

Agency Coordination Meeting #10

I-295/I-76/Route 42 Direct Connection

Camden County

October 24, 2006

Presented by NJ Department of Transportation



AGENDA

- **Review of Alternatives and Alternatives Analysis Process**
- **Alternatives Analysis**
- **Next Steps**



REVIEW OF ALTERNATIVES AND ALTERNATIVES ANALYSIS PROCESS



REVIEW OF ALTERNATIVES

- **Alternative D – NB and SB I-295 side by side on a bridge over I-76 and Browning Road. Ramp C crosses under I-76 just north of Browning Road.**
- **Alternative D1 – NB and SB I-295 side by side on a bridge over I-76 and Browning Road. Ramp C follows similar path to that of Al-Jo's curve.**



REVIEW OF ALTERNATIVES

- **Alternative G2 – NB and SB I-295 in a stacked arrangement on bridges over I-76 and Browning Road. Ramp C crosses under I-76 just north of Browning Road.**
- **Alternative H1 – NB and SB I-295 in a stacked arrangement on bridges over I-76 and Browning Road. Ramp C follows similar path to that of Al-Jo's Curve.**
- **Alternative K - NB and SB I-295 side by side in a tunnel section under I-76 and Browning Road. Ramp C crosses over I-76 just north of Browning Road.**



ALTERNATIVE ANALYSIS PROCESS

- **Develop Alternative Comparison Matrix** ✓
- **Meet with Core Group, CAC and ACM** ✓
- **Modify Alternative Comparison Matrix** ✓
- **Perform Alternative Analysis** ✓
- **Discuss Loaded Matrix and Preferred Alternative with Core Group, CAC and ACM**
- **Recommend a Preferred Alternative and present at Public Information Center**



UPDATES TO ALTERNATIVE COMPARISON MATRIX FROM JUNE MEETINGS

- **Quantify as many criteria as possible**
- **Add a criterion for noise reduction**
- **Revise Project Cost to “Cost to Build” (i.e., include design, inspection and ROW costs)**
- **Address stormwater requirements by adding a criterion for impervious coverage**
- **Address improvements in air quality over the no-build and air toxics**



SUPPORTING DOCUMENTATION

- **Impact criteria**
- **Metrics for Distinguishing Characteristics**
- **Summary of Engineering Criteria**
- **Summary of TES Findings**
- **Environmental Impact Plans**
- **Alternative Comparison Matrix**



SUPPORTING DOCUMENTATION



Impact Criteria

The Technical Environmental Studies (TES) were completed to provide state-of-the-art projections of environmental impacts for the five Build Alternatives. The studies involved exhaustive surveys, modeling and simulation, delineations and extensive record research to insure that a comprehensive approach be brought to the design, construction and mitigation decisions of this project. The TES were initiated to provide technical analyses for projected impacts. These analyses identified and quantified distinguishing characteristics of the five Build Alternatives and the No-Build Alternative. The Summary of TES Findings, Impacts and Benefits Matrix is a summary of this exhaustive process.

The No-Build Alternative proposes no changes to the existing interchange. Impacts to the project area will be evaluated in the same way as the other proposed alternatives, with the assessment of current conditions projected to the design year serving as the impact assessment for the No-Build Alternative. The No-Build Alternative serves as the benchmark to measure the costs and benefits of each Build Alternative evaluated. The No-Build Alternative assumes all bridge decks to be replaced due to their age and resurfacing of all roadways and ramps every ten years in order to be maintained properly until the Year 2030.

The Alternative Comparison Matrix distinguishes the technical/social interrelationship between the five Build Alternatives, plus the No-Build. The following criteria were developed to serve as the basis for decisions regarding technical/social comparisons.

Engineering Criteria

Meets Purpose and Need - The purpose of this project is to improve traffic safety, reduce traffic congestion and meet driver's expectations by improving the direct connection of the I-295 mainline and the interchange of I-295/I-76/Route 42. All of the Build Alternatives meet the purpose and need while the No-Build does not.

The metrics are yes or no.

Temporary Construction Impacts - Temporary construction impacts include increased noise, dust, vibrations, encroachment and inconvenience to residents during construction. Local residents and community facilities will be impacted due to construction activities taking place that will increase noise levels, create dust, cause vibration, encroach upon their properties through temporary easements and cause visual impacts. Existing noise walls may have to be removed for short durations while new ones are constructed. Revised access into the [Willow Place and/or Hickory Place] homes will be required. Construction activities are required on lands and community facilities (New St. Mary's Cemetery, the Annunciation Church, Bellmawr Elementary School and the Bellmawr Baseball fields). The No-Build Alternative assumes all maintenance work will be



SUPPORTING DOCUMENTATION

| CRITERION | METRIC |
|--|--|
| Meets Purpose & Need | Yes or No. |
| Temporary Construction Impacts | <p>Low: Impacts caused by routine maintenance and potential upgrades which will result in local noise and dust and inconvenience of short duration (less than a few months).</p> <p>Medium: Noise, dust, vibration and/or visual impacts and inconvenience to neighboring properties for several years.</p> <p>High: Considerable noise, dust, vibrations, visible impacts, inconvenience to neighboring properties for several years.</p> |
| Maintenance & Protection of Traffic | <p>Low: Minimal traffic is diverted off the mainline due to construction.</p> <p>Medium: Traffic diversions off the mainline due to the southbound weave are 12 months or less, and overall construction duration is less than 6 years.</p> <p>High: Traffic diversion off the mainline due to the southbound weave is greater than 12 months, and overall construction duration is 6 years or more.</p> |
| Security | <p>Low: Potential breach of security results in minor facility damage with a short recovery time to repair.</p> <p>Medium: Potential breach of security results in significant facility damage with an extended duration for repair.</p> <p>High: Potential breach in security results in multiple extreme failures of facilities with an extended duration for repair.</p> |
| Design Criteria (Substandard Elements) | <p>Low: Mainline I-295 is accommodated with a direct connection with 55 mph posted speed, and interchange ramps are designed for a 40 mph posted speed. The substandard design elements are primarily limited to existing bridges and/or facilities at the limits of the project (i.e. Market Street, railroad bridge).</p> <p>Medium: Some geometric improvements are made to the interchange with some increase in posted speeds; however, there are still a number of design elements or other substandard conditions throughout the project limits.</p> <p>High: Mainline I-295 is not accommodated with a direct connection and the northbound weave with Rt 42 and the use of A-I-Jo's curve for I-295 southbound still exist. There are no changes in posted speed. Numerous substandard design elements and conditions are present for both the roadway, ramps and bridges within the interchange as well as for bridges or facilities at the limit of the project.</p> |
| Cost to Build | Estimated cost to build includes construction costs, costs to design, construction inspection costs and right-of-way costs. |
| Construction Duration | Estimated duration of the project. |
| Maintenance & Operations | <p>Low: Amount of structure has not increased and structure maintenance is routine. Operations of pump stations and tunnel sections are not required.</p> <p>Medium: Amount of structure has increased or structure maintenance is significant. Operations of pump stations are required. Operations of tunnel sections are not required.</p> <p>High: Amount of structure has increased significantly or structure maintenance is significant. Operations of pump stations and tunnel sections are required.</p> |

