INNOVATION SUMMIT
PANEL SESSION
USACE STRUCTURAL COP

Innovation Summit

17 September 2019

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BUILDING STRONG

and taking care of people

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BIG PICTURE – STRUCTURAL COMMUNITY OF PRACTICE (COP)

- Structural CoP Mission
- Structural CoP Expertise
- Structural CoP Members
  - CoP size and distribution
  - Grades
  - Education and licensure
- Past Innovations in Structural CoP
- Gaps Filled by Industry/Academia
- Potential Innovative Needs in Structural CoP

STRUCTURAL COMMUNITY OF PRACTICE (COP) - MISSION

- The Structural Engineering Community of Practice (SE CoP) exists within the framework of the Engineering and Construction (E&C) CoP. This group constitutes the professional practice of Structural Engineering within USACE.

- The SE CoP leads the USACE efforts for structural engineering in support of the Civil Works and Military construction mission and is responsible for documenting the state of practice, fostering and promoting growth, development and dissemination of needed technology and products, providing access to technical experts, providing outreach to others, establishing mechanisms for promoting best practices, and capturing and making available lessons learned.

STRUCURAL COMMUNITY OF PRACTICE (COP) - EXPERTISE

- Structural Design and Analyses
- Structural Inspection of Civil Works & Military Construction
- Hydraulic Steel Structures
- Hydraulic Concrete Structures
- Welding & Metallurgy
- Bridges
- Seismic Analyses & Design
- Foundation & Retaining Structures
- Structural Standards & Policy / Guidance

STRUCTURAL COMMUNITY OF PRACTICE (COP) - MEMBERS

- Headquarters, Divisions, and Districts
- Other/Specialty:
  - Inland Navigation Design Center
  - Welding and Metallurgy Center
  - Huntsville Support Center
  - Risk Management Center
  - Protective Design Center
  - Explosive Safety Center
  - Engineering Research and Development Center

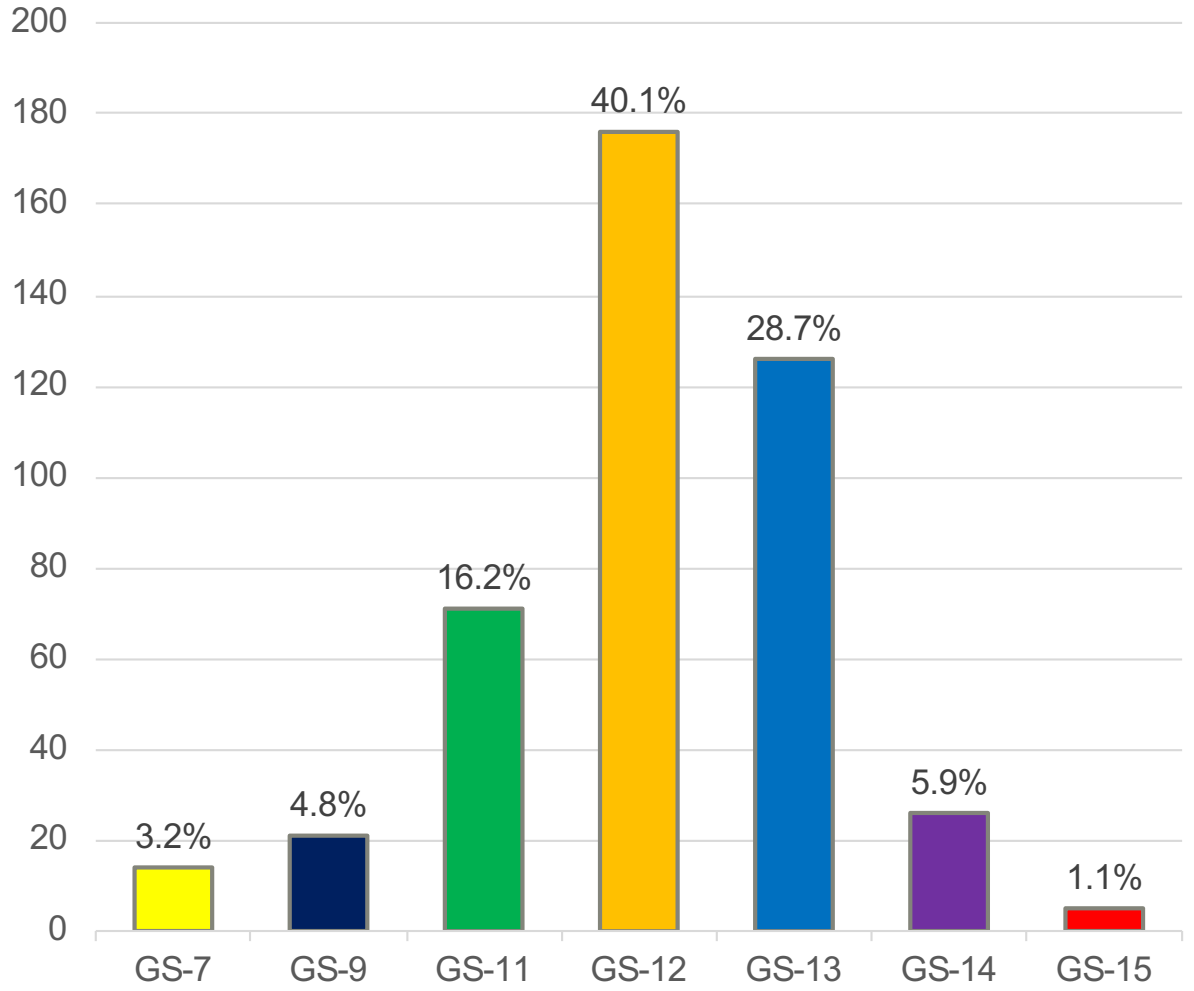
STRUCTURAL COMMUNITY OF PRACTICE (COP)

