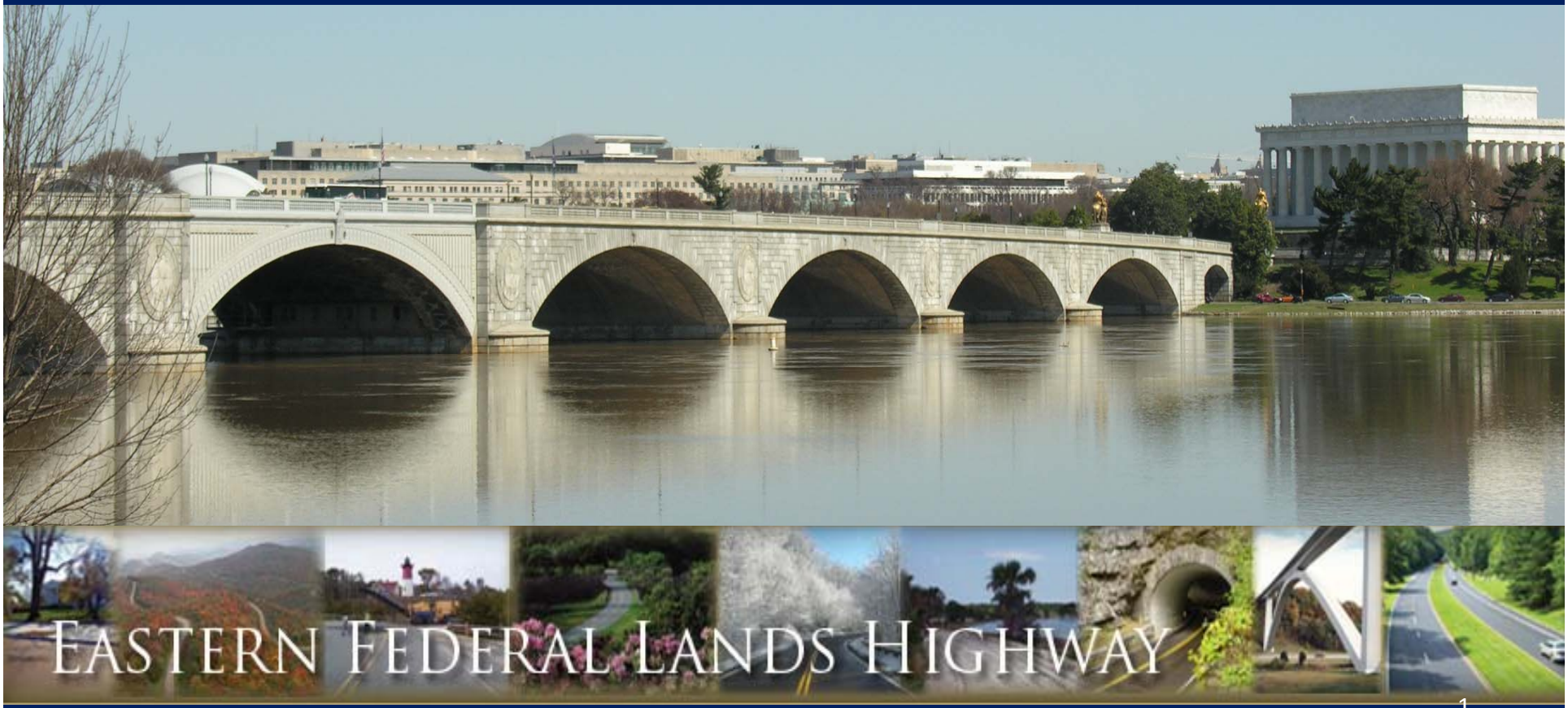
Transportation Research Board 93rd Annual Meeting

