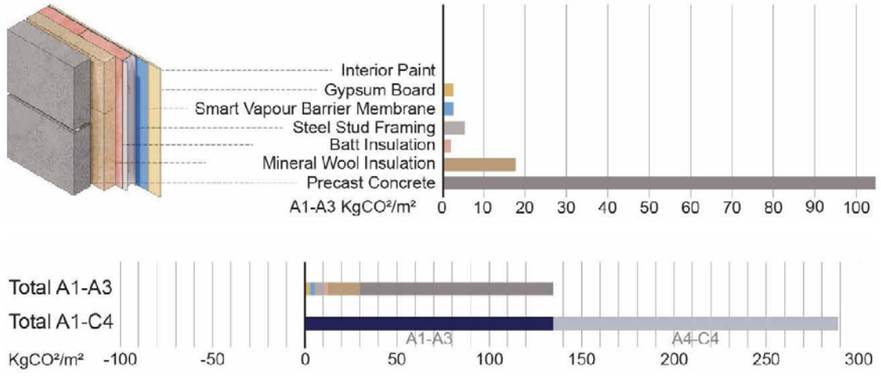
APPENDIX A **WALL ASSEMBLY 12**

W12: Results Summary

Metrics	Results
Description	**Architectural Precast with Mineral Wool Interior Insulation**
Effective R-value	RSI-4.2 m^2K/W | R-24.1 $ft^2 \cdot °F \cdot h/BTU$
Embodied Carbon per m^2 of Enclosure (A1-A3)	135.8 $kgCO_2/m^2$
Biogenic Carbon per m^2 of Enclosure	0 $kgCO_2/m^2$



W12: Assembly Effective R-value Calculation

Description	t_{SI}	t_{IP}	k	C (USI)	$RSI_{effective}$	$R_{effective}$	$R_{nominal}$
Units	mm	in	W/mK	W/m^2K	m^2K/W	$ft^2 \cdot °F \cdot h/BTU$	$ft^2 \cdot °F \cdot h/BTU$
Interior air film					0.12	0.68	
Interior gypsum board	12.7	0.50	0.16	27.0	0.04	0.21	
Smart vapour retarder	-	-	-	-	-	-	
Steel stud-framed wall with mineral fiber batt insulation	88.9	3.50	0.01	0.16	1.10	6.25	
Rigid or semi-rigid mineral fibre board insulation (continuous)	102	4.00	0.01	0.06	2.88	16.3	17.2
Precast concrete panel	152	6.00	2.10	13.8	0.07	0.41	
Exterior air film					0.03	0.17	
TOTALS	**356**	**14.0**			**4.20**	**24.1**	**17.2**

W12: Embodied Carbon Emissions (A1 to A3 Life Stages) for 9m² Assembly Area

Category	Material	Description (from EPD)	Thickness	Material Volume	Carbon Emissions (A1-A3)	% of total
Units			mm	m^3	kgCO2e	%
Finish	Interior Paint	Eggshell acrylic paint, 1294.29 kg/m3 (Generic)	0.16 (0.0063")	0.0014	0.56	0.1%
Finish	gypsum board	Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3) (Generic)	12.7 (0.5")	0.1143	26.00	2.1%
Exterior Membrane	Smart vapour barrier membrane	Vapor Barrier, (Generic)	-	*	23	1.9%
Back-up structure	Steel stud	Steel stud framing for drywall/gypsum plasterboard per sq. meter of wall area (incl. air gaps per m3), C-profile: 92 x 40 mm, gauge 25, 3 m height x 406.4 mm (400 mm) spacing (Generic)	-	*	55	4.5%
Insulation	mineral wool insulation	Mineral fiber batt insulation (Generic)	88.9 (3.5")	0.6001	18	1.5%
Exterior Insulation	Mineral wool insulation board (continuous)	Heavy density mineral wool board, 1 m2K/W, 34 mm (1.34 in), 4.2 kg/m2 (0.86 lb/ft2), 123.52 kg/m3 (7.71 lb/ft3), Industry average US (NAIMA)	101.6 (4")	0.9144	160	13.1%
Exterior Finish	Precast concrete	Precast concrete, architectural wall panel (Generic)	152.4 (6")	1.3716	940	77.0%
				TOTAL	**1222.56**	100.2%

**Software auto-calculates the impact based on the area provided.*

W12: Environmental Emissions (A1 to C4 Life Stages) for 9m² Assembly Area

Lifecycle Stage		**A1 to C4**	A1-A3	A4-A5	B1-B5	C1-C4	A1-A3 Contribution to total
Category	Units	**Total**	Construction Materials	Transport to Site & Construction	Material Replacement & Refurbishment	Deconstruction	%
Global Warming	kg CO2e	**2599.9**	1226.5	25.8	47.6	1299.9	47.18%
Acidification	kg SO	**0.0**	0.0	0.0	0.0	0.0	49.93%
Eutrophication	kg Ne	**39.5**	19.5	0.1	0.1	19.7	49.42%
Ozone Depletion	kg CFC11e	**2**	1	0	0	1	48.90%
Formation of Tropospheric Ozone	kg O3e	**473.9**	230.7	4.2	2.2	237.0	48.67%
Fossil Fuel Primary Energy	MJ	**23601.0**	9594.1	733.9	1472.5	11800.5	40.65%
Biogenic Carbon Storage	kg CO2e	**0**	0	0	0	0	