

# Kentucky Lock Project Update Inland Waterways Users Board Meeting No. 94

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# Kentucky Lock Addition Bottom Line Up Front

- **Downstream Cofferdam Construction**
  - ▶ High water continued to impact into June
  - ▶ Continues to be high risk construction due to constricted area and geology
- **Post Authorization Change Report approved 9 June 2020.**
- **Downstream Lock Monoliths award moved to September 2021**

# Kentucky Lock Project Overview

Bridges Superstructures - \$104M  
Completed Jul 2014

Bridges Substructures - \$44M  
Completed Mar 2006

D/S Lock Excavation - \$54.8M  
Award – Sept. 2018

D/S Cofferdam - \$67.1M  
Award - Sept. 2016

U/S Miter Gate Fab. - \$5.6M  
Completed Dec 2016

D/S Lock Monoliths  
Award – Sept. 2021

Upstream Cofferdam - \$17M  
Completed Nov 2006

Site, Demolition, &  
Utilities - \$4.6M  
Completed Mar 2019

Approach Walls  
Award – Sept. 2022

Upstream Lock - \$110M  
Completed Feb 2017

## Contract Legend

Completed
Current
Future

Lock & Associated Facilities	\$1,006M
TVA Transmission Towers	13M
P & L Railroad	97M
Hwy 62 and other roadways	100M
<b>Total</b>	<b>\$1,216M</b>

\$534.1M Obl thru Sep 2019 = 40% complete



Ongoing Cast in Place concrete operations on 3 of 5 downstream shells

Tailwater elevation below threshold on 4 June 2020!

