Charting the Course

for the future of Interstate 95 in Pennsylvania

A Report By:
Interstate 95 Senior Advisory Group

February 2010

Executive Summary

The Charge

Current programmed capital projects can no longer meet the demands of aging infrastructure with traditional design and funding solutions. In order to accelerate reconstruction and rehabilitation, the Interstate 95 (I-95) Senior Advisory Group (SAG) was tasked to explore alternative approaches to address the current challenges and better meet future needs of Pennsylvania's I-95 corridor.

The Goals

To provide stakeholders and decision makers with alternative design, build, financial and maintenance approaches currently being deployed in other construction and geographic settings which have potential to save money (**ECONOMICAL**), save time (**EFFICIENT**) and/or make a better I-95 for the next generation of users and neighbors (**ENCOMPASSING**).

The Current Program

The Pennsylvania Department of Transportation (PennDOT) developed a strategy to break-up the 51 miles of I-95 in Pennsylvania into more manageable sections. Corridor priority for reconstruction was based on the condition and age of bridges and pavement as well as crash data. The highest priority sector has been assigned the letter A. This sector is located between Race Street and Bleigh Street in the City of Philadelphia. Design for Sector A is currently moving forward under a program which:

- ✓ Construction time of 10 years based on $200 million per year with a total project estimate of $2 billion.
- ✓ Maintenance & Protection of Traffic Plan maintains three lanes in each direction during rush hours, limits lane reductions in off-peak hours and keeps all ramps open.
- ✓ Fifteen separate construction contracts included as part of five design packages.
- ✓ Two off-site contracts have are already been let.

The Senior Advisory Group urges the Commonwealth of Pennsylvania to consider making the necessary investments to create a more economical, efficient and encompassing I-95 corridor.

Innovative Concepts & Techniques

The SAG has developed a variety of ideas and techniques that go beyond the current program. The following are the most innovative of these ideas and techniques that should be explored:

CONTRACT SIZE	Create one, large contract for entire 51 miles or increase individual contract value to $500M to increase competition and encourage broad local, national and global competition.
CM AT RISK	Shift overall risk to private sector Construction Program Manager (CM) for selection, management and oversight of all contractors.
LOW BID + USER COST	Select bid winner based on a combination of project costs and user costs.
TOLL/HOT/ MANAGED LANES	Dedicate Tolled/HOT/Managed Lane(s) that charges through traffic and allows congestion management by varying rates at peak hours. Revenue generated could be used to leverage private investment in the corridor.
CLOSURE OPTIONS	Consider Full or Partial Closure of roadway to accelerate construction time resulting in significant savings in terms of time and expense while delivering improvements to users faster and enhancing design & livability for residents.
CMGC	DOT selects Construction Manager (CM) and General Contractor (GC) to work corroboratively on planned development. DOT & Contractor prepare independent estimates. Process saves time, dollars & reduces disputes.
A+B CONTRACTING	Require time be a key condition of the contractor selection criteria by using the A+B method, where A is the unit cost and B is time.
TRUCK/TRANSIT LANE	Require a dedicated lane for Trucks and Transit during Full or Partial Closure option to reduce congestion and minimize impacts on local detour roads.
COMFORT INDEX	Reduce user frustration by providing 'real time' information to help identify delays, crashes, restrictions, etc. Enable users to make more informed decisions about alternate routes and modes.
PUBLIC INPUT	Gain public buy-in and support through intense, advanced public involvement which educates the community and seeks input on project purpose, benefits and solutions.
LIVABLE COMMUNITY	Include sustainable design elements, context sensitive solutions and livability in design and construction of I-95 improvements.

I-95 Overview

The I-95 corridor follows the east coast from Florida to Maine. Of its 1,917 miles, 51 miles are located in the Commonwealth of Pennsylvania between the Delaware and New Jersey state lines. It parallels the Delaware River for its entire route through the city of Philadelphia and its suburbs to the north and south and as a result received the alternative name "Delaware Expressway".

While planning for this corridor began in the 1930s, opinions differed for decades on form, function, and funding of this interstate segment. Consideration included landscaped parkway or industrial express highway, a Delaware 'Skyway' or covered roadway and a freeway or toll way. Construction of the 51 miles was first initiated in 1959. The 1956 passage of President Eisenhower's 90% federally funded interstate highway program abruptly resolved the debate on "Free or Toll", incorporating the Delaware Expressway into the interstate network. Nonetheless, the construction was undertaken in 'fits and starts', as issues surrounding land acquisition, community opposition to design and roadway access plans, federal litigation and cost increases delayed completion of the entire 51 miles until 1985.

Then...

A 1955 report entitled Delaware Expressway: Free or Toll was completed by the Bureau of Municipal Research for the Philadelphia City Commission and focused on Pennsylvania's proposed Delaware Expressway linking the interregional highways planned for the east coast [today's I-95].

- ✓ The sum total of available and foreseeable highway funds is inadequate to the total need.
- ✓ A toll expressway will be completed with greater dispatch than would a free road.
- ✓ The Delaware Expressway should be a great industrial and commercial highway, with primary emphasis upon its contribution to the basic economy of the city and region.

Now...

