



November 21, 2016



Nice Bridge

Preservation and Replacement Project



Maryland
Transportation
Authority

Project Background

Nice Bridge Fast Facts



- Construction dates: March 1938 – December 1940
- Original cost to construct: \$5 million
- Named in 1968 for Maryland Governor Harry W. Nice
- Length of entire facility (including bridge and approaches): 2.2 miles
- Bridge length: 1.7 miles of two-lane bridge
- CY 2015 traffic volume: 6.6 million vehicles (average annual daily traffic: 18,600)
- FY 2016 toll revenue: \$21.0 million



Agenda



1. What is the Project?

A. Project Background

- I. Existing Bridge - Purpose and Need
- II. Senate Bill 907

B. Actions to Date

- I. Work Completed to Date
- II. Practical Design Efforts
- III. Project PE/ROW Status

2. Why Now?

3. How to Finance?

4. How to Deliver?

5. What are the Next Steps?





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What is the Project?

Project Background

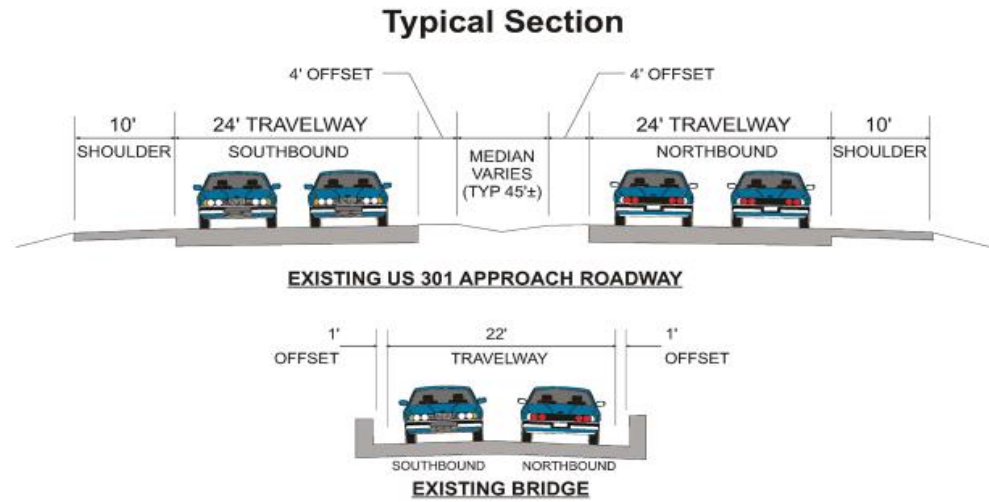
Purpose & Need



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MOST SIGNIFICANT NEEDS FOR BRIDGE REPLACEMENT:

- From NEPA Documents:
 - Geometric inconsistencies
 - Safety issues
 - Traffic capacity limitations
 - Traffic impacts due to incidents, maintenance & wide-loads
- Life Cycle Cost Analysis (LCCA)
 - Major rehab needed in the near future (i.e., re-decking) very problematic, and a cost driver in the LCCA timing



What is the
Project?

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Project Background

Existing Bridge Conditions



CONDITION ASSESSMENT FOR THE BRIDGE'S MAJOR ELEMENTS

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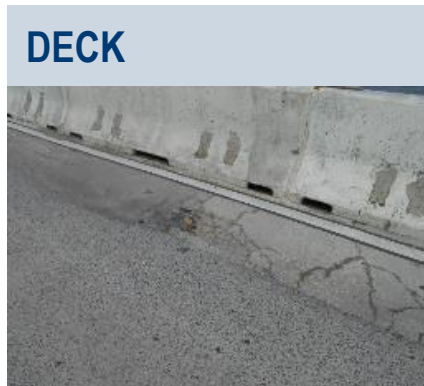
PAINT

Not in very good shape, 10 year life at most.



SUPERSTRUCTURE STEEL

Some section loss, **Condition Rating = 5 (Fair)**



DECK

30 year old wearing surface nearing end of its lifespan, **Condition Rating = 5 (Fair)**



SUBSTRUCTURE

Some spalling & cracking, **Condition Rating = 5 (Fair)**

Project Background

Existing Bridge Conditions



SIGNIFICANT LIFE-CYCLE COSTS AND IMPACTS WILL BE:

Full re-paint.....needed if new bridge is not built soon.

Mill & Overlay Deck.....needed if new bridge is not built soon.

Full Deck Replacement....needed if not replaced by 2035 (50+ yr. deck)

Life-Cycle Cost Implications with regard to Maintaining Existing Bridge		
Scenario	Needed Actions, Estimated Cost	Traffic / MOT Implications
Open New Bridge 2022	Continue minimal, on-going maintenance, \$10 million (thru FY 2022)	Continue single-lane closures, off-peak hours.
Open New Bridge 2030	Full re-paint & thin mill/overlay for deck, \$60 million (thru FY 2030)	Continual single-lane closures during off-peak hours becomes more difficult with growing volumes. Mill & overlay operation significant impact.
Open New Bridge 2040	Full paint & full deck replacement, \$150 million (thru FY 2040)	Single-lane closures during off-peak hours becomes even more difficult with growing volumes. Full deck replacement expected to require full 115 mile detours of bridge , very impactful.

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SAFETY ISSUES

- From 2009 through 2013:
 - Rear end collisions more than double the statewide average
- From 2014 through 2015:
 - 24 total crashes (82 crashes per 100 million vehicle miles traveled) (less than statewide average)
 - 12 rear end collisions (higher than the statewide average)
 - All crashes frequently block both lanes for extended periods

Crash Type	Total Study*	State Rate*
Rear End	58.4	48.0
Fixed Object	37.7	29.1
Other	3.5	1.0
Opposite Direction	20.6	39.2

Severity	Total Study*	State Rate*
Property Damage	48.1	78
Injury	34.2	56.8
Fatal	0.0	1.7
Total Crashes	82.2	136.6

- Crash per 100 Million vehicle-miles of travel
- Jan. 2013 to Dec. 2015 data shown



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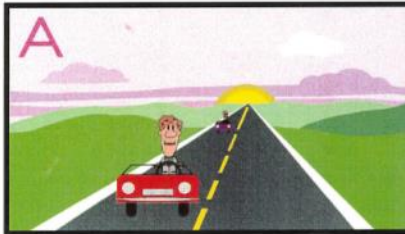


What is the Project?



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TRAFFIC CAPACITY LIMITATIONS



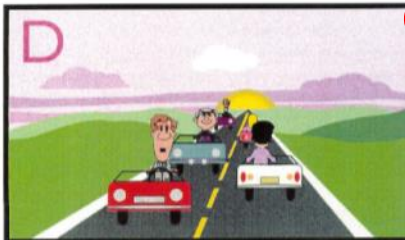
LOS A (FREE FLOW) - a general level of comfort and convenience provided to the motorist is excellent.



