
PEx
Center of Excellence for Preservation
and Service Life Extension
Welcome!
Roadmapping Workshop
Sept 18, 2024

Center of Excellence for Preservation and Service Life Extension

Meeting Objectives

- Learn about this new Center of Excellence which is focused on reducing the impact on the environment by preserving and extending the service life of exiting concrete structures
- Develop strategies to:
  - Measure the benefit of service life extension
  - Educate and motivate owners and other stakeholders?
  - How best to do this?
  - What else?

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Meeting Agenda

Time	Topic	Speaker(s)
7:00 – 8:00	Registration & Breakfast	Group
8:00 – 8:45	Introduction to P+Ex	Peter Emmons & David Whitmore
8:45 – 9:15	Keynote – ESG & Asset Management	Alex Brisson – CEO of Norda Stelo
9:15 – 9:45	Keynote – Reduced CO_2 in Durable Systems: Using LCA and EPD to Avoid Greenwashing in the EU	Mikaela Decio – Corporate Environmental Sustainability Manager, Mapei
9:45 – 10:00	Coffee break	Group
10:00 – 10:15	Introduction to Breakout Sessions	Peter Emmons & David Whitmore
10:15 – 12:00	Breakout Session #1 – Road mapping	Group
12:00 – 12:45	Lunch & Networking	Group
12:45 – 1:30	Breakout session presentations and discussion	Group
1:30 – 3:30	Breakout Session #2 – Road mapping	Group
3:30 – 3:45	Coffee break	Group
3:45 – 4:45	Breakout session presentations and discussion	Group
4:45 – 5:00	Next steps and closing comments	Peter Emmons & David Whitmore


Long Time Academy
Video
“Background
Perspective”


BBC

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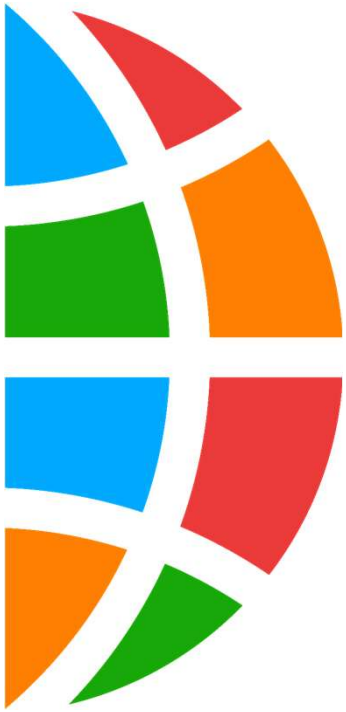

How Does This Relate to Our Industry?

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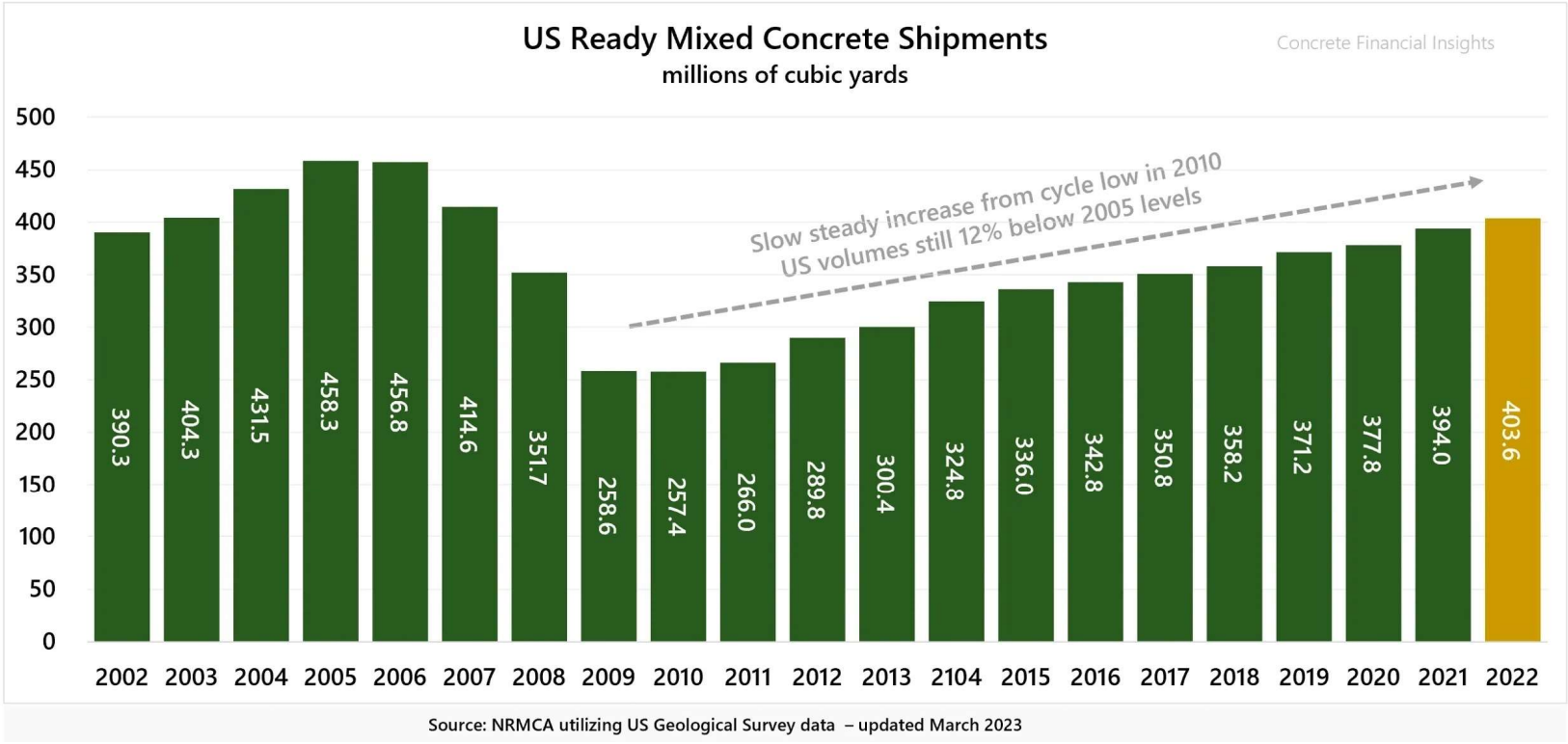
Ready Mix Consumption USA- Only 2.3% of World



