

Geopolymer concrete panels

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Focus

Designing geopolymer concrete panels for use in wet environments like bathrooms or external walls.

The first design



Octogen shape with puzzle joint system design.

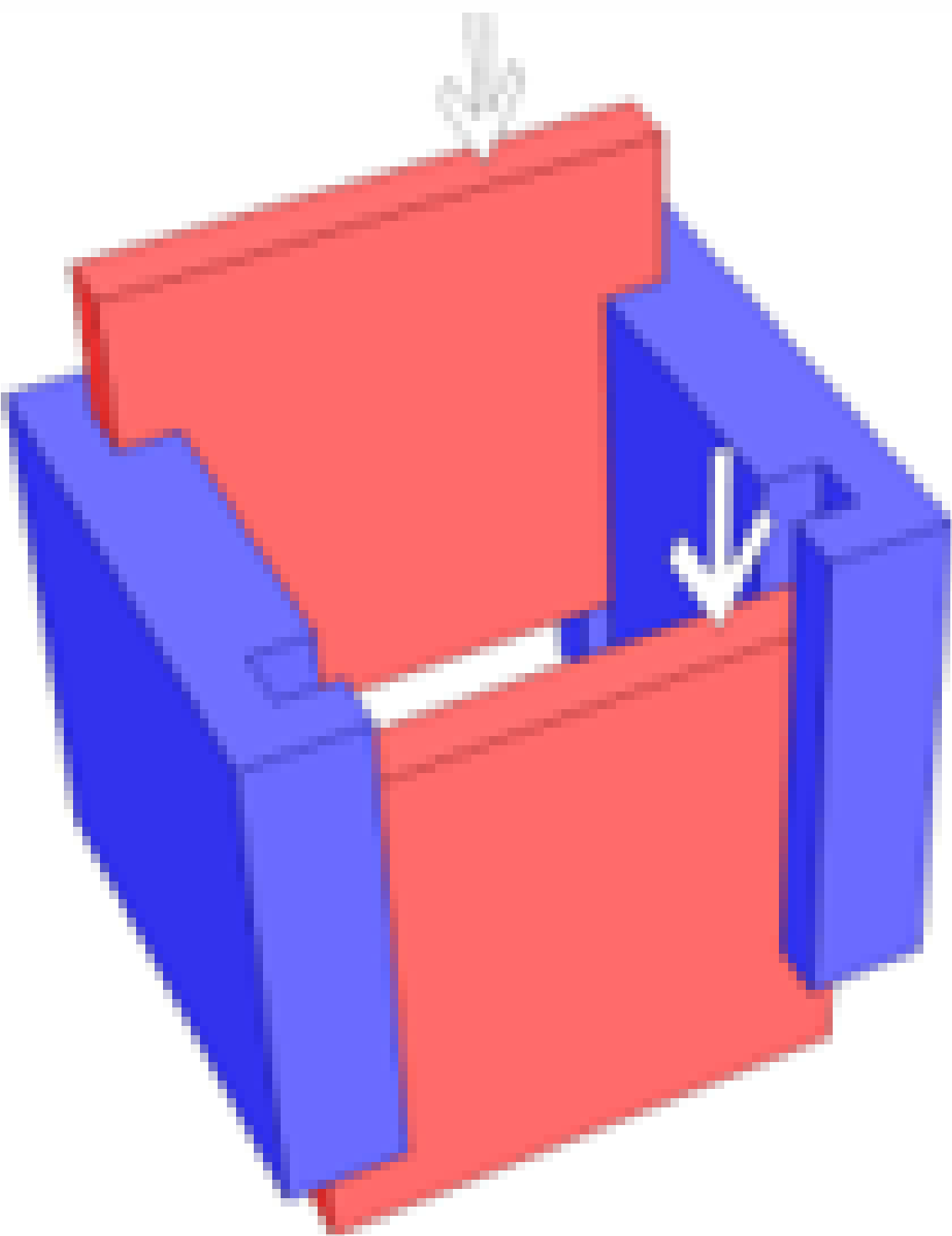
Designed to perform under structural stress. The design involves octagonal panels with puzzle joints to ensure strength and stability in wet environments.

