

HAMPTON ROADS CONGESTION MANAGEMENT SYSTEM

Part II-- Bridge and Tunnel Analysis

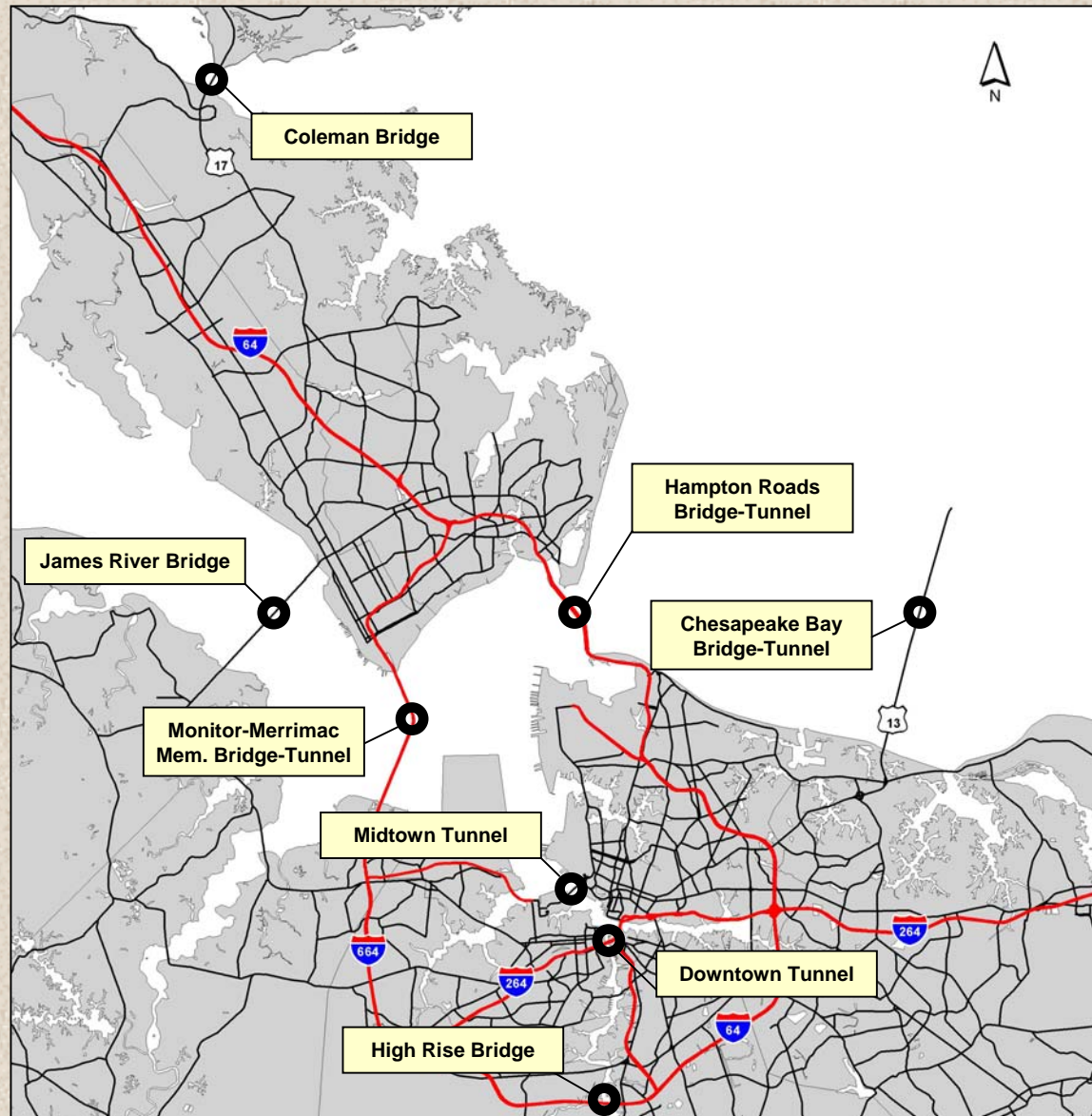


Presented by: Dwight L. Farmer, PE
Deputy Executive Director, Transportation
January 19, 2005

