

ASCC Sustainability & Low Carbon Concrete Efforts

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What is ASCC? Concrete Contractor Trade Assoc.

Self Performing GC's



Concrete Contractors

THE TOP 20 FIRMS IN CONCRETE					
RANK		FIRM		(\$ MIL.) 2023 REV.	% CHANGE '22-'23
2024	2023				
1	1	BAKER CONSTRUCTION ENTERPRISES INC.	ASCC	2,300.0	+7
2	2	LITHKO CONTRACTING	ASCC	1,740.7	+8
3	5	SUNTEC CONCRETE INC.	ASCC	909.0	+23
4	3	STRUCTURAL GROUP	ASCC	825.0	+3
5	6	KENT COS. INC.	ASCC	824.6	+25
6	4	LARGO CONCRETE INC.	ASCC	724.6	-2
7	7	CONCRETE STRATEGIES	ASCC	524.2	+4
8	8	KEYSTONE CONCRETE	ASCC	511.5	+7
9	9	CECO CONSTRUCTION GROUP	ASCC	484.7	+4
10	17	PACIFIC STRUCTURES INC.	ASCC	322.3	+37
11	10	ORION CONCRETE	ASCC	315.9	-23
12	11	FESSLER & BOWMAN INC.	ASCC	313.6	+1
13	15	MARTIN CONCRETE CONSTRUCTION	ASCC	296.0	+15
14	**	PRECISION CONCRETE CONSTRUCTION INC.	ASCC	261.2	+83
15	13	CAPFORM INC.	ASCC	260.0	-13

Hundreds more contractors
\$1 million - \$250 million/yr

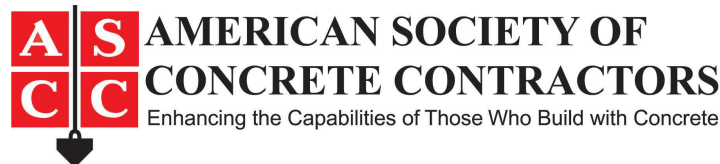
Associates



What Does ASCC Offer?

- **Contractor Hot Line** (> 400 calls/year)
- Position Statements
- Safety & Risk Management Council
- Decorative & Polishing Councils
- Certification, ACI Flatwork & Polishing
- Committees:

- **Sustainability**
- Constructability
- NRMCA/ASCC Paving
- Technical & Others
- Finishing
- Emerging Leaders
- Education & Training



2013

- **Assessing the Impact of “Green” Concrete Mixtures on Building Construction**
 - Lab Trials on high SCM Mixes
 - Delayed set time and early strength gain impacts:
 - Higher formwork pressure
 - More susceptible to plastic shrinkage cracking
 - Delayed saw cutting
 - Postponed resistance to freezing
 - Later stressing of PT cables



Funding:
CHARLES PANKOW
FOUNDATION



ACI Concrete Research Council

2023

- **ASCC Sustainability Committee created**

Allied Associations: NRMCA, PCA, ACI Neu, CRSI

ASCC Members: Beton Consulting, Concrete Strategies, Sundt, Webcor, Lithko, Cemex, SSI, Morley Builders, Master Builders...

- **Webinar EPDs Explained, June**

- **IL Cement /PLC in concrete an industry hot topic**

- **2 Alerts** to heighten ASCC contractor awareness



2023

- **PLC Surveys by ASCC, NRMCA, TCA & ACI 302/ASCC**
 - ~50% of teams, no challenges, *hardly an inconvenience*
 - Others plastic & hardened issues
 - Some ASCC cement & producer members surprised teams having problems, they had done hundreds of trial batches
- **Article in CI: Dec**
 - Matrix EOR's requirements
 - Mesh with contractor recommendations
 - Review RM solution options & mix specific EPD's