TOTAL RESOURCES (2018):

- 439 Structural Engineers
  - 2 Headquarters
  - 9 Division
  - 373 District
  - 55 Other

STRUCTURAL ENGINEERS BY GRADE (ALL)

	(2018)
GS-07	14
GS-09	21
GS-11	71
GS-12	176
GS-13	126
GS-14	26
GS-15	5



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STRUCTURAL ENGINEER
EDUCATION AND LICENSURE

Percentage BS- 100%
Percentage MS – 55%
Percentage PhD – 3%

Percentage PE – 68%
Percentage SE – 7%

PAST INNOVATIONS USED IN SE-COP

- Spiral Welded Pipe Piles

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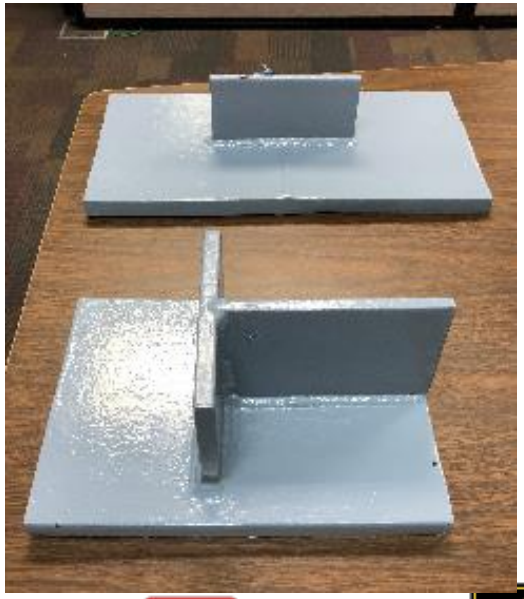
- Advanced Method Phased Array Ultra Sonic Testing (PAUT) with BS 7910



