25TH ANNUAL

25TH LCI CONGRESS
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Utilizing Lean Tools and IPD Behavior on a Federal Project

Saptarshi Desai, Herrero Builders
Brett Bell, Herrero Builders
Michelle Rios, Golden Gate National Recreation Area
Richard Melbostad, Golden Gate National Recreation Area

Introductions

Saptarshi Desai

Project Executive

Herrero Builders

Brett Bell

Superintendent

Herrero Builders

Michelle Rios

Historical Architect

Golden Gate National Recreation Area

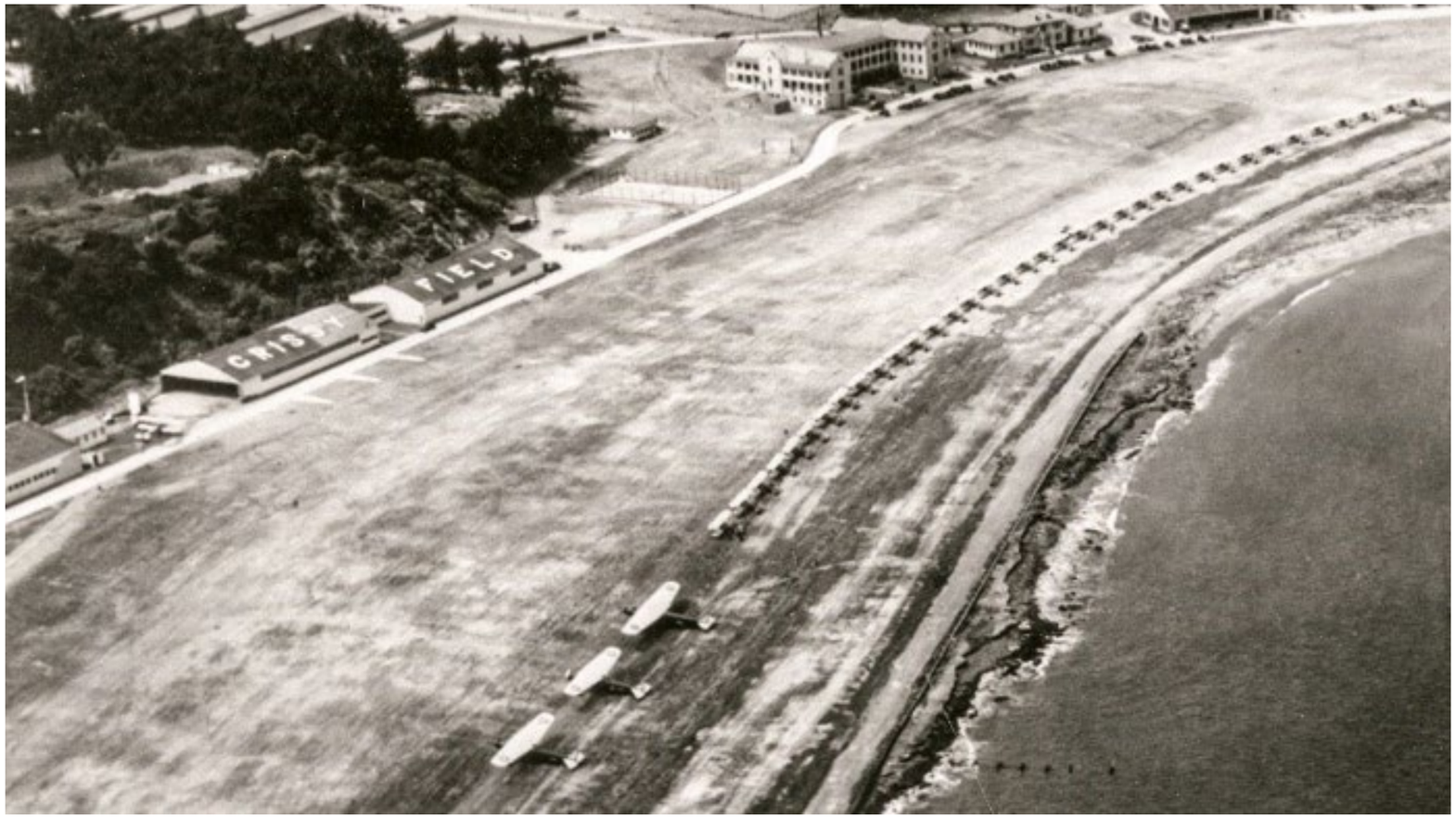
Richard Melbostad

Project Manager

Golden Gate National Recreation Area

Agenda

- Project Overview
- Project Challenges
- Project Structure
- Execution
- Results
- Recap
- Q&A



Project Overview

HERRERO BUILDERS

NATIONAL PARK SERVICE

Lean Construction Institute
Transforming Design and Construction

1923 Construction – 9,000sqft $4,390.32

WAR DEPARTMENT
Q.M.C. Form No. 117 (Old No. 173A
Revised Aug. 21, 1924

Post Plan No. .... LOWER POST
O.Q.M.G.: Plan No. .... Building No. ~~905~~ 648 (Page 1)

Place: The Presidio of San Francisco, California
Designation of building: Hangar (W.P.A. Office) Post Engr. Capacity: 9380 sq ft
Total cost, $: 4390.32 Date completed: 1923
Material: Walls: Steel Frame Foundation: Concrete
Roof: Corrugated Iron Floors: Concrete
Total floor area above basement, square feet: 9380 (See page 2)
Size: Main building: 140' x 67' Wings: Basement: none

a: Gas Steam
(How heated)

b: Gas
(Type of heat)

c: none