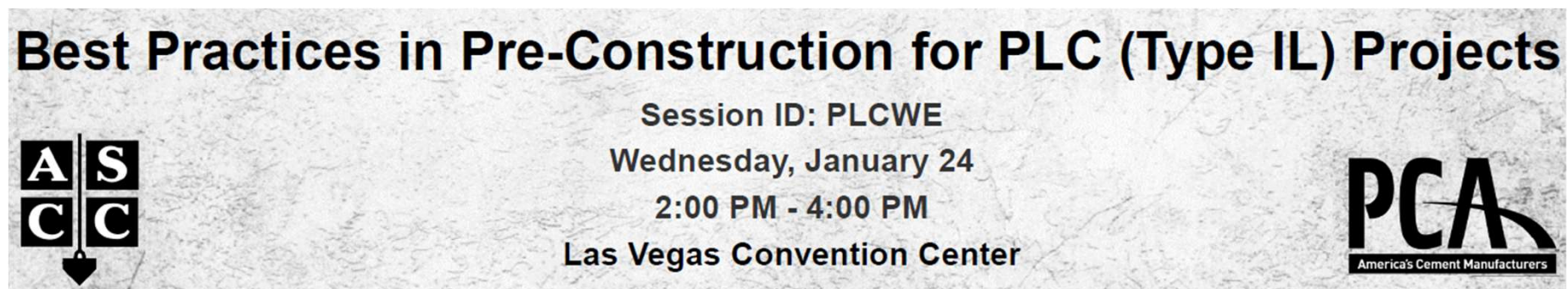
Smart Sustainable Concrete Construction

A framework for concrete contractor participation

by Kyle Kammer, Jeremy Dominik, Monica Chhatwani, Beverly A. Garnant, and Bruce A. Suprenant

2024

- **Jan World of Concrete presentation:**



Looked at successful PLC (IL) projects

- Panels with cement, ready mixed & contractor
- Emphasis on early communication
- Mock ups & more mock ups

2024

- **PLC Survey** published
Concrete International Feb issue

ACI-ASCC Survey on Portland-Limestone Cement Concrete

Summary of responses and comments

by James Klinger, Kevin A. MacDonald, Jerry A. Holland, Scott M. Tarr, Beverly A. Garnant, and Bruce A. Suprenant

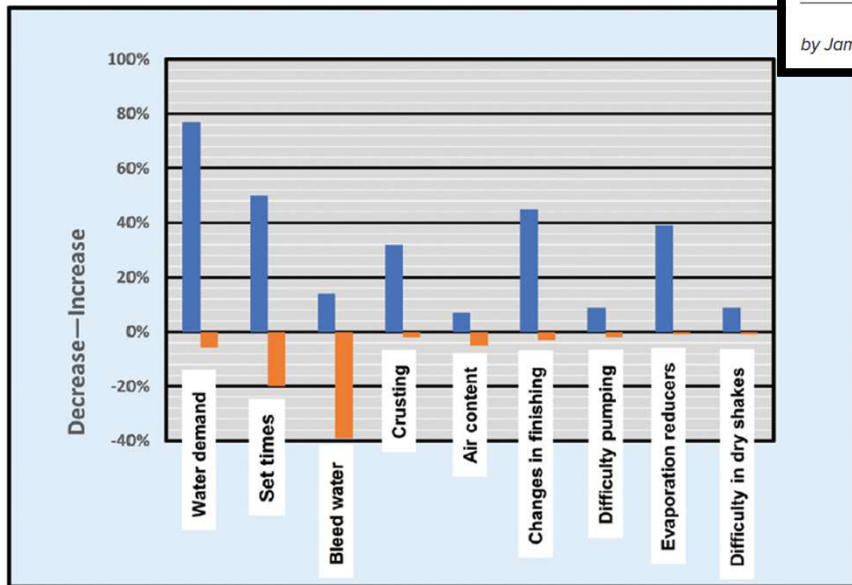


Fig. 5: Changes in characteristics observed by survey respondents when using PLC concrete versus OPC concrete. Positive (blue) bars indicate increased incidences, and negative (orange) bars indicate decreased incidences