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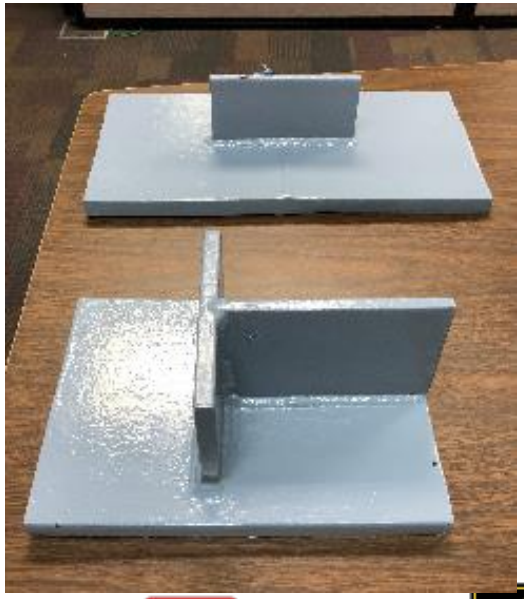
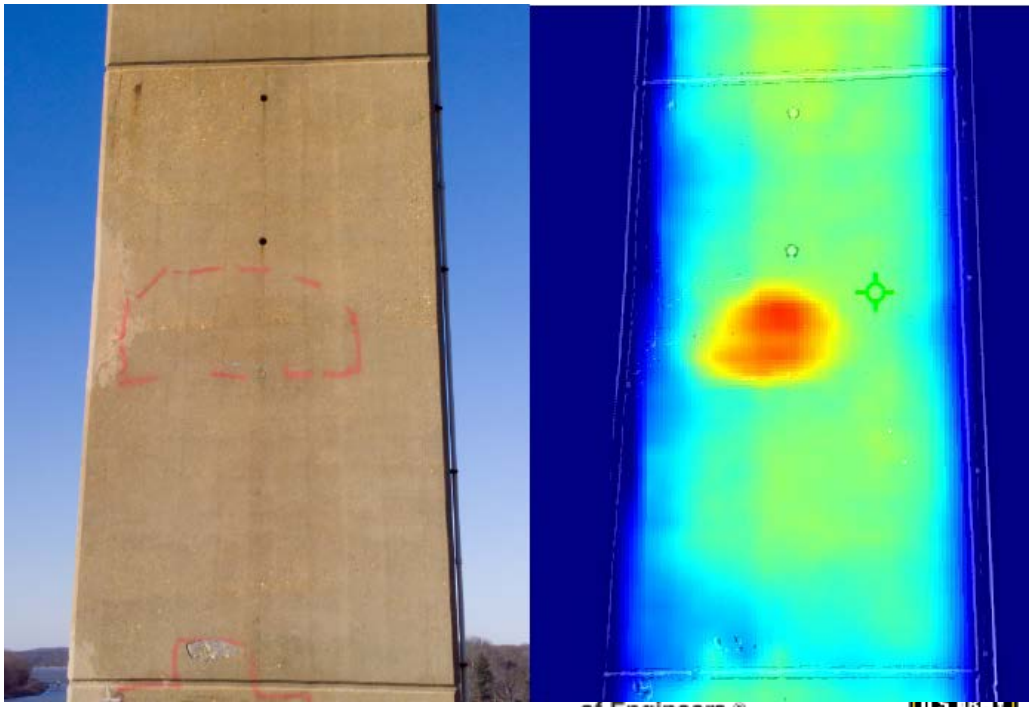


PAST INNOVATIONS USED IN SE-COP

- Routine Inspections using UAS
  - Determine if UAS can be used to reduce or replace current access methods which are slow, costly, and pose risk to human life (rope climbing and snooper truck access).
  - Sensefly (advanced



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- Soo Lock Retrofit
- In-the-Wet Miter Gate Sill Replacement

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- In-the-Wet Miter Gate Sill Replacement
- CFRP for repairing tension cracks

GAPS THAT WERE FILLED BY INDUSTRY/ACADEMIA IN SE-COP

- S-BRITE (Steel Bridge Research, Inspection, Training, and Engineering Center)

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- Spiral Welded Pipe Piles
- Settlement Induced Bending Moment (SIBM)

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- Settlement Induced Bending Moment (SIBM)
- Physical Model testing at University of Il for miter gate anchorage repair

INNOVATIVE NEEDS IN SE-COP

- Routine Inspections using UAS

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- Corrosion Protection Methods and/or Advanced Monitoring Techniques

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- Miter Gate Pintle Assembly Redesign

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- Miter Gate Pintle Assembly Redesign
- Ultra High Performance Concrete (UHPC) for Repair of Nav Structures Subject to Impact and Abrasion

INNOVATIVE NEEDS IN SE-COP

- Routine Inspections using UAS
- Corrosion Protection Methods and/or Advanced Monitoring Techniques
- Miter Gate Pintle Assembly Redesign
- Ultra High Performance Concrete (UHPC) for Repair of Nav Structures Subject to Impact and Abrasion
- Laser Ablation for Coating Removal

INNOVATIONS FROM YOU

- Always open to webinars that industry/academia might be presenting
- Hosting lunch and learns at district offices
- Assistance in appropriately integrating innovations into our design guidance and/or construction specifications

