NEW NICE BRIDGE

New Governor Harry W. Nice Memorial Bridge (US 301)

Will Pines, P.E.

Director of Project Development

April 9, 2018

www.newnicebridge.com

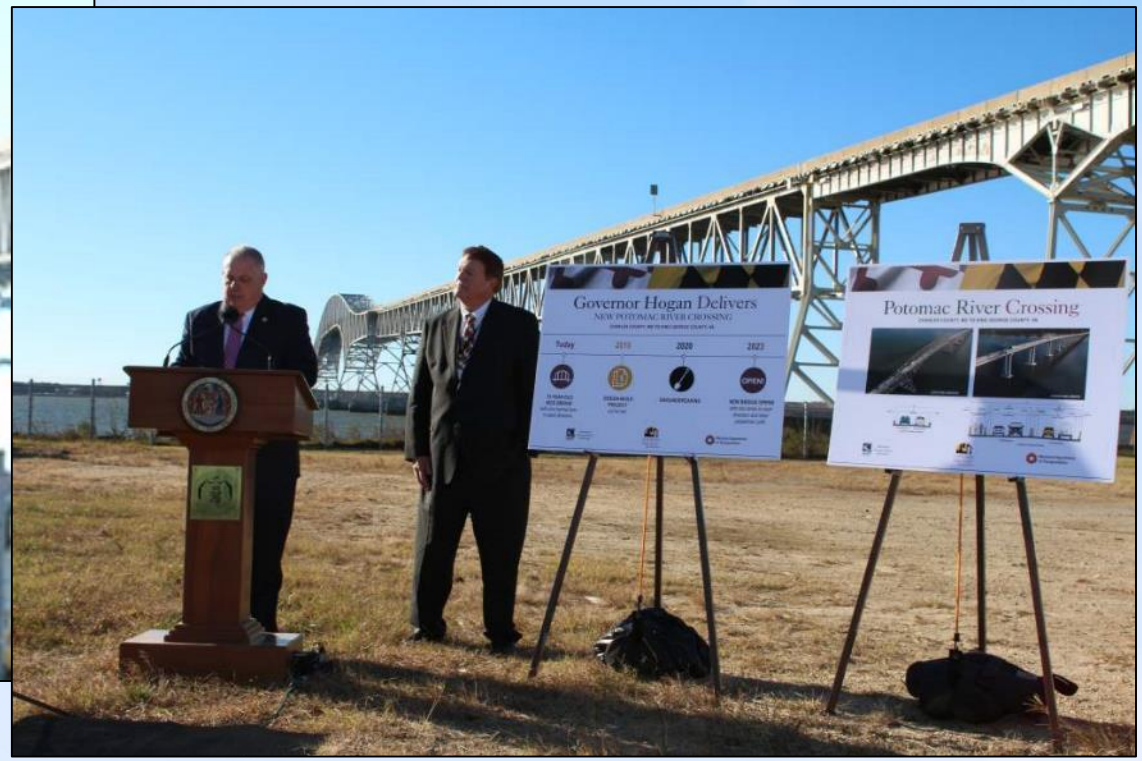
Maryland Transportation Authority

Project Background

- 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: 1.9 miles of two-lane bridge
- 2017 traffic volume: 6.9 million vehicles (average annual daily traffic: 18,800)

Project Introduction

- Maryland Governor Larry Hogan announces funding for new Potomac River crossing



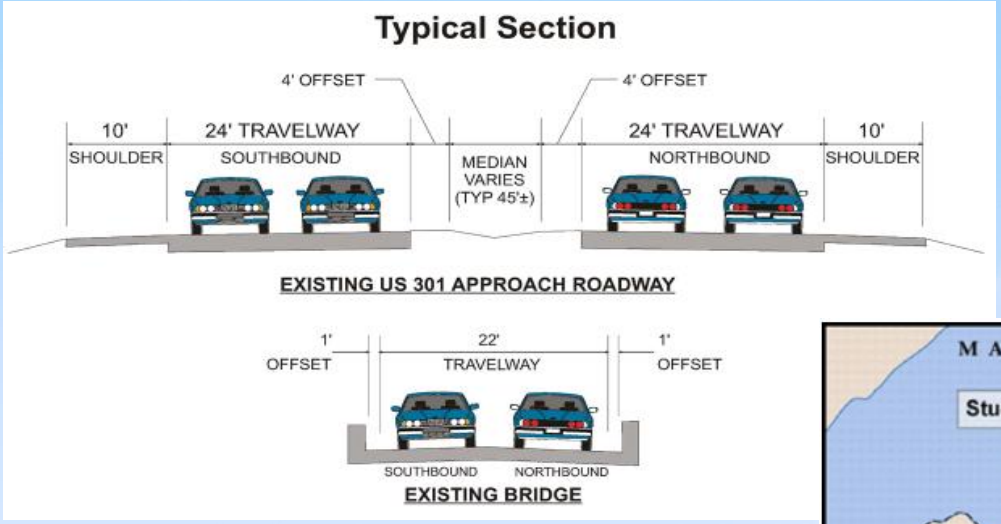
Purpose and Need

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 near future (i.e., re-decking) very problematic, and a cost driver in the LCCA timing



