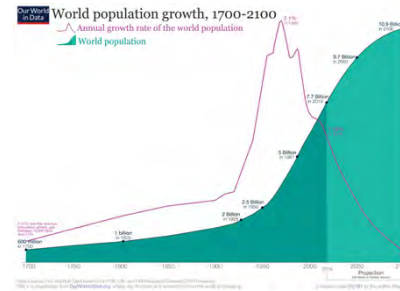


DEVELOPING A CARBON-NEUTRAL FUTURE

the role of organizations



URBAN POPULATION

2.75 billion additional by 2060

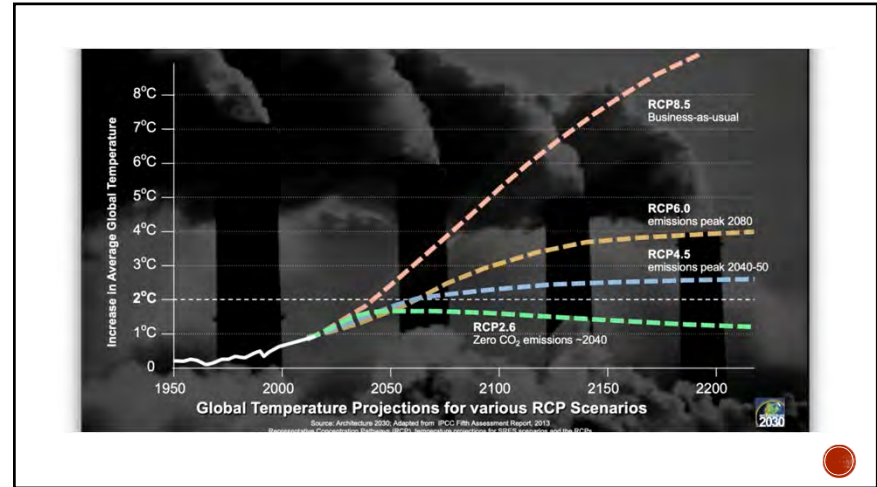
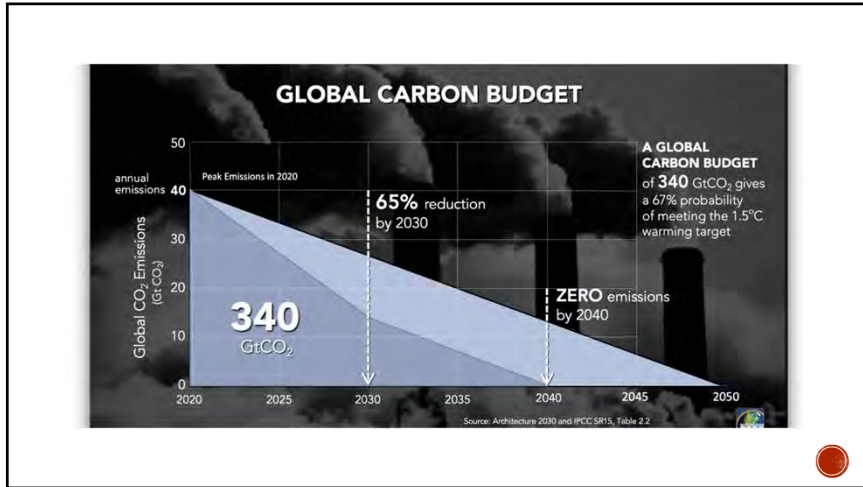


GLOBAL CONSTRUCTION INDUSTRY

By 2060:

- Global building floor area increase
- 230 billion m² or 2.3 trillion ft²
- This **doubles** current worldwide building stock
- "building an entirely new planet next to the existing one" ...in forty years
- Ed Mazria, Executive Director of Architecture 2030





A CARBON NEUTRAL, BUILT ENVIRONMENT

Step 1

Planning, Design & Construction

70% – 80% of goal

Step 2

Renewables

20% – 30% of goal

THE PCA ROAD MAP

The value chain

CLINKER
Key chemically reactive ingredient

CEMENT
The binder

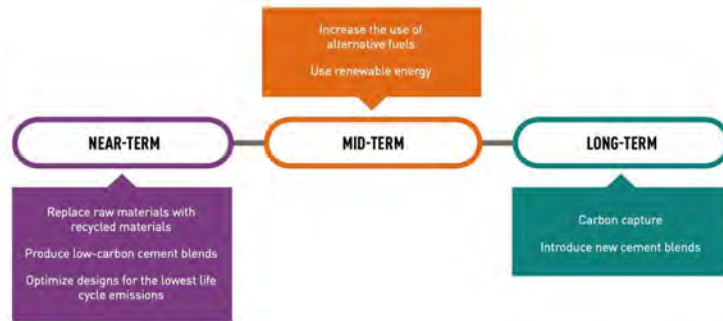
CONCRETE
Critically useful material to society

CONSTRUCTION
Service life / use phase impacts

CARBONATION
Concrete is a CO₂ sink

<https://www.cement.org/sustainability/roadmap-to-carbon-neutrality>

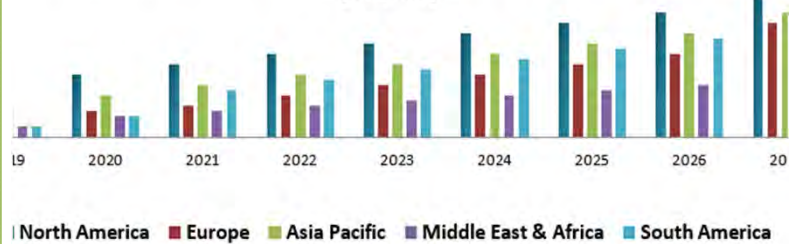
THE PCA ROAD MAP: SOLUTIONS



<https://www.cement.org/sustainability/roadmap-to-carbon-neutrality>

The concrete industry produces about **10 billion tons** annually.

