

Louisville District 2017 Open House

Olmsted Dam Project



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and Taking Care of People!

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**US Army Corps
of Engineers®**



U.S. ARMY

AGENDA

- **Safety Topic**
- **Joint Venture**
- **Project Overview**
- **Current Status**
- **Stakeholder Engagement**
- **Risk Mitigation**
- **Celebrating Success**



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AECOM is a premier, fully integrated global infrastructure firm that designs, builds, finances and operates infrastructure assets for governments, businesses and organizations in more than 150 countries. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital to these markets:

- **Cities**
- **Commercial & Residential**
- **Education**
- **Governments**
- **Healthcare**
- **Industrial**
- **Leisure & Hospitality**
- **Oil, Gas & Chemicals**
- **Power**
- **Sports & Venues**
- **Transportation**
- **Water**



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Alberici is a diversified construction company recognized for superior quality and customer service. With operations throughout North America and clients around the world, we offer general contracting, construction management and design-build solutions across a broad spectrum of industrial and commercial markets:

- **Automotive**
- **Building**
- **Energy**
- **Healthcare**
- **Heavy Industrial**
- **Industrial Process**
- **Mining Infrastructure**
- **Water/Wastewater**



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Olmsted Dam Project:

Location: *River Mile Marker 964.7 on the Ohio River in Pulaski County, Illinois. Considered to be the most crucial point in our nation's navigational inland waterways.*

Inventive Engineering Design: *First and only dam to be built "in the wet", an innovative method designed to minimize impacts to regular river traffic and environmental concerns.*

Largest civil works project undertaken by the US Army Corps of Engineers.

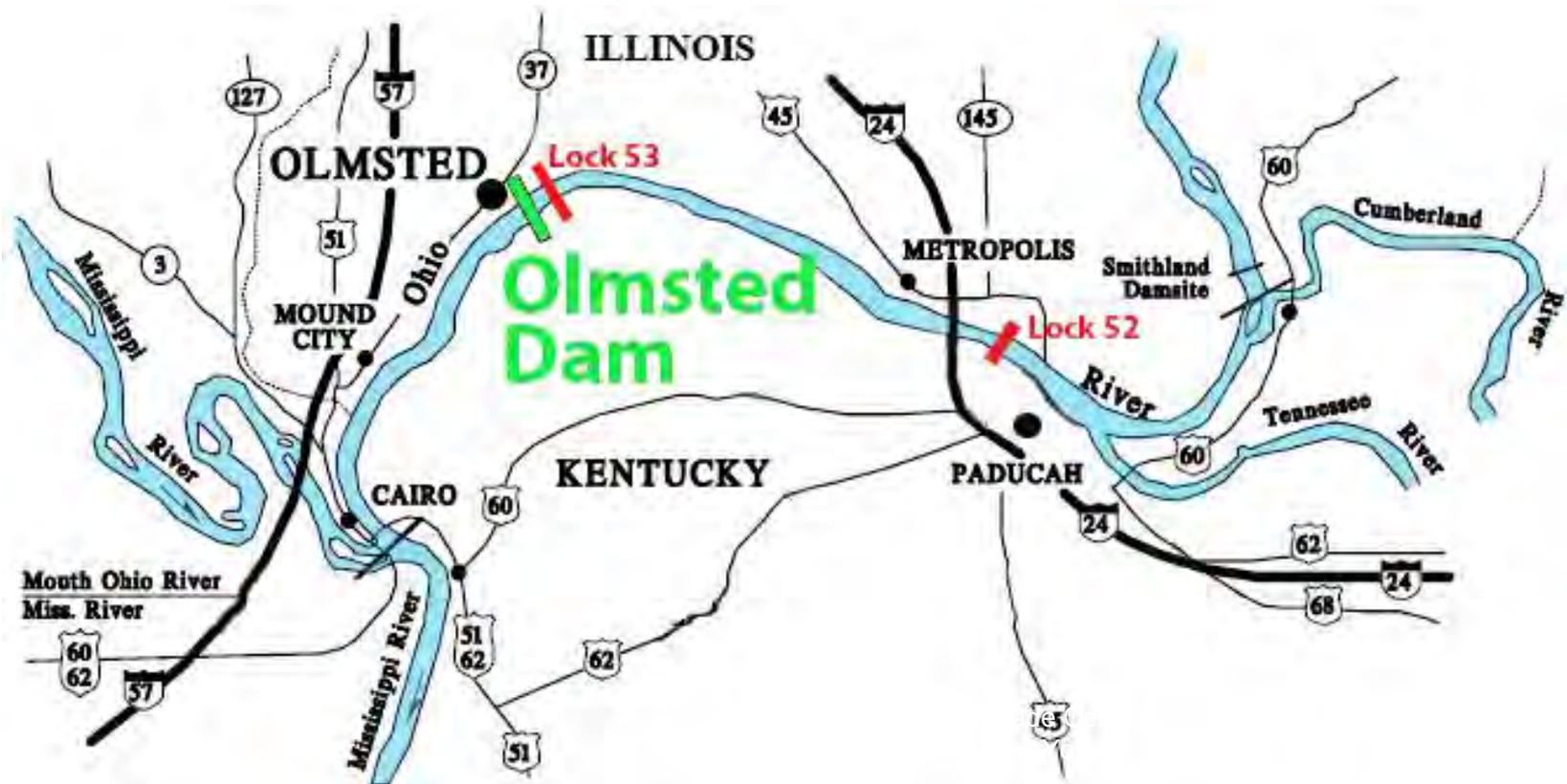


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CRITICAL TO THE RIVER INDUSTRY

- Olmsted Dam will replace two of the original Locks and Dams No. 52 and 53 which were constructed in 1929.
- Total lockage time will be reduced from approx. 5 hours to less than 1 hour.
- Estimated economic benefit to the Nation: \$640 million annually.



