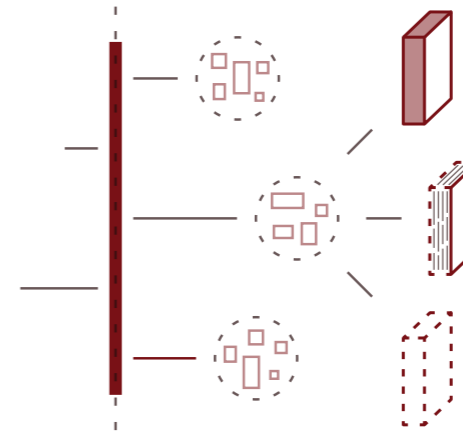
Fun Palace



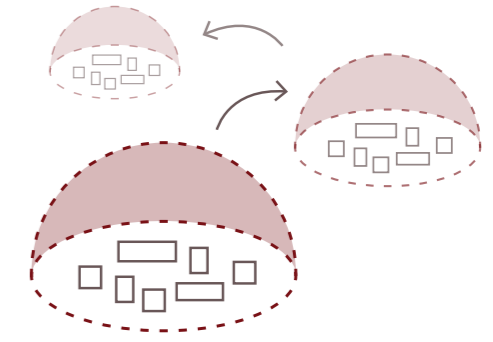
Potteries Thinkbelt



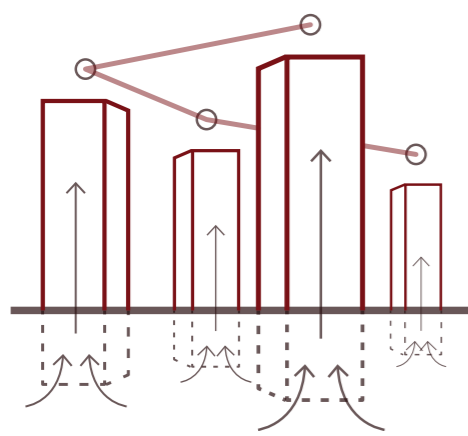
Generator



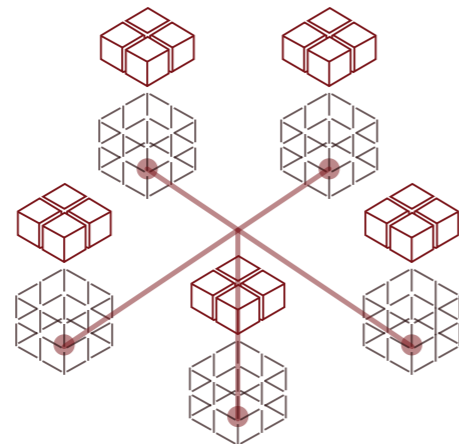
Plug-In-City



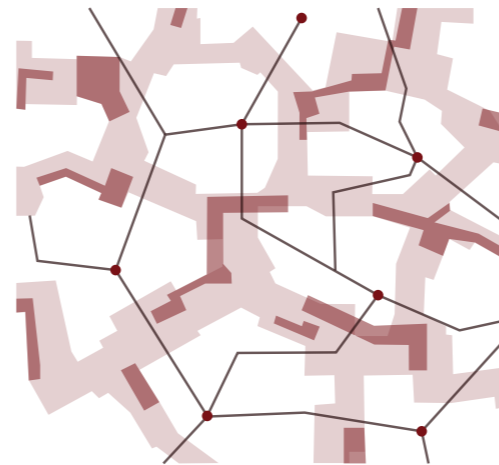
Instant City



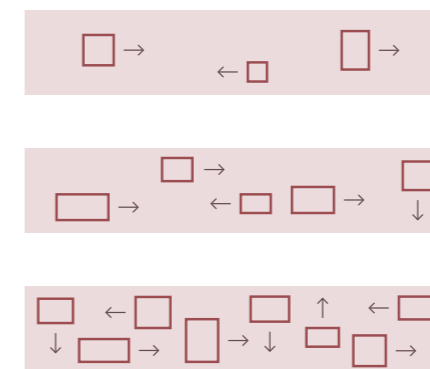
Walking City



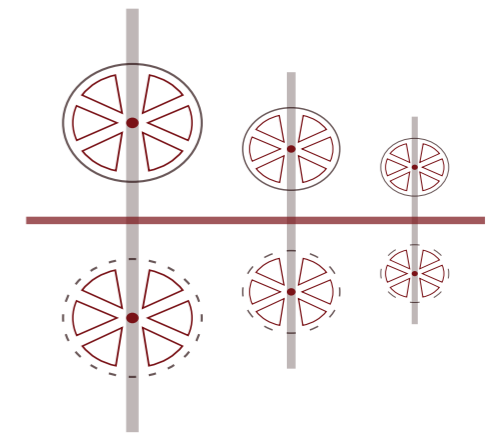
Ville Spatiale



New Babylon

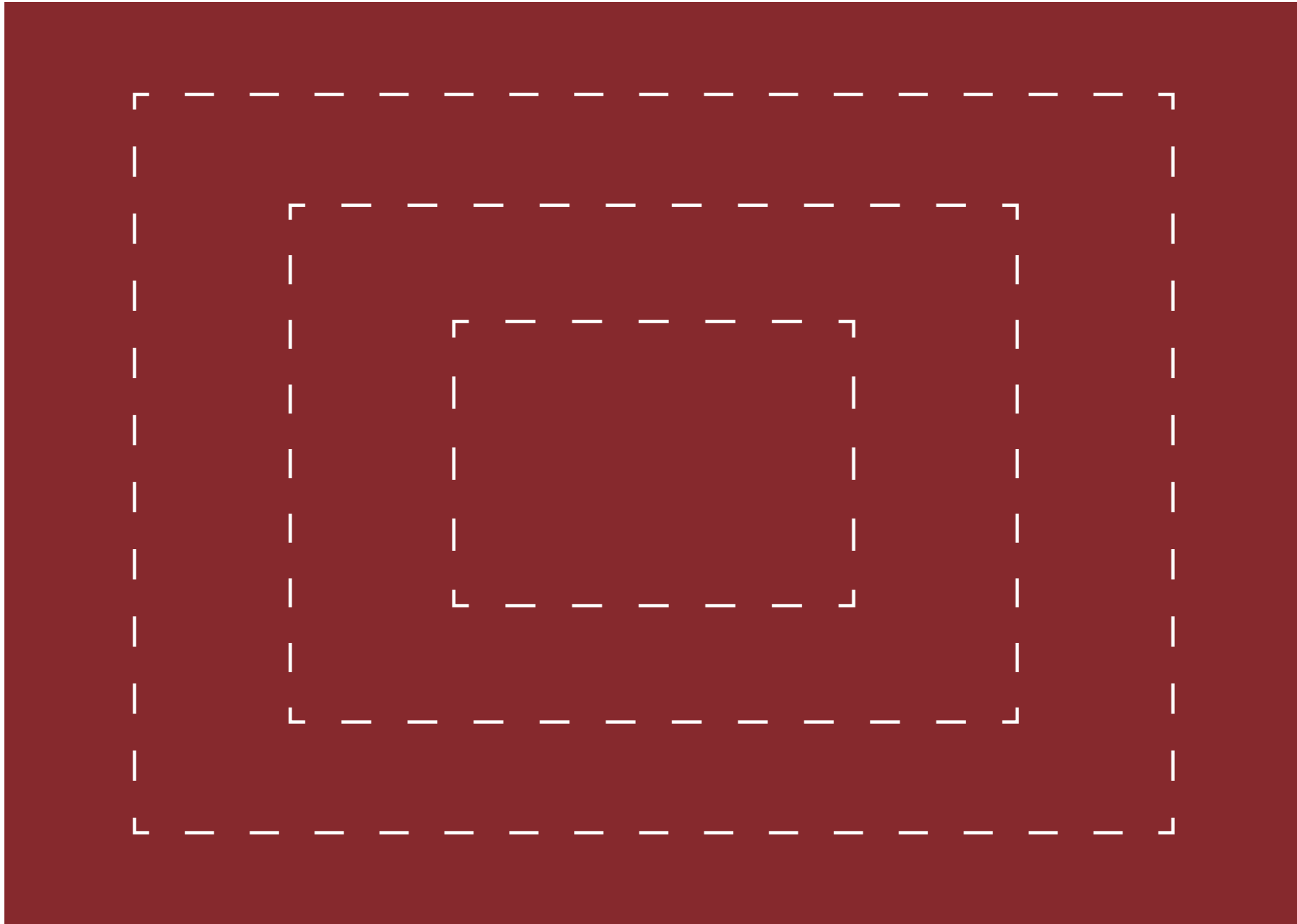


Open Building

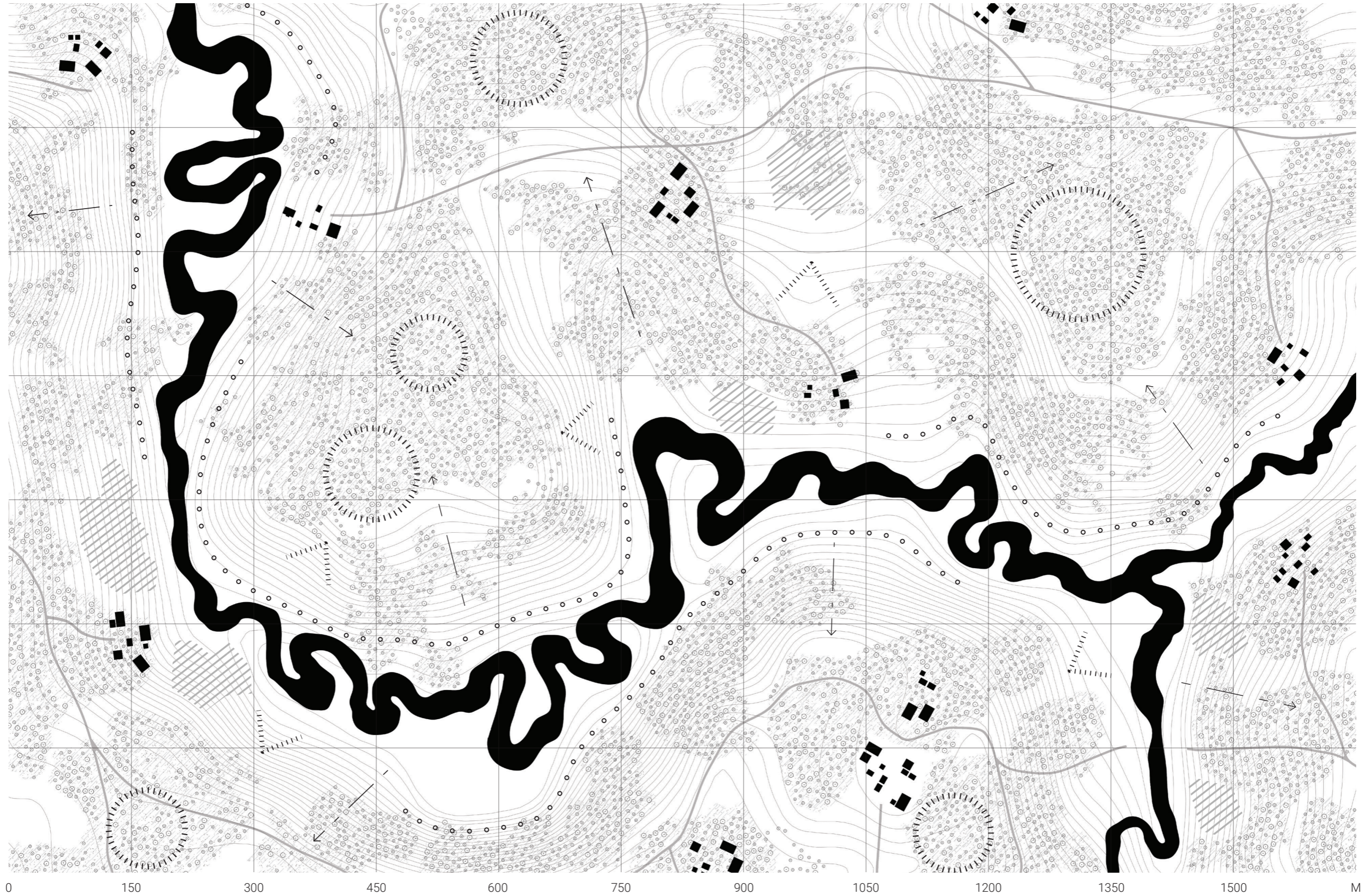


Dymaxion

Story Through Scales - S4

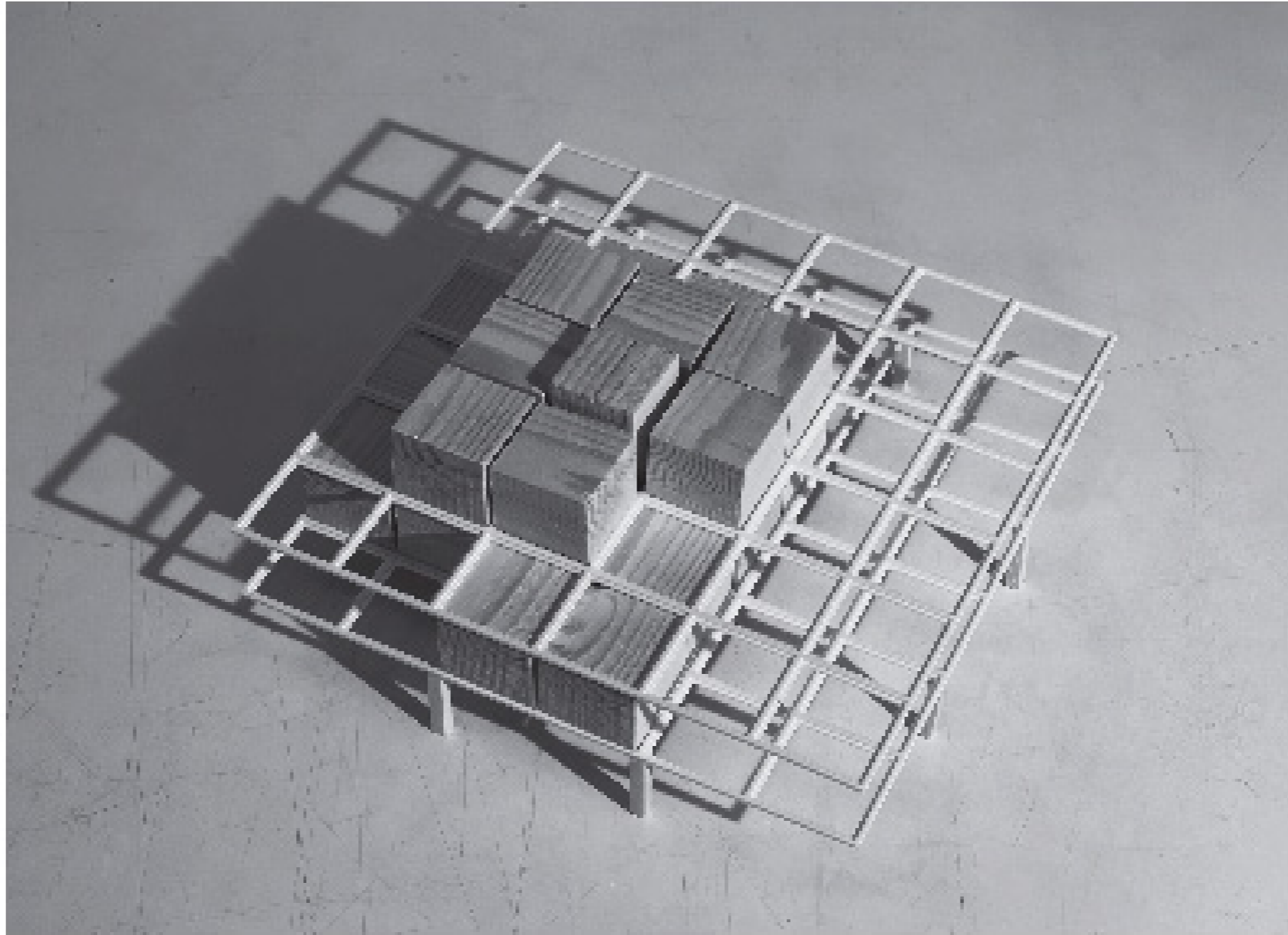


Site Analysis



0 150 300 450 600 750 900 1050 1200 1350 1500 M

Concept Massing Iterations

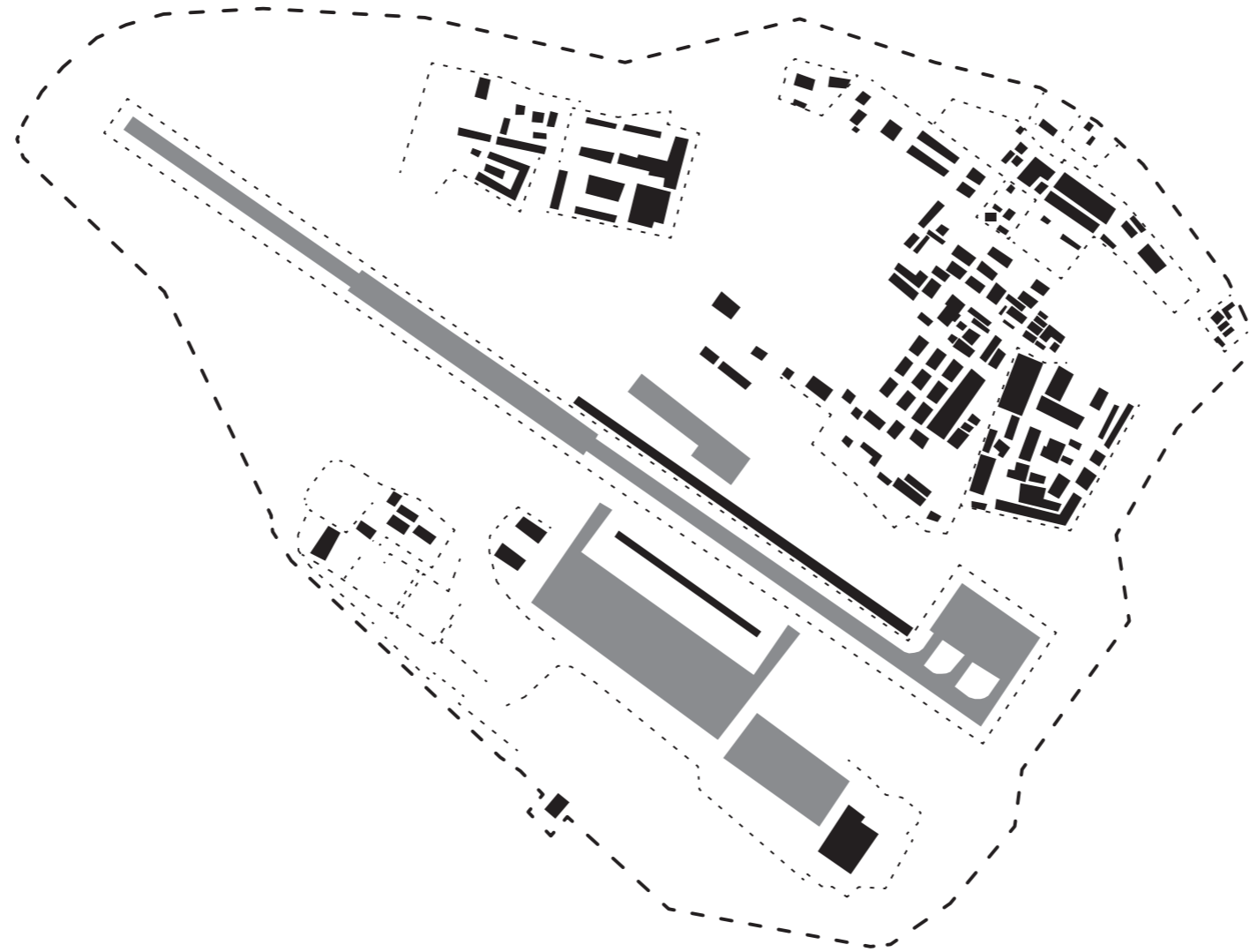


Site Plan

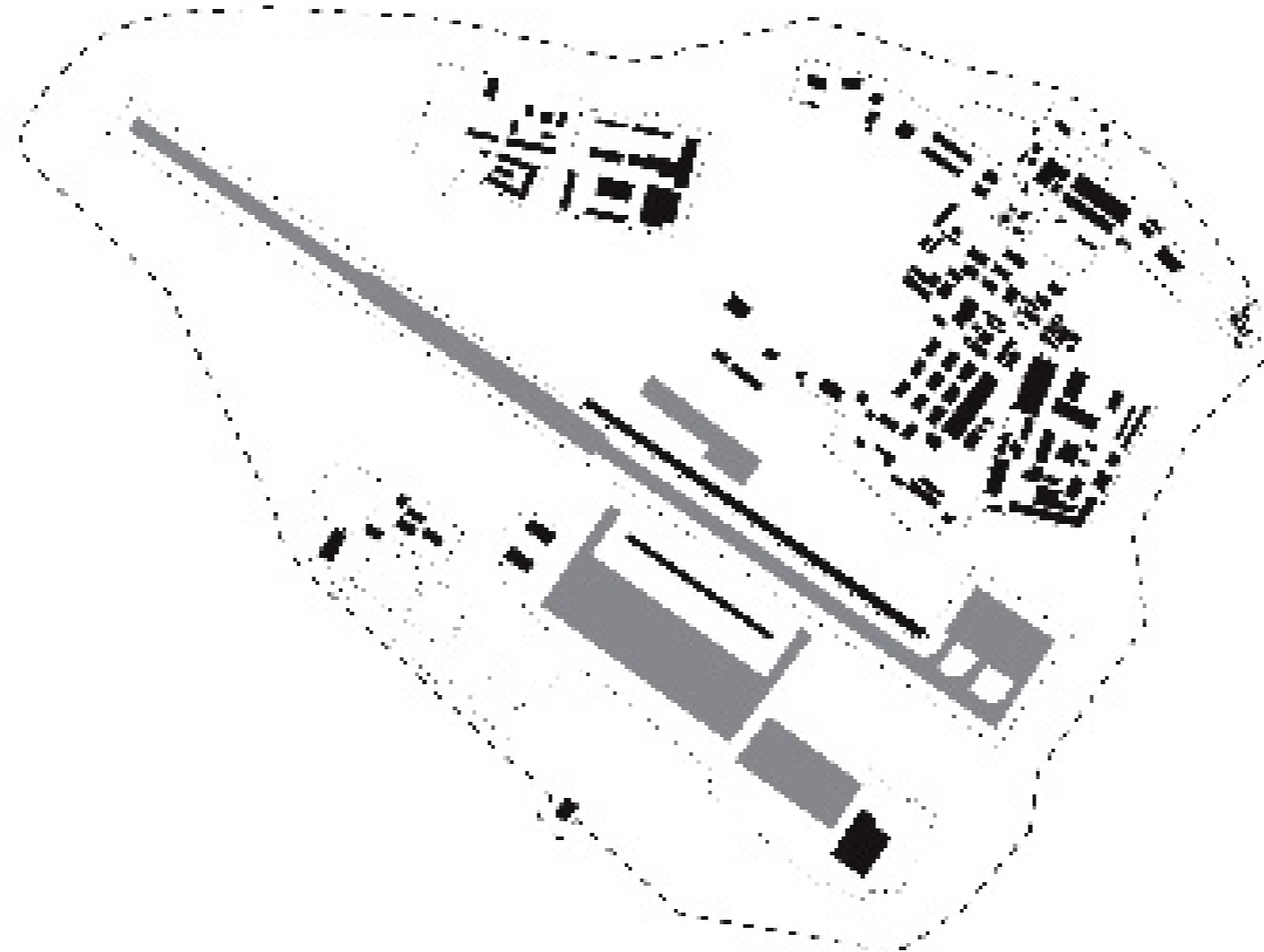