| CRITERION | METRIC |
|---|---|
| Noise | |
| Residential Noise Impact Reduction | The number of receptors presently above the Category B NAC (66 dBA) who will be reduced below the Category B NAC as a result of the project. |
| Post Mitigation Residential Noise Increase over Existing Conditions | The number of receptors experiencing an increase over existing conditions in each of three ranges: less than 3 dBA (not perceivable); greater than 3 dBA but less than 7 dBA (perceivable); and greater than 7 dBA (noticeable). |
| Natural Ecosystems | |
| Floodplain | The actual acreage of floodplain lost due to construction and fill. |
| Total Wetland and SOW Permanent Impacts | The actual acreage of permanent wetland and SOW impacts. |
| On-Site Wetland Mitigation Opportunities | The percentage of acreage available for on-site mitigation. |
| Total Impervious Coverage | The total impervious coverage in acres. |
| Waterfront Access | Yes or No. |
| Socioeconomics | |
| Visual Impacts | <p>None: There will be no change to the viewshed.</p> <p>Low: View is open with limited intrusion of concrete infrastructure. Landscape is dominated by vegetation, existing buildings or buildings of a consistent nature.</p> <p>Medium: View has changed to include some road infrastructure, but infrastructure is balanced with the rest of the landscape. Although the view has changed, the view is recognizable.</p> <p>High: Field of view is dominated by massive intrusive structures, and the resulting view is barely recognizable from existing conditions.</p> |
| Residential Acquisitions | The actual number of residential acquisitions. |
| Community Property Acquisitions | <p>None: No impact to community facility.</p> <p>Low: No loss of use of community facility.</p> <p>Medium: Temporary loss of use of community facility.</p> <p>High: Permanent loss of use of community facility.</p> |
| 4(f) Property Acquisition | The actual acreage acquired from the 4(f) property. |
| Regional Accessibility | The annual vehicle cost savings in dollars due to reduced travel time. |
| Cost Benefits From Reduction in Accidents | The cost savings in dollars on an annual basis. |
| Historic Architectural Resources | |
| Physical Impacts to Historic District | The number of actual acres impacted and the number of structures impacted. |
| Noise Impact Reduction to Historic District | The number of receptors presently above the Category B NAC (66 dBA) that will be reduced below the Category B NAC as a result of the project. |
| Post Mitigation Residential Noise Increase over Existing Conditions | The number of contributing buildings within the Bellmawr Park Mutual Housing Historic District that would have an increase in noise levels over existing conditions in each of three ranges: less than 3 dBA (not perceivable); greater than 3 dBA but less than 7 dBA (perceivable); and greater than 7 dBA (noticeable). |
| Impact to Viewshed | <p>None: There will be no change to the viewshed.</p> <p>Low: The viewshed would remain relatively unchanged and open with limited intrusion of physical infrastructure.</p> <p>Medium: The viewshed would be changed to include some new infrastructure at a relatively close distance to the historic district.</p> <p>High: The viewshed would be dominated by intrusive infrastructure at a relatively close distance to the historic district.</p> |