OLMSTED RELEVANCE



Commodities transiting Olmsted proportionately **equal to** the **passenger** traffic through Dallas Love Field + Atlanta Hartsfield + Chicago O'Hare + LAX



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HOW THE DAM OPERATES CONTROLLING THE FLOW

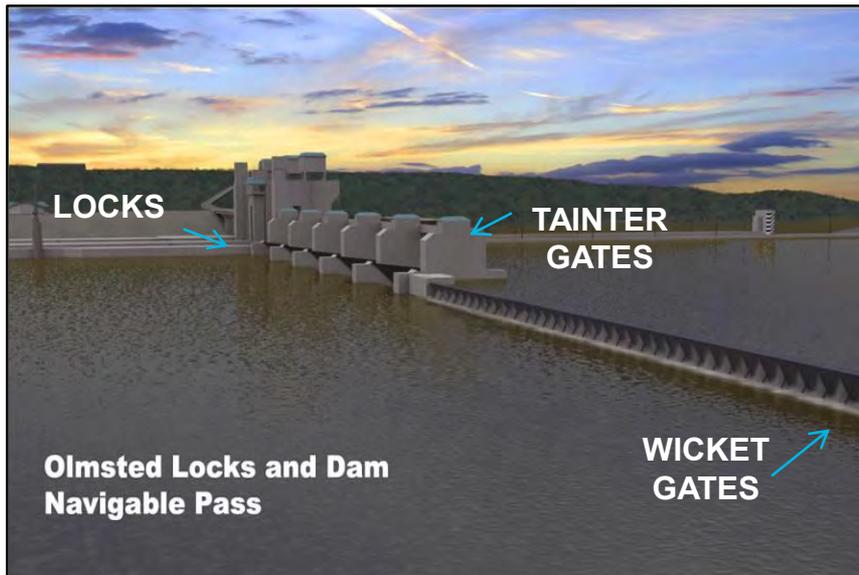
Gates and Wickets will be used to control the water levels.

When the river is low,

- Tainter gates are lowered to force flow into the navigational section.
- Wickets are raised and gates closed, creating a pool for barge transport and safe passage through the locks.

When the river is high,

- Tainter gates are raised.
- The wickets are lowered, allowing barges to navigate over the dam and avoid the locks.

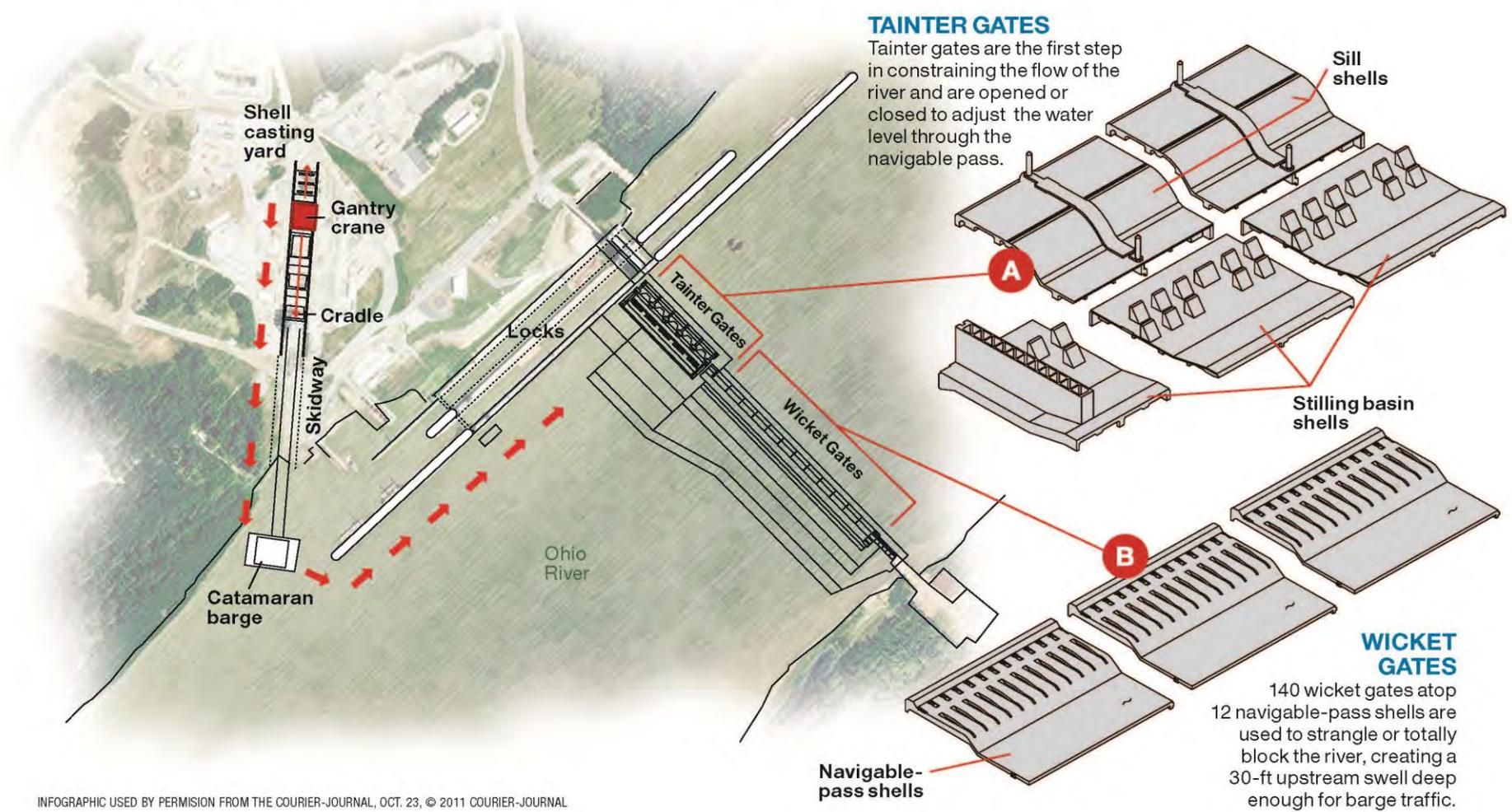


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OLMSTED DAM COMPONENTS

The tainter gate section of Olmsted Dam will have six sill shells on piles to carry six piers that hold five tainter gates. Another six stilling basin shells sit downstream of the sill shells and have energy-dissipating blocks to break up the flow of water, which increases as it passes over the sill shells.



