



ESS Neutron Guidelines Shielding
ESS meeting, Copenhagen

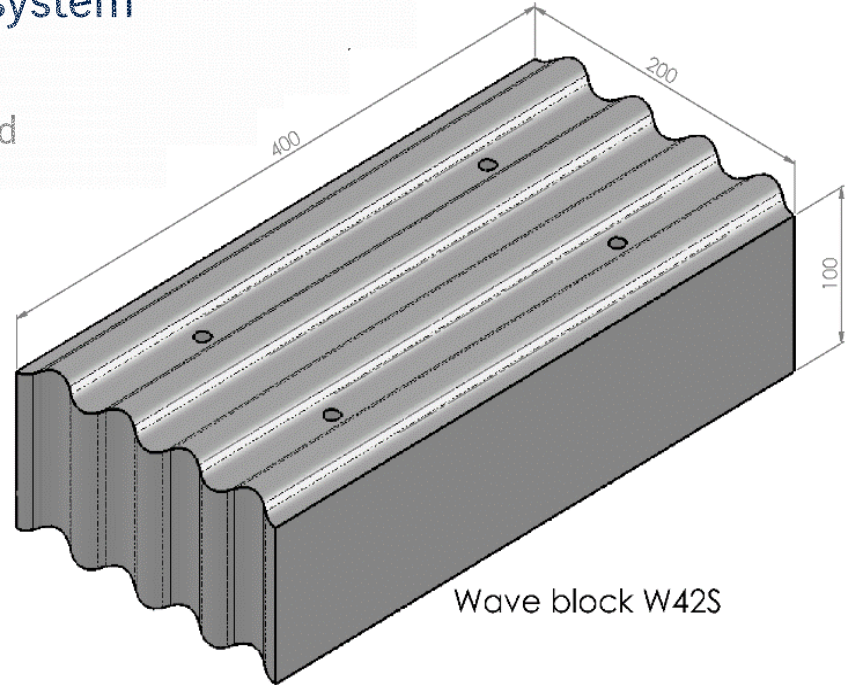
Milan BUNATA
May 2016

📍 Concrete-based modular shielding system

- Wide range of densities (2.3 – 5.0 t/m³)
- Dry construction, no mortar nor glue used
- Steel reinforcement available
- Neutron shielding under development

📍 NUVIA can provide:

- Design
- Project documentation
- Manufacturing
- Supervision
- (Construction works)



📍 1 m², 1 cm Pb equivalent (weight cca 120 kg)

- Lead (11.7 kg/dm³, price app. 4 EUR/kg) -> 480 EUR
- Steel (7.8 kg/dm³, price app. 2 EUR/kg) -> 240 EUR
- Concrete HD (5.0 kg/dm³, price app. 0.8 EUR/kg) -> 100 EUR
- Concrete MD (4 kg/dm³, price app. 0.5 EUR/kg) -> 60 EUR
- Concrete LD (2.3 kg/dm³, price app. 0.4 EUR/kg) -> 50 EUR

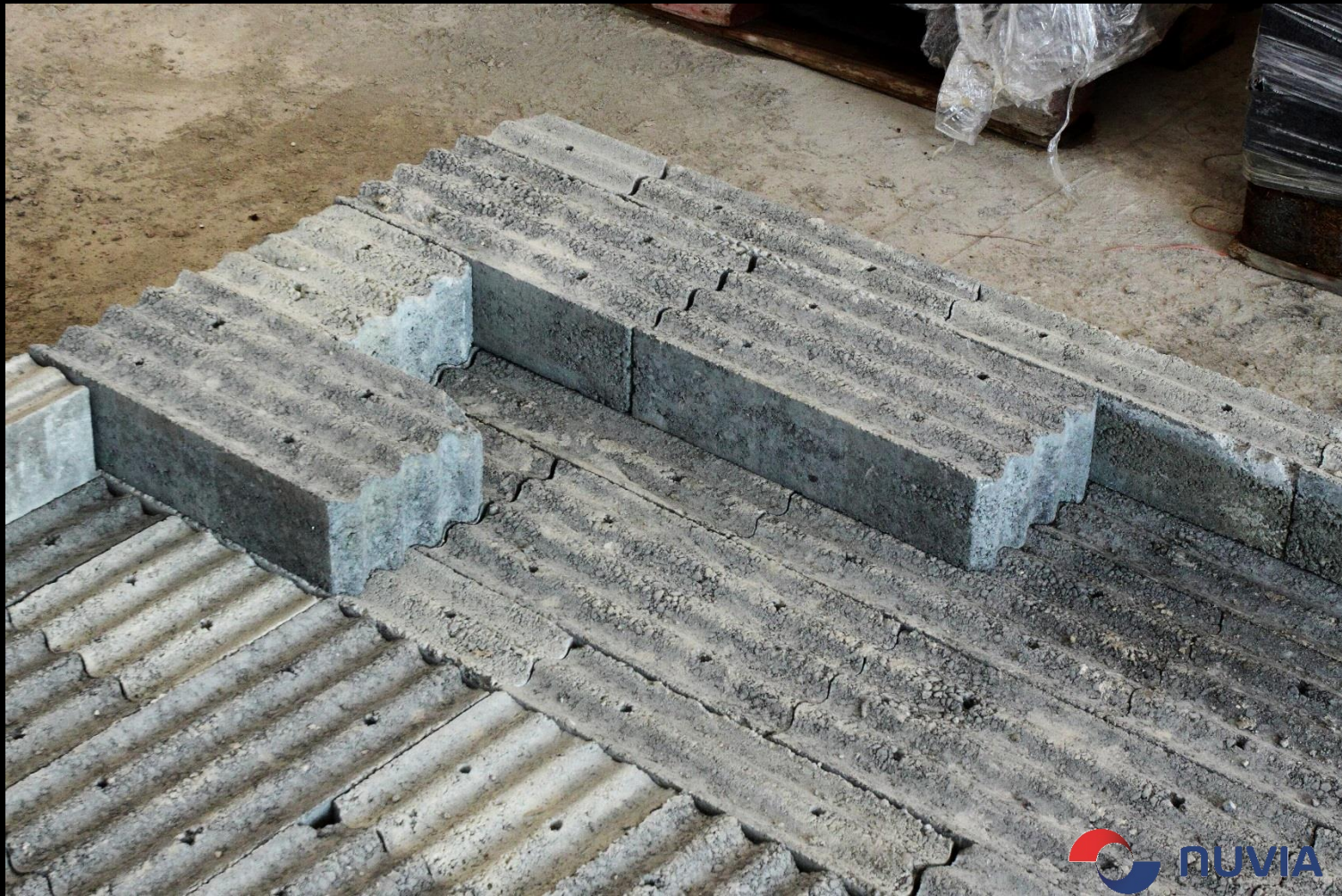
- Concrete with Boron (3.5 kg/dm³, price app. 0.8 EUR/kg) -> 100 EUR