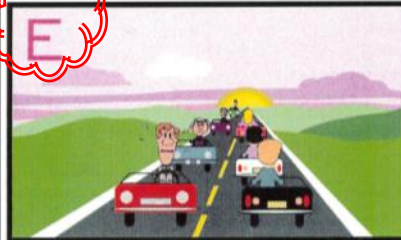
LOS B (STABLE FLOW) - the presence of others in the traffic stream begins to affect individual behavior.



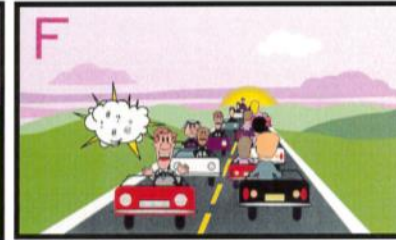
LOS C (STABLE FLOW) - comfort level declines noticeably at this level.



LOS D (HIGH DENSITY BUT STABLE FLOW) - speed and freedom to maneuver are severely restricted.



LOS E (NEAR OR AT LEVEL OF CAPACITY) - driver frustration level is generally high.



LOS F (FORCED OR BREAKDOWN FLOW) - the amount of traffic approaching a point exceeds the amount which can traverse the point; gridlock.

Why Now?

How to Finance?

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What are the Next Steps?

- Bottleneck along US 301 created by the existing two-lane bridge:
 - *Highway Capacity Manual* – Level of Service (LOS) analysis:
 - Average Weekday = **LOS E** for PM Peak (2015 data)
 - Average *Summer* Weekday = **LOS E** from 11am to 6pm (2015 data)

Project Background

Purpose & Need



TRAFFIC CAPACITY LIMITATIONS (CONT'D)

- Slow trucks leaving the toll-plaza from a stop condition must climb 3.75% over 3,000' with no 'climbing lane,' significantly impacting traffic.
- Incidents & wide-loads:
 - Traffic incidents and crashes create major impacts, closing one direction or both directions until cleared.
 - Lack of shoulders or pull-off areas for 1.7 miles of bridge is difficult to manage
 - Number of wide-load requests/year (closes bridge) = approximately **1,200**.
 - Proximity to Dahlgren Naval Facility – many military oversize vehicle crossings
 - Agricultural demographics in surrounding area – oversize farming equipment crossings



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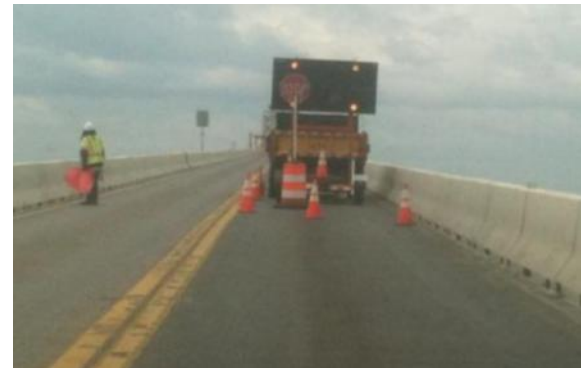
Project Background

Purpose & Need



TRAFFIC CAPACITY LIMITATIONS (CONT'D)

- Maintenance
 - With increasing age, impacts from routine maintenance very problematic, and will become more frequent in future.
 - Capacity during normal traffic operations:
 - 1000 vehicles per hour per direction
 - Capacity during lane closures (commonly implemented):
 - **400 to 600** vehicles per hour per direction



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LANE CLOSURE LIMITATIONS

- 2015 MOT Queue Length Analysis (in miles) during closures:

Queue Length Key:

X.XX	Queue = 0.00
X.XX	0.00 > Queue ≥ 1.00
X.XX	1.00 > Queue ≥ 2.00
X.XX	2.00 > Queue ≥ 3.00
X.XX	3.00 > Queue

Queue Lengths		<u>Legend</u>																									
Avg Vehicle Length + Spacing (ft)		X.XX Queue length in miles, greater than zero																									
25																											
NB Northbound																											
Date/Hour	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Queue Length (miles)		
Monday	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Queue Length (miles)
Tuesday	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Wednesday	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Thursday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.23	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Friday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.71	0.55	0.25	0.18	0.00	0.00	0.00	0.00	0.00	0.00		
Saturday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.35	0.27	0.31	0.70	0.51	0.22	0.09	0.00	0.00	0.00	0.00	0.00	0.00		
Sunday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.34	1.06	1.70	1.90	2.24	1.49	2.04	1.25	0.00	0.00	0.00	0.00	0.00		
SB Southbound																											
Monday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.98	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Queue Length (miles)	
Tuesday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	1.11	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Wednesday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	1.36	1.21	0.17	0.00	0.00	0.00	0.00	0.00	0.00		
Thursday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	1.70	1.74	0.94	0.00	0.00	0.00	0.00	0.00	0.00		
Friday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.63	0.83	1.08	1.78	2.32	3.09	3.20	2.18	0.90	0.00	0.00	0.00	0.00	0.00		
Saturday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.67	1.07	1.28	1.24	0.92	0.71	0.60	0.39	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Sunday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.36	0.48	0.25	0.47	0.30	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Project Background

Purpose & Need



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LANE CLOSURE LIMITATIONS

- **2025 MOT Queue Length Analysis (in miles)** during closures:

Queue Length Key:

X.XX	Queue = 0.00
X.XX	0.00 > Queue ≥ 1.00
X.XX	1.00 > Queue ≥ 2.00
X.XX	2.00 > Queue ≥ 3.00
X.XX	3.00 > Queue

Why Now?

Queue Lengths

Legend

Avg Vehicle Length + Spacing (ft) **25**

X.XX Queue length in miles, greater than zero

NB Northbound																										Queue Length (miles)
Date/Hour	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00		
Monday	0.00	0.00	0.00	0.00	0.00	0.31	0.79	1.63	0.00	0.00	0.00	0.00	0.00	0.17	0.21	0.78	0.86	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tuesday	0.00	0.00	0.00	0.00	0.00	0.50	1.09	1.04	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.03	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Wednesday	0.00	0.00	0.00	0.00	0.00	0.13	0.79	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.77	0.95	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Thursday	0.00	0.00	0.00	0.00	0.00	0.20	0.37	0.92	0.00	0.00	0.10	0.00	0.00	0.00	0.80	0.82	0.54	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Friday	0.00	0.00	0.00	0.00	0.00	0.00	0.40	1.17	0.33	0.38	0.08	0.54	0.46	0.20	2.21	1.47	1.27	0.91	0.82	0.00	0.00	0.00	0.00	0.00	0.00	
Saturday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.32	1.18	1.03	0.94	0.98	1.45	1.23	0.87	0.71	0.54	0.00	0.00	0.00	0.00	0.00	
Sunday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	1.53	2.23	1.89	2.67	2.91	3.31	2.41	3.07	2.12	0.30	0.15	0.00	0.00	0.00	
SB Southbound																										Queue Length (miles)
Monday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	1.76	1.55	0.30	0.00	0.00	0.00	0.00	0.00	0.00	
Tuesday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.95	1.79	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
Wednesday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.42	2.43	2.25	0.98	0.00	0.00	0.00	0.00	0.00	0.00	
Thursday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.11	0.00	0.00	0.00	0.00	0.20	0.64	1.84	2.46	2.50	1.55	0.06	0.00	0.00	0.00	0.00	0.00	
Friday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.44	0.58	0.98	1.37	1.61	1.92	2.75	3.41	4.35	4.47	3.24	1.70	0.55	0.00	0.00	0.00	0.00	
Saturday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1.42	1.90	2.15	2.11	1.72	1.46	1.33	1.07	0.80	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
Sunday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.92	1.04	1.19	0.90	1.17	0.98	0.69	0.27	0.00	0.00	0.00	0.00	0.00	0.00	

How to Finance?