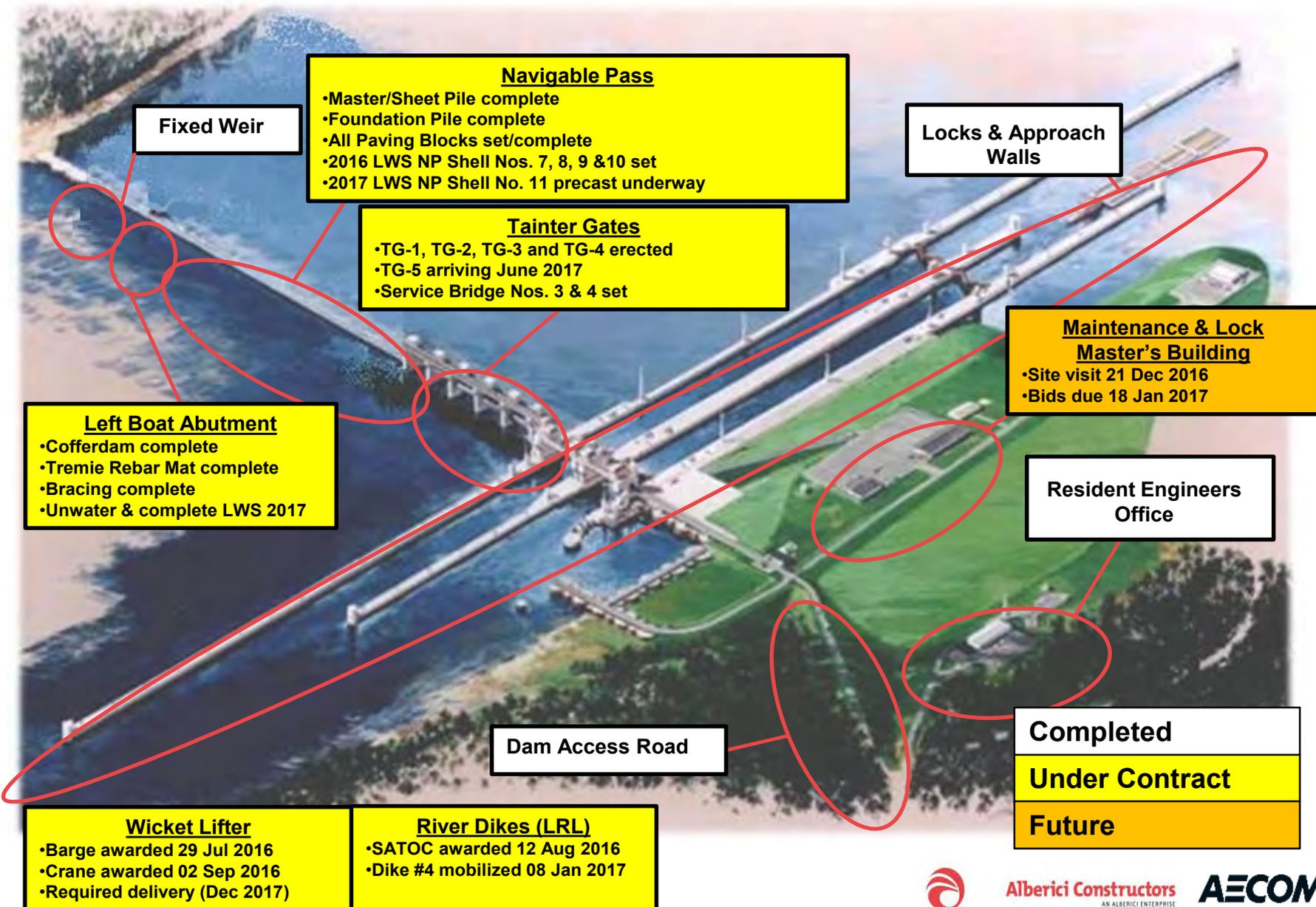
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OLMSTED CURRENT STATUS



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OLMSTED DAM EXECUTIVE PARTNERING & STAKEHOLDER INVOLVEMENT



“Partnering Mission Statement”

We, the members of the Olmsted Dam Project Delivery Team, proudly dedicate ourselves to the successful completion of this highly visible project that is essential to our nation’s inland marine transportation infrastructure. We will continue to use a creative mix of traditional and innovative techniques, demonstrating excellence and professionalism, to safely deliver a one-of-a-kind, world-class facility which meets the users’ needs now and well into the future. We will work together with integrity and open and honest communication while maintaining an enthusiastic attitude and celebrating our successes.



