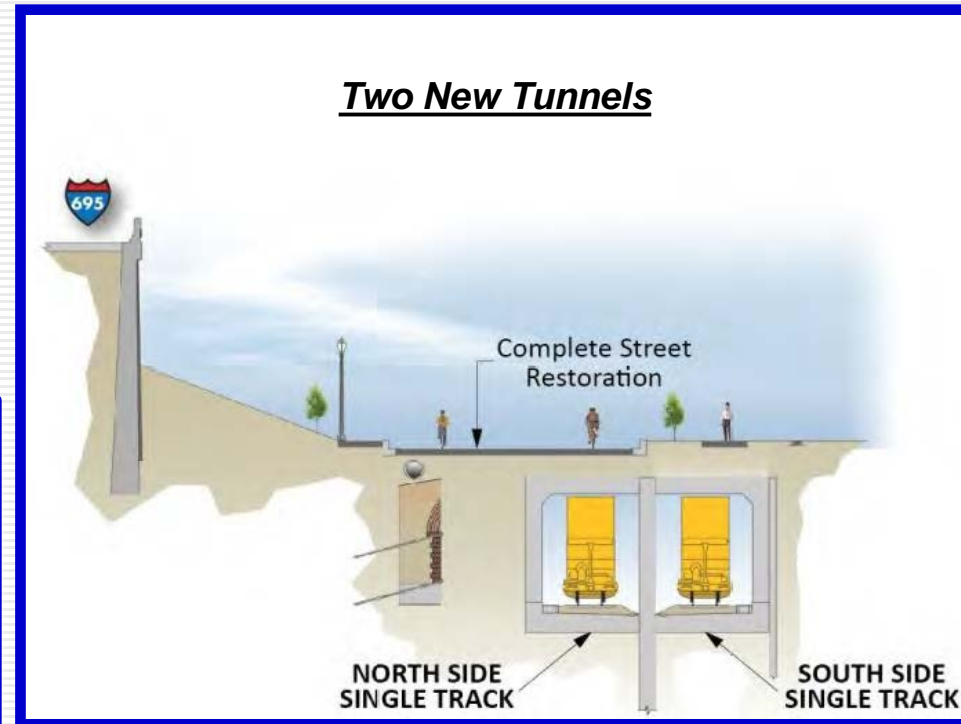


Virginia Avenue Tunnel Reconstruction Project

April 2016

Brandon Knapp, P.E.