New situation

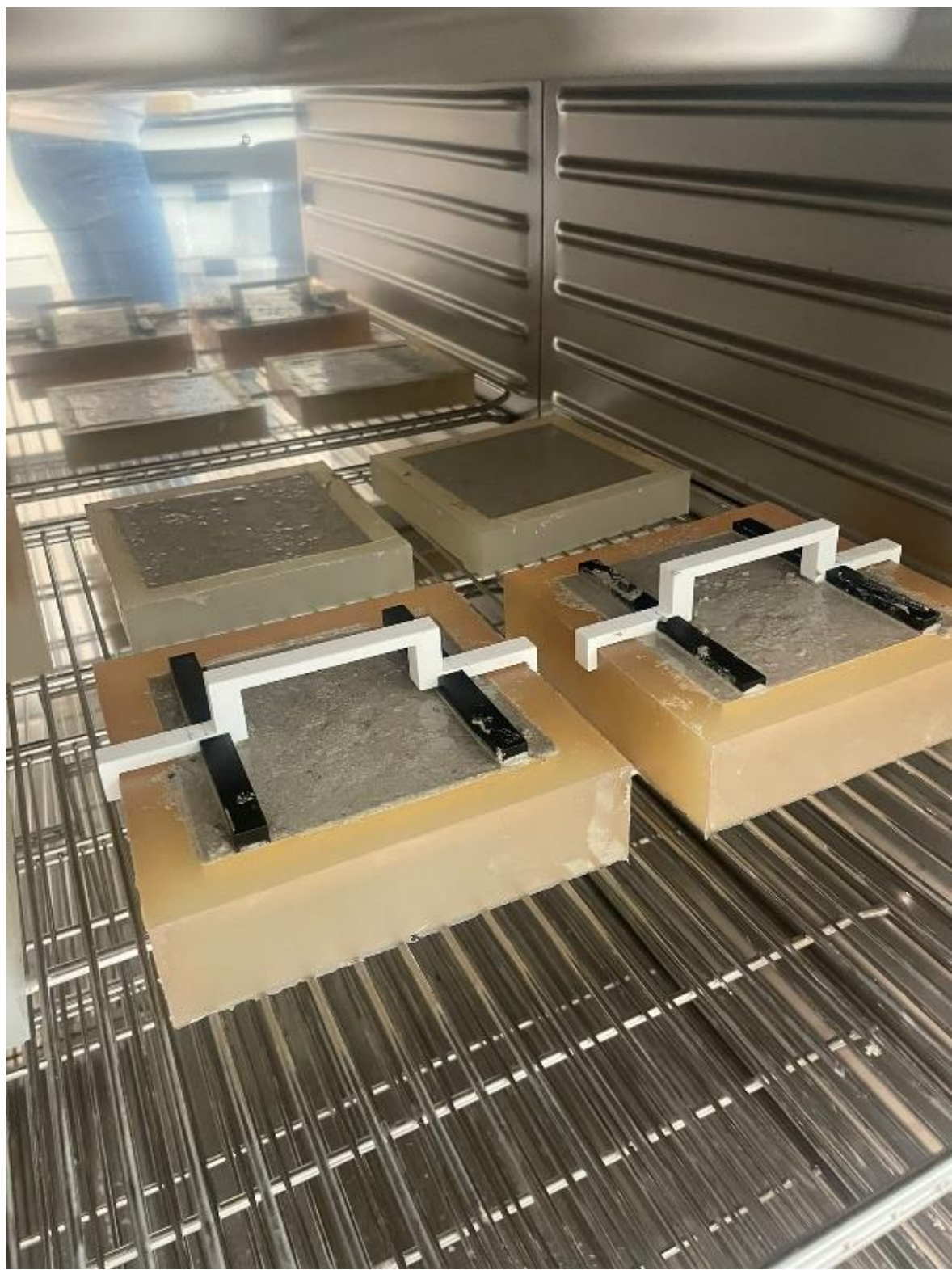
Non-load-bearing, decorative wall applications, where aesthetic integration and moisture resistance are prioritized over load-bearing capacity.

Initial design

Tongue and groove joints ensure seamless, watertight connections for moisture-exposed panels.



