

# SPECIAL STRUCTURES BRIEFING

Stephen C. Brich, P.E., Commissioner of Highways

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# Special Structures Updates

- **Projects**
- **Health Index**

# Special Structure Projects

# Special Structures Fund – Facility

District	Special Structure	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
		\$ nearest thousand					
Bristol	460 Connector Bridge	0	0	0	0	0	200
	Big Walker Tunnel	3,011	3,640	7,250	7,000	12,091	6,916
	East River Tunnel	3,451	4,770	7,000	6,230	8,820	4,861
Fredericksburg	Eltham Movable Bridge	1,700	1,750	2,650	0	0	0
	Gwynn's Island Movable Bridge	8,670	7,125	0	0	0	0
	Norris Bridge	350	2,005	3,000	5,000	3,000	6,702
Hampton Roads	Berkley Movable Bridge	700	6,645	19,889	21,282	18,294	39,737
	Coleman Movable Bridge	0	2,700	0	0	0	0
	Hampton Roads Bridge Tunnel	23,675	19,501	23,881	15,157	360	400
	Hampton Roads Bridge Tunnel (New)	0	0	0	0	0	100
	Willoughby Bay Bridge	0	1,150	3,737	12,741	22,009	0
	High Rise Movable Bridge	1,520	10,000	0	0	0	0
	High Rise Bridge Approaches	0	0	0	0	0	100
	James River Movable Bridge	2,860	5,500	4,500	392	953	14,628
	James River Bridge Approaches	0	0	0	0	0	0
	Monitor Merrimac Memorial Bridge Tunnel	0	745	523	1,482	2,625	10,237
	MMMBT - Bridge - North Approach	0	0	0	0	0	300
	MMMBT - Bridge - Approach-South	0	0	0	0	0	100
	Chincoteague Movable Bridge	0	0	0	0	0	100
	Northern Virginia	Rosslyn Tunnel	3,463	5,435	4,500	5,500	5,000
Richmond	Benjamin Harrison Movable Bridge	3,650	7,150	2,300	5,794	5,795	1,661
	Varina-Enon Bridge	1,950	1,885	2,850	3,471	7,036	3,564
Salem	SMART Road Bridge	0	0	0	0	0	200
Statewide	Emergency Funds	5,000	0	0	0	0	0
<b>Grand Total</b>		<b>60,000</b>	<b>80,000</b>	<b>82,080</b>	<b>84,050</b>	<b>85,983</b>	<b>89,808</b>

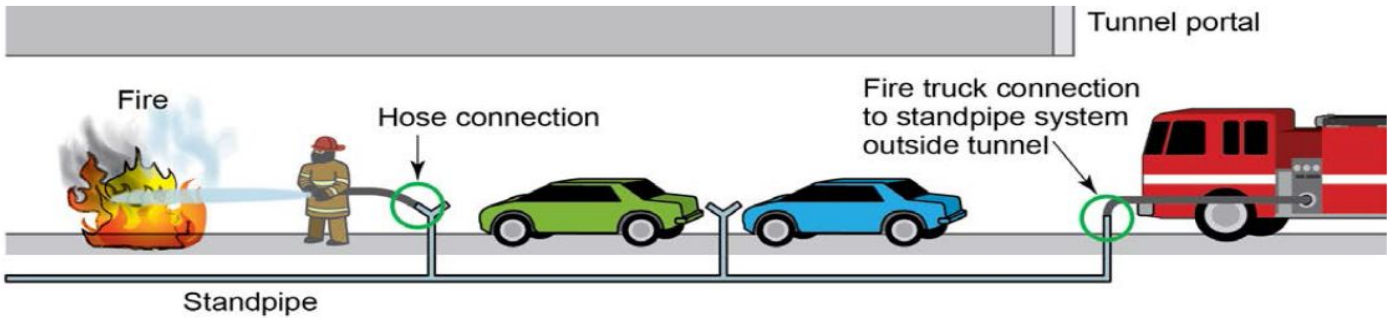
# Bristol – Big Walker and East River Mountain Tunnels