In September 2009, the Delaware Valley Regional Planning Commission released Connections: The 2035 Regional Plan for a Sustainable Future. The report found:

- ✓ A $45 billion gap between regional transportation needs and anticipated funding levels.
- ✓ Scheduled improvements of I-95 viaducts in South Philadelphia for 2026-2035.
- ✓ Targeted four strategies essential for a sustainable future:
  - Manage growth and protect natural resources
  - Develop livable communities
  - Build an energy-efficient economy
  - Establish a modern transportation system

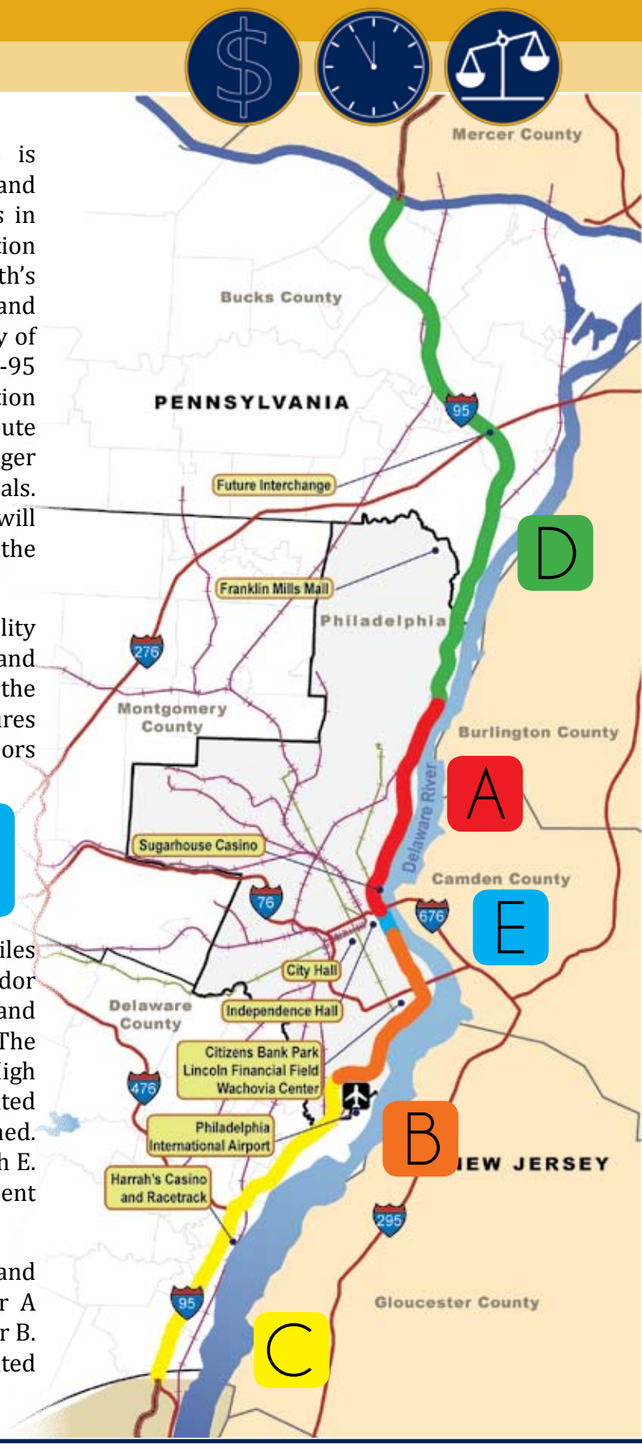
As reconstruction of Pennsylvania's now aging I-95 is initiated, many of these challenges of form, function and funding again require the attention of all stakeholders in the future viability and utility of this critical transportation corridor. This corridor which links the Commonwealth's most populous city with a tri-state metropolitan region, and the entire east coast of the nation encompasses an array of land uses, neighborhoods and transportation facilities. I-95 is also a critical intermodal road, linking transportation facilities including ports and airports, local fixed-route transit lines and services, regional and national passenger and freight rail, local residential streets and major arterials. Any decision made effecting the flow of traffic on I-95 will result in a domino effect on all means of mobility in the region.

While the road has become an integral part of the mobility fabric of the region over the past 50 years, the years and usage of Pennsylvania's I-95 have started to take a toll on the condition and capacity of the roadway and bridge structures creating disruptions impacting both users and neighbors throughout the corridor.

A B C D E

PennDOT developed a strategy to break-up the 51 miles of I-95 into smaller more manageable sections. Corridor priority for reconstruction was based on the condition and age of bridges and pavement as well as crash data. The highest priority sector has been assigned the letter A. High priority sectors have an urgent need to be rehabilitated because of the conditions of the factors previously mentioned. Subsequent priority sectors follow with letters B through E. Lower priority sectors can be kept serviceable for a sufficient period of time with maintenance and repair.

Estimated costs of capital improvement projects and maintenance are scheduled to be $2 billion for Sector A with long term needs estimated to be $4 billion for Sector B. Capital improvements to Sectors C, D and E are not estimated to begin until 2030.