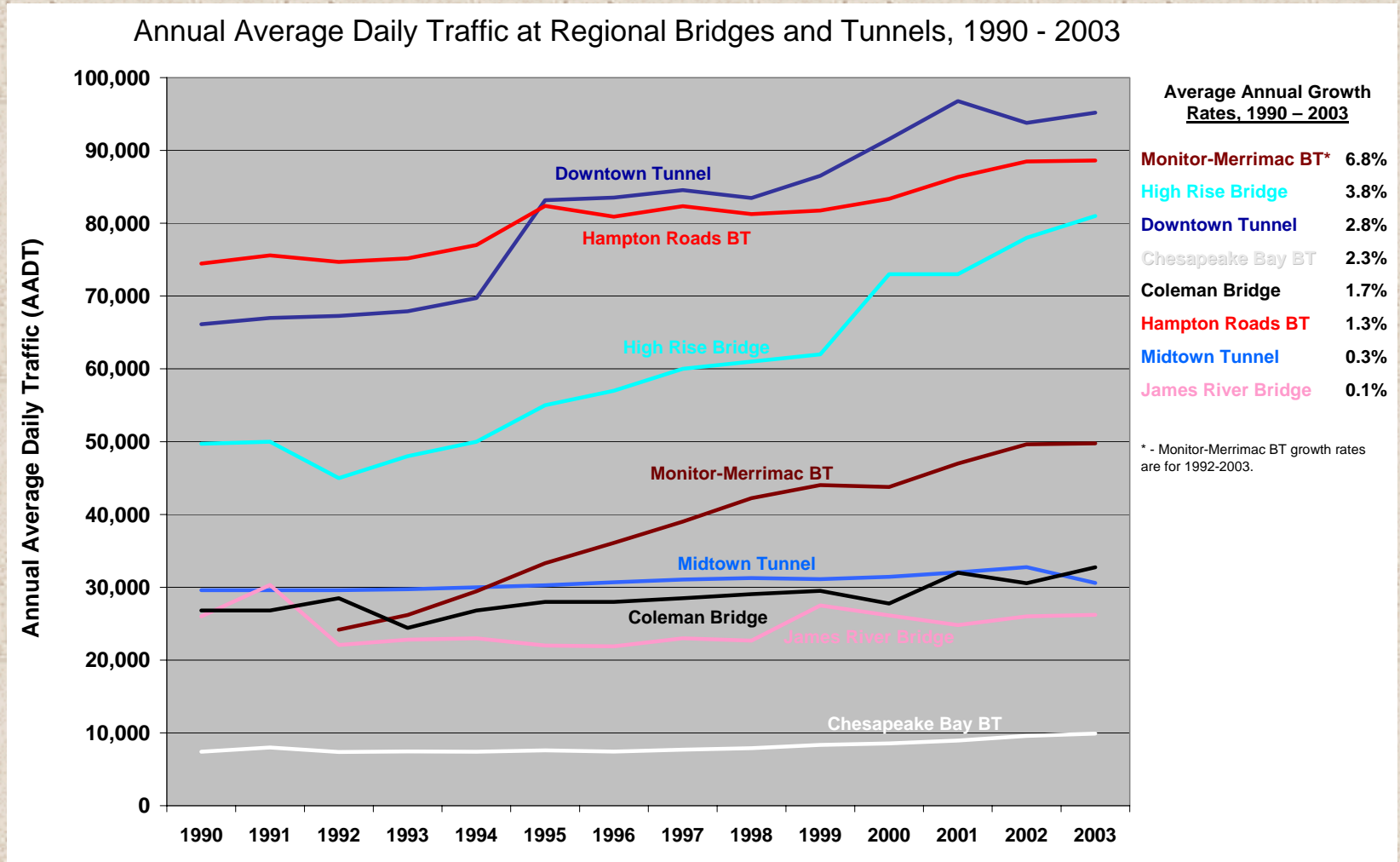
CMS Outline

- **Part I - State of Transportation (December 2004)**
- **Part II –**
 - **Bridge & Tunnel analysis (Today)**
 - **Comprehensive congestion analysis (March 2005)**
- **Part III –**
 - **Identification of most congested corridors**
 - **Congestion management strategies**

