VDOT

Virginia Department of Transportation

Safety Inspection Program
Structure and Bridge Division

July 16, 2013

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For the Safety Inspection Program

Commonwealth's Structure Inventory

- VDOT has 104 personnel dedicated to the structure inspection program
- Bridge and Culvert inventory is 20,983 structures
- Ancillary structure (signs, signals, luminaires, high mast light and camera poles) inventory is over 31,000 structures
- Four (4) major and three (3) minor VDOT maintained tunnel facilities
- VDOT conducts more than 10,000 bridge and culvert inspections annually

Commonwealth's Structure Inventory

- NBI = National Bridge Inventory
- NBI structures include bridges and culverts that are more than 20 feet long (measured along the centerline of the road)
- FHWA requires the states to provide only NBI data
- VDOT provides FHWA update of NBI data April 1st
- Non-NBI structures include bridges ≤ 20 feet long and culverts ≥ 36 SF opening

District	No. of Structures		
	NBI	Non-NBI	Total
Bristol	2,008	1,426	3,434
Salem	1,807	1,255	3,062
Lynchburg	1,397	717	2,114
Richmond	1,959	634	2,593
Hampton Roads	1,396	292	1,688
Fredericksburg	527	285	812
Culpeper	1,019	673	1,692
Staunton	1,858	1,640	3,498
NOVA	1,413	677	2,090
Total =	**13,384**	**7,599**	**20,983**

Commonwealth's Ancillary Structure Inventory

District	Number of Ancillary Structures						Percentage
	Sign Structures	Luminaires	Signal Structures	High Mast Lights	Camera Poles	Total	
Bristol	74	457	243	76	0	850	2.7%
Salem	171	819	541	13	0	1,544	4.9%
Lynchburg	91	302	253	0	0	646	2.1%
Richmond	864	2,065	1,475	105	0	4,509	14.3%
Hampton Roads	885	6,799	489	118	284	8,575	27.3%
Fredericksburg	75	453	700	1	1	1,230	3.9%
Culpeper	42	155	382	0	0	579	1.8%
Staunton	74	45	451	26	53	649	2.1%
Northern Virginia	1,136	7,003	4,317	322	80	12,858	40.9%
Statewide	3,412	18,098	8,851	661	418	31,440	100.0%

- Hampton Roads, Richmond and NOVA = 82.5% of Inventory

Inspection Practices

Standard	Inspection Frequency	
	NBIS	VDOT
Bridges	2 Year	2 Year or 1 Year (SD or Posted)
Culverts	2 Year	2 Year (NBI) or 4 Year (Non-NBI)
Fracture Critical Structures	2 Year	1 Year
Fatigue Prone Details	2 Year	1 or 2 Year
Underwater	5 Year	5 Year
Sign Structures	No Requirement	4 – 6 Year
Signal Structures	No Requirement	4 – 6 Year
High Mast Lights Poles	No Requirement	4 – 6 Year
Camera Poles	No Requirement	10 Year
Luminaires	No Requirement	10 Year

Inspection frequency will be reduced based on condition of structure

Structure Inspections

Number of Inspections (July 2012 thru June 2013)				
District	Bridges Inspected	Culverts Inspected	Total No. Structures Inspected	Percent of Total Number of District Bridges Inspected
	No.	No.		
Bristol	1,324	436	1,760	51.3%
Salem	1,135	610	1,745	57.0%
Lynchburg	707	308	1,015	48.0%
Richmond	793	528	1,321	50.9%
Hampton Roads	655	167	822	48.7%
Fredericksburg	245	189	434	53.4%
Culpeper	556	303	859	50.8%
Staunton	1,320	645	1,965	56.2%
NOVA	478	376	854	40.8%
Total	7,213	3,562	10,775	51.4%

Inspection Practices

- **District Organization:**
  - Responsible for the inventory/inspection/load rating of structures
  - 94 - S&B personnel dedicated to the bridge safety inspection program
  - Dedicated bridge safety inspection engineer that oversees the district wide inspection program
  - Dedicated bridge safety inspection teams
  - Designated load rating engineer
  - Professional engineers or National Bridge Inspection Standards (NBIS) certified engineers and technicians perform inspections
- **Central Office:**
  - Dedicated safety inspection section (Policy and Procedures, QA, Inventory)
  - 10 - S&B personnel dedicated to the bridge safety inspection program
  - One (1) statewide underwater inspection consultant contract
  - Nine (9) district/regional consultant inspection contracts for bridges and ancillary structures

Safety Inspection Criteria

- Safety Inspectors are trained in determining the General Condition Ratings (GCR) of the structure

- GCR's is a numerical system that ranges from 0 (failed condition) to 9 (excellent condition). The following general condition ratings are used as a guide in evaluating bridge decks, bridge superstructures, bridge substructures, and culverts

0	1	2	3	4	5	6	7	8	9
Failed	Imminent Failure	Critical	Serious	Poor	Fair	Satisfactory	Good	Very Good	Excellent

Structurally Deficient

Inspection Practices

- **FY13 Inspection Program:**
  - **Bridge/culvert expenditures $26.1 million**
  - **10,775 bridges/culverts were inspected**
  - **Ancillary structure expenditures $4.6 million**
  - **3,068 ancillary were inspected**
- **Quality Assurance:**
  - **Central Office conducts an annual QA review of all nine (9) district bridge safety inspection programs**
  - **FHWA Annual NBIS Compliance Review**
    - Review of statewide inventory/database/organization/procedures
    - QA review of one (1) or more districts per year (records/field)
  - **VDOT is in compliance with FHWA Review**

Summary

- VDOT has 20,983 Bridges and Culverts
- VDOT has 31,440 Ancillary Structures
- VDOT Requires Trained Safety Inspection Personnel
  - Required to Pass National Highway Institute (NHI) Safety Inspection of In-service Bridges Training Course
  - Bridge Inspection Refresher Training is required once every three (3) years
  - Fracture Critical Inspection Techniques for Steel Bridges Training
- VDOT Exceeds the National Bridge Inspection Standard
- VDOT is in Compliance with FHWA's NBIS 23 Metric Evaluation

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