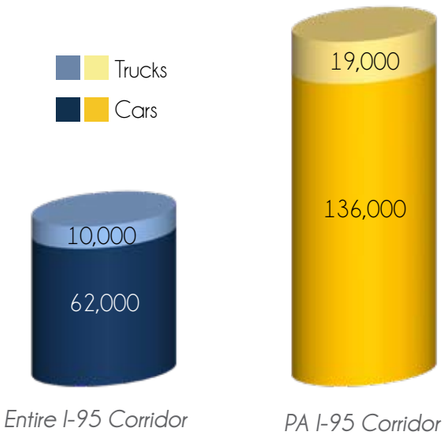


Traffic & Safety

The 51 miles of 1-95 within Pennsylvania serve a variety of users. The I-95 corridor has a diverse mix of national, regional, local commuter and truck/freight traffic. This mix of users is concentrated in the highly urbanized section in and around the city of Philadelphia (Sectors A, E and B,). This aging infrastructure with many outdated design features and poor pavement conditions, combined with high volumes and speed create an often uncomfortable driving experience with a significant amount of congestion.

Average Daily Traffic (ADT) & Average Daily Truck Traffic (ADTT)

The Pennsylvania I-95 corridor has more than twice the average daily traffic (ADT) compared to the rest of the I-95 corridor (see graphic, right). The average daily truck traffic (ADTT) is most heavily concentrated in Sector A, but is typically more than 10% of the traffic volume.



Driver Comfort

The international roughness index (IRI) is used to define a standardized roughness measurement for pavements. This generally correlates to the amount of vibration and comfort of the ride to the motorist. More than half of the pavement surface in Sectors A and B is considered poor while less than 10% of the pavement in Sectors C and D is currently considered poor.

Major Traffic Disruptions

I-95 has had some significant emergency closures for repair. These events have caused significant short term traffic congestion for motorists attempting to find alternative routes. The following are two of these major traffic disruptions events:

1996 Tire Fire

In March 1996, a tire fire under the I-95 overpass in Port Richmond shut down a one-mile stretch of the highway. The highway was closed for a week for repairs and structure replacements resulting in $6 Million in damage.

2008 Pier Crack

A two-mile stretch of I-95 was shut down in March 2008, after a 6-foot crack in a concrete pillar was discovered. In order to prevent possible collapse, I-95 was closed between Exits 23 and 25. The two-mile stretch was closed for the next two days as PennDOT began emergency repairs. The repairs cost $650,000.

Traffic Crashes

On average, the crash rate from 2003 to 2007 along the entire I-95 corridor in Pennsylvania is significantly greater than the statewide average for other Urban Interstates. At certain interchanges (noted below), the crash rate approaches four times the statewide average. These traffic crash rates present significant public safety issues that must be addressed in the I-95 corridor.

- Route 413 Interchange
- Cottman-Princeton Interchange
- Broad Street Interchange
- I-476 Interchange

Congestion

In Pennsylvania, the average number of people per square mile is 274. This is three times more densely populated than the U.S. average. The average of states in the I-95 corridor is 272 people per square mile.

Population in the I-95 Pennsylvania corridor is expected to increase 10% in the next 25 years; 20-30% growth is expected in Bucks and Delaware counties.

Without any further improvements to the corridor, in 2035, virtually 100% of the segment in the city of Philadelphia would be under heavy congestion. Portions of the corridor in the suburban regions would increase congestion from the current 26% impacted to more than 55%.

Asset Conditions

The I-95 corridor in Pennsylvania is a complex network of bridge structures and roadway. Of the 51 miles of I-95 in Pennsylvania, 23% are located on bridge structures, with the remaining being roadway. Both assets are quickly deteriorating and in need of major rehabilitation. Some segments are beyond the point of maintenance. Bridge structures and roadway need to be repaired/reconstructed before they become unsafe and unusable.

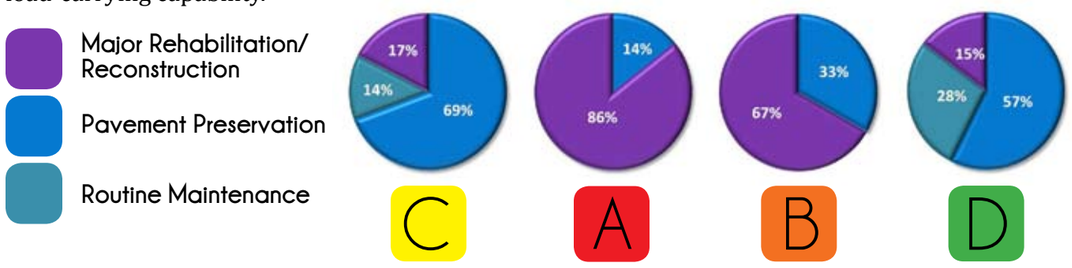
Structures

A unique feature of I-95 in Pennsylvania is the amount of the corridor that is located on structure. These structures elevate the highway over local roads, rail lines, and other local features. In recent years, the condition of the structures has been a major issue as they continue to deteriorate and come to the end of their useful life. The condition of structures in each sector was one of the major factors used to determine their priority for reconstruction.

Pavement Needs

PennDOT uses a pavement management system to determine the overall condition of highways, including I-95 in Pennsylvania. To do this, PennDOT uses Systematic Technique to Analysis and Manage Pennsylvania's Pavements (STAMPP), an automated condition survey that collects distressed data about the pavement surfaces such as patching, cracking, rutting, raveling, edge deterioration and weathering. Software is used to analyze the collected data to determine the appropriate pavement maintenance treatment.

PennDOT divides the pavement needs into three categories: Routine Maintenance, Pavement Preservation and Major Rehabilitation/Reconstruction. Routine Maintenance consists of day-to-day activities that maintain and preserve the condition of the highway system at a satisfactory level of service. A Pavement Preservation program addresses pavement while it is still in good condition and before the onset of serious deterioration. Major Rehabilitation/Reconstruction consists of structural enhancements that extend the service life of an existing pavement and/or improve its load-carrying capability.