0 150 300 450 600 750 900 1050 1200 1350 1500 M

Real-World Transformations

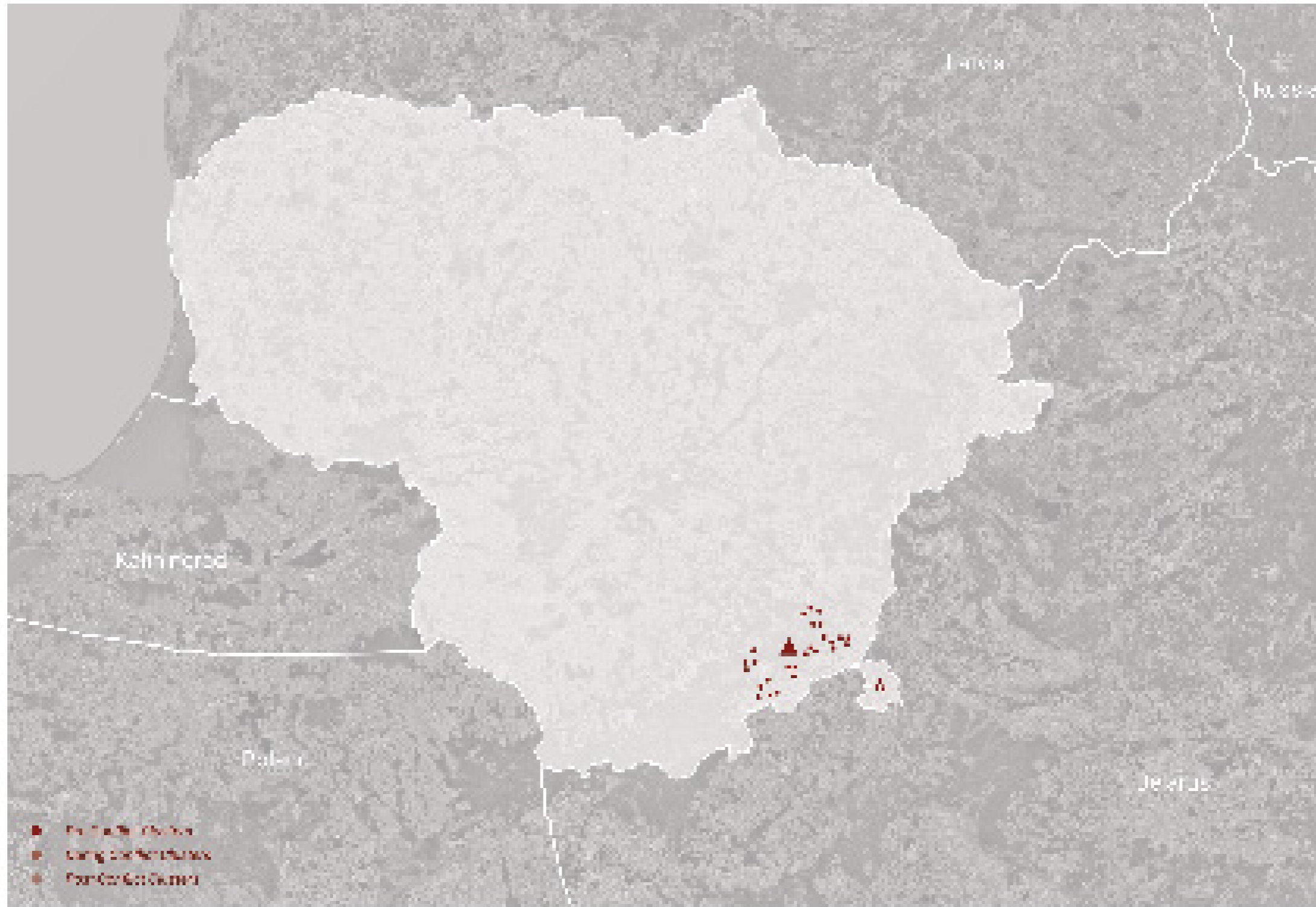


Real-World Transformations

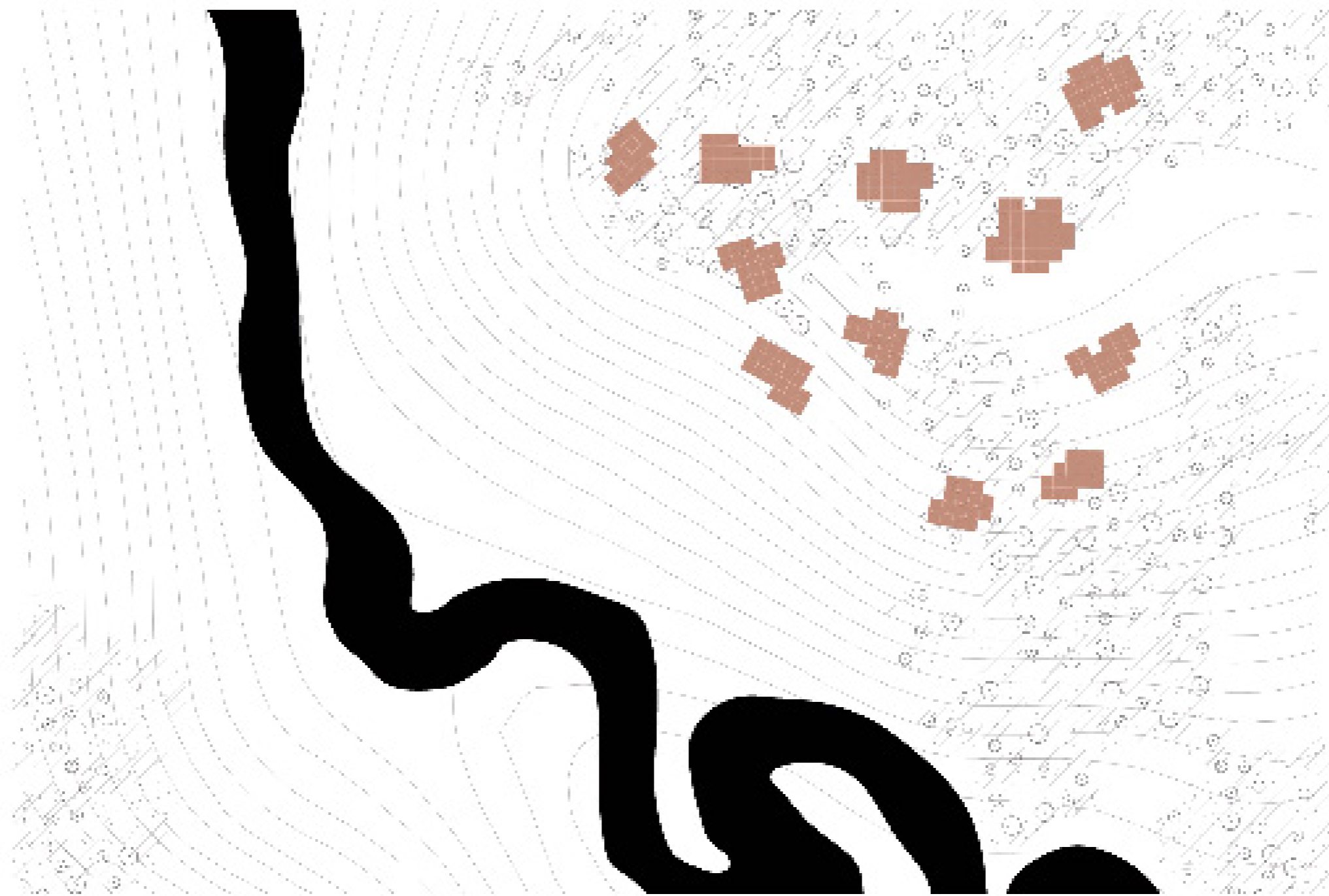


NLW National Base Taifoor (Kamp Holland) 2005

Macro-Scale Movement



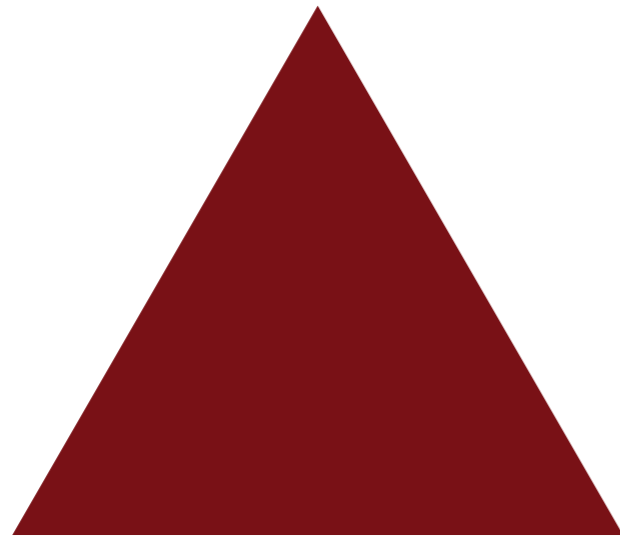
Micro-Scale Scenarios



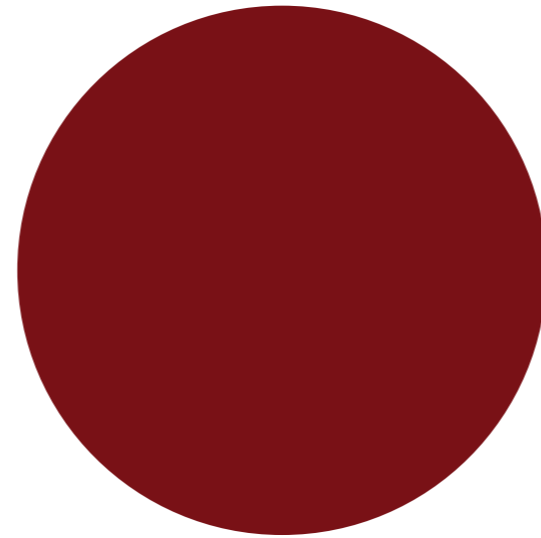
Succession Deployment Order

Arrival - Expansion - Temporalness

Conflict Phases



Pre-Conflict

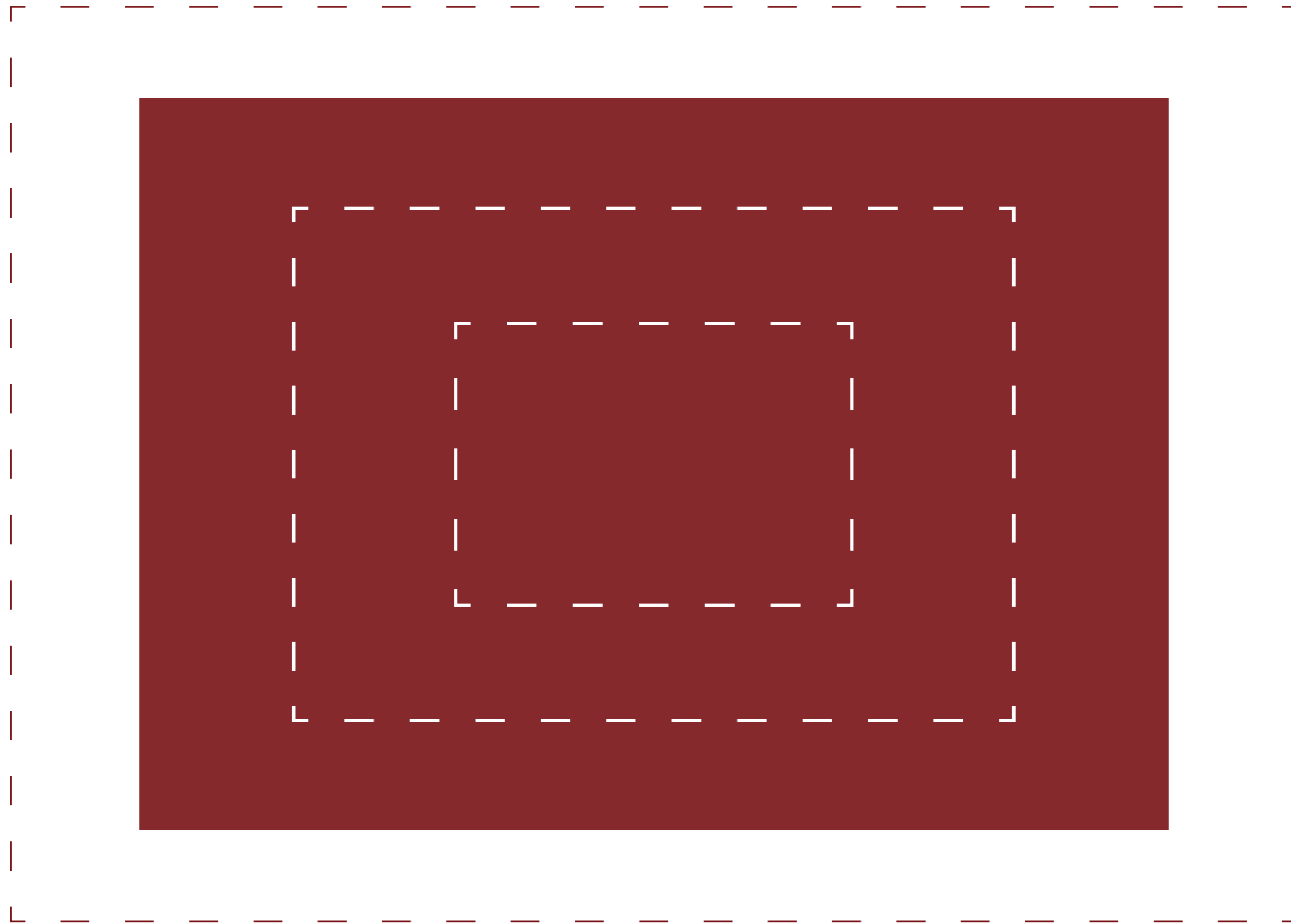


During Conflict

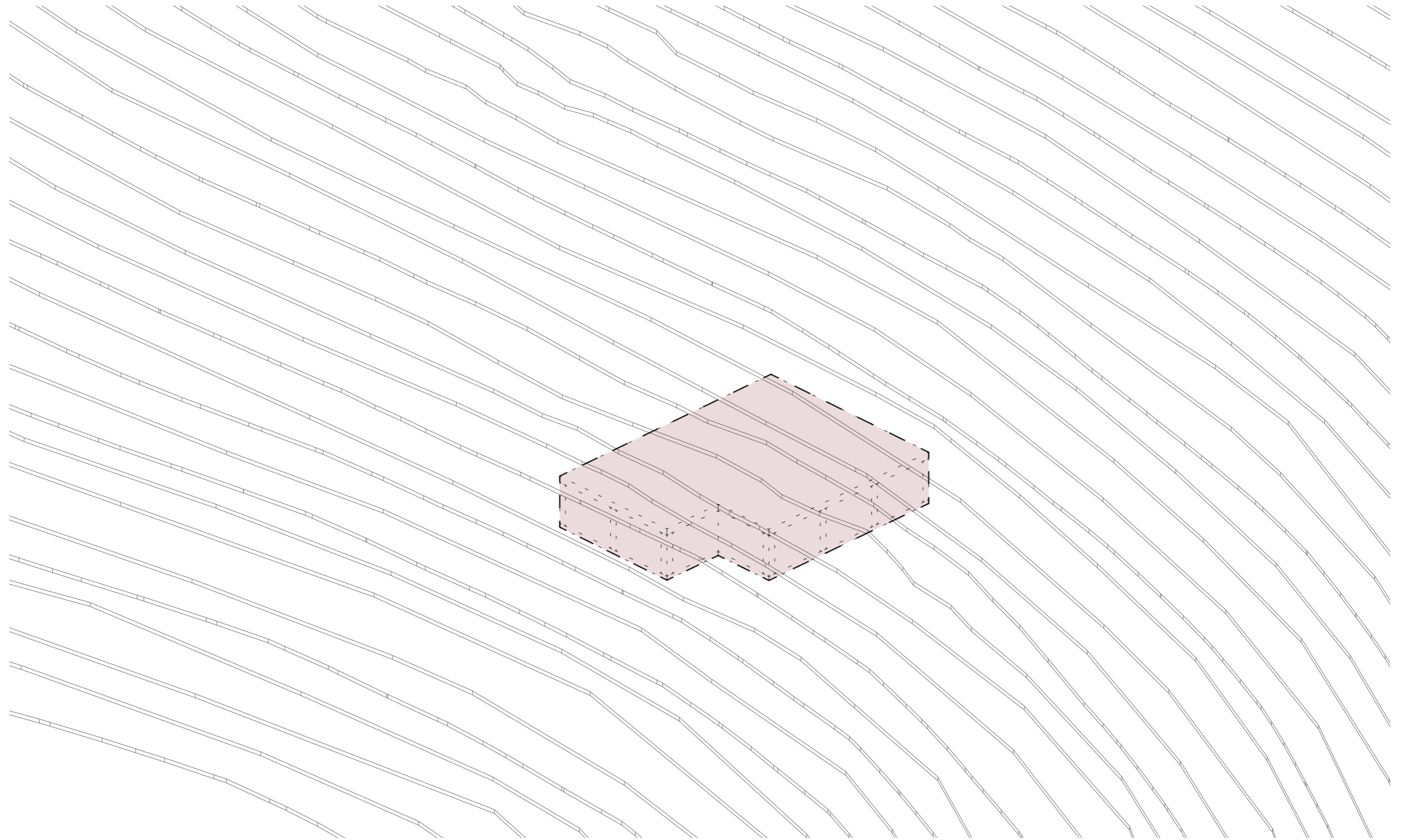


Post-Conflict

Story Through Scales - S3



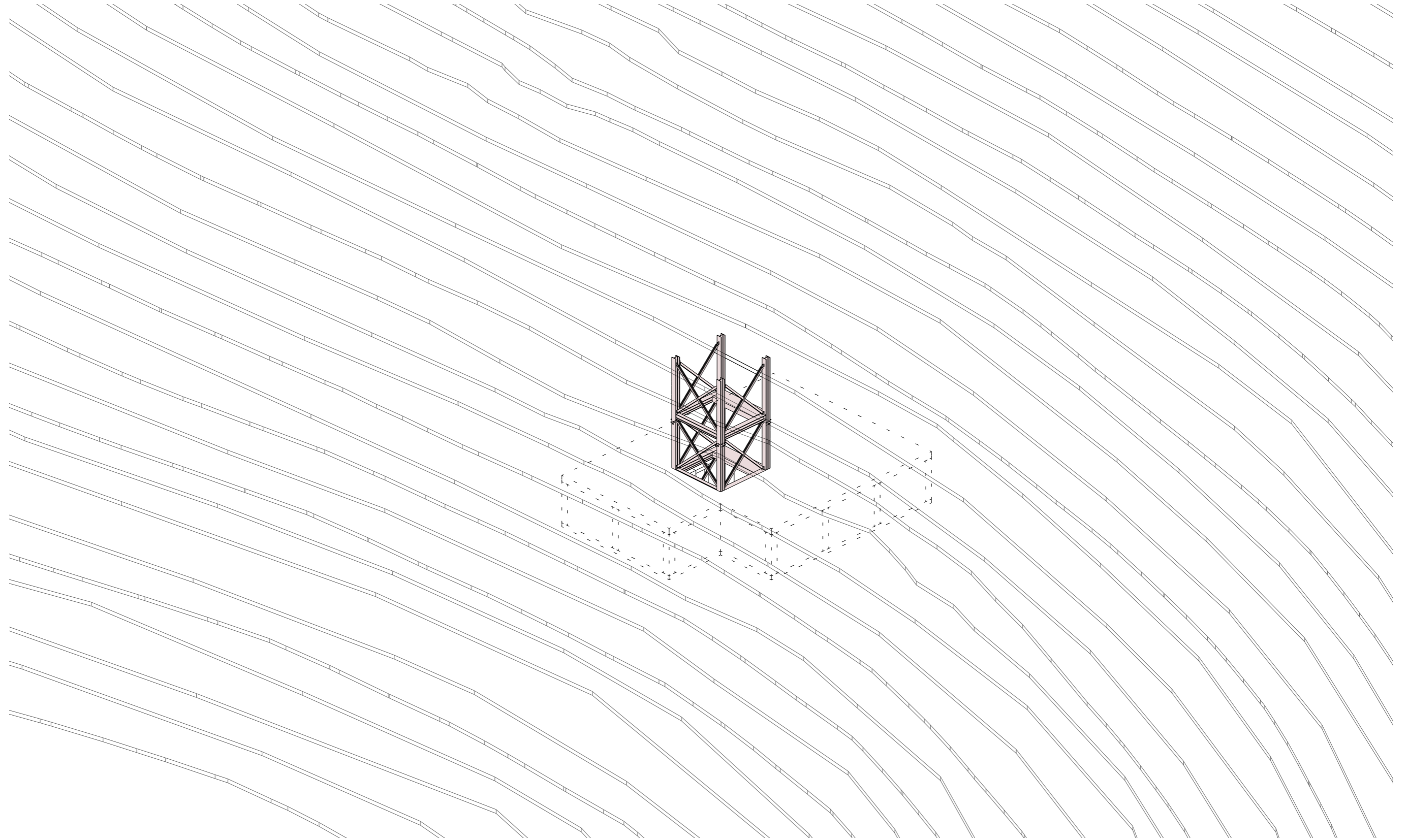
Phased Framework



Place (_Fixed)

Scattered Basements

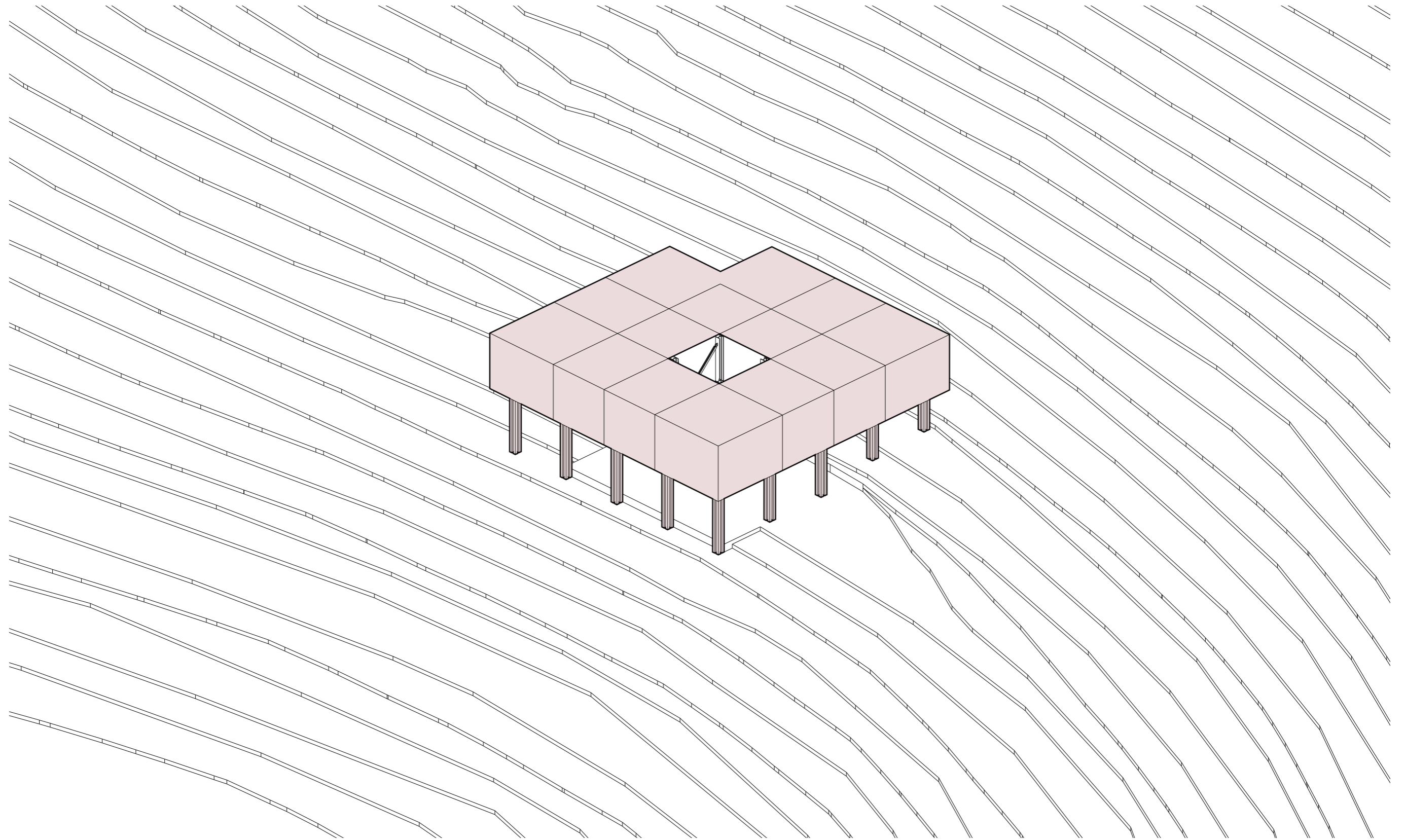
Phased Framework



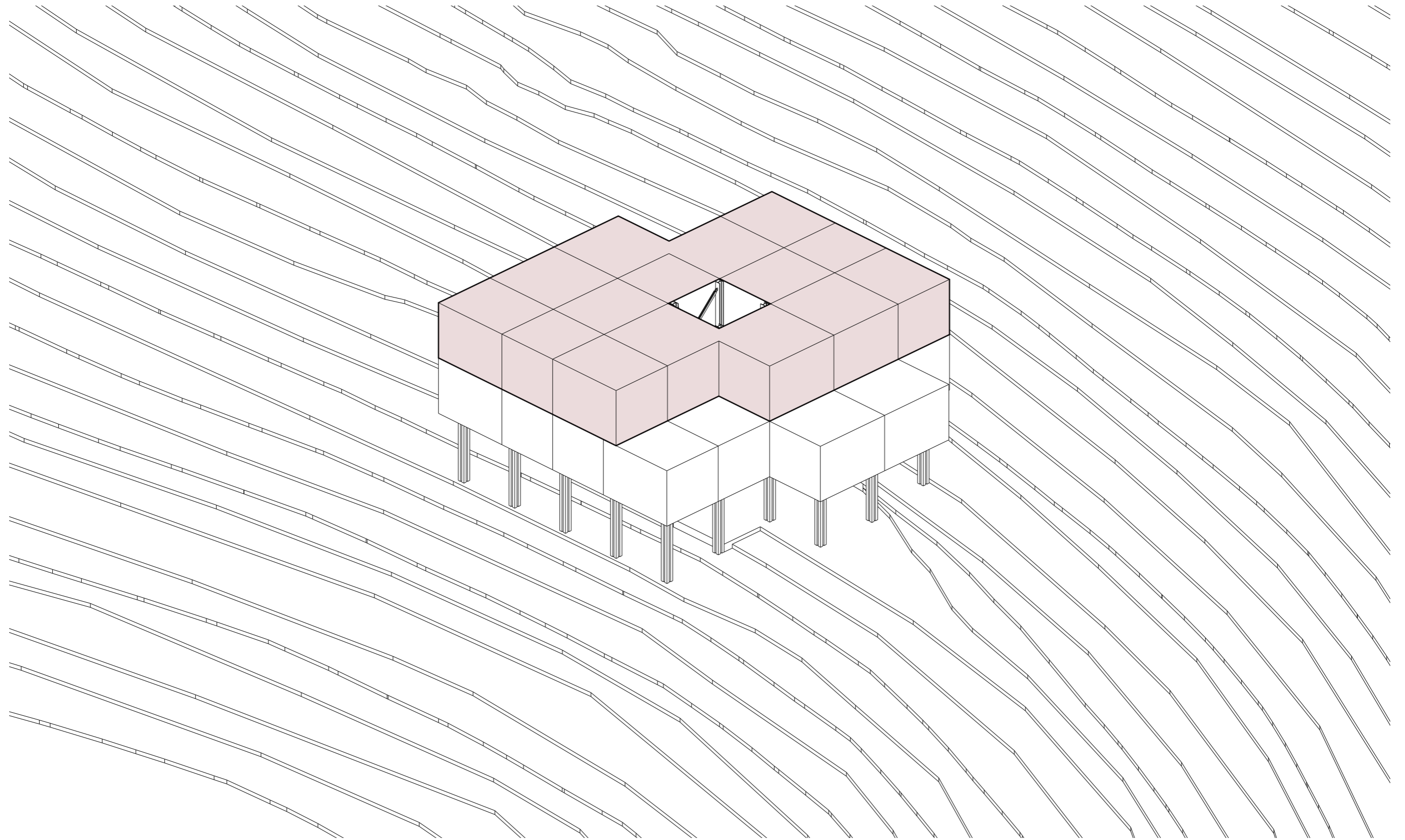
Activate (_Fixed)