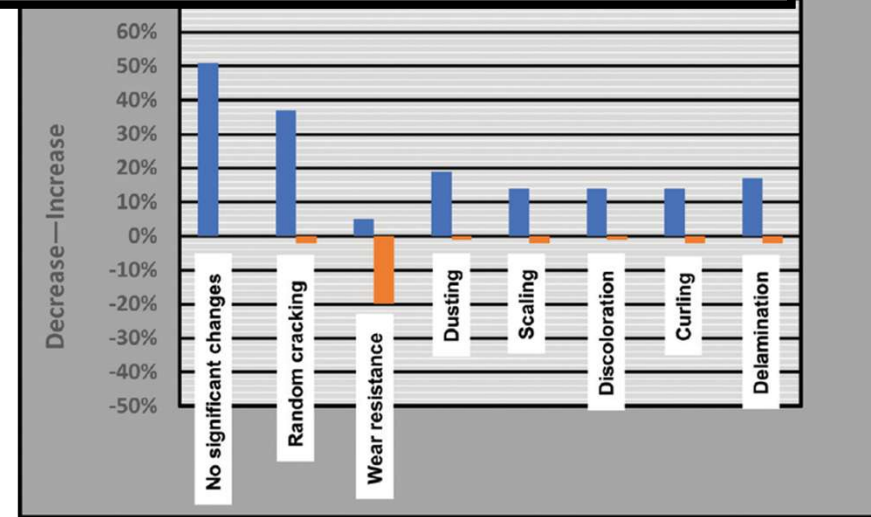


Fig. 9: Changes observed by survey respondents when using PLC concrete versus OPC concrete. Choices were based on Chapter 13 of ACI 302.1R-156

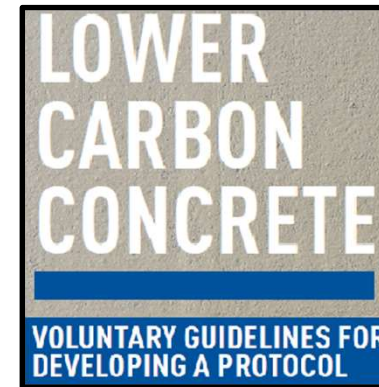
2024

- **Multiple joint NRMCA-ASCC Federal Grant proposals (all no)**
- **ACI Foundation 302-ASCC IL Interior SOG Mixes (yes!)**
 - Attempt to establish statistical differences
 - Find pre-PLC industry baseline
 - What changed in mix proportions?
- **PCA-NRMCA-ASCC-Industry Roundtable IL lessons learned, Oct**



2024

- **Sustainability Comm:** Update each other on Company or Association & ACI developments
- **Contribute on PCA document:** Oct
- **Structure Mag:** Dec
 - Be proactive early
 - Carbon budgeting
 - Validate workability



2024-2025

- Visited 8 cement plants with ASCC Members



MB, Sundt & DPR
Visit CalPortland-
Rillito, AZ



Procon team by kiln,
Roanoke (Titan)-
Troutville, VA

- Ash Grove, NE
- Holcim*, CO
- GCC, NM



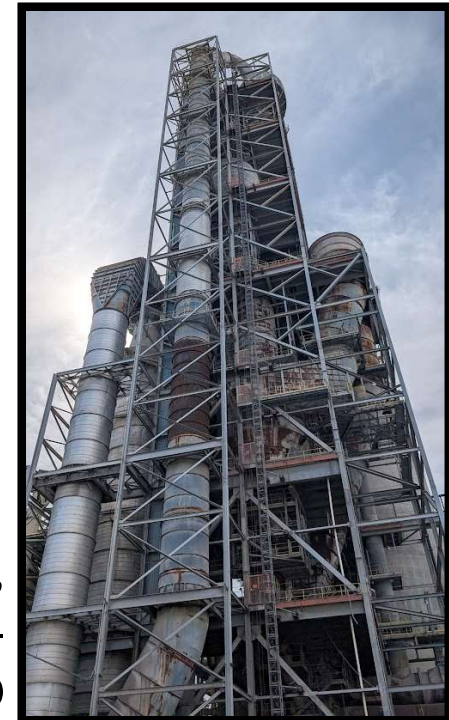
Control Room,
Holcim*-St Gen.
Bloomsdale, MO

