NEPA, TDOT and the Benefits of Accelerated Project Delivery

Jim Ozment, P.G.
Senior Environmental Consultant
K.S. Ware and Associates
Today’s Presentation

Smart Cities and Transportation
NEPA Process
Reasons for Project Delays
Accelerated Project Delivery Methods
Benefits of Faster Delivery
Dilemma
How to Balance Benefits of Growth vs. Impacts

**BENEFITS**
- Jobs
- Revenue
- Access to Amenities
  - Titans
  - Predators
  - Symphony

**IMPACTS**
- Congestion
- Pollution
- Overcrowding
- Stress
Dilemma
How to Balance Benefits of Growth vs. Impacts

Balance
National Environmental Policy Act of 1969
NEPA

The National Environmental Policy Act of 1969 (NEPA) was passed by Congress in 1969 and signed into law on January 1, 1970 by President Richard M. Nixon.
NEPA

To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation;
NEPA

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What Drove Development of NEPA?
Federal Environmental Laws and Executive Orders affecting Transportation
Los Angeles 1960
Beijing, China
Today
Cuyahoga River on Fire
Interstate Construction
Federal Environmental Laws and Executive Orders affecting Transportation

CUMULATIVE NUMBER OF LAWS AND AMENDMENTS

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<th>Year</th>
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NEPA “Umbrella”

• Title VI of Civil Rights Act of 1964
• Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
• Americans with Disabilities Act
• Executive Order 12898 (Environmental Justice)
• Section 4(f) of USDOT Act (49 USC 303)
• Clean Air Act
• Safe Water Drinking Act
• Farmland Protection Policy Act
• Solid Waste Disposal Act
• Resource Conservation and Recovery Act of 1976 (RCRA)

• CERCLA (Superfund)
• Emergency Planning and Community Right to Know Act of 1986 (SARA)
• National Historic Preservation Act
• Economic, Social and Environmental Effects of Highways
• Highway Noise Standards
• Public Hearing Requirements
• Archaeological and Historic Preservation Act
• Archaeological Resources Protection Act
AND MORE…
What Impacts Need to be Considered

**Human Environment**
- Social
- Economic
- Historic
- Archaeological
- Visual
- Noise
- Recreational
- Air Quality
- Environmental Justice
- Indirect and Cumulative

**Natural Environment**
- Streams
- Wetlands
- Rare & Endangered Species
- Floodplains
- Terrestrial
- Caves
- Sinkholes
- Hazardous Materials
- Geotechnical Study
Reasons for Project Delay

- Lack of Funding: 18%
- Low Priority: 15%
- Local Controversy: 13%
- Complex Project: 12%
- Res. Agen. Review: 10%
- FWS/ESA: 8%
- Section 106: 8%
- Wetlands: 2%
- Change in Scope: 2%
- Threat of Litigation: 2%
- HazMat: 1%
Accelerated Project Delivery

Win/Win

- Reduce Costs ?
- Critical Need ?
- Reduce Impacts ?
Accelerated Project Delivery

- Safety – Work Zone, Workers, Commuters
- Lessen Congestion
- Reduce Delays
- Minimize Impacts to Air Quality
- Minimize Social and Economic Impacts to the Region
- Minimizes the Use of Resources – Fuel
State Route 70
Bridge over Clinch River
Hancock County
Built Between 1927 and 1929
The Need

- Replace structurally deficient bridge
  - Sufficiency Rating of 6
- Avoid/minimize environmental impacts
- Limit social impacts
Options

- Replace with a new bridge on current alignment
- Rehab/repair existing bridge
- Construct new bridge adjacent to existing
Detour Route
Kyles Ford to Rogersville
Human Environment Impacts

- Long commuter detours (1 of 2 bridges in Co.)
- Substantial economic impacts to commuters
- Impacts to emergency services
- Impacts to schools
- Local business/tourist impacts
Environmental Constraints

- Potential Archaeology Site (Red)
- Permanent Conservation Easement
- Shoal Area
- Entire River is a Mussel Sanctuary
- Historic Bridge
- Hazmat Site

20 federally listed species of mussels
- 4 with critical habitat present
- 4 candidates for federal listing
2 federally listed fish species
- 1 with critical habitat present
Environmental Constraints

- Required significant coordination with resource agencies
- Redesign of bridge to avoid impacts to the river (no piers in the river)
- Additional vigilance to ensure BMPs were in place to prevent impacts to the river
- Increased inspections by third party inspectors to ensure compliance with permit requirements
Success

- By working closely with agencies, TDOT was able to design and build a new bridge adjacent to the existing structure.
- Historic bridge will remain as a tourist attraction.
- Detour need was eliminated.
- Business impacts reversed.
- Emergency service options maintained.
Drilling shaft for pier on Kyle’s Ford bridge
North pier cap of Kyle’s Ford bridge formed and ready to be poured
Cap for north pier of Kyle’s Ford bridge completed
Setting beams on Kyle’s Ford bridge.
Setting beams on Kyle’s Ford bridge.
Deck being poured on Kyle’s Ford bridge.
Containment system on Kyle’s Ford bridge during deck pours.
Mussel and madtom impressions on Kyle’s Ford bridge rails.
Accelerated Project Delivery

- Design - Build
- CM/GC - Construction Manager/General Contractor
- ABC – Accelerated Bridge Construction
- Working at Night
Estimating Direct User Impacts

- Commuters
- Direct Effects on Business
- Schools
- Access to Hospitals
- Emergency Response Times
- Air Quality
- Tourism
INRIX Roadway Analytics identified the worst traffic hotspots in America’s 25 most-congested cities.
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Estimating Direct User Impacts

- **Vehicle Operating Costs**
  - Change in mileage
  - Change in idling

- **Travel Time**
  - Change in time to travel further (VHT)
  - Change in time due to more congestion
  - (Delay)

- **Safety**

- **Vehicle Operating Costs**
  - 50 cents/mile
  - 2 mile detour
  - 50,000 trips per day
  - $50,000 x 1.00 = $50,000/day
  - 2 years @ 260 work days/yr
  - 520 days x $50,000 = $26,000,000
Direct Effects

- **Example 1: Social**
  - Leave 30 minutes earlier, arrive home 30 minutes later

- **Example 2: Economic**
  - Truckers: Local Delivery - 5 trips a day
  - Each trip is 30 minutes each way
  - Load and unload in 30 minutes
  - Truck drivers can only work 8 hour days
  - Paid by the load
Direct Effects

- Business Trips

  1.5 hrs per trip $\times$ 5 Trips = 7.5 hrs
  
  Construction Delays add 10 minutes
  
  Add 1:40
  
  Can’t make 5 trips in 8 hours
  
  Loses 20% of daily income
Questions?