**Downstream Cofferdam Construction  
23 June 2020**

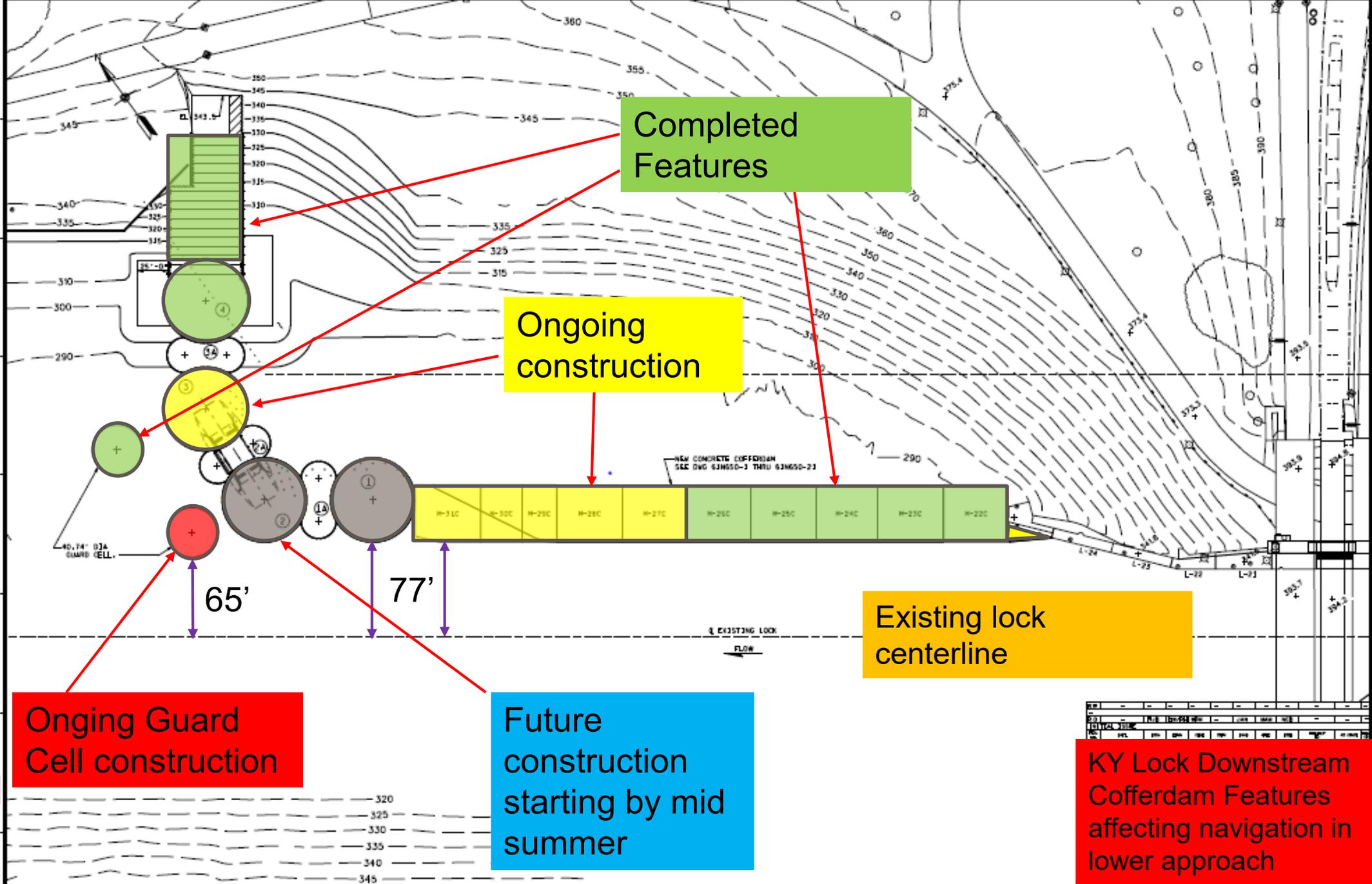
Guard Cell 2

Cell 3

Downstream Lock Cofferdam  
23 June 2020



SOLNOLS 3 8 2 3 4 5 6 7 8 9 10



Completed Features

Ongoing construction

Ongoing Guard Cell construction

Future construction starting by mid summer

Existing lock centerline

KY Lock Downstream Cofferdam Features affecting navigation in lower approach

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DS 29



Secondary Helper Boat

Guard Cell under construction

Primary Helper Boat

Upbound Tow on 17 June 2020

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# Downstream Lock Excavation Looking Downstream