*Holcim became Amrize



XRF, GCC-
Pueblo, CO

Preheat tower,
Heidelberg-
Union Bridge, MD



2025

- **P(A)CA-ASCC-NRMCA Blended Cement pres & roundtables**
 - World of Concrete, Jan '25
 - Portland OR, May
 - **Atlanta GA, Oct**
 - **Denver CO, Nov**
 - World of Concrete, Jan '26
 - **Info & Best Practice Examples**
 - **Project Spotlights**
- **Input on MIT CSHub Task Group**



2025 - ? Next ASTM C595 Blended Cements

Next round of blended cements will be unique from plant to plant based on SCM availability & local market needs

ASCC goal to find out:

- What will the next blended cement be?
- Where & when will ready mixed test it?
- Can ASCC Members place & finish some?

ASTM C595 Blended cements (not IL) available:

With slag + :

- IT(S38)(L7)
- IT(S30)(P10)
- IT(S30)(L11)

Pozzolans + limestone:

- IT(P25)(L6) HS
- IT(P25)(L3)
- IT(P20)(L10)
- IT(P10)(L10)

Other Blended Cements in markets:

- IS(22)
- IP(25) HS

ASCC should be great resource on future blended cement releases

ASCC Outreach to US Cement Companies

Company <i>ASCC Members in Red</i>	# Cement Plants	~Tons/Yr Cement 2024
Amrize (Holcim)	13	18,650,000
Ash Grove / CRH	11	10,200,000
Heidelberg Materials*	9	8,700,000
Buzzi-Unicem	8	8,100,000
Cemex	8	7,800,000
Quikrete	6	6,900,000
Eagle Materials	8	6,250,000
Calportland	4	4,400,000
GCC	5	2,900,000
Titan America	2	2,800,000
National Cement	2	2,550,000
St. Marys*	2	1,900,000
Martin Marietta	1	1,800,000
Various* <i>Inc grinding plant</i>	79	82,950,000
Various - requests sent	10	6,750,000
US Totals (*2 grind only) :	89	89,700,000