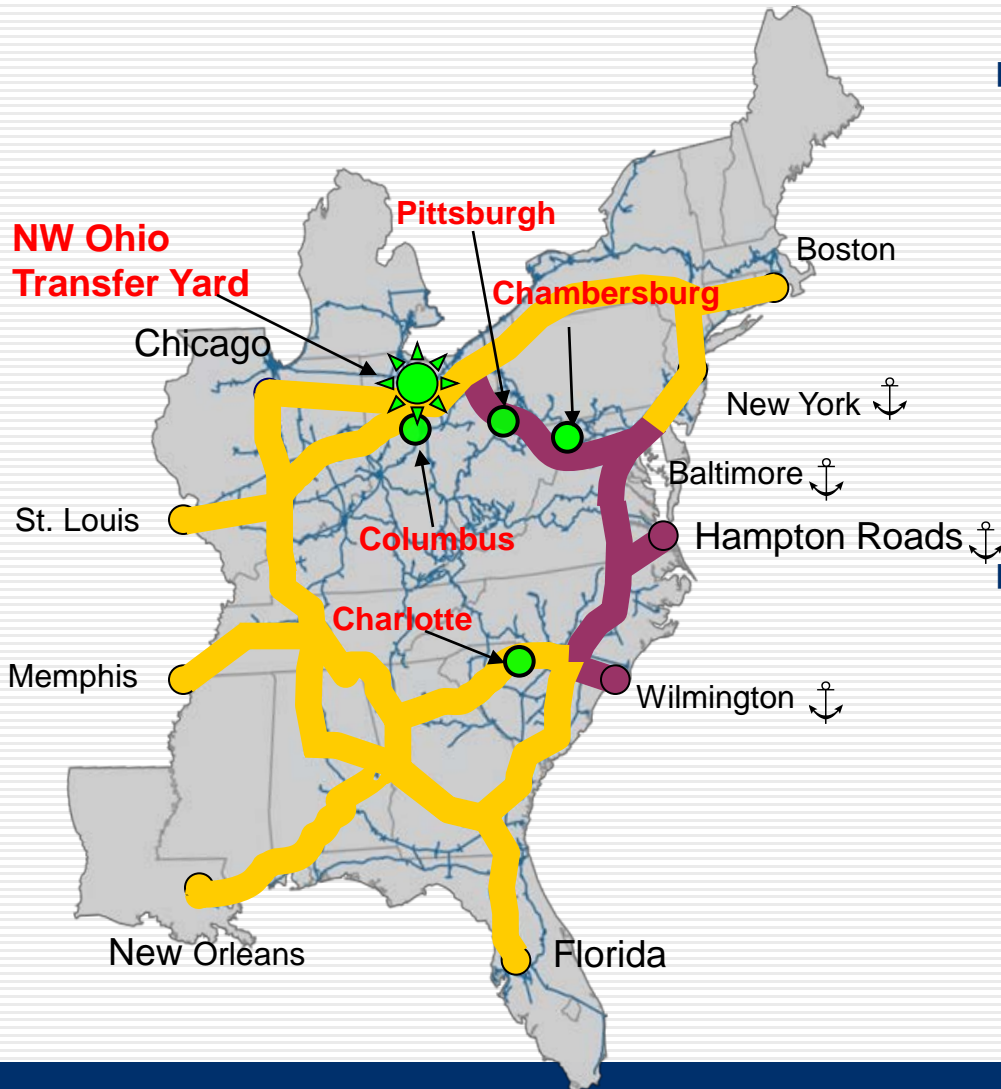
CSX connects the nation and the globe

The 23 State CSX Network...

- 30,000 employees
- 21,000 route miles
- 1,200+ trains/day
- 5 million+ carloads
- 3,500+ locomotives
- 80,000+ freight cars
- Serves 70 ocean, lake and river ports



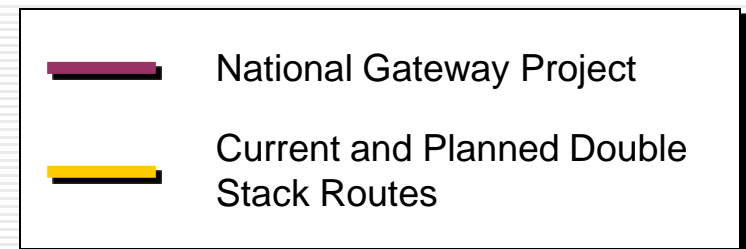
National Gateway: Critical to meeting future freight demands



- 61 clearance projects in 6 states and the District of Columbia to achieve 21'0" clearance

- Construction work varies from minor modifications to complete reconstruction of bridges, tunnels and other infrastructure

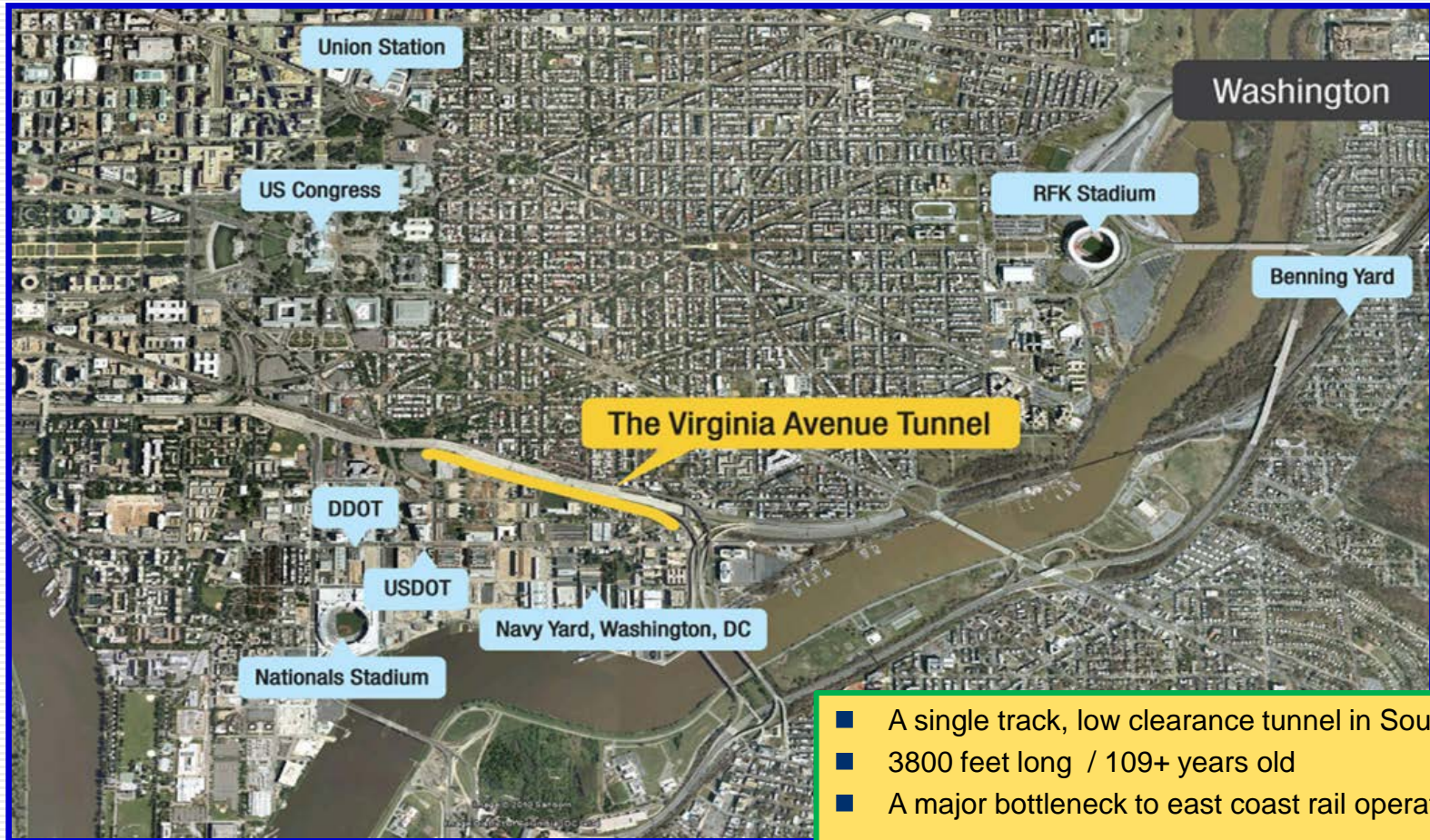
- 5 new/enhanced terminals along the National Gateway corridors utilizing the latest technology