The charts show that the highest priority Sectors (A and B), have unsatisfactory pavement requiring mostly major rehabilitation/reconstruction. The remainder of the pavement in Sectors A and B requires pavement preservation.

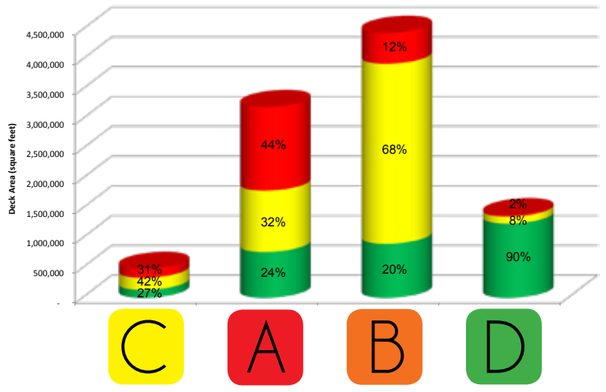
Bridge Condition Ratings

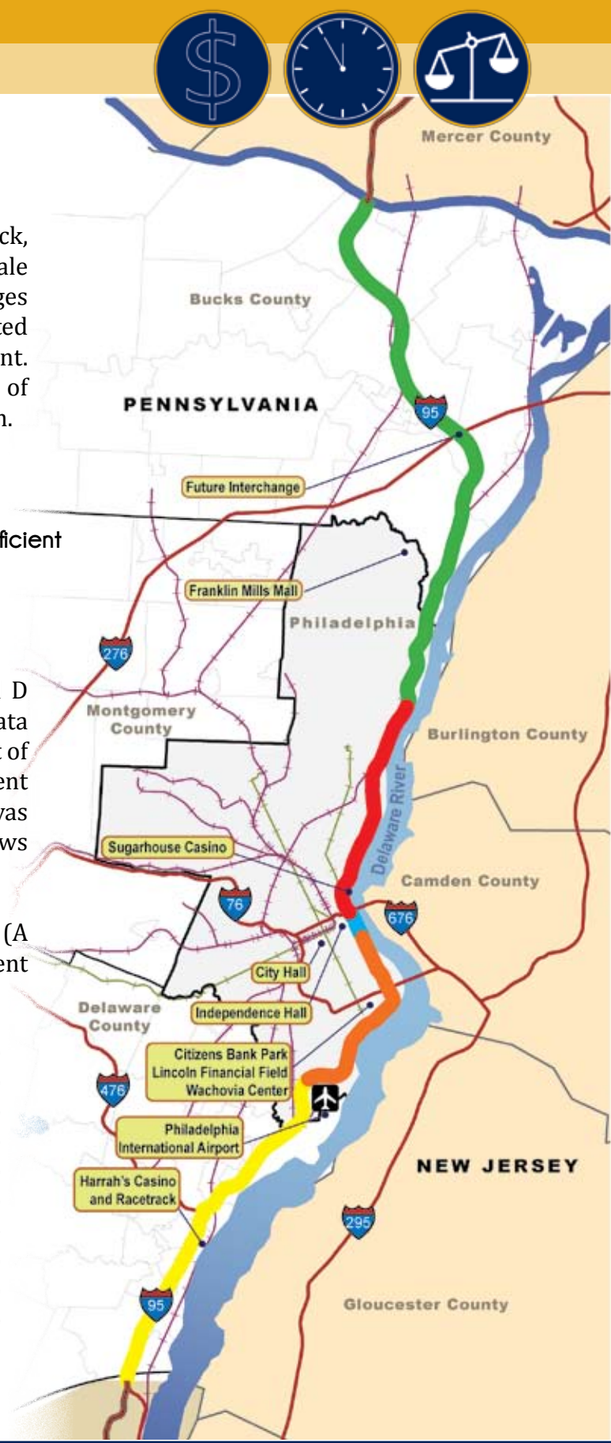
PennDOT assigns a condition rating to the deck, superstructure and substructure of bridges on a scale from 0 to 9, with nine being excellent condition. Bridges that have a rating of four or less for any of the listed components are considered to be Structurally Deficient. While this does not mean the bridge is in danger of collapse, it does indicate the need for remedial action.

0-4	Structurally Deficient Major Rehabilitation Required
5	Potential to become Structurally Deficient Minor Rehabilitation Required
6-9	Good Condition Maintenance Required

The condition of the bridges in Sector A, B, C and D were determined using PennDOT condition rating data (Sector E does not contain any bridges). The amount of structurally deficient, potentially structurally deficient and good condition deck area for each Sector was charted (see below). The height of each column shows the amount of deck area in each Sector.

The charts show that the highest priority Sectors (A and B), have the largest amount of structurally deficient deck area and the largest amount of total deck area.





Sector A Evolving

Future Development

The Delaware Riverfront is one of the fastest evolving areas of development in the city of Philadelphia. This is especially true in Sector A. Former industrial tracts along the river are being redeveloped for higher density, mixed-use commercial and residential uses. Community and local development organizations are looking forward with new plans and visions to improve the livability of their neighborhoods and protect both natural and man-made resources in new more sustainable ways. Consistent among all these efforts is a view that I-95 has been a barrier to waterfront access for businesses, visitors and residents.