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OLMSTED PROJECT **STAKEHOLDERS**

- **AECOM\Alberici**
- **Global Diving**
- **Oregon Iron Works**
- **G & G Steel**
- **Vass Pipe & Steel**
- **Edgen Murray**
- **Dorman Long Technologies**
- **Pine Bluff Sand and Gravel**
- **Ederer (Bigge Crane & Rigging)**
- **VT Halter Marine**
- **Local Municipalities**
- **Trade Unions**
- **Glosten Naval Architecture & Marine Engineering**
- **US Army Corps of Engineers**
- **Inland Waterways Users Board**
- **Commercial Towing Industry**
- **TVA**
- **US Coast Guard**
- **Jacobs\COWI**
- **Conrad Shipyard**
- **CJ Mahan**
- **Luhr Bros., Inc.**
- **Appleton Marine. Inc.**
- **US Taxpayer**
- **LRL-Operations Division/Personnel**
- **Lower Mon, Chick and Kentucky Projects**



This Is Now (2016)

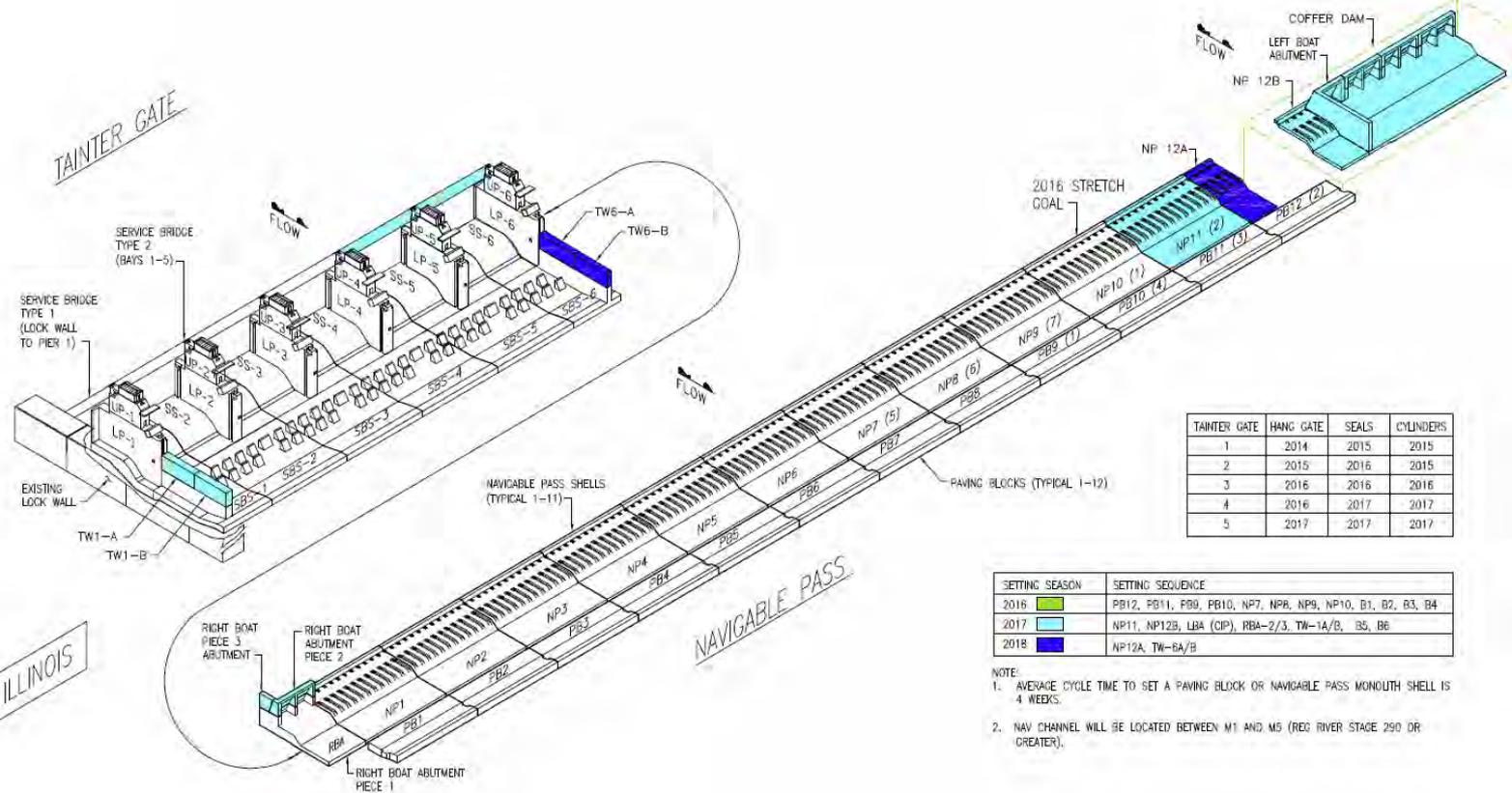
RINGER BARGE PLACEMENTS	
SHELL	WEIGHT (TONS)
RBA PIECE 3	81.5
TW1-A	347
TW1-B	302
TW5-A	308
TW5-B	316
SERVICE BRIDGE TYPE 2 (2)	283
7 REMAINING RINGER PLACEMENTS	

CAT BARGE PLACEMENTS	
SHELL	WEIGHT (TONS)
NP 11	4855
NP 12A	(4785.7) 1/2
RBA PIECE 2	372
3 REMAINING CAT BARGE PLACEMENTS	

SHELL SETTING ISOMETRIC

KENTUCKY

TANTIER GATE



TANTIER GATE	HANG GATE	SEALS	CYLINDERS
1	2014	2015	2015
2	2015	2016	2015
3	2016	2016	2016
4	2016	2017	2017
5	2017	2017	2017

SETTING SEASON	SETTING SEQUENCE
2016	PB12, PB11, PB9, PB10, NP7, NP8, NP9, NP10, B1, B2, B3, B4
2017	NP11, NP12B, LBA (CP), RBA-2/3, TW-1A/B, BS, BE
2018	NP12A, TW-6A/B

- NOTE:
- AVERAGE CYCLE TIME TO SET A PAVING BLOCK OR NAVIGABLE PASS MONOUTH SHELL IS 4 WEEKS.
 - NAV CHANNEL WILL BE LOCATED BETWEEN M1 AND M5 (REQ RIVER STAGE 290 OR GREATER).

