

SUPPLEMENTARY MATERIAL

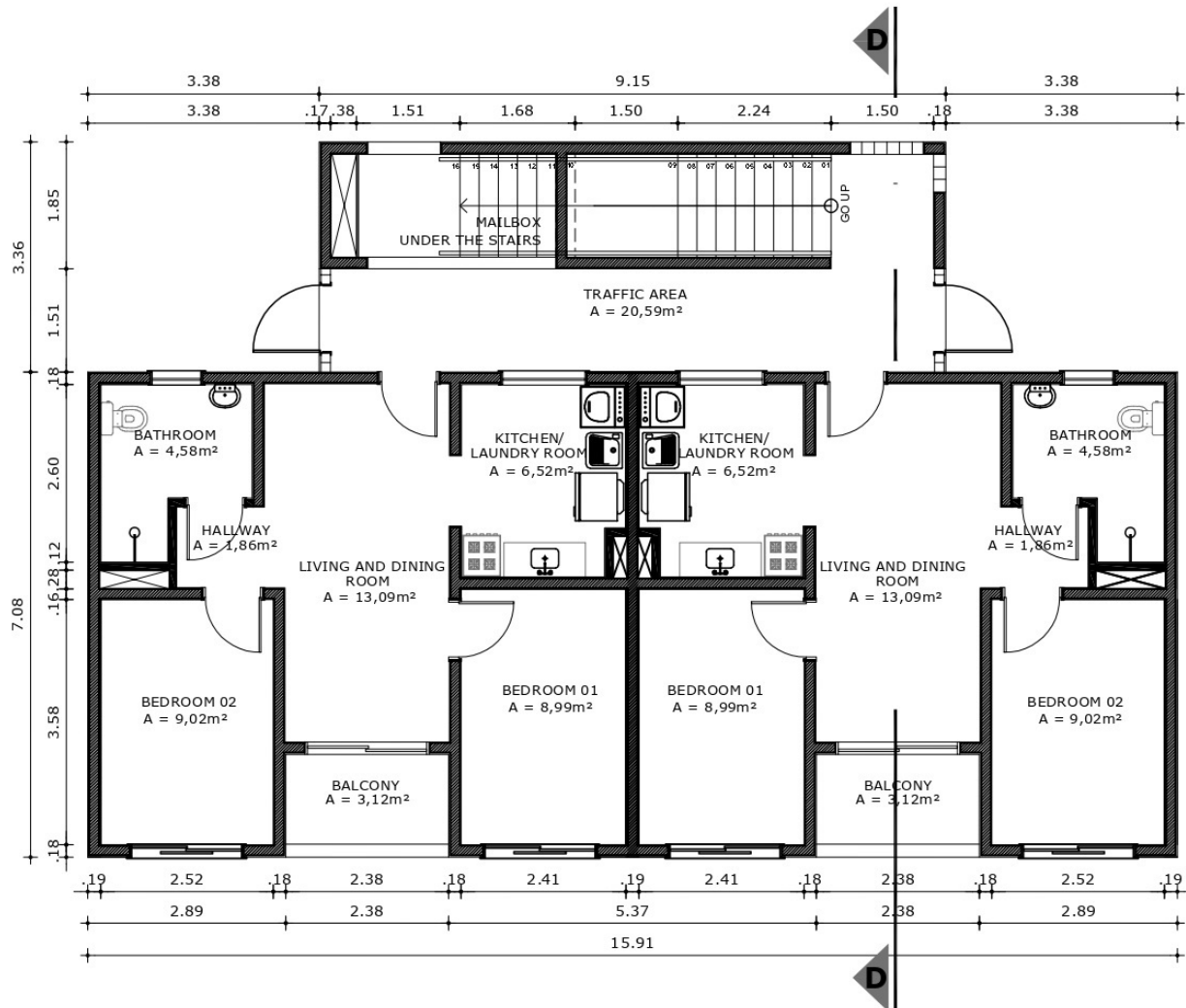


Figure S1. Architectural form plan - Ground floor plan.