📍 Unified design, easy to remove / replace / add

- to improve shielding properties
- to remove activated / contaminated parts
- to extend the layout

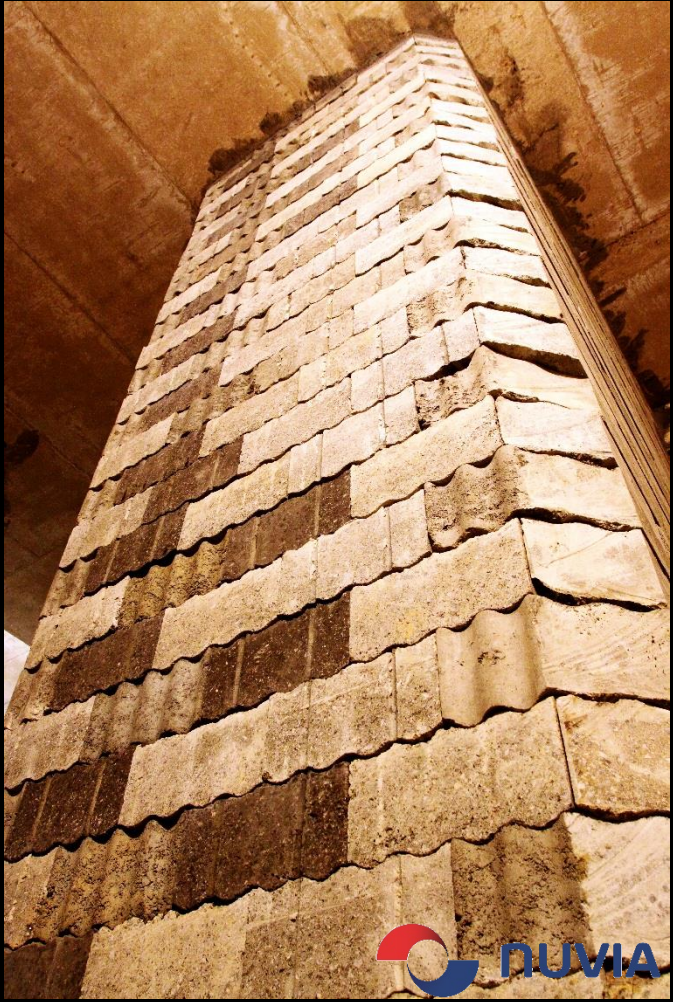


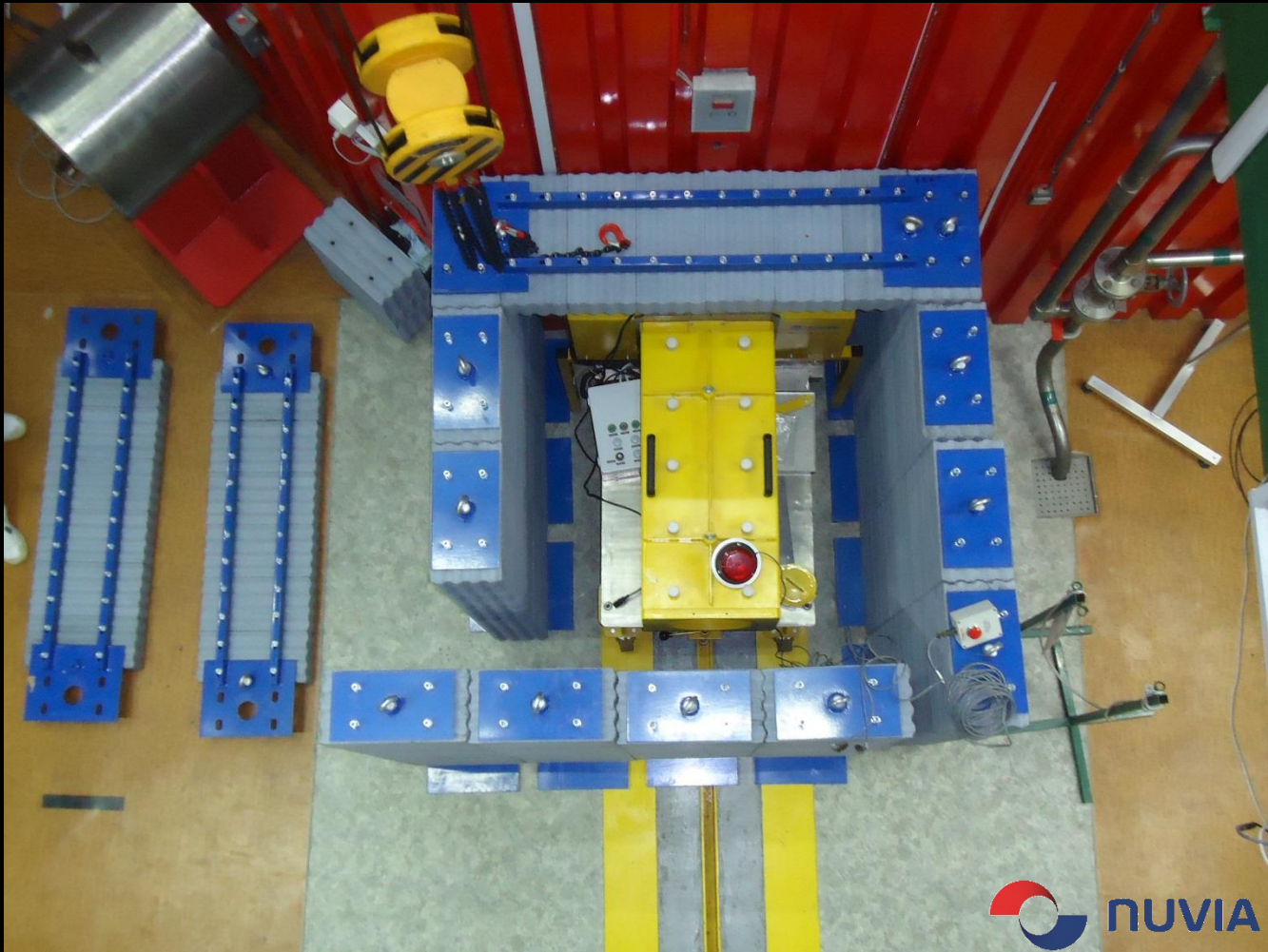










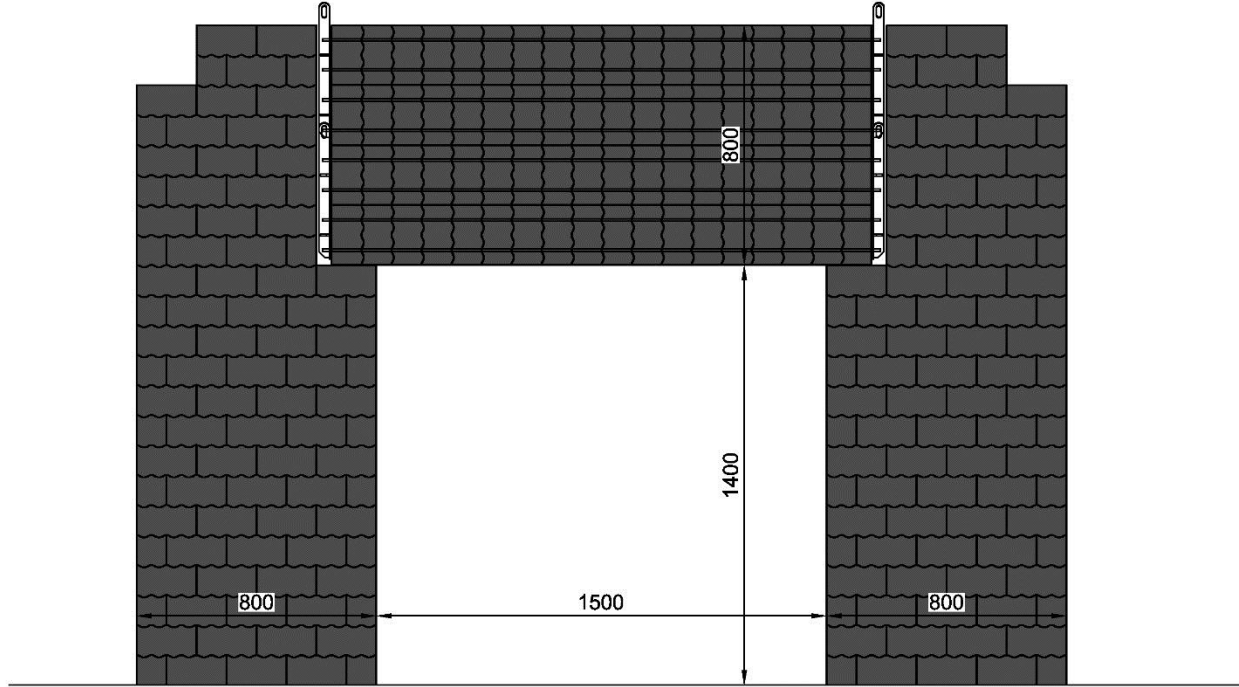


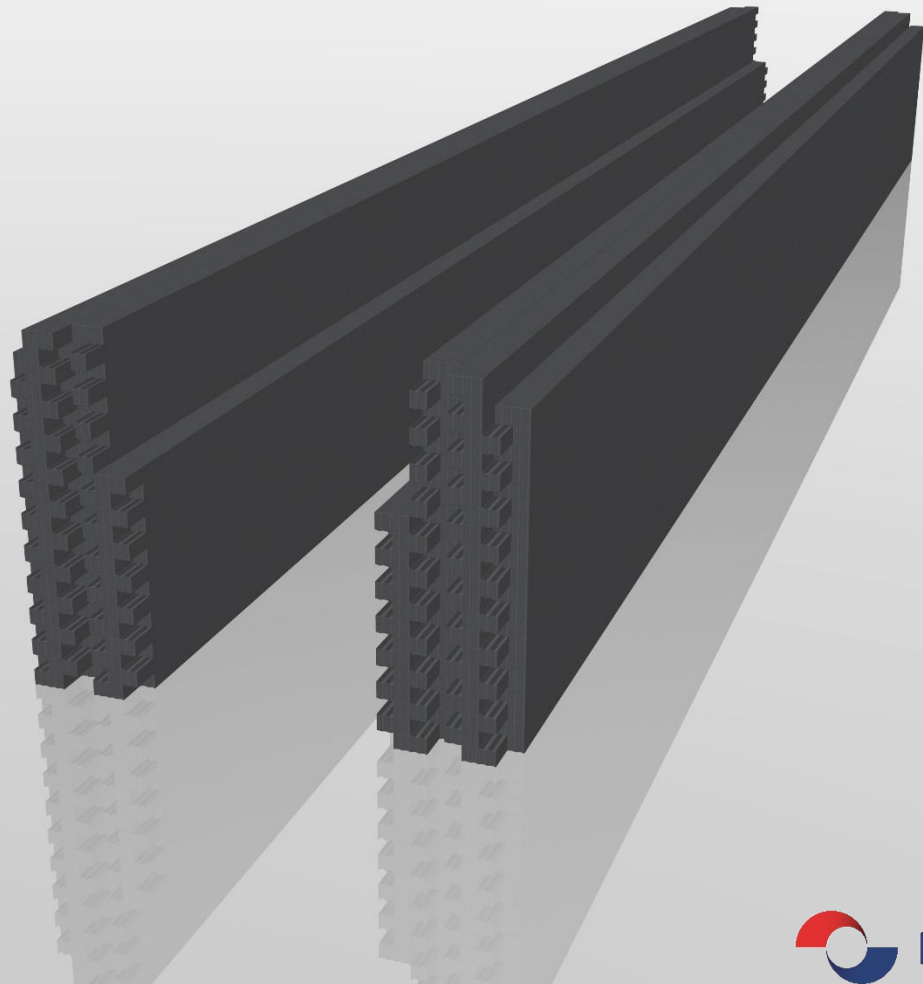