(Type of domestic hot water heater)

Height of first floor above ground: none
How lighted: Electric
Water connections: yes
Sewer connections: yes
Gas connections: yes

COOKING RANGES INSTALLED

Coal, No.: none
Gas, No.: none
Electric No.: none
Oil, No.: none
Steam, No.: none

METERS INSTALLED

Gas, No.: 1
Electric, No.: 1 Removed
Oil, No.: none
Steam, No.: none
Water, No.: none

67
140
7680
67
9380

P91-005.421

ADDITIONS AND INSTALLATIONS

(Below enter chronologically all modifications, additions, introductions of water, sewer, lights, heating, etc.)

DATE		COST
4-9-40	1 - 18x20 Lavatory, comp. Purch w/ W.P.A funds V.O. No. 18	6.68
4/25/40	1 - ea Door panel 5 - 2'4" x 6'8"	26.5
	1 ea Meter Elec Removed V.O. # 1113	
	1 " [illegible]	26.70
3/6/42	1 Stove [illegible] (V.O. 50)	
6.23.41	Reconstruct building	39,523.87
[illegible]	Refinish and wax wooden floors	47.87
12.30.41	Necessary wiring	767.72
3.3.42	Construct warehouse office and storeroom	786.93
5.1.42	Set up Diesel oil tank	245.69
3.12.42	Put gas heater in warehouse office	68.81
2.18.42	Make dressing table for ladies' latrine	1.40
1.27.42	Lay linoleum	249.17
4.6.42	Painting in shops and warehouse	157.46
2.12.42	Install ventilators in office	94.41
2.3.42	Build counter in office	19.50
12.24.41	Install radiation in building	759.10
1.2.42	Necessary painting	92.61
3.11.42	Meter, Watthour - 1 - Ø 15 amp, 240V, 3 wire, 60 cy. #2667921	8.78
3.7.42	1 - Sink enameled, cast iron, 22" x 16" x 6" deep	
2.21.42	1 - Urinal trough, 5 feet	