Central Core for Next Floors

Phased Framework



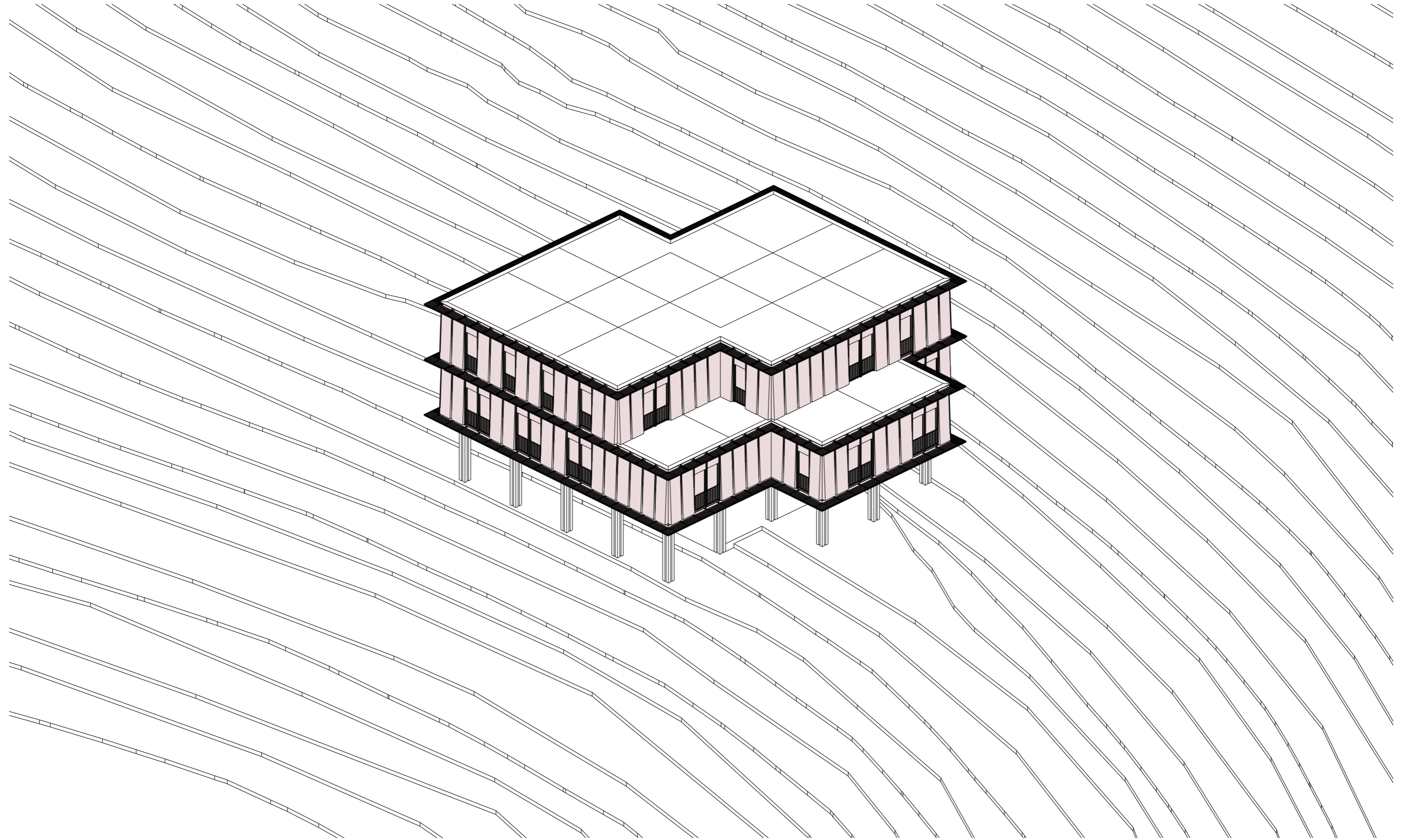
Phased Framework



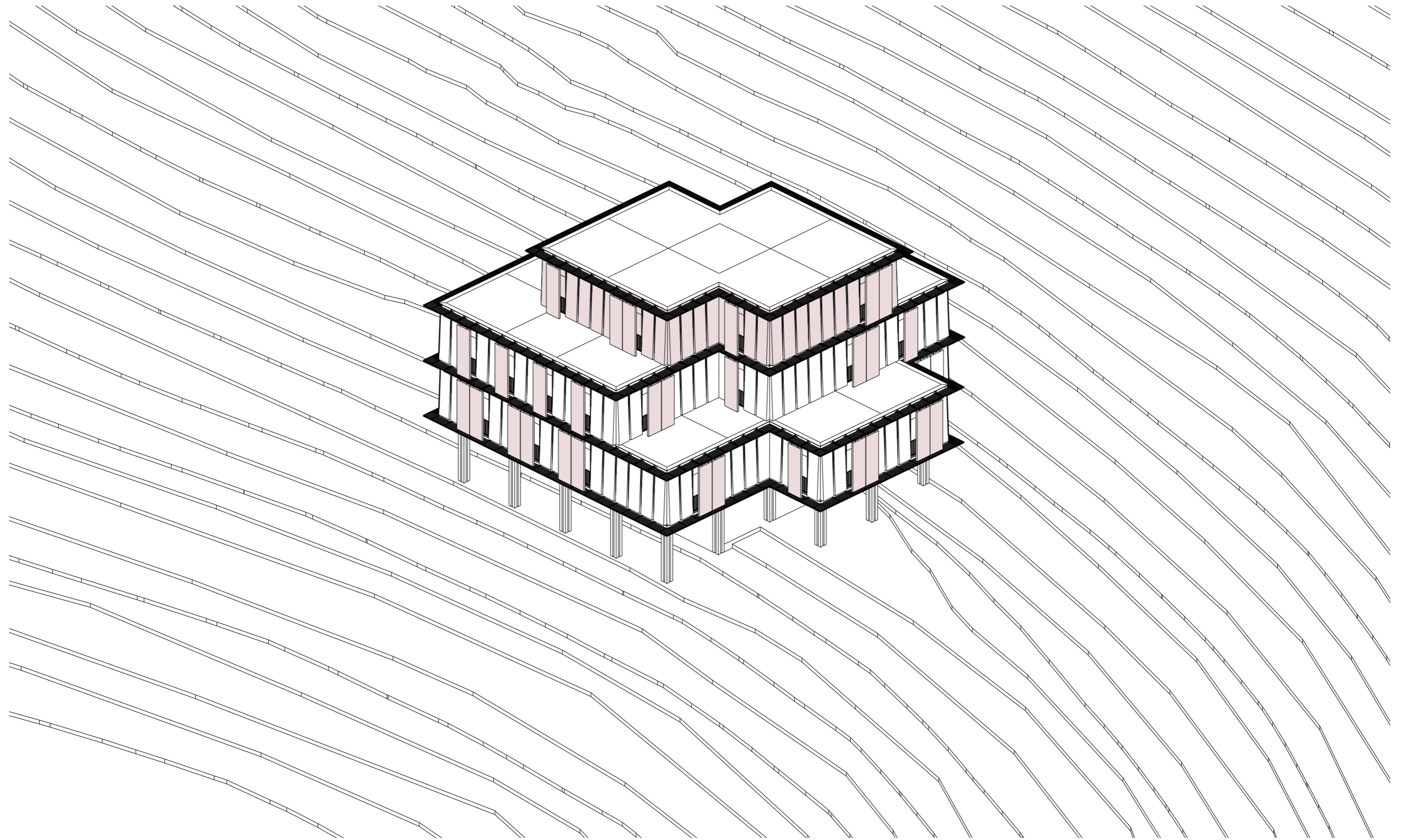
Expand (_Flexible)

More Units Arriving

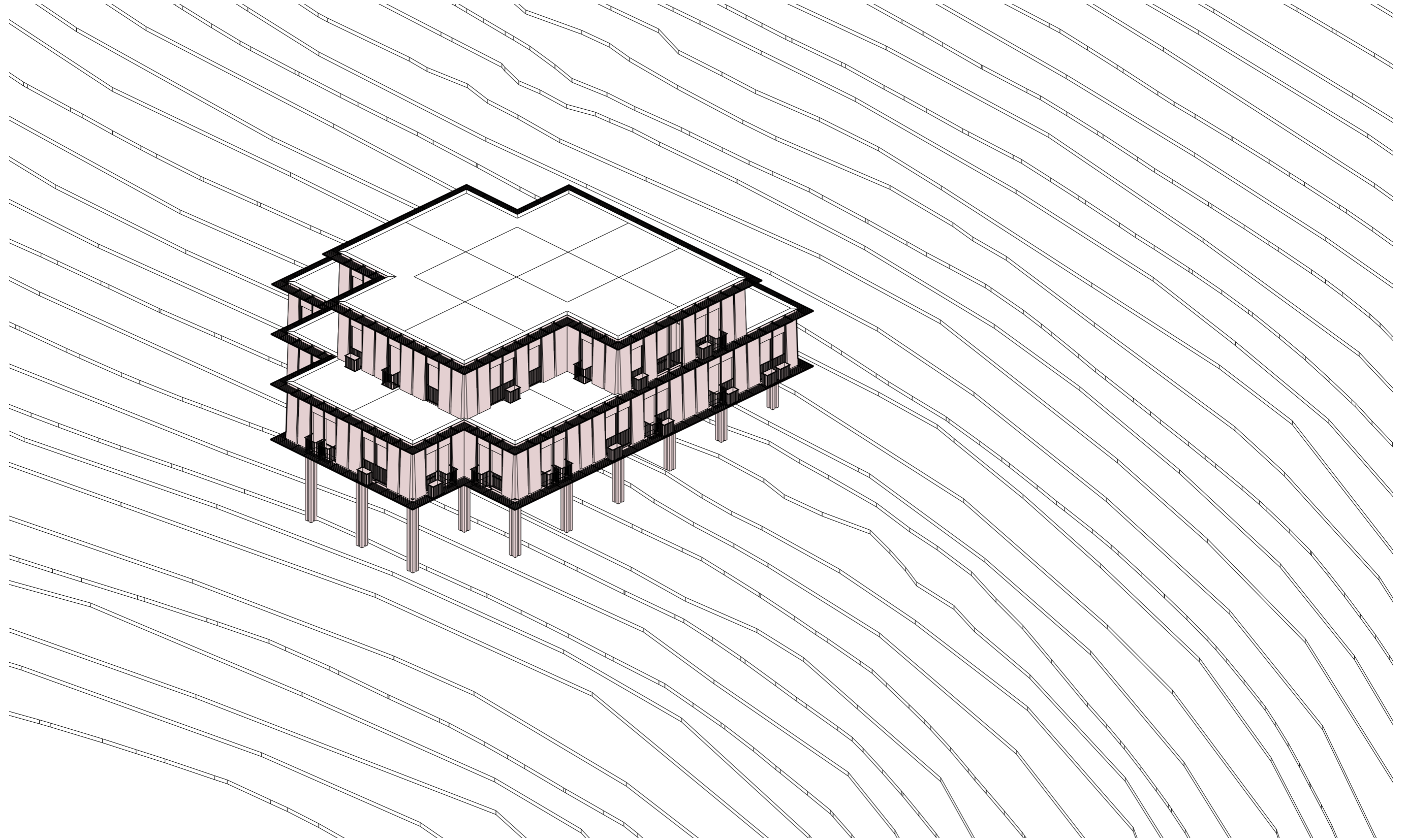
Phased Framework



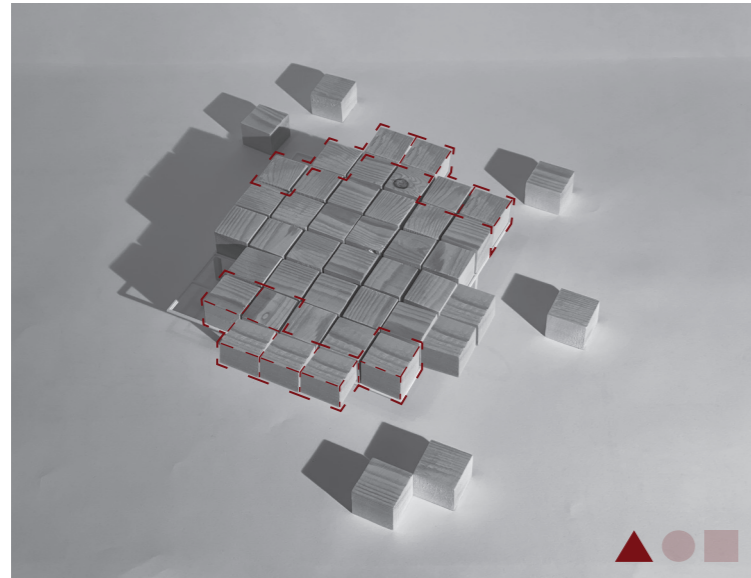
Phased Framework



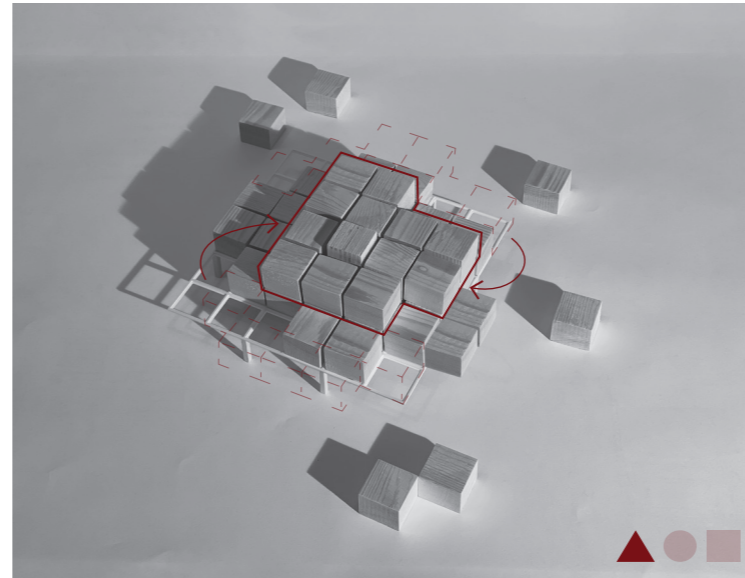
Phased Framework



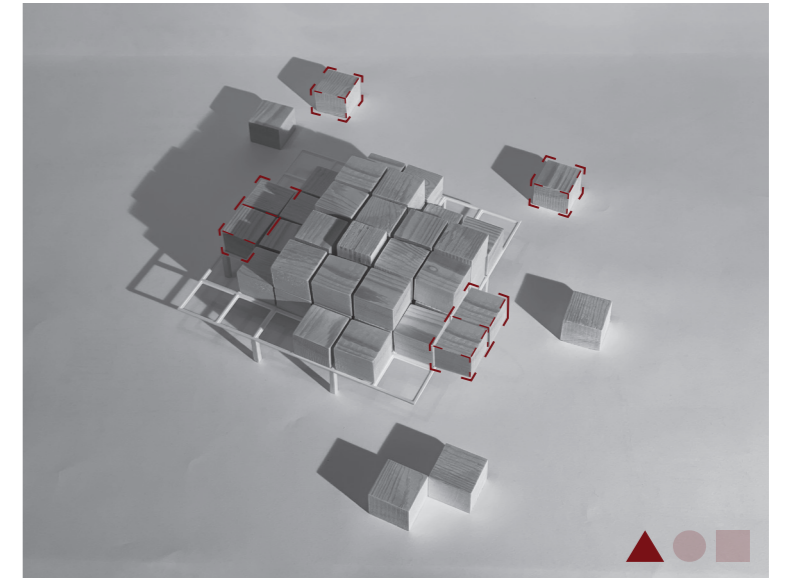
Cluster Sequencing



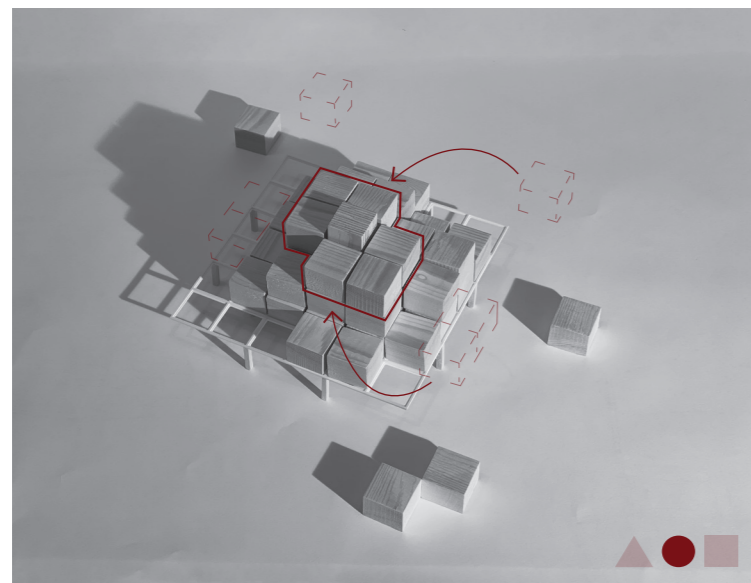
Pre-Conflict Transition



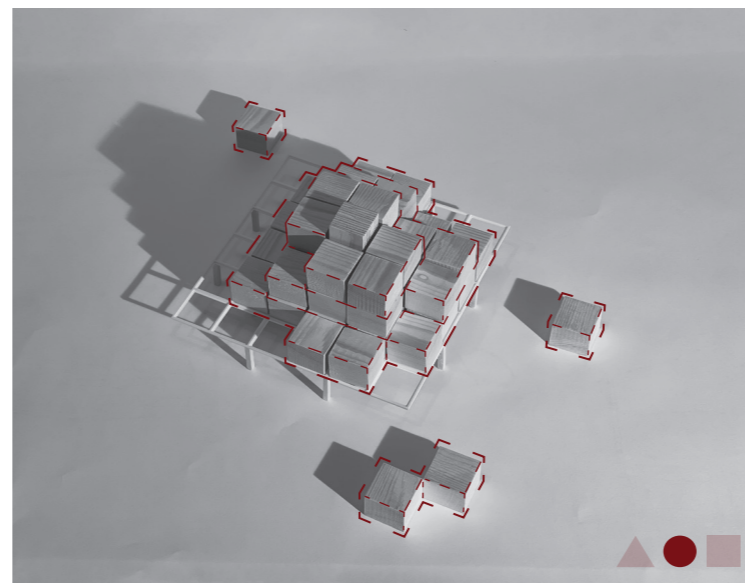
Pre-Conflict Module Configuration 2



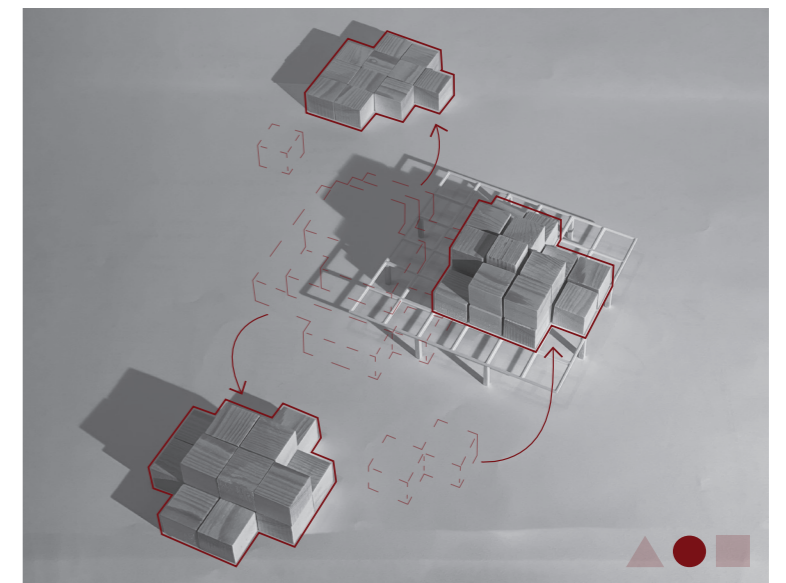
Pre-Conflict Transition to During Conflict



