Making the Case For More Industry-Wide Research Efforts
The Results of Current Industry-Wide Research Efforts

- Non-Farm Productivity
- Construction Productivity

Construction and Non-Farm Labor Productivity Index (1964 = 100%)

Value Added per Employee
2005 dollars
Existing Solutions in Place to do Industry-Wide Research
Vision Statement

“To Provide the AEC Industry with a Better Way to Design and Build.”

Mission Statement

“To Be a Catalyst to Advance Innovation in the Design and Construction of Buildings.”

- **Catalyst**: The word “Catalyst” is used here to imply the Foundation’s intent to bring both Leadership and Resources to the process of “Advancing Innovation”.

- **Buildings**: Buildings will always be in the DNA of the Foundation. Any future project approved by the Foundation will have to prove to be a benefit to the design and construction of buildings. Having said that, it is likely that the current research focus of the Foundation on larger, more impactful concepts may likely benefit the design and construction of all types of structures.
How Research is a Tool to Address Industry Issues?

“In Using Research to find a Solution to a Real Industry Problem”

“In Not a Research Solution in Search of a Real Problem”

In 2013, the Charles Pankow Foundation Board of Directors adopted a Strategic Based Research Program whereby the Foundation will identify a number of Foundation Initiatives that will establish the research priorities for the immediate future. Although the submission of great ideas and interesting individual research projects are always welcome, the majority of the Foundation’s resources will be dedicated to the Foundation Initiatives.
Two Examples of CPF Efforts

- BIM Interoperability
- Updating Our Aging Building Codes
Industry-Wide BIM Strategic Issue

BIM has become the primary communication tool in the AEC Industry

The Problem is ........... It Doesn’t Communicate!!

Food for Thought

- This is an Industry Wide issue.
  - Does Anybody Care?
- The US is far behind other countries in BIM Integration.
  - Does Anybody Care?
- Facility Management Industry is far ahead of the AEC Industry.
  - Does Anybody Care?
- Clash Detection is the “Killer APP” for BIM
  - Clash Detection is 3-D CAD, not BIM
Participants in the BIM World

Where is the Financial Incentive to Solve the Interoperability Issue?
Business Process Re-Engineering in IFC

Workflow Across Multiple Applications for The Precast Concrete Industry
Outdated Building Codes

The Charles Pankow Foundation has identified the convergence of the United States building codes with the current technology available in design and construction practices and advancements in building material properties and manufacturing as a major research focus. Building codes have been slow to adapt to technological changes that will only accelerate in the coming years. **Updating the concrete construction building codes to accommodate modern steel reinforcing materials is an important first step in the process.**
Resources Available to keep Building Codes Current

Diddly-Squat

Thesaurus

Legend: [Synonyms] [Related Words] [Antonyms]

Noun 1. diddly-squat - a small worthless amount; "you don't know jack"
   diddley, diddy, diddy-shit, diddyshit, diddlysquat, doodly-squat, jack, squat, shit
   small indefinite amount, small indefinite quantity - an indefinite quantity that is below average size or magnitude

Based on WordNet 3.0, Fanlex office collection. © 2000-2012 Princeton University, Fanlex Inc.
Initial Steps taken by CPF

1. Identify Barriers
2. Engage Experts
3. Engage Producers
4. Validate with Research
5. Develop Road Map
6. Material Definition Research

$1 Million +
The primary objective of the proposed work is to “prepare a detailed Road Map which specifically identifies the technical support required, whether it be the results of new research/testing or existing research findings, to effect updates of ACI 318 to allow the general use of reinforcing steel bars in excess of Grade 60.”
The HSR Roadmap Game Plan
Net Results of Full Research Effort

• Validation and/or Re-Validation of Most of the ACI 318 Technical Requirements through Rigorous Research Testing and Analysis.

• Convergence of the ACI 318 Code with Modern Material Production Technology

• Convergence of the ACI 318 Code with Current International Building and Design Practices and One-Off Ad Hoc Efforts in the US.
“The gap between material science and actual construction is very far and very wide. It can take decades to move a breakthrough in engineering from a lab to a building site. But as architects and engineers face bigger challenges — from earthquakes to dwindling resources to sheer cost — a new generation of smart materials is emerging.”

GIZMODO, August 25, 2014
How? Industry Cooperation!
What are the Real Implications of Anemic Research?
Discussion Items

- Who is Responsible for Doing Research?
- Who’s Problems is this?
- How Do We Change Things?
- Why Should We Care?
Questions

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