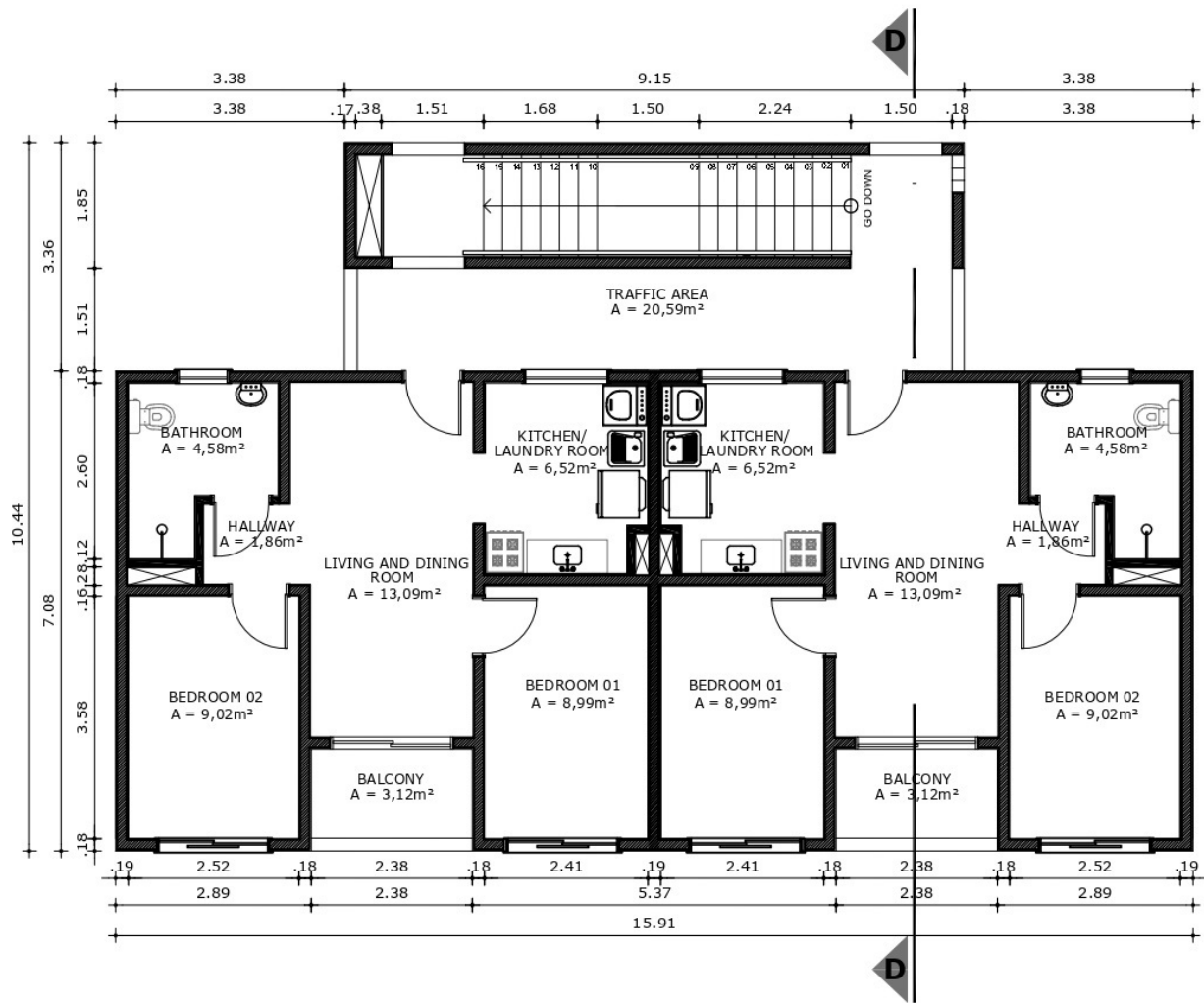


Figure S2. Architectural form plan - Typical floor plan.