SUMMARY OF TES FINDINGS

| DISCIPLINES | BUILD ALTERNATIVES | | | | | NO BUILD ALTERNATIVE (2030) |
|---|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------------------|
| | D | D1 | G2 | H1 | K | |
| ENVIRONMENTAL IMPACTS | | | | | | |
| Noise | | | | | | |
| Category B Residences | 340 | 342 | 378 | 380 | 327 | 269 |
| Category B Recreation | 3 | 5 | 3 | 5 | 3 | 2 |
| Category B Cemeteries | 2 | 2 | 2 | 2 | 2 | 1 |
| Category E Schools (interior) | 3 | 3 | 3 | 3 | 3 | 2 |
| Category E Churches (interior) | 2 | 2 | 2 | 2 | 2 | 2 |
| Category C Commercial/Industrial | 11 | 11 | 15 | 15 | 10 | 11 |
| Total Number of Impacts Without Mitigation | 361 | 365 | 403 | 407 | 347 | 287 |
| Walls to be Removed | 4 | 4 | 4 | 4 | 4 | 0 |
| Noise Wall Costs | 11.2 m | 11.5 m | 12.7 m | 13 m | 8 m | 0 |
| Mitigation for School Impacts (Air Conditioning) | 2 | 2 | 3 | 3 | 2 | 0 |
| <i>Noise Impact Reduction</i> | 109 | 109 | 91 | 91 | 113 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| <i>Less than 3 dBA (Not Perceivable)</i> | 135 | 125 | 150 | 140 | 133 | 250 |
| <i>Greater than 3 dBA but less than 7 dBA (Perceivable)</i> | 15 | 26 | 35 | 46 | 7 | 4 |
| <i>Greater than 7 dBA (Noticeable)</i> | 0 | 0 | 12 | 12 | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 | 15 |
| Total Number of Remaining Noise Impacts | 155 | 156 | 215 | 216 | 145 | 269 |
| Natural Ecosystems | | | | | | |
| <i>Total Wetland & SOW Permanent Impacts</i> | 1.97 Ac | 3.73 Ac | 0.95 Ac | 3.15 Ac | 2.90 Ac | None |
| <i>State Open Water</i> | 0.06 Ac. | 0.10 Ac. | 0.06 Ac. | 0.22 Ac. | 0.06 Ac. | None |
| <i>Tidal Wetlands</i> | 0.64 Ac. | 2.14 Ac. | 0.04 Ac. | 1.53 Ac. | 1.44 Ac. | None |
| <i>Non-Tidal Wetlands</i> | 1.28 Ac. | 1.49 Ac. | 0.86 Ac. | 1.40 Ac. | 1.40 Ac. | None |
| Stream Ecology Impacts | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | No Impact |
| <i>Total Impervious Coverage</i> | 61 Ac. | 65 Ac. | 64 Ac. | 67 Ac.* | 67 Ac. | 42 Ac.** |
| <i>Requires Relocation of Little Timber Creek Channel</i> | No | No | No | Yes | No | No |
| <i>Floodplain</i> | 2.28 Ac | 4.45 Ac | 0.90 Ac | 4.26 Ac | 3.04 Ac | No Impact |
| Freshwater Wetland Buffer Impacts | 3.59 Ac | 4.20 Ac | 2.48 Ac | 4.67 Ac | 3.35 Ac | None |
| <i>On-Site Wetland Mitigation Opportunities</i> | 100% | 10% | 100% | 12% | 93% | 0 |
| <i>Opportunity to Increase Wild Rice (Wildlife Food Source) Habitat</i> | Yes | No | Yes | No | Yes | No |
| Surface Water Quality | Imp StormW Qual | Imp StormW Qual | Imp StormW Qual | Imp StormW Qual | Imp StormW Qual | Negative Impact |
| <i>Waterfront Access</i> | Yes | No | Yes | No | Yes | No |
| Upland Vegetation Impacts | 19.04 Ac | 20.92 Ac | 20.57 Ac | 21.95 Ac | 21.43 Ac | None |
| Geology Impacts | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | None |
| Soils Impacts | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | None |
| Groundwater Flow / Quality Impacts | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | Minimal Impact | None |
| Air Quality | No Impact | No Impact | No Impact | No Impact | No Impact | No Impact |

Note: Italicized impacts are distinguishing characteristics.

* Includes channel realignment/relocation.

** Does not provide for stormwater treatment



SUMMARY OF TES FINDINGS

| DISCIPLINES | BUILD ALTERNATIVES | | | | | NO BUILD (2030) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------|
| | D | D1 | G2 | H1 | K | |
| Socioeconomics | | | | | | |
| Visual Impacts | | | | | | |
| <i>Number of additional levels in interchange</i> | 1 | 1 | 2 | 2 | 1 | 0 |
| <i>Height of structure including noise walls (in feet)</i> | 49 | 49 | 78 | 78 | 55 | 0 |
| Economic Benefits | | | | | | |
| <i>Regional Accessibility</i> | | | | | | |
| <i>Travel Time Savings-Car (dollars saved)</i> | \$26 million | \$26 million | \$26 million | \$26 million | \$26 million | 0 |
| <i>Travel Time Savings-Truck (dollars saved)</i> | \$13 million | \$13 million | \$13 million | \$13 million | \$13 million | 0 |
| <i>Total Travel Time Savings (annual)</i> | \$39 million | \$39 million | \$39 million | \$39 million | \$39 million | 0 |
| <i>Cost Benefit from Reduction in Accidents (annual)</i> | \$11 million | \$11 million | \$11 million | \$11 million | \$11 million | 0 |
| Community Impacts | | | | | | |
| Minority Population | No Impact | No Impact | No Impact | No Impact | No Impact | No Change |
| Senior Citizen | No Impact | No Impact | No Impact | No Impact | No Impact | No Change |
| Disabled | No Significant Impact | No Significant Impact | No Significant Impact | No Significant Impact | No Significant Impact | No Change |
| Linguistically Isolated Population | No Impact | No Impact | No Impact | No Impact | No Impact | No Change |
| Female Head of Household | No Impact | No Impact | No Impact | No Impact | No Impact | No Change |
| Transit Dependent | No Impact | No Impact | No Impact | No Impact | No Impact | Negative Impact |
| Low Income | No Significant Impact | No Significant Impact | No Significant Impact | No Significant Impact | No Significant Impact | No Change |
| Land Use and Zoning | No Impact | No Impact | No Impact | No Impact | No Impact | No Change |
| Total Acquisitions Including ROW and Permanent Easements (acres) | 11.97 | 14.40 | 9.46 | 11.91 | 12.88 | None |
| Bellmawr | | | | | | |
| <i>Proposed ROW Acquisitions (in acres)</i> | 10.50 | 12.99 | 11.41 | 8.02 | 10.54 | 0.00 |
| Permanent Easements (in acres) | 1.18 | 1.11 | 1.18 | 1.14 | 1.07 | 0.00 |
| Temporary Easements (in acres) | 2.18 | 2.12 | 2.11 | 1.93 | 1.95 | 0.00 |
| Residences Acquired | 13 | 13 | 5 | 5 | 13 | 0 |
| Businesses Relocated | 1 | 1 | 0 | 0 | 1 | 0 |
| <i>Community Facilities Impacted -number of sites</i> | 5 | 5 | 5 | 5 | 5 | 0 |
| <i>Community Facilities Impacted -in acres (Acquisition and Permanent Easement)</i> | 8.61 | 11.03 | 7.67 | 10.10 | 8.62 | 0.00 |
| <i>Bellmawr Baseball League</i> | 0.86 | 0.86 | 0.30 | 0.30 | 0.88 | 0.00 |
| <i>Bellmawr Park Elementary School (4(f))</i> | 0.70 | 0.70 | 0.32 | 0.32 | 0.70 | 0.00 |
| <i>New St. Mary's Cemetery</i> | 6.26 | 6.26 | 6.26 | 6.26 | 6.26 | 0.00 |
| <i>Annunciation B.V.M. Church and Regional School</i> | 0.72 | 3.15 | 0.72 | 3.15 | 0.72 | 0.00 |
| <i>Resurrection Christ Cemetery</i> | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.00 |
| <i>Community Facilities- Impact on services provided</i> | No impact | No impact | No impact | No impact | No impact | No Impact |
| Public Access to Little Timber Creek | Yes | No | Yes | No | Yes | No |

Note: Italicized impacts are distinguishing characteristics.