Global Green Concrete Market, by Region 2019-2027 (US\$ Bn)




BARRIERS TO SUCCESS?



ASSOCIATION VIEWPOINT

Renewal, Reinvention and Responsibility



HOW DO WE:
LEARN | INSPIRE | LEAD

TO ENSURE SUCCESS?



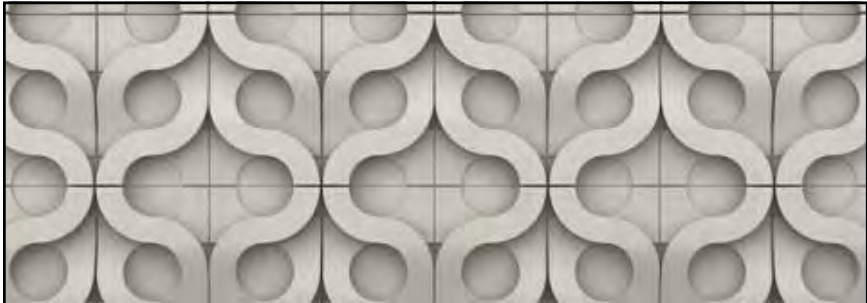
HOW DO WE DEFINE SUCCESS?



**RENEWAL:
LEADING FROM WITHIN**



**RENEWAL:
EVOLVING FROM THE OUTSIDE**



REINVENTION: CREATING VISION

As published in Architect magazine



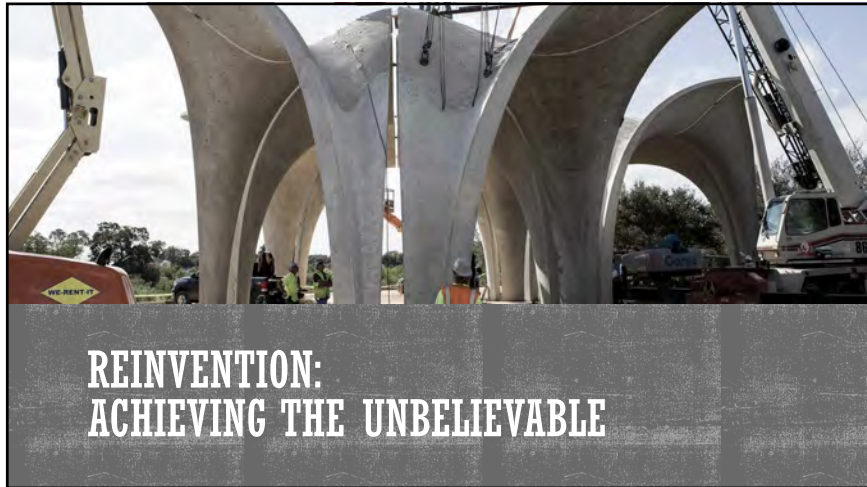
REINVENTION: LIBERATING CREATIVITY



MARS PAVILION

Joseph Sarafian – Parametric Architecture
Architect magazine





RESPONSIBILITY: FOSTERING PERFORMANCE

PROVISIONAL CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 308-14) AND COMMENTARY

COMMENTARY

proposed for members involved with Concrete Classes R2C and R2D because of the potential for reducing the volume fraction of voids. It is not clear to what extent the members with minimal "bulk cement" content in Figure 5.3.2-1 (Class R2) are likely to be used in terms of relative area. While there is an inherent danger of overuse of the current requirements, the code is subject to change in subsequent editions. It is not the intent of the code to be overly restrictive.

Table 5.3.2—Concrete design requirements for exposure categories and classes

Exposure class	Maximum w/cm	Minimum f_c' , psi*	Additional minimum requirements			
Air content						
R0	N/A	2500	N/A			N/A
R1	0.55	2500	Table 5.4.1			N/A
R2	0.45	4000	Table 5.4.1			Table 5.4.2
R3	0.40	5000	Table 5.4.1			Table 5.4.2
Conventional materials¹—types						
		ASTM C150/C150M	ASTM C595/C595M	ASTM C1157/C1157M		Calcium chloride admixture
R50	N/A	2500	No type restriction	No type restriction	No type restriction	No restriction
R51	0.50	2500	II	Types with (MS) designation	M6	No restriction
R52	0.45	3000	V ²	Types with (HS) designation	HS	Not permitted
R53	0.45	3000	V + pozzolan or slag	Types with (HS) designation plus pozzolan or slag cement ²	HS + pozzolan or slag cement ²	Not permitted
Maximum water-soluble chloride ion (Cl⁻) content in concrete, percent by mass of cementitious material³ in reinforced concrete						
RC0	N/A	2500				1.00
RC1	N/A	2500				0.30
RC2	0.40	4000				0.15

Table 5.3.2—Exposure categories and classes

Exposure class	Maximum slump ²	Minimum f_c' , psi
R0	6	2500
R1	5	3000
R2	5	3500
R3	4	4000

*Maximum specified slump shall have a tolerance for purposes of field testing.

DEVELOPING A CARBON-NEUTRAL FUTURE

the role of organizations

COMMITMENT

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