DATE		COST
2.21.42	1 - Pipe, perforated, 60" for urinal, chrome plated	
1.28.42	5 - Toilet paper holders, No. 6005	6.05
1.20.42	1 - Fountain, drinking, Sanitary, Vitreous, China with integral strainer	18.50
1.7.42	1 - 60B - Boiler, gas, Crane, Basmor, 25W-8 - complete with insulated metallic jacket and NCW trim, # 40-1483	270.35
	5 - Valves radiator 3/4" #226	15.30
	11 - " " 1/2" #226	28.93
	5 - Ells, Unions, 3/4" #192	3.20
	11 - " " 1/2" #192	5.61
	16 - Valves, air comp, key #210	1.60
	1 - Tank, pressure, Crane BG # 21	8.55
	1 - Charger B&G, air, with tank drainer	3.15
	1 - Valve, relief, simplex 3/4" A2	7.00
	1 - Circulator, water, 2" Crane, Relay, Crane Penn #793	7.50
	1 - Room thermostat, Crane 870 - A010 - A.4	7.00
	10 Bushings, Radiator 3/4" RH	.80
	22 - " " 1/2" RH.	1.76
	1 - Vent, air, auto, B&G	3.15
1-23-42	1 - Soap dish 6x6 #2667	1.35

INSTRUCTIONS.—"a" State whether heated from central heating or by individual heating plants, stoves, furnaces, or fireplaces.
"b" State whether steam, vapor, hot water, or hot air.
"c" State whether gas, coal, oil, or central heating plant.

See reverse side of form.

3—6891

Project Overview: Right Team, Right Approach from the Beginning

- Seismic and Historic Rehabilitation of 1923 airplane hangars – B643
- GGNRA 17 Million Visitors a year
- Owner-National Park Service
- Federal Contract requirements
- Contract with Presidio Trust
- Two Phases: 1st Phase 12 Months, 2nd Phase 18 Months
- GMP Contract $28MM

Project Phases

Phase 1: Complete

1) Demolition and Abatement
2) Seismic Strengthening foundation and Structure
1) U.G Utilities and site drainage

Phase 2: In Construction

1) Historic renovation
2) New Roof and Exterior
3) Interior Build out

Project Challenges

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Challenges

Contractor Challenges

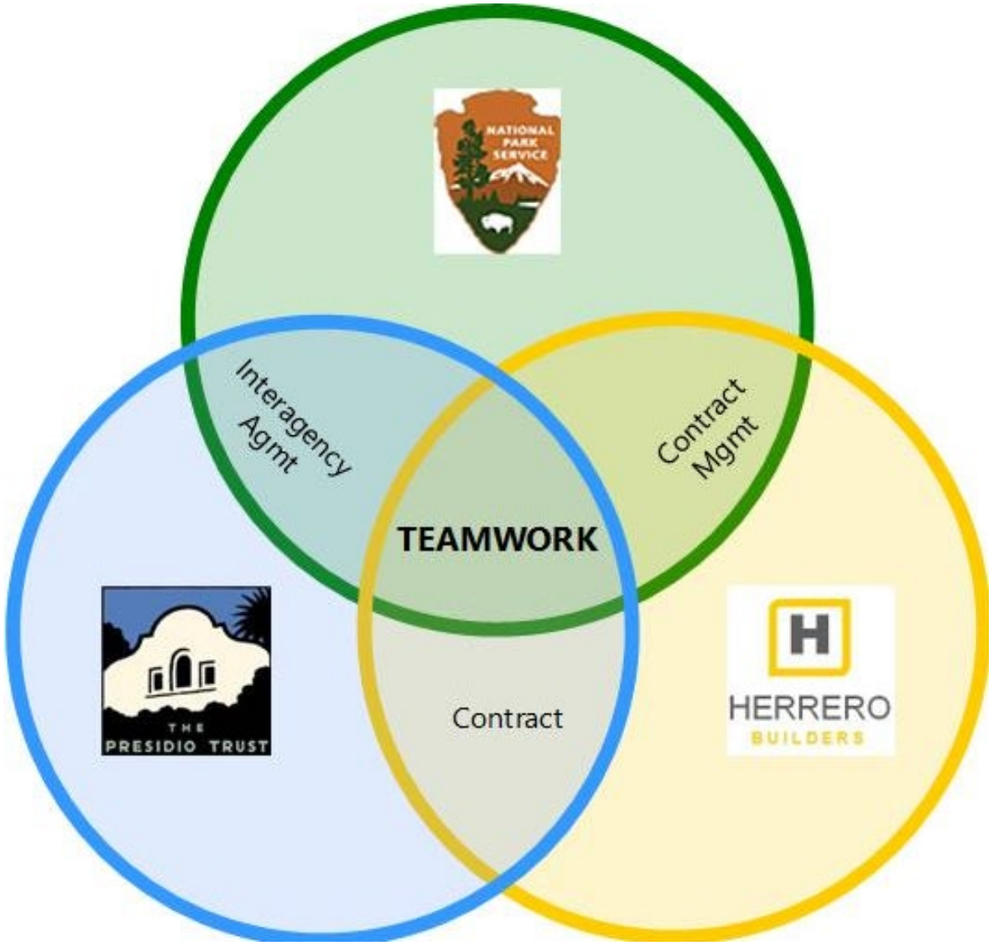
1) Complexity of Relationships & Process.
2) Covid-19 & Supply Chain
3) Unforeseen Conditions