SUMMARY OF TES FINDINGS

| DISCIPLINES | BUILD ALTERNATIVES | | | | | NO BUILD (2030) |
|--|---|---|---|---|---|-----------------|
| | D | D1 | G2 | H1 | K | |
| Socioeconomics | | | | | | |
| Mt. Ephraim | | | | | | |
| Proposed ROW Acquisitions (in acres) | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0 |
| Permanent Easements (in acres) | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0 |
| Temporary Easements (in acres) | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0 |
| Gloucester City | | | | | | |
| Proposed ROW Acquisitions (in acres) | 0 | 0 | 0 | 0 | 0 | 0 |
| Permanent Easements (in acres) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0 |
| Temporary Easements (in acres) | 0 | 0 | 0 | 0 | 0 | 0 |
| Archaeological Resources | No Impact | No Impact | No Impact | No Impact | No Impact | No Impact |
| Historic Architectural Resources | | | | | | |
| <i>Physical Destruction of Resource in Acres (% of total acreage)</i> | 2.11 Ac (8.87%) | 2.11 Ac (8.87%) | 1.05 Ac (4.4%) | 1.05 Ac (4.4%) | 2.20 Ac (9.27%) | No Impact |
| <i>Demolition/Relocation of Contributing Resources</i> | 5 residential buildings; 12 dwelling units | 5 residential buildings; 12 dwelling units | 1 residential building; 4 dwelling units | 1 residential building; 4 dwelling units | 5 residential buildings; 12 dwelling units | No Impact |
| <i>Noise Impact Reduction to Historic District</i> | 14 | 14 | 14 | 14 | 18 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| <i>Less than 3 dBA (Not Perceivable)</i> | 16 | 16 | 18 | 18 | 12 | 23 |
| <i>Greater than 3 dBA but less than 7 dBA (Perceivable)</i> | 0 | 0 | 1 | 1 | 0 | 0 |
| <i>Greater than 7 dBA (Noticeable)</i> | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>Total Number of Remaining Noise Impacts to Historic District</i> | 16 | 16 | 19 | 19 | 12 | 23 |
| <i>Impact to Viewshed</i> | Moderate | Moderate | High | High | Low | No Impact |
| Hazardous Waste | | | | | | |
| Areas of Concern Impacted | 3 | 3 | 2 | 2 | 3 | 1 |
| Area of Ramp C at I-295, MP 27 | Yes | Yes | Yes | Yes | Yes | No |
| New St. Mary's Cemetery | Yes | Yes | Yes | Yes | Yes | No |
| Bill Sea's Towing | Yes | Yes | No | No | Yes | No |
| No. of Buildings on AOCs to be Demolished (LBP/ACM issues) | 4 | 4 | 2 | 2 | 4 | 0 |
| No. of Residential Buildings to be Demolished (LBP/ACM issues) | 6 | 6 | 2 | 2 | 6 | 0 |
| Acreage of Potentially Contaminated Soil Impacted (Maintenance Areas) | 0.35 Ac. | 0.35 Ac. | 0.30 Ac. | 0.30 Ac. | 0.35 Ac. | 0.00 |
| Roadway Spill Area Impacted | Yes | Yes | Yes | Yes | Yes | Yes |
| Aboveground Storage Tanks to be Removed | 1 | 1 | 1 | 1 | 1 | 0 |
| Underground Storage Tanks to be Removed | 1 | 1 | 1 | 1 | 1 | 0 |

Note: Italicized impacts are distinguishing characteristics.