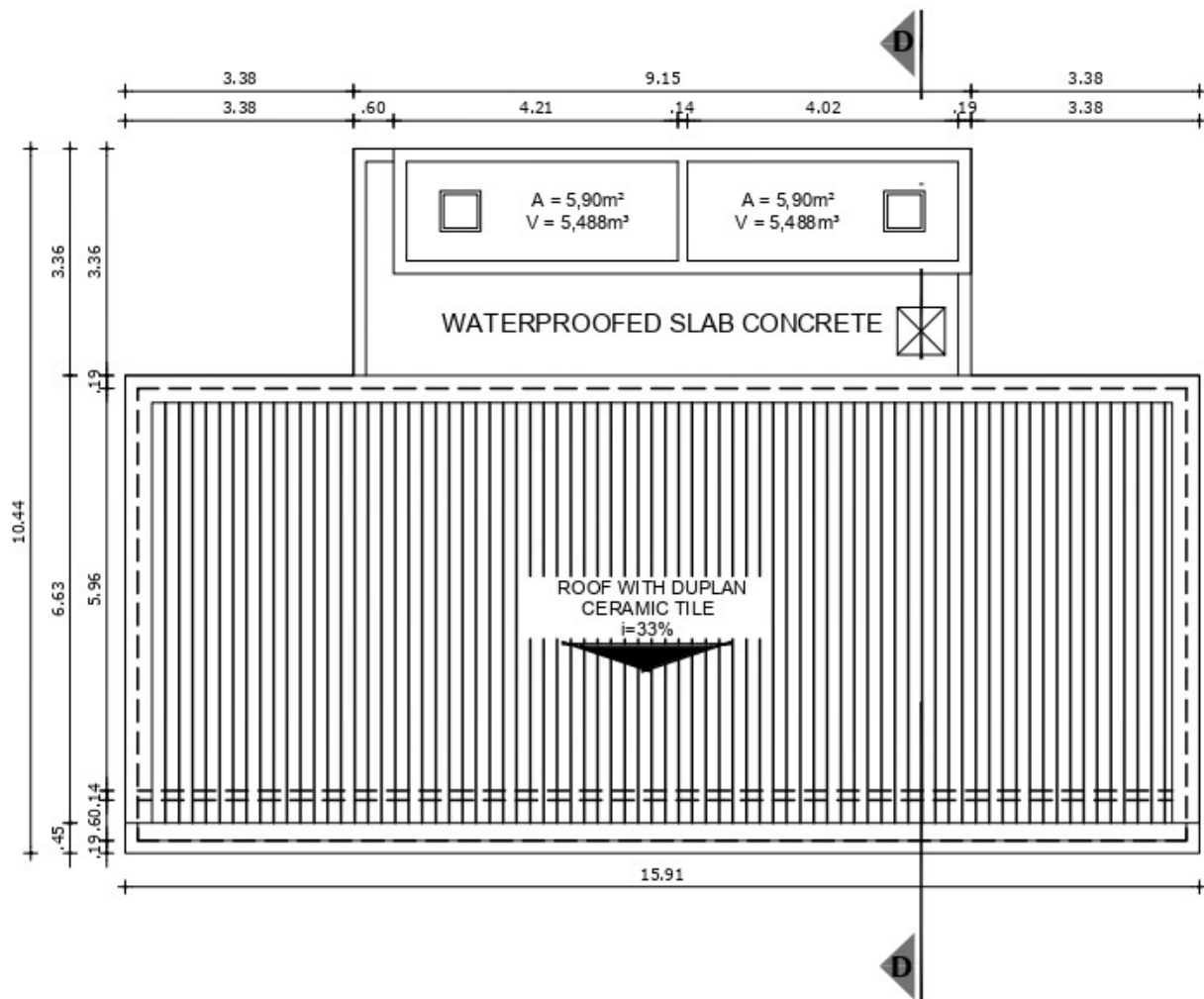


Figure S3. Architectural form plans - Roof plan.