How to Deliver?

What are the Next Steps?

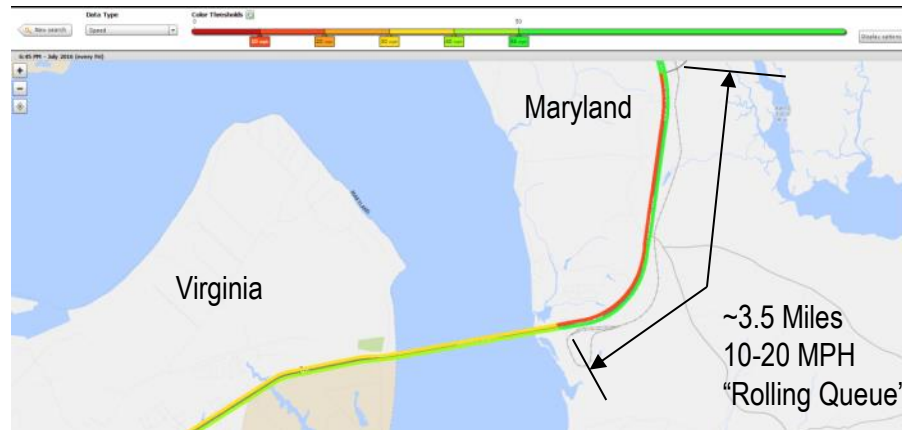
Project Background

Existing Bridge Traffic



CURRENT TRAFFIC CONDITIONS - ROUTINE SUMMER, WEEKEND CONGESTION

Average Friday
(Southbound)
July 2016



Average Sunday
(Northbound)
July 2016



What is the Project?

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Project Background

Existing Bridge Traffic



AUGUST WEEKENDS - UP TO 4 MILE BACKUPS



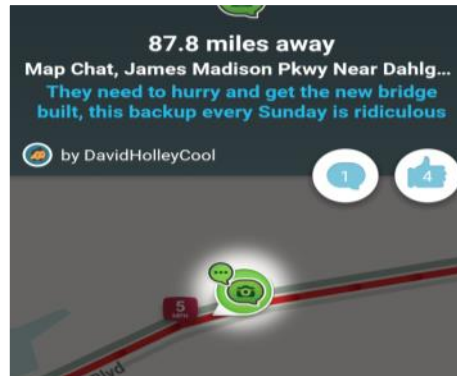
Friday Aug. 12th



Friday Aug. 19th



Friday Aug. 12th
MD Approach SB



Sunday Aug. 14th
Waze @ 5 mph



Sunday Aug. 14th
VA Approach NB

What is the Project?

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Project Background

Senate Bill 907 – Key Provisions



- The bill passed the legislature with a 90-50 vote in the House and 33-12 vote in the Senate on the final day of the legislative session. Governor Hogan vetoed the bill on May 27, 2016.
- Establishes a Nice Bridge Replacement Fund (irrevocable tax-exempt Trust).
 - \$75 million deposit is required annually (after other Trust Agreement obligations are met, but before funding other capital project priorities) in FY 2018 through FY 2027, except in an emergency
 - Money in Replacement Fund may only be used for the design and construction of the replacement bridge
 - Prohibits the use of bond proceeds to fund the annual deposit
- Requires the replacement bridge to be constructed and commence operations by December 31, 2030.
- Prohibits the MDTA from redecking and maintaining the existing bridge as a long-term option and requires the construction of a replacement bridge that includes at least two lanes in each direction.
- Expresses the intent that MDTA promptly undertake all steps necessary to complete preliminary design, engineering, and right-of-way acquisition.

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Project Background

Senate Bill 907 – Concerns



- The bill establishes a policy precedent that violates the statutory capital prioritization and development process and jeopardizes MDTA's statutory independence, which is critical to its credit rating.
- SB 907 is the least economical way to fund the project.
 - **\$191 million** – project cost savings that can be generated by doing the project sooner rather than later based on current inflation and discount rates (Cost of inflation increases project cost annually)
 - **\$81 million** – amount of negative net carrying cost generated by issuing bonds to fund the capital program while cash is sitting idle in the Nice Bridge Replacement Fund in accordance with SB 907 (SB 907 requires money to be set aside before it is needed – forces MDTA to issue bonds for its capital program, paying 3.5% interest rate, while cash accumulates, earning less than 1% return)
 - **\$1.1 billion** – amount of cash on hand required in FY 2027 is excessive (\$750M for Nice Bridge set aside and \$350M per policy)
 - **\$36 million** – amount of additional interest paid over the life of \$100M of 30 year bonds financed at MDTA's assumed long-term interest rate (4.75%) vs. short-term rates (3%)

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Project Background Summary



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KEY TAKEAWAYS

- The existing bridge is in fair (5) condition.
- Ongoing preservation costs depend on the anticipated timing of the new bridge, \$10 million for a new bridge in 2022, \$60 million for a new bridge in 2030.
- The existing bridge is prone to congestion, typically 3.5 miles during incidents and summer weekends. Summer backups are expected to grow to 4.5 miles (southbound Fridays) and 5.5 miles (northbound Sundays) by 2030.

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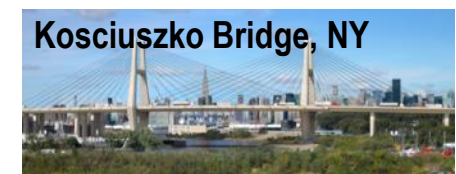
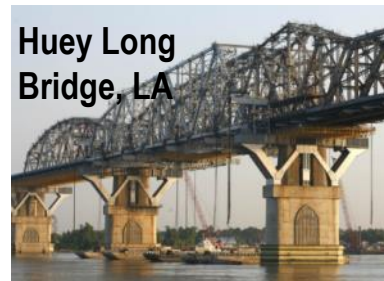
Actions to Date

Lessons Learned Workshops



LESSONS LEARNED WORKSHOPS HELD IN AUGUST AND NOVEMBER 2014

- Invited panelists (owners & engineers) from several mega-projects throughout country to discuss:
 - All phases of project development
 - Project delivery/procurement
 - Funding & finance
 - Bridge types
 - Potential pitfalls



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Actions to Date

Bridge Types



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How to Finance?