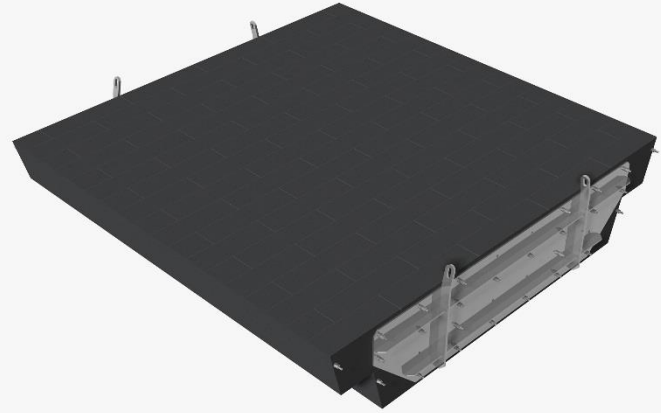
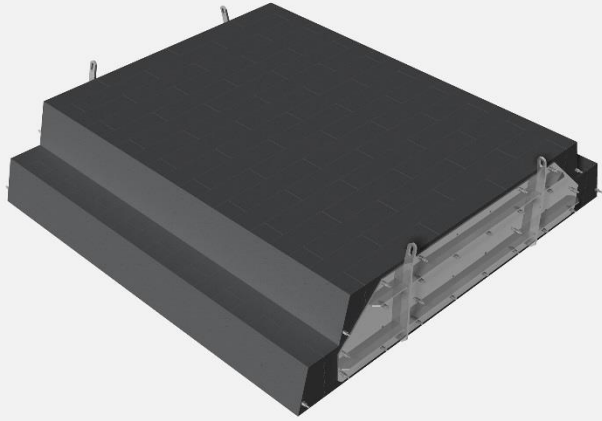
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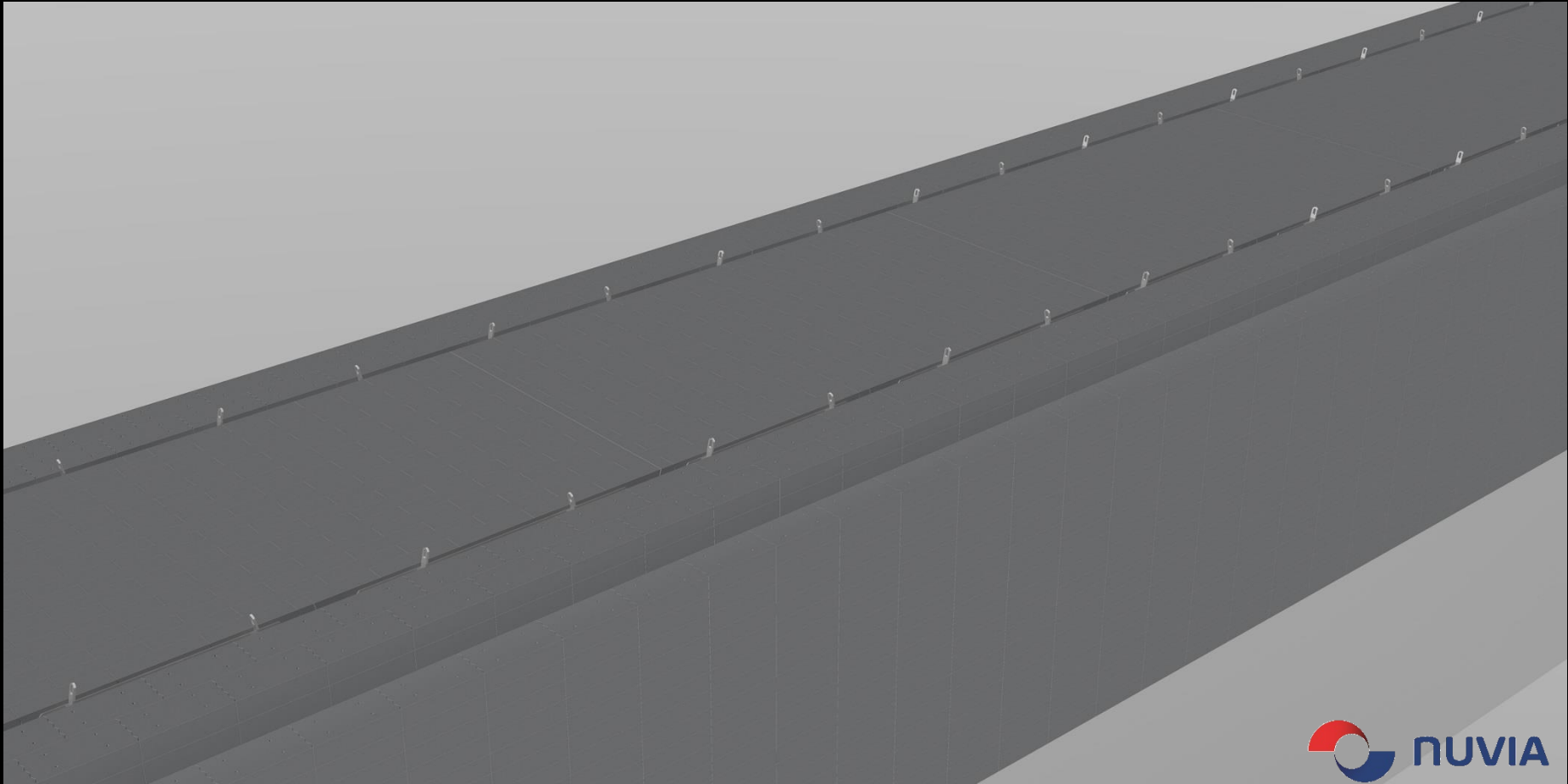