Purpose and Need

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)**

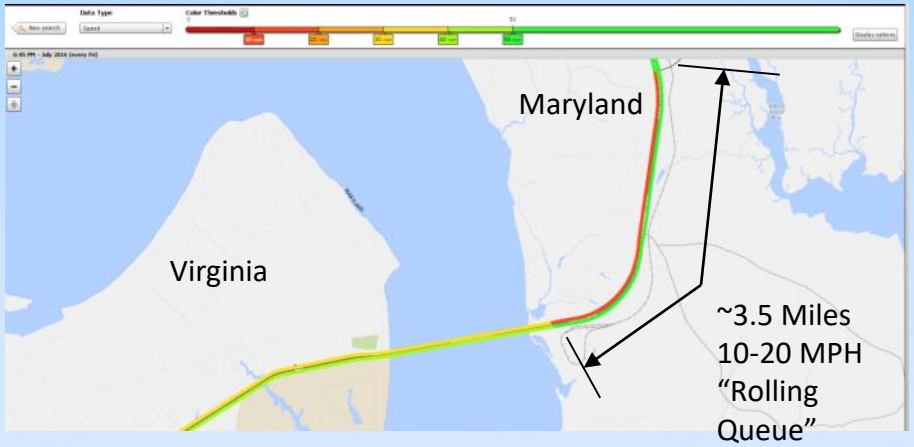
Purpose and Need

SAFETY ISSUES

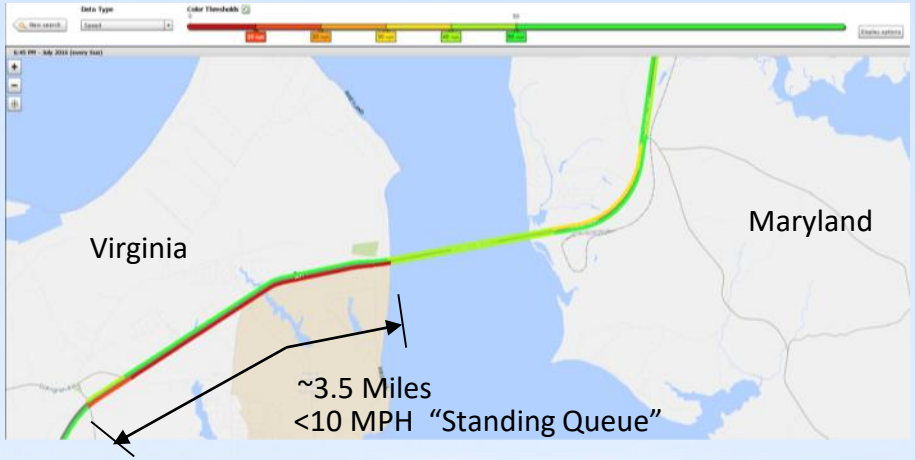
Purpose and Need

CURRENT TRAFFIC CONDITIONS - ROUTINE SUMMER, WEEKEND CONGESTION

Average Friday
(Southbound)
July 2016



Average Sunday
(Northbound)
July 2016

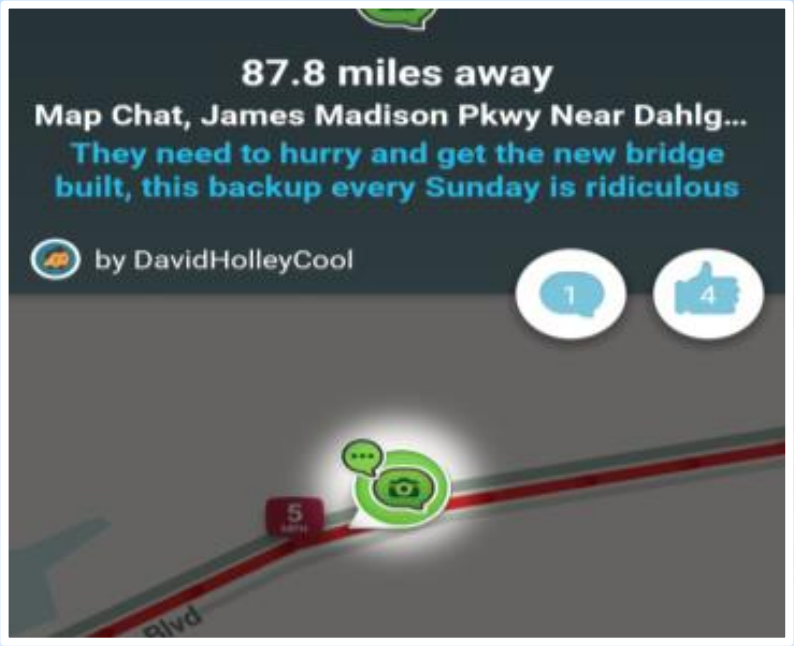


Purpose and Need

AUGUST WEEKENDS - UP TO 4 MILE BACKUPS

Friday Aug. 12th

Sunday Aug. 14th
VA Approach NB



Sunday Aug. 14th
Waze @ 5 mph

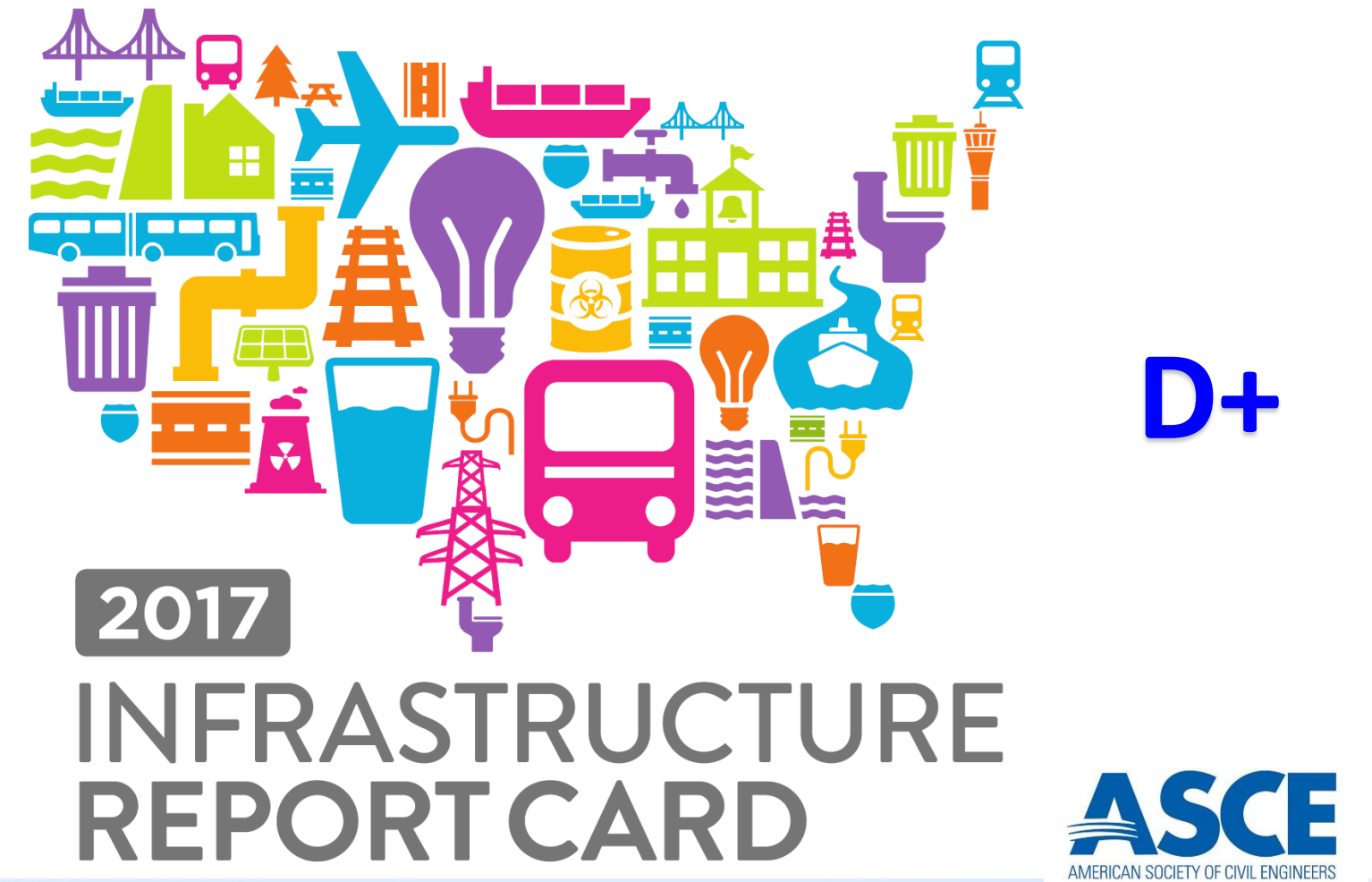
Friday Aug. 12th
MD Approach SB

Friday Aug. 19th

Purpose and Need

MAINTENANCE AND INSPECTION LIMITATIONS

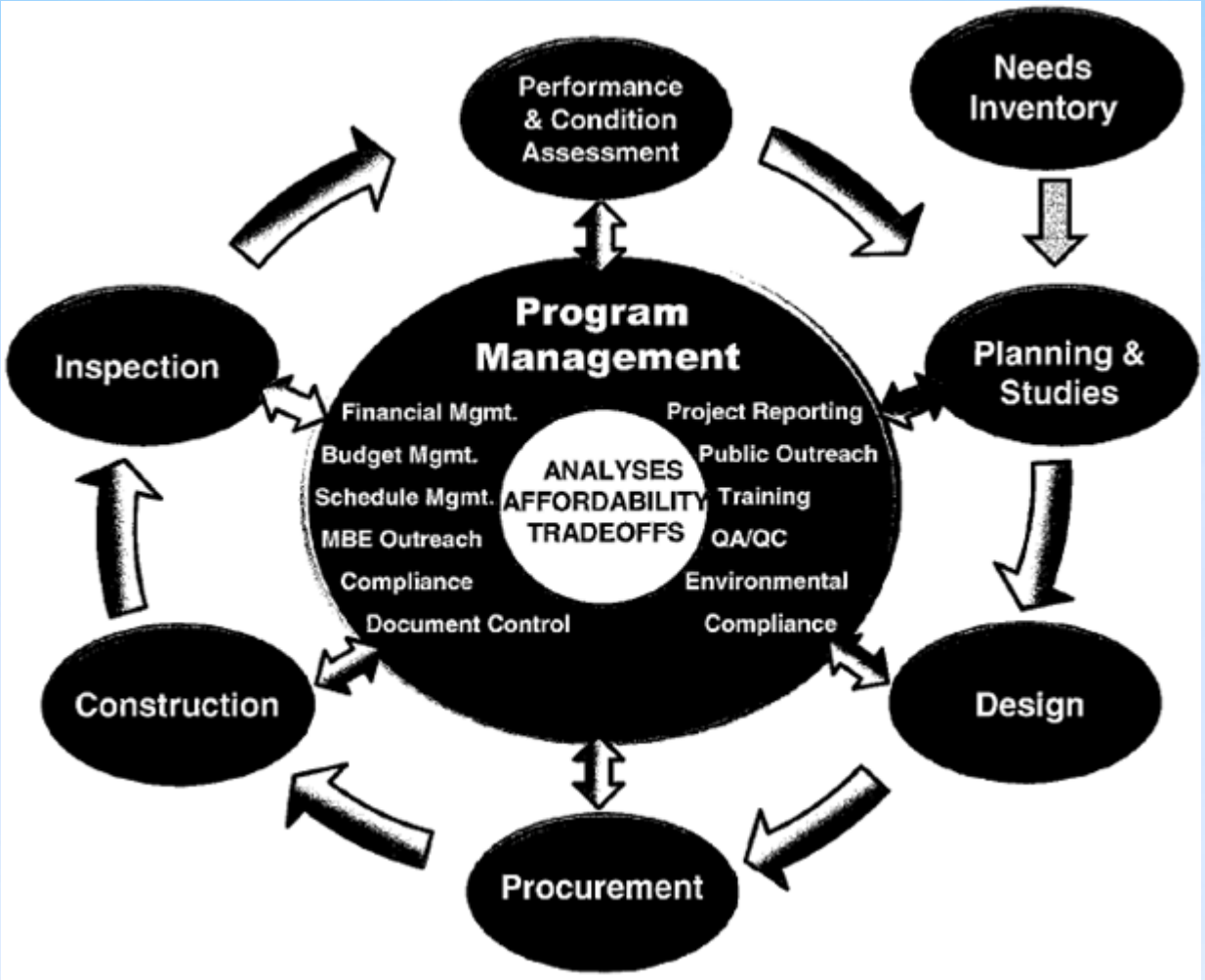
Why Practical Design?



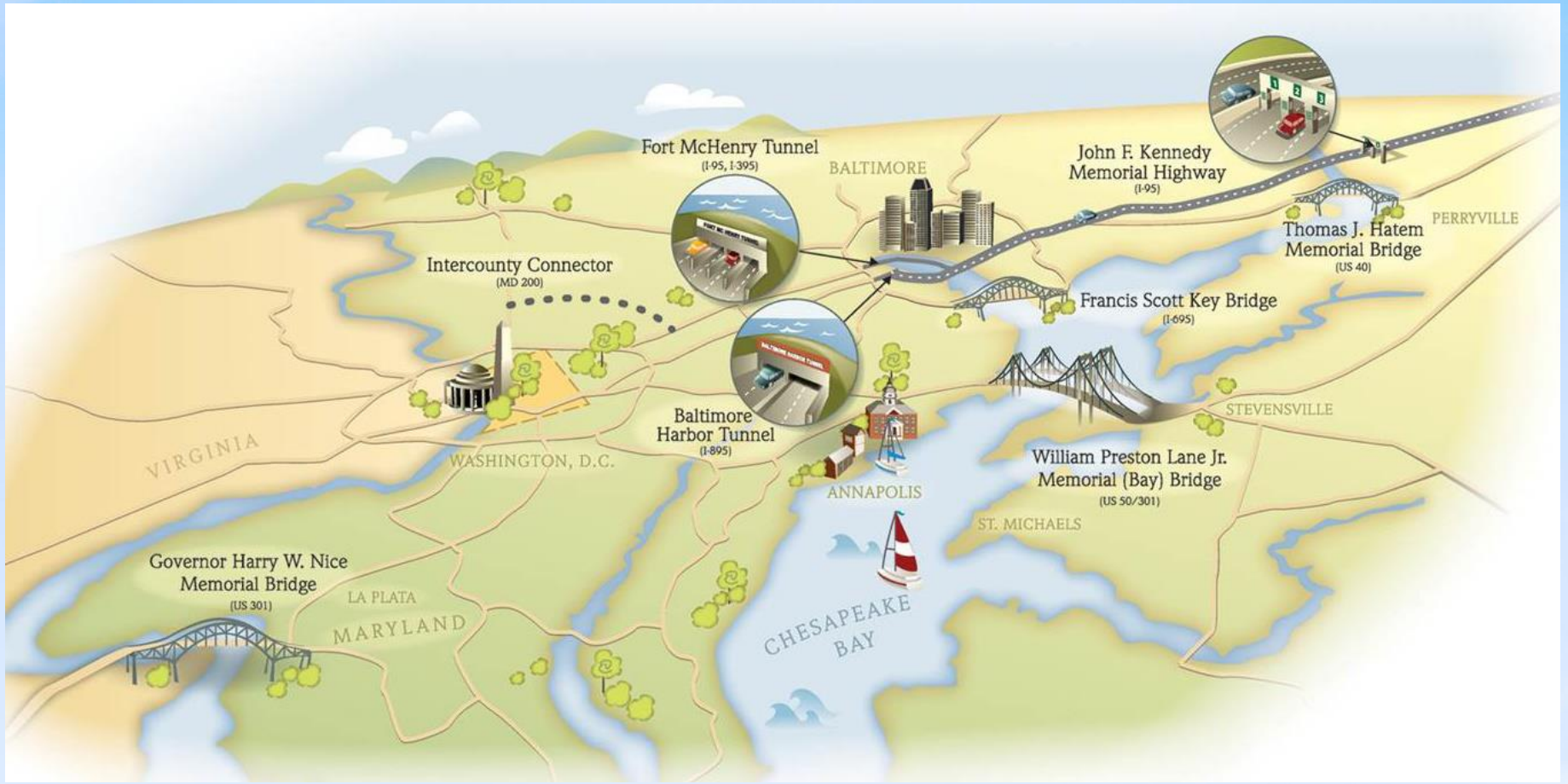
Goals?