Regional Bridges and Tunnels



Annual Average Daily Traffic

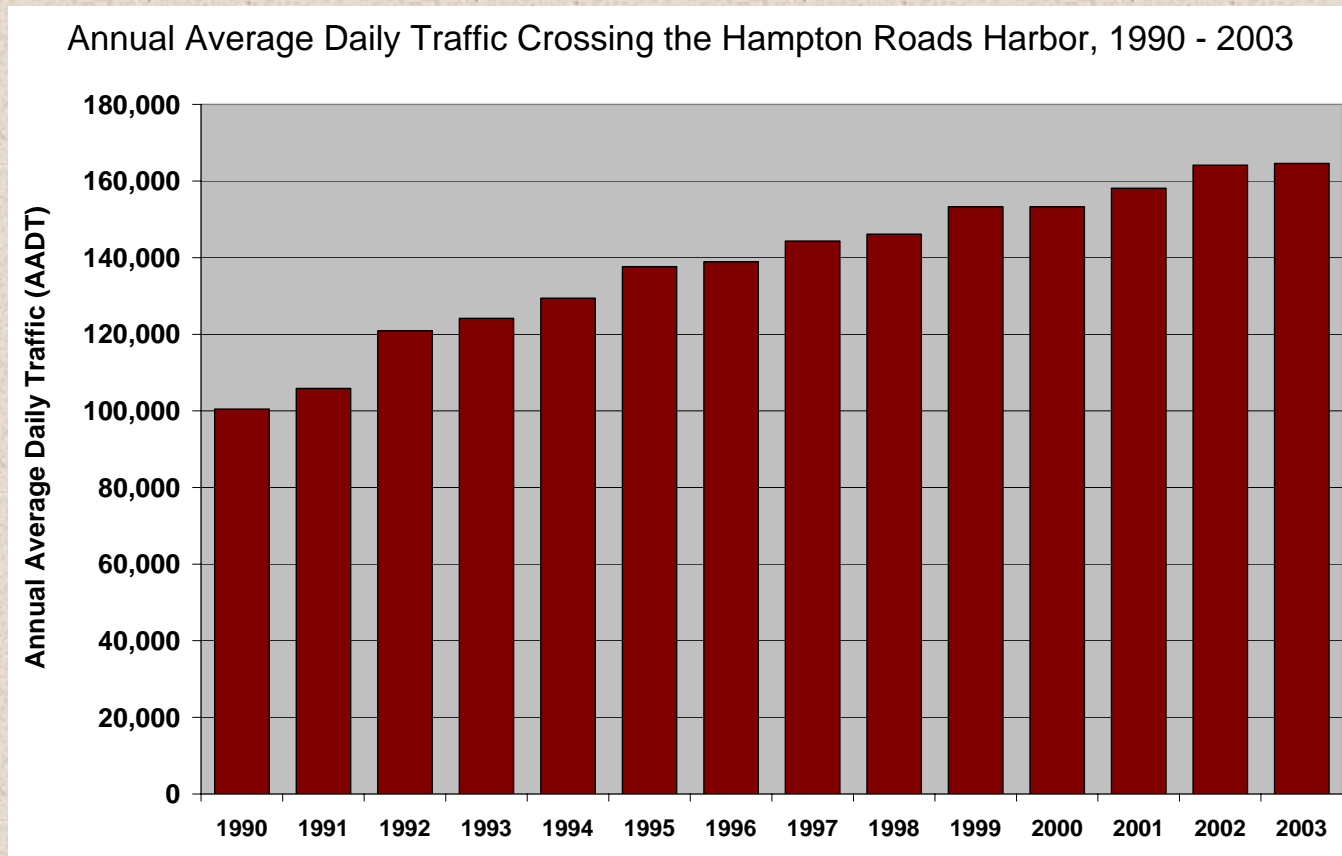


Data Sources: HRPDC Economic Outlook, VDOT. Some data is VDOT estimates. Downtown and Midtown Tunnel data excludes Sept. and Oct. 2003 due to Midtown Tunnel closure. James River Bridge data excludes 9/15/03 - 10/3/03 due to equipment failure.