## Movable Exhaust Canopies



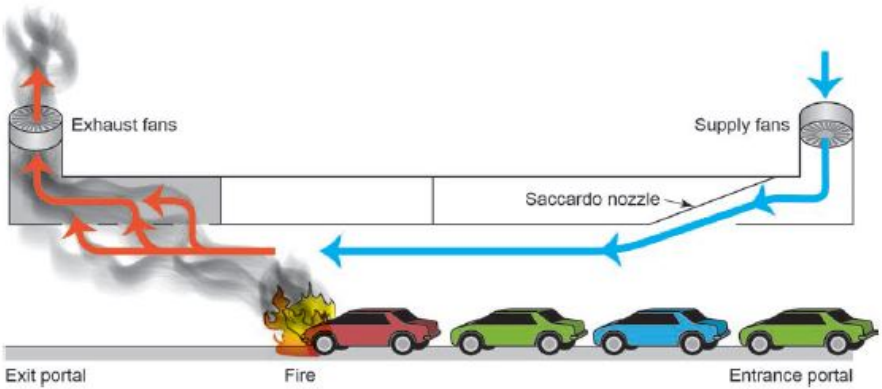
## Standpipe



## Fixed Fire Suppression



## Emergency Ventilation



# Bristol – Big Walker and East River Mountain Tunnels

## Major Fan Repair



## Structural Repair



# Fredericksburg – Gwynn’s Island Movable Bridge

Mechanical Repair - Jaw clutch disengages during operations and Worn Gear



Structural Repairs



Generator Replacement



# Fredericksburg – Norris Bridge

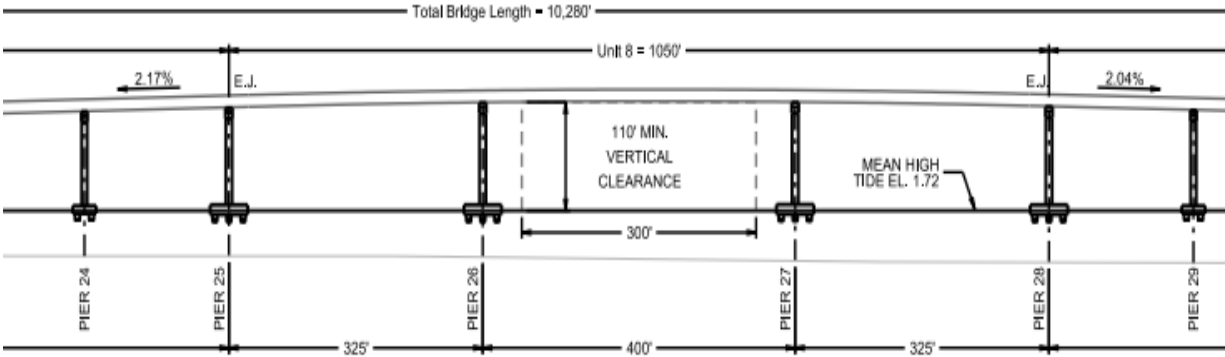