Owner Challenges

1) Federal Funding Challenges to Address Full Scope
2) GMP Contract New to NPS
3) Limited Time in Phase 1 Preconstruction

Overcome challenges

- GC Selection Process
- Federal to Federal Agreements
- Implement IPD Principles & LEAN on a Federal Project
- Build a culture of trust
- Set the Expectations/Goals
- Think differently
- Complex Relationships



Project Execution

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Work Collaboratively and Establish Trust

- Define Values for all Stake Holders
- Establish regular communication channels for effective information exchange.
- Promoted transparency and shared decision-making processes.
- Implement LEAN Tools
- Celebrate team achievements.
- No “Back Pocket” Strategy. All issues on the table in a timely manner.
- IPD Behavior

Value Integration Process

- Establish Values
- Define Drivers
- True North Indicators (TKN)
- Weekly check in, Monthly evaluation
- Continuous Improvement

VIP (Value Integration Process)

- Finding what's Valued:

Drivers

- Contract
- Stewardship
- Safety
- Lean Process
- Relationships
- Accountability
- Collaboration
- Communication

Survey	0	0	60	40	0	8.002	100	
Survey	0	0	60	40	0	8.002	100	
Survey	0	0	50	50	0	8.335	100	
Survey	0	0	50	50	0	8.335	100	
Survey	0	0	70	30	0	7.669	100	
Survey	0	0	70	30	0	7.669	100	
Survey	0	0	40	60	0	8.668	100	
Survey	0	0	33	67	0	8.9011	100	
Survey	0	0	40	50	0	8.52	90	
Survey	0	0	40	50	0	8.52	90	
Survey	0	0	40	60	0	8.668	100	