***“Do you want ASCC
Contractor feedback before
your next blended cement
market introduction?”***

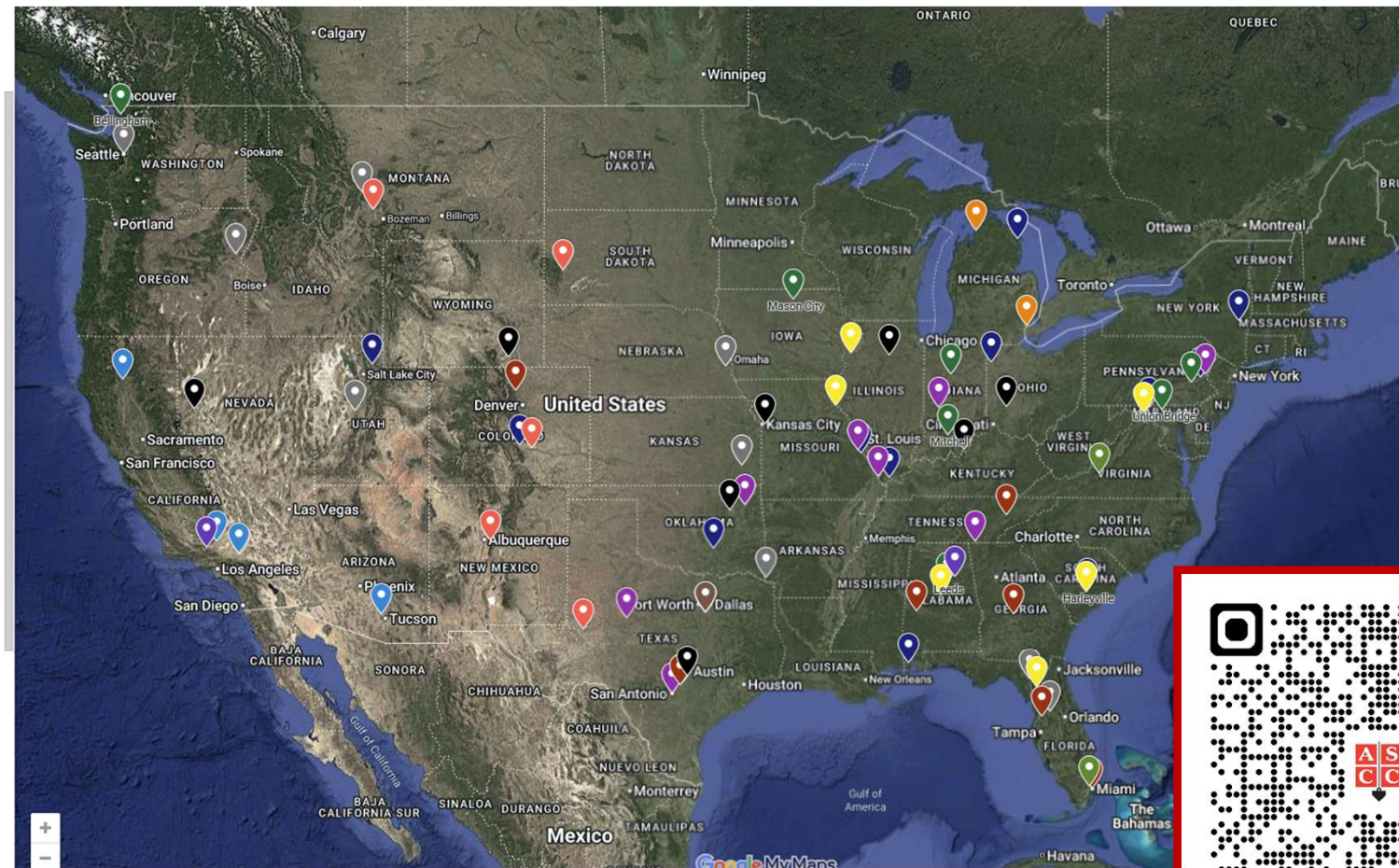
ASCC Outreach to US Cement Companies

Company ASCC Members in Red	# Cement Plants	~Tons/Yr Cement 2024	ASCC will be informed before next blended cement introduction
Amrize (Holcim)	13	18,650,000	Yes
Ash Grove / CRH	11	10,200,000	Yes
Heidelberg Materials*	9	8,700,000	Yes
Buzzi-Unicem	8	8,100,000	Yes
Cemex	8	7,800,000	Yes
Quikrete	6	6,900,000	Yes
Eagle Materials	8	6,250,000	Yes
Calportland	4	4,400,000	Yes
GCC	5	2,900,000	Yes
Titan America	2	2,800,000	Yes
National Cement	2	2,550,000	1-No Reply & 1-Yes
St. Marys*	2	1,900,000	Yes
Martin Marietta	1	1,800,000	Yes
Various* <i>Inc grinding plant</i>	79	82,950,000	
Various - requests sent	10	6,750,000	
US Totals (*2 grind only) :	89	89,700,000	

“It was an oversight to not include concrete contractors in the Type IL rollout discussions.”