Aesthetics
Autonomous
Value
Quality
Safety
Risk
Economy
Transit
Mobility
Outreach
Life-cycle
Innovation
Environment
Jobs
Cost
Customer
Schedule
Freight
Bikes

Divisional Needs?



MDTA – Agency Needs?



Statewide Needs?

Port of Baltimore 1706

MVA

Maryland Transportation Authority

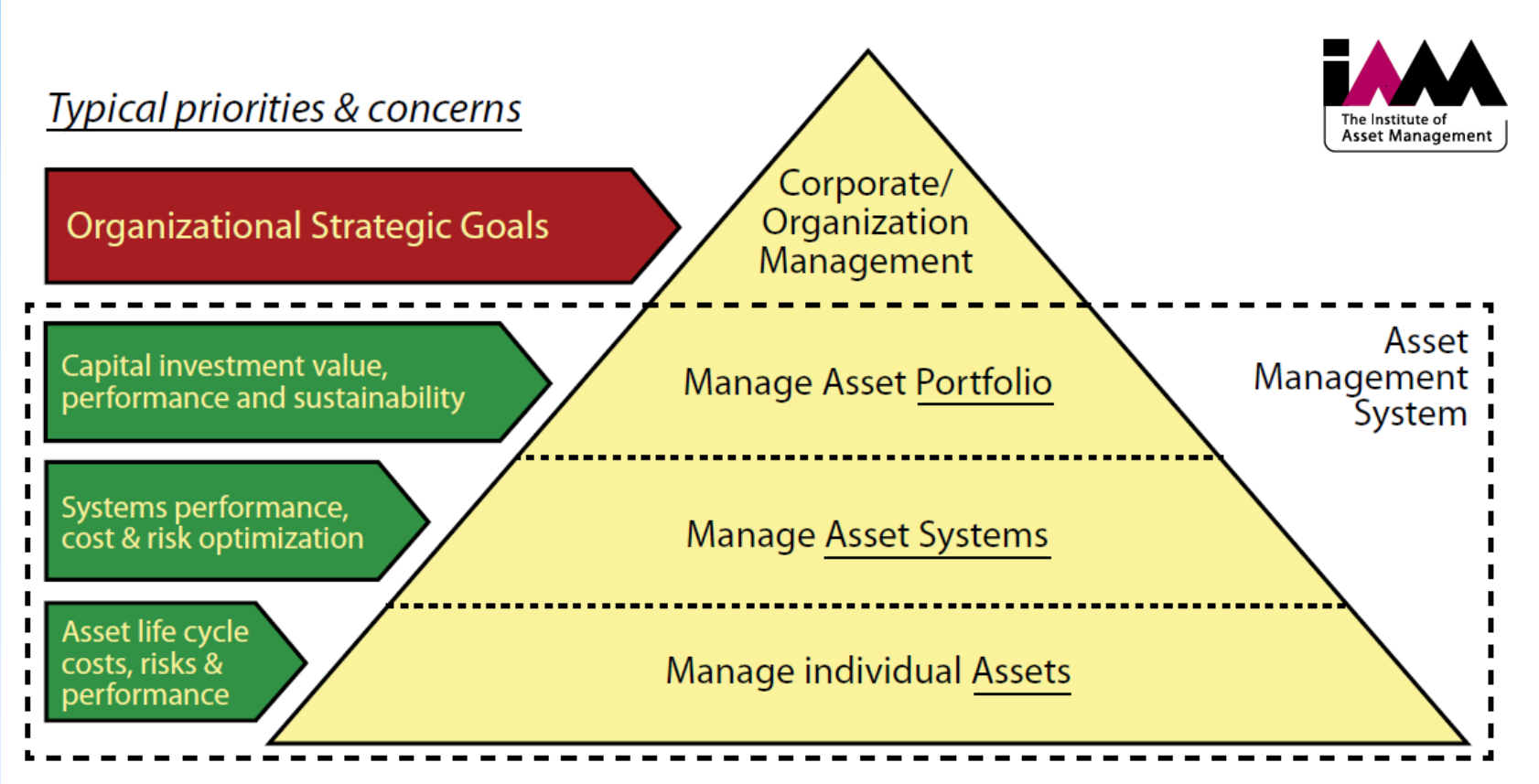
MDOT Maryland Department of Transportation

MTA Maryland

Maryland Aviation Administration

SHA State Highway Administration

Be smart about your part!



What is Practical Design?

Maryland Department of Transportation
Original Date: September 30, 2016
Revised Date: September 30, 2016

Policy No: MDOT 701
Effective Date: September 30, 2016

Approved by: _____ Date: 9-30-16
Secretary

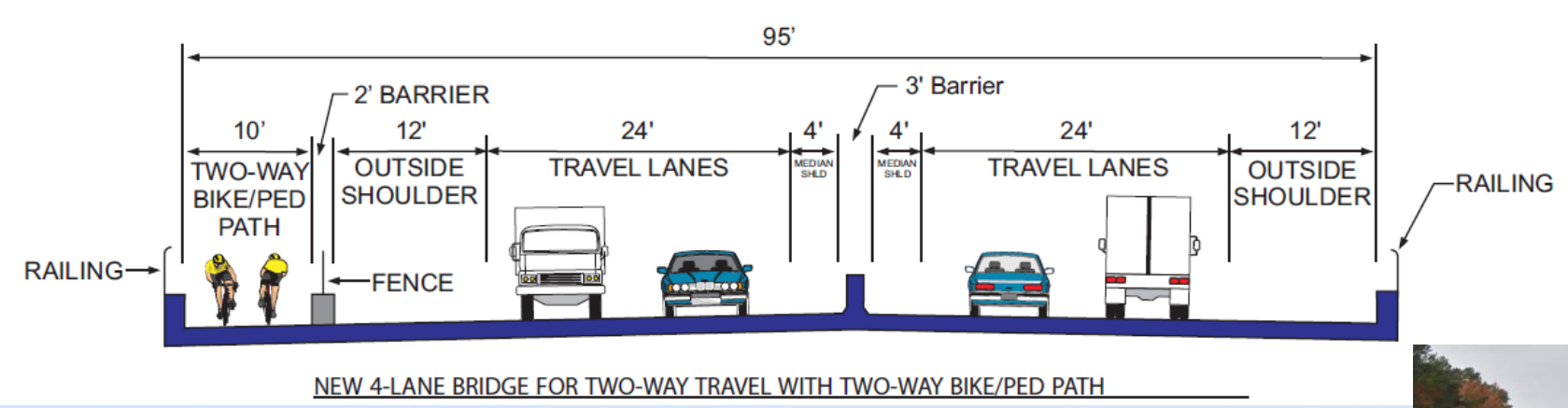
PRACTICAL DESIGN POLICY

C. Practical Design means designing transportation project solutions for a specific need for identified problem(s) considering safety, context, and expected performance. Practical design allows engineers to use innovation and flexibility in applying the appropriate design guidance to achieve the project's goals, balancing the least cost and impact while meeting the long-range goals of the transportation network.

https://policymanual.mdot.maryland.gov/mediawiki/index.php?title=MDOT_701_Practical_Design_Policy