During Conflict Module Configuration 1

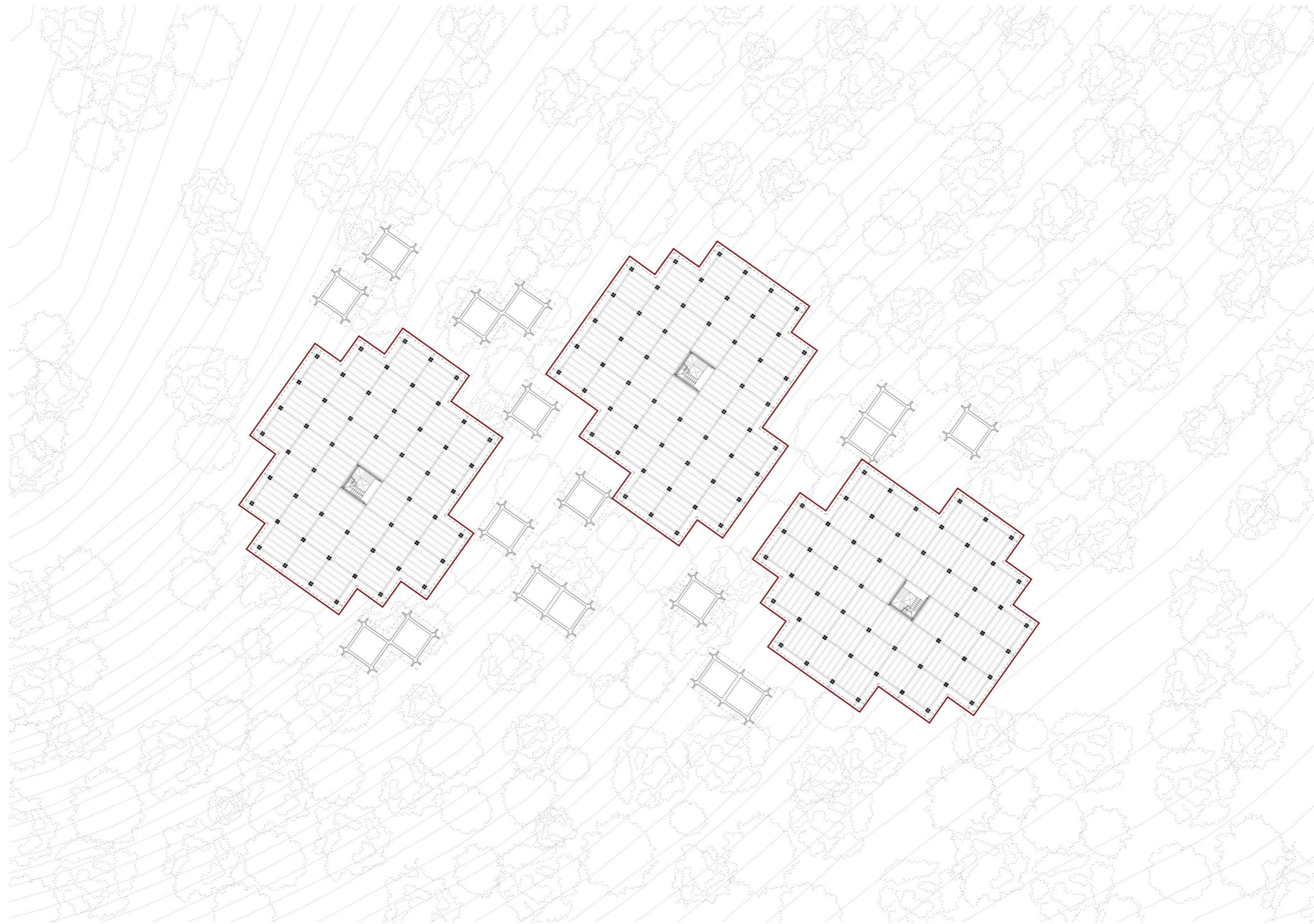


During Conflict Transition

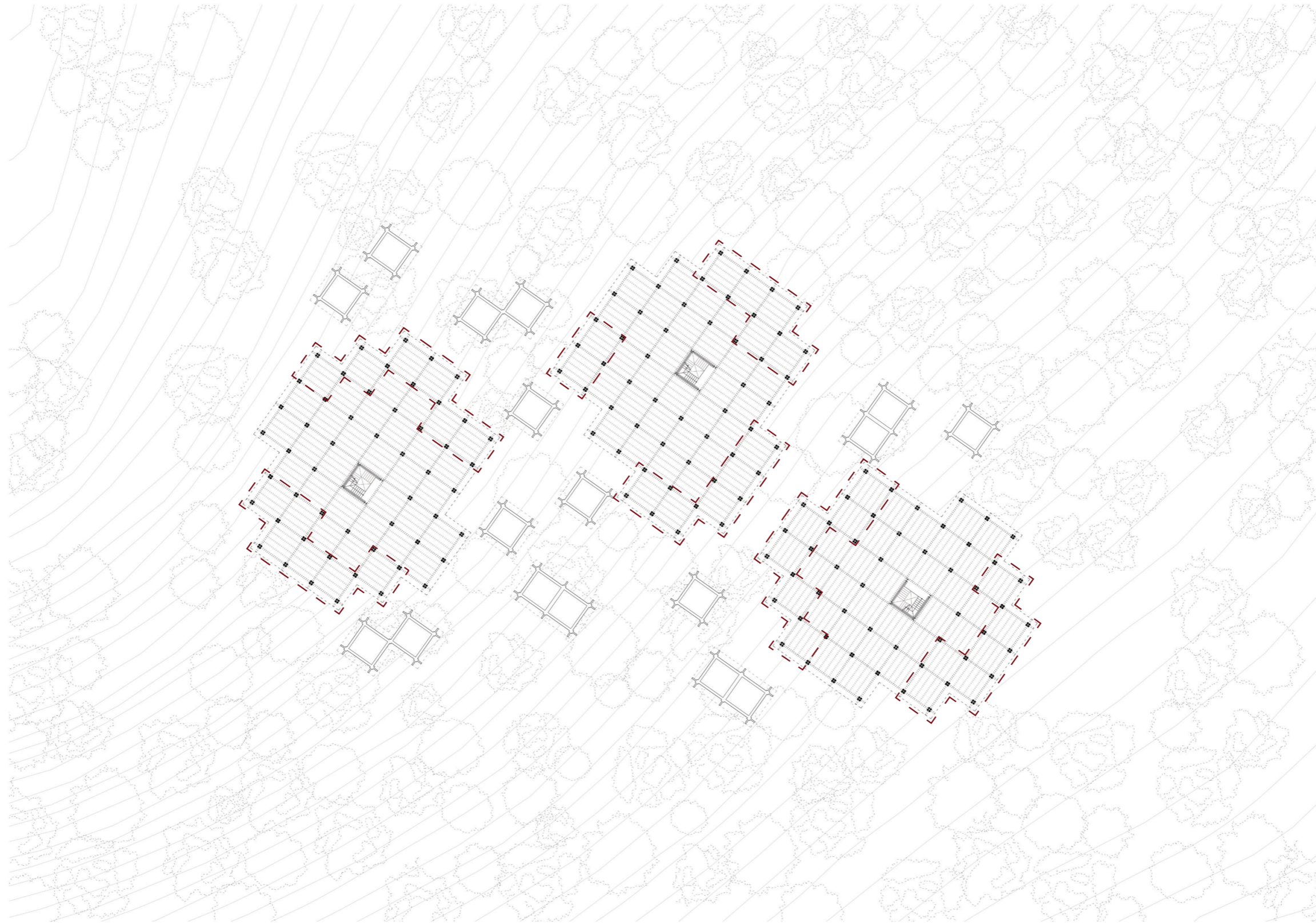


During Conflict Module Configuration 2

Cluster Sequencing



Cluster Sequencing

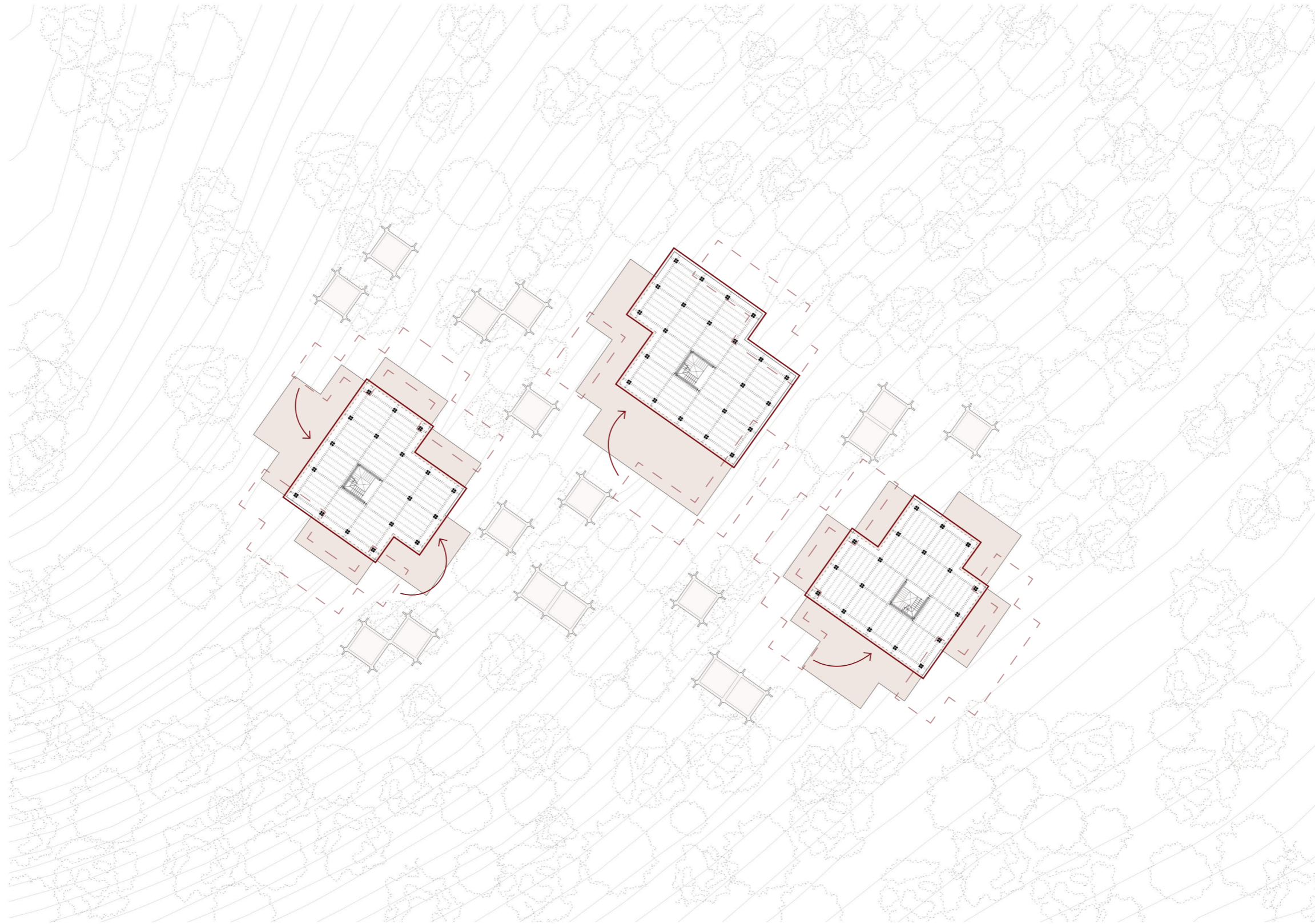


Pre-Conflict Transition

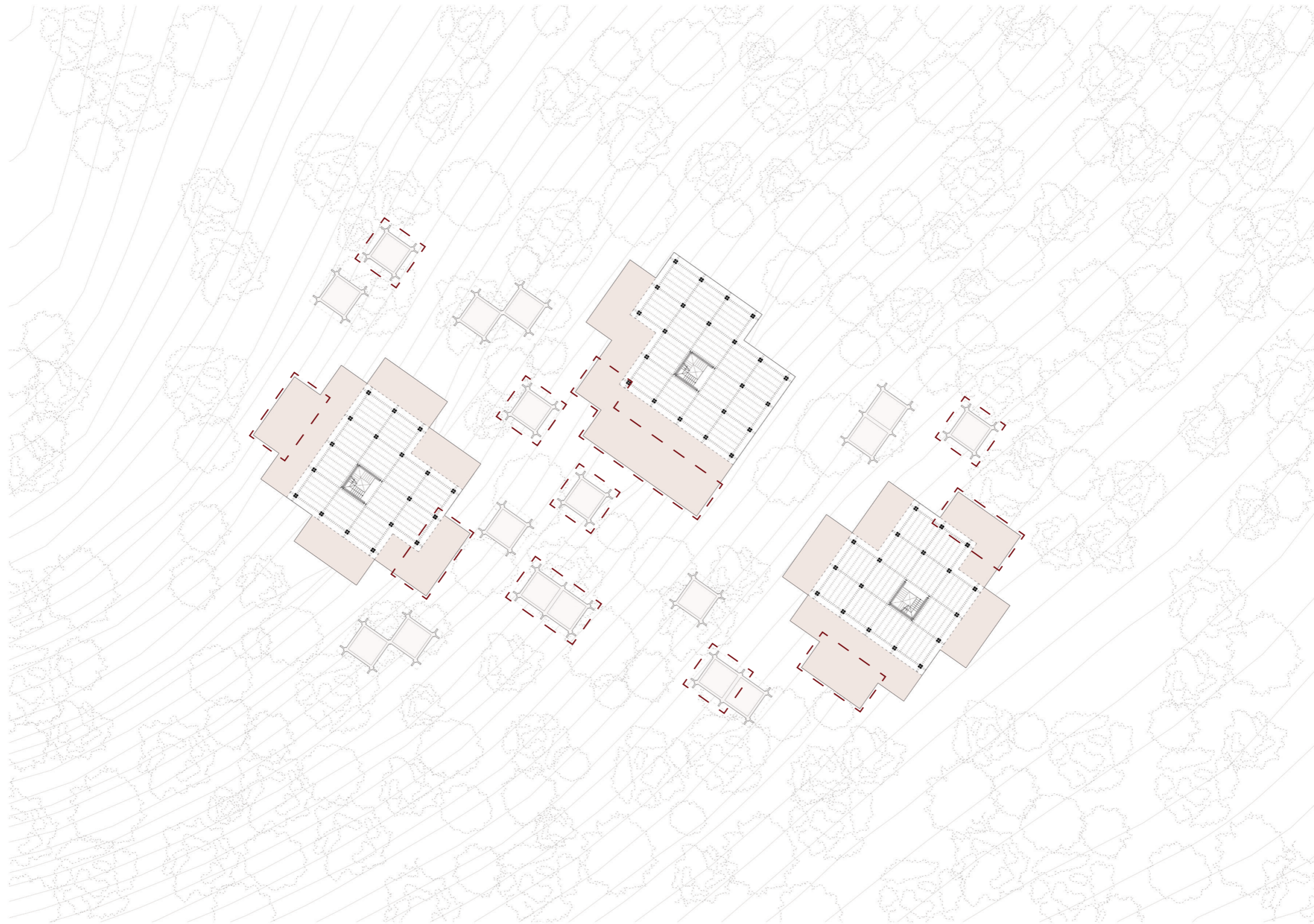
Selected modules making up current building, utilised to make new form.

0 12.5m 1:500

Cluster Sequencing



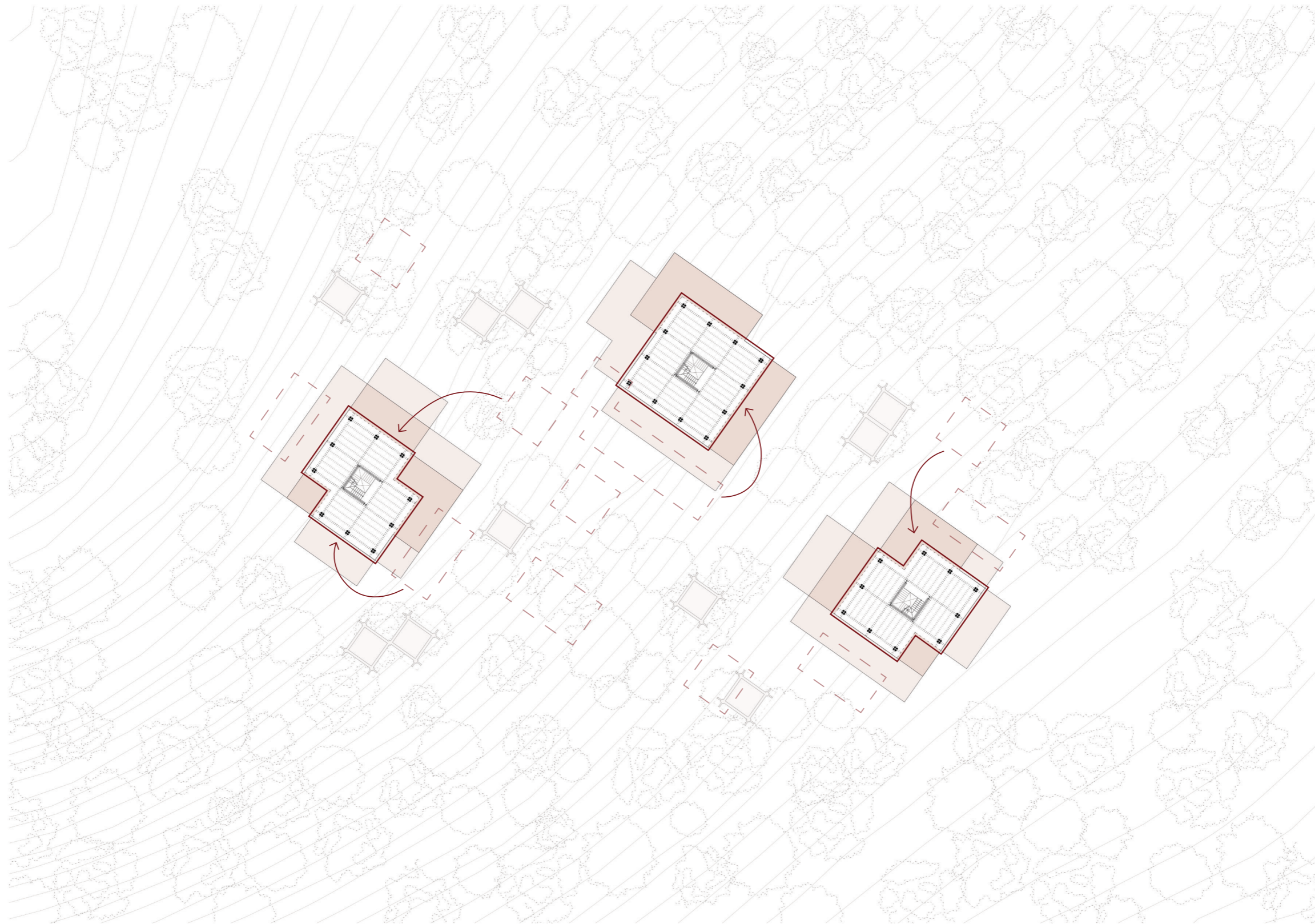
Cluster Sequencing



Pre-Conflict Transition to During Conflict

Lower modules are selected to be placed higher up.

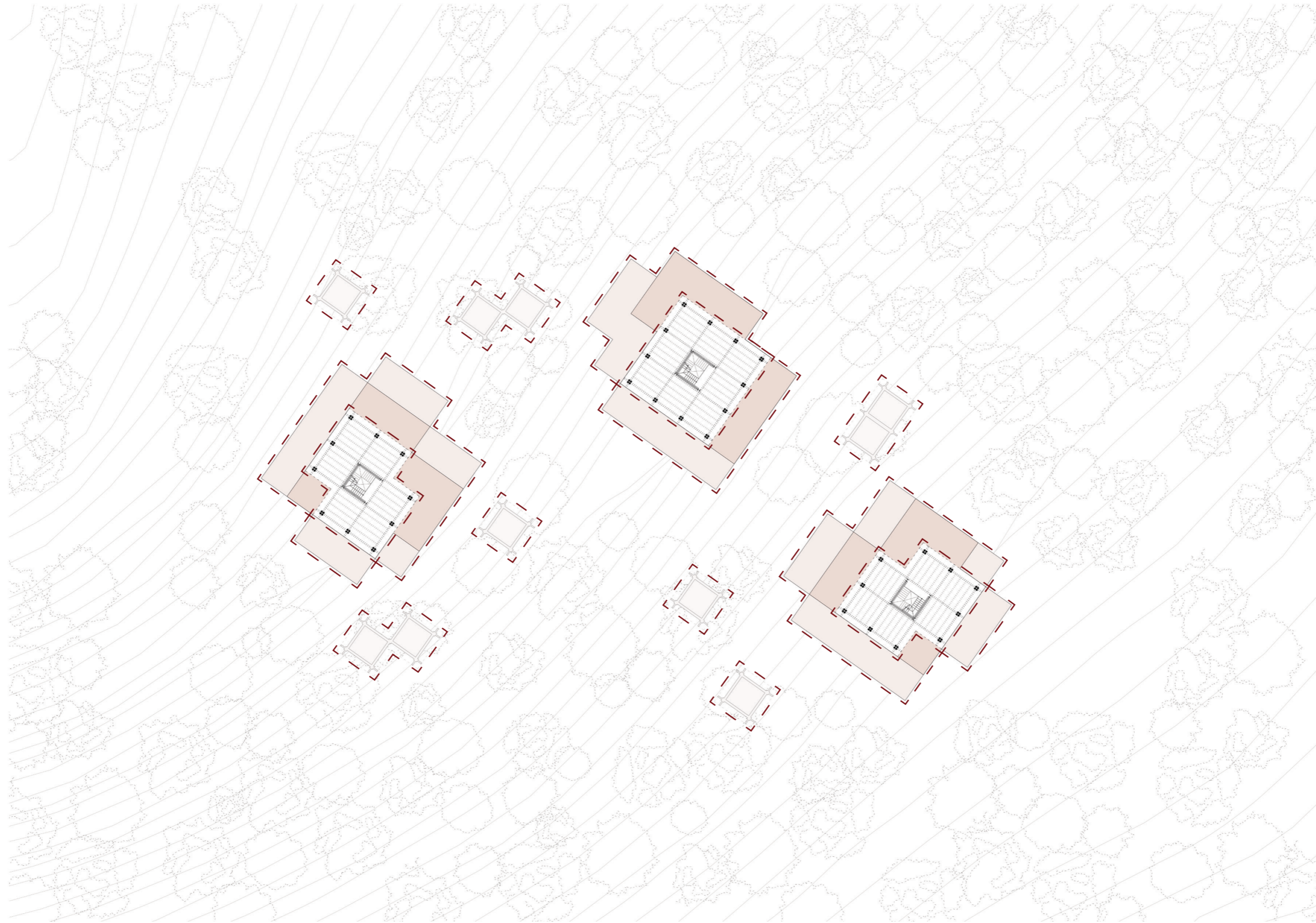
Cluster Sequencing



During Conflict Configuration 1

Setting up a third and final floor adds a protective layer on the structure.

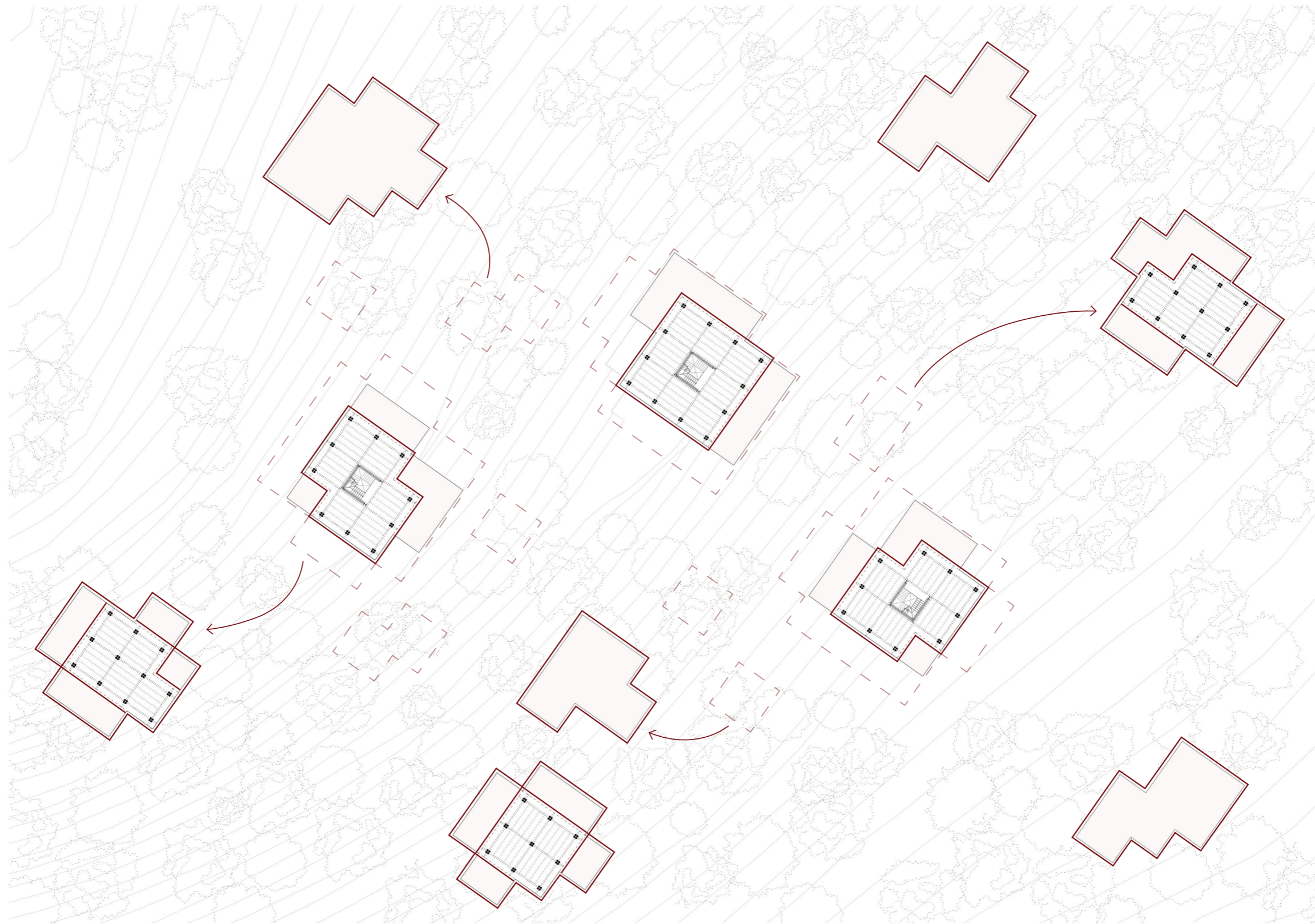
Cluster Sequencing



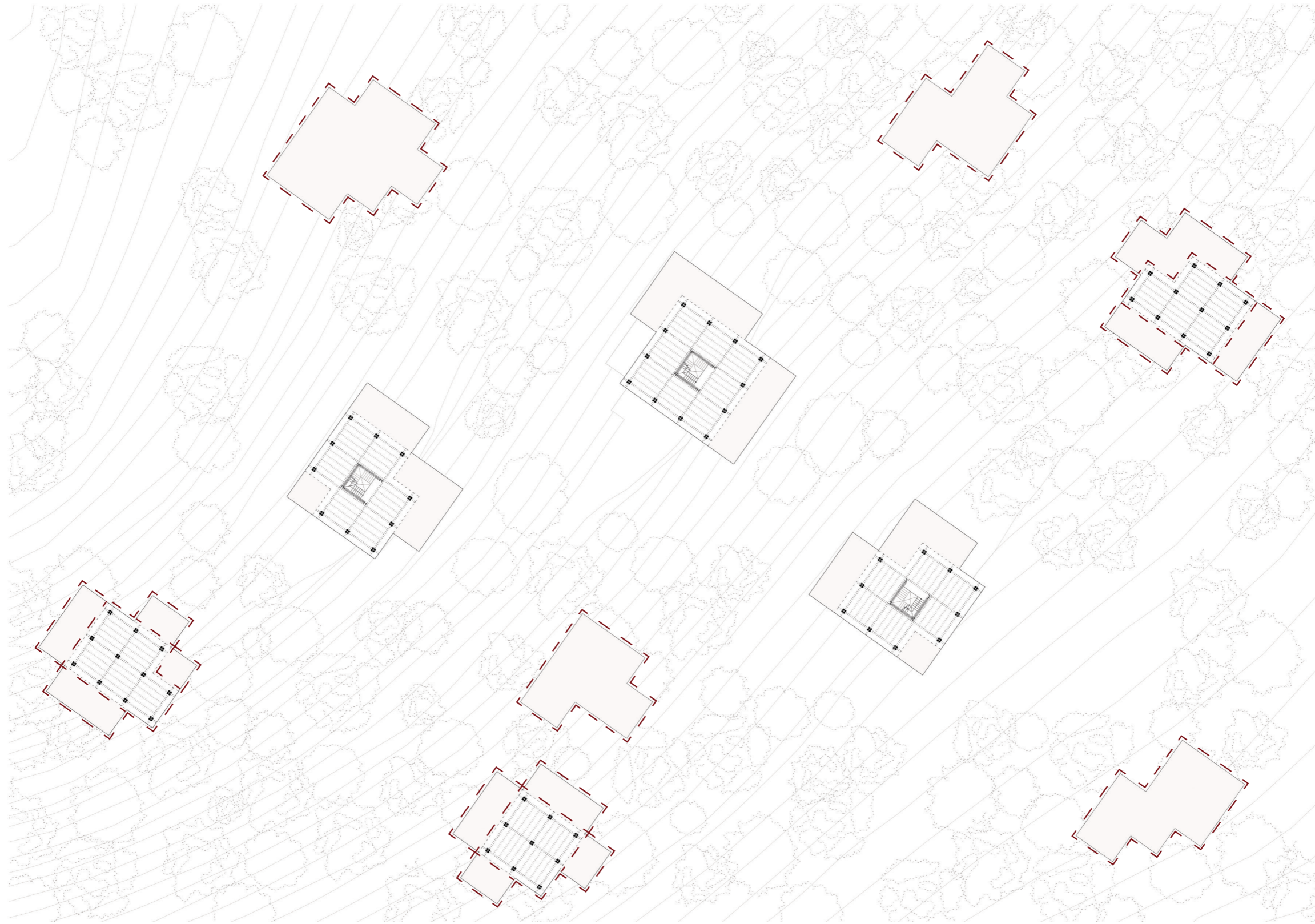
During Conflict Transition

Dismantling the entire structure in order to disperse functions.

