NBIS BRIDGE RATING, POSTING & SIGNING
Goals today…

• Provide overview of regulatory authority

• Review of the National Bridge Inspection Standards (NBIS) requirements to perform load ratings

• Discuss upcoming changes in bridge weight limits and planned installation of new signage

• Explain what resources VDOT has made available to share information
Why Bridge Load Ratings?

To calculate safe load carrying capacity so risks can be mitigated.
Regulatory Authority

Virginia Law – Title 46.2, Chapter 10

• Article 14 – Maximum Vehicle Size, Generally
• Article 15 – Maximum Vehicle Widths and Heights
• Article 16 – Maximum Vehicle Lengths
• Article 17 (46.2-1124 thru 46.2-1127) – Axle Weights and Spacing and weight limitations
• Article 18 (46.2-1139 et seq.) – Permits for Excessive Size and Weight
Regulatory Authority

Virginia Administrative Code – Title 24, Agency 20

- Chapter 80 (Overload 5% Permits per 46.2-1128)

- Chapter 81 (Hauling Permits)
  - Section 60 (Legal Weight – Chart 1)
  - Section 70 (Single and Tandem axle weights without Engineering Review)
  - Section 80 (Maximum weight without Engineering Review – Chart 2)
Background:
Advancements in the Trucking Industry & What it Means for DOTs

• Commercial truck manufacturers have developed more efficient vehicles with four, five, six and seven axles capable of carrying overall heavier legal loads because the weight is spread across more axles.

• The Federal Highway Administration (FHWA) has deemed these vehicles Special Hauling Vehicles (SHV).

• SHVs have a higher concentration of weight in a shorter length than previous typical hauling vehicles.

• Bridges built before 2007 were not designed for vehicles with these concentrated loads.

• DOTs nationwide must now update bridge load ratings based on SHV legal weight standards due to FHWA mandates to align with today’s trucking standards.
Examples of Special Hauling Vehicles (SHV)

Four Axles

Five Axles

Six Axles

Seven Axles
Overview: VDOT’s Bridge Inventory

- **21,213 bridges**
  - Ranging from 195 years old to <1 year
  - Average age - 49 years
  - FHWA defines a bridge as greater than 20 feet in length. These are included in the National Bridge Inventory (NBI) - 13,592 bridges
  - VDOT has 7,621 bridges less than or equal to 20 feet in length. These are not included in the NBI but are part of the VDOT bridge safety inspection program.

- VDOT inspects and load rates ALL structures to National Bridge Inspection Standards (NBIS) requirements - though not required to.
- All bridges will be evaluated based on the FHWA SHV mandate
- VDOTs NBIS program includes both VDOT responsible and VDOT oversight bridges (those owned by others for which we report to FHWA)
Specialized Hauling Vehicles (SHVs)

- FHWA Memorandum (11/15/2013) directed states to consider the effects of these vehicles for all structures. ([https://www.fhwa.dot.gov/bridge/loadrating/131115.cfm](https://www.fhwa.dot.gov/bridge/loadrating/131115.cfm))
- SHVs meet the Federal Bridge Formula (FBF) chart defining Legal Vehicles
- Have been determined to exceed the force effects of the FBF envelope
Why the FHWA Mandate?

- SHVs meet federal legal weight standards and are defined in the AASHTO Manual for Bridge Evaluation (MBE).
- The NBIS is governed by 23 CFR Part 650 Subpart C – which incorporates the MBE by reference.
- SHVs comply with FBF and are legal vehicles in all States*
  - SHVs do not require a permit in Virginia

*unless State law explicitly excludes the use of such vehicles

SHVs may be the same length or shorter than typical hauling vehicles and be able to legally carry a heavier load because they have more axles. This means more weight concentrated in a shorter span.
Potential Impacts of New Weight Restrictions on Bridges

• **Agency Impacts**
  • Some bridges will need updates so they are not weight-restricted to accommodate heavier vehicles where emergency response/commerce would be affected
    • Working to determine bridges that would present greatest impacts
  • **Mitigation of Impacts will result in additional costs**
    • Engineering Evaluation
    • Field Signage
    • Updates to some bridges

• **Trucking Industry**
  • Once new weight restrictions are posted, may mean SHVs would have to take a different route to avoid weight-restricted bridges
    • GIS mapping tool being developed – Truck Web
  • **Industry and citizens must become accustomed to new signage**
Examples of Signage

• Signs show familiar icons/visuals
Examples of Signage

• Signs show familiar icons/visuals
• Drivers distinguish by axle count and gross vehicle weight
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Signage Reference Sheet

• Available via the VDOT and DMV websites
Resources

• To learn more about trucks, legal weight for different vehicle types and hauling on Virginia roads, visit www.dmv.virginia.gov/commercial.

• For information regarding VDOT’s efforts and materials used during this discussion, visit www.virginiadot.org/trucking.

• Programmatic Questions
  • Chris Williams, Assistant Division Administrator, Structure and Bridge
    ▪ Christopher.Williams@vdot.virginia.gov
Resources

- [www.virginiadot.org/trucking](http://www.virginiadot.org/trucking)
Resources

- [www.virginiadot.org/trucking](http://www.virginiadot.org/trucking)
- Live spreadsheet shows all bridge weight restrictions once signs have been installed

### Weight, Height or Width Restrictions at Bridges and Tunnels

**Bridges**

Various bridges statewide have restrictions on the weight, height, or width of vehicles. Signs posted on the highway at the affected bridges indicate these restrictions. A map of state-maintained bridges with restrictions on height, width, as well as weight bridges is available upon request to [vdotmapfiles@vdot.virginia.gov](mailto:vdotmapfiles@vdot.virginia.gov). The mapping is updated bi-annually.

#### Find restricted bridges:

For a current listing (updated daily) of bridges statewide posted with restricted weight limits (does not include height or width limitations), click here.

| District | Jurisdiction | Route | Route Name | VA Strm No. | Fed Strm Id | Crossing | Type | Year Built | Year Record (State) | Year Record (Fed) | Deck Cond | Super Cond | Sub Cond | Culvert Cond | Fill | Tonnage | Strm Bldg | Last Inspected | Load Posting Status | Single Sign - Single Unit Vehicle Pnted Capacity (in tons) | Dual Sign - Single Unit Vehicle Pnted Capacity (in tons) | Dual Sign Combination Unit Vehicle Pnted Capacity (in tons) | Responsibility | Structure Length (FT) | Structure Width (FT) | Avg Daily Traffic | Road System | Report Date |
|----------|--------------|-------|------------|-------------|-------------|----------|------|------------|---------------------|--------------------|-----------|------------|----------|-------------|------|---------|-----------|----------------|------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|-----------------|------------------|-----------------|------------------|-------------|------------|------------|
Resources

Specific Local Concerns

Contact VDOT District Representatives

- Bristol
  Gary Lester, 276-696-3372
- Salem
  Dean Hackett, 540-387-5311
- Lynchburg
  Kenneth Martin, 434-856-8175
- Richmond
  Sean Nelson, 804-524-6096
- Hampton Roads
  E. Alex Jarrell, 757-956-2054
- Fredericksburg
  Leslie Danovich, 540-899-4343
- Culpeper
  Lou Hatter, 540-717-2890
- Staunton
  Susan Hammond, 540-462-6990
- Northern Virginia
  Juan Rocha Encinas, 703-259-2393
QUESTIONS?