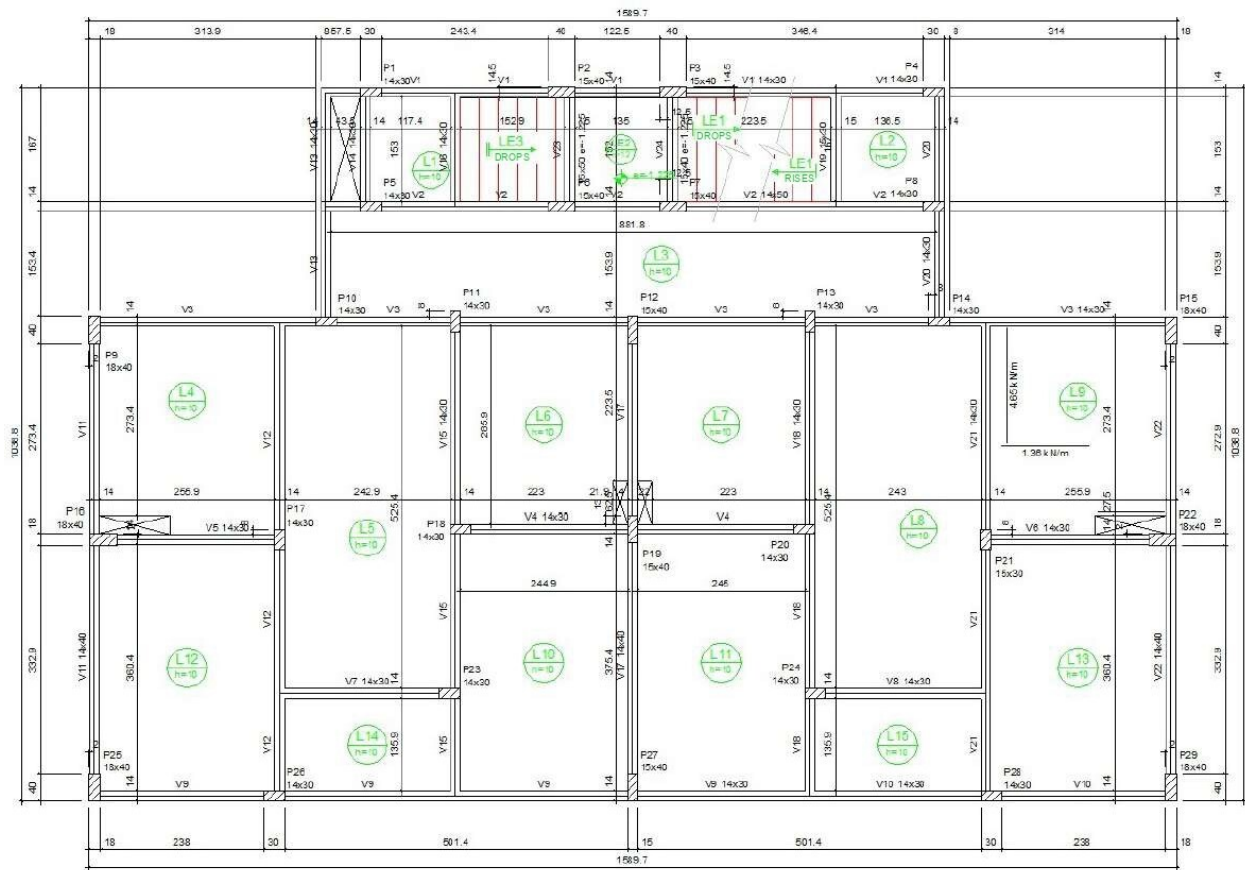


Figure S6. Structural form plan and representative section - Typical floor form plan.



Figure S7. Structural form plan and representative section - Roof form plan.

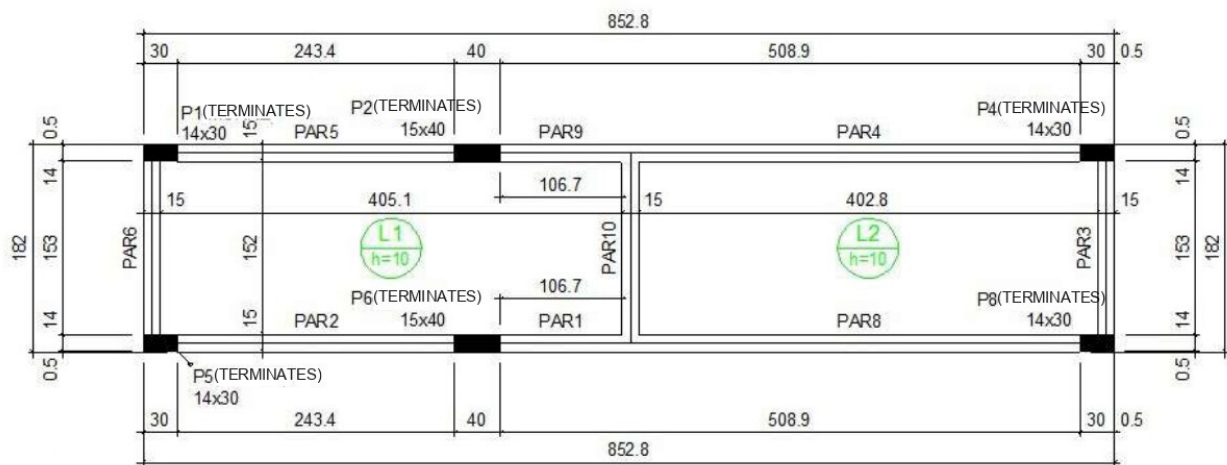


Figure S8. Structural form plan and representative section - Water tank level form plan.