Annual Average Daily Traffic

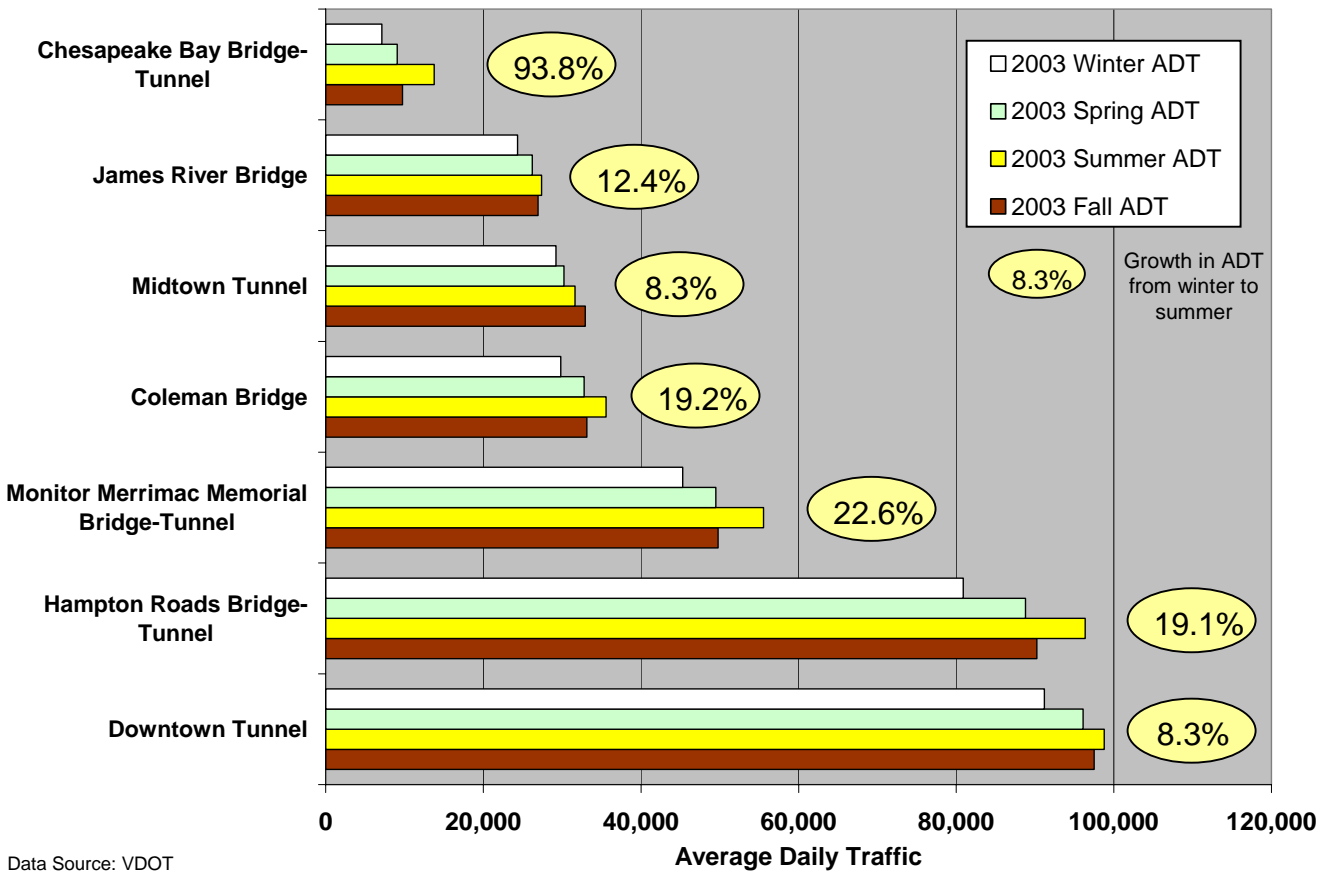
- The amount of traffic crossing the HR harbor increased 64% between 1990 - 2003.