23 June 2020



Original ground line

Material removal at site of first rock production blast

Excavation 50' below original ground line

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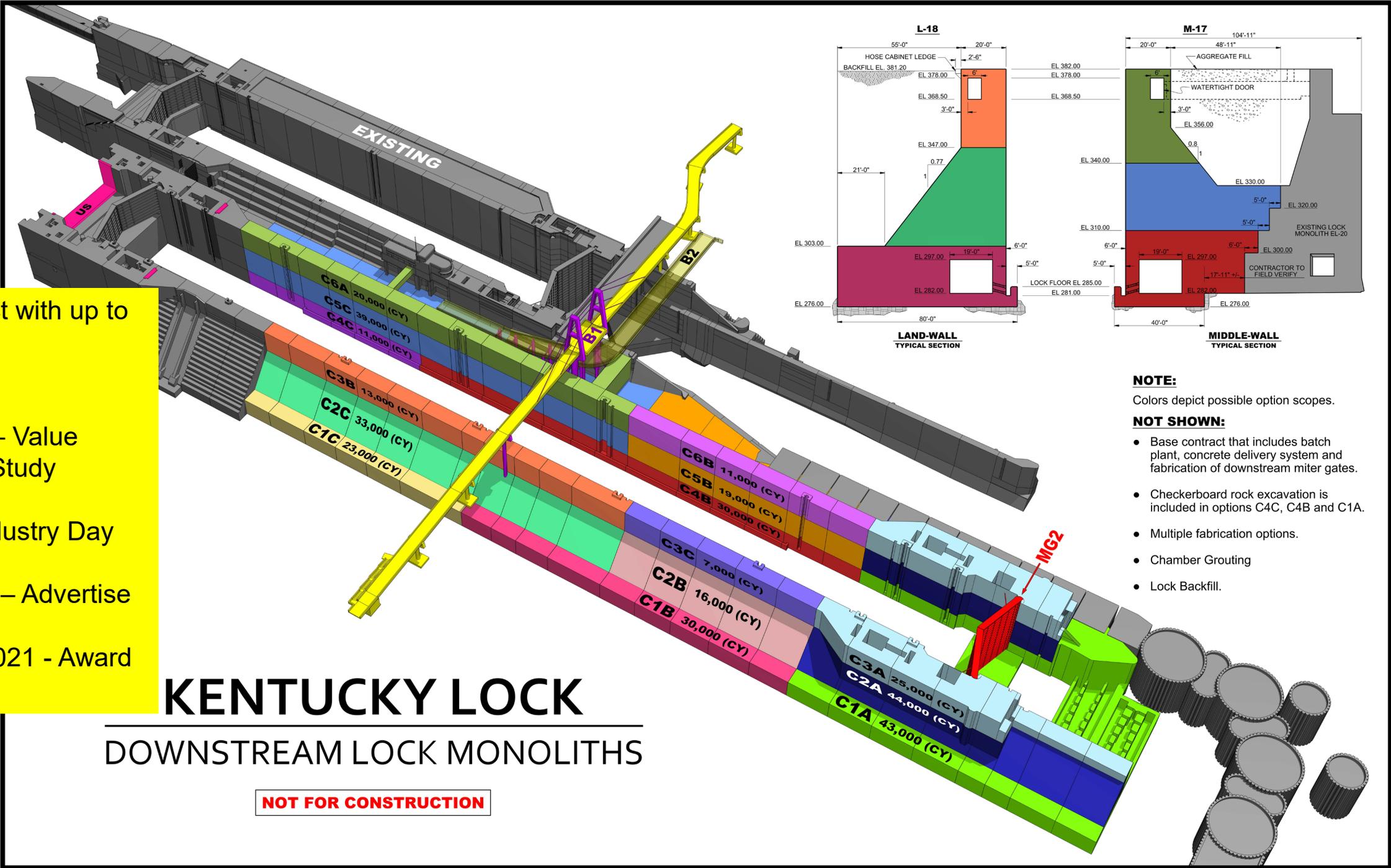


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Base Contract with up to 32 Options

Milestones:  
 24 February – Value Engineering Study  
 3 March – Industry Day  
 January 2021– Advertise  
 September 2021 - Award



**NOTE:**  
 Colors depict possible option scopes.

**NOT SHOWN:**

- Base contract that includes batch plant, concrete delivery system and fabrication of downstream miter gates.
- Checkerboard rock excavation is included in options C4C, C4B and C1A.
- Multiple fabrication options.
- Chamber Grouting
- Lock Backfill.

# KENTUCKY LOCK

## DOWNSTREAM LOCK MONOLITHS

**NOT FOR CONSTRUCTION**

# DS Lock Monoliths Value Engineering Study

## Team Assessment

#	VE Alternative	Cost Avoidance (\$M)	Function	Schedule	Risk
M1	Standardize longitudinal monolith dimensions on landward wall	0.7	-	Improved	-
M2	Step landward edge of landside monolith	3.6	-	-	-
M3	Use Voids in landside monolith	0.0	Improved	-	Increased
M4	Allow use of Formsavers on 2nd pour concrete	0.3	-	Improved	-
M5	Use fewer larger shear rods	2.4	-	Improved	-
M6	Use composite material for downstream miter gate contact pieces	0.8	-	-	Increased
M7	Drilled Shafts @ M20 & M21	TBD	-	Improved	-
M8	Store culvert bulkheads in dedicated space	-0.1	Improved	-	-
M9	Install steel liner at line hooks to reduce formwork	0.3	Improved	Improved	-
CT1	Contract Acquisition Strategy	0.5	Improved	Improved	Improved
CT2	Align Limits of adjacent stacked options	0.0	-	Improved	-
CT3	Subdivide Option C1A above EL310'	0.0	-	Improved	-
BR1	Redesign access bridge edge barrier	0.0	Improved	-	-
BR2	Improve access to utilities on Pedestrian/Bicycle Bridge	TBD	Improved	-	Reduced
BR3	Remove walls below middle wall access ramp	0.2	Improved	Improved	-
BR4	Use conventional rebar	0.2	-	-	-
	<b>Total Potential Cost Avoidance</b>	<b>8.9</b>			