Tioga Marine Terminal

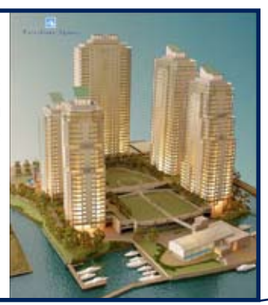
Once used as a port during WWII, the Tioga Marine Terminal is a major facility for Philadelphia's Chilean fruit business. The terminal's gantry cranes and mobile harbor crane can handle an array of containers and breakbulk cargoes and allows immediate access to I-95, I-76 and rail lines.

Sugarhouse Casino

The casino complex Phase 1 estimated at $550 million will include a casino, retail & dining outlets, and free parking in a 3,000 car garage. Future phases include a 500-room hotel & spa and event center. It is estimated the casino will generate in excess of $1 billion in gaming taxes over the first five years of operation.

Waterfront Square

The Waterfront Square is a luxury high-rise condominium and spa located on the Delaware River. This five-tower, 966-unit gated community boasts waterfront living, valet parking, and riverside jogging trails.



Sector A is a 7 mile stretch of I-95 located between Race Street and Bleigh Street that contains some of the most deteriorated assets in Pennsylvania's I-95 corridor. The current improvement program is estimated to take 10 years, expending $200 million a year, employing proven traditional design, procurement and public funding resources and approaches. This amount does not take into account annual maintenance costs, estimated to be an average of $10 million per year, as a result of routine and additional maintenance necessary for the deteriorating assets throughout the Sector.

Reconstruction

PennDOT is currently focusing its efforts on the reconstruction of Sector A as opposed to the other Sectors within the corridor. While Sector A is not estimated to be the most costly, it has:

- ✓ Highest volume of average daily traffic (ADT) - Two-way ADT over 180,000 vehicles per day
- ✓ 85% of roadway with an International Roughness Index (IRI) of Fair or Poor
- ✓ Largest percentage of pavement area requires major rehabilitation or reconstruction (86%)
- ✓ Total bridge deck area of 3.2 million square feet (Sector B contains 4.4 million square feet)
- ✓ Largest current percentage of structurally deficient deck area (44%) compared to 12% of Sector B
- ✓ One of the oldest sections having been built almost 50 years ago

Current Plan

PennDOT is in the process of design and construction for Sector A. The current plan includes:

- ✓ Construction time of 10 years based on $200 million per year with a total project estimate of $2 billion.
- ✓ Maintenance & Protection of Traffic Plan maintains three lanes in each direction during rush hours, limits lane reductions in off-peak hours and keeps all ramps open.
- ✓ Fifteen separate construction contracts included as part of five design packages.
- ✓ Two off-site contracts have already been let.
- ✓ The next scheduled letting is for Section CPR mainline late 2010.

There are various "Pros" and "Cons" to following the current plan:

Pros:
- ✓ Meets communities's expectations
- ✓ Provides maximum access during construction
- ✓ Provides minimum delays through the construction zone
- ✓ Meets PennDOT financial ability
- ✓ Reduces future maintenance costs

Cons:
- ✓ Maximum construction time, 10 years of continuous disruption
- ✓ Remainder of I-95 continues to deteriorate, eventually reaching an unacceptable level
- ✓ Money available for maintenance will be drained

The Senior Advisory Group explored alternate ways to design and construct Sector A that focus on cost reduction, time savings and non-traditional methods of providing infrastructure improvements in the corridor. As a way to explore these alternative concepts in action, the Senior Advisory Group investigated successful, innovative projects throughout the country. While each project has unique challenges, the concepts and techniques highlighted in these Case Studies could be applied to I-95.

ECONOMICAL

Funding availability is the primary reason that Sector A is currently scheduled to take a decade to complete. By relying completely on traditional Federal and State interstate funding allocations, officials are forced to balance a long list of transportation needs and available funding throughout the region. Out of a financially constrained projection of $330 million a year, the I-95 project is limited to $200 million annually. By leveraging the anticipated dedicated public dollars with new dedicated revenue and debt sources, both public and private could substantially deliver improvements sooner - saving time and money, for the entire 51 mile corridor.

CONTRACT SIZE	Create one, large contract for entire 51 miles or increase individual contract value to $500M to increase competition and encourage broad local, national and global competition.
CM AT RISK	Shift overall risk to private sector Construction Program Manager (CM) for selection, management and oversight of all contractors.
LOW BID + USER COST	Select bid winner based on a combination of project costs and user costs.
GMP CONTRACT	Set Guaranteed Maximum Price (GMP) for contract and select Contractor/ Design Team based on 'best value' scope of work that can be delivered within the GMP.
P3s	Explore ways to shift financing, risk, resources, oversight and monitoring to the Public, Private Partnerships (P3s).
SMART TRANSPORTATION	Apply the most innovative transportation technology solutions to solve the major congestion and safety issues while enhancing the communities along I-95.
INCENTIVE BASED CONTRACTS	Include incentives and disincentives in contracts that reward early completion, value engineering and reduce project delays.
GARVEE BONDS & FINANCING	Explore other sources of income and funding such as GARVEE bonds and private investments.
MANAGED LANES	Dedicate one lane in each direction for HOT (High Occupancy Toll) lanes that charge for through traffic, or use during peak traffic times.
FLEXIBLE STANDARDS	Allow project to have flexible standards to accelerate design and construction time.