Data Sources: HRPDC Economic Outlook, VDOT

Seasonal Usage

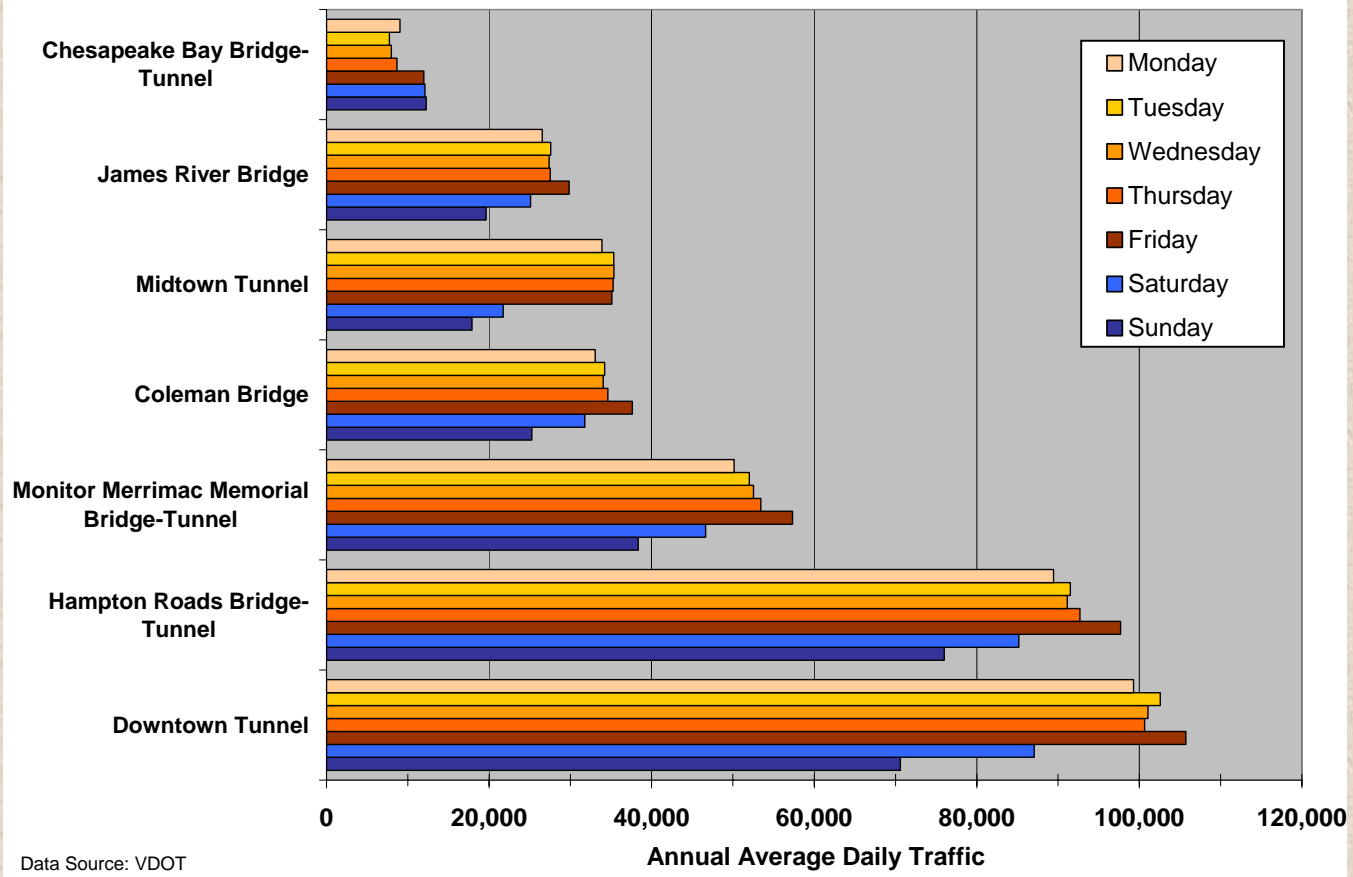
Seasonal Average Daily Traffic at Regional Bridges and Tunnels, 2003



Winter includes January-February and December. Spring includes March-May. Summer includes June-August. Fall includes September-November. All facilities exclude data from 9/18/03 – 9/21/03 due to Hurricane Isabel. James River Bridge data excludes 9/16/03 – 10/3/03 due to equipment failure. Midtown Tunnel data does not include September or October counts due to the effects of Hurricane Isabel.

