

Why South Alternatives Were Eliminated



- Greatest number of residential and business impacts compared to northern options.
- More impacts to publicly owned parkland, cultural and historic resources, federally and state-listed threatened and endangered species.
- Project timing uncertainty for the surrounding community due to electric substation relocation.



Comparison of Preliminary Impacts

NPI & NSA Alternatives



	Feature	Potential Impacts	
		North Partial Impact Alignment (NPI) Full-Width Construction Off-line	North Staged Alternate Alignment (NSA) Partial-Width Phased Construction
Natural Resources	Water Resources		
	Wetlands		
	Palustrine Forested/Scrub Shrub/ Emergent	0.0 ac (PA); 0.31 ac (NJ)	0.0 ac (PA); 0.31 ac (NJ)
	Palustrine Emergent	0.0 ac (PA); 0.19 ac (NJ)	0.0 ac (PA); 0.19 ac (NJ)
	Streams		
	E32A-R4-Perennial	230 lf (PA)	230 lf (PA)
	E32B-R4-Perennial	147 lf (PA)	140 lf (PA)
	North Ditch	5,110 lf (NJ)	4,600 lf (NJ)
	E8-R1-Tidal (This is also included in the North Ditch impact)	318 lf (NJ)	318 lf (NJ)
	Delaware River - Permanent Direct	186 lf	194 lf
	Delaware River - Permanent Shaded	192,280 sq. ft. (Proposed) 128,900 sq. ft. (Existing) 67,380 sq. ft. (Net Increase)	202,440 sq. ft. (Proposed) 128,900 sq. ft. (Existing) 73,540 sq. ft. (Net Increase)
	Submerged Aquatic Vegetation		
	Permanent Impacts (sq.ft.)	0 sq. ft. (river bottom); 5,200 sq. ft. (shade)	0 sq. ft. (river bottom); 1,200 sq. ft. (shade)
	Temporary Impacts (sq.ft.)	150 sq. ft. (river bottom); 6,800 sq. ft. (shade)	105 sq. ft. (river bottom); 4,150 sq. ft. (shade)
	Floodplains		
	100 Yr. Floodplain	0.93 ac (PA); 20.84 ac (NJ)	0.79 ac (PA); 19.08 ac (NJ)
	Floodways	No Net Rise (0.00' in 1% AEP elevations)	No Net Rise (0.00' in 1% AEP elevations)
	Coastal Zone*	No Net Rise (NJ) (0.00' in 1% AEP elevations)	No Net Rise (NJ) (0.00' in 1% AEP elevations)
	Terrestrial Habitat		
	Forested /Wooded Habitat	2.74 ac (PA); 10.9 ac (NJ)	2.83 ac (PA); 9.70 ac (NJ)
Species of Concern			
Shortnose & Atlantic Sturgeon	Likely to Adversely Affect	Likely to Adversely Affect	
Peregrine Falcon	Impact - Relocation of Nest	Impact - Relocation of Nest	
Osprey	Impact - Relocation of Nest	Impact - Relocation of Nest	
Indiana bat	Not Likely to Adversely Affect	Not Likely to Adversely Affect	
State-Listed Mussels	Impact - Salvage and Relocation	Impact - Salvage and Relocation	
Cultural Resources	Historic Resources		
	National Register Historic Places (NRHP) Eligible or Listed		
	Pennsylvania RR Mainline	2,550 sq. ft. (Pier Removal)	700 sq. ft. (Pier) 2,550 sq. ft. (Pier Removal)
	Pennsylvania RR Grundy Tower	No Impact	No Impact
	Fleetwing Estates	No Impact	No Impact
	Delaware Canal (also a National Historic Landmark)	No Impact	No Impact
	Delaware River Bridge	Adverse Effect	Adverse Effect
Archaeological Resources - 4 Known Sites	No Impact	No Impact	

*There is no FEMA regulated floodway in PA as entire project area is within coastal zone