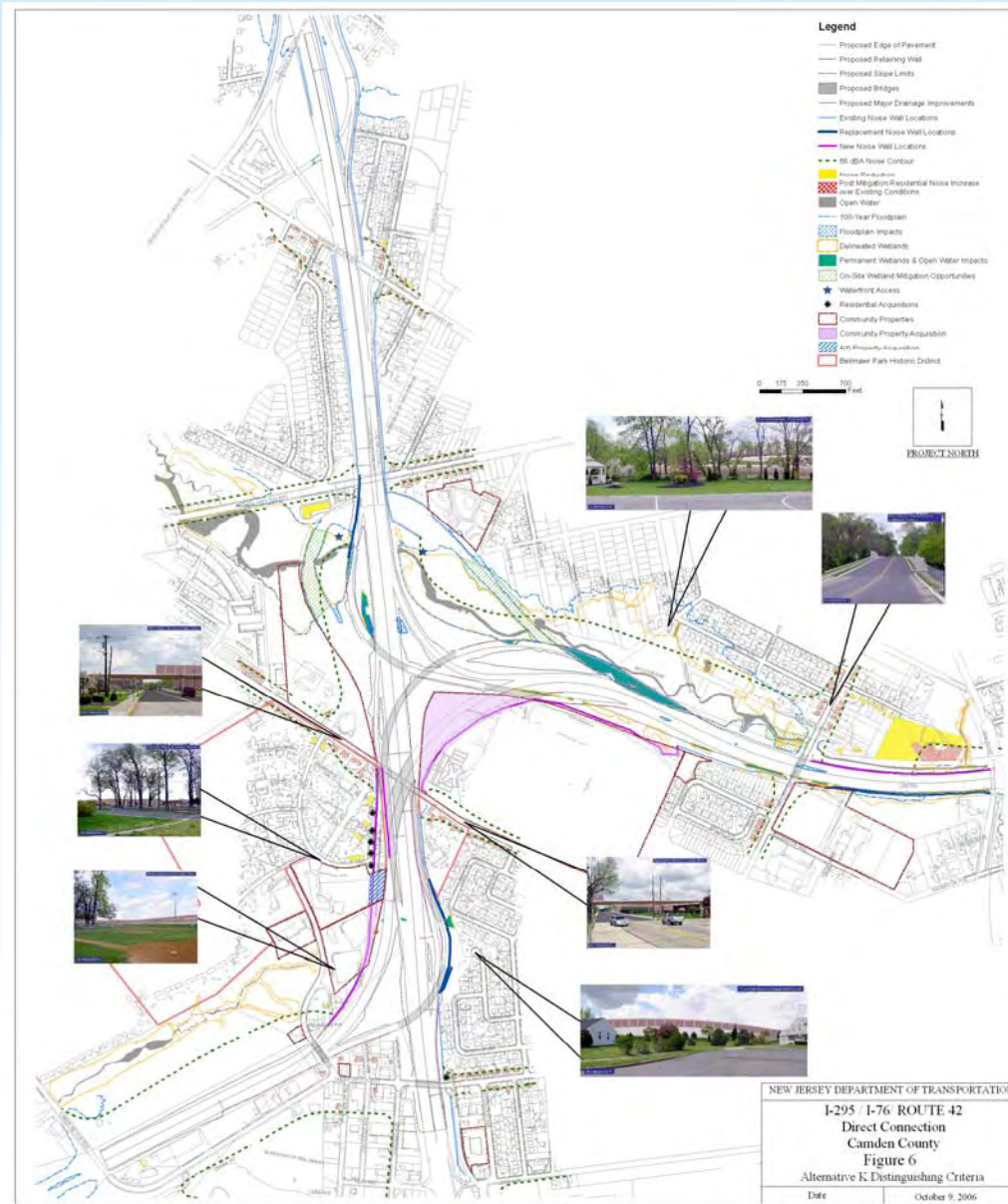


SUMMARY OF ENGINEERING CRITERIA

| CRITERIA | BUILD ALTERNATIVES | | | | | NO BUILD ALTERNATIVE |
|---|--------------------|---------------|---------------|---------------|---------------|----------------------|
| | D | D1 | G2 | H1 | K | |
| MEETS PURPOSE AND NEED | Yes | Yes | Yes | Yes | Yes | No |
| TEMPORARY CONSTRUCTION IMPACTS | | | | | | |
| Noise | Medium | Medium | High | High | Medium | Low |
| Dust | Medium | Medium | Medium | Medium | Medium | Low |
| Vibration | Medium | Medium | Medium | Medium | Medium | Low |
| Encroachment | High | High | Medium | Medium | High | None |
| Visual | Medium | Medium | High | High | Low | None |
| Overall Rating | Medium | Medium | High | High | Medium | Low |
| MAINTENANCE AND PROTECTION OF TRAFFIC | | | | | | |
| I-76 Southbound Diversion | 8 Months | 18 Months | 30 Months | 12 Months | 0 | 0 |
| Construction Duration | 64 Months | 63 Months | 70 Months | 73 Months | 88 Months | As Needed |
| Overall Rating | Medium | High | High | High | High | Low |
| SECURITY | | | | | | |
| Mainline Tunnel | No | No | No | No | Yes | No |
| Significant Viaduct | No | No | Yes | Yes | No | No |
| Potential Impact to Multiple Facilities | Yes | Yes | Yes | Yes | Yes | Yes |
| Overall Rating | Medium | Medium | High | High | High | Low |
| DESIGN CRITERIA (SUBSTANDARD ELEMENTS) | | | | | | |
| Substandard Design Elements | Low | Low | Low | Low | Low | High |
| Mainline Posted Speed | 55 MPH | 55 MPH | 55 MPH | 55 MPH | 55 MPH | 35 MPH |
| Ramp Posted Speed | 40 MPH | 40 MPH | 40 MPH | 40 MPH | 40 MPH | 35 MPH |
| Overall Rating | Low | Low | Low | Low | Low | High |
| COST TO BUILD | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$820,618,920 | N/A |
| CONSTRUCTION DURATION | 64 Months | 63 Months | 70 Months | 73 Months | 88 Months | As Needed |
| MAINTENANCE AND OPERATIONS | | | | | | |
| Need to Operate and Maintain Pump Stations | Yes | Yes | Yes | Yes | Yes | No |
| Amount of Structure To Maintain | Medium | Medium | High | High | High | Low |
| Tunnel Operations and Maintenance | No | No | No | No | Yes | No |
| Overall Rating | Medium | Medium | High | High | High | Low |



ENVIRONMENTAL IMPACT PLANS



ALTERNATIVE COMPARISON MATRIX

| CRITERIA | BUILD ALTERNATIVES | | | | | NO BUILD ALTERNATIVE |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|----------------------|
| | D | D1 | G2 | H1 | K | |
| ENGINEERING CRITERIA | | | | | | |
| Meets Purpose and Need | Yes | Yes | Yes | Yes | Yes | No |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium | Low |
| Maintenance and Protection of Traffic | Medium | High | High | High | High | Low |
| Security | Medium | Medium | High | High | High | Low |
| Design Criteria (Substandard Elements) | Low | Low | Low | Low | Low | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$922,618,920 | N/A |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months | As Needed |
| Maintenance and Operations | Medium | Medium | High | High | High | Low |
| ENVIRONMENTAL CRITERIA | | | | | | |
| Noise | | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 | 250 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 | 4 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 | 15 |
| Natural Ecosystems | | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | 90 acre | 4.26 acres | 3.04 acres | 0 |
| Total Wetland and SCW Permanent Impacts | 1.87 acres | 3.73 acres | 95 acre | 3.15 acres | 2.90 acres | 0 |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% | N/A |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres | 42 acres** |
| Waterfront Access | Yes | No | Yes | No | Yes | No |
| Socioeconomics | | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low | None |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 | 0 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium | None |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre | 0 |
| Regional Accessibility (Annual) | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | 0 |
| Cost Benefit from Reduction in Accidents (Annual) | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | 0 |
| Historic Architectural Resources | | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs | 0 acres/0 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 | 23 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 | 0 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low | None |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.