GEORGE WASHINGTON MEMORIAL PARKWAY
ARLINGTON MEMORIAL BRIDGE



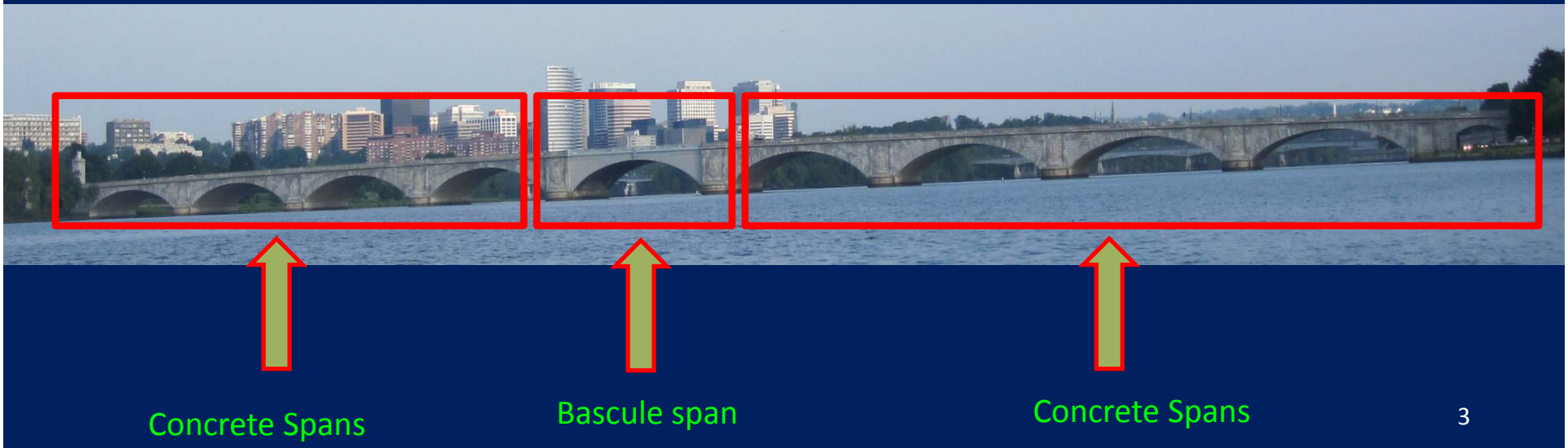
Description of Existing Bridge

- This bridge was built in 1932
- Historic structure
- As-built plans exist – Several Construction Contracts

Bridge deck and sidewalk

Description of Existing Bridge (cont.)

- Movable Steel Truss Bascule Span
- Total length of the bridge: 2,108 feet
- Bascule span:
  - 216 feet (Main Trunnion to Main Trunnion)
- Approach Spans:
  - 10 Total (5 on each side of bascule)
- Curb to curb: 60 feet (6 lanes)
- Sidewalk width 17 feet
- Estimated water depth varies (10 feet to 30 feet)
- Known Utilities (Survey Completed):
  - Pepco
  - FAA
  - Tunnel for submarine cable



