VIII. ALTERNATIVES SCREENING AND EVALUATION

The modal alternatives identified in the study were evaluated based on evaluation criteria developed by the consulting team and verified through the public involvement process. The evaluation criteria developed allowed the team to compare each modal alternative against the No Build condition and allowed comparison across alternatives.

Various analyses employing a number of different disciplines were used to rank the alternatives, including environmental, civil, travel demand, and stakeholder input. The scores for each alternative were developed based on the technical analysis performed, including the analysis of transportation system performance and estimates of future usage generated by the various travel demand models. The scores for stakeholder input were qualitatively developed based on feedback and comments received throughout the public involvement process.

For the environmental analysis data as collected related to historic and archeological resources, noise sensitive receptors, contaminated soils locations and wetlands. Each of the environmental constraints was mapped and used to qualitatively analyze likely impacts based on the conceptual alignments of the alternatives. From a civil engineering perspective information related to horizontal/vertical clearance, curve radius, design speed, profile and grade, were used to develop alignments that would minimize the need for design exception and result in buildable alternatives. Information related to order of magnitude capital and operational costs and well as right of way, properties and utility impacts were also developed for comparative analysis. The following sections describe the evaluation criteria used and the screening or evaluation process undertaken.

EVALUATION CRITERIA

The Study Mission is to define the best use or best uses of the Bergen Arches right-of-way. Our process has always considered four elements to evaluate the alternatives: the ability to satisfy the transportation needs, feasibility of construction alternatives, the environmental impacts, and the degree of stakeholder support. The elements were broken down into five categories to evaluate the alternatives as follows:

- Accessibility Criteria,
- Mobility Criteria,
- Environmental Issues Criteria,
- Feasibility Criteria, and
- Stakeholder Criteria.

Components of each criteria were developed, and the public was invited to offer comments or suggestions on the draft criteria during and after the Public Information Center held on June 18, 2002. Additionally, the team sought ideas and comments on the draft criteria from the Task Force at the June 2002 Task Force meeting and from the Technical Advisory Committee at the August 2002 meeting. As a result of input received, the criteria for evaluation were finalized, along with the weights assigned to each component.

The criteria for evaluating accessibility issues were defined as follows:

- Rail freight access enhancements – Does the alternative make improvements in rail freight access to intermodal facilities?

- Truck access enhancements to intermodal facilities – Does the alternative increase truck accessibility (in terms of lane miles)?

- Enhancements to the roadway network –
    - Does the alternative increase automobile accessibility to major destination centers on the Jersey City waterfront?
    - Does the alternative increase bus accessibility to major destination centers on the Jersey City waterfront?

- Enhancements to passenger rail services and connectivity –
    - Does the alternative result in new passenger rail trips diverted from the auto mode?
    - Does the alternative offer improvements in passenger rail connectivity to multimodal facilities?
    - Does the alternative result in a diversion from other existing transit services?

The criteria developed for mobility related measures were defined as follows:

- Regional highway network performance –
    - Does the alternative impact travel demand compared to the No Build (in terms of VMT)?
    - Does the alternative reduce peak period congestion compared to the No Build (in terms of VHT)?

- Local Highway Network Performance –
    - Does the alternative impact travel demand compared to the No Build (in terms of VMT)?
    - Does the alternative reduce peak period congestion compared to the No Build (in terms of VHT)?
    - Does the alternative decrease total vehicle trips compared to the No Build?
    - Does the alternative increase the total passenger carrying capacity compared to the No Build?
    - Does the alternative offer improvements to freight mobility compared to the No Build?
    - Does the alternative impact average peak period travel speed compared to the No Build?
    - Does the alternative improve local operating conditions compared to the No Build (in terms of v/c)?

The criteria developed for environmental issues were defined as follows:

- Community impacts in terms of the potential for increase in non-motorized transportation –
    - What level of accommodation for non-motorized transportation is offered by the alternative?

  - What is the increase in non-motorized commuting offered by the alternative?

- Community impacts such as the impact to residences, businesses and cultural resources -
  - How significant is the extent of community resource acquisition needed?

- Community impacts in terms of land use compatibility –
  - What is the level of compatibility of the alternative compared to adjacent land uses and zoning?

- The ability to preserve or stabilize the Bergen Arches Historic District –
  - Is there potential, if the alternative were developed, to repair or maintain the character-defining features of the Historic District and historic properties?
  - Does the alternative require a modification to character-defining features of the Historic District or historic properties?
  - Is the alternative consistent with the historic use of the District and historic properties?

- The impacts to air quality –
  - Does the alternative result in a reduction of single occupancy vehicle usage in the study area?
  - What is the impact to travel demand compared to the No Build (in terms of VMT)?
  - Does the alternative reduce peak period congestion compared to the No Build (in terms of VHT)?

- The impact of the alternative on noise levels –
  - Does the alternative increase noise levels (according to FHWA standards) at sensitive locations?
  - What is the potential to mitigate noise impacts?