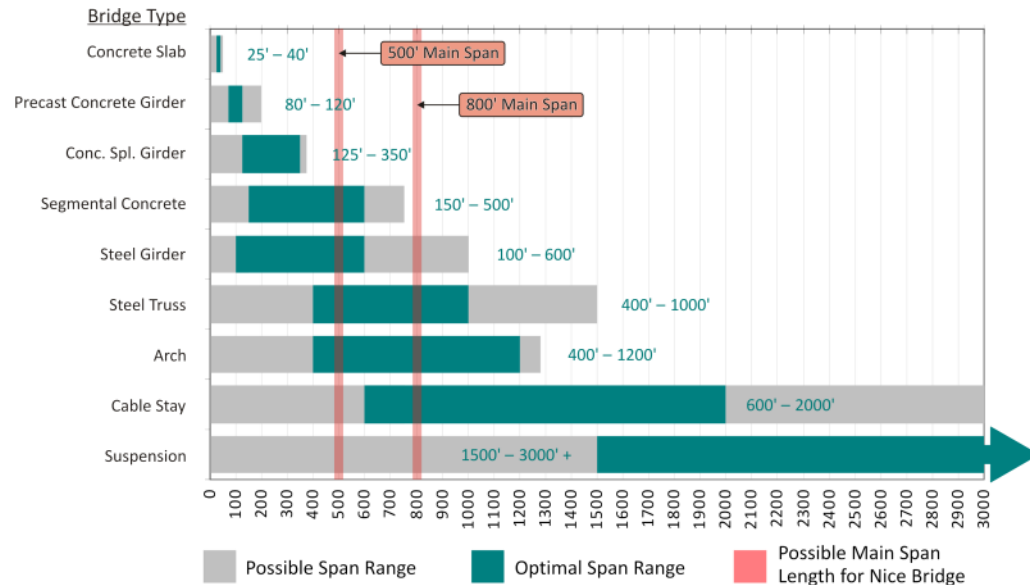
How to Deliver?

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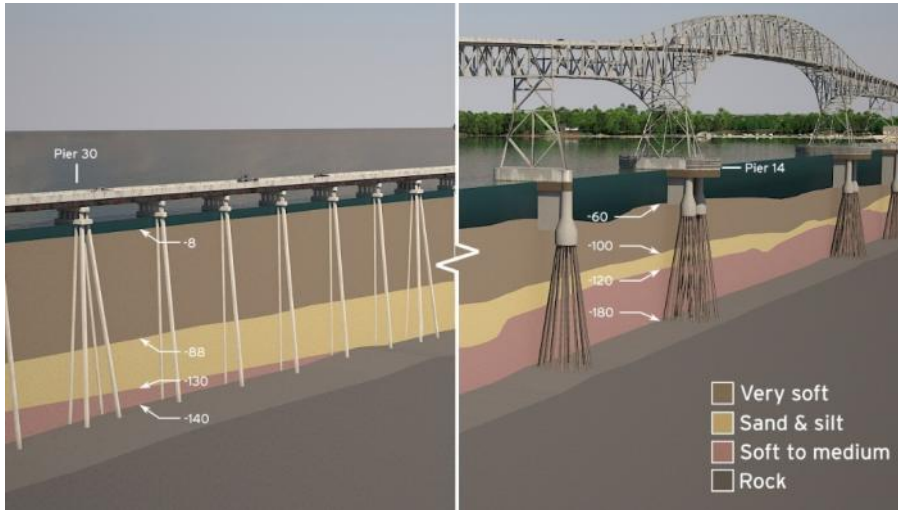
BRIDGE TYPE COST EVALUATION

- Pre-TS&L (Type, Size and Location) Bridge Design Report developed:
 - 360-ft steel girder bridges
 - 600-ft concrete segmental bridge
 - 800-ft and 1,000-ft cable stayed bridges



Actions to Date

Existing Site Investigations



Geotechnical:

- **Borings** - Field work completed May 2016, Geotechnical Data Report compiled for new bridge design
- **Test Piles** - Accomplished small test pile program in February 2016 (2 – 24” steel pipe piles)

MEC/UXO Investigation

- 2 dive investigations completed. 151 anomalies investigated. **No UXO indicated**; mostly construction, fishing debris, crab pots

Utility Investigation:

- Completed level 'C' Utility Mosaic Basemap
- Confirmed AT&T under river crossing well clear of proposed new bridge location

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Actions to Date

Stakeholder Coordination



Federal Highway Administration: Met to discuss potential NEPA reevaluation

U.S. Navy: On-going coordination with important neighbor

NOAA Fisheries: Noise monitoring during borings & test piles

U.S. Coast Guard: No objectionable comments received on USCG “Notice to Mariners”. USCG verbally indicated that approval is forthcoming on the “Request for Preliminary Determination”.

Proposed Changes		
	Description of Change	Estimated Cost Savings
Horizontal Clearance	Reduce clear width from 700' to 250'	\$45 million
Vertical Clearance	Reduce vertical clearance from 135' to 106.5'	\$6 million
Channel Shift	Shift C/L of channel 585' to the west	\$52 million *

** The \$52 million savings for the channel shift could also be achieved by the vertical clearance option only.*

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How to Finance?

How to Deliver?