TNI	Drivers	Current Survey	Previous Survey	Difference
Contract	10.00	8.00	8.67	-0.67
Stewardship	9.23	8.34	8.97	-0.63
Safety	7.69	7.67	8.53	-0.86
Lean Process	7.69	8.67	9.00	-0.33
Relationships	6.92	8.90	8.34	0.56
Accountability	6.15	8.52	8.67	-0.15
Collaboration	5.38	8.67	8.67	0.00
Communication	4.62	9.26	8.34	0.92
Project Success	4.62	8.67	8.34	0.33
Quality	3.85	8.67	8.67	0.00
Budget	2.31	9.00	8.89	0.11
Schedule	1.54	7.34	8.52	-1.18
Fun	0.08	7.34	8.00	-0.66
Adaptability	0.00	8.34	9.00	-0.66
0	0.00	0.00		0.00
0	0.00	0.00		0.00
0	0.00	0.00		0.00
0	0.00	0.00		0.00
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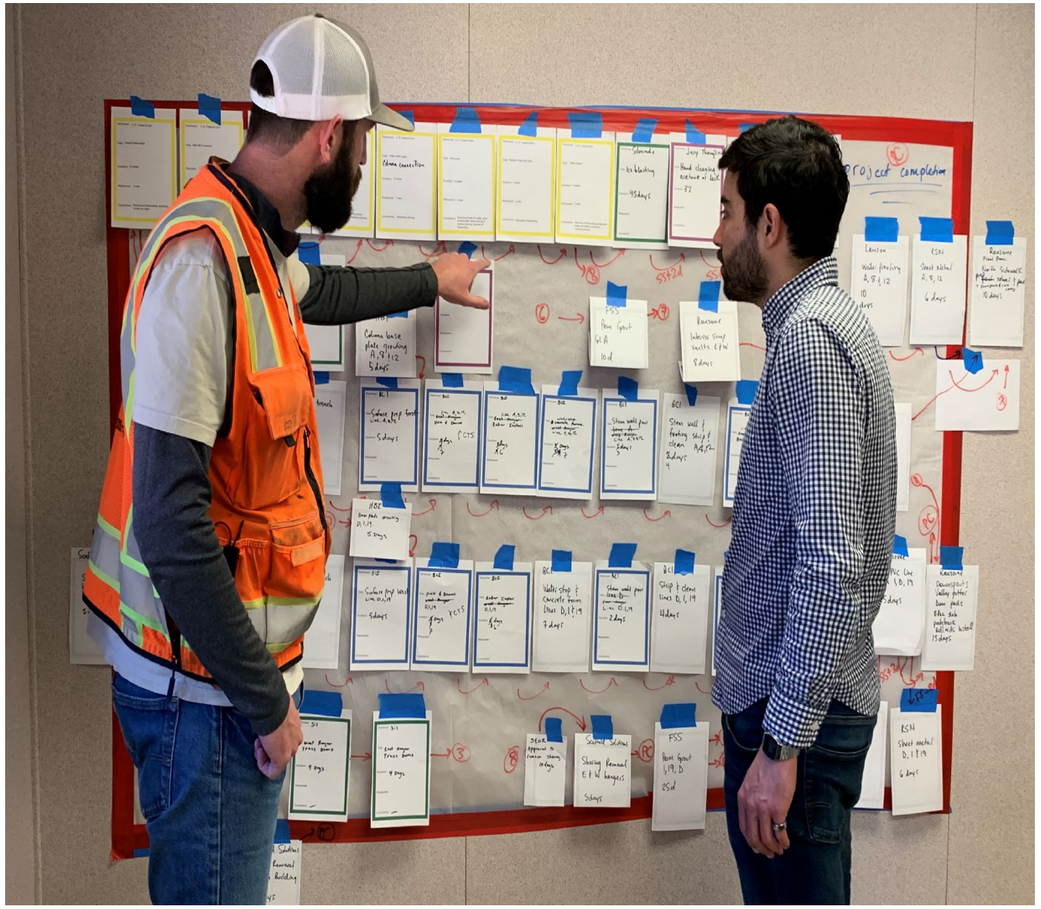
Lean Tools in Office & Field