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CO_2 Impact of Extending Service Life

- **400 Million CY** of new concrete placed each year in USA
  - Material production only, contributes 80 Million Tons of CO_2 to the atmosphere (*source PCA, 400# CO_2/cy)*
- **12 Billion CY** Current inventory of Existing Concrete in USA
  - 12 Billion CY = 2.4 Billion Tons of CO_2
  - Repairing , Protecting, Rehabilitating, Preserving
  - Extending the Service Life
  - Everyday we extend the service life of existing concrete inventory

    = **Savings of 6.6M tons of CO_2 ***

* less the CO_2 required to preserve the existing concrete which is generally minimal

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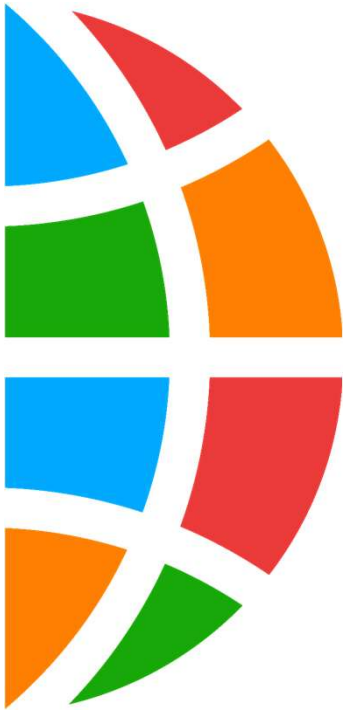
Impact



SERVICE LIFE Extension is a **NET REDUCER** of CO_2 Emissions

Also Saves Resources for Future Use and Offsets the Need to Demolish and Replace Structures we Already Have

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Brief History of P+Ex

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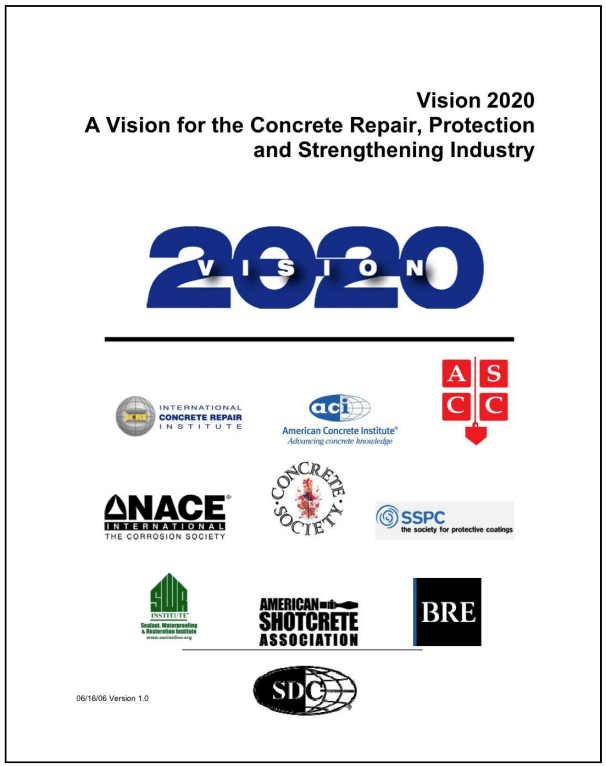
2020 VISION First Industry Plan