ILLINOIS

* Eight shells set in LWS 2016 including stretch goal NP-10



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Strategic Planning, Excellence in Production and Safety Execution = SUCCESS!

(FY16-**\$268M**) (FY17-**\$225M**)

<u>MILESTONE</u>	<u>BASELINE</u>	<u>CURRENT</u>
PB-9	26 Jul	19 May (A)
PB-10	17 Aug	23 Jul (A)
PB-11	07 Jul	29 Jun (A)
PB-12	15 Jun	09 Jun (A)
NP-6	05-Sep	01 Feb (A)
NP-7	17 Sep	09 Aug (A)
NP-8	18 Oct	26 Aug (A)
NP-9	14 Nov	04 Oct (A)
NP-10 (Stretch Goal)	LWS 17	10 Nov (A)
TG-3	20 Aug	22 Aug (A)
TG-4	17 Nov	19 Oct (A)
SB-1	23 May	04 May (A)
SB-2	26 May	06 May (A)
SB-3 (Stretch Goal)	LWS 17	01 Dec (A)
SB-4 (Stretch Goal)	LWS 17	02 Dec (A)



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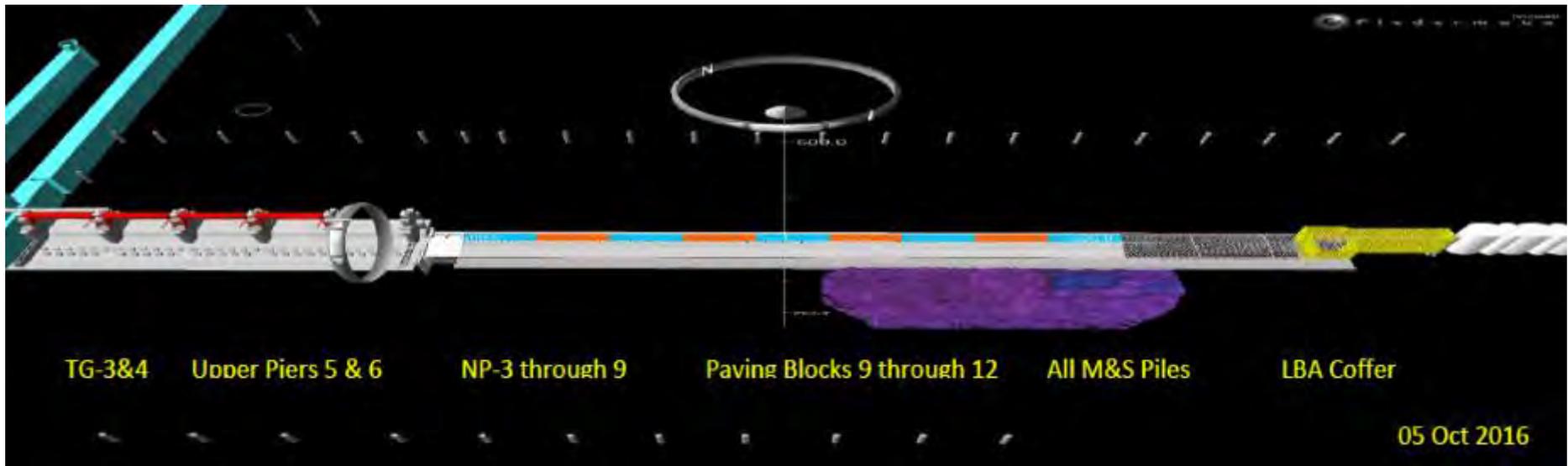
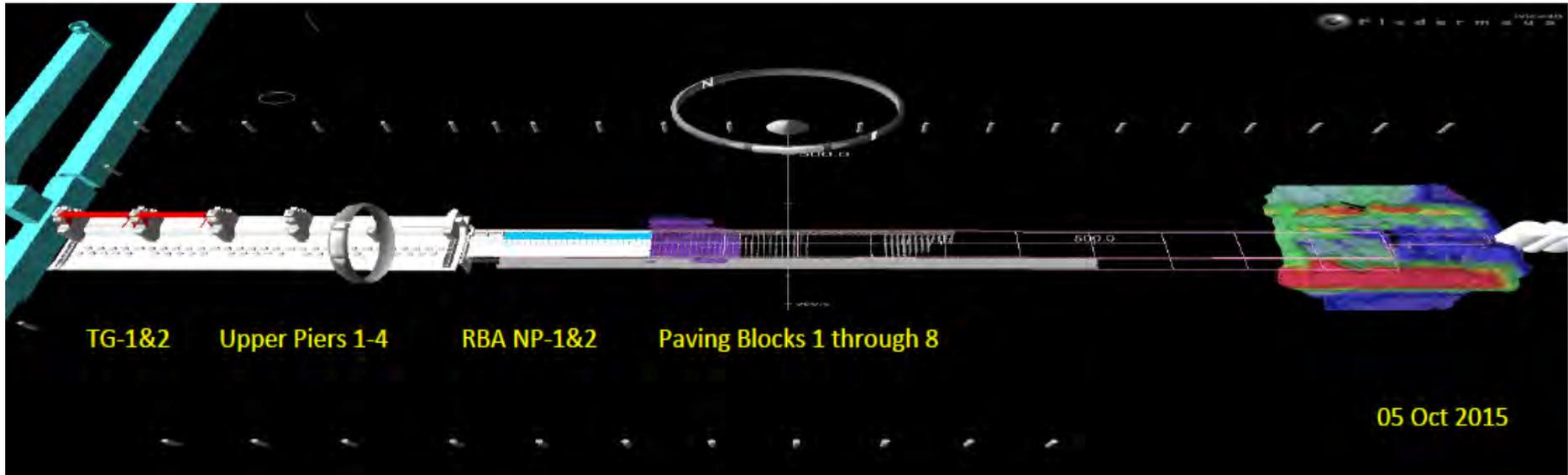