Cluster Sequencing



Cluster Sequencing



During Conflict Transition to Post-Conflict

Final transition to consolidate by selecting dispersed modules.

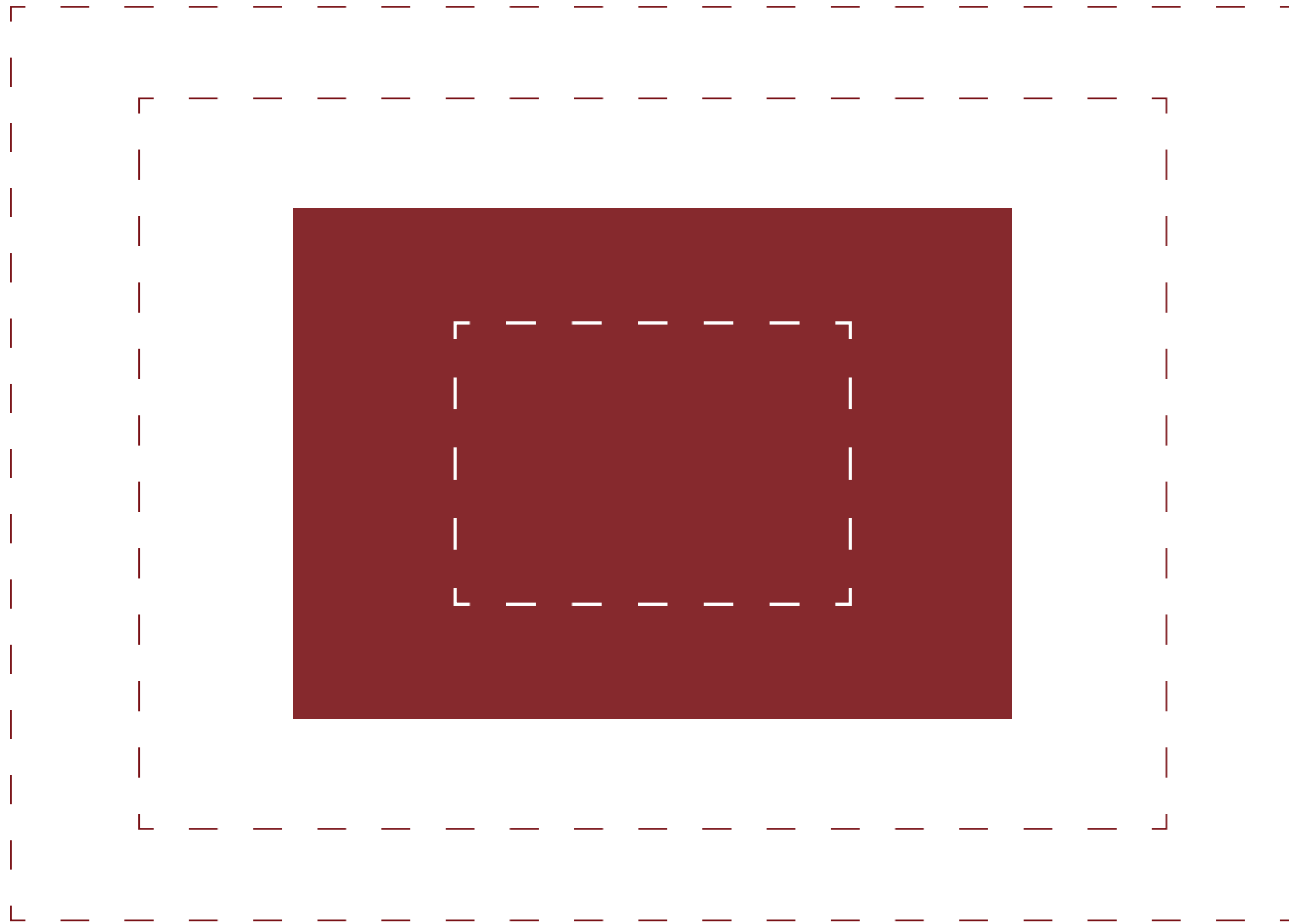
Cluster Sequencing



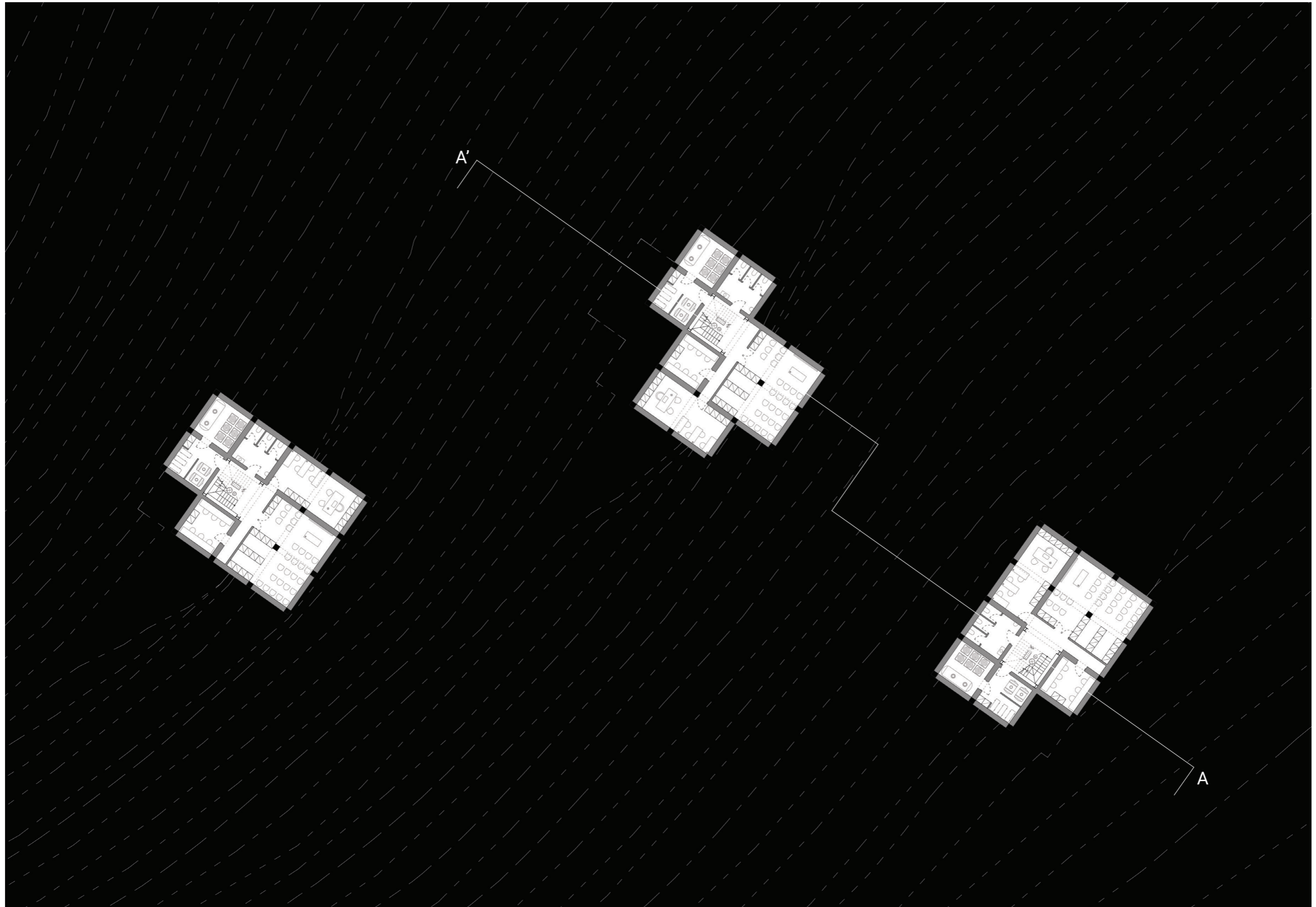
Post-Conflict Configuration

Original 45 modules are present strengthening relationship with outdoors.