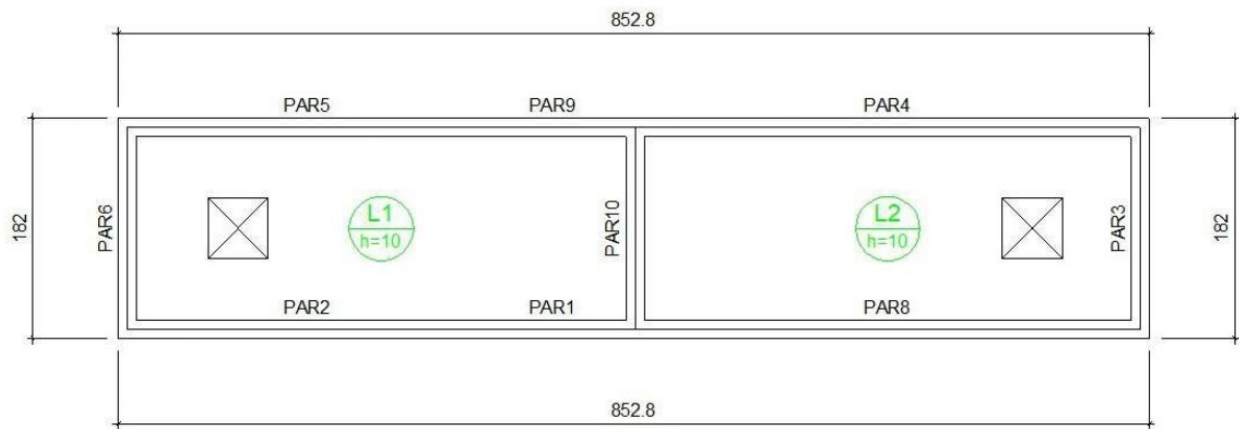


Figure S9. Structural form plan and representative section - Top of water tank form plan.

Table SI. Adopted loads and wind parameters.

Category	Element / Area	Assumption (Value)	Unit	Basis / Standard	Notes
Permanent (Dead) Loads	Reinforced conventional concrete	25	kN/m ³	NBR 6120 (ABNT 2019)	Self-weight
Permanent (Dead) Loads	Reinforced lightweight concrete	18.5	kN/m ³	NBR 6120 (ABNT 2019)	Self-weight
Permanent (Dead) Loads	Masonry (hollow clay brick)	13	kN/m ³	NBR 6120 (ABNT 2019)	Density adopted
Permanent (Dead) Loads	Plaster coating	19	kN/m ³	NBR 6120 (ABNT 2019)	Density adopted
Permanent (Dead) Loads	Floor finishes – interior slabs	1	kN/m ²	NBR 6120 (ABNT 2019)	Superimposed dead load
Permanent (Dead) Loads	Floor finishes – stairs & roof	0.8	kN/m ²	NBR 6120 (ABNT 2019)	Superimposed dead load
Permanent (Dead) Loads	Roof self-weight (architectural areas)	0.7	kN/m ²	NBR 6120 (ABNT 2019)	Additional dead load
Live Loads	Bedrooms, living rooms, kitchens	1.5	kN/m ²	NBR 6120 (ABNT 2019)	Occupancy load
Live Loads	Bathrooms, service areas	2	kN/m ²	NBR 6120 (ABNT 2019)	Occupancy load
Live Loads	Shared-use corridors	3	kN/m ²	NBR 6120 (ABNT 2019)	Occupancy load

Table SI. Continuation.

Live Loads	Roof (inspection/ maintenance access)	1	kN/m ²	NBR 6120 (ABNT 2019)	Occasional access
Wind Actions	Basic wind speed (Paraíba, Brazil)	30	m/s	NBR 6123 (ABNT 2023b)	From isopleths
Wind Actions	Exposure factor (S_1)	1	dimensionless	NBR 6123 (ABNT 2023b)	Typical Category II terrain
Wind Actions	Topographic factor (S_2)	1	dimensionless	NBR 6123 (ABNT 2023b)	Flat/benign topography
Wind Actions	Shape factor (S_3)	0.8–1.3	dimensionless	NBR 6123 (ABNT 2023b)	Rectangular plan; H < 30 m
Wind Actions	Partial & combination factors (wind)	$\gamma_{unfav} = 1.40$; γ_{fav} $= 0.00$; $\psi_0 =$ 0.60; $\psi_1 = 0.30$; $\psi_2 = 0.00$	dimensionless	NBR 6118 (ABNT 2023a)	Per Table 4 of the TCC
Load Combinations (ULS)	Partial factors (permanent/variable)	$\gamma_g = 1.4$; $\gamma_q = 1.4$	dimensionless	NBR 8681 (ABNT 2003)	Standard ULS combo
Load Combinations (ULS)	Combination factor (secondary variables)	$\varphi_0 = 0.7$	dimensionless	NBR 8681 (ABNT 2003)	Live loads & wind