- 1998 ACI forms new subsidiary SDC*
- 2004 SDC facilitates Vision 2020 Plan
- 2006 Vision 2020 plan endorsed: action begins
- 2006-13 562 Repair Code is created (V2020)
- 2014 ICRI 160 Sustainability white paper (V2020)
- 2019 563 Repair Specifications (V2020)
- 2020 SDC dissolved
- 2023 PEX Center of Excellence ——>
- *2024 PEX Creates Industry Plans*

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* **SDC** Strategic Development Council was created by ACI to provide **industry strategic problem solving** for technology advancement within the concrete industry

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Vision 2020 Goals (I)

1. Industry Cooperation
2. Accelerate Industry Documents
3. Create Repair Code
4. Create Repair Specifications
5. Improve Repair Materials
6. Friendly Repair Methods/Materials
7. Predict Performance
8. Strategic Repair Research Council

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Vision 2020 Goals (2)

9. Recruiting, Increase Professionals
10. Improve Project Relationships
11. Educate Owners
12. Accurate Assessment
13. Specific Repair Systems
14. Branding & Promotion of Concrete Repair Industry
15. Sustainability of Concrete Repair

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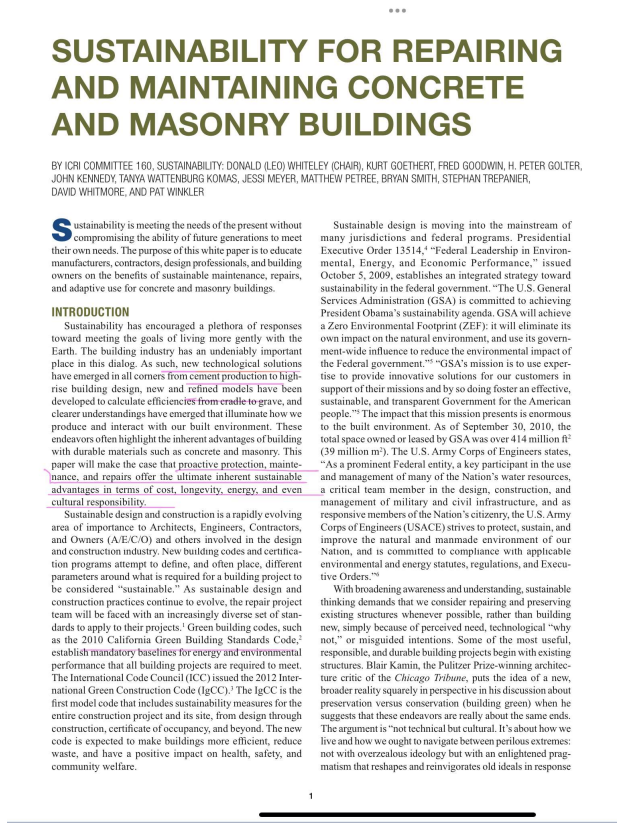
Vision 2020 Goal, ICRI Committee



SUSTAINABILITY FOR REPAIRING AND MAINTAINING CONCRETE AND MASONRY BUILDINGS

BY ICRI COMMITTEE 160, SUSTAINABILITY: DONALD (LEO) WHITELEY (CHAIR), KURT GOETHERT, FRED GOODWIN, H. PETER GOLTER, JOHN KENNEDY, TANYA WATTENBURG KOMAS, JESSI MEYER, MATTHEW PETREE, BRYAN SMITH, STEPHAN TREPANIER, DAVID WHITMORE, AND PAT WINKLER

Sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs. The purpose of this white paper is to educate manufacturers, contractors, design professionals, and building owners on the benefits of sustainable maintenance, repairs, and adaptive use for concrete and masonry buildings.