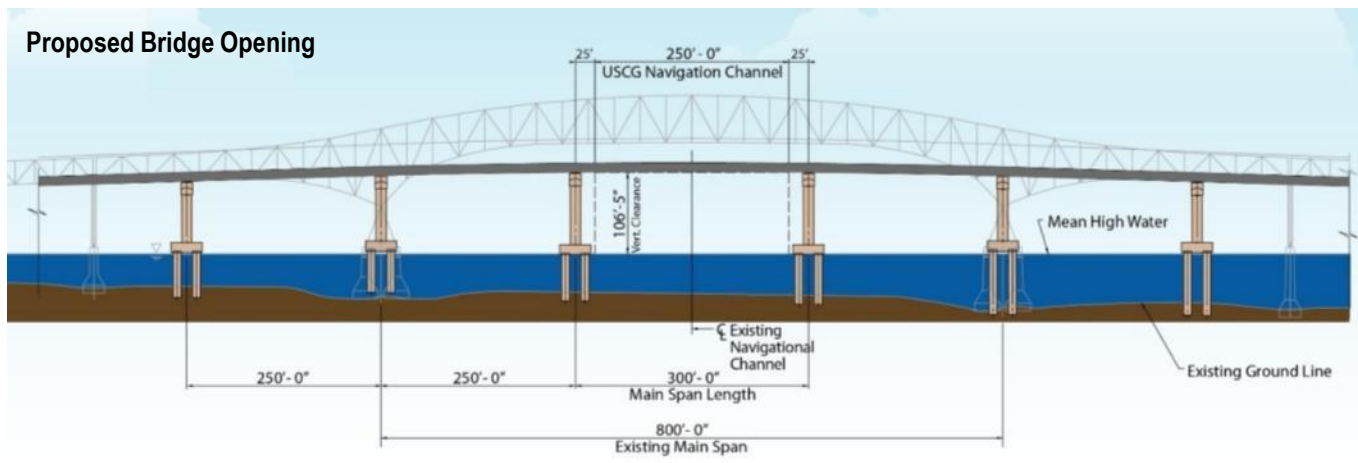
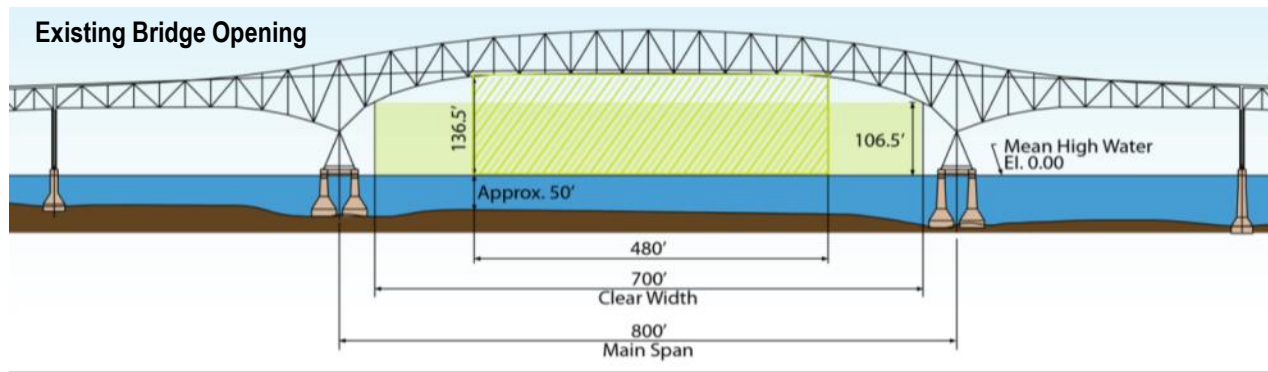
What are the Next Steps?

Actions to Date

Stakeholder Coordination – Coast Guard



PROPOSED CLEARANCE CHANGES



What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

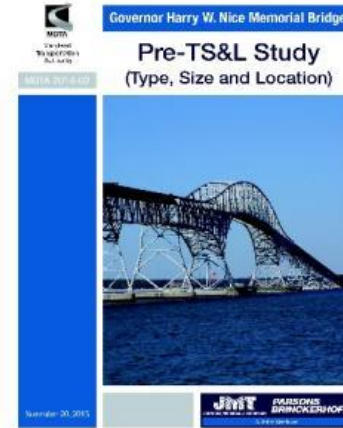
Actions to Date

Practical Design

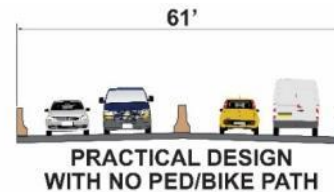
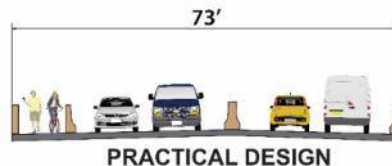


BRIDGE DESIGN

- Several alternatives have been evaluated to reduce the horizontal and vertical clearances, as well as the types and sizes of structures.



“Practical Design” <i>With</i> Ped/Bike Path	“Practical Design” <i>Without</i> Ped/Bike Path
---	--



2016\$*	\$608 million – \$675 million	\$551 million – \$615 million
YOE 2020\$**	\$724 million – \$805 million	\$656 million – \$732 million
YOE 2028\$**	\$904 million – \$1,006 million	\$817 million – \$913 million

* Cost estimates have been developed in 2016 (FY17) dollars.

** Dates in the Year of Expenditure (YOE) dollar cost estimates are the start of construction.

Cost estimates include PE, ROW, and CO.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

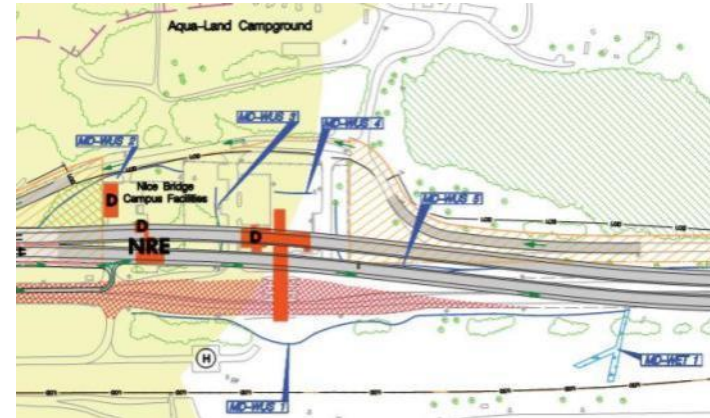
Actions to Date

Practical Design



ROADWAY DESIGN

- Roadway alignment options have been evaluated to shorten the bridge and minimize MDTA campus facility impacts.



NEPA Preferred Alternative Alignment



Alignment Option to Minimize Facility Impacts

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Actions to Date

Right-of-Way



RIGHT-OF-WAY ACQUISITION STATUS

	Property Owner	Status	Acquisition Area (In Acres) Fee Simple
Maryland Side	BRC, LLC (Aqua-Land Marina)	ROW plats approved, Appraisals completed, Offer Letter Sent	7.153
	Mundi Enterprises Inc.	ROW plats approved, Appraisals completed, Offer Letter Sent	0.500
	Bryan Road Corporation	ROW plats approved, Appraisals completed, Offer Letter Sent	1.047
Virginia Side	King George County, Virginia	ROW plats prepared, on hold pending VA participation	6+
	Virginia Tourism Authority	ROW plats prepared, on hold pending VA participation	2.115
	Virginia 4(f) & 6(f) Replacement Parkland sites - locations being investigated	ROW plats prepared, on hold pending VA participation	13+/-

Refined Estimate of ROW Costs

- At current market values, total ROW cost estimate = \$6.5 million (vs. NEPA cost est. of \$25 million)

Actions to Date

Board Actions



- Approved project goals (April 2014):
 - Continue to maintain the now 70+ year old steel truss bridge in Fair (“5”) to Satisfactory (“6”) SI&A rating [“9”=best/new bridge].
 - Undertake all pre-construction activities and eventual construction for the replacement structure and removal of the existing structure in an environmentally sensitive manner and consistent with the approved NEPA documents and applicable permits.
 - Design, construct, operate and maintain a cost-effective replacement structure that provides a safe, durable and efficient new Nice Bridge for at least 100 years, under the most financially advantageous toll structure that provides best-value for MDTA and our customers.



What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Actions to Date

Board Actions (cont'd)



- Supported NEPA design revisions (March 2015):
 - Typical Section = 73'-0" wide bridge (similar to the Key Bridge, except with bike path).
 - Increase allowable grade from 3% to 4% with a design speed reduction from 60 MPH to 55 MPH (existing bridge is 3.75% and 50 MPH).
 - Modify shipping channel to reduce main span costs.
 - Include Open Road Tolling (ORT) with cash lanes.