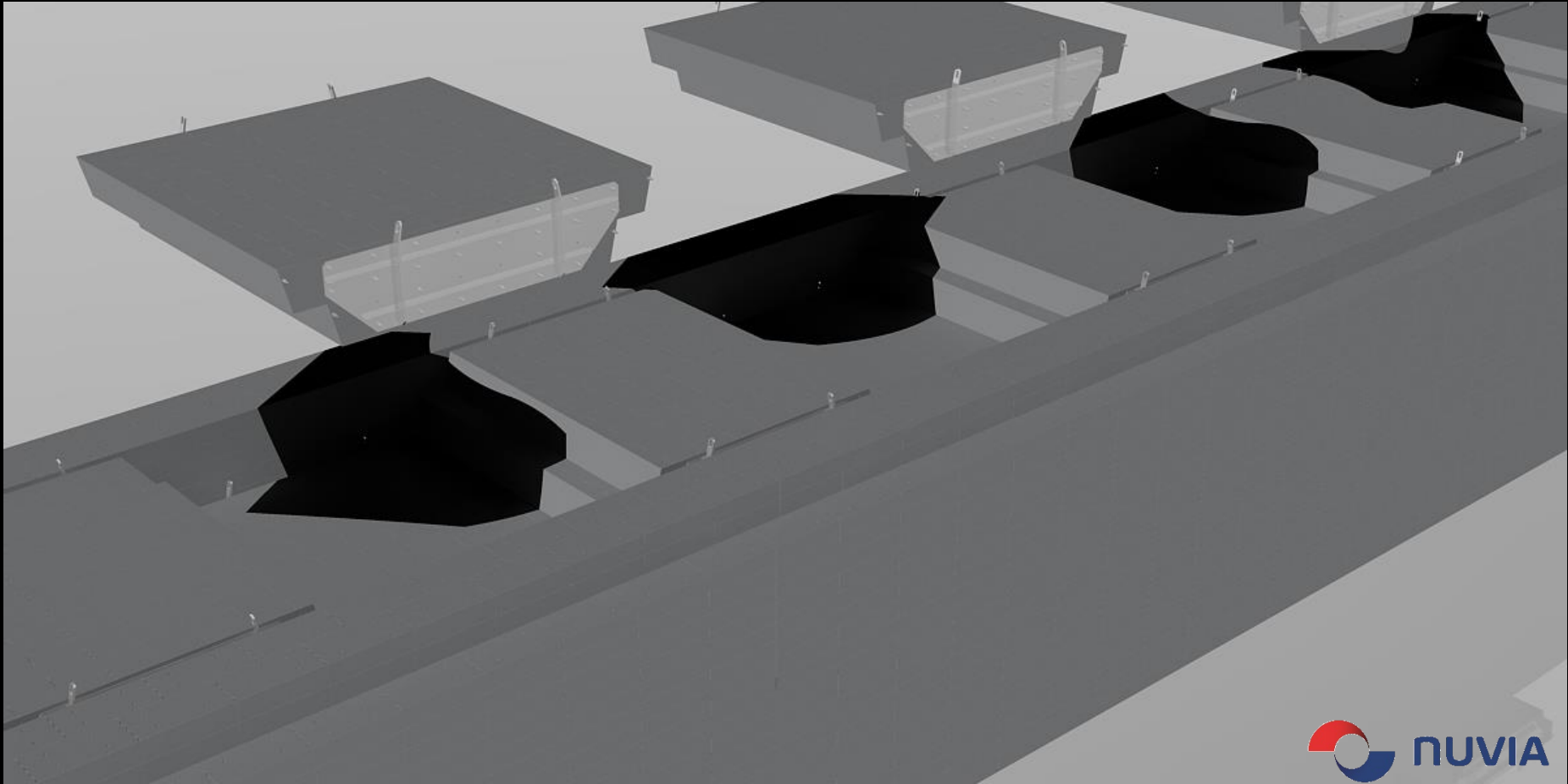


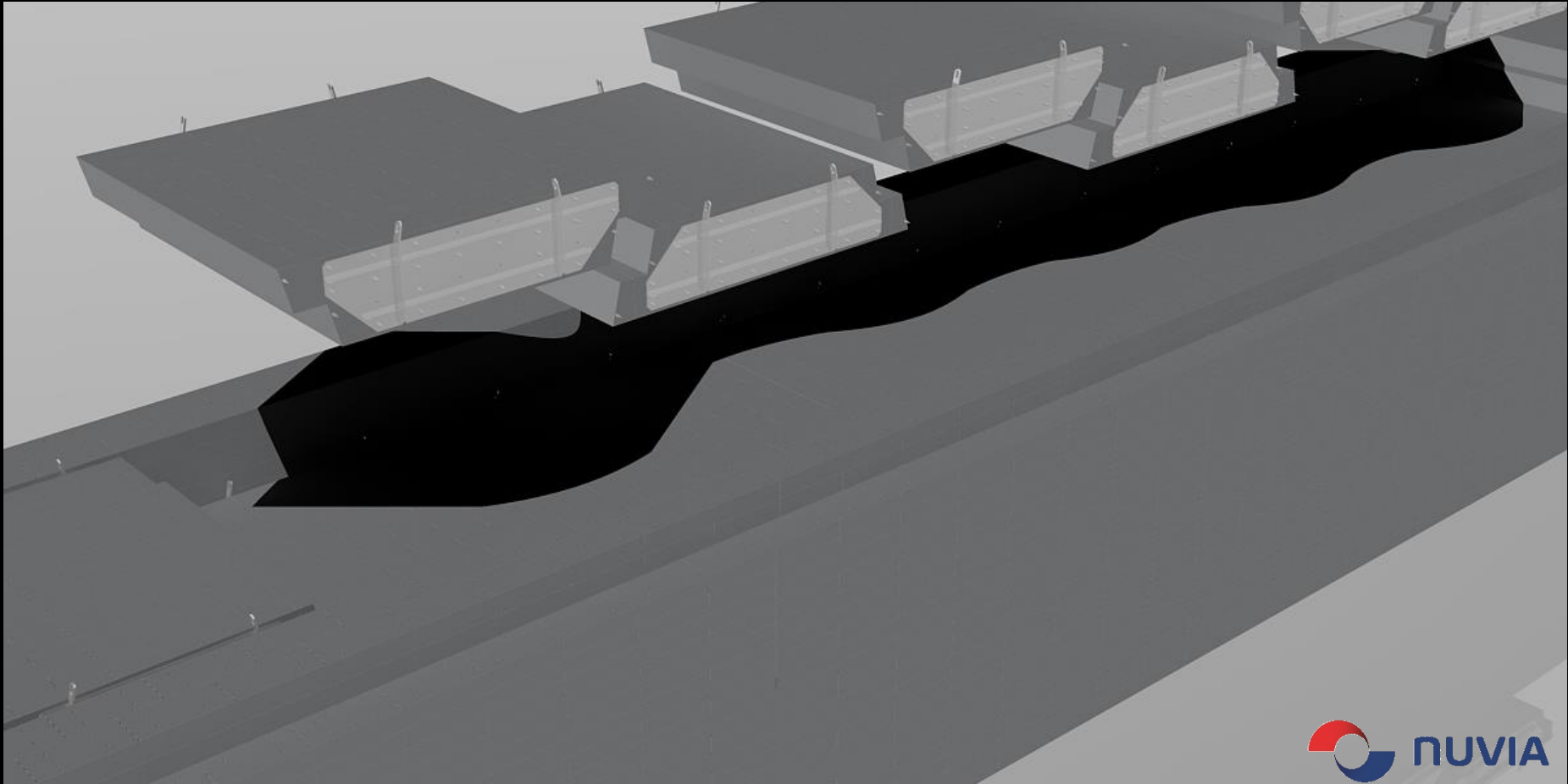