Case Study: Rapid Bridge Removal and Replacement - Utah

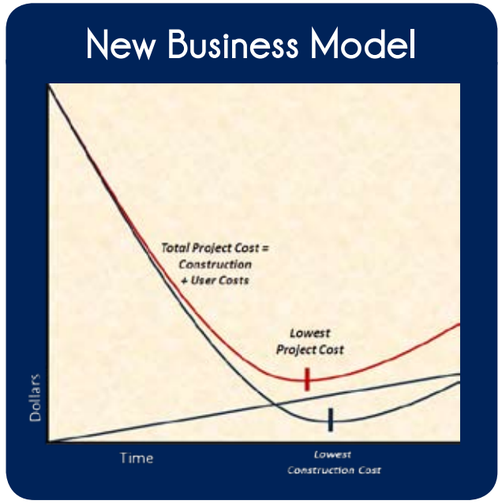
The I-15 Reconstruction Project in Salt Lake City, Utah was one of the largest transportation projects in the United States costing $1.6 billion to rebuild 17 miles of Interstate 15 through Salt Lake City, Utah. The Utah Department of Transportation used an innovative new business model to select the contractor. The new business model combines construction cost and user costs, resulting in a lower Total Project Cost. This project cost not only takes into account the cost of the construction, but also factors in the cost to the users by completing the project quicker.

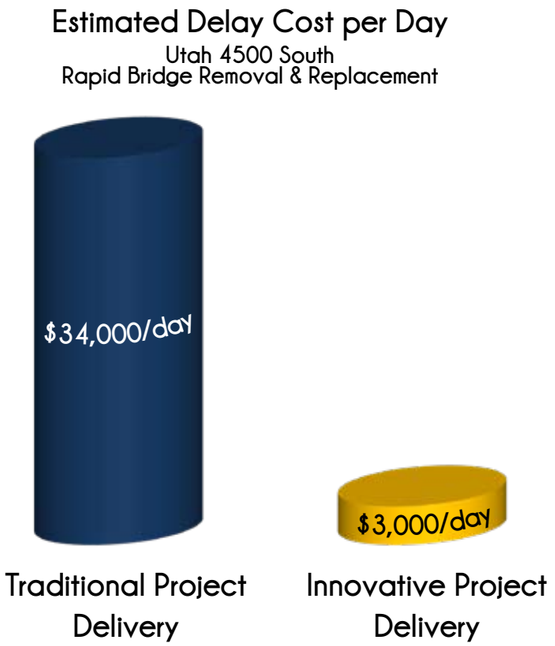
The I-215 project, specifically the Rapid Removal and Replacement of the 4500 South Bridge was part of the Federal Highway Administration's (FHWA's) Highways for Life (HfL) pilot program, an initiative to accelerate innovation in the highway community. Their final report in April 2009, included an economic analysis by comparing the benefits and costs associated with the innovative project delivery approach that was used to a more traditional delivery approach on a project of similar size and scope.

The FHWA's report concluded the although construction costs for the Rapid Removal and Replacement of the 4500 South Bridge were more than a traditional approach, users' cost savings for this accelerated approach were much more significant and resulted in a

Total Project Cost Savings of $3.2 Million.

Source: FHWA





EFFICIENT

Maximizing efficiency for the restoration of I-95 in Pennsylvania not only saves time and reduces overall expenditures over the life of the improvements due to the future value of money, but it also minimizes the duration of negative construction impacts on users and the surrounding community. While the relative costs and benefits of the following opportunities should be weighed, consideration should be given to all of the following approaches, singularly or in combination.

CLOSURE OPTIONS	Consider Full or Partial Closure of roadway to accelerate construction time resulting in significant savings in terms of time and expense while delivering improvements to users faster and enhancing design & livability for residents.
CMGC	DOT selects Construction Manager (CM) and General Contractor (GC) to work corroboratively on planned development. DOT & Contractor prepare independent estimates. Process saves time, dollars & reduces disputes.
A+B CONTRACTING	Require time to be a key condition of the contractor selection criteria by using the A+B method, where A is the unit cost and B is time.
DESIGN BUILD	Explore options to use Design Build where the design and construction phases of a project are overlapped to provide faster project delivery.
CONSTRUCTION TECHNIQUES	Explore innovative construction techniques: Accelerated Bridge Construction (ABC), Accelerated Pavement Construction (APC), Pre-Casting, etc., that allow items to be built off-site and installed quickly.
NEW TECHNOLOGY	Incorporate new technology into design, such as IntelliDrive and real time information sensors, which will allow for future time savings for users.

A full or partial closure of I-95 would allow construction to occur on an accelerate schedule by minimizing the time and materials needed for lane shifts and staging areas.

The use of Pre-Cast elements, allows construction to occur at an accelerate pace, as pieces can be placed together quickly.

Case Study - Hyperfix: Fast-Track Innovation in Indiana

The Indiana Department of Transportation (INDOT) faced daunting challenges when it planned major improvements along a substantial section of the combined I-65 and I-70 arteries just south of downtown Indianapolis. The project could have easily stretched across two entire construction seasons, with one side of the highway being addressed at a time, including some 33 bridges. Instead, the entire project was completed in just 55 days. The project also earned the attention of FHWA's Highways for Life (HfL) program.