- Approved Nice Bridge GEC contract (April 2015):

- \$15M task-based contract.
- Seven year contract awarded in June 2015.
- Scope includes Program (GEC) and Financial Management, Preliminary Engineering and Final Design, and Construction Management and Inspection services.
- Approved contract amount is insufficient for final engineering and construction. A contract modification for continuity of services will be needed.



What is the Project?

Why Now?

How to Finance?

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What are the Next Steps?

Actions to Date Summary



KEY TAKEAWAYS

- Practical Design efforts have significantly reduced costs by \$200 million+.
- Right-of-way acquisition of Maryland properties is nearly complete. Virginia properties are ready to procure, but on hold pending discussions for Virginia participation.
- Stakeholder coordination is ongoing, requiring resolution to some key concerns including: U.S. Coast Guard navigation approval and Federal Highway NEPA re-evaluation.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?



Maryland
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Authority

Why Now?

FY 2020 Construction Start



BENEFITS FOR THE FACILITY USERS:

- Provide relief much sooner to drivers regularly experiencing 3-4 mile backups on summer weekends.
- Sooner relief from frequent single-lane closures needed for maintenance and wide loads.
- Sooner relief from the fear many drivers feel toward crossing the existing bridge.



Stacey Rosenthal February 24, 2014
Scariest bridge I've ever been on. Just a tap from the oncoming lane, and you are sure to careen over the way too short side wall.

Upvote Downvote

Kawania Wooten September 15, 2010
This bridge is creepy. There are only two lanes. You have to drive up pretty high on this bridge before you come down. Eek!

Upvote Downvote

Kate Owens October 2, 2011
My mother always makes me drive on this bridge, because she can't handle it. She calls it "the white knuckle bridge".

Upvote 2 Downvote

Laura C. December 22, 2012
If you have any kind of phobia about bridges this one might scare you.

Upvote 6 Downvote

Ginny Harple August 9, 2011
If there is construction or an accident you're screwed. Please drive carefully and pay attention, no shoulder!

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

FY 2020 Construction Start



BENEFITS FOR MDTA – PROJECT-RELATED:

- Major due diligence activities for replacement are nearly completed, strongly positioning the project to move forward with a Design-Build Procurement in FY 2020.
- Maintains project momentum by flowing directly into construction after design and engineering work is complete.
- Addressing the Nice Bridge now allows MDTA to stage major capital projects over time and avoid major project backlogs.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

FY 2020 Construction Start



BENEFITS FOR MDTA – FINANCIAL:

- Significant financial benefits can be attained by doing the project sooner rather than later.
- \$180 million – amount of financing cost savings that can be generated in the current interest rate environment (MDTA's assumed interest rate for future bonds is 4.75%, but current TIFIA rates are at 2.3%).
- \$191 million – project cost savings that can be generated by doing the project sooner rather than later based on current inflation and discount rates.
- \$50 million of preservation costs avoided by replacing the bridge sooner and not making the current bridge last until FY 2030.
- Allows MDTA to potentially use a low-rate TIFIA loan to reduce costs and minimizes risk of change in TIFIA program eligibility requirements or interest rates.

What is the Project?

Why Now?

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What are the Next Steps?

FY 2020 Construction Start



KEY TAKEAWAYS

- Provides relief to drivers regularly experiencing 3-4 mile backups on summer weekends.
- Capitalizes on current project momentum to flow right into construction after completion of design and engineering work.
- Cost avoidance of preserving existing facility.
- Low financing cost in current interest rate environment.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?



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How to Finance?

Base Case Forecast



Key Assumptions and Results FY 2018-2031

Year of first toll increase:	FY 2031 - \$0.35
Total toll increases:	\$0.35
Year of first debt issuance:	FY 2026 - \$30.0 million
Total debt issuances:	\$810.0 million
Operating budget:	Fully funded
Annual capital budget:	Fully funded
Total capital budget:	\$4,621 million
Construction start:	N/A
Project cost:	N/A
Nice Bridge funding:	N/A



The Base Case Forecast is from November 2016 and includes the following:

- Actual revenue and spending for FY 2016 reconciled to the MDTA's audited financial statements
- Current estimates of the operating budget for FY 2017 and 2018, with 4% growth in future years
- Spending projections for the FY 2017-2022 capital program without full funding for the Nice Bridge
- Updated traffic and revenue estimates

The current forecast shows a strong financial position with revenue and debt capacity to fund additional capital projects.

Debt Service Savings Opportunities

REFUNDINGS/REFINANCINGS

- Beginning in 2017 and continuing in 2018, 2019 and 2022, numerous 10-year call dates will provide opportunities for debt service savings.
- Although many of MDTA's outstanding debt issuances are already "in the money", MDTA is awaiting current refundings on the call date rather than advanced refunding.

Series	Callable Par	Term	Annual Debt Service Savings	Cumulative Debt Service Savings
2007	\$282.7 million	24 years	\$3.1 million	\$74.4 million
2008	\$503.0 million	23 years	\$5.6 million	\$128.8 million
2009A	\$54.3 million	4 years	\$1.4 million	\$5.6 million
2012	<u>\$39.0 million</u>	7 years	<u>\$0.6 million</u>	<u>\$4.2 million</u>
Total	\$879.0 million		\$10.7 million	\$213.0 million

PARTIAL CASH DEFEASANCE

- Cash defeasances provide another opportunity for debt service savings. Debt is paid off early, which results in interest savings and reduces debt outstanding.
- Defeasances can also be structured to use cash that exists today to provide savings but still have cash available in future years when needed.
- At the end of FY 2016, MDTA had nearly \$800 million of cash available for use. A partial defeasance of certain early maturities of the Series 2007 bonds can use \$72.1 million of today's cash to generate interest rate savings of \$19.7 million through FY 2024.

Current Financial Position



KEY TAKEAWAYS

- MDTA's current financial position has strengthened. It is strong and all financial policies are exceeding minimum requirements, which provides both cash and debt capacity.
- Traffic and revenue performed better than forecasted in FY 2016, providing additional project funds.
- Numerous debt service savings opportunities will be available to MDTA over the next several years and can generate cumulative interest savings of over \$200 million.
- In August 2016, Fitch upgraded MDTA's outlook from Stable to Positive.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Capital Funding Options



SEVERAL OPTIONS ARE AVAILABLE TO HELP FUND THE PROJECT

- Pay-as-you-go/Cash
- MDTA Revenue Bonds
- TIFIA loan/line of credit
- FASTLANE/TIGER grants
- Virginia DOT participation