** Does not provide for stormwater treatment.



ALTERNATIVES ANALYSIS



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | | NO BUILD ALTERNATIVE |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|----------------------|
| | D | D1 | G2 | H1 | K | |
| ENGINEERING CRITERIA | | | | | | |
| Meets Purpose and Need | Yes | Yes | Yes | Yes | Yes | No |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium | Low |
| Maintenance and Protection of Traffic | Medium | High | High | High | High | Low |
| Security | Medium | Medium | High | High | High | Low |
| Design Criteria (Substandard Elements) | Low | Low | Low | Low | Low | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 | N/A |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months | As Needed |
| Maintenance and Operations | Medium | Medium | High | High | High | Low |
| ENVIRONMENTAL CRITERIA | | | | | | |
| Noise | | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 | 250 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 | 4 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 | 15 |
| Natural Ecosystems | | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | 90 acre | 4.26 acres | 3.04 acres | 0 |
| Total Wetland and SCW Permanent Impacts | 1.87 acres | 3.73 acres | 95 acre | 3.15 acres | 2.90 acres | 0 |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% | N/A |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres | 42 acres** |
| Waterfront Access | Yes | No | Yes | No | Yes | No |
| Socioeconomics | | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low | None |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 | 0 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium | None |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | 32 acre | .32 acre | .70 acre | 0 |
| Regional Accessibility (Annual) | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | 0 |
| Cost Benefit from Reduction in Accidents (Annual) | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | 0 |
| Historic Architectural Resources | | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs | 0 acres/0 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 | 23 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 | 0 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low | None |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.

** Does not provide for stormwater treatment.



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | | NO BUILD ALTERNATIVE |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|----------------------|
| | D | D1 | G2 | H1 | K | |
| ENGINEERING CRITERIA | | | | | | |
| Meets Purpose and Need | Yes | Yes | Yes | Yes | Yes | No |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium | Low |
| Maintenance and Protection of Traffic | Medium | High | High | High | High | Low |
| Security | Medium | Medium | High | High | High | Low |
| Design Criteria (Substandard Elements) | Low | Low | Low | Low | Low | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 | N/A |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months | As Needed |
| Maintenance and Operations | Medium | Medium | High | High | High | Low |
| ENVIRONMENTAL CRITERIA | | | | | | |
| Noise | | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 | 250 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 | 4 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 | 15 |
| Natural Ecosystems | | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | .90 acre | 4.26 acres | 3.04 acres | 0 |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | .95 acre | 3.15 acres | 2.90 acres | 0 |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% | N/A |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres | 42 acres** |
| Waterfront Access | Yes | No | Yes | No | Yes | No |
| Socioeconomics | | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low | None |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 | 0 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium | None |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre | 0 |
| Regional Accessibility (Annual) | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | 0 |
| Cost Benefit from Reduction in Accidents (Annual) | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | 0 |
| Historic Architectural Resources | | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs | 0 acres/0 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 | 0 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 | 23 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 | 0 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low | None |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative

* Includes channel realignment/relocation.

** Does not provide for stormwater treatment.



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|
| | D | D1 | G2 | H1 | K |
| ENGINEERING CRITERIA | | | | | |
| Meets Purpose and Need | Yes | Yes | Yes | Yes | Yes |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium |
| Maintenance and Protection of Traffic | Medium | High | High | High | High |
| Security | Medium | Medium | High | High | High |
| Design Criteria (Substandard Elements) | Low | Low | Low | Low | Low |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months |
| Maintenance and Operations | Medium | Medium | High | High | High |
| ENVIRONMENTAL CRITERIA | | | | | |
| Noise | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 |
| Natural Ecosystems | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | .90 acre | 4.26 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | .95 acre | 3.15 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres |
| Waterfront Access | Yes | No | Yes | No | Yes |
| Socioeconomics | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre |
| Regional Accessibility (Annual) | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 |
| Cost Benefit from Reduction in Accidents (Annual) | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 |
| Historic Architectural Resources | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|
| | D | D1 | G2 | H1 | K |
| ENGINEERING CRITERIA | | | | | |
| Meets Purpose and Need | Yes | Yes | Yes | Yes | Yes |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium |
| Maintenance and Protection of Traffic | Medium | High | High | High | High |
| Security | Medium | Medium | High | High | High |
| Design Criteria (Substandard Elements) | Low | Low | Low | Low | Low |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months |
| Maintenance and Operations | Medium | Medium | High | High | High |
| ENVIRONMENTAL CRITERIA | | | | | |
| Noise | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 |
| Natural Ecosystems | | | | | |
| Floodplain | 2.26 acres | 4.45 acres | .90 acre | 4.26 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | .95 acre | 3.15 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres |
| Waterfront Access | Yes | No | Yes | No | Yes |
| Socioeconomics | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre |
| Regional Accessibility (Annual) | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 | \$39,000,000 |
| Cost Benefit from Reduction in Accidents (Annual) | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 | \$11,000,000 |
| Historic Architectural Resources | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|
| | D | D1 | G2 | H1 | K |
| ENGINEERING CRITERIA | | | | | |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium |
| Maintenance and Protection of Traffic | Medium | High | High | High | High |
| Security | Medium | Medium | High | High | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months |
| Maintenance and Operations | Medium | Medium | High | High | High |
| ENVIRONMENTAL CRITERIA | | | | | |
| Noise | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 |
| Natural Ecosystems | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | .90 acre | 4.26 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | .95 acre | 3.15 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres |
| Waterfront Access | Yes | No | Yes | No | Yes |
| Socioeconomics | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre |
| Historic Architectural Resources | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|
| | D | D1 | G2 | H1 | K |
| ENGINEERING CRITERIA | | | | | |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium |
| Maintenance and Protection of Traffic | Medium | High | High | High | High |
| Security | Medium | Medium | High | High | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months |
| Maintenance and Operations | Medium | Medium | High | High | High |
| ENVIRONMENTAL CRITERIA | | | | | |
| Noise | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 |
| Natural Ecosystems | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | .90 acre | 4.26 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | .95 acre | 3.15 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres |
| Waterfront Access | Yes | No | Yes | No | Yes |
| Socioeconomics | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre |
| Historic Architectural Resources | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.