Story Through Scales - S2



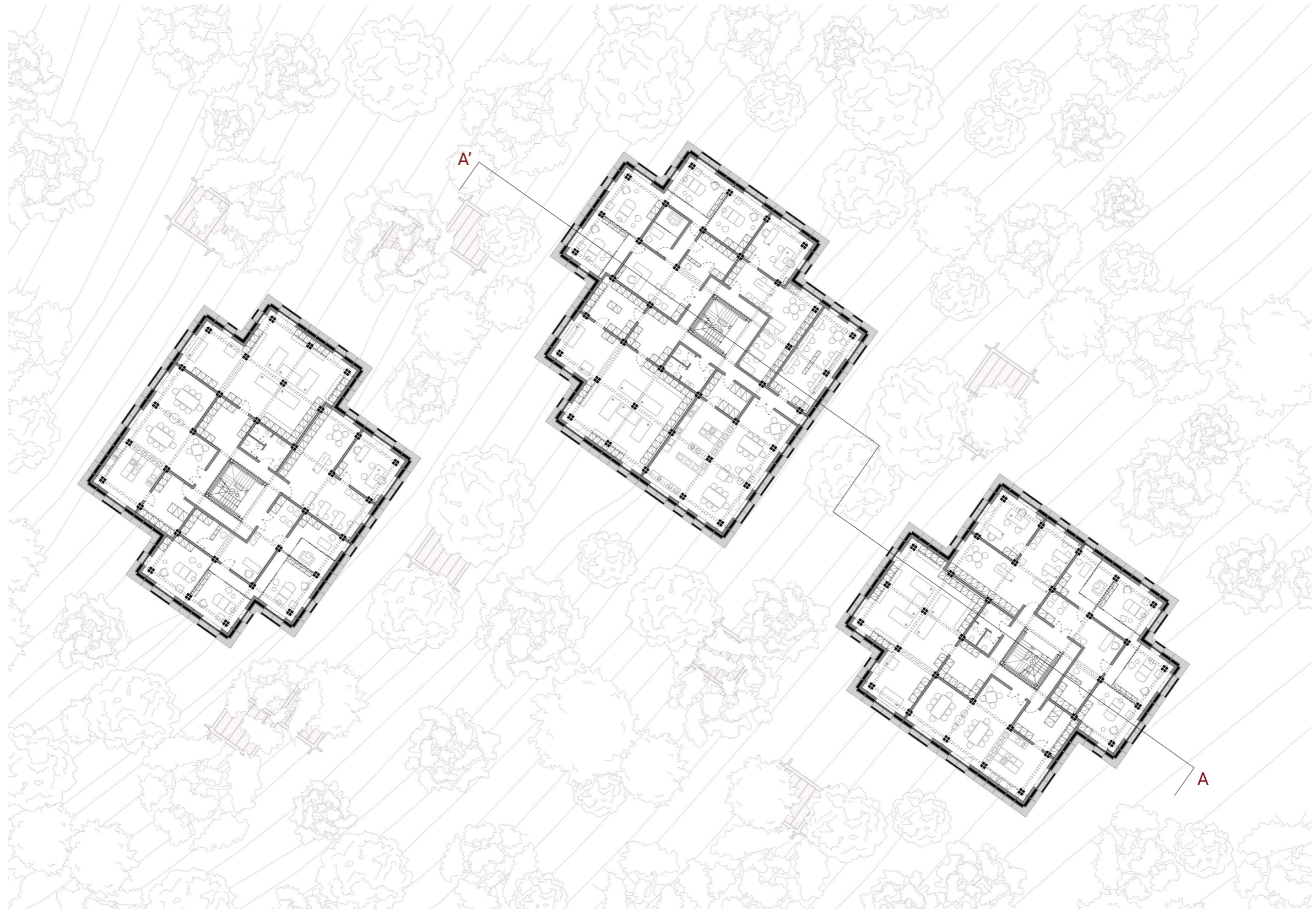
During Conflict Phase Cluster



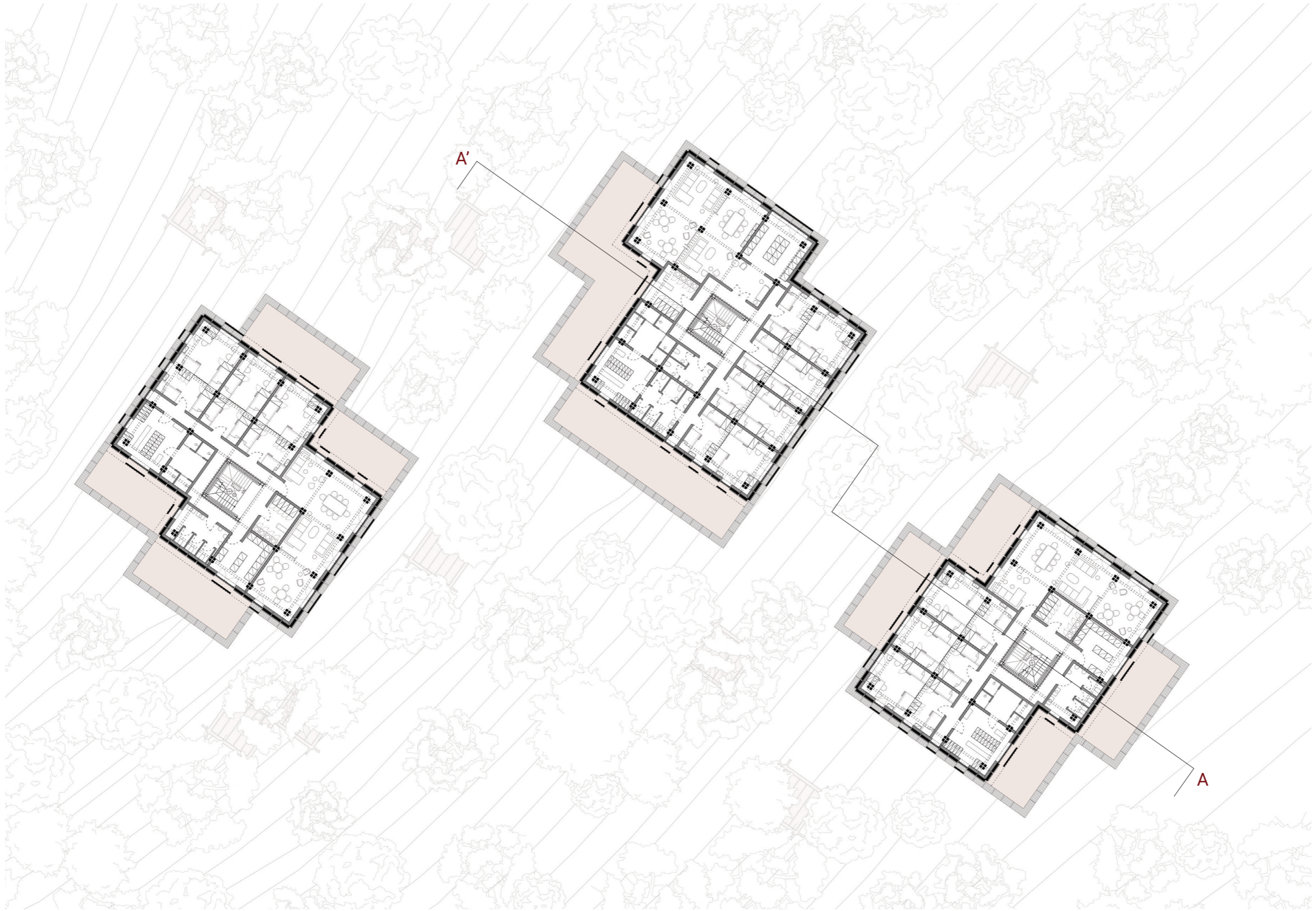
During Conflict Phase Cluster



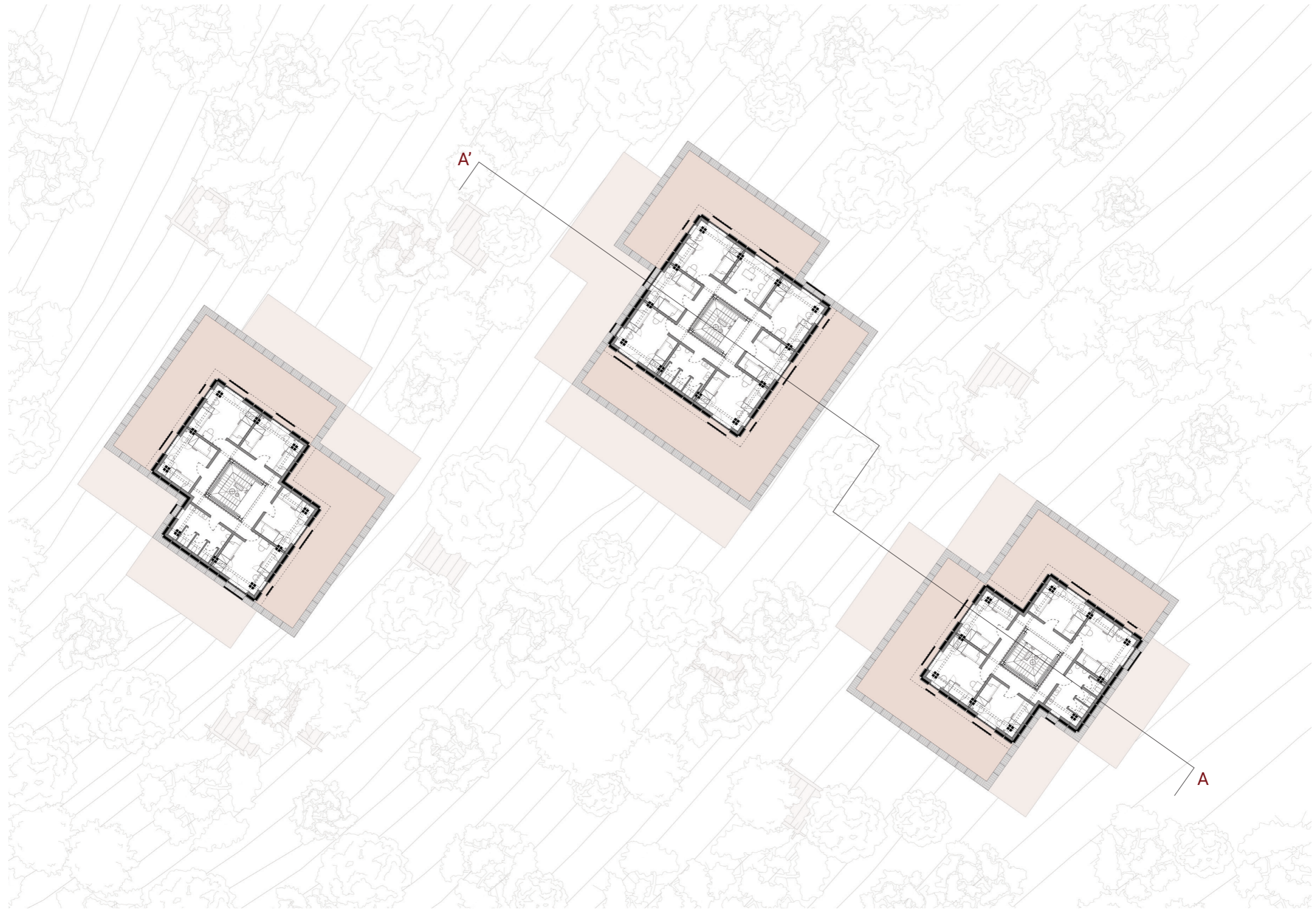
During Conflict Phase Cluster



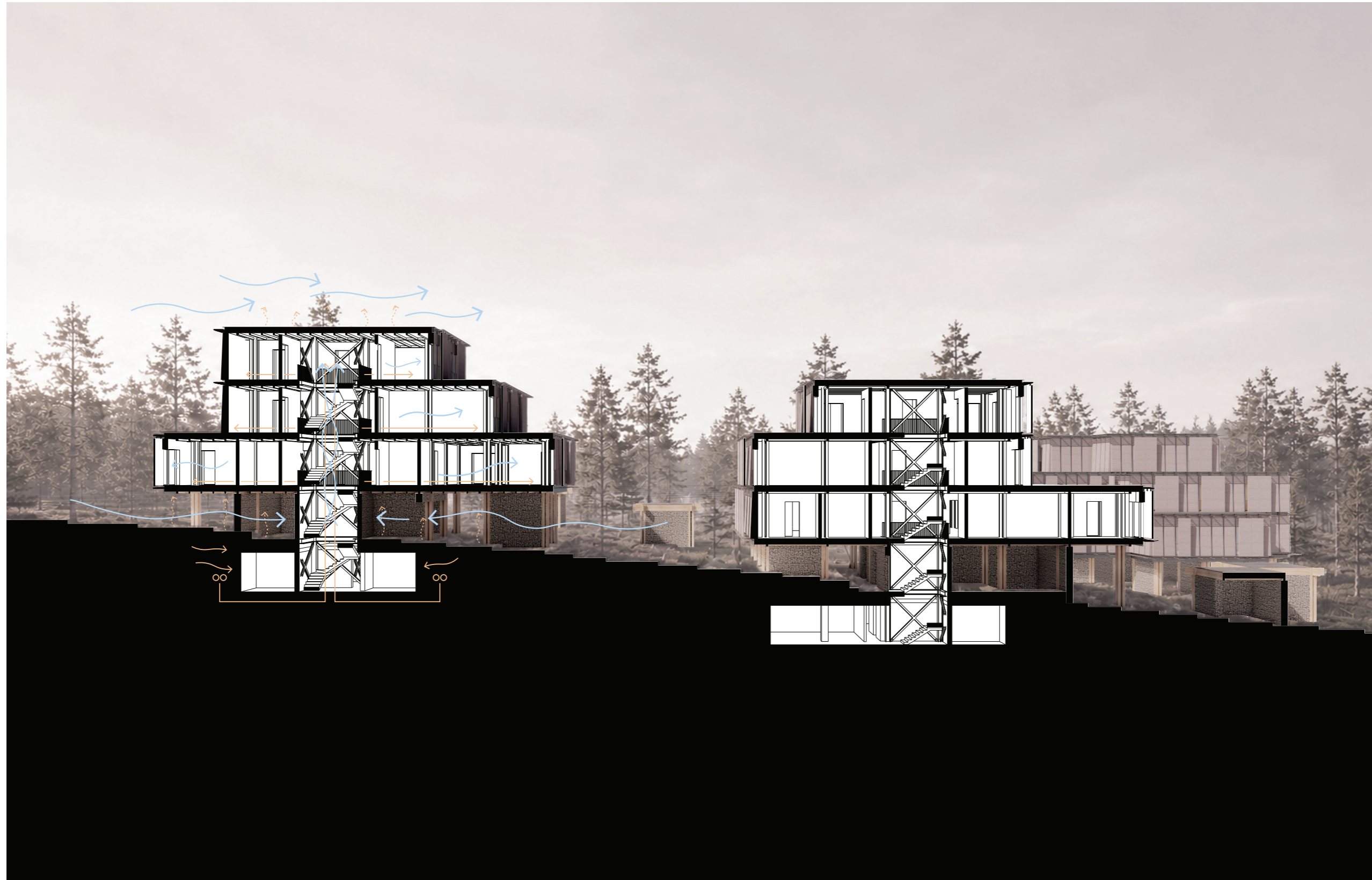
During Conflict Phase Cluster



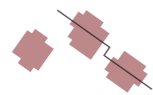
During Conflict Phase Cluster



During Conflict Phase Section

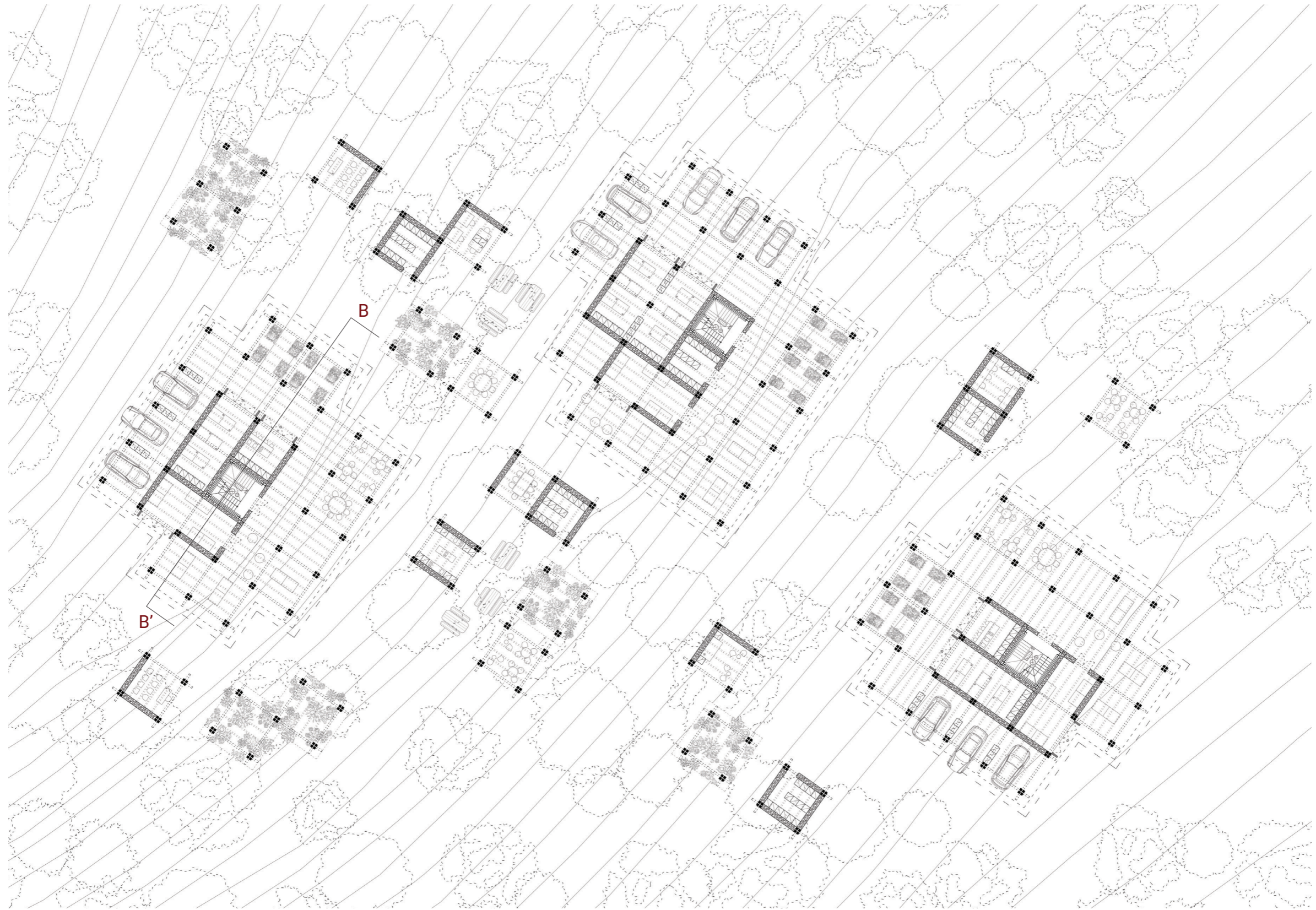


Section AA'



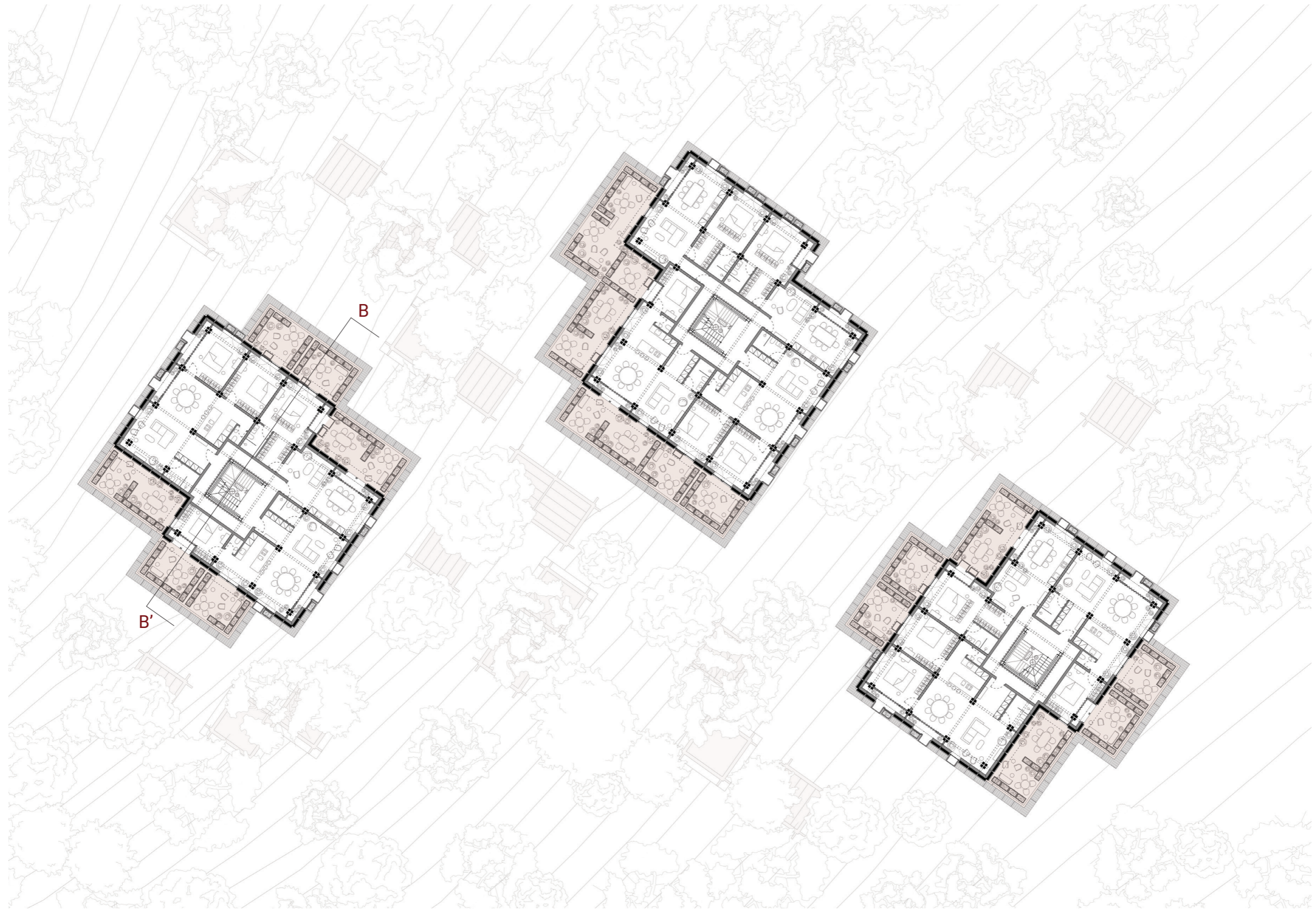
0 5m 1:200

Post-Conflict Phase Cluster

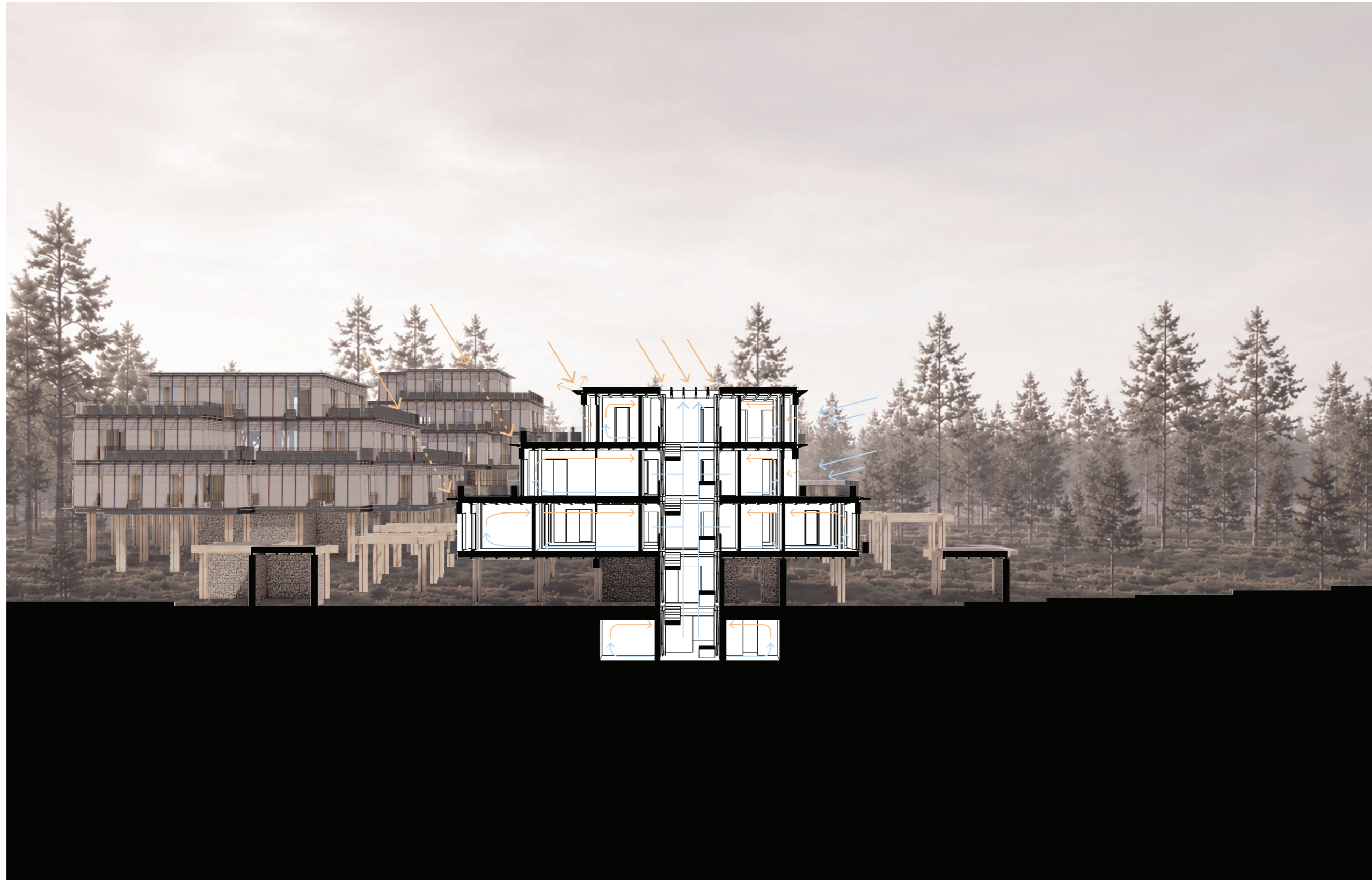


Level 0 _ Ground Floor

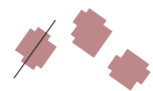
Post-Conflict Phase Cluster



Post-Conflict Phase Section

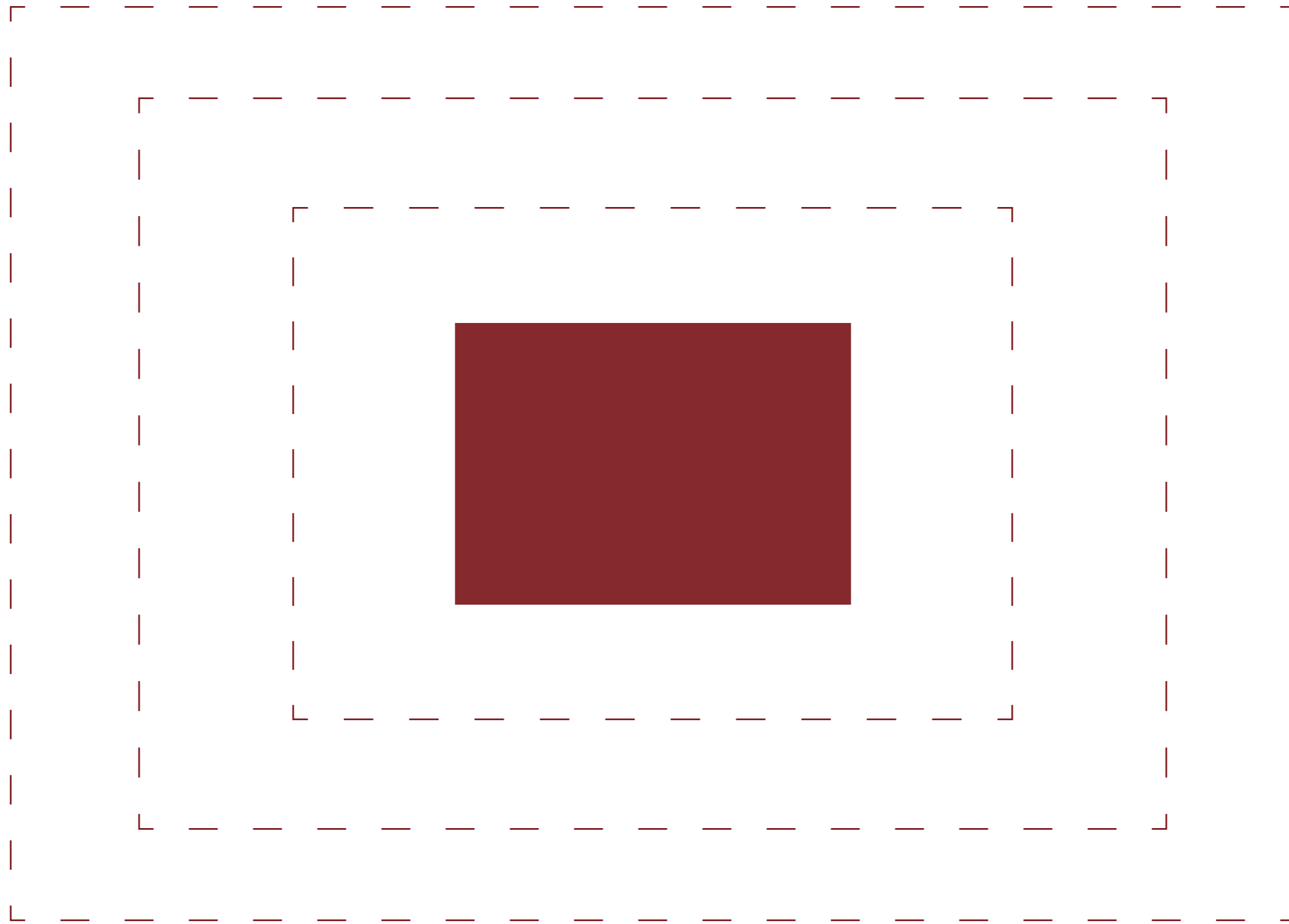


Section BB'

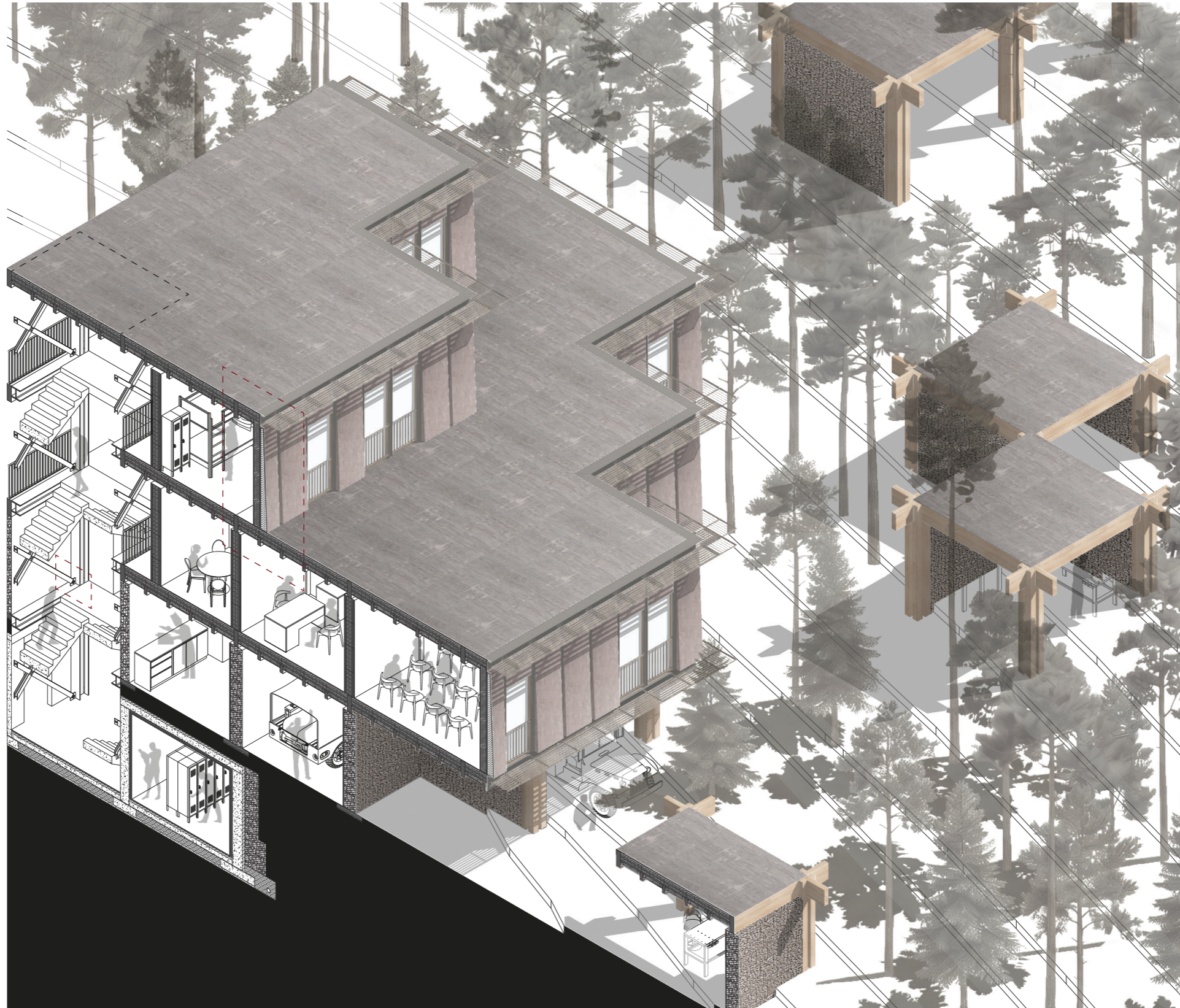


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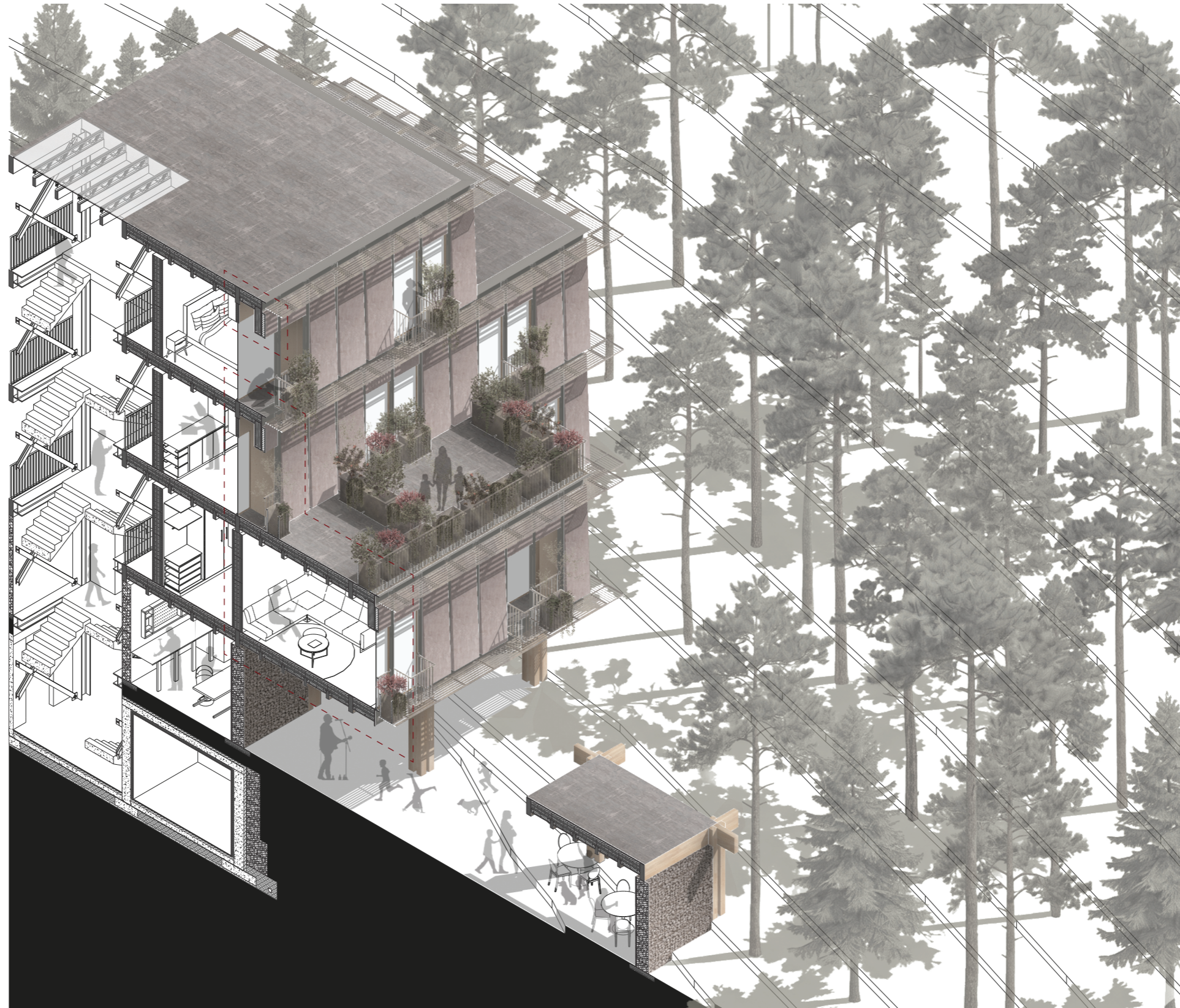
Story Through Scales - S1