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BACK-UP SLIDES

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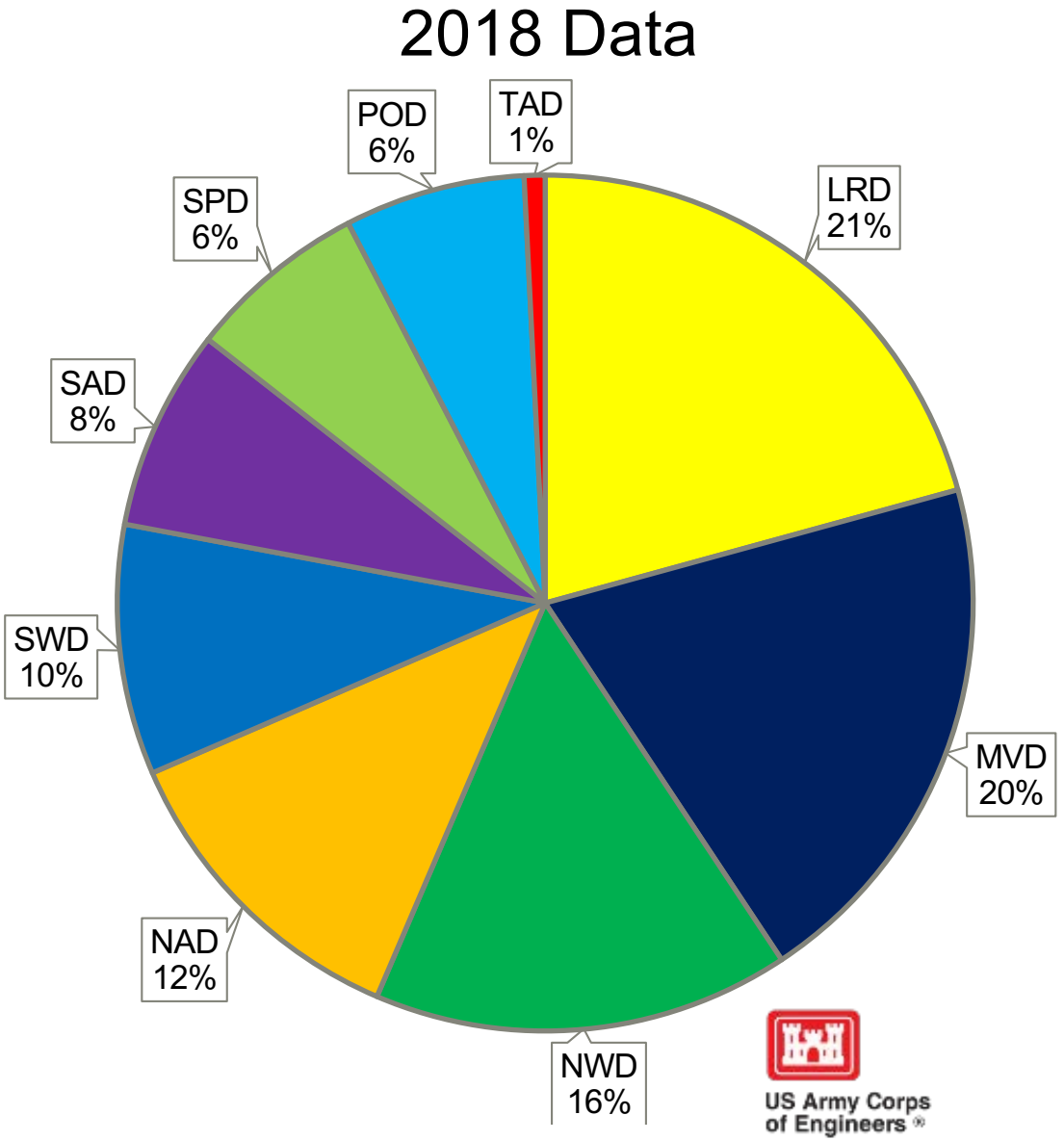
STRUCTURAL ENGINEERS BY DIVISION

