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

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• 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**

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**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.

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](#).

A map of state-maintained bridges with restrictions on height, width as well as weight bridges is available upon request to virgindiaglass@vdot.virginia.gov. The mapping is updated bi-annually.

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**Virginia Department of Transportation**

Virginia Roads

- General information source for road maps, data and facts.

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## 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 approach of the bridge indicate these restrictions.

**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](http://www.virginiadot.org/trucking).

A map of state-maintained bridges with restrictions on height, weight, as well as weight bridges is available upon request to vdotmapfiles@vdot.virginia.gov. The mapping is updated bi-annually.

| District     | Jurisdiction | Route No. | Route Name | VA Street No. | VA Street Id | Crossing      | Type | Year Built | Year Record (Stat.) | Year Record (Fed.) | Deck Cond | Super Cond | Sub Cond | Culvert Cond | SRL | Time Inspected | Struc. Date | Weight Posting Status | Single Sign - Single Unit Vehicle-Paired Capacity (in tons) | Dual Sign - Single Unit Vehicle-Paired Capacity (in tons) | Dual Sign - Combination Unit Vehicle-Paired Capacity (in tons) | Responsibility | Structure Length (FT) | Structure Width (FT) | Avg. Daily Traffic | Road System | Date Report |
|--------------|--------------|-----------|------------|---------------|--------------|---------------|------|------------|---------------------|--------------------|-----------|------------|----------|--------------|-----|----------------|------------|------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|---------------|------------------------|----------------|------------------------|------------|-------------|-----------|
| Bristol      | Tazewell    | 00770     | ASCUE ROAD | 6233         | 0018681      | INDIAN CREEK | Bridge | 1832       | 0                   | -1                 | 5          | 5          | 6         | N          | Y   | FO            | 7/17/2018  | Posted                  | 0, 27                  | 40, 27                  | VDOT                     | 53.00000044713111 | 23, 283                | 283, 23                  | Secondary       | 10/28/2019  | 10/28/2019 |
| Bristol      | Dickenson  | 00283     | ROUTE 693 | 1040         | 0005518      | BRANCH       | Bridge | 1941       | 0                   | -1                 | 5          | 5          | 6         | N          | N   | FO            | 1/15/2019  | Posted                  | 0, 27                  | 40, 27                  | VDOT                     | 12.1000003814697    | 26.6000003814697       | 2628, 23                  | Primary          | 10/28/2019  | 10/28/2019 |
| Bristol      | Washington | 00028     | JEB STUART HWY | 1081 | 0018881 | STRAGHT BRANCH | Bridge | 1930       | 0                | 6          | 6          | 5         | N          | N   | FO            | 8/15/2018   | Posted                  | 0, 27                  | 40, 27                  | VDOT                     | 22, 27                 | 27.9999992370605       | 674, 23                    | Primary          | 10/28/2019  | 10/28/2019 |
| Bristol      | Wythe      | 00784     | ASBURY CHURCH RD | 6076 | 0016779 | CRIPPLE CREEK | Bridge | 1932       | -1               | 6          | 6          | 5         | N          | Y   | FO            | 10/1/2018   | Posted                  | 0, 19                  | 28, 15                  | VDOT                     | 42, 15                | 15, 320               | 320, 15                    | Secondary         | 10/28/2019  | 10/28/2019 |
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?