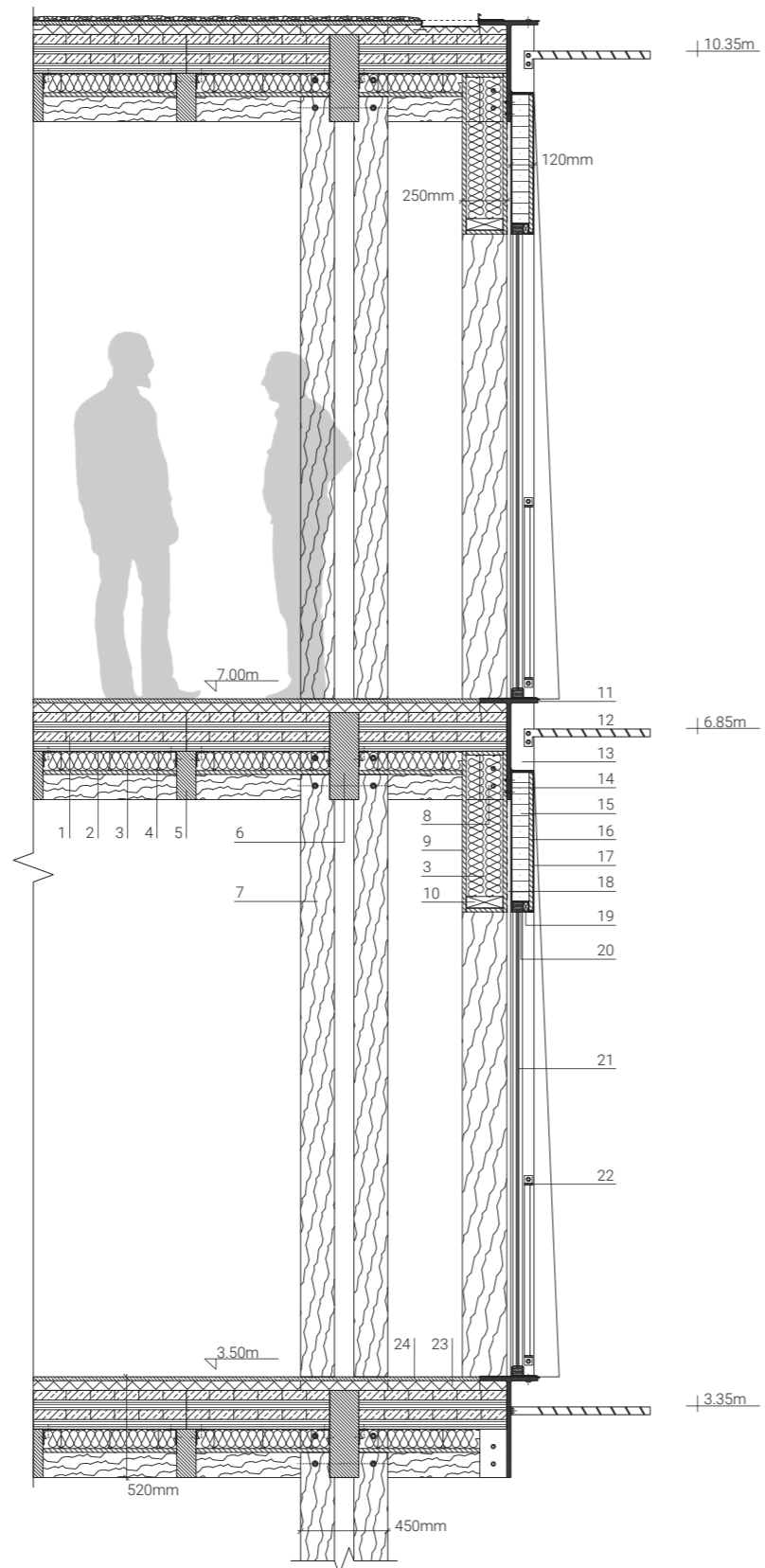
Pre-Conflict Sectional Axonometric



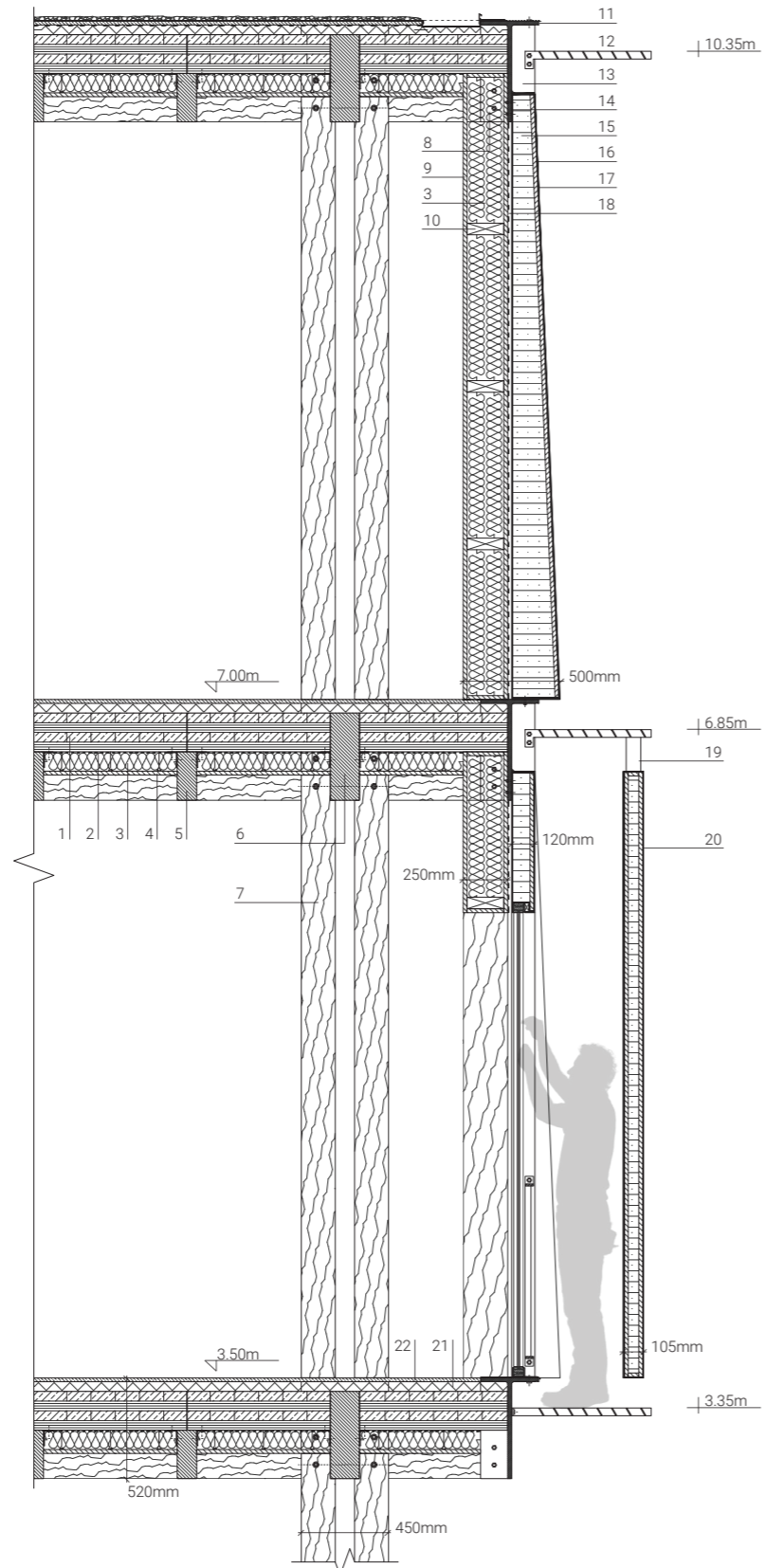
Post-Conflict Sectional Axonometric



Pre-Conflict Facade Fragment



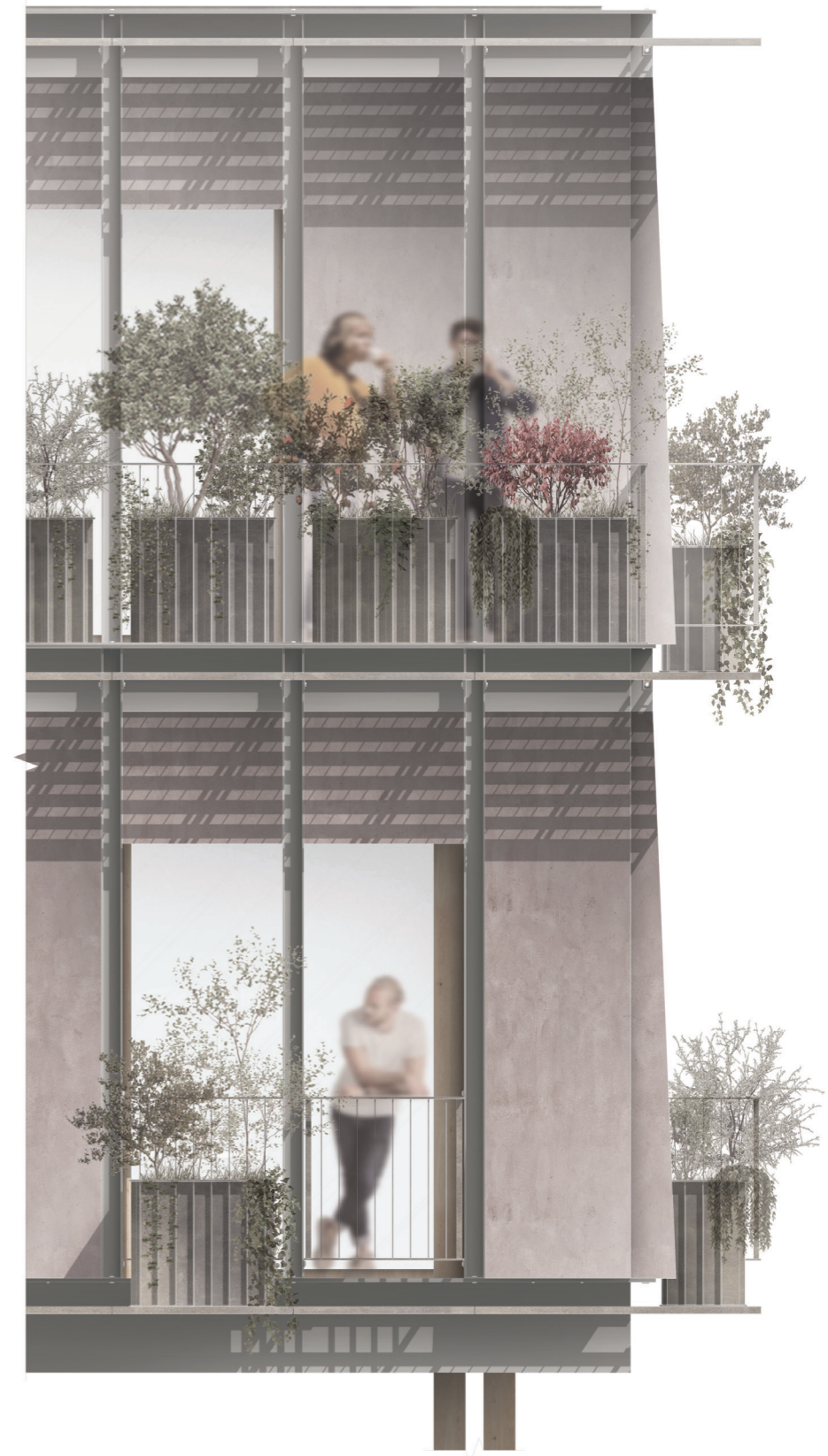
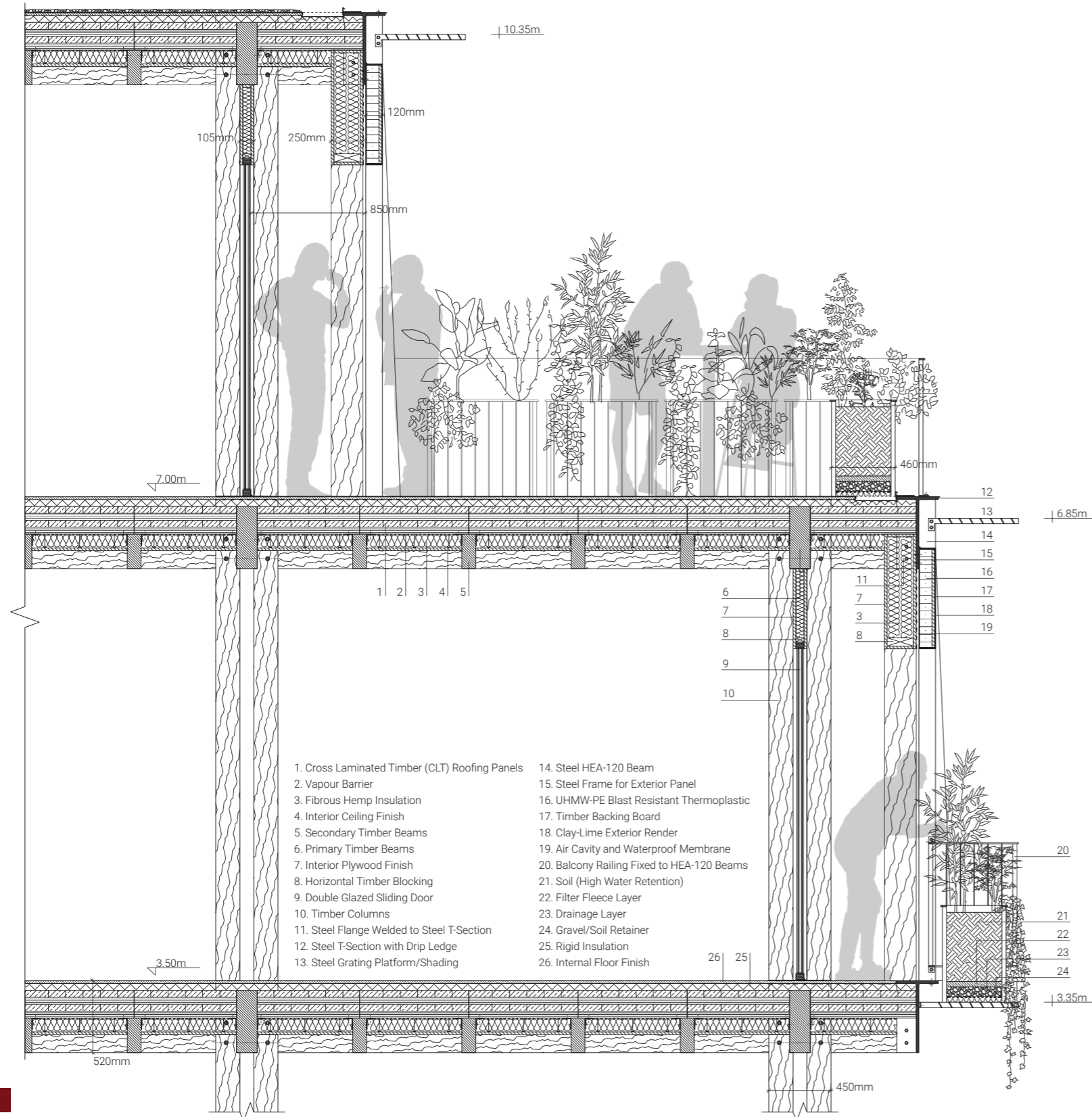
During Conflict Facade Fragment



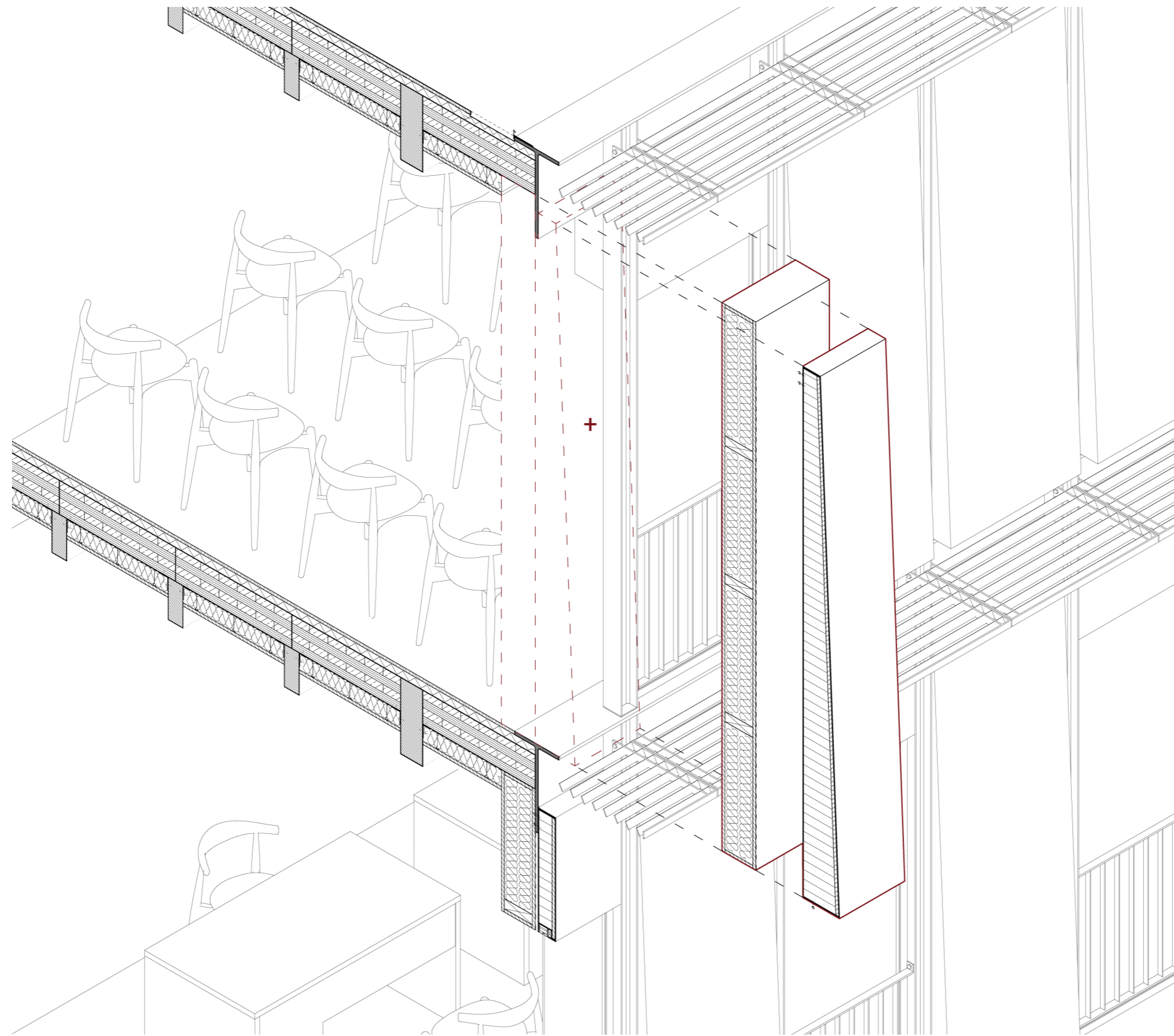
1. Cross Laminated Timber (CLT) Roofing Panels
2. Vapour Barrier
3. Fibrous Hemp Insulation
4. Interior Ceiling Finish
5. Secondary Timber Beams
6. Primary Timber Beams
7. Timber Columns
8. Steel Flange Welded to Steel T-Section
9. Interior Plywood Finish
10. Horizontal Timber Blocking
11. Steel T-Section with Drip Ledge
12. Steel Grating Platform/Shading
13. Steel HEA-120 Beam
14. Steel Frame for Exterior Panel
15. UHMW-PE Blast Resistant Thermoplastic
16. Timber Backing Board
17. Clay-Lime Exterior Render
18. Air Cavity and Waterproof Membrane
19. Steel Connection for Blast Screen
20. Hanging Blast Screen
21. Rigid Insulation
22. Internal Floor Finish