2018	
LRD	79
MVD	77
NWD	60
NAD	46
SWD	36
SAD	29
SPD	26
POD	26
TAD	3



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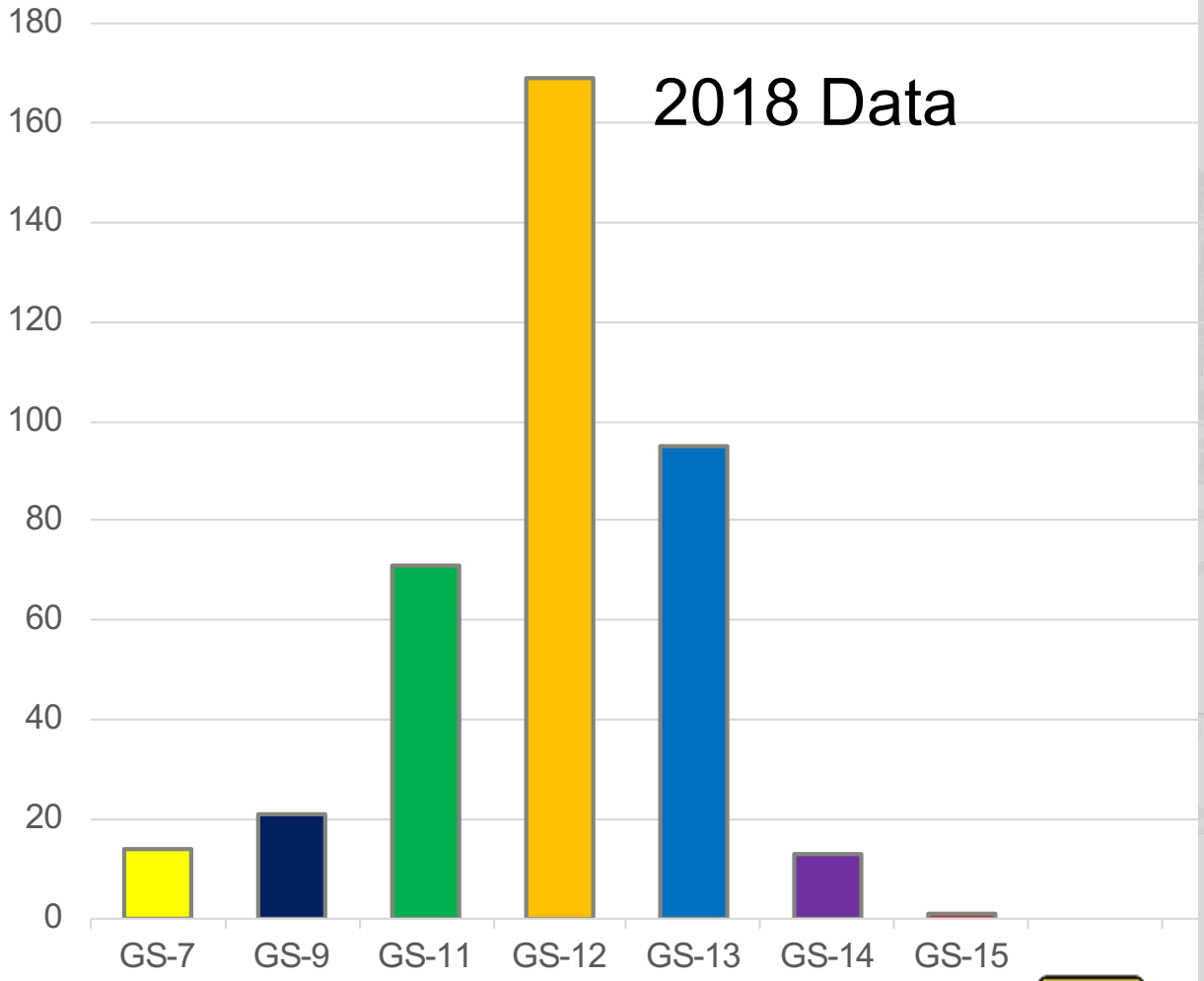
STRUCTURAL ENGINEERS BY GRADE (HQ, DISTRICT, MSC)