## Structural Repairs



## Geotechnical Investigation – Representative Picture



## Bridge Replacement Preliminary Engineering - Concept Drawing of Replacement Bridge





# Hampton Roads – Berkley Movable Bridge

Cross Girder Repair

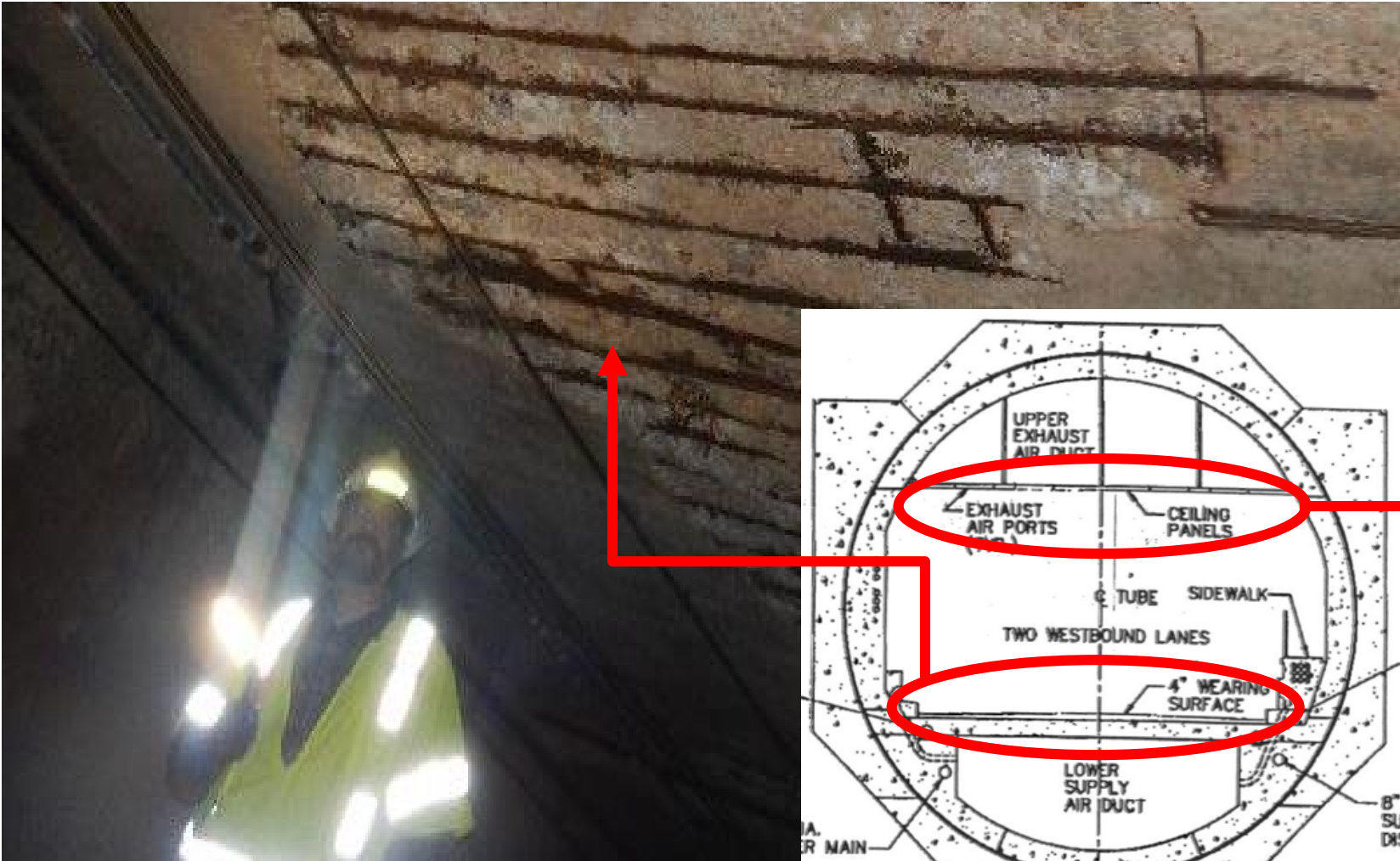


Drive



# Hampton Roads – Hampton Roads Bridge Tunnel

Concrete Invert Slab Repairs



Overheight Project



# Hampton Roads – High Rise Movable Bridge

Bascule Repairs (Machinery base, bearing seat and other repairs)