Usage by Day of Week

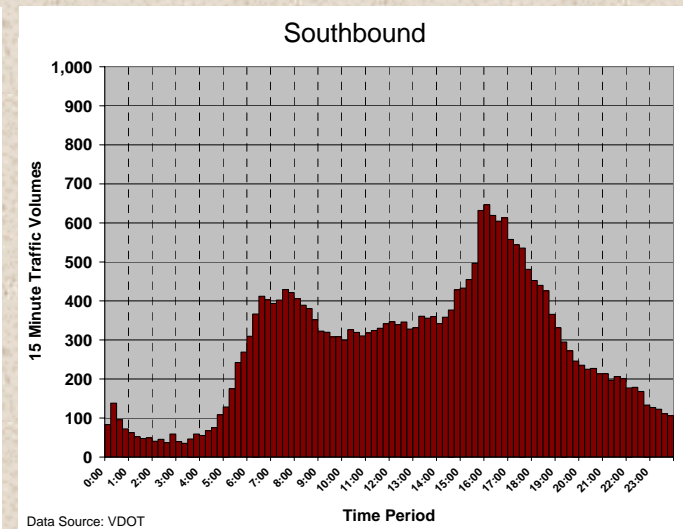
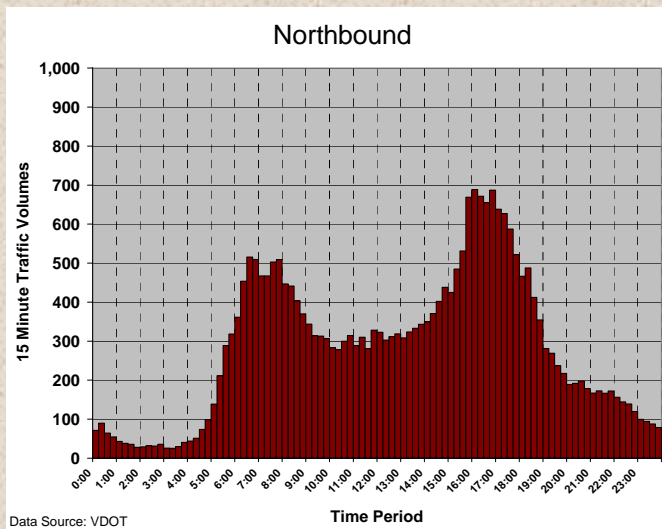
Annual Average Daily Traffic by Day of Week at Regional Bridges and Tunnels, 2003



All facilities exclude data from 9/18/03 – 9/21/03 due to Hurricane Isabel. James River Bridge data excludes 9/16/03 – 10/3/03 due to equipment failure. Midtown Tunnel and Downtown Tunnel data does not include September or October counts due to the effects of Hurricane Isabel.

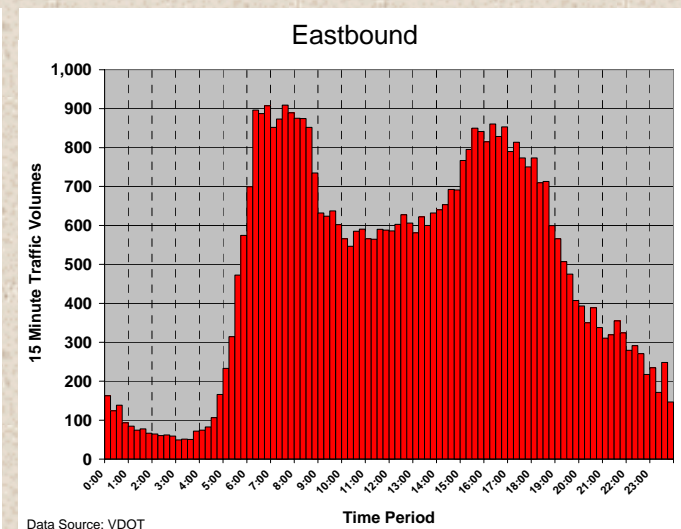
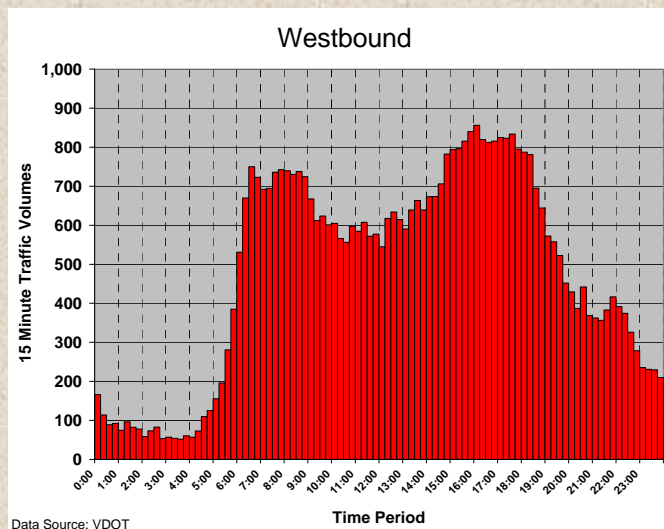
Usage by Time of Day - Findings

- **Monitor-Merrimac Memorial Bridge-Tunnel**
 - Similar travel patterns in both directions.
 - More heavily used in both directions during the PM Peak Period.
 - During the PM peak hour, the MMMBT carries 80% of the traffic the HRBT does.