Existing Deck and Sidewalks

Deterioration of roadway surface

Deterioration of roadway surface

Deterioration of the sidewalks

Deterioration of roadway surface

Existing Deck - Underside

Photo taken on 07/21/2010

Photo taken on 02/08/2012

Deck - Recent Repairs

Photo taken on 09/29/2012

Deck - Recent Repairs

Photo taken on 10/01/2012

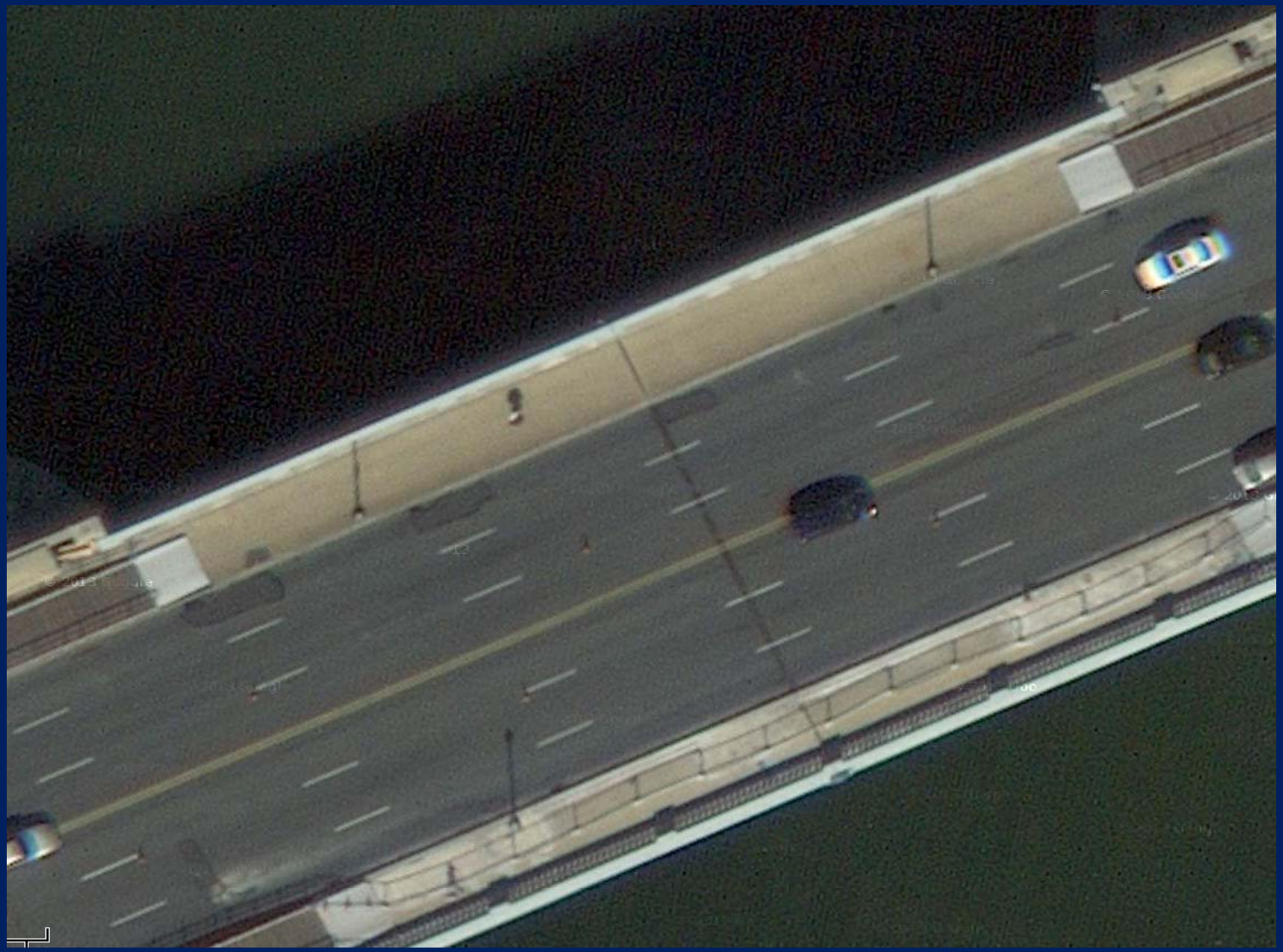
Deck - Recent Repairs

Photo taken on 09/29/2012

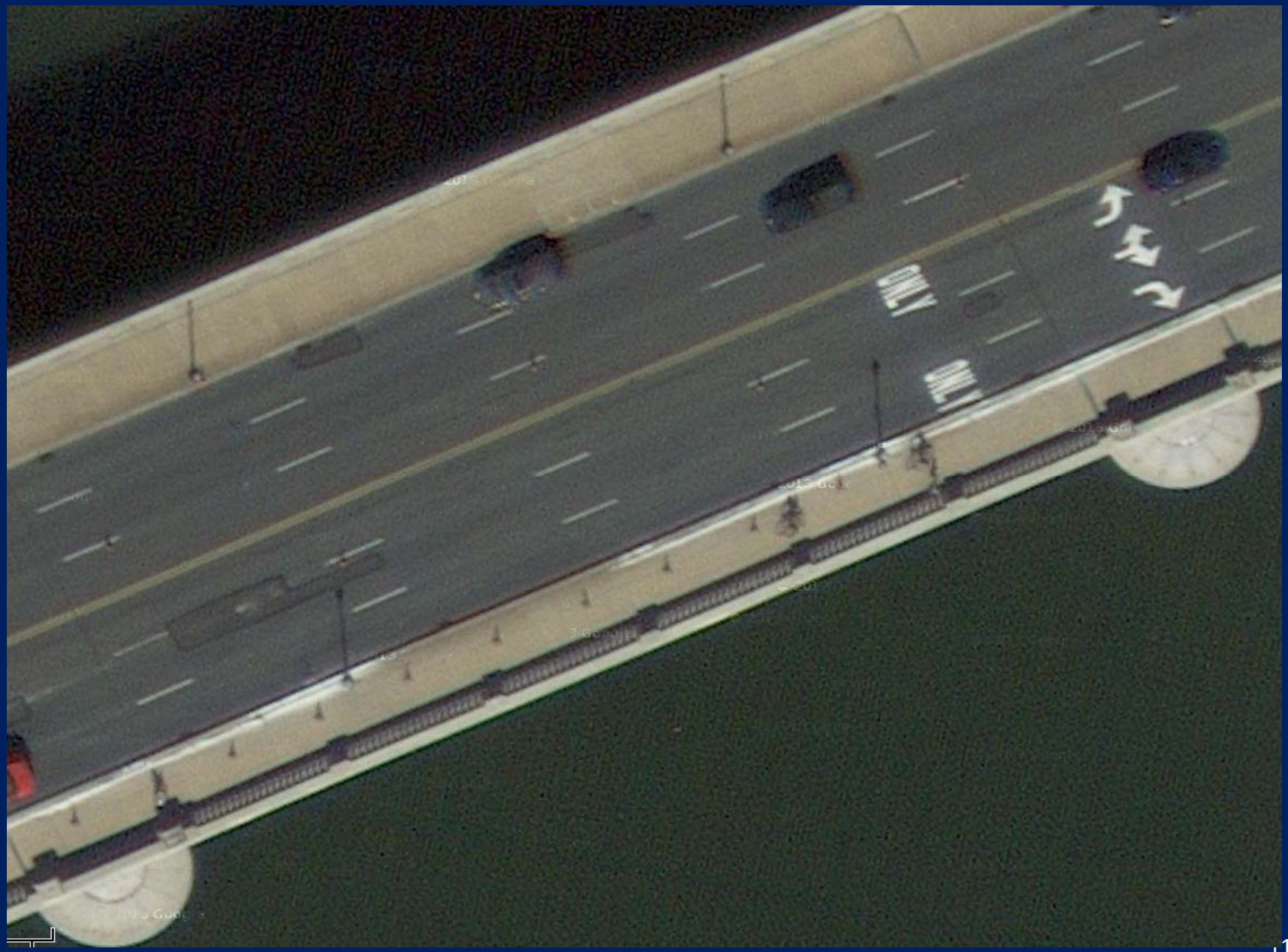
Sidewalk - Recent Repairs

Photo taken on 09/20/2012

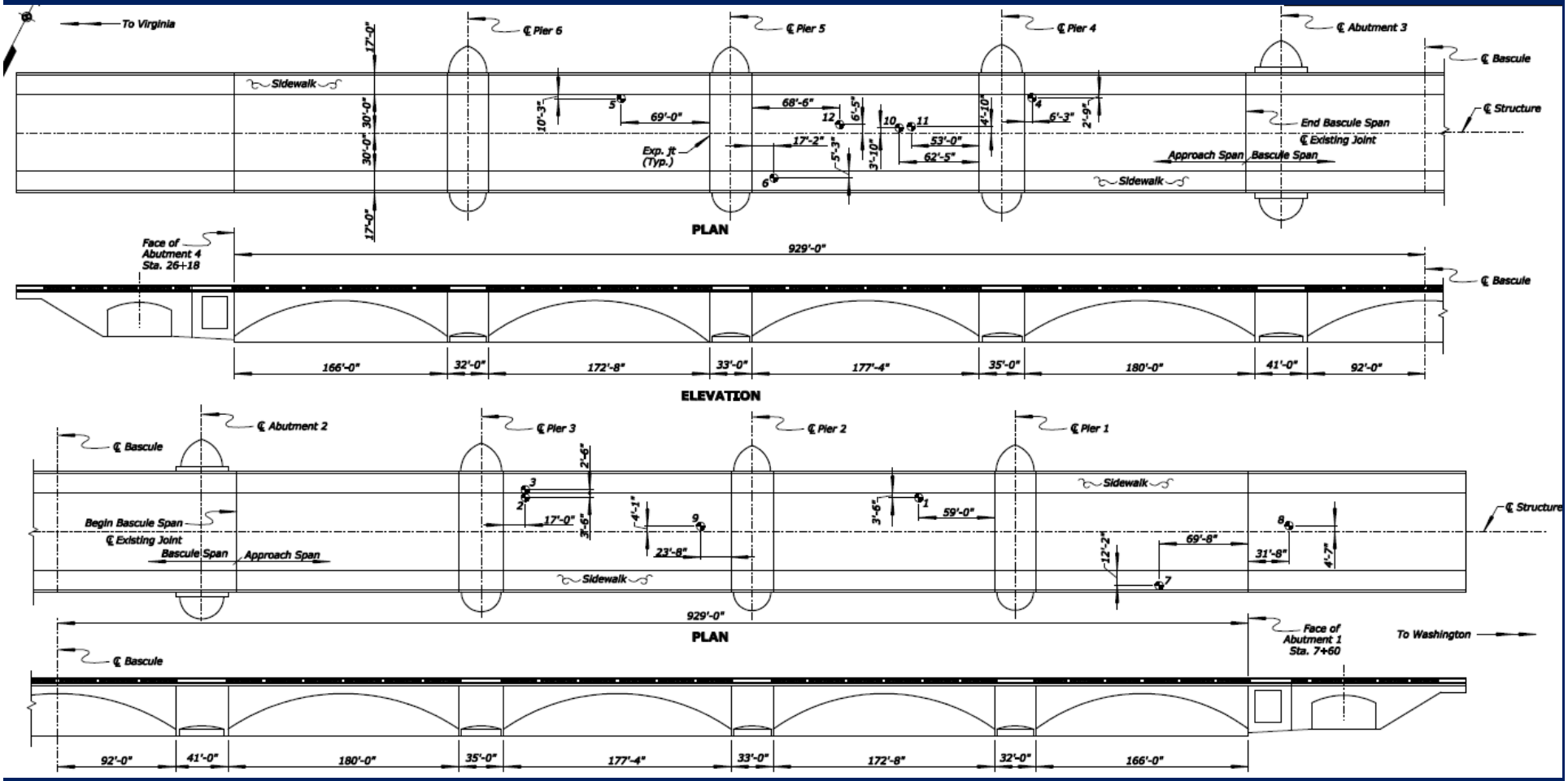
Eagle’s Eye View



Eagle's Eye View



Deck Study – Core Boring Locations



Deck Study – Retrieved Core Findings

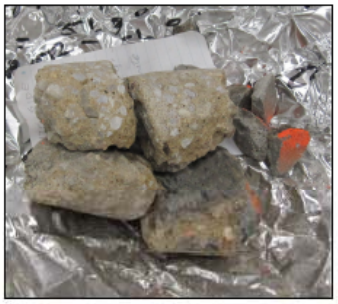
Core #1
3" asphalt and 5" concrete core with horizontal cracking and efflorescence

Core #2
1¼" asphalt and concrete rubble