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MAKING INTEREST

NAVIGABLE PASS (MULTI-BEAM SURVEY)



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2016 LWS IMAGES



1. TG 4 Arrival



2. TG-2 Dewatering



3. NP 7-10 construction

4. Emergency Support to L&D 52



5. 10,000th Dive



6. LBA Tremie and NP9 set down



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PROJECT PERFORMANCE METRICS

PACR Risk-Informed (with contingency) Performance Metrics:

Cost = \$3.1B (fully-funded)
Schedule (Operational) = 2022
Schedule (Complete) = 2026

Current Schedule: **Ahead of Schedule**
2018 (Operational)
2022 (Complete)

Current Cost: **Under Budget**

Estimate at Completion = \$2.794B (\$300M under budget)
Expenditures through FY16: \$2,263,656,351

Safety:

Annual Exposure Profile
Approx. 1.5M man hours
Approx. 50,000 crane hours
Approx. 100 critical lifts
Approx. 1000 dives
(11,000 to date)
DART = 0.367, TCIR 0.981

- Keys: 1) Receiving **full capability funding** each year has allowed the PDT to efficiently plan and execute our annual work plan.
- 2) Advantageous river conditions have allowed the work to expand beyond the contractual low water season (June - November).



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Thank You!/Questions?

More information regarding safety, production planning, and quality best practice in addition to precast, marine and heavy lift operations can be found in the version of this brief posted online.



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WHY OLMSTED IS SUCCESSFUL



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SAFETY FOR LIFE

9 LIFE-PRESERVING PRINCIPLES



- 1) **Demonstrated Management Commitment**
- 2) **Employee Participation**
- 3) **Budgeting and Staffing for Safety**
- 4) **Pre-Planning**
- 5) **Contractor Management**
- 6) **Recognition and Rewards**
- 7) **Safety Orientation and Training**
- 8) **Incident Investigation**
- 9) **Fit for Duty**



QUALITY

How We Ensure Quality - Onsite

- Collaborative Effort
- Joint participation in Preparatory and Initial phase meetings and Follow-up phase inspections
- Discuss items relating to Quality (submittals, witness point/hold point/pre-placement inspections, lessons learned) in daily Production Planning Meetings with General Foreman, Superintendents and Management
- Mutually perform examination of work at hold/witness points
- Weekly Coordination Meeting
- Jointly Operate Materials Lab

How We Ensure Quality – Offsite

- OIW –Site visit by both QC and QA as required for current workflow
- G&G Steel – QC has full time, onsite presence. QA performs site inspection approximately twice per month
- Bosch/Rexroth, other – milestone events and as needed