National Gateway Projects

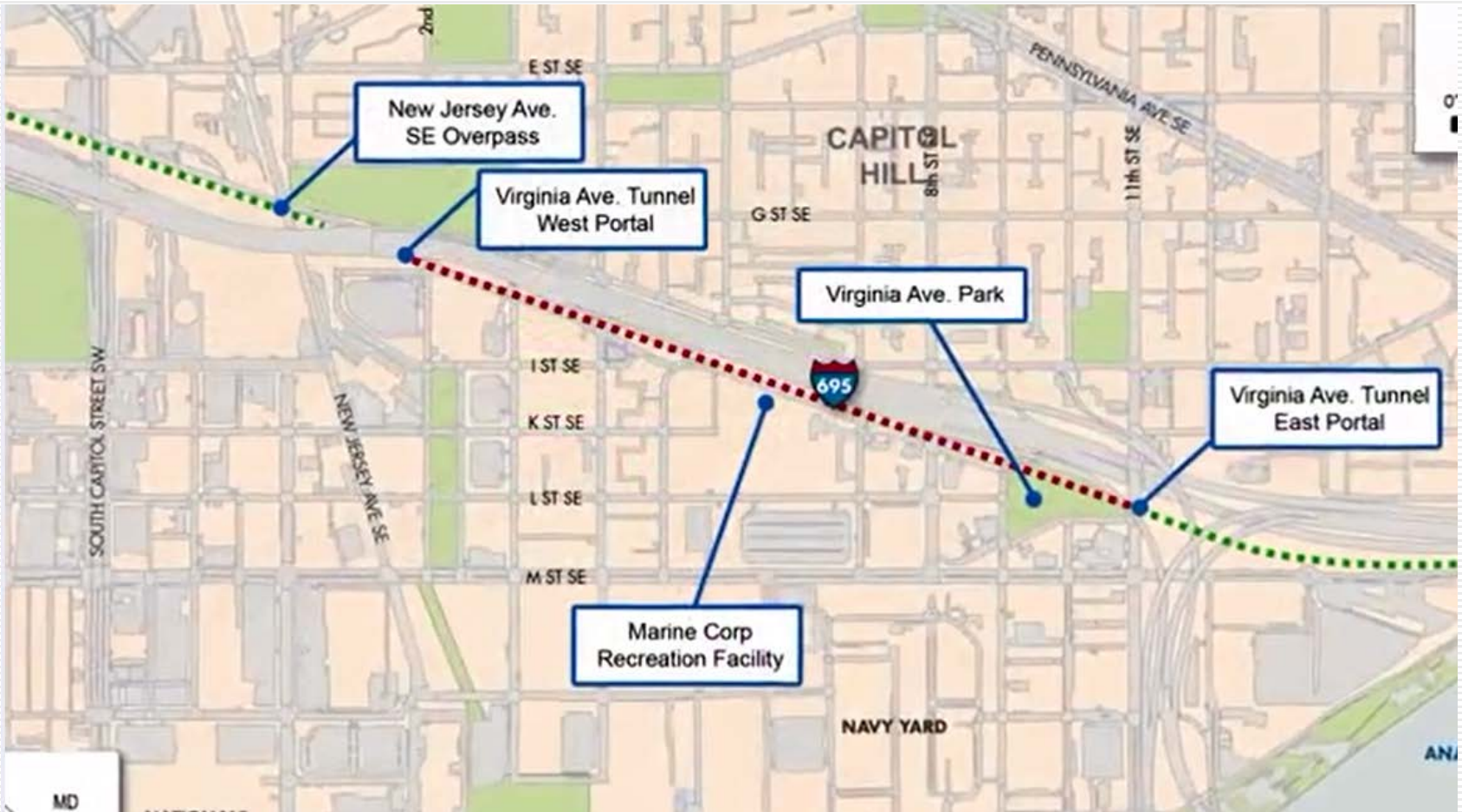


Virginia Avenue Tunnel



- A single track, low clearance tunnel in Southeast DC
- 3800 feet long / 109+ years old
- A major bottleneck to east coast rail operations