What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

MDTA Revenue Bonds



REVENUE BONDS ARE AN EFFECTIVE FINANCING OPTION

- MDTA can issue revenue bonds backed by toll revenues for maturities of up to 40 years, although issuances are typically limited to 30 to 33 years.
- Statute limits MDTA's debt outstanding to \$2.325 billion through FY 2020 and \$3.0 billion thereafter. Debt outstanding at the end of FY 2020 is \$2.1 billion, leaving MDTA sufficient statutory cap to fund the project.
- MDTA's financial policies ensure that debt remains affordable. MDTA is currently meeting and exceeding all policies, providing additional capacity.
 - A minimum unencumbered cash balance of \$350 million – current \$788.6 million
 - Debt service coverage of at least 2.5x through FY 2020 and 2.0x thereafter (debt service coverage is net revenues divided by debt service) – current 3.62
 - Rate covenant (legal requirement) of at least 1.0x (rate covenant is net revenues divided by 120% of net revenues) – current 2.87
- Credit ratings of AA- by S&P and Fitch and Aa3 by Moody's will help secure low interest rates.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

TIFIA



THE CURRENT STRUCTURE AND INTEREST RATES FOR TIFIA PROVIDE AN ATTRACTIVE OPTION

- The Transportation Infrastructure Finance and Innovation Act (TIFIA) program is administered by FHWA and provides credit assistance for qualified projects of regional and national significance.
- Major requirements include project cost of at least \$50 million, investment grade ratings, a dedicated repayment source, meet all federal requirements (Civil Rights, NEPA, Buy America, Titles 23 and 49), and credit assistance is limited to 33% of project costs.
- TIFIA offers low interest rates (currently 2.33%) and flexible repayment terms – must begin 5 years after completion with full repayment in 35 years.
- The Nice Bridge project may be eligible as a TIFIA Rural Infrastructure project, which provides additional interest rate savings (currently 1.17%).
- Submission of a letter of interest begins the TIFIA application process.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Federal Grants



FEDERAL GRANTS PROVIDE OPPORTUNITIES FOR “FREE” MONEY BUT PROGRAMS ARE SEVERELY OVERSUBSCRIBED

- The Transportation Investment Generating Economic Recovery (TIGER) grants provide funding for innovative projects, including multi-modal and multi-jurisdictional projects, which are difficult to fund through traditional federal programs.
 - Demand for the 2016 TIGER grant program far exceeded available funds – 585 applications requesting \$9.3 billion were submitted and only 40 requests totaling nearly \$500 million were funded.
- The Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant program provides funding for nationally and regionally significant freight and highway projects that address critical freight issues.
 - Demand for the 2016 FASTLANE grant program far exceeded available funds – 212 applications totaling roughly \$10 billion were submitted and only 18 requests totaling \$759 million were funded.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Is the Project Affordable?



SEVERAL FACTORS HAVE IMPROVED PROJECT AFFORDABILITY

- Practical design efforts have reduced project cost by \$200 million+.
- Continued low interest rate environment provides low-cost financing.
- Current interest rates and eligibility requirements for TIFIA make it an attractive option to help fund the project.
- Revenue attainment exceeded forecast, which has a cumulative impact on revenues over the forecast period.
- Debt service savings opportunities exist in 2017 and beyond.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

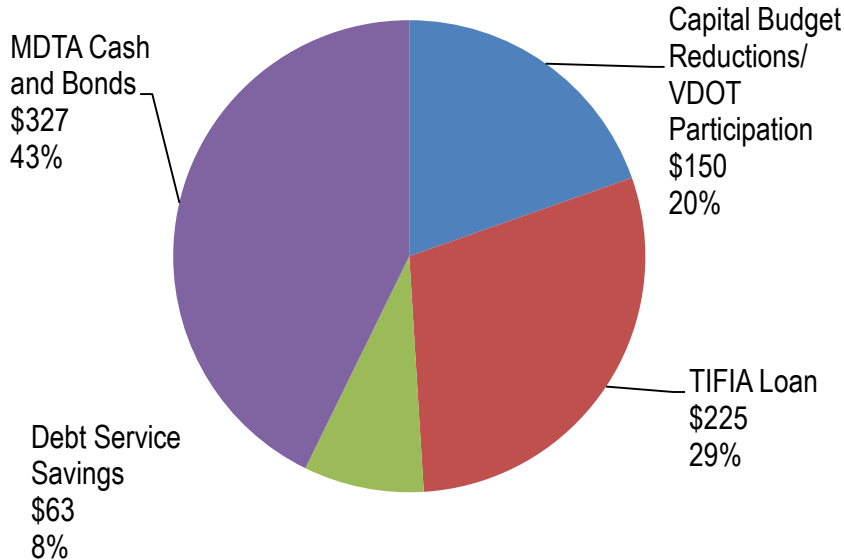
What are the Next Steps?

Project Funding



NICE BRIDGE FUNDING PLAN

\$ in Millions



Project Cost = \$765 million (\$61 million currently funded)

Project Cost

Total Project Cost	\$765 million
Currently Funded	\$61 million
Net Project Cost	\$704 million

Project Funding

Paygo Cash	\$335 million (44%)
MDTA Debt	\$430 million (56%)
Total	\$765 million

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

FY 2020 Construction Start



Key Assumptions and Results FY 2018-2031		Compared to Base Case Forecast
Year of first toll increase:	FY 2029 - \$0.10	Smaller toll increase (-\$0.25) required 2 years earlier
Total toll increases:	\$0.55	Increased by \$0.20
Year of first debt issuance:	FY 2021 - \$20.0 million	Accelerated by 4 years
Total debt issuances:	\$1,390 million	Increased by \$580 million
Operating budget:	Fully funded	No change
Annual capital budget:	Reduced by \$25 million annually in FY 2018-2023 only	Reduced by \$25 million annually in FY 2018-2023 only
Total capital budget:	\$5,155 million	Increased by \$534 million
Construction start:	2020	N/A
Project cost:	\$765 million	N/A

The project is affordable with construction starting in FY 2020.

- MDTA maintains compliance with all financial affordability policies
- No toll increases until FY 2029
- Takes advantage of current low-interest rate environment
- Inflation will increase project cost over time at a higher rate than investment earnings

Project Affordability



KEY TAKEAWAYS

- The project is affordable with construction starting in FY 2020.
 - All financial affordability policies are met
 - No toll increases are needed until FY 2029 (similar to timing and size of current forecast)
- Project costs have been reduced by \$200 million+ through practical design efforts.
- Participation by the Virginia DOT, federal grant awards, and actual revenue attainment may reduce the amount of MDTA debt needed to fund the project.

What is the Project?

Why Now?

How to Finance?

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What are the Next Steps?



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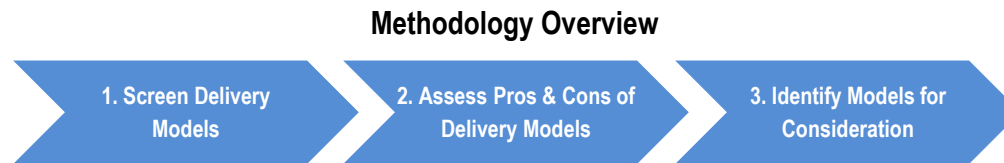
How to Deliver?