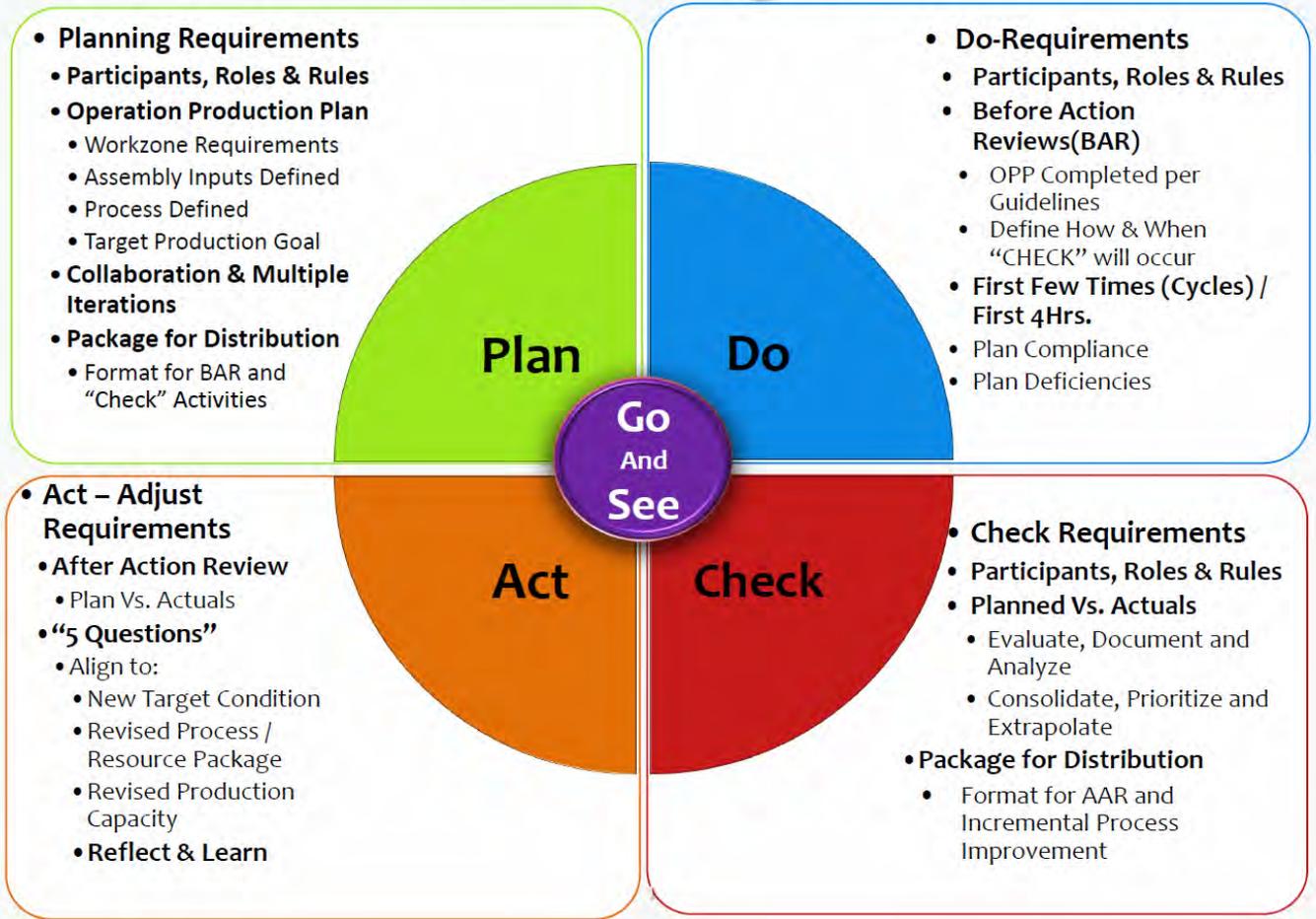


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QUALITY

PDCA Cycle



PRODUCTION PLANNING

Craft involvement in all components of the planning system is essential. This is accomplished by:

- Construction Project Production Management System (CP²MS)
 - Assured Production Planning and Control boards
 - Daily planning and coordination meeting

- Operation Dam Excellence (ODE)
 - Operation Production Planning (OPP)
 - Activity Hazard Analysis (AHA) Development
 - Before Action Review (BAR)
 - After Action Review (AAR)

- Quality Control Initial Meeting
 - Performed with craft and supervision prior to performing work activities
 - Review AHA
 - Review work plan and OPP

- Daily Safe Card and Two Minute Rule card review



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EXECUTION & TECHNICAL EXCELLENCE



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ELEMENTS OF CONSTRUCTION.....

CASTING YARD

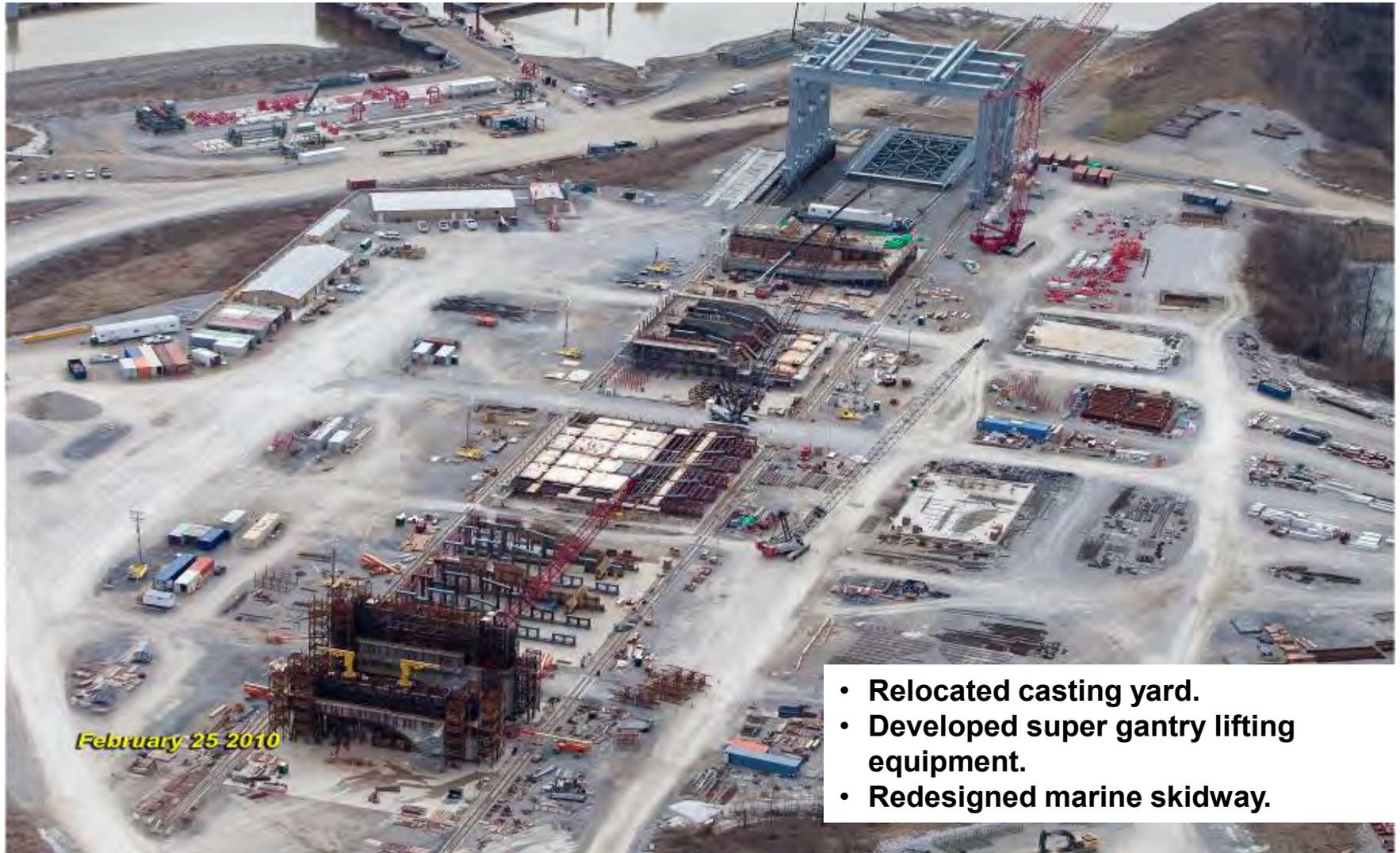
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SHELLS CONSTRUCTED ON CONCRETE CASTING SLABS



- Relocated casting yard.
- Developed super gantry lifting equipment.
- Redesigned marine skidway.