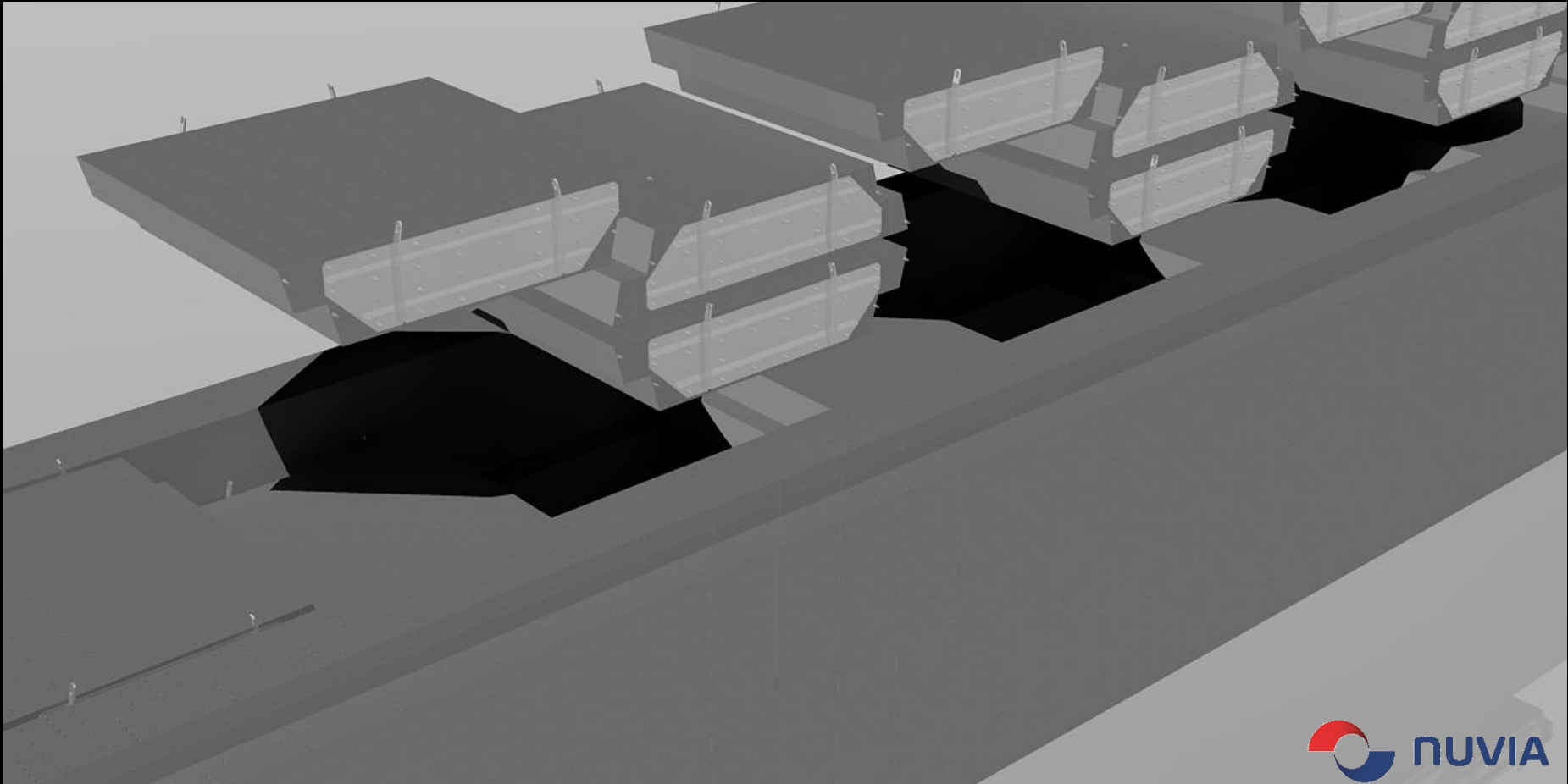