Under Evaluation – Likely adoption

Implemented

Under Evaluation

Currently Implementing

Not Adopted

Under Evaluation

Under Evaluation

Not Adopted – See Solicitation Type

Currently Implementing

Under Evaluation – Unlikely adoption

Under Evaluation – Unlikely adoption

BI

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# Kentucky Lock holds Industry Day for upcoming >\$250M contract (Mar. 3, 2020)

## Events:

- Nashville District hosted an Industry Day on March 3, 2020 for the upcoming Downstream Lock Monoliths contract of the Kentucky Lock Addition Project in Grand Rivers, Ky.

## Communication Objectives:

- Educate and SEEK INPUT from our industry partners to develop a better construction contract.
- COMMUNICATION and COOPERATION between the Corps of Engineers and its contractors lead to more successful outcomes.

## Activities:

- In a 2 hour 45 minute session, presentations were made by the PDT on the draft designs and contract features to the 57 industry attendees that included representatives from 12 potential prime contractors. Input from the attendees was solicited via a written questionnaire and through oral discussions that were encouraged during and after the presentations.

## Key Take-Aways:

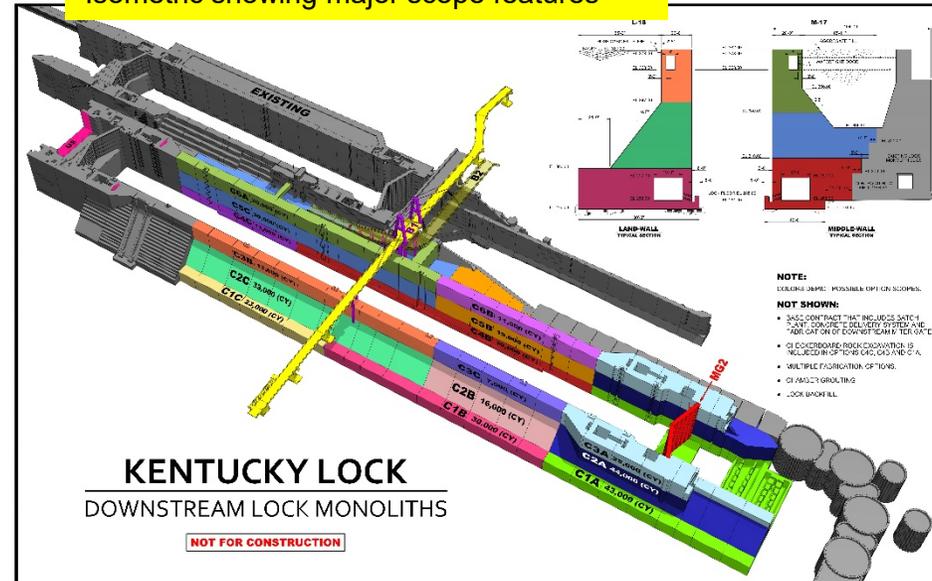
- Valuable input was received that will result in a better solicitation and contract. Examples include input on the options structure, solicitation type, data management requirements, and steel reinforcing designs.
- Holding this type of event DEMONSTRATES that the Corps is serious about working with its Industry PARTNERS to seek and act on their concerns that usually result in win-win outcomes.