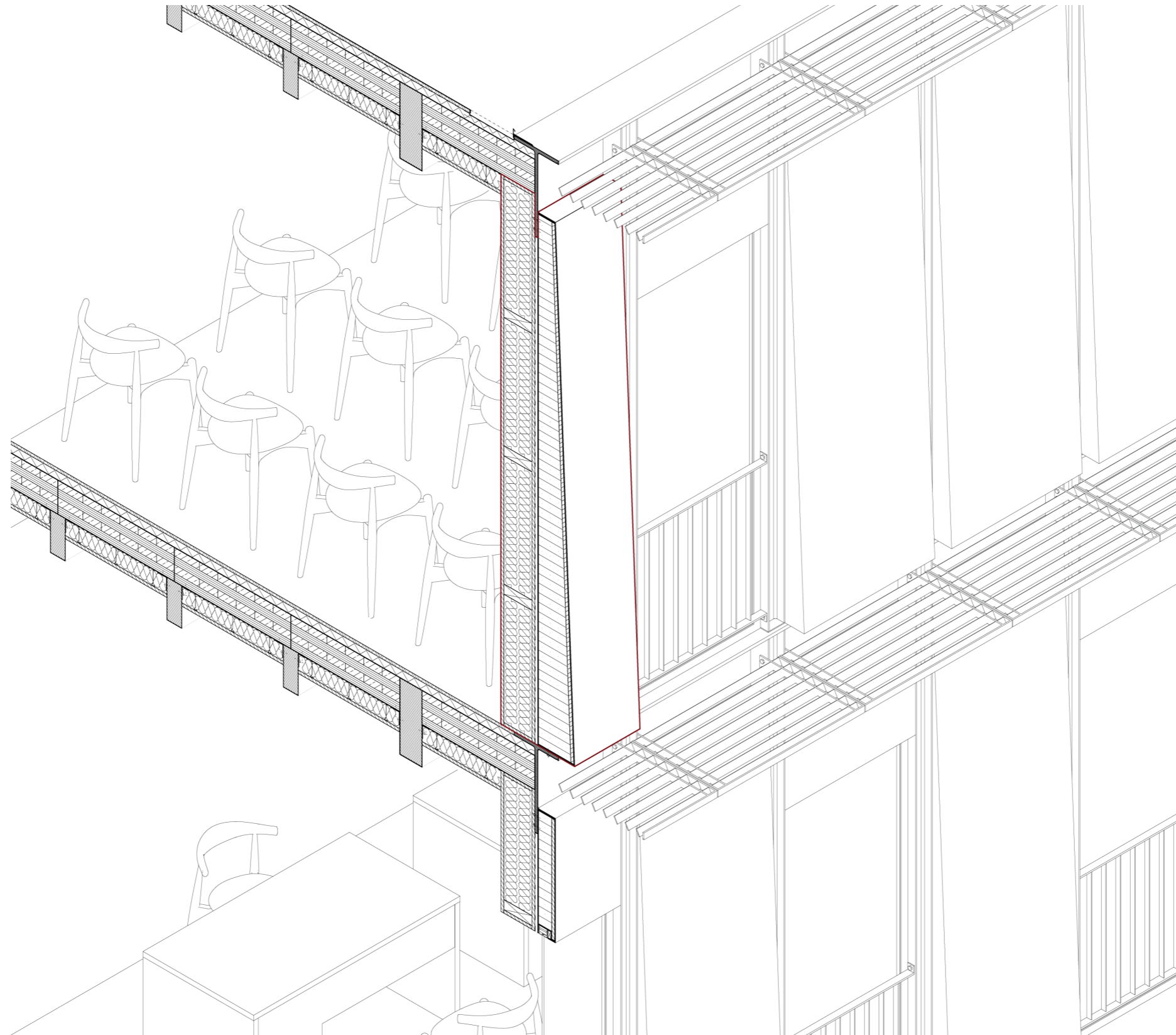
Post-Conflict Facade Fragment



Phase-Dependent Enclosure



Phase-Dependent Enclosure

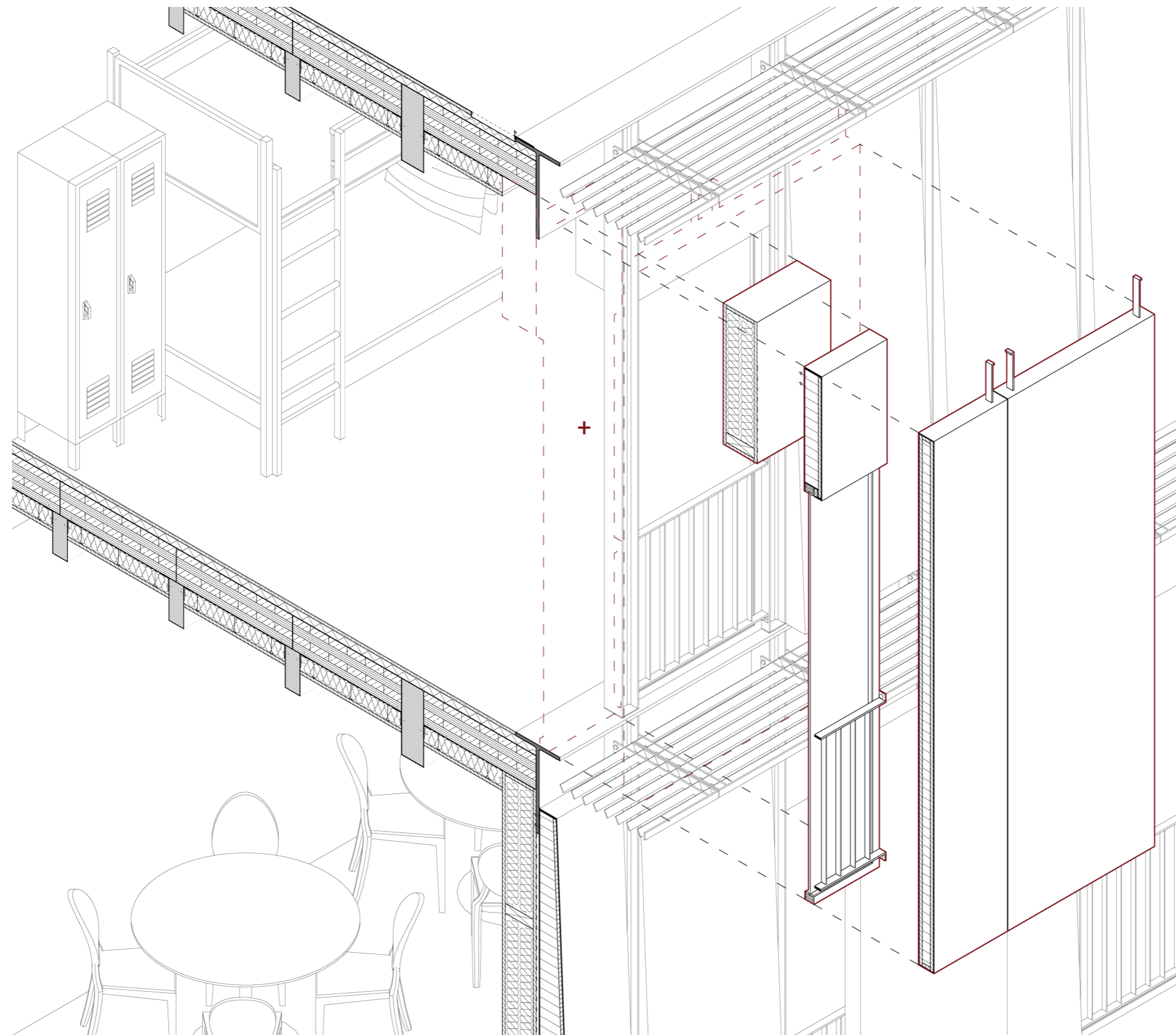


Pre-Conflict Phase

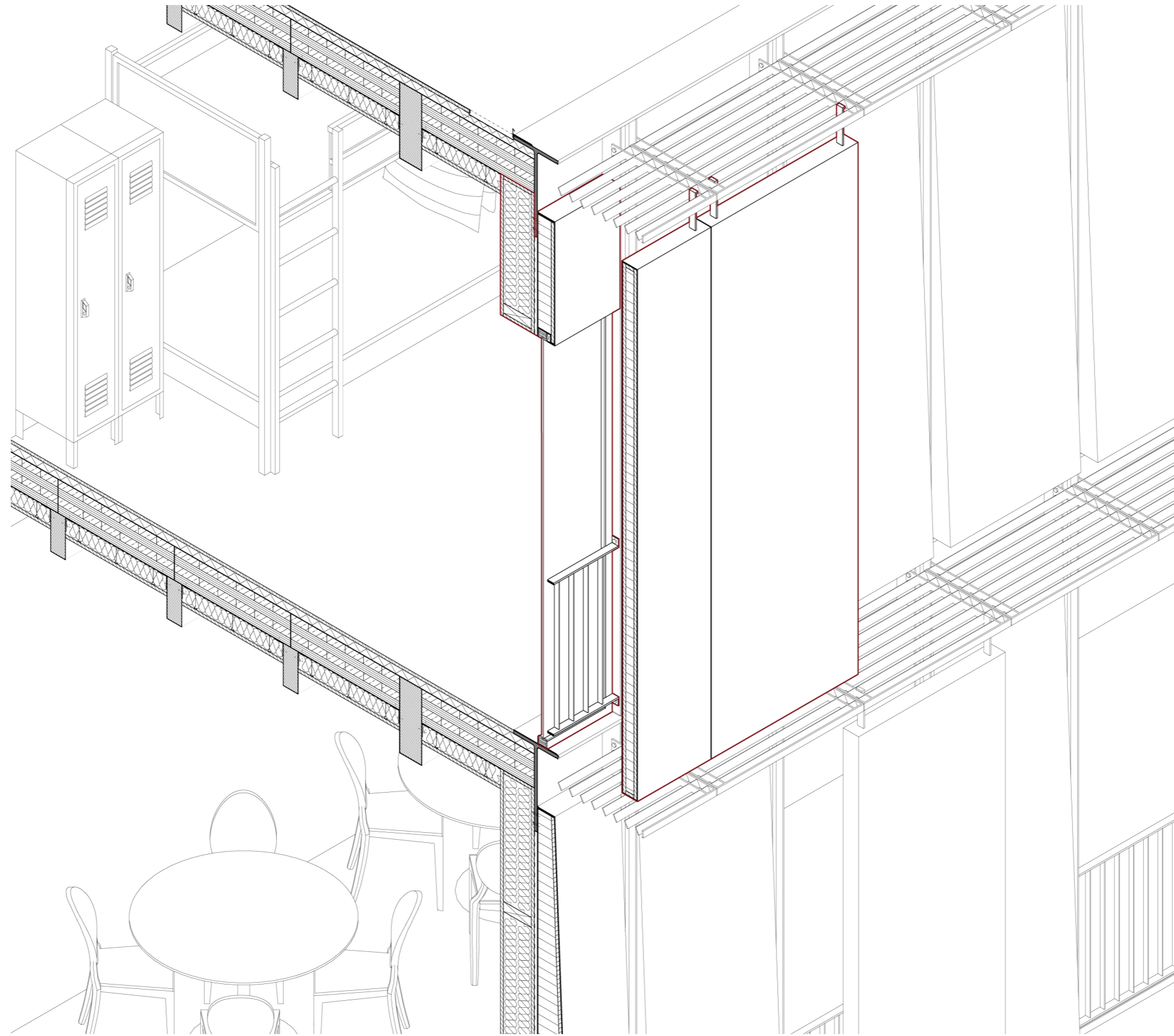
Semi-permeable envelope and degree of visual openness.

0 0.5m 1:20

Phase-Dependent Enclosure



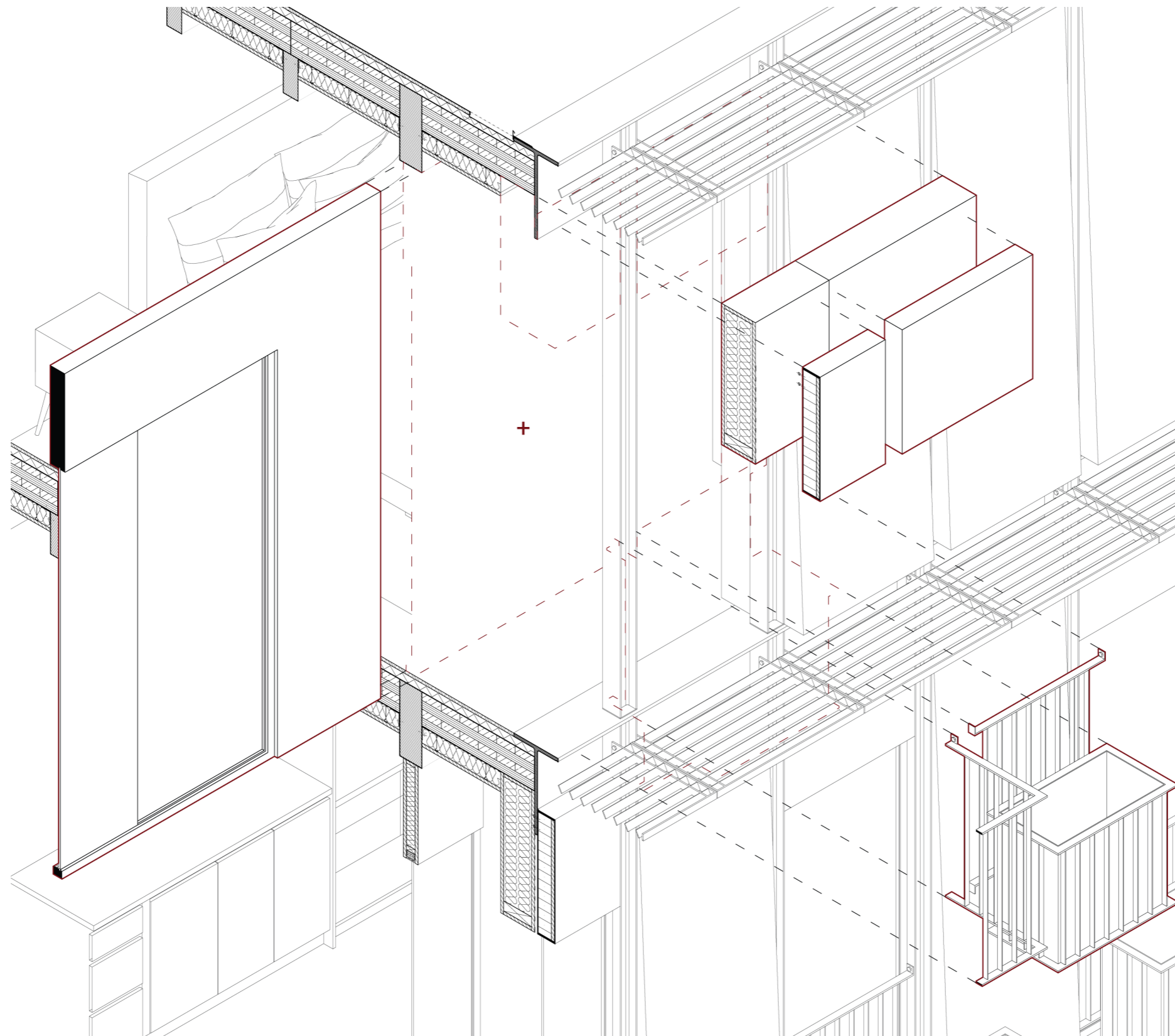
Phase-Dependent Enclosure



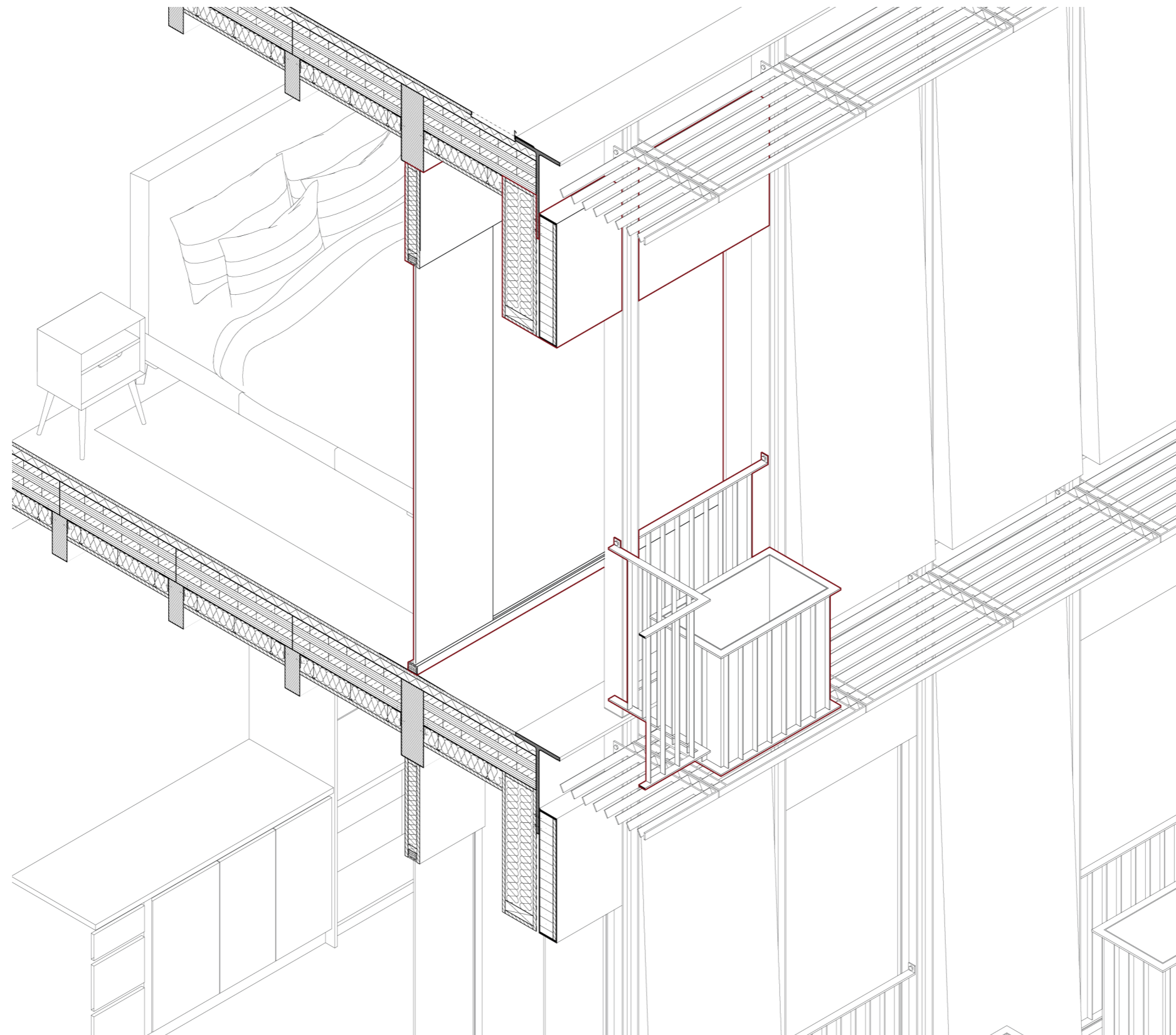
During Conflict Phase

Defensive envelope and additional protective layers.

Phase-Dependent Enclosure



Phase-Dependent Enclosure



Post-Conflict Phase

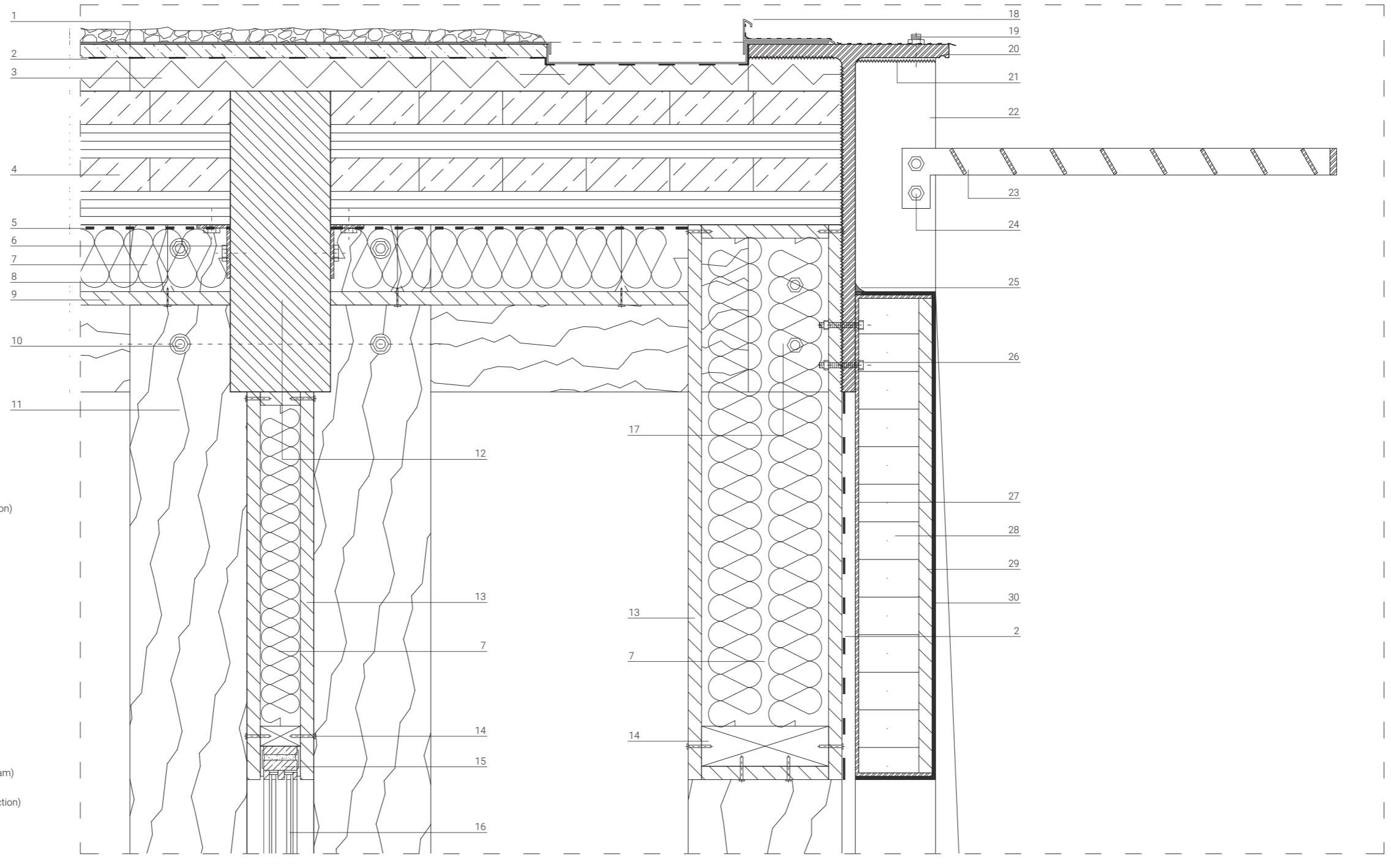
Reopening towards everyday civilian use.

0 0.5m 1:20

Modular Assembly Demonstration



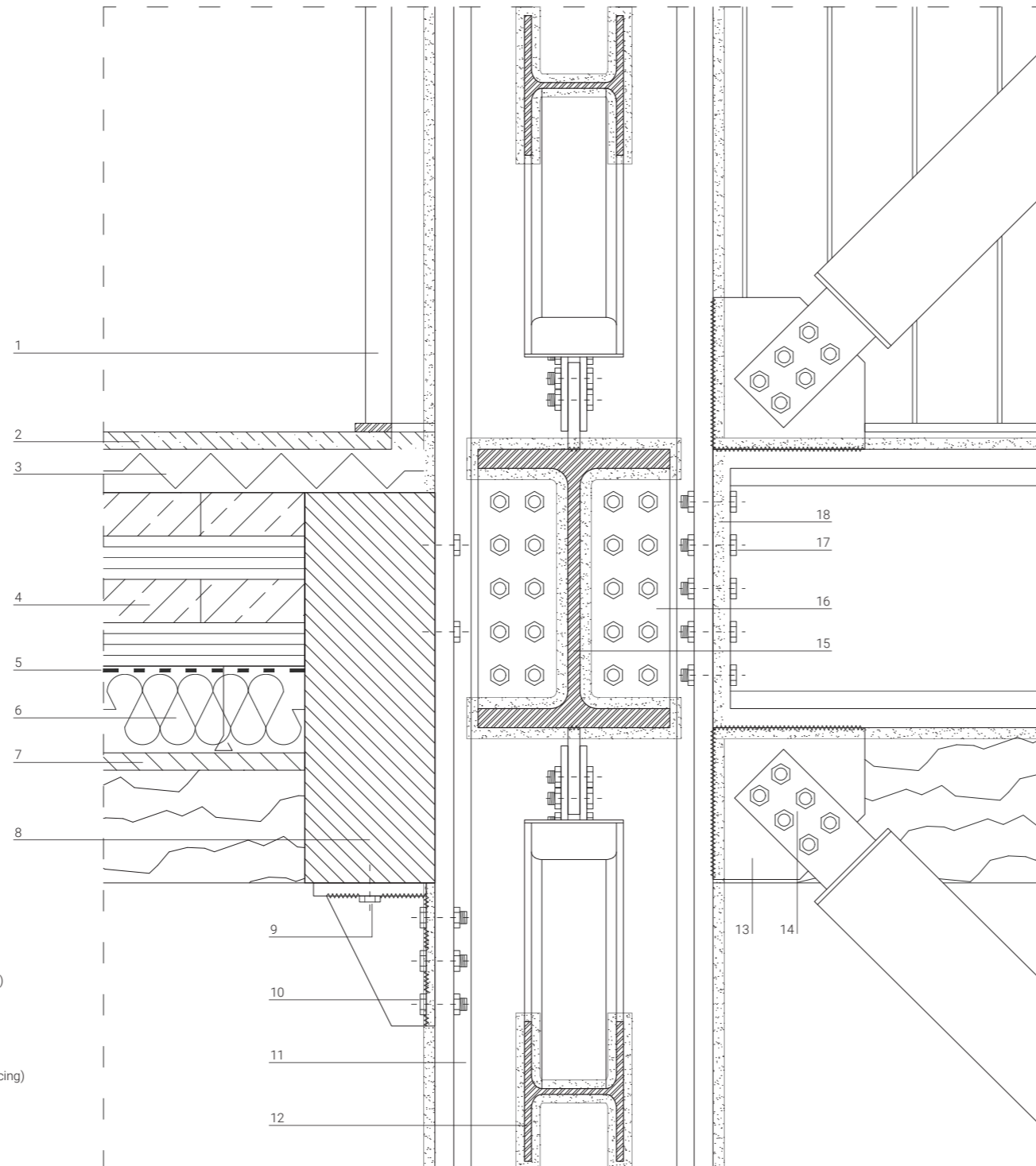
Representative Facade to Roof Detail



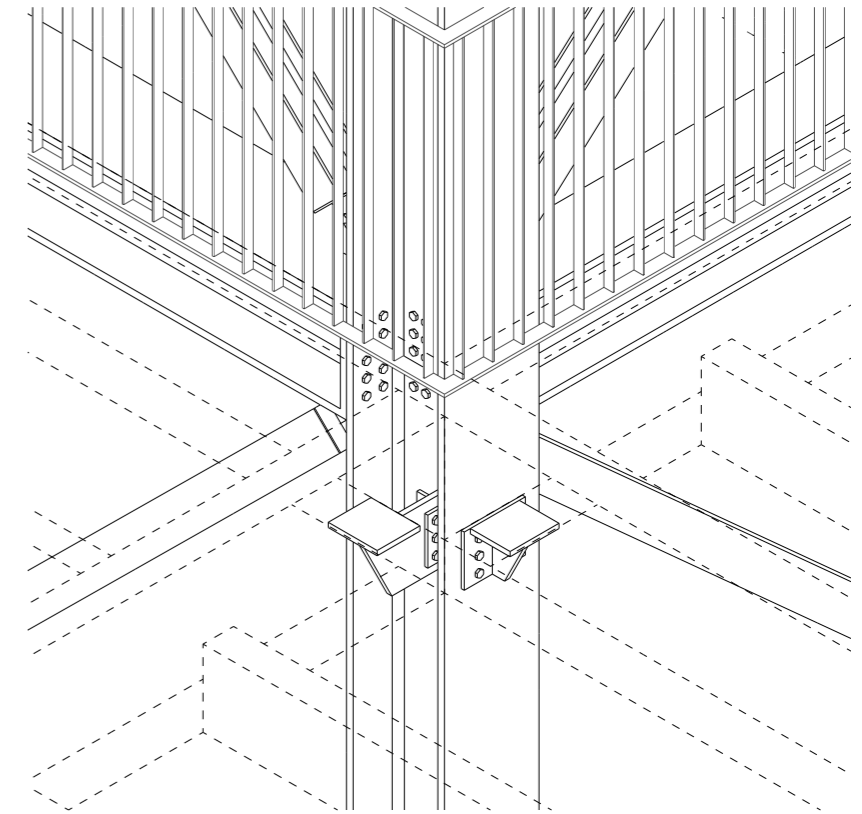
1. External Protective Roof Finish
2. Air Cavity and Waterproof Membrane
3. Rigid Insulation
4. Cross Laminated Timber (CLT) Roofing Panels
5. Vapour Barrier
6. Steel Mounting Bracket (CLT to Timber Beam Connection)
7. Fibrous Hemp Insulation
8. Ceiling Suspension Wires
9. Interior Ceiling Finish
10. M14 Through Bolts (Column to Beam Connection)
11. Timber Column
12. Primary Timber Beams
13. Interior Plywood Finish
14. M4 Wood Screws and Horizontal Timber Blocking
15. Sliding Door Frame
16. Double Glazed Sliding Door
17. Steel Flange Welded to Steel T-Section
18. Flashing/Gutter with Aluminum-Backed Butyl Tape
19. M12 Bolted Connection (T-Section to HEA-120 Beam)
20. Steel T-Section with Drip Ledge
21. Steel Capping Plate Welded to HEA-120 Beam
22. Steel HEA-120 Beam
23. Steel Grating Platform/Shading
24. M12 Bolted Connection (Steel Grating to HEA-120 Beam)
25. Rubber Gasket Wedge with Backing Sealant Rod
26. M8 Bolted Connection (Exterior Facade Panel to T-Section)
27. Steel Frame for Exterior Panel
28. UHMW-PE Blast Resistant Thermoplastic
29. Timber Backing Board
30. Clay-Lime Exterior Render



Steel Section Core Detail



1. Steel Railing Surrounding Core
2. Internal Floor Finish
3. Rigid Insulation
4. Cross Laminated Timber (CLT) Roofing Panels
5. Vapour Barrier
6. Fibrous Hemp Insulation
7. Interior Ceiling Finish
8. Primary Timber Beams
9. M14 Bolted Connection (Steel Support Flange to Beam)
10. Steel Support Flange Bolted to Steel UC
11. Steel Universal Column (UC)
12. Steel HEA-120 Diagonal Bracing
13. Steel Flange Welded to UC and UB
14. M14 Bolted Connection (Steel Flange to HEA-120 Bracing)
15. Steel Universal Beam (UB)
16. Steel Capping Plate Welded to UB
17. M14 Bolted Connection (UB to UC)
18. Spray-Applied Fire-Resistant Coating



Atmosphere Reflects Adaptability



Atmosphere Reflects Adaptability



Atmosphere Reflects Adaptability



Systems in Motion

Modular Architecture for Conflict and Civilian Transition

Aidan Azzopardi Muscat