Tunnel Location



Existing Virginia Avenue Tunnel

- Constructed in two phases between 1872 and 1904
- Approximately 3,800' long
- Lies generally beneath Virginia Ave. SE
- Single track through the tunnel with double track on either side
- Vertical clearance is insufficient for double stack intermodal container freight trains ($\approx 18'$)
- Increased maintenance costs as the tunnel nears the end of its useful life – 350' section collapsed in 1985



Project Purpose and Need

The purpose is to preserve, over the long term, the continued ability to provide efficient freight transportation services in the District of Columbia, the Washington Metropolitan Area, and the eastern seaboard

- Address the structural deficiencies of the tunnel
- Accommodate expected increases in freight transportation that, in part, would stem from the expansion of the Panama Canal
- Ensure that during construction freight transportation services remain uninterrupted

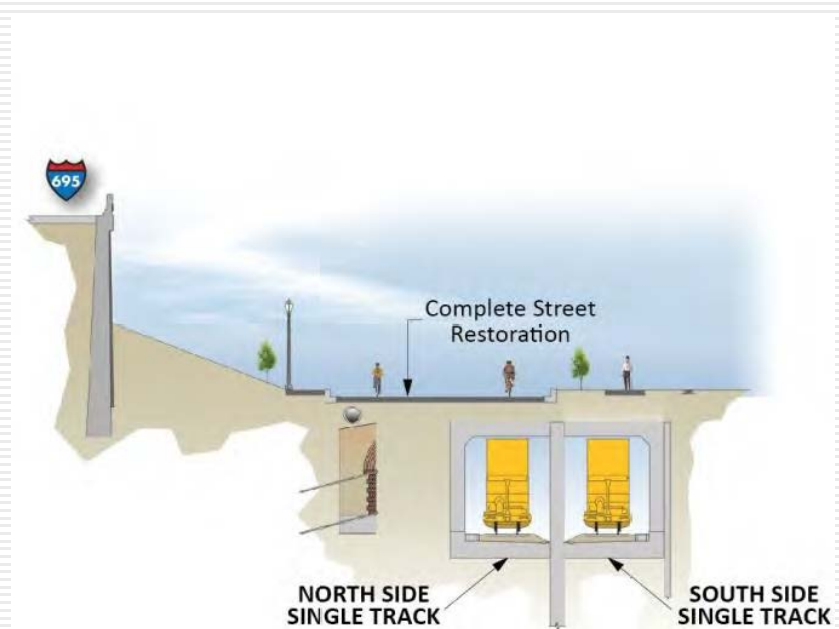
Project Development

■ NEPA

- Project began as an EA in early 2011 and was changed to an EIS in May 2012
- Lead federal agency – FHWA
- Lead local agency - DDOT
- 11 Initial concepts with 4 retained in the EIS
- Draft EIS – July 2013
- Final EIS with Preferred Alternative – June 2014
- Record of Decision – November 2014

Selected Alternative

- Two tunnels with shared middle wall
- Double stack clearance
- Rebuild using protected open trench construction methods
- New length: 4,132'
- Upgraded security and drainage features
- Estimated construction duration: 30 – 42 months



NEPA Mitigations

- Residential Property Mitigation (RPM)
- Air, noise, and vibration monitoring
- Pile Drilling
- Construction protection plan
- Archeological work plan
- VA Ave. pavers
- Community outreach program
- Virginia Avenue Park – Dog Park
- Restoration of CP VA Tower
- Preservation of tunnel portal stones
- Enhanced streetscape, landscaping, and greenspace



Post ROD World

- Final design and permitting
- Agreements
- Utility design approvals and relocations
- Site preparation
- NEPA mitigation implementation
- Major Construction Start – May 2015