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Afternoon site visit after morning indoor session



Isometric showing major scope features



# DS Lock Monoliths Solicitation Type

- In March 2020, the Corps' Senior Contracting Official responsible for oversight of Nashville District's contracts determined that this contract should be issued using a Best Value Trade-off (BVTO) solicitation vs. our more traditional Invitation for Bid (i.e., low bid) solicitation. The rationale for this decision on this particular contract is the belief that it would yield a contractor that would provide the Best Value to the Government.
- For contracts >\$100M, the BVTO has a complicated award process that we expect will take on the order of 6 months to award after receipt of offerors' proposals vs. approximately 3 weeks to award after receipt of bids using an IFB. Therefore, we expect to advertise by January 2021 to award by September 2021.

# DS Lock Monoliths Industry Day

Contractors views on BVTO are a mixed bag. One of 7 written survey questions at Industry Day:

4. If this contract was issued using a negotiated Best Value (Request for Proposal) procurement method instead of a low-bid, Invitation for Bid, would this significantly impact your total bid amount?

Yes, RFP would increase bid amnt      No, RFP would not increase bid amnt

Would RFP affect your decision on whether to bid or not?

Yes, RFP may cause us not to bid      No, RFP would not affect bid decision

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Slide

- Results on question on BVTO vs. IFB:
  - 2 (of 12) may not submit under BVTO
  - 40% would submit significantly higher bid with BVTO

# Post Authorization Change Report and Economic Update

- Director's Report signed on 9 June 2020 and PACR sent to Congress that week.
- If re-authorized, new first cost at FY20 price level will be \$1,152,769,000 (does not include inflation)
- Project will reach current 902 cost limit in FY2023 based on efficient funding profile.
- New 2020 Fully Funded Total Project Cost Estimate is \$1,210,565,000 (FY20 price level) vs. 2019 TPCE of \$1,215,858,000 (FY19 price level).

# Post Authorization Change Report and Economic Update (Continued)

## Benefit Cost Ratio Comparison Table

Type of Benefit Cost Ratio	Discount Rate	
	7% (OMB)	2.75% (current)
Old BCR	1.3	2.8
New BCR	1.1	2.4
Old RBRCR	2.3	5.3
New RBRCR	1.8	4.1
New BCR w/o inefficient funding in costs (\$241M difference)	Not computed	3.1
New RBRCR w/o inefficient funding in costs (\$241M difference)	Not computed	5.0

# Kentucky Locks & Dam, Tennessee River, KY

	ARRA	CG	IWTF	Total
<b>Total Project Cost (TPC):</b>				<b>\$1,210,565,000<sup>1</sup></b>
Allocations through FY 2015:	\$88,833,626	\$183,305,288	\$148,810,987	\$420,949,901
FY16 Allocation:	NA	\$22,850,000	\$22,850,000	\$45,700,000
FY17 Allocation:	NA	\$18,000,000	\$18,000,000	\$36,000,000
FY18 Allocation:	NA	\$20,600,000	\$20,600,000	\$41,200,000*
FY19 Allocation:	NA	\$21,800,000	\$21,800,000	\$43,600,000
FY20 Allocation:	NA	<b>\$30,530,000</b>	<b>\$30,530,000</b>	<b>\$61,060,000</b>
<b>Total Allocations to Date:</b>	\$88,833,626	\$297,085,288	\$262,590,987	<b>\$648,509,901</b>
<b>Remaining TPC Balance:</b>				<b>\$562,055,099</b>
<b>Remaining Balance Change From Last Meeting</b>				<b>-\$68,053,000<sup>2</sup></b>

Notes: <sup>1</sup>Project cost data is reflective of 27 Mar 2020 certified cost (OCT 19 \$'s), Fully Funded.