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SELF-PERFORM CONSTRUCTION



Peak craft employed: 619



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LP-1 & LP-2 CONSTRUCTION



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INSTALLING TREMIE CONCRETE SENSOR SYSTEM



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ELEMENTS OF CONSTRUCTION...



....MARINE WORK



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AQUADIGGER IN ACTION



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GROUT MAT INSTALLATION



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PILE DRIVING



- AECOM designed & constructed pile driving template.
- Controls accuracy.
- Improved production.



DIVE TEAMS



Diving teams operate under subcontract.



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RINGER CRANE BARGE



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ELEMENTS OF CONSTRUCTION.....



... HEAVY LIFT



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SUPER GANTRY CRANE



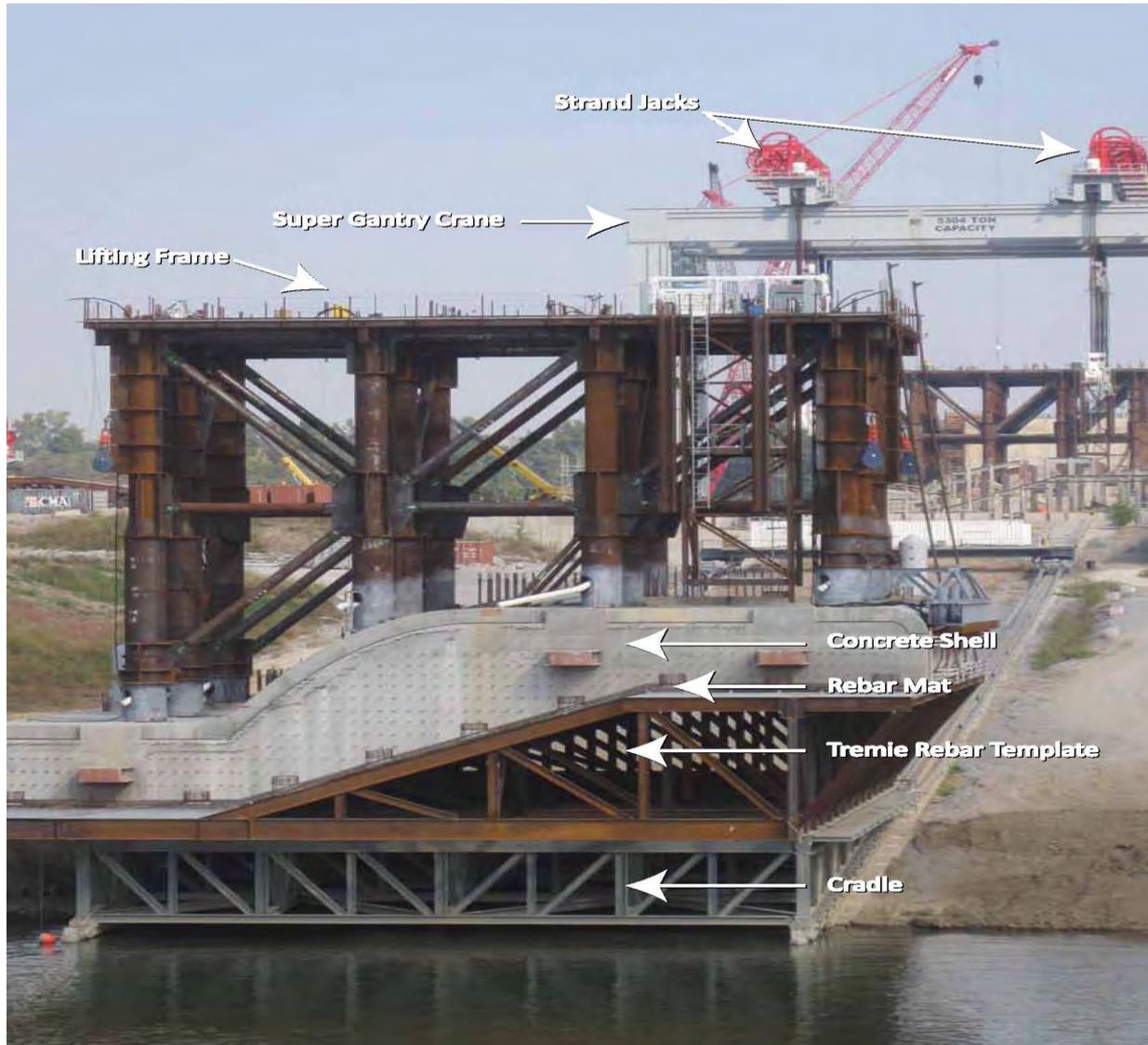
- AECOM developed the “super gantry crane” concept.
- AECOM selected “strand jacks” for lifting shells.



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HEAVY LIFT



- AECOM redesigned and developed the push-pull marine skidway



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HEAVY LIFT CATAMARAN BARGE



TREMIE DELIVERY SYSTEM



Pumped from land lock wall to fill 4-12 CY barge mounted drum mixers



Additional admixtures are added & mixed during transportation prior to dumping at placing barge



Placing barge pumps into tremie pipe hoppers



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INSTALLATION OF ALL PIER MACHINERY HOUSES, TWO TANTER GATES AND SERVICE BRIDGES 1 & 2 SHOWN



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RENDITION OF OLMSTED DAM

ESTIMATED COMPLETION DATE: 2019



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Thank You