Practical Design

MODIFIED ALTERNATE 7



Unaffordable

NEPA Design wider than the Virginia approach highways

Practical Design

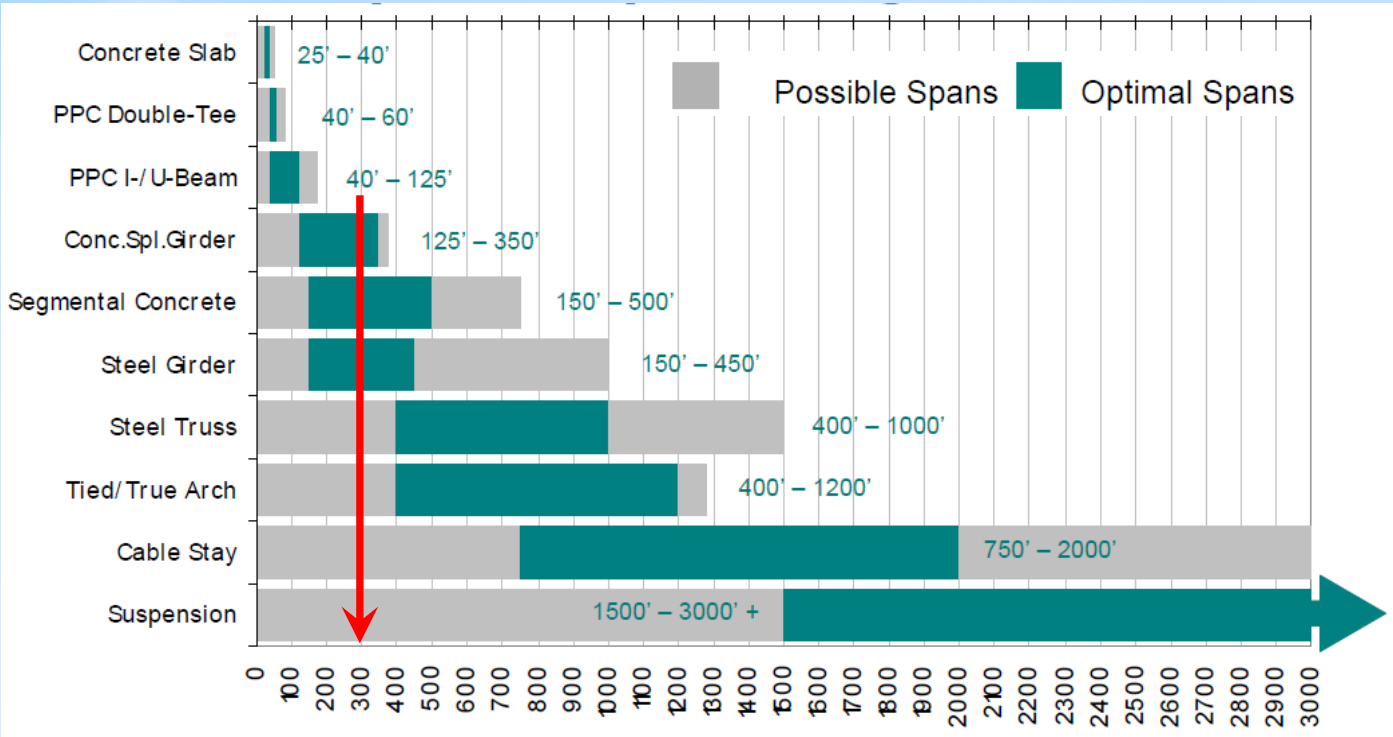
MDTA'S FRANCIS SCOTT KEY BRIDGE

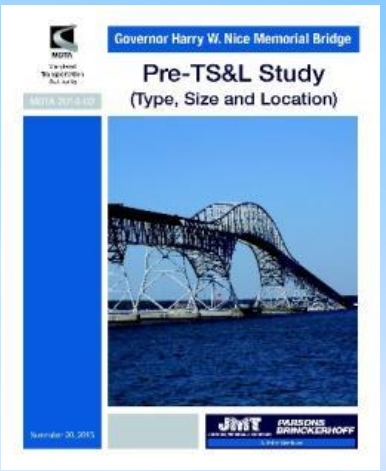
Four (4) lanes with barrier separation, similar to New Nice Bridge Options

Practical Design

BRIDGE TYPE COST EVALUATION

- Pre-TS&L (Type, Size and Location) Bridge alternatives analysis completed based on reduced span length:





I-95 ETL Ramps

Max. Spans 290 feet

Project Goals

1. **Cost** – Complete the project at or below the total construction budget, while minimizing life-cycle costs.

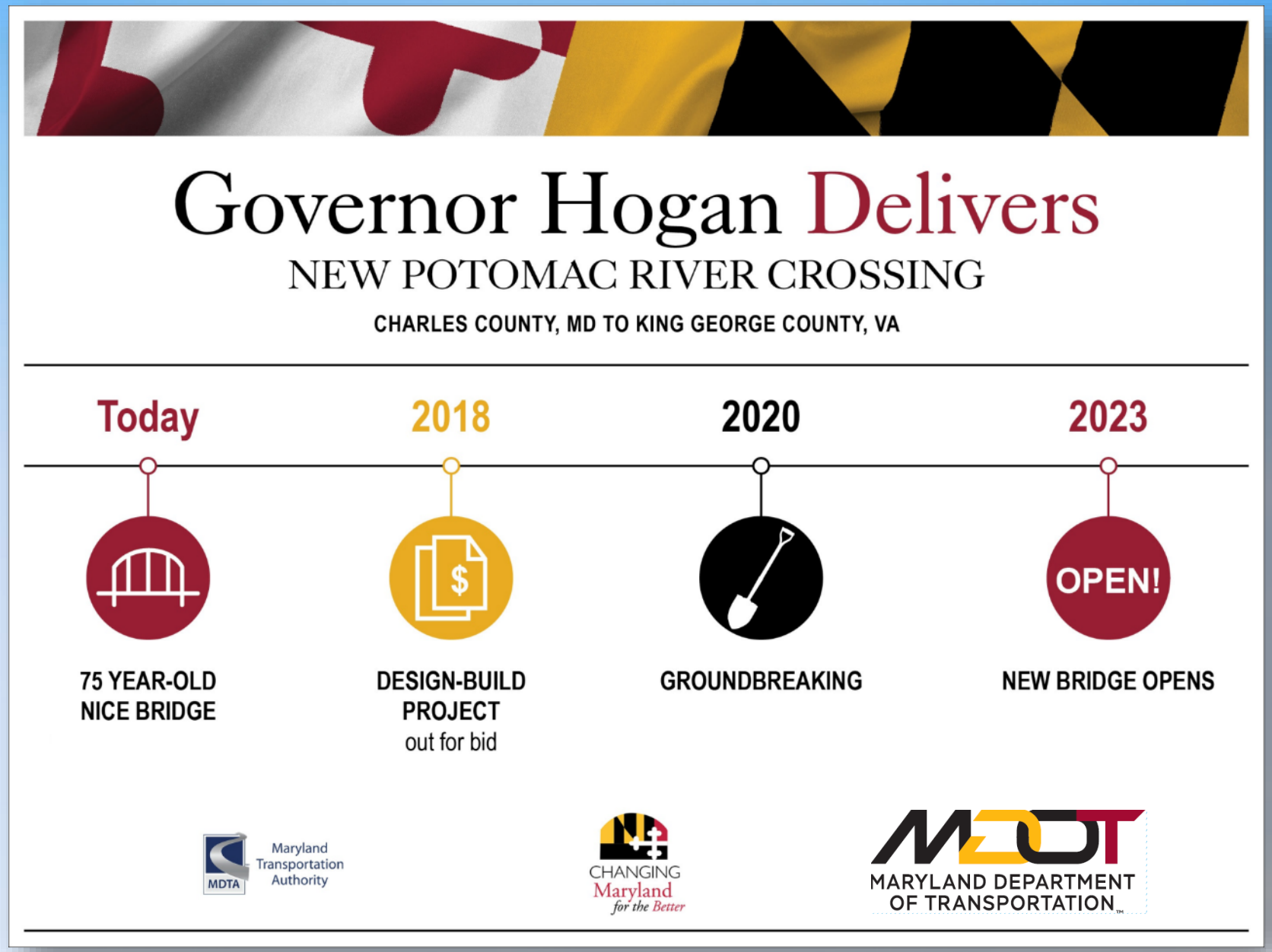
2. **Schedule** – Fully open all four (4) lanes to traffic on the new bridge by December 15, 2022 and minimize the total days of project construction.

3. **Safety** – Provide a safe toll facility with zero fatalities and serious injuries for workers and the public during and after construction.

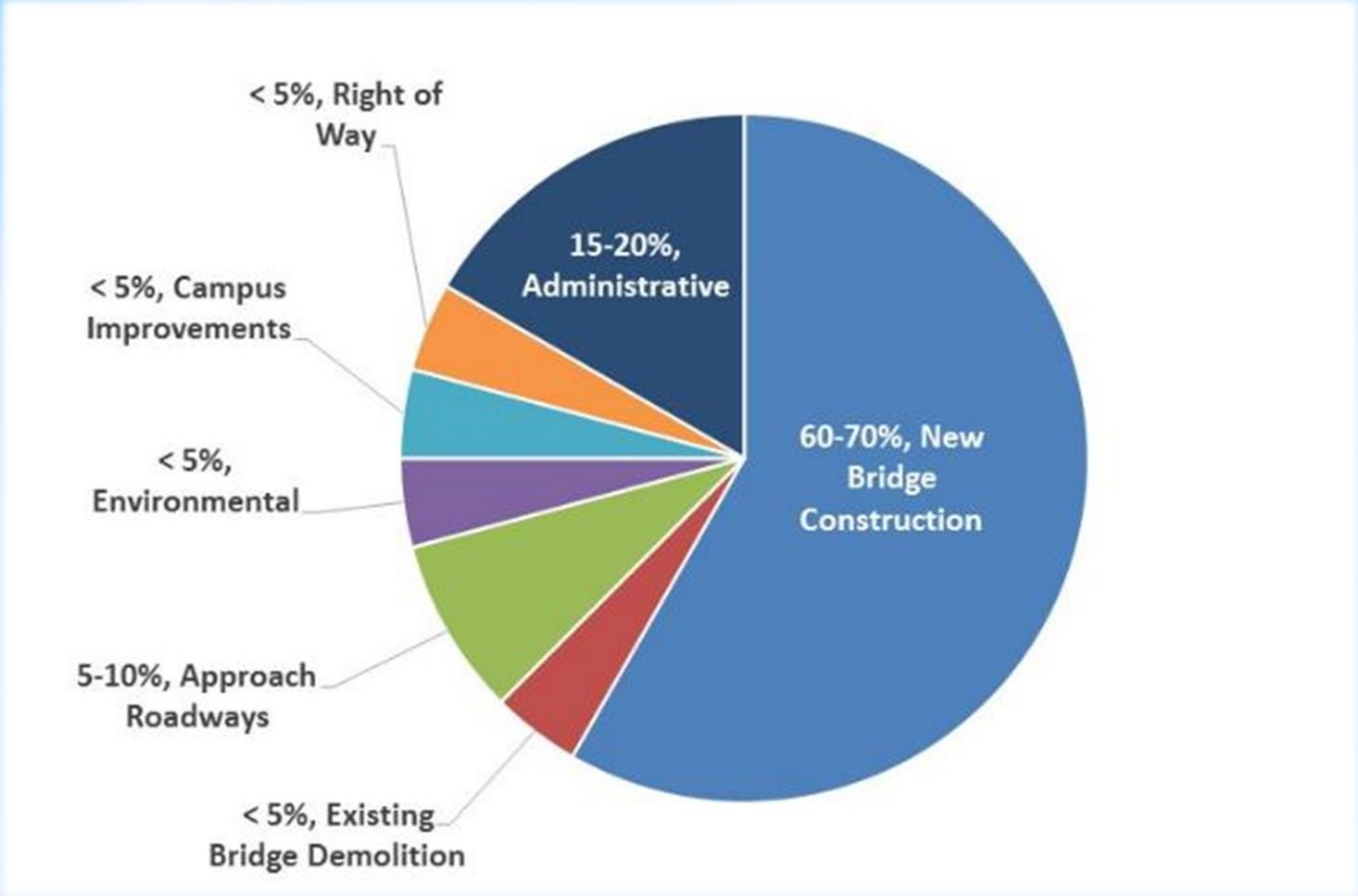
4. **Durability** – Integrate high quality design, construction and operational aspects to deliver a durable, functional bridge achieving the minimum 75 year service life requirements.