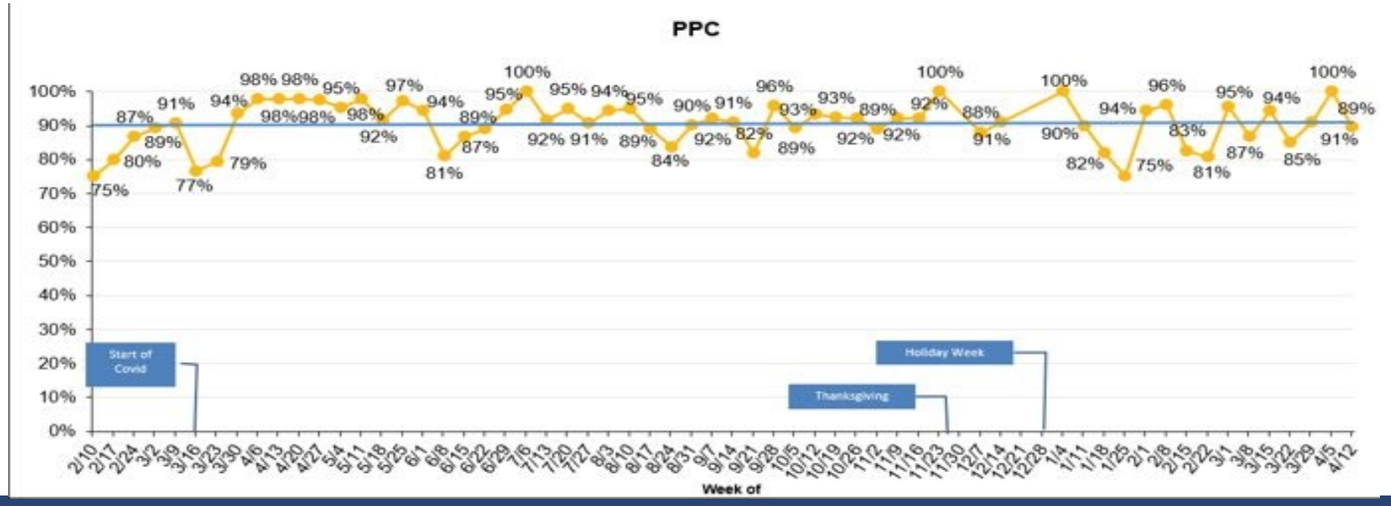
- 5S the Process: Streamline RFIs & Submittals
- Recognize Small Wins
- Continuous Improvement
- WWP (Weekly Work Plan)
- Trade Partner Meetings
- Constraint Log



Last Planner

- Pull schedules
- Weekly Work Plans
- Track PPC
- Constraint log

SCHEDULE ID		ACTIVITY	% Complete	Mon 6/26	Tue 6/27	Wed 6/28	Thu 6/29	Fri 6/30	Sat 7/1	Sun 7/2	DONE? YES	DONE? NO / CAT.	REASON FOR VARIANCE
RHI													
ROOF-1000		Roof Framing-East Hanger	80%	x	x	x	x	x					
ROOF-1060		Roof Framing- West Hanger	100%	x	x	x							West Roof complete, Waiting on MEP openings
CET													
EXT-1000		Install 2x4 HSS @ West Hanger Hanger	60%	x	x	x	x	x					RFI constraint- Most locations
Bayview													
FND-1030		Saw cut & Demo- west & east complete	100%	x	x								Waiting on MEP for roof penetrations.
BCI													
FND-1040		Dig Footings @ both hangers	70%	x	x	x	x	x					Waiting on Rebar shop approval in both hangers
HDI													
EXT-1250		Skeleton Framing GL A,D,1-8	100%	x	x								Door shops, MEP drawings from design, Detail SE7.1 (A,B)
EXT-1250		Skeleton Framing GL A,D,12-19	80%			x	x	x					
OMNI													
EXT-1100		Below Grade Flashing	0%				x					3	After mockup installation
EXT-1340		Flashing @ mockup	0%			x						7	Flashing delivery late, pending install next week.
IGC													
EXT-1340		Install window and Glazing @ mockup	0%					x				2	Cannot preform work until Omni installs flashing
Enterpice													
Roof-1140		Walk with HBI/HDI for Scupper layout	100%			x							



IPD Behavior in Construction

- Focus on People/Build Relationships
- Develop Trust
- Open and Honest Communication,
- True Collaboration
- Continuous Improvement