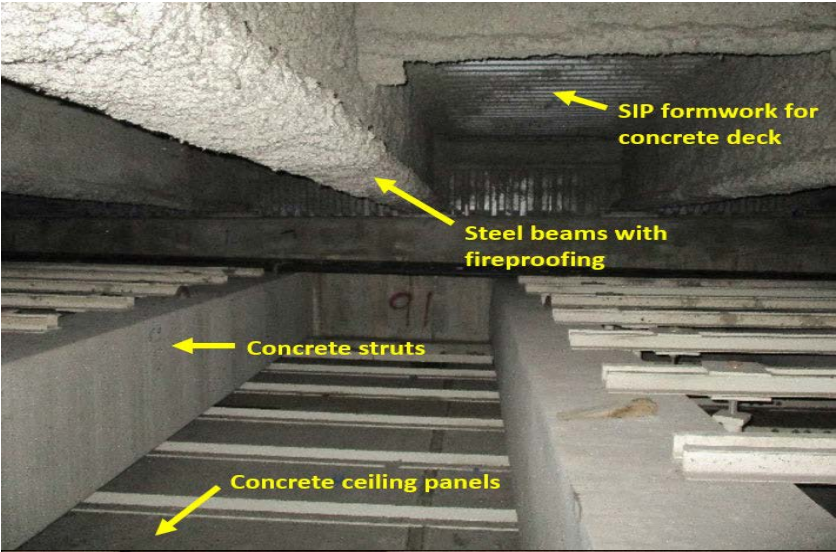


# Northern Virginia – Rosslyn Tunnel

Ceiling Tile Removal



Fireproofing



Structural Repair



# Richmond – Benjamin Harrison Movable Bridge

## Generator Replacement



## Span Lock



# Emergency Funds – \$5M

Set aside for the unknown

No current estimate

Ensures no plan disruption

## Examples:

- James River Bridge Lighting Strike – 2018
- East River Primary Power Cable – 2021



# Health Index

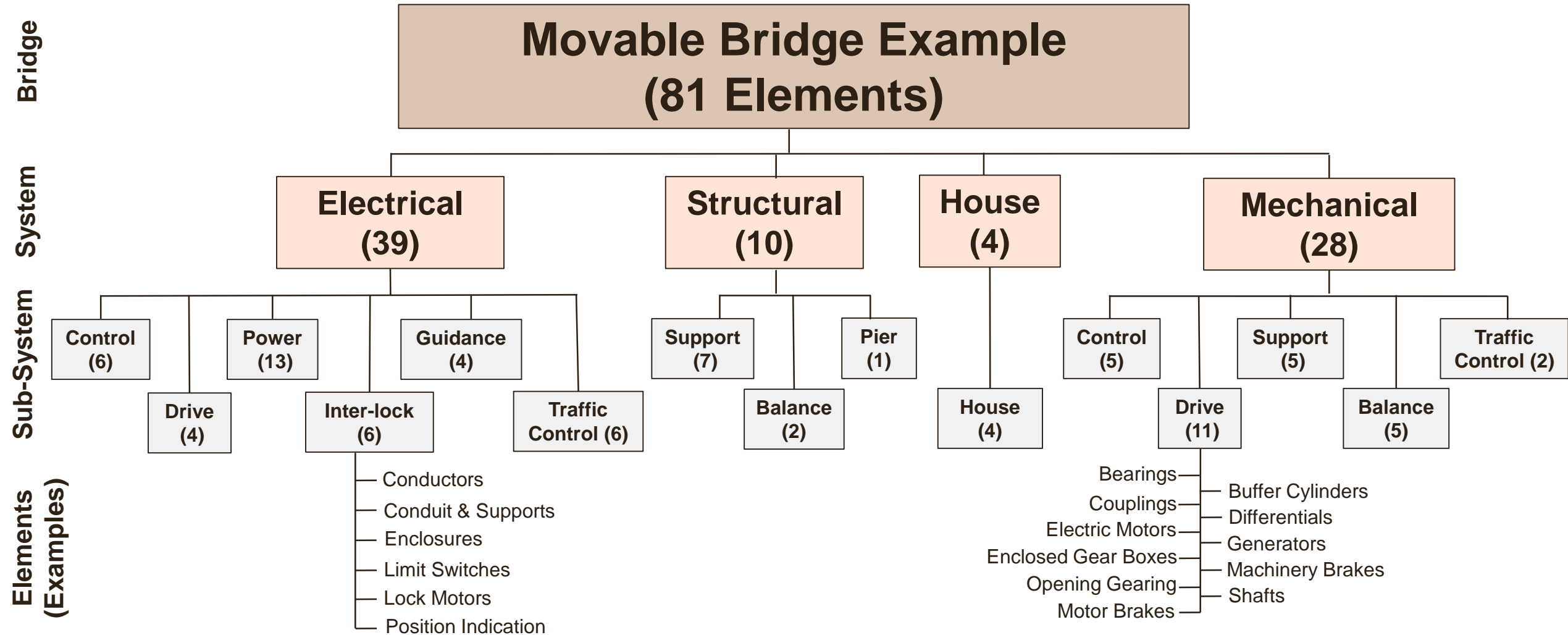
**Adopt a consistent and principle-based approach to structure evaluation and risk management to determine a structure's relative health**