5. **Mobility** – Minimize customer travel delays during and after construction.

Project Schedule



Project Budget



Cost Elements:

New Bridge Construction
Infrastructure on new bridge and temporary access

Administrative
Planning, preliminary engineering, CMI, program and financial management

Approach Roadways
Infrastructure for roadway, signs, lighting, cameras, gantries, traffic control, utilities

Campus Improvements
Modifications to administrative building and maintenance facility

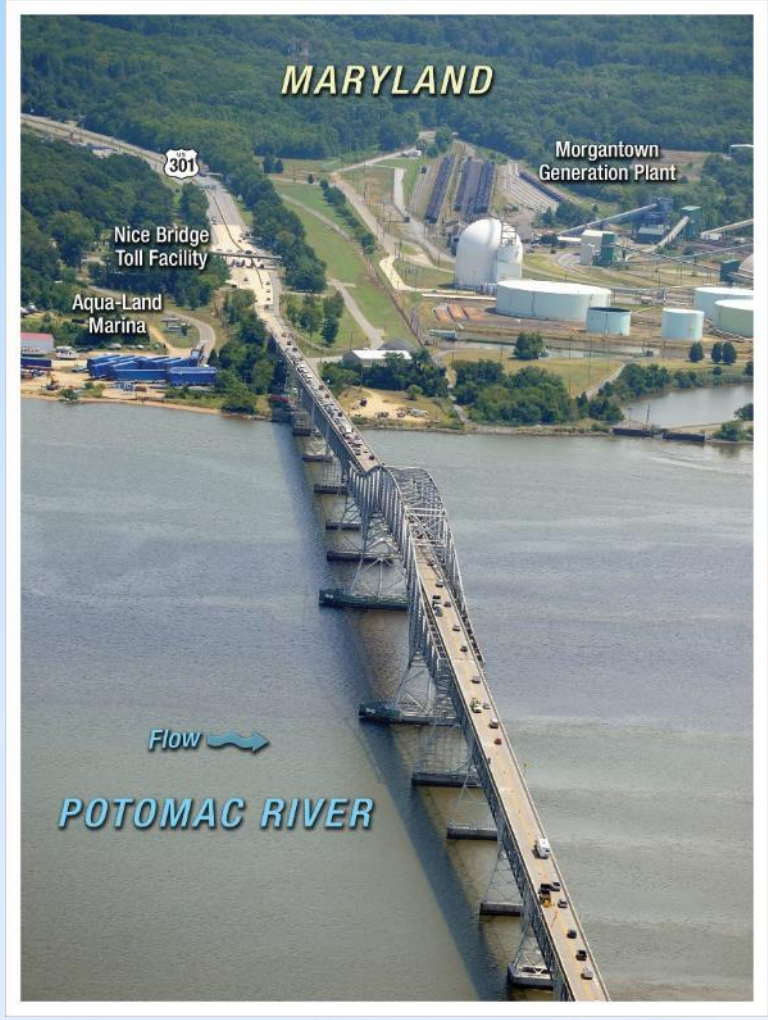
Environmental
Park mitigation and other environmental work

Existing Bridge Demolition
Removal of existing structure once new bridge is constructed

Right of Way
Acquisition costs for all required parcels

DBE / OJT Program

- Project will include Federal DBE and OJT Programs
- Opportunities
  - Engineering and Design
  - Construction
  - Services

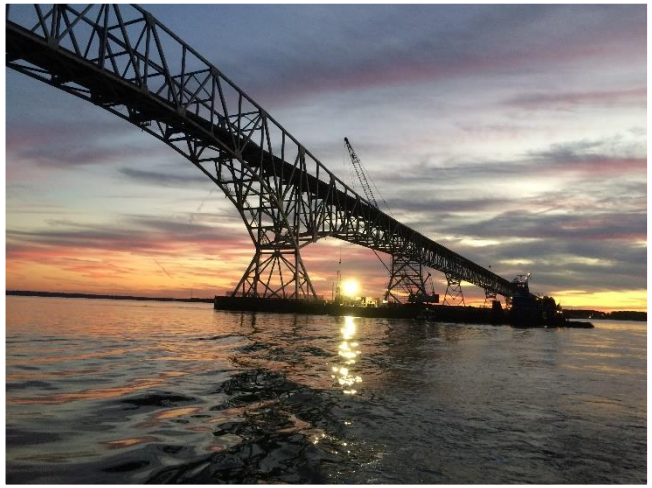


Anticipated Work Items

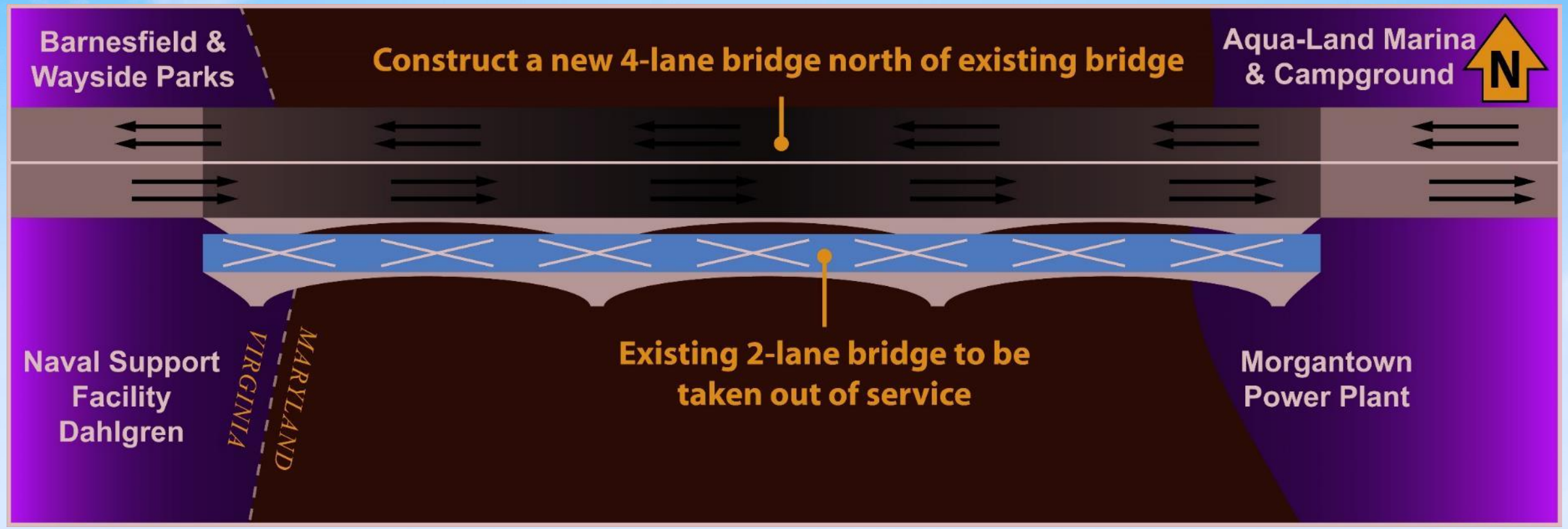
- The following include a sample of the main work items anticipated for this contract:
  - Approximately 1.9 Mile Bridge Structure across the Potomac River with an opening for Navigational Passage
  - Approximately 1 Mile of Highway Realignment in both Maryland and Virginia
  - Realignment of Orland Park Road and Roseland Road
  - Drainage and Stormwater Management
  - Traffic Signing and ITS Equipment
  - Tolling Infrastructure

Anticipated Work Items (cont'd.)

- Navigational Beacons
- Utility Relocations
- Environmental Mitigation and Landscaping
- Temporary Construction Access Structures
- Demolition of the Existing Bridge
- Support for Regulatory Approvals and Permitting
- Associated Engineering Design, Geotechnical Studies, Earthwork, Supplies, and Hauling