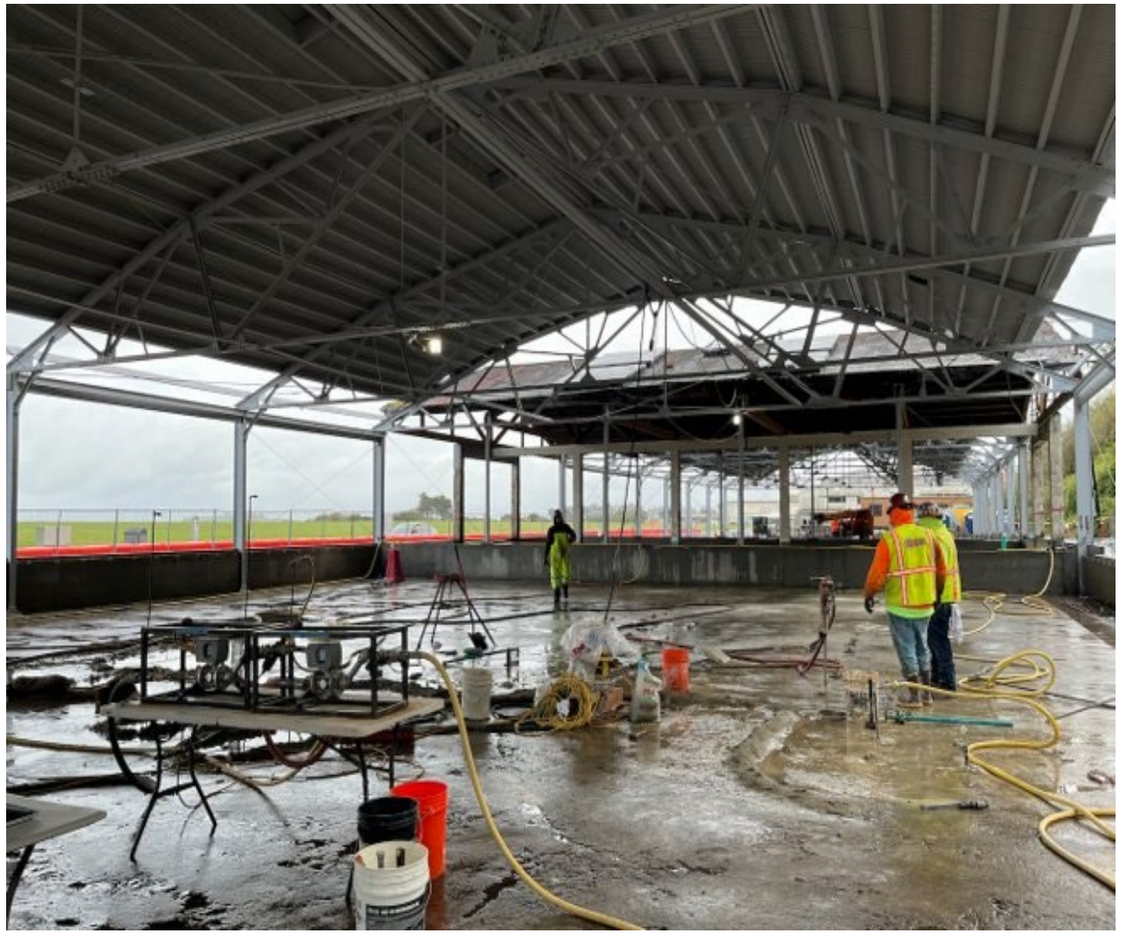
Results and Successes

Lessons Learned

Permeation Grouting:

- Change of Trade Partner
- Test program
- Supply Chain issues

Constructability Review for Phase 2.