INTRODUCTION

Sustainability has encouraged a plethora of responses toward meeting the goals of living more gently with the Earth. The building industry has an undeniably important place in this dialog. As such, new technological solutions have emerged in all corners from cement production to high-rise building design, new and refined models have been developed to calculate efficiencies from cradle to grave, and clearer understandings have emerged that illuminate how we produce and interact with our built environment. These endeavors often highlight the inherent advantages of building with durable materials such as concrete and masonry. This paper will make the case that proactive protection, maintenance, and repairs offer the ultimate inherent sustainable advantages in terms of cost, longevity, energy, and even cultural responsibility.

Sustainable design and construction is a rapidly evolving area of importance to Architects, Engineers, Contractors, and Owners (A/E/C/O) and others involved in the design and construction industry. New buildng codes and certification programs attempt to define, and often place, different parameters around what is required for a building project to be considered "sustainable." As sustainable design and construction practices continue to evolve, the repair project team will be faced with an increasingly diverse set of standards to apply to their projects.[1] Green building codes, such as the 2010 California Green Building Standards Code,[2] establish mandatory baselines for energy and environmental performance that all building projects are required to meet. The International Code Council (ICC) issued the 2012 International Green Construction Code (IgCC).[3] The IgCC is the first model code that includes sustainability measures for the entire construction project and its site, from design through construction, certificate of occupancy, and beyond. The new code is expected to make buildings more efficient, reduce waste, and have a positive impact on health, safety, and community welfare.

Sustainable design is moving into the mainstream of many jurisdictions and federal programs. Presidential Executive Order 13514,[4] "Federal Leadership in Environmental, Energy, and Economic Performance," issued October 5, 2009, establishes an integrated strategy toward sustainability in the federal government. "The U.S. General Services Administration (GSA) is committed to achieving President Obama's sustainability agenda. GSA will achieve a Zero Environmental Footprint (ZEF): it will eliminate its own impact on the natural environment, and use its government-wide influence to reduce the environmental impact of the Federal government."[5] "GSA's mission is to use expertise to provide innovative solutions for our customers in support of their missions and by so doing foster an effective, sustainable, and transparent Government for the American people."[5] The impact that this mission presents is enormous to the built environment. As of September 30, 2010, the total space owned or leased by GSA was over 414 million ft^2 (39 million m^2). The U.S. Army Corps of Engineers states, "As a prominent Federal entity, a key participant in the use and management of many of the Nation's water resources, a critical team member in the design, construction, and management of military and civil infrastructure, and as responsive members of the Nation's citizenry, the U.S. Army Corps of Engineers (USACE) strives to protect, sustain, and improve the natural and manmade environment of our Nation, and is committed to compliance with applicable environmental and energy statutes, regulations, and Executive Orders."[6]

With broadening awareness and understanding, sustainable thinking demands that we consider repairing and preserving existing structures whenever possible, rather than building new, simply because of perceived need, technological "why not," or misguided intentions. Some of the most useful, responsible, and durable building projects begin with existing structures. Blair Kamin, the Pulitzer Prize-winning architecture critic of the *Chicago Tribune*, puts the idea of a new, broader reality squarely in perspective in his discussion about preservation versus conservation (building green) when he suggests that these endeavors are really about the same ends. The argument is "not technical but cultural. It's about how we live and how we ought to navigate between perilous extremes: not with overzealous ideology but with an enlightened pragmatism that reshapes and reinvigorates old ideals in response

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"Sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs. The purpose of this white paper is to educate manufacturers, contractors, design professionals, and building owners on the benefits of sustainable maintenance, repairs, and adaptive use for concrete and masonry buildings."

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130 Sustainability Document

The thoughtful extension of the life of existing structures through careful repair and a commitment to long-term maintenance is a responsible answer to the reality of reducing our impact on the environment.

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130 Sustainability Document

Increase leadership in infrastructure renewal: "America's infrastructure needs bold leadership and a compelling vision at the national level. During the 20th century, the federal government led the way in building our nation's greatest infrastructure systems, from the New Deal programs to the Interstate Highway System and the Clean Water Act. Since that time, federal leadership has decreased, and the condition of the nation's infrastructure has suffered. Currently, most infrastructure investment decisions are made without the benefit of a national vision. That strong national vision must originate with strong leadership at all levels of government and the private sector. Without embracing a strong national vision, the infrastructure will continue to deteriorate."

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130 Sustainability Document

It takes a lot of energy to construct a building. For example, building a 50,000 ft^2 (4600 m^2) commercial building requires the same amount of energy needed to drive a car 20,000 miles (32,000 km) a year for 730 years.