INDOT's approach to the undertaking's key challenges was simple, if not easy: close the entire affected stretch of highway and design the project so that the many contractors and subcontractors would be on the job every day, 24 hours a day, seven days a week. That produced a need to provide 175,000 displaced daily drivers with the means to negotiate the commute without turning alternative routes into parking lots. The team supplied places for commuters to park, provided special shuttle buses so they could ride in relaxation, and planned routes for the buses to get commuters to their destinations. In addition, a notable element in the plan called for INDOT and contractors' representatives to meet with as many community stakeholders as possible before construction began.

The extraordinary truth behind the "hyper" tag was that the job, already planned along a super fast track, was completed within just 55 days - 30 days ahead of the most optimistic projections from team engineers.

Each day shaved off the construction schedule saved the public approximately $1 million in user delay costs.

By utilizing the Hyperfix model on I-95, the current 10 year construction schedule could be greatly reduced. Even the usage of a partial closure, would allow the reconstruction to be completed in a shorter amount of time, delivering the improvements faster to users and shortening the period of time of negative impacts on local communities and residents. As seen on the Hyperfix project in Indiana, a significant cost savings resulted from accelerated construction schedule.

Source: FHWA

ENCOMPASSING

The asset conditions of the current I-95 infrastructure underlies the need for restoration and reconstruction. Correction of identified past deficiencies however, can be broadened to include future tools, visions, technologies and public policies encompassed in the Delaware Valley Regional Planning Commission (DVRPC) 2035 Regional Plan for a Sustainable Future. The approaches listed below are consistent with the Plan's four strategies for a sustainable future to: manage growth and protect natural resources, develop livable communities, build an energy efficient economy and establish a modern transportation system.

Along with DVRPC, other stakeholders and community/neighborhood groups have put together plans for the future that focus on improving access to the waterfront region (*see page 17*). The Delaware River waterfront not only provides economic value to the region through tourism and real estate, but also increases livability for all residents.

TRUCK/TRANSIT LANE
Require a dedicated lane for Trucks and Transit during Full or Partial Closure option to reduce congestion and negative impacts on local detour roads.

COMFORT INDEX
Reduce user frustration by providing 'real time' information to help identify delays, crashes, restrictions, etc. Enable users to make more informed decisions about alternate routes and modes.

PUBLIC INPUT
Gain public buy-in and support through intense, advanced public involvement which educates the community and seeks input on project purpose, benefits and solutions.

TOLL/HOT/ MANAGED LANES
Dedicate Tolled/HOT/Managed Lane(s) that charges through traffic and allows congestion management by varying rates at peak hours. Revenue generated could be used to leverage private investment in the corridor.

COMMUNITY BASED DESIGN
Create design competition as part of the contract, that requires designs to include elements from master plans of stakeholders and neighborhood groups.

BARRIER EFFECT
Address 'Barrier Effect' of I-95 to the Delaware River Waterfront through design competition and overall roadway design.

LIVABLE COMMUNITY
Include sustainable design elements, context sensitive solutions and livability in design and construction of I-95 improvements.

PHASED IMPROVEMENTS
Do not wait to implement short-term or less complex improvements. Combine these types of improvements into packages with the most critical and complex sections to provide benefits earlier in the process rather than later.

MODAL CONNECTIVITY
Focus on improved access to air, rail, port and transit to increase personal and commercial mobility choices.

Redevelopment Authority of Bucks County
Provide way-finding signage from major transportation corridors (I-95 and I-76) that would inform travelers of the plethora of resources that the waterfront of Buck County has to offer.

Philadelphia City Planning Commission
Improve connectivity from SEPTA regional rail stations through new development in theme with Transit Oriented Development along the waterfront and creating a new riverfront road network that is pedestrian and bicycle friendly.

New Kensington
Reconnect residents to the river through a series of gateways that will make the waterfront more publicly accessible, safe and vibrant.

Northern Liberties
Improve access to the Delaware waterfront through sustainable design, more pedestrian amenities and greenways leading to the riverfront.

Delaware River Water Front Corporation
Revitalize Race Street Pier (Pier 11) to provide new open space as an anchor to reconnect with Old City Philadelphia.

City of Philadelphia
Increase access to waterfront from neighborhoods as much as possible.