Project Success

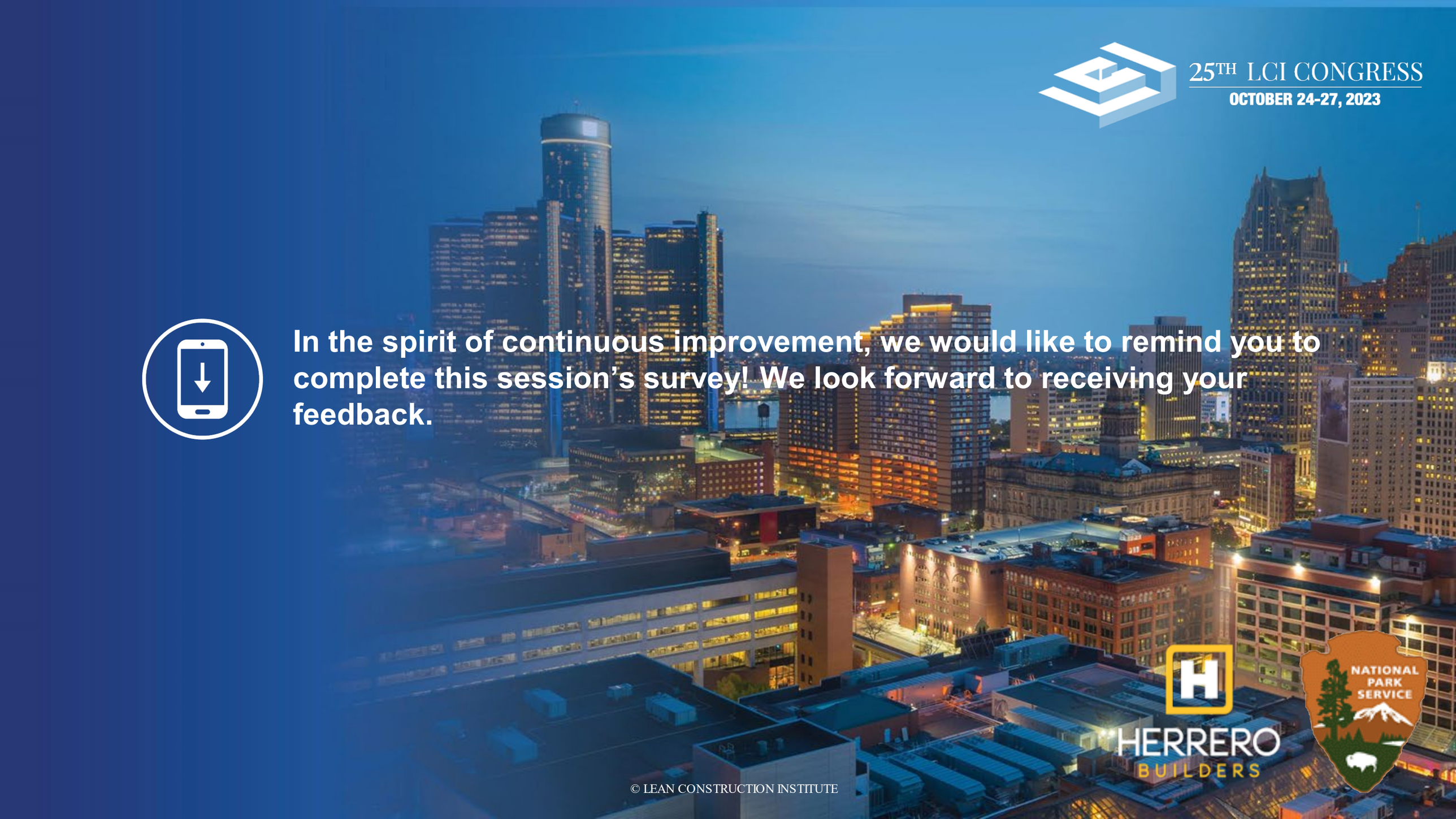
- Phase 1 completed in 12 months
- Project savings 5% of GMP value
- Develop strong relationship between:
  - Owner
  - Design Team
  - Construction team.
- Collaborative Environment.
- Team’s confidence in Phase 2.

Tools to apply on your next project

How can you apply this tomorrow?

- Right Team & Right Approach from the Beginning
- Set the Goals Early (Conditions of Satisfaction)
- Work Collaboratively & Establish Trust
- Encouraging Open & Honest Discussions
- Stay the Course When Challenges Arise
- Utilizing Last Planner System and other Lean tools
- Streamlining Submittal and RFI Processes to Reduce Waste
- Emphasizing Value Integration Process

Q&A



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