Project Layout



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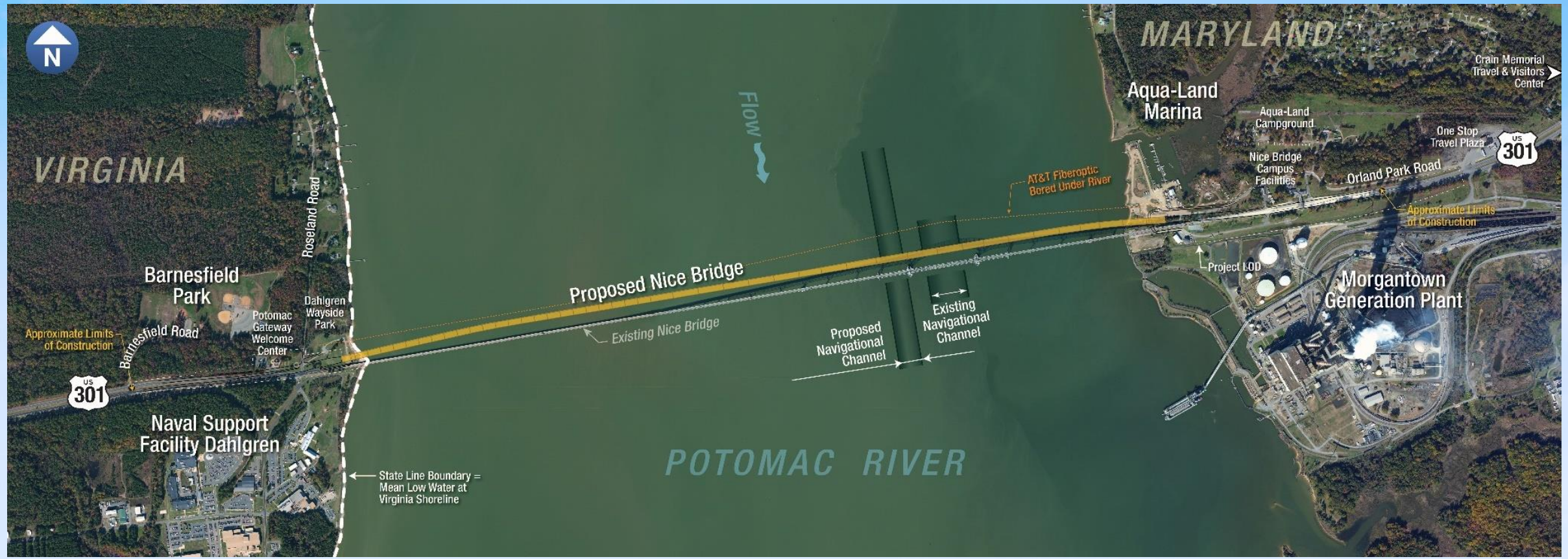
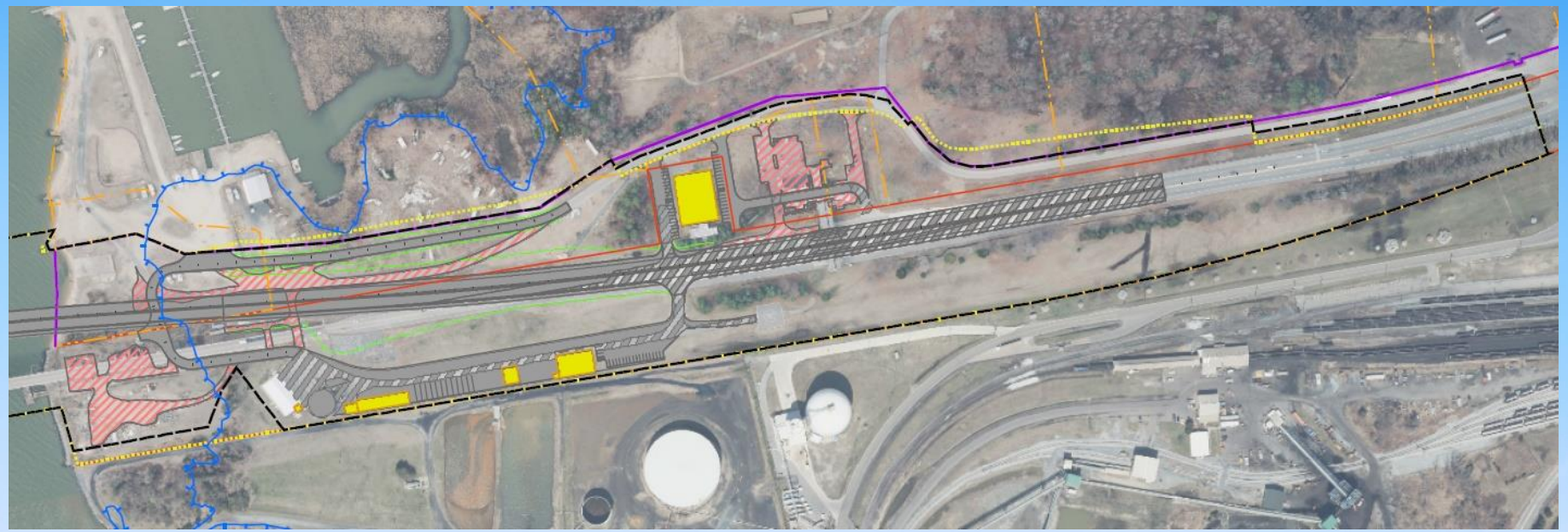
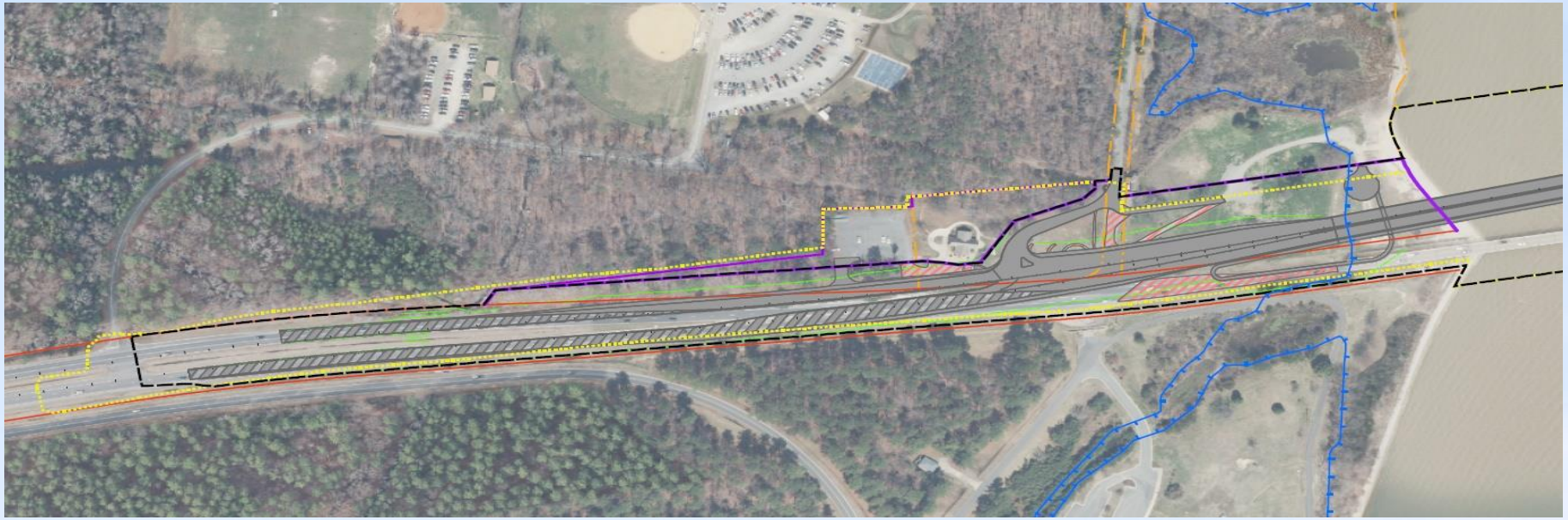
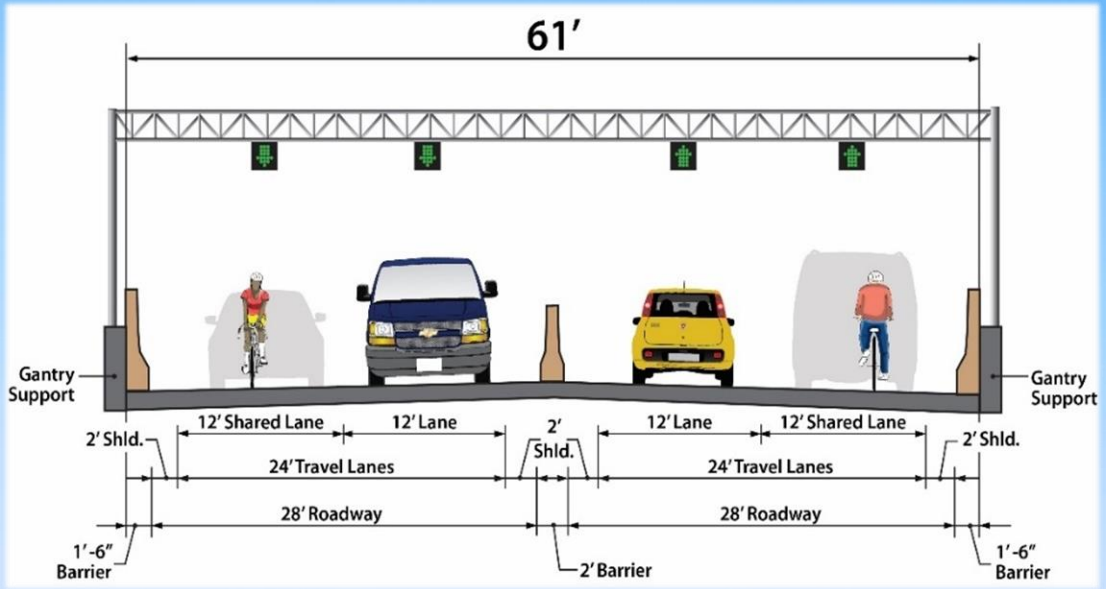