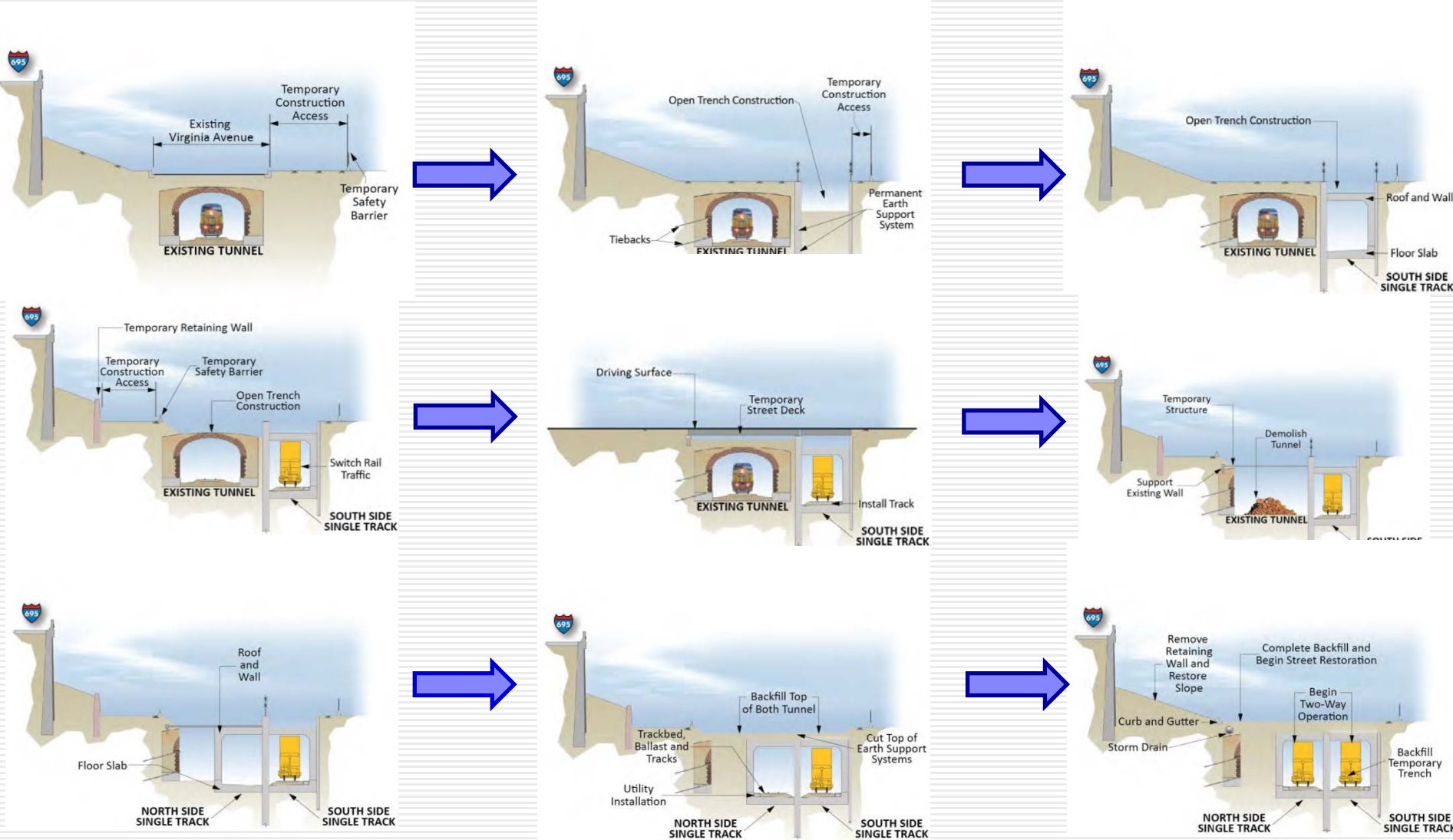
Final Design Features

- Steel reinforced, cast in-place concrete structure
- 21'3" Vertical Clearance – 18' Horizontal Clearance
- Roof design: AASHTO HS25 (per DDOT standards)
- Drilled “H-pile” and “secant pile” design support-of-excavation (SOE) in lieu of driven piles
- Track: CWR on concrete ties
- Access from street level – cross passage access to both tunnels
- Improved drainage system with dual electric pumps and control valves
- Safety / inspection walkway incorporated on top of duct banks
- Upgraded security system
- LED lighting and ventilation fans
- Back up generators
- PTC communication compatible

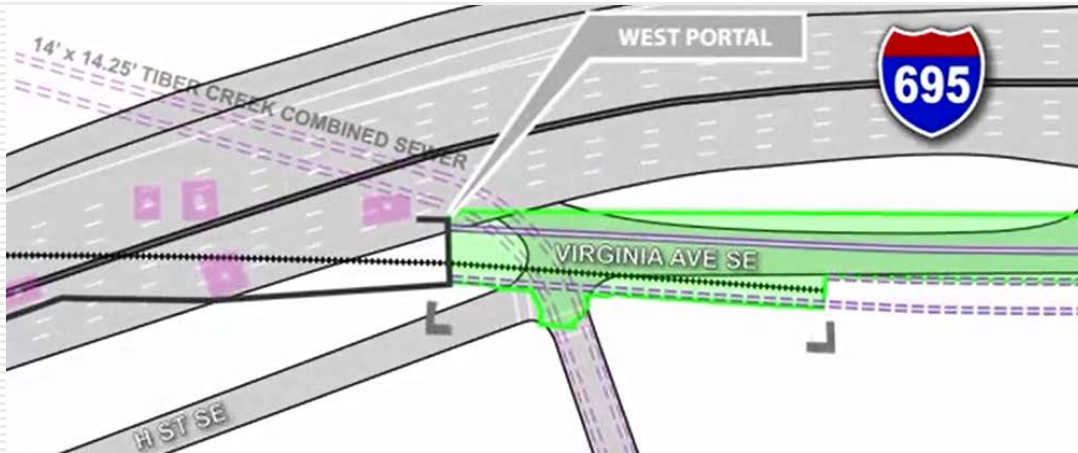
Unique Tunnel Features

- Three typical tunnel cross-sections
 - West segment – shared tunnel
 - Middle segment – shared middle tunnel wall (majority)
 - East segment – split tunnels
- Tiber Creek Sewer
- 6th Street Siphon
- Marine Chiller Underpinning
- Six Cross-street bridges
- Phase 1 Tunnel demolition – 370' under live traffic