- The impact to environmentally sensitive areas like contaminated sites –
  - What is the level of environmentally contaminated locations involved?
  - What is the level of potential environmental remediation required?

- The impact to environmentally sensitive areas like wetlands –
  - What is the anticipated amount of wetlands impacted?
  - What is the potential for restoration and improvements to wetlands?

- The impact to environmentally sensitive areas like vegetated areas –
  - What is the anticipated amount of vegetated area impacted?

- The ability for greenway or landscape enhancement –
  - Is there area available for potential greenbelt or vegetative landscape enhancement?

The criteria developed for feasibility measures were defined as follows

- The nature of geometric or design constraints –
  - What is the extent of design exceptions needed for the alternative?
  - What are impacts of the alignment on design speed?

- The nature of capital costs –
    - What are the estimated construction costs compared to other alternatives?

- The nature of operating costs –
    - What are the estimated operating and maintenance costs compared to other alternatives?

- The nature of right-of-way impacts –
    - How much property acquisition is needed compared to other alternatives?

The criteria developed for stakeholder interest were defined as follows:

- The nature of community support –
    - What is the level of interest from residential communities?
    - What is the level of interest from business communities?

- The nature of interest group support –
    - What is the level of interest from Community Preservation groups?
    - What is the level of interest from Historic Preservation groups?
    - What is the level of interest from Environmental Interest groups?
    - What is the level of interest from Transportation Advocacy groups?

SCREENING PROCESS

Data on physical constraints (engineering feasibility for alternative modal uses) and environmental features present in the study area were developed and collected. Information from these sources along with information on system connectivity for the access criteria and network statistics from the modeling effort for the mobility criteria were augmented with information gathered from stakeholders to form the basis for the screening process.

The criteria described in the above section were arrayed in an evaluation matrix**.** This matrix served to aid in the determination of the best use or uses for the Bergen Arches. **Tables 19A-19F** contain the criteria and weighting components of the evaluation matrices. The entire matrix can be found in **Appendix A.** The criteria developed were arrayed on the left side of the matrix while twelve alternative modes were arrayed across the top of the matrix. These modes included one No Build alternative, one rail freight alternative, one bicycle and pedestrian alternative, three roadway alternatives, three transit alternatives, and three mixed mode alternatives. The criteria were assigned weights to reflect the relative value associated with each and to balance a category when multiple criteria were used. The sum of the weights for the Accessibility and Mobility criteria totaled 200 points. Environmental criteria weights totaled 100 points, while Feasibility and Stakeholder Interest criteria totaled 70 points and 50 points respectively. Scores ranging from “0” to “5” were used to develop a base value for each criteria. These values were than weighted accordingly to develop a total score for all five criteria (Accessibility, Mobility, Feasibility, Environmental Issues, and Stakeholder Support). These individual criteria scores were then combined to develop a total composite score. A high total score reflects a relatively better use of the Arches compared to other alternatives. A summary of total scores is included in **Table 20.**

Table 19A: Accessibility		Weight
Rail Freight Access Enhancements	**Improvements in rail freight access to intermodal facilities** Significant=5, Marginal=3, Insignificant or None=0	**30**
Truck Access Enhancements to Intermodal Facilities	**Increase in truck accessibility** Significant=5, Marginal=3, Insignificant or None=0	**30**
Enhancements to Road Network	**Increase in automobile accessibility to major destination centers on the Jersey City waterfront** Significant=5, Marginal=3, Insignificant or None=0	**30**
	Increase in bus accessibility to major destination centers on the Jersey City waterfront Significant=5, Marginal=3, Insignificant or None=0	**30**
Enhancements to Passenger Rail Services and Connectivity	**Number of new transit trips diverted from the auto mode** Significant=5, Marginal=3, Insignificant or None=0	**40**
	Improvements in connectivity to multimodal facilities Significant=5, Marginal=3, Insignificant or None=0	**30**
	Degree of diversion from other existing transit services Insignificant or None=5, Marginal=3, Significant=1, NA=0	**10**
	Sub-Total Score	**200**

Table 19B: Mobility		Weight
Regional Highway Network Performance	**Impact to travel demand over future "no-build" conditions (in terms of VMT)** Decrease=5, No Change=3, Increase=1	**30**
	Reduction in peak period congestion over future "no-build" conditions (in terms of VHT) Significant=5, Marginal=3, Insignificant or None=0	**30**
Local Highway Network Performance	**Impact to VMT over future "no-build" conditions** Decrease=5, No Change=3, Increase=1	**20**
	Reduction in peak period congestion over future "no-build" conditions (in terms of VHT) Significant=5, Marginal=3, Insignificant or None=0	**40**
	Decrease in total vehicle trips over "no-build" conditions Significant=5, Marginal=3, Insignificant or None=0	**10**
	Increase in total passenger carrying capacity over "no-build" conditions Significant=5, Marginal=3, Insignificant or None=0	**20**
	Improvements to freight mobility over "no-build" conditions Significant=5, Marginal=3, Insignificant or None=0	**10**
	Impact to average peak period travel speed over future "no-build" conditions increase=5, No Change=3, Decrease=1	**20**
	Improvement to local operating conditions over future "no-build" conditions (in terms of v/c) Significant=5, Marginal=3, Insignificant or None=0	**20**
	Sub-Total Score	**200**