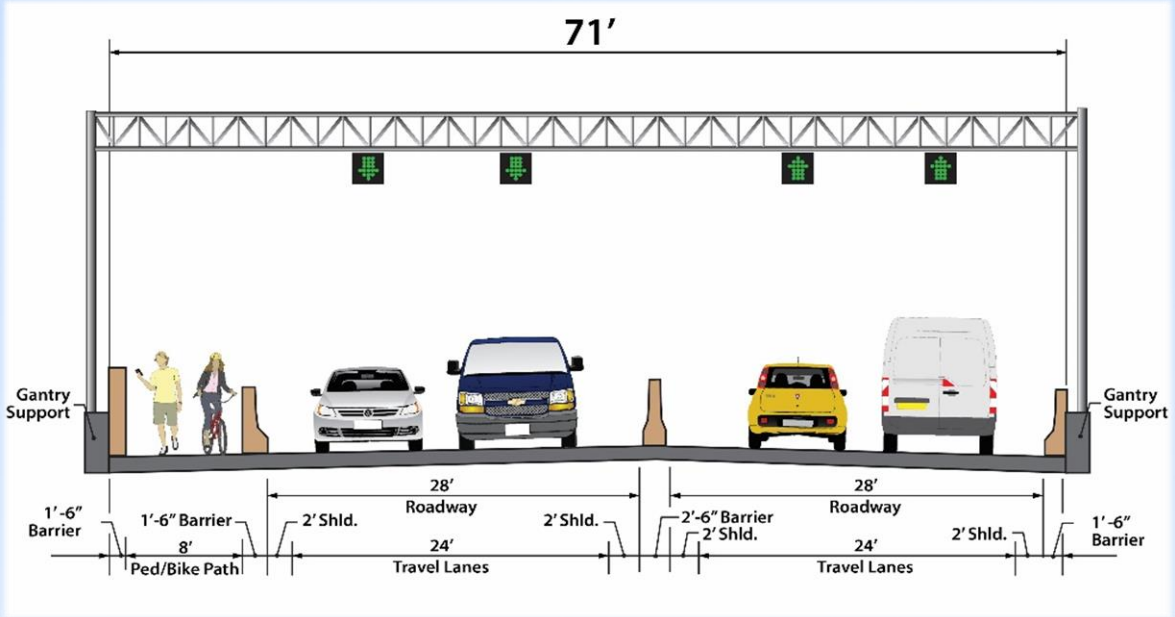
Project Land Work



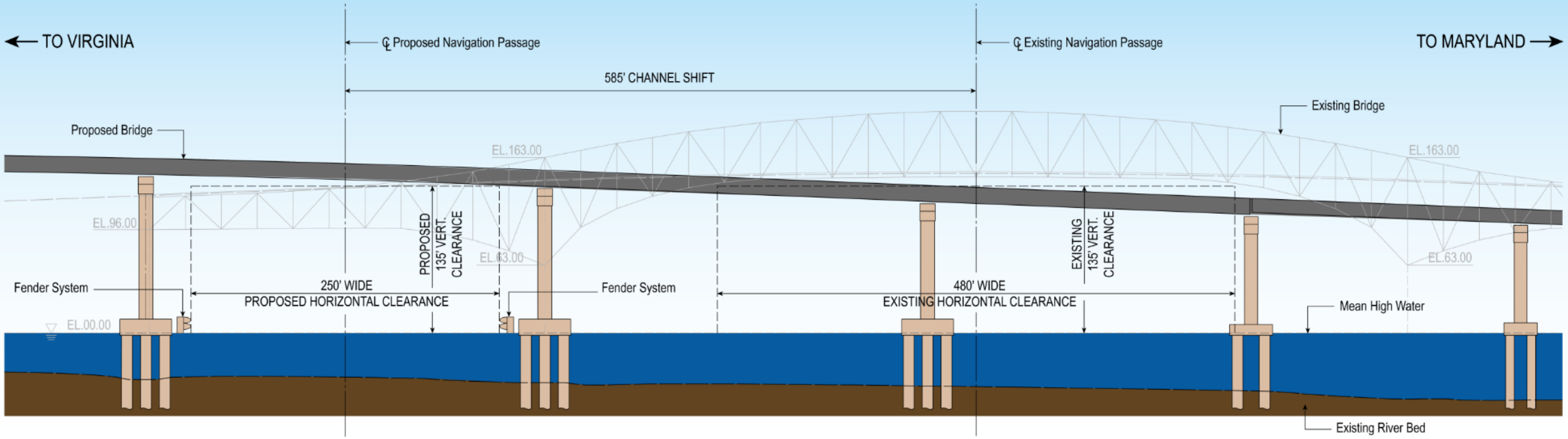


Bid-Alternate Approach





Bridge Design



MAIN SPAN STEEL GIRDER - WATERWAY SEQUENCE OF CONSTRUCTION
(585' CHANNEL SHIFTED / 250' CHANNEL WIDTH / 135' VERT. CLEARANCE / 4% GRADE)

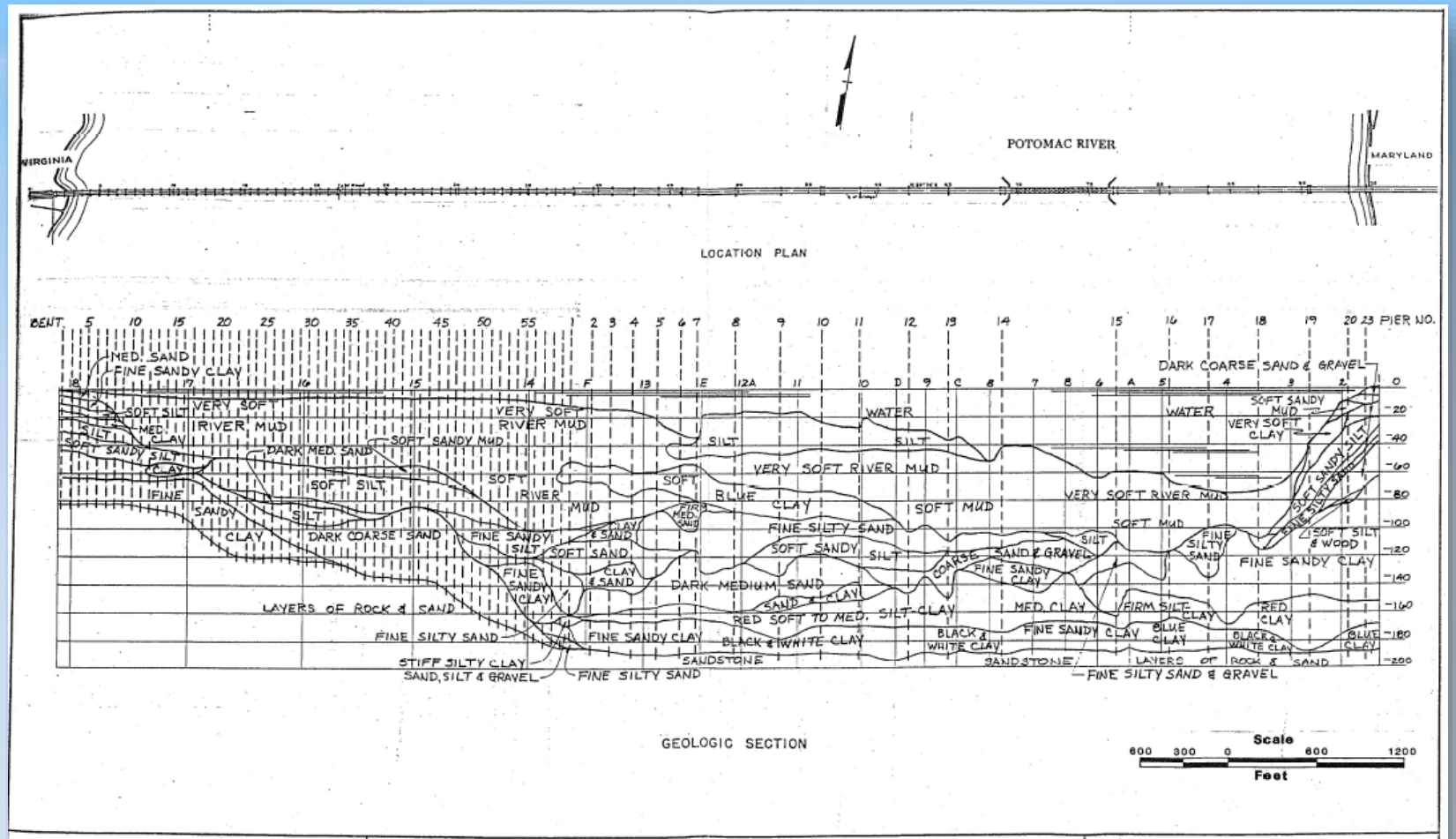
Bridge Type

Steel

Segmental

Concrete

Geotechnical Historical Information



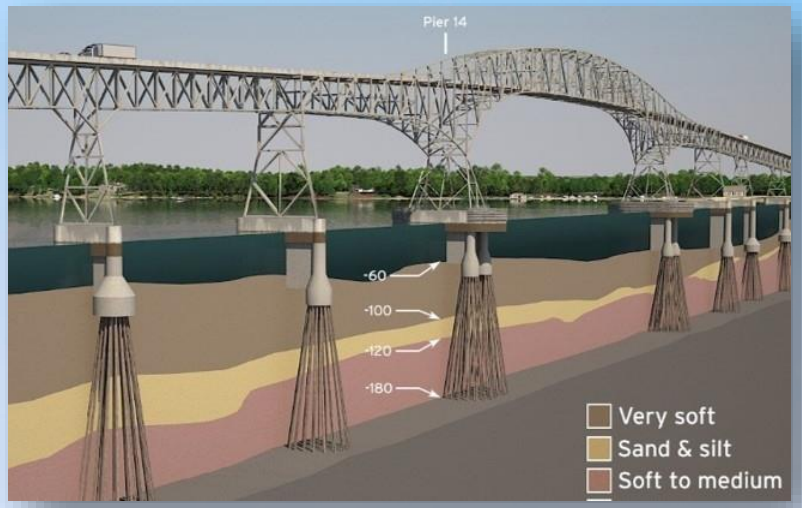
PIER PROTECTION STUDY CONTRACT NO. BRB 6-838	GEOLOGIC SECTION HARRY W. NICE MEMORIAL BRIDGE	MD. TRANSPORTATION AUTHORITY TOLL FACILITIES ADMINISTRATION