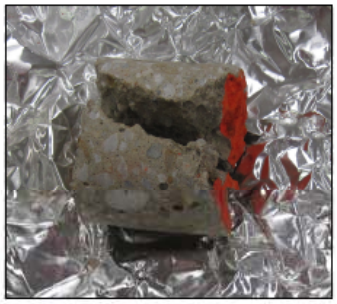
Core #3
4½" concrete core with spalling and efflorescence

Core #4
1" asphalt with membrane and 4" concrete rubble

Core #5
2" asphalt with membrane and concrete rubble

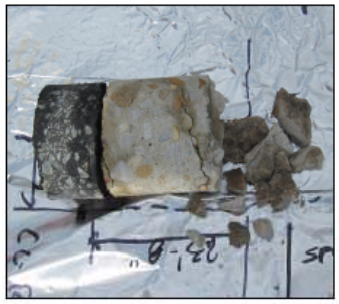


Core #6
4½" concrete core with horizontal cracking, vertical cracking, and efflorescence present



Core #7
2½" concrete core with vertical cracking present

Core #8
2" asphalt with membrane and concrete rubble



Core #9
2" asphalt with membrane and 3½" concrete core with horizontal cracking and rubble

Core #10
2" asphalt with membrane and concrete rubble

Core #11
2" asphalt with membrane and 3½" concrete core

Core #12
2" asphalt with membrane and concrete rubble

Note:

See "DECK STUDY - 1" sheet for boring locations.

FIELD DATA FOR INFORMATION ONLY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

GEORGE WASHINGTON MEMORIAL PARKWAY

ARLINGTON MEMORIAL BRIDGE

DECK STUDY - 2
RETRIEVED CORE FINDINGS

Eastern Federal Lands Highway Division & Turner-Fairbanks Highway Research Center working together!

RABIT – Data Based Assessment Tool

1. **Panoramic Camera** collects high-quality 360-degree images around the bridge deck.
2. **High-Definition Imaging** collect high-quality images of the bridge deck.
3. **Electrical Resistivity Probes** characterizes the corrosive environment of concrete deck.
4. **Impact Echo and Ultrasonic Surface Waves** determine concrete delamination and concrete deck strength.
5. **Ground Penetrating Radar (GPR)** records and marks location data.
6. **Global Positioning System (GPS)** uses electromagnetic waves to map rebars and assess concrete deterioration