Comparison of Preliminary Impacts

NPI & NSA Alternatives



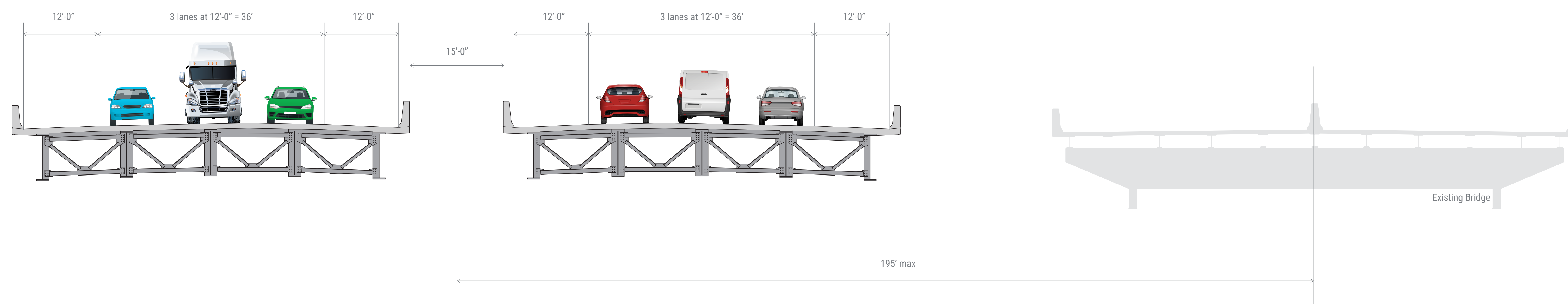
Feature	Potential Impacts		
	North Partial Impact Alignment (NPI) Full-Width Construction Off-line	North Staged Alternate Alignment (NSA) Partial-Width Phased Construction	
Socioeconomic Resources	Property Acquisitions		
	Residential Acquisitions (Total/Partial)	13/0	12/0
	Commercial Acquisitions (Total/Partial)	1/4	1/5
	Industrial Acquisitions (Total/Partial)	1/2	1/2
	Billboards/Cell Towers	7	7
	Visual/Aesthetic Impact	Minimal Impact - Tied Arch Bridge	Minimal Impact - Tied Arch Bridge
	Section 4(f) Properties	*	*
	Water Trail - Delaware River	De Minimis Use	De Minimis Use
	Permanent Impact (sq.ft.)	17,190 sq. ft. (net decrease of 1,374 sf)	17,930 sq. ft. (net decrease of 634 sf)
	Temporary Impacts (sq.ft.)	80,610 sf Water Trail to be closed for erection of new bridge and demolition of existing bridge (multiple closures)	73,810 sf Water Trail to be closed for erection of WB bridge, demolition of existing bridge and erection of EB bridge (multiple closures)
	Delaware River Heritage Trail	De Minimis Use	De Minimis Use
	Permanent Impacts (lf)	410 lf (PA)	410 lf (PA)
	Temporary Impacts (lf)	410 lf (PA) Temporary closure for erection of new bridge and demolition of existing bridge (coincidental with temporary closure of SR 13 Bristol Pike - 2 closings)	410 lf (PA) Temporary closure for erection of new WB bridge, demolition of existing bridge, and erection of EB bridge (coincidental with temporary closure of SR 13 Bristol Pike - 3 closings)
	Black Ditch Park	No Use	No Use
	Pacific Park	No Use	No Use
	Veterans Park	De Minimis Use	De Minimis Use
	Permanent Impact (acres)	4.8	4
	Temporary Impacts (acres)	N/A	N/A
	Pennsylvania RR Mainline	Temporary Occupancy	De Minimis Use
	Pennsylvania RR Grundy Tower	No Use	No Use
Fleetwing Estates	No Use	No Use	
Delaware Canal (also a National Historic Landmark)	No Use	No Use	
Potential Waste Sites	2 (PA); Historic Fill (NJ)	2 (PA); Historic Fill (NJ)	
Engineering Considerations	Public Utilities	Relocation of Amtrak Electric Lines (2 moves required)	Relocation of Amtrak Electric Lines (4 moves required)
	River Navigation	No Permanent Impact Temporary Impacts for Erection of Arch (1 closing) and Demolition of Existing Bridge (1 closing)	No Permanent Impact Temporary Impacts by Erection of WB Arch (1 closing), Demolition of Existing Bridge (1 closing), and Erection of 3rd Arch for EB bridge (multiple closings)
	Construction - Open to Traffic	~3.3 years	~6.5 years
	Construction - In River	~3 years	~5 years
	Construction Complete	~5 years	~6.5 years
	Traffic Management and Operations	2 Travel lanes open at all times. Minimal traffic impacts to pave tie-in locations.	2 Travel lanes open at all times. Minimal traffic impacts to pave tie-in locations. 4 lanes (2 lanes in each direction) on WB bridge without usable shoulders for more than 3 years
	Cost	Lowest Cost	Additional \$50 Million to \$150 Million

*A de minimis impact involves the use of Section 4(f) property that is generally minor in nature.