PLATE C3

FOR REFERENCE ONLY

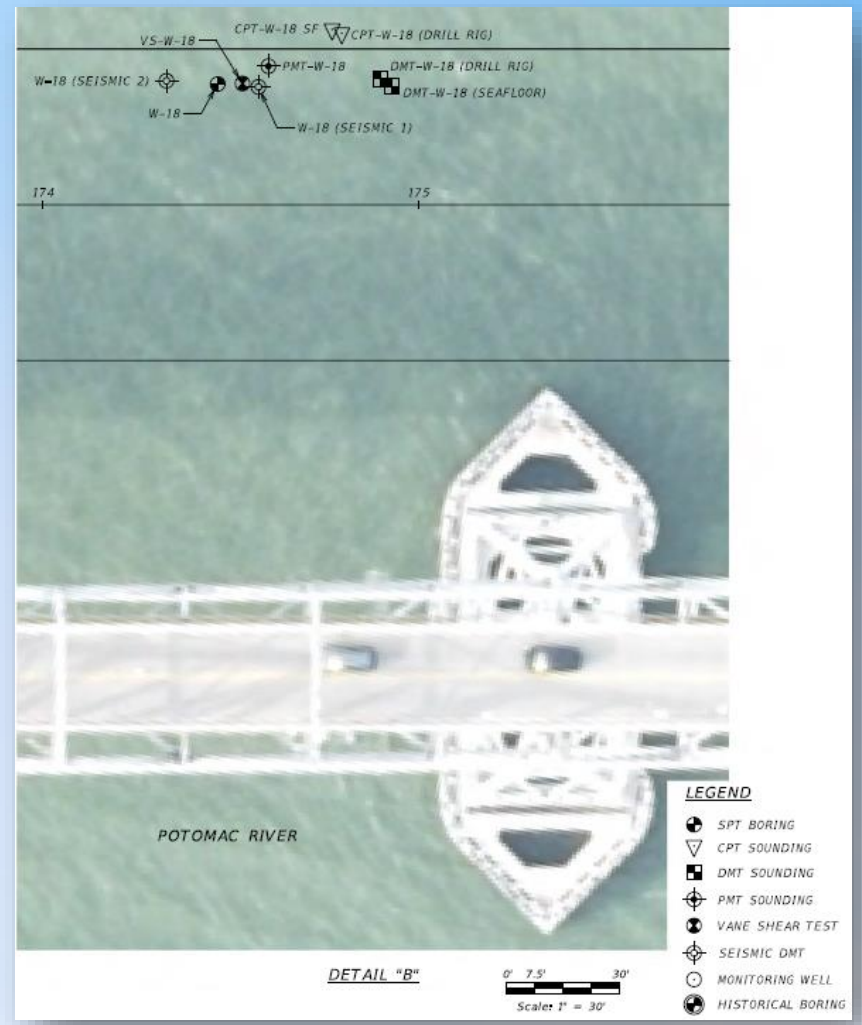
Geotechnical Program and Results

- A Survey of potential submerged hazards found that there is virtually no risk of encountering “Munitions of Concern” or “Unexploded Ordinances” from the Dahlgren Naval Support Facility
- Geotechnical Subsurface Investigation Program
  - 27 River SPT Borings to 150 to 250 feet
  - 20 Maryland Shore Land SPT Borings
  - 10 Virginia Shore Land SPT Borings
- Seismic Testing @ 2 River Locations per ASTM D7400
- In-Situ Testing Program
  - 13 River Cone Penetrometer Tests with Pore Pressure Dissipation Tests and Seismic Testing
  - 4 Land Cone Penetrometer Tests with Pore Pressure Dissipation Tests and Seismic Testing
  - 4 Dilatometer Tests; 2 Rover and 2 Land
  - 30 Pressuremeter Tests In 2 River Borings
  - 21 Field Vane Shear Tests at 2 River Boring Locations

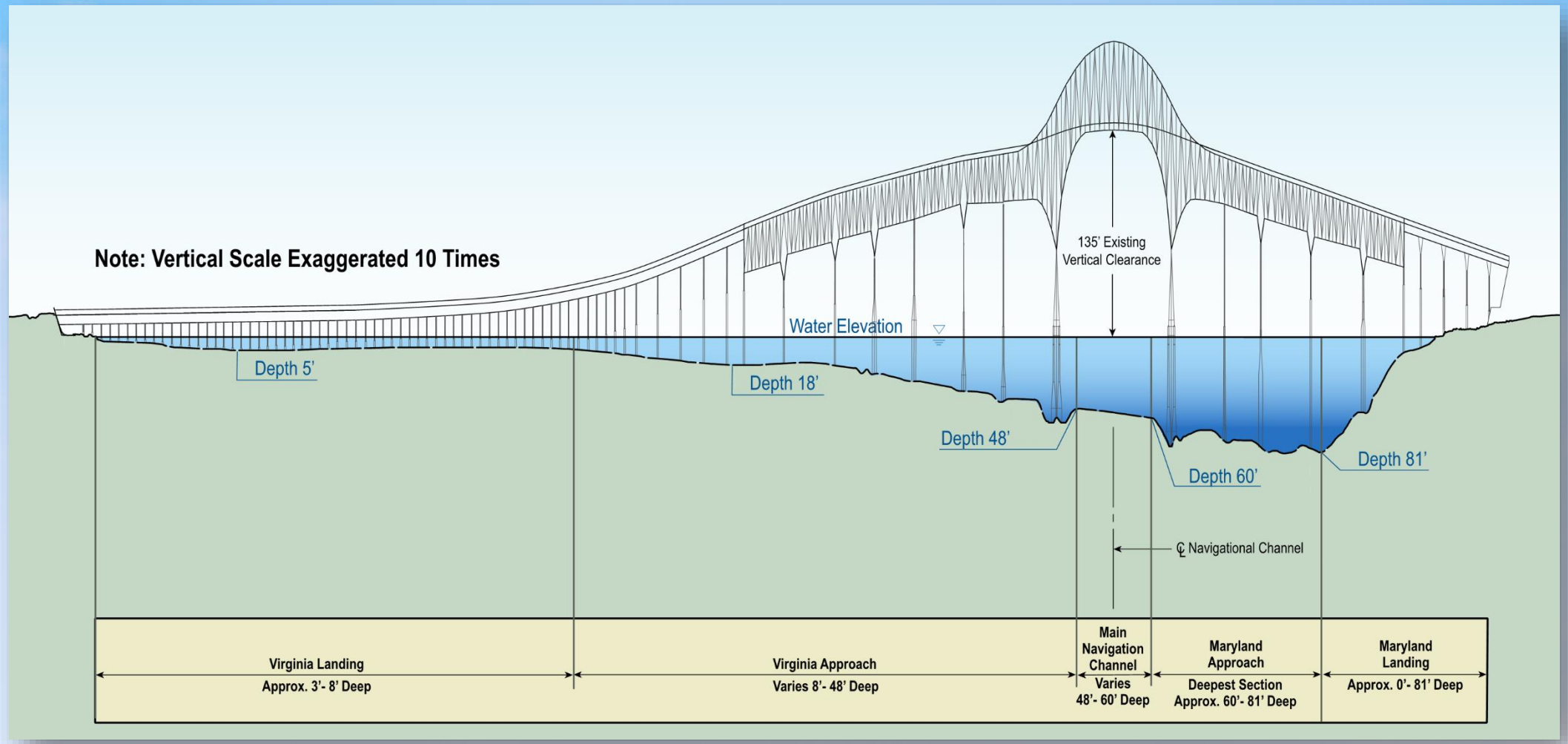


Geotechnical Program and Results (cont'd)

- Borings - Field work completed May 2016, Geotechnical Data Report compiled.
- Test Piles - Accomplished small test pile program in February 2016 (2 – 24" steel pipe piles)
- Geologic Setting Disclosed By Geotechnical Subsurface Investigation Program
  - Holocene (MD, VA and Potomac River)
  - Pleistocene (Maryland Point on MD Side and Sedgefield on VA Side)
  - Miocene Age Calvert Formation (VA Side)
  - Nanjemoy (MD, VA and Potomac River)
  - Marlboro Clay (MD, VA and Potomac River)
  - Aquia (MD, VA and Potomac River)

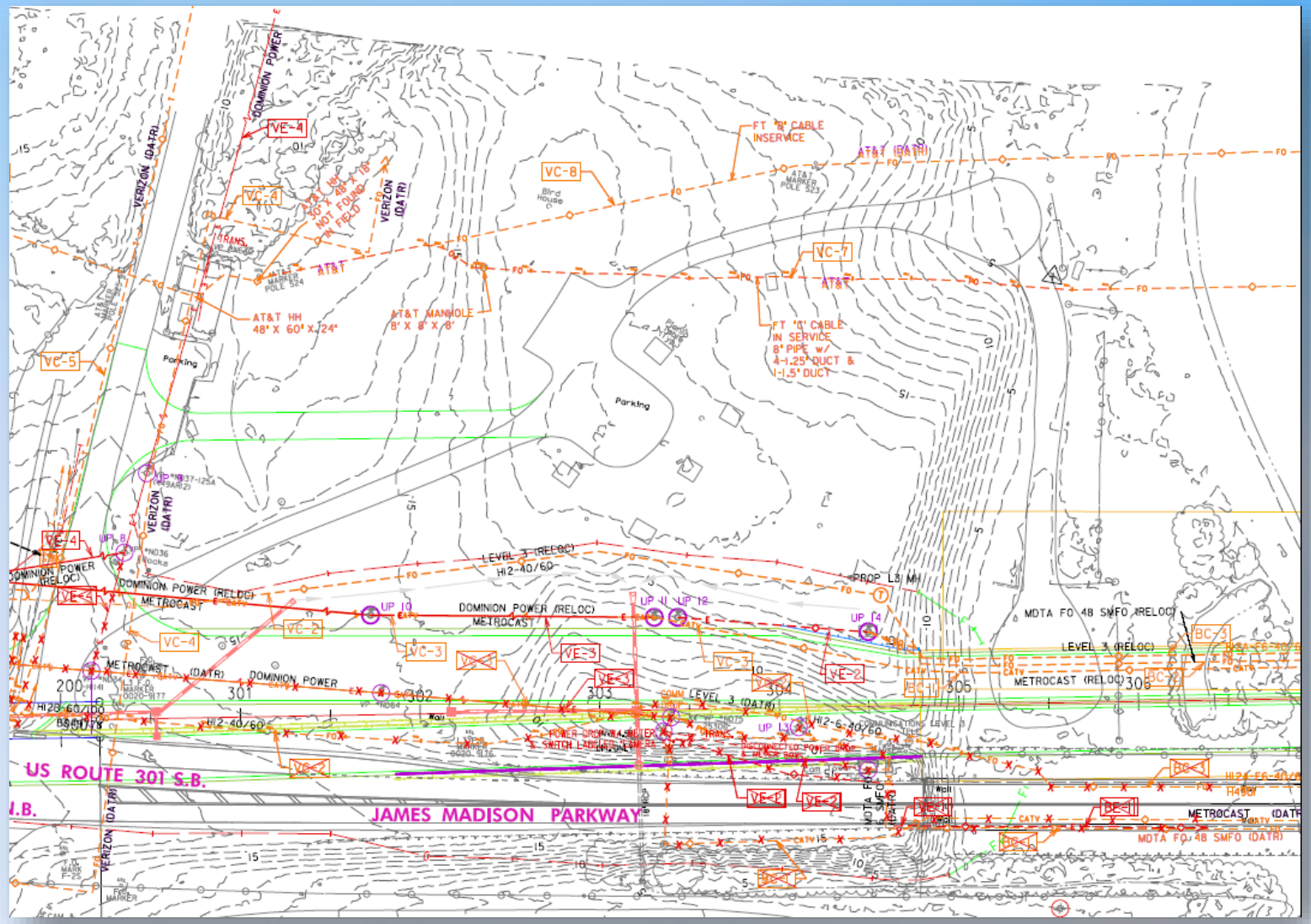


Existing Landside and Hydrographic Surveys



Utility Investigations

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



All Electronic Tolling (AET)

ICC/MD 200

I-95 ETLs

ICC/MD 200

Questions/
Open Discussion

Stay Tuned @ **www.newnicebridge.com**