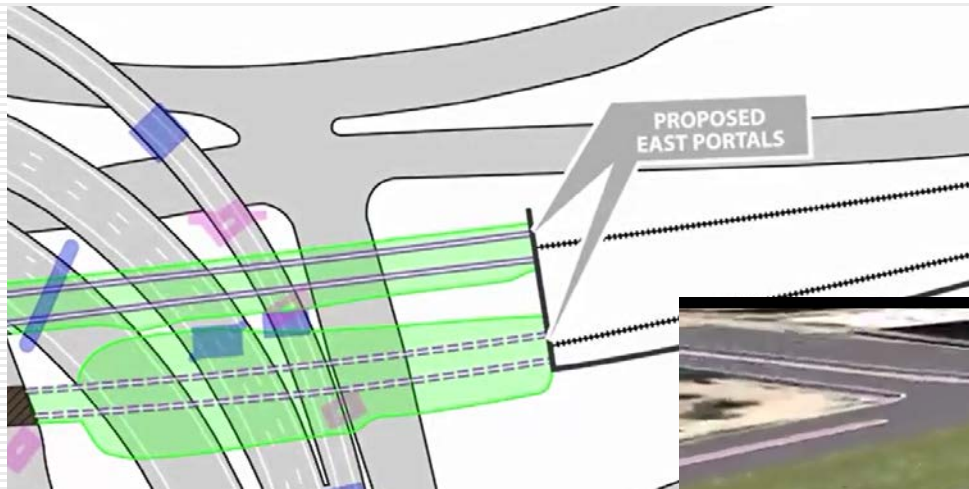
Sequence of Construction



West Segment

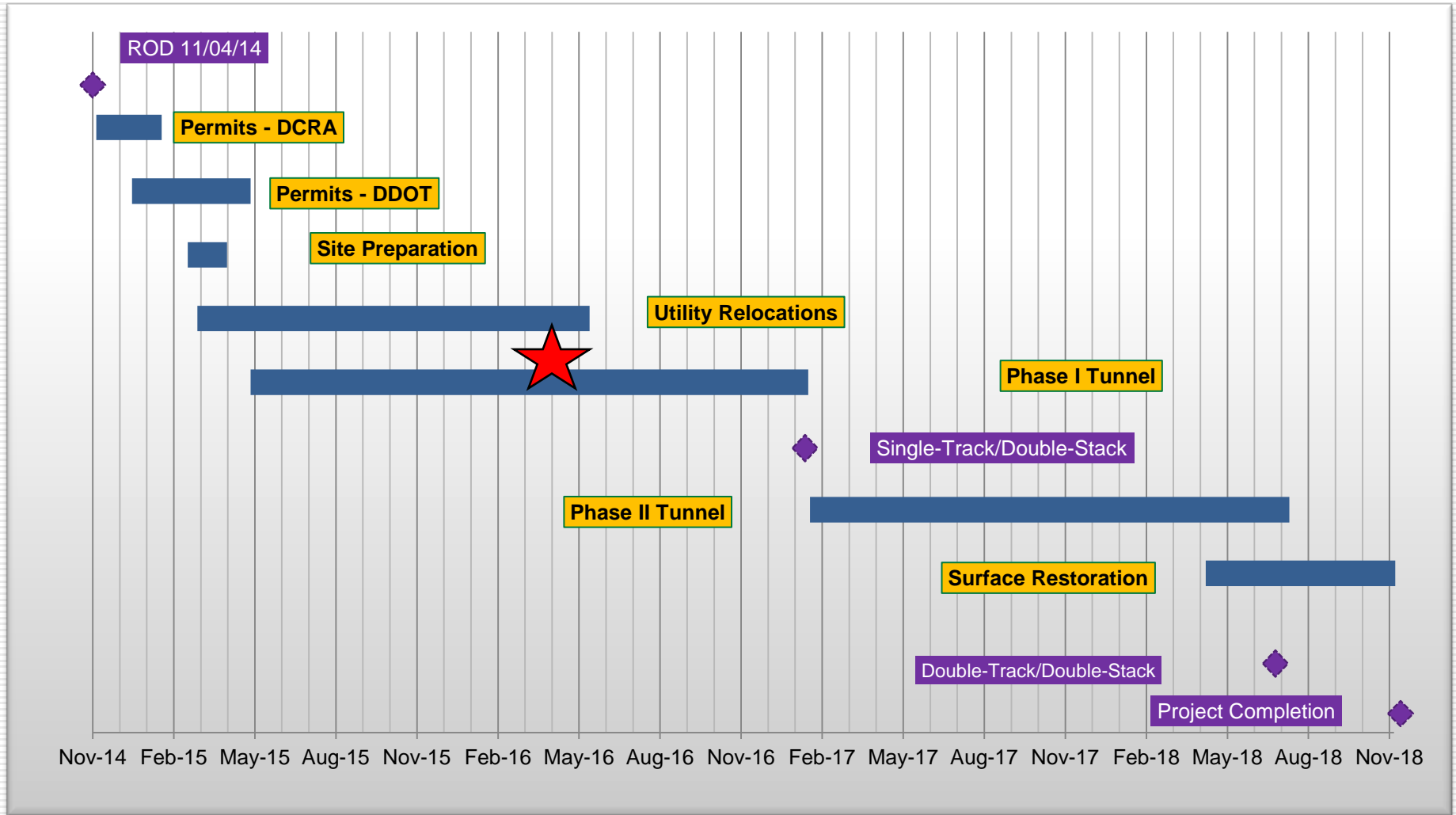


East Segment



Virginia Avenue Tunnel Reconstruction Project Summary Schedule

As of 4/01/16

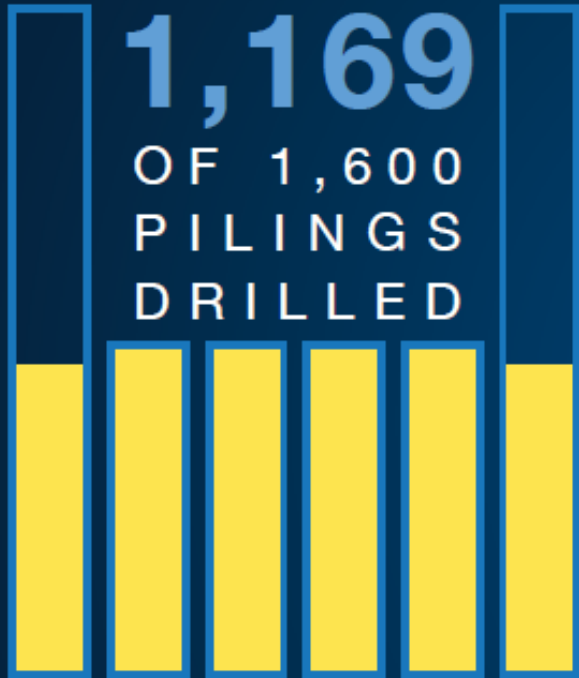


Note: Activity start dates are contingent upon receipt of the required permits



VIRGINIA AVENUE TUNNEL CONSTRUCTION PROGRESS

Data effective March 1, 2016



7,600 TRUCKLOADS
OF DIRT EXCAVATED



**7,400 CUBIC
YARDS** OF
CONCRETE
POURED



185 WORKERS
RECEIVED SAFETY
TRAINING AND
EMPLOYED ON-SITE

3,944 HOURS
OF AIR, NOISE
AND VIBRATION
MONITORING



39,676 
CONTACTS
WITH NEIGHBORS

10 MONTHS OF THE TOTAL
42 MONTHS OF CONSTRUCTION