Cement Manufacturers will help boost awareness of new ASTM C595 blended cement introductions

- ✓ Amrise Plants
 - ▼ Amrise (Holcim)
- ✓ CRH-Ash Grove Plants.xlsx
 - ▼ CRH / Ash Grove
- ✓ Buzzi-Unicem Plants.xlsx
 - ▼ Buzzi Unicem
- ✓ Cemex Plants.xlsx
 - ▼ Cemex
- ✓ Heidelberg Plants.xlsx
 - ▼ Heidelberg
- ✓ Quikrete Plants.xlsx
 - ▼ Quikrete (Argos)
 - ▼ Quikrete (Continental)
- ✓ Eagle Materials' Plants.xlsx
 - ▼ Eagle Mat'l
- ✓ CalPortland & GCC Plants.xlsx



QR Code for this cement plant map:



Lab Trails: Technique to Test Multiple Admixes

Plan for constructability example, July 2025

MB Procedure for evaluating cementitious materials & admixtures



Lab Trial with Mortar (Cement-SCM-Sand-Water-Admix)

- 5 gallon bucket & mixer
- Small Batches
- Mini-slump & air
- 3"x6" cylinder breaks
- Run Calorimetry
- Develop maturity curves



Placing & Finishing IL Cement Conc Guide-Aug '25 CI

Advice from national slab consultants with blended cement concrete mixes:

- Evaporation countermeasures need to be in place such as fogging
- Consider accelerators, even in mild conditions
- Test & use judgement on “*finishing aids*”, can be chemical rich, others high water content, **Takeaway: Not all of them are =**



Field Guide to Placing and Finishing Type IL Cement Concrete

by Chad White, Bryan M. Birdwell, Jerry A. Holland, and Michael G. Hernandez

ASCC Position Statement #48

Lower Embodied Carbon Concrete, Sept '25 CI

1. Start Early
 2. Request Less Prescriptive Specifications
 3. Foster Collaboration: Designers, Contractors, Ready Mix, Cement...Test Lab
 4. Plan for Constructability
 5. Track & Report- Mix Specific EPDs
 6. Share the Risk-Owner Insurance Option?
- **Share the risk.** Owners are encouraged to explore insurance options with their broker that acknowledge shared responsibility for potential unexpected and unacceptable concrete performance with recently developed lower-embodied carbon mixtures.



ASCC Documents In Progress

- Guide for contractors to **evaluate a ready mixed producer quality control** (2-3 pages)
- Gathering Panel on **Initial Curing Boxes** (or Tanks), Challenges & Solutions with representatives of:
 - Owner
 - Engineer
 - Testing Lab x 2
 - General contractor
 - Concrete subcontractor
 - Ready mixed producer
 - State ready mixed?

Intend to publish article in CI



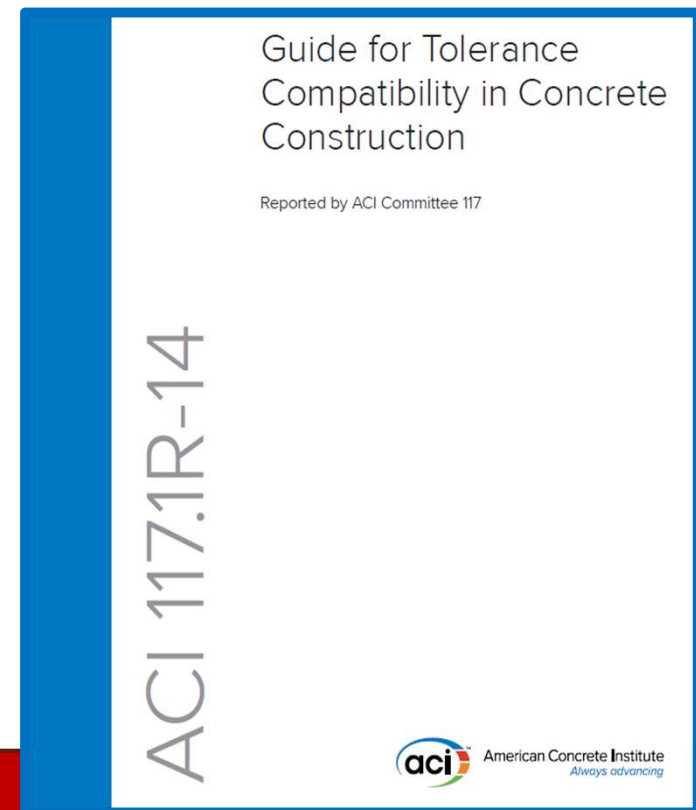
ASCC Documents In Progress

ASCC Sustainability Comm:

- Collection of sustainability documents that contractors should become familiar with
- Reviewing lower embodied carbon training program by others

ASCC Technical Committee:

- Update **ACI 117.1R-14 Guide for Tolerance Compatibility in Concrete Construction**
- More Position Statements



ASCC Documents In Progress

ASCC Finishing Committee: Glossary of plastic concrete terms, English & Spanish, to provide constructive feedback to ready mixed if performance not meeting expectations

ASCC Constructability Committee:

- Closer working relationship with ACI 134 Constructability Comm.

& ACI Pro 
An ACI Center of Excellence
for Advancing Productivity

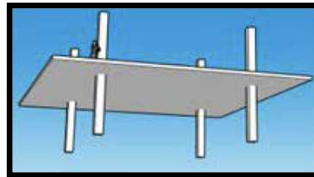
- CRSI productive rebar details library organized by element & seismic design criteria



ASCC Documents In Progress

ACI Pro Task Groups & WOC Presentation

Engineering: Bridging the Gap Between the GC & the Engineer

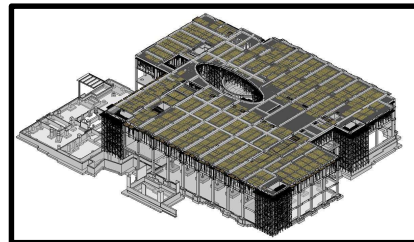


Basic Floor Framing System	Typical Spans, ft	Constructability Advantages	Constructability Disadvantages	Quick Tip
Flat plate, mild reinforcing	Up to 25'	~Productive	Many columns, camber	Align Columns
Flat plate, PT reinforcing	22' - 32'	Productive, no camber	Pour Strips	Use double headed stud rails to resist shear

ACI Flatwork Finisher CEU presentations (up to 8 hours)



BIM/VDC Presentation: Appreciate your support on field uses

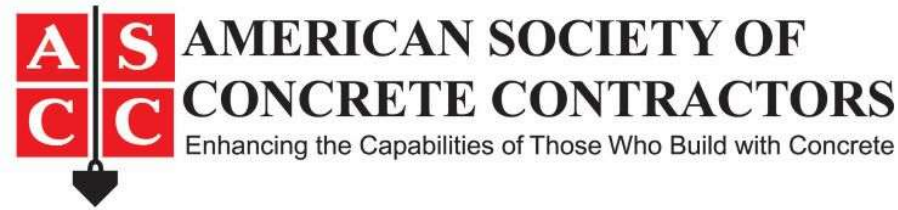




Cement Plant Map



**Field Guide to Placing and
Finishing Type IL Cement
Concrete**

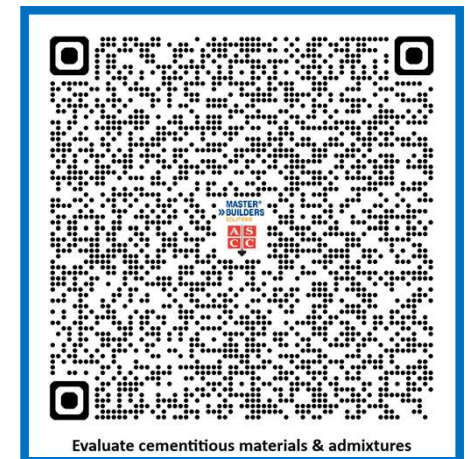


Questions?

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**Position Statement #48
Lower-Embodied Carbon
Concrete**



MB Lab Admixture Trials