**BROWNING ROAD FROM NEW ST.
MARY'S CEMETERY DRIVEWAY**



EXISTING CONDITIONS

BROWNING ROAD LOOKING WEST



ALTERNATIVE D, D1 WITH NOISE WALLS

BROWNING ROAD LOOKING WEST



ALTERNATIVE G2, H1 WITH NOISE WALLS

BROWNING ROAD LOOKING WEST



ALTERNATIVE K WITH NOISE WALLS

**BELLMAWR PARK SCHOOL FROM
VICTORY DRIVE/POPLAR PLACE**



EXISTING CONDITIONS

VICTORY DRIVE LOOKING SOUTH



ALTERNATIVES D, D1 WITH NOISE WALLS

VICTORY DRIVE LOOKING SOUTH



ALTERNATIVES G2, H1 WITH NOISE WALLS

VICTORY DRIVE LOOKING SOUTH



ALTERNATIVE K WITH NOISE WALLS

ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | | | |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|
| | D | D1 | G2 | H1 | K |
| ENGINEERING CRITERIA | | | | | |
| Temporary Construction Impacts | Medium | Medium | High | High | Medium |
| Maintenance and Protection of Traffic | Medium | High | High | High | High |
| Security | Medium | Medium | High | High | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$833,973,280 | \$893,722,160 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 70 months | 73 months | 88 months |
| Maintenance and Operations | Medium | Medium | High | High | High |
| ENVIRONMENTAL CRITERIA | | | | | |
| Noise | | | | | |
| Residential Noise Impact Reduction | 109 | 109 | 91 | 91 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 150 | 140 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 35 | 46 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 12 | 12 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 18 | 18 | 5 |
| Natural Ecosystems | | | | | |
| Floodplain | 2.28 acres | 4.45 acres | .90 acre | 4.26 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | 95 acre | 3.15 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 100% | 12% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 64 acres | 67 acres* | 67 acres |
| Waterfront Access | Yes | No | Yes | No | Yes |
| Socioeconomics | | | | | |
| Visual Impacts | Medium | Medium | High | High | Low |
| Residential Acquisitions | 13 | 13 | 5 | 5 | 13 |
| Community Property Acquisitions | Medium | Medium | Low | Low | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .32 acre | .32 acre | .70 acre |
| Historic Architectural Resources | | | | | |
| Physical Impacts to Historic District | 2.11 acres/5bldgs | 2.11 acres/5 bldgs | 1.05 acres/1 bldg | 1.05 acres/1 bldg | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 18 | 18 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 1 | 1 | 0 |
| Impact to Viewshed | Medium | Medium | High | High | Low |

NOTES: Air Quality, Hazardous Waste and Archaeology are not distinguishing criteria, since results are virtually equal for each alternative.

* Includes channel realignment/relocation.



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | |
|---|--------------------|--------------------|--------------------|
| | D | D1 | K |
| ENGINEERING CRITERIA | | | |
| Temporary Construction Impacts | Medium | Medium | Medium |
| Maintenance and Protection of Traffic | Medium | High | High |
| Security | Medium | Medium | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 88 months |
| Maintenance and Operations | Medium | Medium | High |
| ENVIRONMENTAL CRITERIA | | | |
| Noise | | | |
| Residential Noise Impact Reduction | 109 | 109 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 5 |
| Natural Ecosystems | | | |
| Floodplain | 2.28 acres | 4.45 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 67 acres |
| Waterfront Access | Yes | No | Yes |
| Socioeconomics | | | |
| Visual Impacts | Medium | Medium | Low |
| Residential Acquisitions | 13 | 13 | 13 |
| Community Property Acquisitions | Medium | Medium | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .70 acre |
| Historic Architectural Resources | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | Low |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | | |
|---|--------------------|--------------------|--------------------|
| | D | D1 | K |
| ENGINEERING CRITERIA | | | |
| Temporary Construction Impacts | Medium | Medium | Medium |
| Maintenance and Protection of Traffic | Medium | High | High |
| Security | Medium | Medium | High |
| Cost to Build | \$608,431,000 | \$642,191,560 | \$822,618,920 |
| Construction Duration | 64 months | 63 months | 88 months |
| Maintenance and Operations | Medium | Medium | High |
| ENVIRONMENTAL CRITERIA | | | |
| Noise | | | |
| Residential Noise Impact Reduction | 109 | 109 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 | 5 |
| Natural Ecosystems | | | |
| Floodplain | 2.28 acres | 4.45 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% | 93% |
| Total Impervious Coverage | 61 acres | 65 acres | 67 acres |
| Waterfront Access | Yes | No | Yes |
| Socioeconomics | | | |
| Visual Impacts | Medium | Medium | Low |
| Residential Acquisitions | 13 | 13 | 13 |
| Community Property Acquisitions | Medium | Medium | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre | .70 acre |
| Historic Architectural Resources | | | |
| Physical Impacts to Historic District | 2.11 acres/5 bldgs | 2.11 acres/5 bldgs | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | | |
| Less than 3 dBA (Not Perceivable) | 16 | 16 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 | 0 |
| Impact to Viewshed | Medium | Medium | Low |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | |
|---|--------------------|---------------|
| | D | D1 |
| ENGINEERING CRITERIA | | |
| | | |
| Maintenance and Protection of Traffic | Medium | High |
| Cost to Build | \$608,431,000 | \$642,191,560 |
| Construction Duration | 64 months | 63 months |
| | | |
| ENVIRONMENTAL CRITERIA | | |
| | | |
| Noise | | |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 |
| | | |
| Natural Ecosystems | | |
| Floodplain | 2.28 acres | 4.45 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% |
| Total Impervious Coverage | 61 acres | 65 acres |
| Waterfront Access | Yes | No |
| | | |
| Socioeconomics | | |
| | | |
| Historic Architectural Resources | | |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | |
|---|--------------------|---------------|
| | D | D1 |
| ENGINEERING CRITERIA | | |
| | | |
| Maintenance and Protection of Traffic | Medium | High |
| Cost to Build | \$608,431,000 | \$642,191,560 |
| Construction Duration | 64 months | 63 months |
| | | |
| ENVIRONMENTAL CRITERIA | | |
| | | |
| Noise | | |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 135 | 125 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 26 |
| | | |
| Natural Ecosystems | | |
| Floodplain | 2.28 acres | 4.45 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 3.73 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 10% |
| Total Impervious Coverage | 61 acres | 65 acres |
| Waterfront Access | Yes | No |
| | | |
| Socioeconomics | | |
| | | |
| Historic Architectural Resources | | |
| | | |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | |
|---|--------------------|--------------------|
| | D | K |
| ENGINEERING CRITERIA | | |
| Temporary Construction Impacts | Medium | Medium |
| Maintenance and Protection of Traffic | Medium | High |
| Security | Medium | High |
| Cost to Build | \$608,431,000 | \$822,618,920 |
| Construction Duration | 64 months | 88 months |
| Maintenance and Operations | Medium | High |
| ENVIRONMENTAL CRITERIA | | |
| Noise | | |
| Residential Noise Impact Reduction | 109 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 135 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 |
| Natural Ecosystems | | |
| Floodplain | 2.28 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 93% |
| Total Impervious Coverage | 61 acres | 67 acres |
| Waterfront Access | Yes | Yes |
| Socioeconomics | | |
| Visual Impacts | Medium | Low |
| Residential Acquisitions | 13 | 13 |
| Community Property Acquisitions | Medium | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre |
| Historic Architectural Resources | | |
| Physical Impacts to Historic District | 2.11 acres/5bldgs | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 16 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 |
| Impact to Viewshed | Medium | Low |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | |
|---|--------------------|--------------------|
| | D | K |
| ENGINEERING CRITERIA | | |
| Temporary Construction Impacts | Medium | Medium |
| Maintenance and Protection of Traffic | Medium | High |
| Security | Medium | High |
| Cost to Build | \$608,431,000 | \$822,618,920 |
| Construction Duration | 64 months | 88 months |
| Maintenance and Operations | Medium | High |
| ENVIRONMENTAL CRITERIA | | |
| Noise | | |
| Residential Noise Impact Reduction | 109 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 135 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 7 |
| Greater than 7 dBA (Noticeable) | 0 | 0 |
| Approved Additional Residential Units (not present under existing conditions) | 5 | 5 |
| Natural Ecosystems | | |
| Floodplain | 2.28 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 93% |
| Total Impervious Coverage | 61 acres | 67 acres |
| Waterfront Access | Yes | Yes |
| Socioeconomics | | |
| Visual Impacts | Medium | Low |
| Residential Acquisitions | 13 | 13 |
| Community Property Acquisitions | Medium | Medium |
| 4(f) Property Acquisition (In Acres) | .70 acre | .70 acre |
| Historic Architectural Resources | | |
| Physical Impacts to Historic District | 2.11 acres/5bdgs | 2.20 acres/5 bldgs |
| Noise Impact Reduction to Historic District | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 16 | 12 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 0 | 0 |
| Impact to Viewshed | Medium | Low |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | |
|---|--------------------|---------------|
| | D | K |
| ENGINEERING CRITERIA | | |
| Maintenance and Protection of Traffic | Medium | High |
| Security | Medium | High |
| Cost to Build | \$608,431,000 | \$822,618,920 |
| Construction Duration | 64 months | 88 months |
| Maintenance and Operations | Medium | High |
| ENVIRONMENTAL CRITERIA | | |
| Noise | | |
| Residential Noise Impact Reduction | 109 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 135 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 7 |
| Natural Ecosystems | | |
| Floodplain | 2.28 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 93% |
| Total Impervious Coverage | 61 acres | 67 acres |
| Socioeconomics | | |
| Visual Impacts | Medium | Low |
| Historic Architectural Resources | | |
| Noise Impact Reduction to Historic District | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 16 | 12 |
| Impact to Viewshed | Medium | Low |