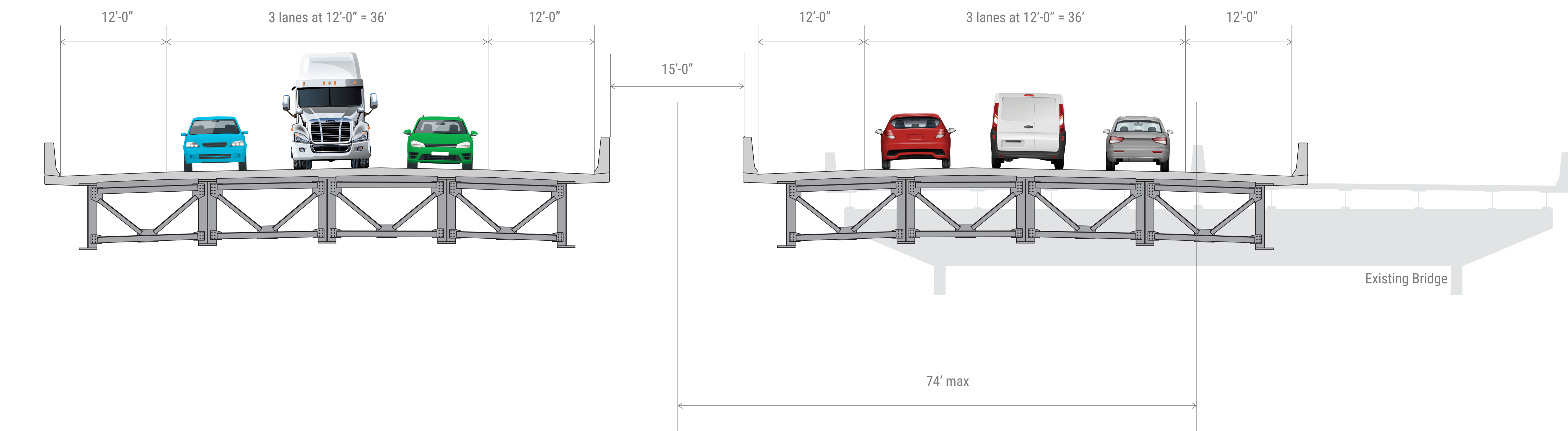
Differences between NPI and NSA



NPI: North Partial Impact



NSA: North Staged Alternate



Alternative North Partial Impact (NPI)

The maximum offset between the centerlines of the existing and proposed bridge, occurring over the river, would be 195-feet.

Why does this matter?

- This would allow for easier contractor access to build the proposed bridge and remove the existing bridge.
- It would allow the proposed river piers to be in-line with the existing river piers thus reducing the length of the main span and the cost associated with construction.

The entire proposed bridge could be constructed in a single phase without any interference with the existing bridge.

Why does this matter?

- This would allow the construction of the proposed bridge to happen more efficiently.
- This would minimize impacts to navigation traffic.
- It would allow for fewer changes to travel patterns on the Turnpike.
- It would also result in less disruption to travel patterns for area residents who live close to the anticipated construction site.

Traffic would be maintained on the existing bridge during the entirety of construction of the proposed bridge.

Why does this matter?

- This would allow for safer construction of the proposed bridge for both construction workers and the travelling public by completely separating construction activities from vehicle traffic for the entirety of the project.

Six lanes of traffic across the proposed bridge would be available within ~3.3 years from the start of construction.

Why does this matter?

- This would allow for safer flow of traffic across the bridge and reduces the potential for traffic congestion on the Turnpike.

Overall construction duration would be ~5 years.

Why does this matter?

- This would lessen impacts to the surrounding communities by reducing the amount of time traffic would be affected when compared to Alternative NSA.

One temporary relocation of the Amtrak electrical transmission lines and impacts to catenary lines would be required.

Why does this matter?

- This would limit work on one of the busiest passenger rail corridors in the western hemisphere thus reducing the potential for disruptions.
- This would reduce the potential for construction delays since critical construction activities can be performed around the limited work timeframes permitted along the railroad corridor.

Alternative North Staged Alternate (NSA)

The maximum offset between the centerlines of the existing and proposed bridge, occurring over the river, would be 74-feet.

Why does this matter?

- This would complicate contractor access for construction of the proposed bridge and removal of the existing bridge.
- It would require the proposed river piers to be located closer to the shorelines when compared to existing river piers, since they cannot be built in-line, thus increasing the length of the main span and the cost associated with construction.

The entire proposed bridge must be constructed in two phases as it overlaps with the existing bridge.

Why does this matter?

- This would complicate construction of the proposed bridge and removal of the existing bridge resulting in potential inefficiencies, causing construction to take longer, and increasing cost.
- This would complicate construction of the second phase of the main river bridge resulting in more impacts to navigation traffic as additional closures of the river would be required.
- It would require more changes to travel patterns on the Turnpike as additional traffic configurations are required.
- It would also increase the disruption to travel patterns for area residents who live close to the construction site.

Traffic would be maintained on the existing bridge and on the first half of the proposed bridge during construction.

Why does this matter?

- This would require traffic to be located directly adjacent to active construction, reducing safety for both construction workers and the travelling public.

- Traffic would be maintained on the first half of the proposed bridge with substandard (2.5' wide) shoulders for ~3.3 years increasing the likelihood of traffic congestion and reducing safety along the corridor.

Six lanes of traffic across the proposed bridge would be available within ~6.5 years from the start of construction.

Why does this matter?

- This would double the time until traffic flow across the bridge is alleviated when compared to Alternative NPI increasing the likelihood for traffic congestion on the Turnpike.

Overall construction duration would be ~6.5 years.

Why does this matter?

- This would increase impacts to the surrounding communities by lengthening the amount of time traffic would be affected when compared to Alternative NPI.
- This would require an additional ~2 years of work in the river when compared to Alternative NPI. The Delaware River is a vital resource that is home to federally and state-listed species, supports fish spawning habitat, and contains important submerged aquatic vegetation. The additional construction time could result in additional adverse impact to these important resources not otherwise observed with Alternative NPI.

Multiple temporary relocations of Amtrak electrical transmission lines and impacts to catenary lines would be required.

Why does this matter?

- This would increase potential disruptions on one of the busiest passenger rail corridors in the western hemisphere.
- This would increase the potential for construction delays as limited work timeframes are permitted along the railroad corridor.