Major Milestones Completed

- Utility relocations – 95% complete
- Phase 1 tunnel demolition complete
- 4th St. temporary bridge deck open
- Tunnel Invert – 10% complete
- Walls – 9%
- 1st Precast roof segment installed
- Tiber Creek bridge construction started

Utility Relocations



East End Retaining Wall



Support of Excavation and Secant Pile Wall Construction



Mass Excavation in the 400 Block of VA Ave.



Mass Excavation Adjacent to the Marines Facility



Mass Excavation Adjacent to the Marines Facility



Excavate to Subgrade

Mass Excavation in Virginia Avenue Park



Excavate to Subgrade

Cross-Street Bridges



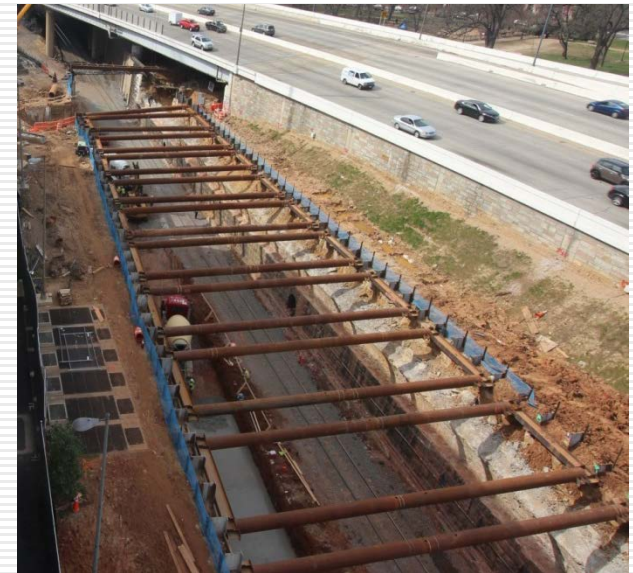
Tunnel Demolition - Phase I 100% Complete