We are much too inclined to think of our buildings as disposable rather than a renewable resource. A 2004 report from the Brookings Institution[13] projects that by 2030, we will have demolished and replaced 82 billion ft^2 (7.6 billion m^2) of our current building stock. Because it is estimated that there are about 300 billion ft^2 (28 billion m^2 of space in the United States today, we anticipate demolishing nearly one-third of our building stock in the next 20 to 25 years.

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130 Sustainability Document

It will take as much energy to demolish and reconstruct this 82 billion ft^2 (7.6 billion m^2) of space (as predicted by the Brookings study) as it would to power the entire state of California—the 10th largest economy in the world with a population of about 36 million people—for 10 years.

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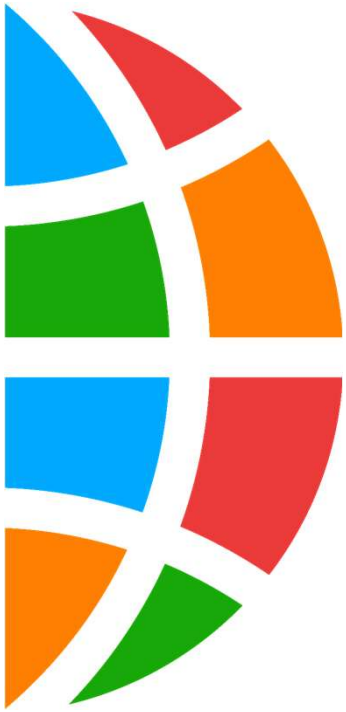
Sustainability Initiative is Largely Unfinished

- A good whitepaper on sustainability was written
- The concrete repair industry was not ready to do more on this issue at that time
- Societal expectations and corporate responsibilities have evolved
- Now there is a need to follow through and address this issue



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P+Ex Established

- Non-profit Center of Excellence established
- Want broad engagement and involvement of industry, academia, institutions, organizations, government and independent individuals
- Funded by industry partners, individuals and organizations who wish to support this initiative

Sika
structural group
VECTOR CORROSION TECHNOLOGIES
FREYSSINET
SIMPSON Strong-Tie
MAPEI
MITSUI & CO.

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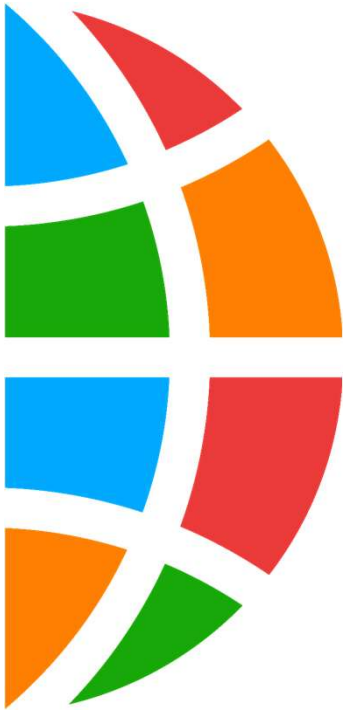
Our Mission



To drive awareness, education, tools and actions to preserve and extend the service life of concrete structures to ensure a sustainable built environment.

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Our Vision

To Promote and Lead “Preservation and Extension of Service Life Initiatives” to contribute to Sustainable Solutions for Society

has suffered. Currently, most infrastructure investment decisions are made without the benefit of a national vision. That strong national vision must originate with strong leadership at all levels of government and the private sector. Without embracing a strong national vision, the infrastructure will continue to deteriorate.”

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Strategies

- How are we going to drive awareness, education, tools and action?
- How can we educate and motivate owners and other stakeholders?
- How are we going to measure the benefit of service life extension?
- What else?

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Roadmapping Workshops

- Objective is to develop detailed strategies and tactics in roadmapping workshops

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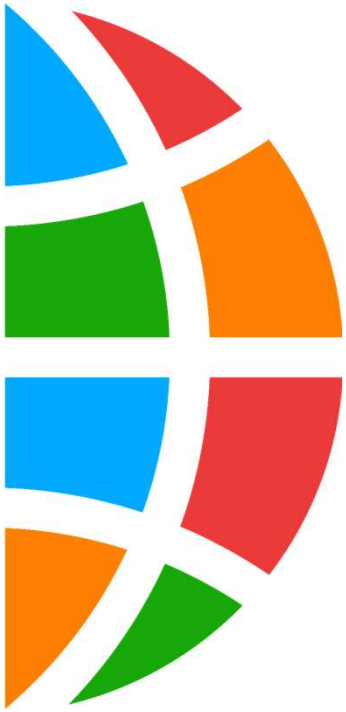
Conclusions



- Thank You for participating!