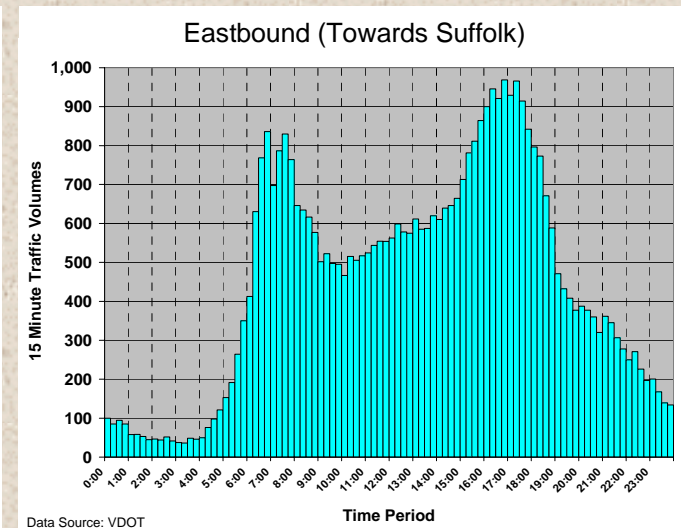
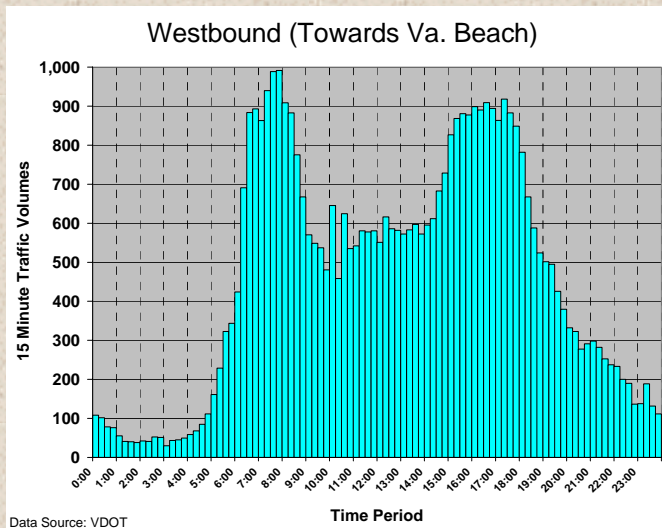
Usage by Time of Day - Findings

- Hampton Roads Bridge-Tunnel
 - Long PM Peak Period duration.
 - AM and PM peak hour volumes are similar.
 - Midday volumes are about 75% of the peak period volumes.



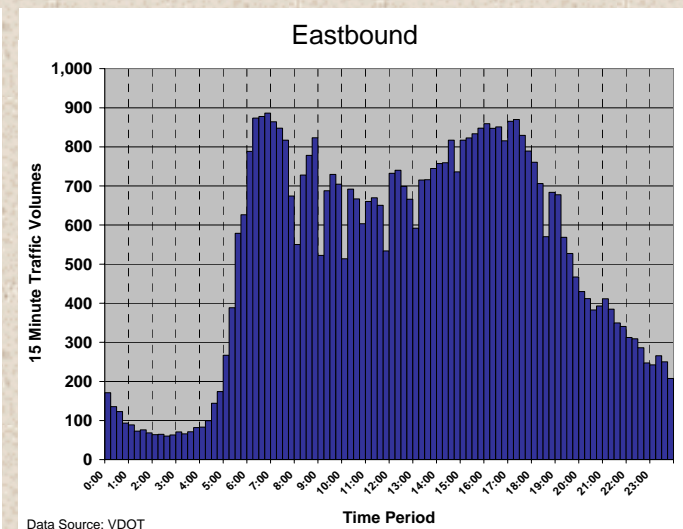
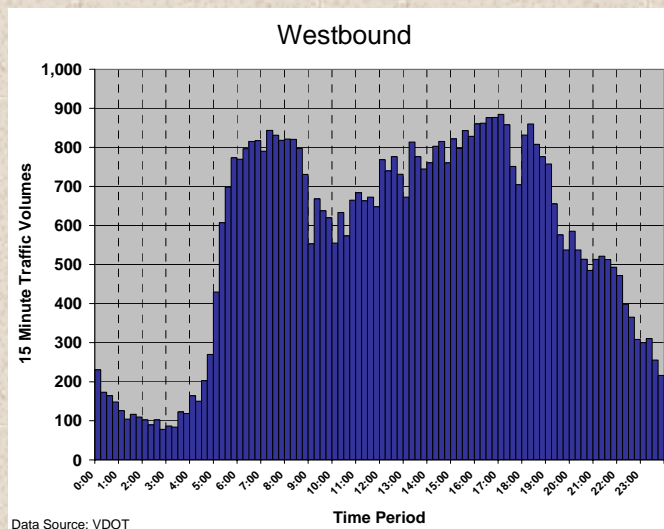
Usage by Time of Day - Findings