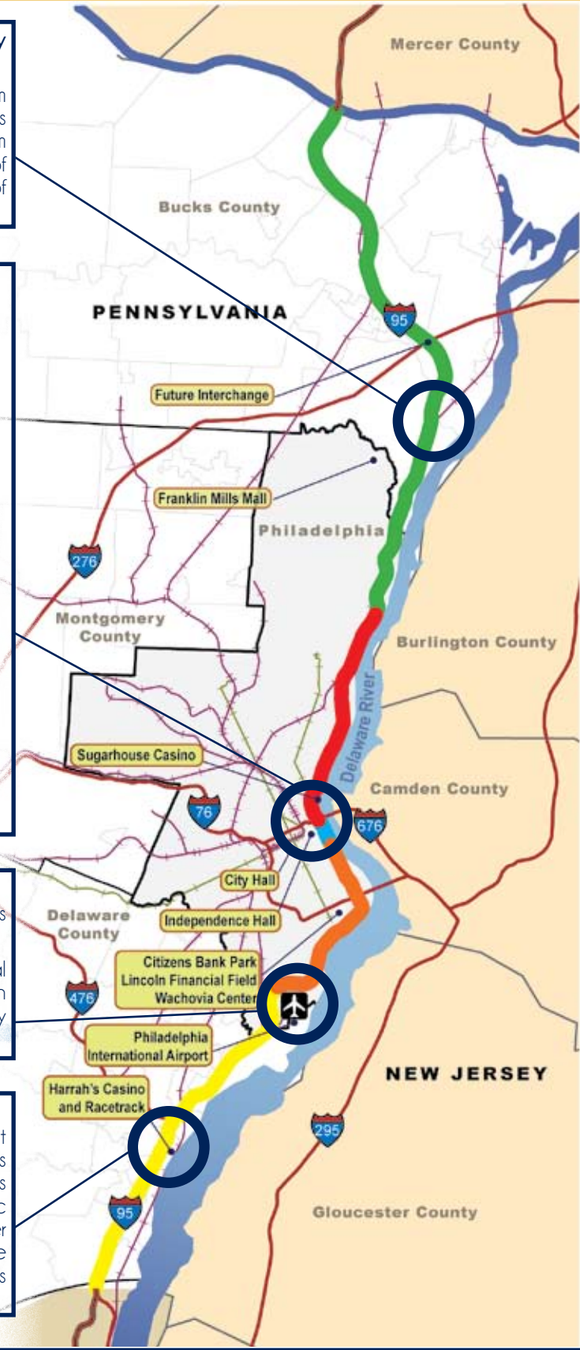
SEPTA
Provide additional service on R7 regional rail line, providing an alternative mode to I-95.

DVRPC
Focus on the appearance of I-95 at street level, allowing the river to be viewed as an asset that is accessible.

Philadelphia International Airport
Prepare Master Plan to include strategies and timelines for the airport's future operational demand, expansion needs and growth potential.

Develop and transform the area around the Philadelphia International Airport with more commercial and retail development to meet the vision of city and business leaders to create an "aerotropolis" surrounded by offices, shops and restaurants.

City of Chester
Improve access to I-95 at Highland Avenue, and access routes to the water front areas that will aid in the economic recovery of the City of Chester by allowing visitors to experience the new developments (Harrah's Casino, Soccer Stadium, etc.)



Matrix Summary

Of the ideas and techniques presented on the previous pages, the following are the most innovative options that should be further explored. Whether used separately or combined together these options can save money (ECONOMICAL,) save time (EFFICIENT) and make a better I-95 (ENCOMPASSING).

CONTRACT SIZE	✓	✓	
CM AT RISK	✓	✓	
LOW BID + USER COST	✓		✓
HOT/MANAGED LANES	✓		✓
CLOSURE OPTIONS	✓	✓	✓
CMGC	✓	✓	
A+B CONTRACTING	✓	✓	✓
TRUCK/TRANSIT LANE	✓		✓
COMFORT INDEX			✓
PUBLIC INPUT			✓
LIVABLE COMMUNITY			✓

The check marks represent the category(s) which each option best addresses. While some options do not cover all areas, a combination of multiple options could be used to address saving time, saving money and making a better I-95.

Next Steps

The SAG was tasked with exploring alternative approaches to address the current challenges and meet the future needs of Pennsylvania's I-95 corridor. As presented in this report, the 51 miles of I-95 that run through Pennsylvania are facing an uncertain future. Sector A, specifically is in need of major reconstruction and strategizing, but lacks the necessary funding to accomplish this in a reasonable amount of time for motorist and local residents.

A variety of innovative options and alternatives that save money, save time and ultimately make a better I-95 have been developed by the SAG. These options and alternatives were developed by thinking 'outside the box' and researching different approaches that are being used in various construction projects throughout the country.

With a multitude of innovative options available, parties must take necessary next steps to make these options viable.

The SAG has developed a list of 'Next Steps' that will aid in moving forward with the innovations and approaches that have been laid out in this report.

I-95 in Pennsylvania has the ability to be a ground breaking project that uses new ideas and techniques to save money, save time and make a better I-95 for all.

Administration Buy-In
Coordinate with PennDOT Administration to implement suggestions and explain benefits.

Legislative Action
Start process to get legislative approval for use of new concepts.

Organizational Analysis
Develop recommendations/research organization effects of using techniques not currently used.

Stakeholder & Public Input
Once a plan is in place, educate stakeholders and the public on benefits of alternative delivery.

Diversion Analysis
Model closure options and complete diversion studies to determine effects on roads and transit.

Industry Input
Get input from engineering and construction community on concepts.

Additional Research
Quantify estimated benefits for entire corridor.

Implement New Solutions
Deliver new and innovative solutions in early phases of the project.

Strategic/Financial Plan
Develop plans that address entire corridor & highlight potential project delivery & financing vehicles.

The Senior Advisory Group urges the Commonwealth of Pennsylvania to consider making the necessary investments to create a more economical, efficient and encompassing I-95 corridor.

Senior Advisory Group

The Senior Advisory Group came into being in the course of PennDOT's ongoing I-95 Asset Management Plan process. PennDOT was looking for a team of experienced individuals with a variety of backgrounds, who would brainstorm and think 'outside the box' concerning construction and funding techniques to be applied to future improvements of the I-95 Corridor in Pennsylvania. Throughout the summer of 2009, the Senior Advisory Team met multiple times, face-to-face and through conference calls to develop ideas to save money, save time and make a better I-95. This report documents the results of their innovative thinking.

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