Tonge and groove joint system panel design

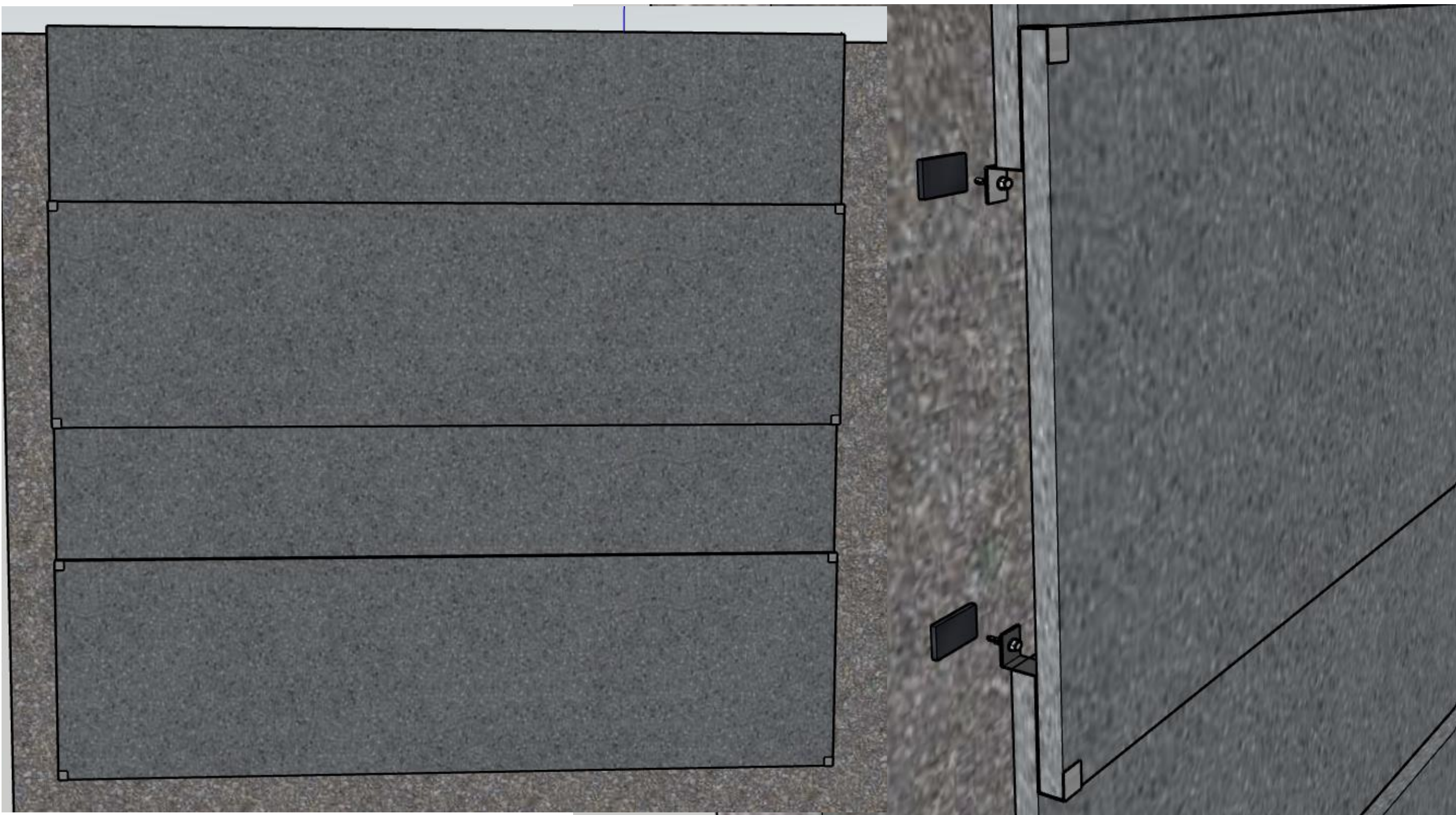


Silicone mould and 3D printed indent

New approach

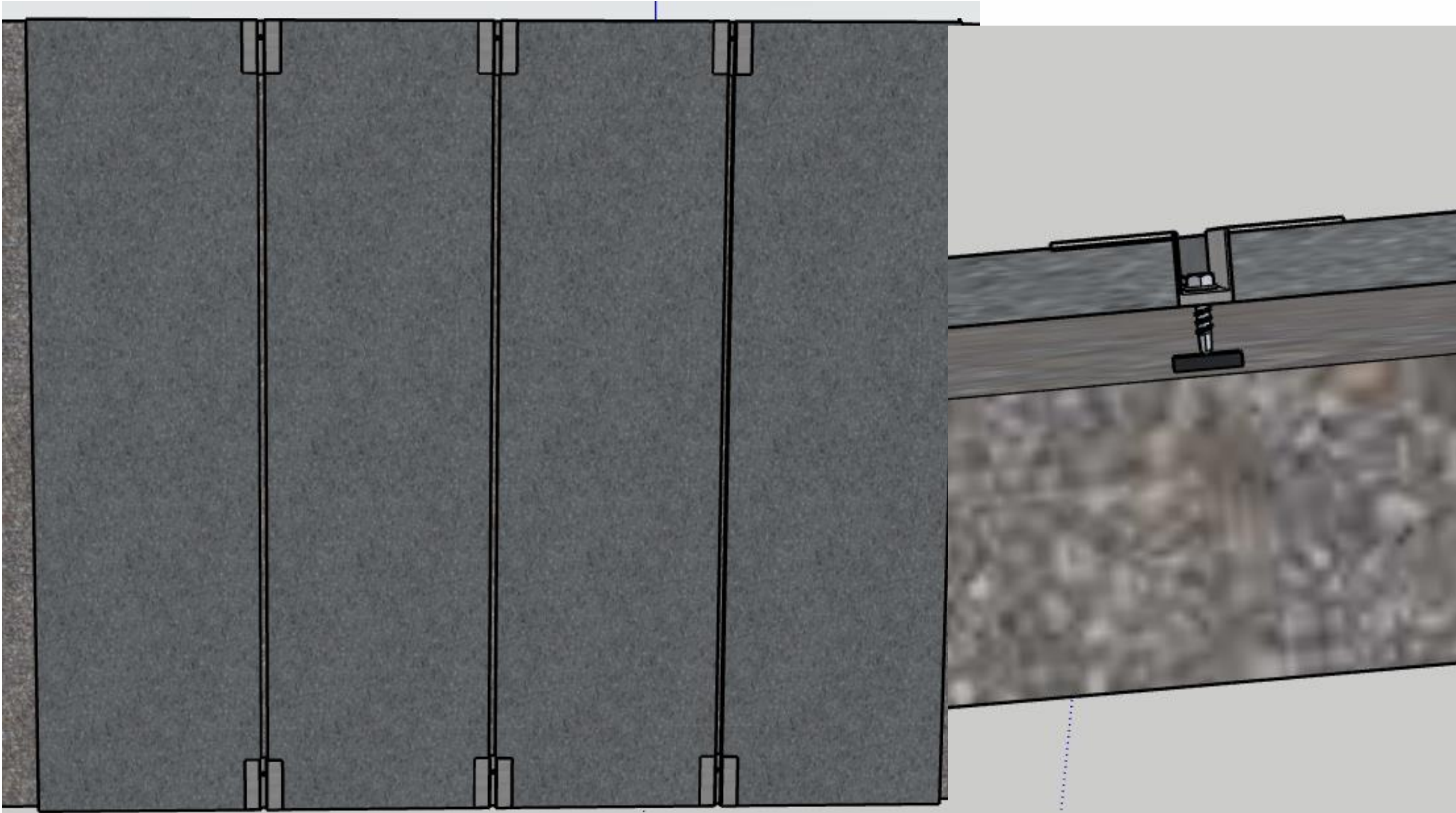
Panels are placed directly on the wall, using aluminum profiles with two rubber components: one between the profile and panels for a tight connection, and rigid rubber at the wall interface to ensure secure mounting.

Horizontal connection:



Horizontal panel connection

Vertical connection:



Vertical panel connection

Discussion

- Simplifies installation with secure connection
- Tests will guide improvement

References

1.Korniejenko, K., Łach, N. M., Hebdowska-Krupa, N. M., & Mikuła, N. J. (2020).
2.Construction Joint in Concrete – Types, location selection and advantages. (2018, October 22). theconstructor.org