# Health Index (HI) for Special Structures

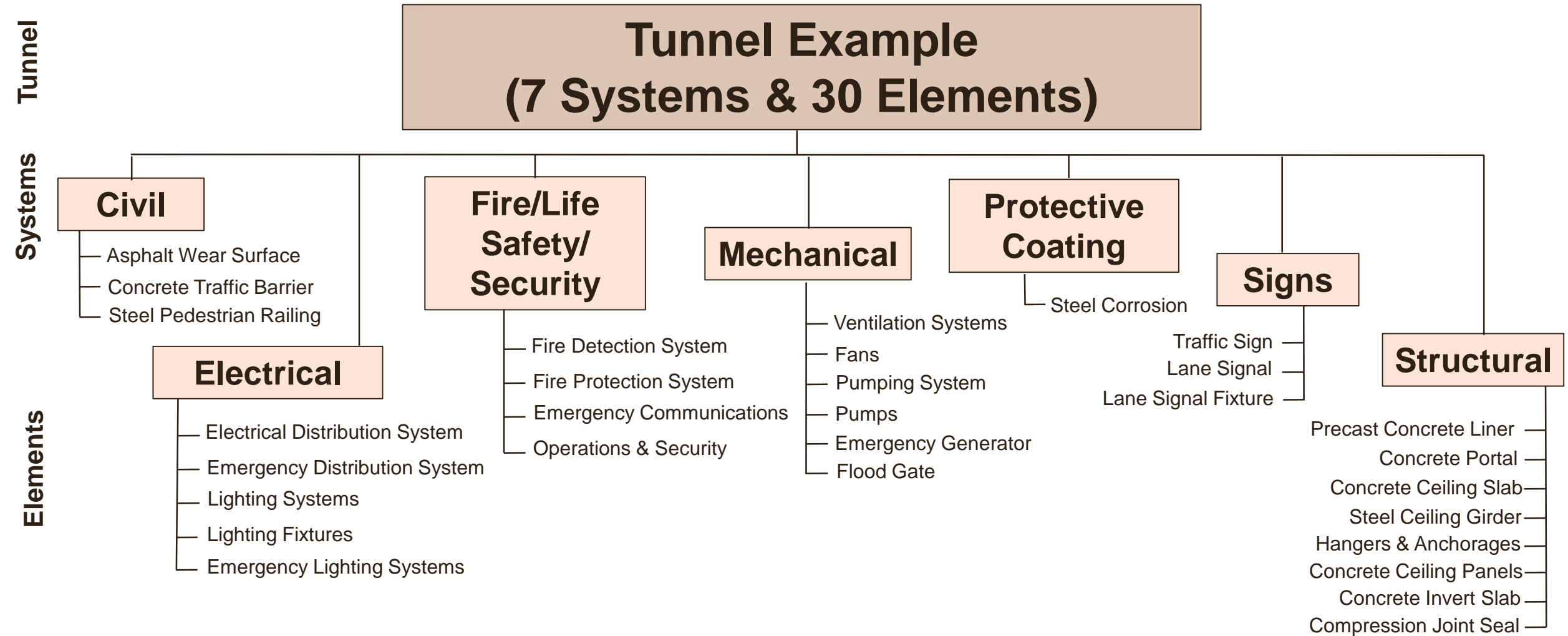
- **Development**
  - Tunnels
  - Movable Bridges
- **Outreach efforts**
  - No examples of HI for these types of structures
- **Presented to AASHTO Technical Subcommittees**
  - Positive reinforcement
- **Lessons learned USACE risk assessment protocol**
- **HI measures**
  - **relative health** of individual structures
  - **relative health** of individual systems



# Proposed Health Index – Attributes Used



# Proposed Health Index – Attributes Used



**QUESTIONS?**