Delivery Method Evaluation



DELIVERY METHODS EVALUATED

- Preliminary assessment of the merits of different project delivery options for the replacement of the Nice Bridge and identification of the delivery methods considered worthy of further evaluation.



- Project delivery options evaluated included:
 - Design-Bid-Build (DBB)
 - Design-Bid-Build with Alternative Technical Concepts (DBB/ATC)
 - Construction Manager At Risk (CMAR)
 - Design-Build (DB)
 - Public Private Partnerships (P3):
 - Design-Build-Finance (DBF)
 - Design-Build-Operate-Maintain (DBOM)
 - Design-Build-Finance-Maintain with availability payments (DBFM)
 - Design-Build-Finance-Operate-Maintain (DBFOM) with availability payments

Delivery Method Evaluation



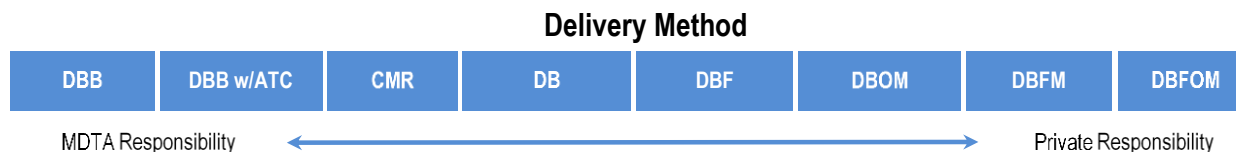
DEVELOPED A PROJECT RISK REGISTER

- Analyzed the delivery methods in terms of the ability to transfer risk from the public sector to the private sector.

Typical Risk Transfer for Different Project Delivery Models
(risks transferred to the private sector for each project delivery model)

	Design	Type of Risk Transferred to Private Sector					
		Construction	Financial	Operations	Maintenance	Traffic	Revenue
DBB		X					
DBB w/ ATC		X					
CMR		X					
DB	X	X					
DBF	X	X	X				
DBOM	X	X		X	X		
DBFM	X	X	X		X		
DBFOM	X	X	X	X	X	Possibly	Possibly

- Typically, the more responsibility the private sector takes on via a particular project delivery model, the more risk is transferred from the public sector.



What is the Project?
 Why Now?
 How to Finance?
 How to Deliver?
 What are the Next Steps?

Delivery Method Options



CONCLUSIONS

- Delivery methods deemed most appropriate for the Nice Bridge Project:
 - **DBB** - Design-Bid-Build
 - **DBB w/ATC** - Design-Bid-Build with alternative technical concepts, and
 - **DB** - Design-Build
- Design-Build and Design-Bid-Build variants have both been effectively used for similar projects and could work in this case.
- CMAR ruled out because contractor constructability reviews in advance of advertisement is not critical to project success.
- Public-Private Partnership options ruled out:
 - Existing operational and maintenance approach is effective and has well established good relationships with abutting Virginia and SHA facilities and communities.
 - Effective State financing options are available. Private financing would require an availability payment structure with higher anticipated interest rates than public financing.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Delivery Method – DB Selection



CONCLUSIONS

- Design-Build also offers a number of project specific benefits:
 - Consistent with nation-wide industry recent trends for comparable projects.
 - Lessons Learned National Expert Panel reviewed the Nice Bridge project requirements and recommended using Design-Build project delivery due to the speed of construction, price assurance, risk transfer, and the opportunity for innovation.
 - Firm-fixed price contract with early pricing works well with required FHWA funding obligations and financial plan for TIFIA loan, etc.
 - Pre-TS&L concepts showed that a number of design options are cost comparable, allowing for cost efficiencies from a Contractor customized design.
 - DB Team better positioned to design to minimize environmental impacts.
 - Alternative Technical Concepts offer innovation opportunities prior to award.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

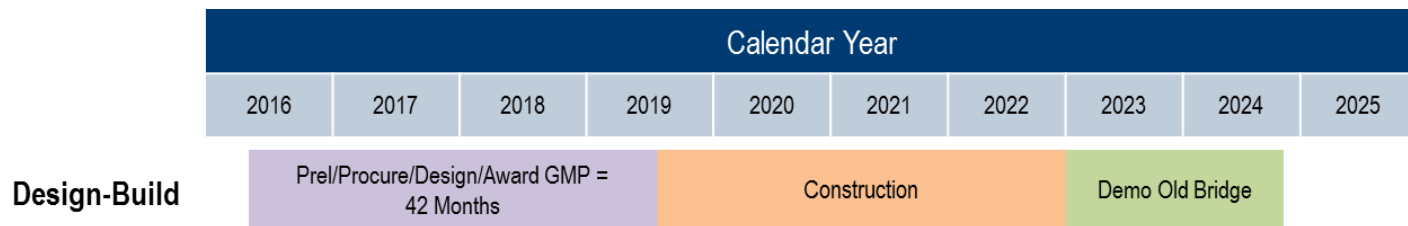
What are the Next Steps?

Delivery Method – DB Selection



CONCLUSIONS

- No project specific barriers to Design-Build:
 - No anticipated 3rd Party agreements requiring upfront full design.
 - No anticipated permits, ROW or utilities that would delay construction.
 - No anticipated complex staging requirements meriting MDTA control to avoid public impacts.
 - No specific site characteristics presenting significant risks of unknowns (e.g., UXO low risk, boring data reasonably consistent, no HAZMAT identified, etc.).
- Based on a Start-of-Construction date of FY 2020, DB deemed to be best method to meet the schedule:



What is the Project?
 Why Now?
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 What are the Next Steps?

Delivery Decision - Summary



KEY TAKEAWAYS

- Design-Build and Design-Bid-Build could both work for the Nice Bridge.
- Design-Build offers a number of benefits over Design-Bid-Build.
- There are no specific barriers to using Design-Build.
- MDTA has obtained industry expert opinions on best practices for Design-Build delivery for the Nice Bridge.



What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?

Decision Points



1. What is the Project?

Recommendation – Construct a new, practically designed 4-lane Nice Bridge and demolish the existing bridge.

2. Why Now?

Recommendation – Start construction in FY 2020 to provide congestion relief and offer significant financial advantages and cost savings, as compared to delayed construction options.

3. How to Finance?

Recommendation – Fund the project with a combination of MDTA cash and debt and utilize refunding opportunities for existing debt when available.

4. How to Deliver?

Recommendation – Prepare contract documents for a design-build project delivery.

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?



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What are the Next Steps?

Next Steps

- Progress right-of-way acquisition
- Continue working with Coast Guard on preliminary determination
- Re-engage FHWA for coordination of NEPA reevaluation
- Develop detailed schedule with milestones
- Begin procurement document development:
 - Preparation of project request for qualifications (RFQ)
 - Project performance specifications
 - MDTA RFP Template – evaluate general provisions and terms and conditions for any suggested changes
- Develop indicative and directive plans for RFP
- Develop letter of interest for TIFIA loan to begin application process

What is the Project?

Why Now?

How to Finance?

How to Deliver?

What are the Next Steps?