- **High Rise Bridge**
 - Carries more traffic during the peak hour than other analyzed bridges/tunnels.
 - Peak travel periods are shorter than at other bridges and tunnels.



Usage by Time of Day - Findings

- **Downtown Tunnel**
 - Long AM and PM peak period durations.
 - Peak hour volumes are comparable to the HRBT.
 - Noontime volumes are about 85% of the peak hour volumes.



Travel Speeds

- **Collected on congested facilities**
 - HRBT, High Rise, Downtown, Midtown
- **Three travel runs in each direction for each peak period**
 - October and November 2004
 - Tuesday - Thursday
- **Mainline speeds only**
- **Compared measured speeds versus speed limits to calculate delay**
- **Does not reflect delays due to incidents**

Travel Speeds

- **The Midtown Tunnel had the most recurring delay during both the morning and afternoon peak travel periods.**

Average Recurring Delays at Congested Bridges and Tunnels, 2004

			AM	PM
Midtown Tunnel	NB	High St to Brambleton Ave	18.4 min/veh	6.7 min/veh
	SB	38th St to Wesley St	0.9 min/veh	11.3 min/veh
Downtown Tunnel	WB	Ballentine Blvd to Effingham St	2.0 min/veh	7.5 min/veh
	EB	Frederick Blvd to I-464	6.4 min/veh	2.0 min/veh
Hampton Roads BT	WB	I-564 to Mallory St	1.6 min/veh	5.1 min/veh
	EB	I-664 to 15th View St	6.7 min/veh	7.2 min/veh
High Rise Bridge	WB	Military Hwy to I-464	6.8 min/veh	0.4 min/veh
	EB	Battlefield Blvd to George Washington Hwy	0.0 min/veh	1.2 min/veh

Safety

- There were over 10,000 traffic stoppages, 200,000 vehicle inspections, and 14,000 overheight vehicles at regional tunnel facilities in 2003.

Types of Traffic Stoppages Reported at Regional Tunnel Facilities, 2003

Reason for Traffic Stoppage	Downtown Tunnel	Hampton Roads Bridge-Tunnel	Midtown Tunnel	Monitor-Merrimac Mem. Bridge-Tunnel
Stalled Vehicles	1,015	984	233	689
Flat Tire	223	436	60	329
Out of Gas	423	252	80	252
Vehicle Escorts	84	193	110	2,574
Accident	673	217	73	32
Fires	10	5	0	1
Miscellaneous	39	423	1,019	68
Total Stoppages	2,467	2,510	1,575	3,945
Vehicle Inspections	48,795	79,613	13,572	71,271
Overheight Vehicles Stopped, Measured, and Turned Around	6,051	7,825	930	0

Source: VDOT.

Safety

- **The number of traffic stoppages at regional bridges and tunnels has mostly decreased over the last five years.**

Traffic Stoppages Reported at Regional Bridge and Tunnel Facilities, 1999 - 2003

Year	Downtown Tunnel	Hampton Roads Bridge-Tunnel	Midtown Tunnel	Monitor-Merrimac Mem. Bridge-Tunnel	James River Bridge	Coleman Bridge
1999	2,213	2,839	1,756	4,649	738 stoppages 739 bridge openings	29 stoppages 237 bridge openings
2000	2,313	2,750	1,723	4,441	541 stoppages 709 bridge openings	31 stoppages 232 bridge openings
2001	1,643	2,641	1,311	4,020	470 stoppages 664 bridge openings	26 stoppages 198 bridge openings
2002	2,335	2,751	1,811	3,744	468 stoppages 499 bridge openings	32 stoppages 275 bridge openings
2003	2,467	2,510	1,575	3,945	461 stoppages 434 bridge openings	20 stoppages 167 bridge openings

Source: VDOT.



HAMPTON ROADS
PLANNING DISTRICT COMMISSION