ALTERNATIVES ANALYSIS

| CRITERIA | BUILD ALTERNATIVES | |
|---|--------------------|---------------|
| | D | K |
| ENGINEERING CRITERIA | | |
| Maintenance and Protection of Traffic | Medium | High |
| Security | Medium | High |
| Cost to Build | \$608,431,000 | \$822,618,920 |
| Construction Duration | 64 months | 88 months |
| Maintenance and Operations | Medium | High |
| ENVIRONMENTAL CRITERIA | | |
| Noise | | |
| Residential Noise Impact Reduction | 109 | 113 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 135 | 133 |
| Greater than 3 dBA but less than 7 dBA (Perceivable) | 15 | 7 |
| Natural Ecosystems | | |
| Floodplain | 2.28 acres | 3.04 acres |
| Total Wetland and SOW Permanent Impacts | 1.97 acres | 2.90 acres |
| On-Site Wetland Mitigation Opportunities | 100% | 93% |
| Total Impervious Coverage | 61 acres | 67 acres |
| Socioeconomics | | |
| Visual Impacts | Medium | Low |
| Historic Architectural Resources | | |
| Noise Impact Reduction to Historic District | 14 | 18 |
| Post Mitigation Residential Noise Increase over Existing Conditions | | |
| Less than 3 dBA (Not Perceivable) | 16 | 12 |
| Impact to Viewshed | Medium | Low |



ALTERNATIVES ANALYSIS

➤ **Alternative D Preferred**

✓ **Subject to concurrence by:**

- **Core Group**
- **CAC**
- **ACM**
- **PIC**



NEXT STEPS



NEXT STEPS

- **Funding for Draft Environmental Impact Statement (DEIS) approved 9/18/06**
- **Prepare pre-DEIS and DEIS**
- **Prepare Conceptual Army Corps Permit**
- **Prepare Section 4(f) Documentation for Bellmawr Park Mutual Housing**



EIS SCHEDULE

- **FHWA review of TES –2006**
- **Identify Preferred Alternative – Fall 2006**
- **Pre-Draft EIS and Conceptual ACOE Permit – Winter 2007**
- **Agency Review – Spring 2007**
- **Circulation of DEIS – Fall 2007**
- **Public Hearing – Fall 2007**
- **Final EIS – Spring 2008**



CONSTRUCTION SCHEDULE

- **Anticipate multiple construction contracts**
 - ✓ **Funding will influence schedule**
 - ✓ **Alternative selected will influence schedule**
 - ✓ **Start late 2009 / 2010 with an advanced contract**
 - ✓ **Complete by 2015±**