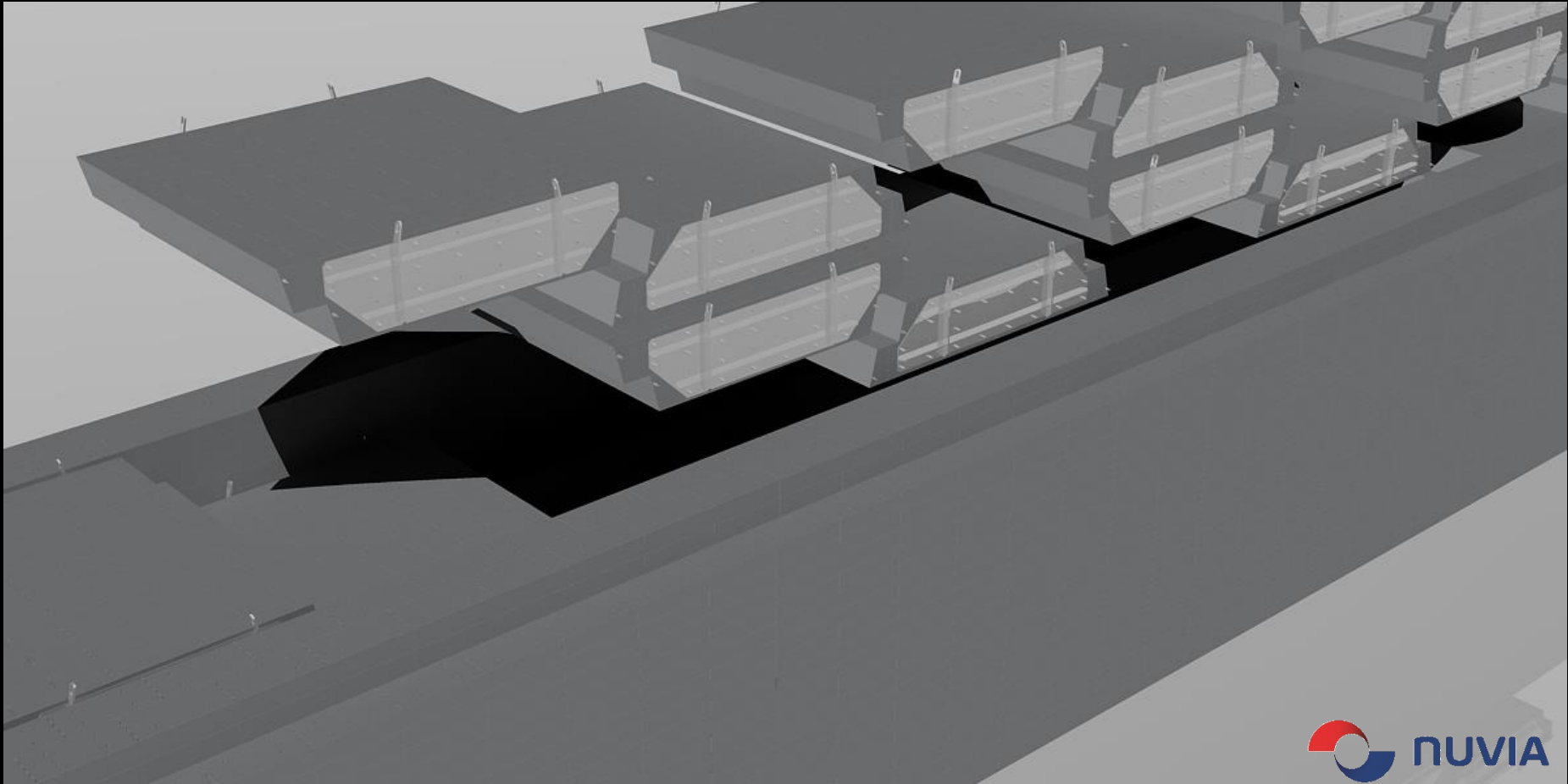


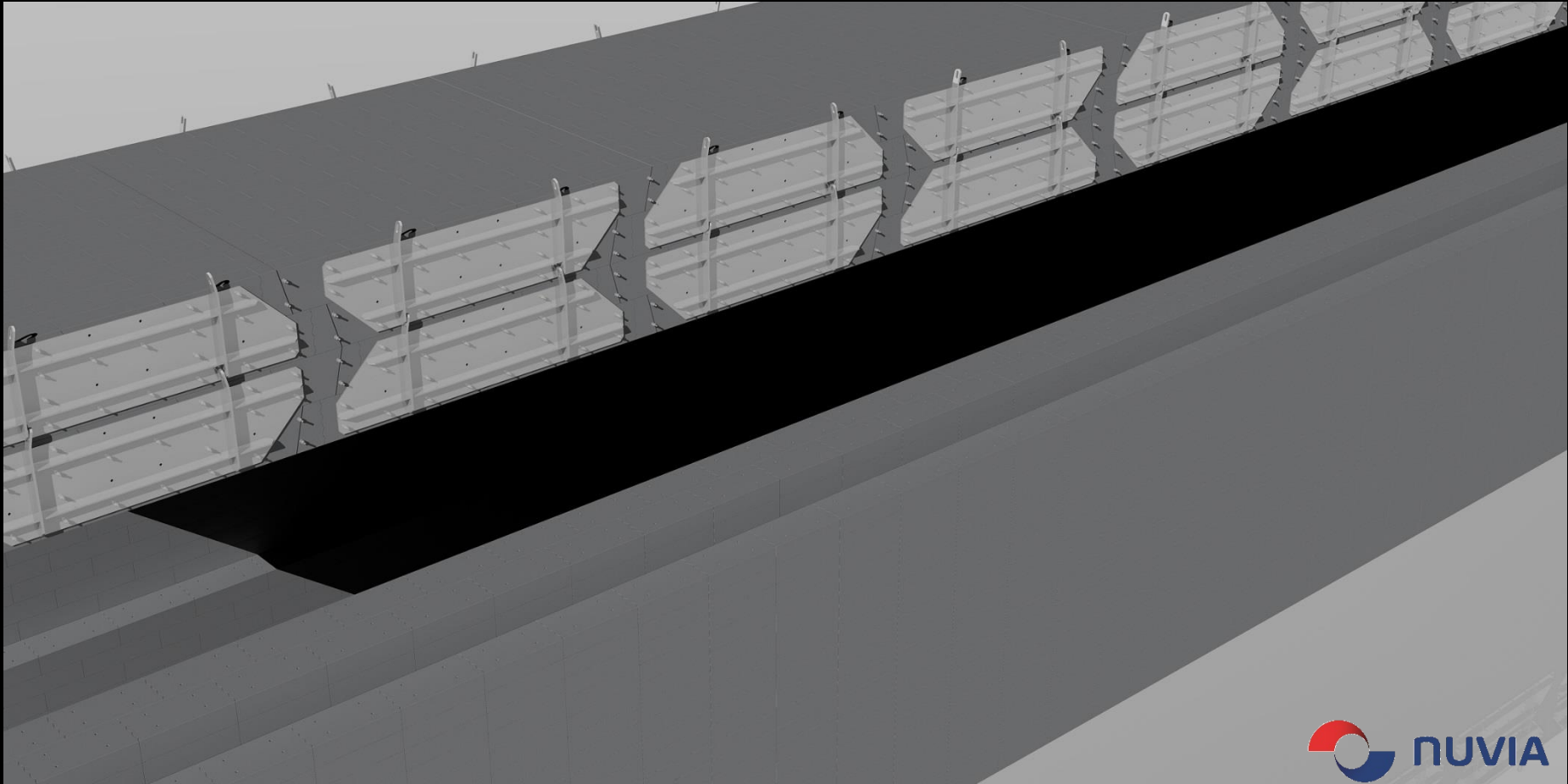
















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