	2018
GS-07	14
GS-09	21
GS-11	71
GS-12	169
GS-13	95
GS-14	13
GS-15	1



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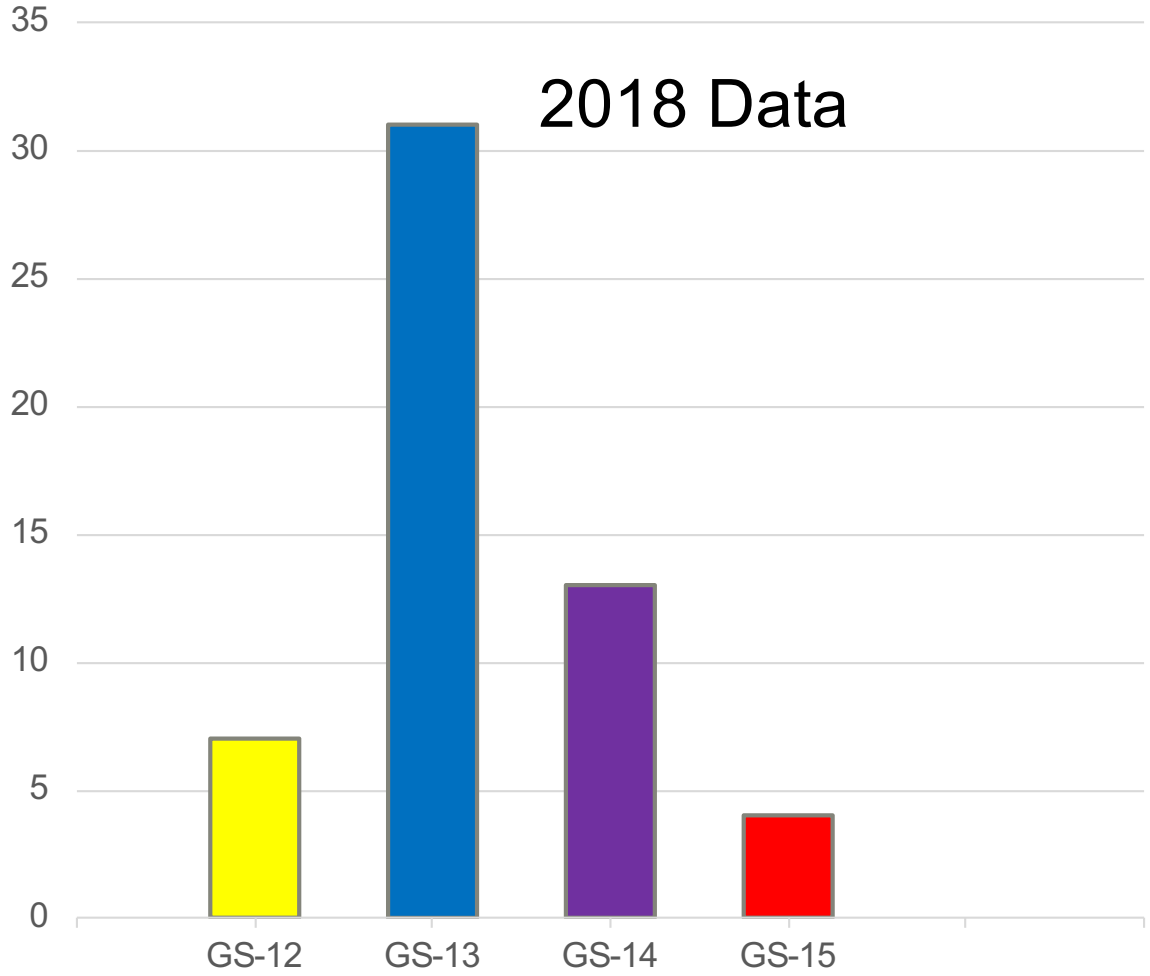
STRUCTURAL ENGINEERS BY GRADE (OTHER/SPECIALTY)