Tunnel Demolition - Phase I 100% Complete

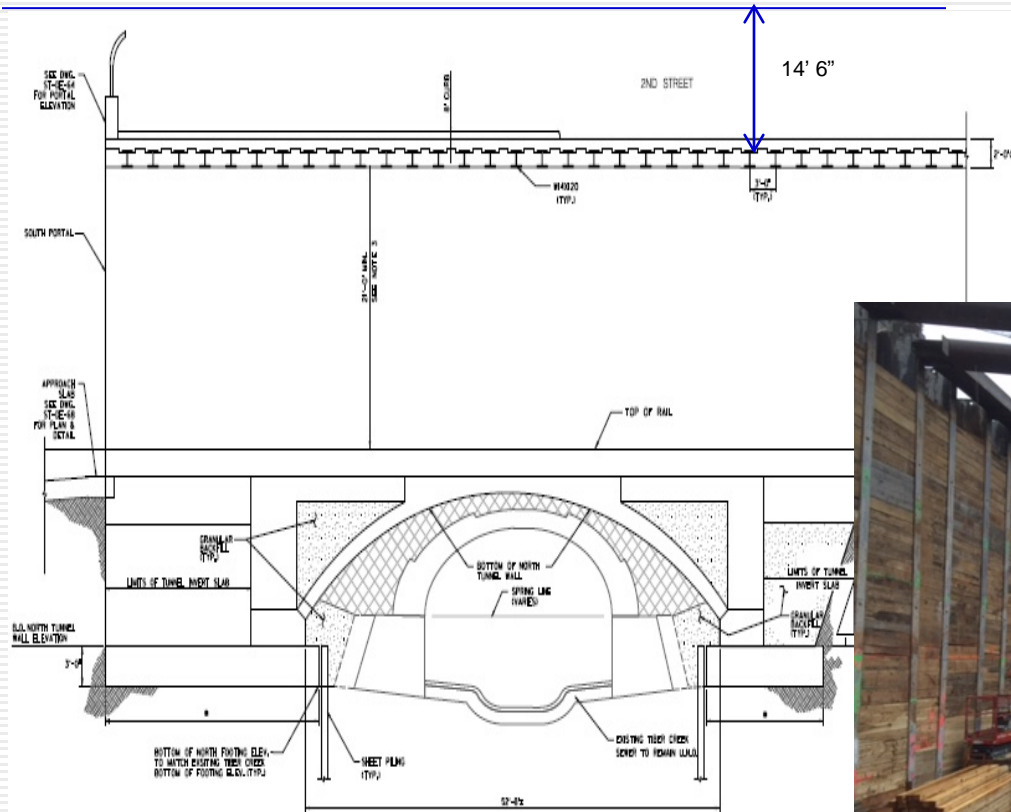


Tunnel Demo - 200 Block of VA Ave.



"Four-level" crossing at Tiber Creek

(I-695 above 2nd Street)



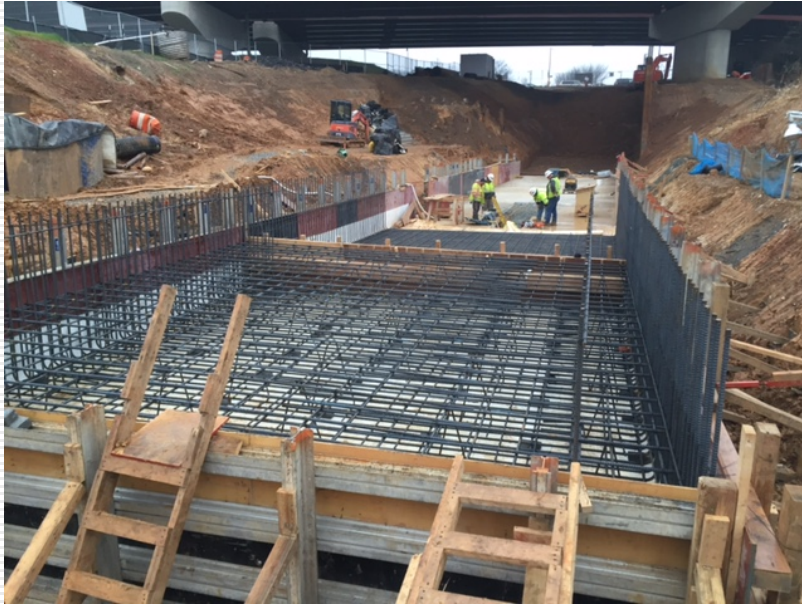
Marine Chiller Underpinning



Tunnel Concrete Construction – 400 Block of VA Ave.



East End Tunnel Construction



East End Tunnel Construction



East End Tunnel Construction



East end Tunnel Construction



East End Tunnel Construction



Upcoming Events and Ways to Stay Connected

- **Coffee with Chuck - CSX Community Office**

- Wednesday, May 18, 2016
- Wednesday, June 15, 2016



- **Quarterly Open House - Courtyard Marriott**

- Thursday, April 14, 2016
- Thursday, July 21, 2016



- www.virginiaavenuetunnel.com
- Sign up for e-mail and text alerts
- Twitter: @VATNews

Thank You!