<sup>2</sup> Reflects new total project cost and \$61.1M FY20 allocation

## Changes

**All fund amounts reflect new FY20 Total Project Cost Estimate and PACR**

### Funding Overview

- Authorized Cost: **\$726,046,000 (Oct19 \$)**
- 902 Limit: **\$812,844,000 (Oct19 \$)**
- ARRA (FY09-13): **\$ 88,833,626**
- Engineering & Design Cost: **\$115,425,000 (Thru FY19)**
- Supervision & Admin Cost: **\$ 23,599,000 (Thru FY19)**
- Mitigation Cost: TBD

### Current Status of the Project

- Downstream Cofferdam construction is **80% complete**;
- Downstream Lock Excavation contract **40% completed**.
- **Downstream Lock Monoliths has 75% Agency Technical Review ongoing.**

### Next Steps

- **Complete Downstream Cofferdam by January 2021.**
- **Advertise Downstream Monoliths by January 2021.**

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# Kentucky Locks & Dam, Tennessee River, KY

Schedule of Remaining Work	Design Initiated	Contract Award	Construction Complete*	Project Benefits	Capitalized Cost Closeout
Task 1 – HWY / RR Superstructures	01-Oct-99	19-Sep-05	24-May-12		
Task 2 – Upstream Lock Monoliths (all Options)	01-Oct-00	29-Jan-10	30-Dec-16		
Task 3 – Upstream Miter Gate Fabrication	01-Oct-02	30-Sep-13	1-Mar-16		
Task 4 – Downstream Cofferdam	01-Oct-00	30-Sep-16	19-Nov-20		
Task 5 – Site, Demolition, & Utilities	01-Oct-00	31-Jan-18	30-Mar-19		
Task 6 – Downstream Lock Excavation	01-Oct-00	26-Sep-18	3-Jan-22		
Task 7 – Downstream Lock Monoliths	01-Oct-00	30-Sep-21	12-Sep-25	12-Sep-25**	
Task 8 – Approach Walls	01-Oct-02	30-Sep-22	21-Nov-24		

\*Dates are achievable based on the most efficient funding profile.

\*\*Based on 27 Mar 2020 Certified cost estimate Cost and Schedule Risk Assessment, the project has an 80% confidence level of being completed by 2028.

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# Kentucky Lock Project Time and Cost Scorecard



## Expenditures

1 Apr

Planned (BCWS)	\$581.2M
Earned (BCWP)	\$524.3M
Actual (ACWP)	\$510.6M

**BCWP:** Reports the value (based on % complete) of the work performed to date.

**Target:**

Actual as compared to Planned: (<1% = Green) (>1%and <3% = Yellow) and (>3% = Red)

## Schedule

1 Apr

(Baseline)/(Current)

Project Complete	May 2028 / Sep 2025
Lock Operational	May 2028 / Sep 2025

**Measures:** Planned project completion and Lock operational dates

**Target:**

Downstream Lock Monoliths award September 2021.



## Budget

KY Lock Project EAC Trend



## Major Activity Schedule

Activity	Baseline	Current
Complete Downstream Cofferdam	Nov 2019	Nov 2020
Advertise Downstream Lock Monoliths Contract	May 2020	Jan 2021
Project Re-Authorization	FY2020	FY2020



# Kentucky Lock Summary and Challenges

- **Project schedule impacts are being experienced due to high river levels and geologic conditions.**
- **Downstream Cofferdam construction is a high risk contract due to constricted marine area and geology.**
- **Award of >\$250M Downstream Lock Monoliths in September 2021**
- **Efficient Funding Profile:**

Date	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY2025	Total
Feb 2020	\$61.1M	\$169.5M	\$159.4M	\$170.5M	\$66.4M	\$0	\$626.9M
July 2020	\$61.1M	\$110.1M <sup>1</sup>	\$162.7M	\$138.5M	\$131.5M	\$19.2M	\$623.1M <sup>2</sup>

<sup>1</sup> Reduction due to pushing Approach Wall award to FY2022. Includes contingencies at 50% confidence level.

<sup>2</sup> Reflects new 2020 Total Project Cost with 80% confidence level contingencies (difference between 80% and 50% confidence level budgeting is included in FY's 24 and 25)