	2018
GS-12	7
GS-13	31
GS-14	13
GS-15	4



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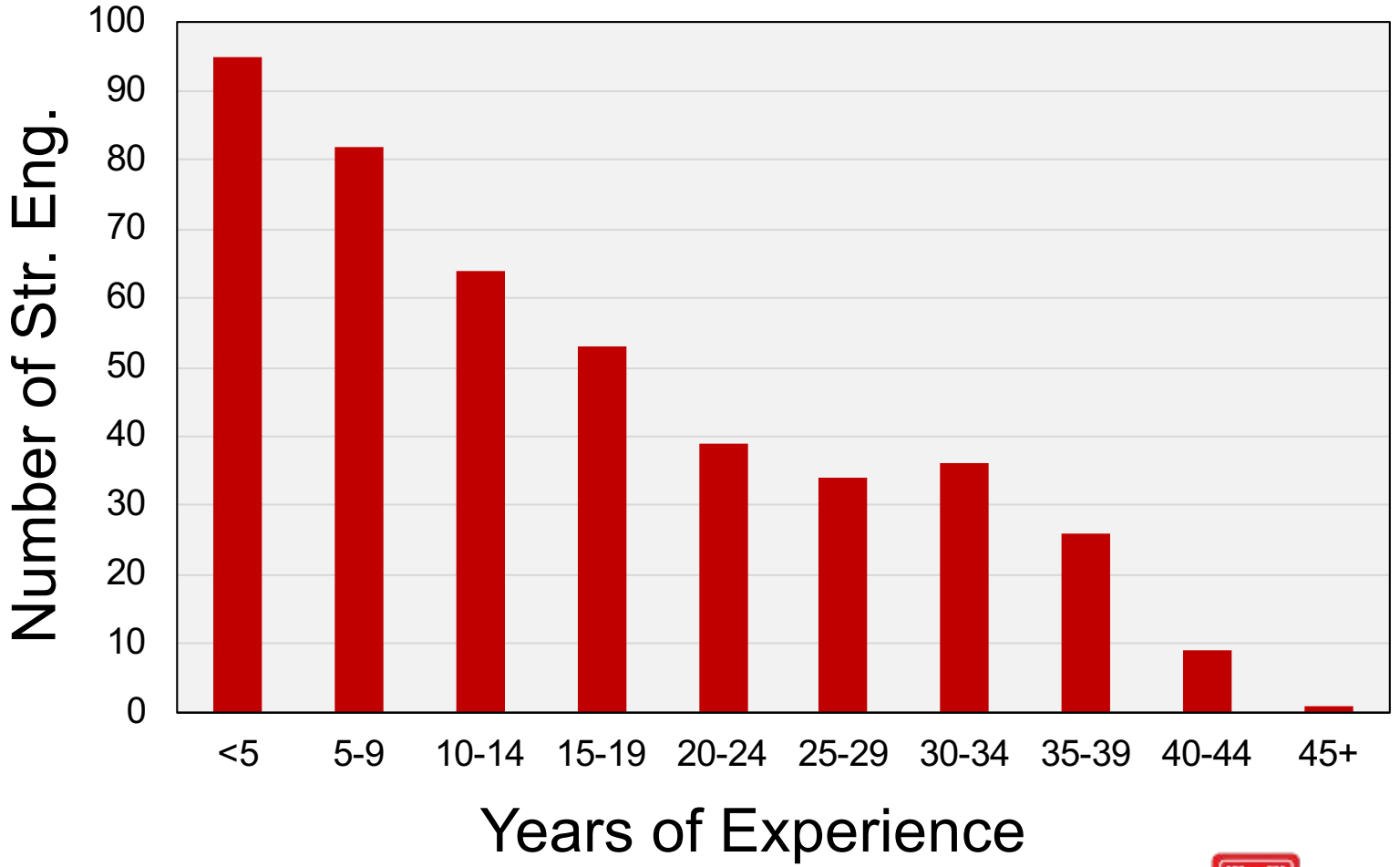
STRUCTURAL ENGINEER
EXPERIENCE



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STRUCTURAL ENGINEER
EXPERIENCE (AVERAGES)

HQ	32.5 yrs	INDC	34.7 yrs
MSC	21.9 yrs	RMC	27.9 yrs
SAD	19.3 yrs	W&MC	21.0 yrs
POD	17.2 yrs	ERDC	20.3 yrs
NAD	15.8 yrs	PDC	20.2 yrs
SWD	15.6 yrs	HNC	16.8 yrs
MVD	13.6 yrs	EDC	15.1 yrs
SPD	13.6 yrs		
NWD	13.5 yrs		
LRD	11.9 yrs		
TAD	6.0 yrs		

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STRUCTURAL ENGINEER EXPERIENCE

CERCAP Certification:

- Required for ATR members per EC 1165-2-217
- Structural CoP has 140 certified
- 262 have 10+ years of experience
- Not a perfect system, but useful starting point and provides some credibility
- Structural has 75 AoE within Coastal, Navigation, Dam, CW Buildings and LFP Structures

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WHAT ARE THE COP STRENGTHS?

- We are busy (staffing is affordable)
- We have the skill sets and proficiency
- We have high professional certification
- We deliver quality
- We do not overly rely on consultants