Table 19C: Feasibility		Weight
Geometric/Design Constraints	**Design Exceptions Needed** None=5, Minor=3, Major=1	**5**
	Alignment Impacts on Design Speed None=5, Minor=3, Major=1	**5**
Capital Costs	**Estimated Construction Costs (Relative)** Low=5, Medium=3, High=1	**30**
Operating Costs	**Operating and Maintenance Costs (Relative)** Low=5, Medium=3, High=1	**20**
Right of Way Impacts	**Property Acquisition Necessary** Low=5, Medium=3, High=1	**10**
	Sub-Total Score	**70**

Table 19D: Stakeholder Criteria		Weight
Community Support	**Level of interest from residential communities?** Strong=5, Moderate=3, None=1	**10**
	Level of interest from business communities? Strong=5, Moderate/Light=3, None/No Response=1	**10**
Interest Group Support	**Level of interest from Community Preservation Groups?** Strong=5, Moderate/Light=3, None=1	**10**
	Level of interest from Historical and Environmental Preservation Groups? Strong=5, Moderate/Light=3, None=1	**10**
	Level of interest from Transportation Advocacy Groups? Strong=5, Moderate/Light=3, None=1	**10**
	Sub-Total Score	**50**

Table 19E: Environmental Criteria		Weight
Community Impacts: Potential for an Increase in Non-Motorized Transportation	**Level of accommodation for non-motorized transportation** High=5, Medium=3, None=0	**7**
	Increase in non-motorized Commuting High=5, Medium=3, None=0	**6**
Community Impacts: Impact to Residences/ Business/ Cultural Resources	**Extent of community resource acquisition (Schools, Libraries, other public facilities)** Insignificant/None=5, Marginal=3, Significant=0	**6**
Community Impacts: Land Use Compatibility	**Level of Compatibility with adjacent uses and zoning** High=5, Medium=3, Low=0	**6**
Preserve/Stabilize Arches Historic District	**Potential to repair/maintain character-defining features of Historic District(s)/historic property(ies)** Yes=5, Possible=3, No=0	**4**
	Required modification of character-defining feature(s) of Historic District(s)/historic property(ies) No=5, Possible=3, Yes=1	**4**
	Consistency with historic use of District(s)/property(ies) Yes=5, No=0	**4**
Air Quality Impacts	**Reduction in single occupancy vehicle usage in the study area** Significant=5, Marginal=3, Insignificant/None=0	**10**
	Impact to travel demand over future "no build" conditions (in terms of VMT) Decrease=5, No Change=3, Increase=0	**10**
	Reduction in peak period congestion over future "no-build" conditions (in terms of VHT) Significant=5, Marginal=3, Insignificant/None=0	**10**
Noise Impacts/Noise Mitigation Potential	**Increase in noise levels (according to FHWA standards) at sensitive locations** Insignificant/None=5, Marginal=3, Significant=0	**10**
	Potential to mitigate noise impacts Significant=5, Marginal=3, Insignificant/None=0	**10**
Environmentally Sensitive Areas: Contaminated Sites	**Level of environmentally contaminated locations involved** Low=5, Medium=3, High=0	**3**
	Level of potential environmental remediation required Not required/Low=5, Medium=3, High=0	**2**
Environmentally Sensitive Areas: Wetland Areas	**Anticipated amount of wetlands impacted** Insignificant/None=5, Marginal=3, Significant=1	**2**
	Potential for restoration and improvements to wetland areas Not Required/Significant=5, Marginal=3, Insignificant/None=0	**2**
Environmentally Sensitive Areas: Vegetated Areas	**Anticipated amount of vegetated areas impacted by alternative** Insignificant/None=5, Marginal=3, Significant=0	**2**
Greenway/ Landscape Enhancement	**Area available for potential greenbelt/vegetative landscape enhancement** Not Required/Significant=5, Marginal=3, Insignificant/None=0	**2**
	Sub-Total Score	**100**

Table 20: Alternative Comparison

	Accessibility	Mobility	Feasibility	Environmental	Stakeholder	Total
No Build	0	210	350	287	210	1057
BP1 *(Bike/ Ped)*	0	210	300	380	190	1080
F1 *(Freight)*	240	290	200	272	90	1092
R1 *(Roadway: 11th/18th)*	400	640	215	205	50	1510
R2 *(Roadway: 6th/6th)*	400	640	160	217	50	1467
R3 *(Roadway: 18th/18th)*	400	640	215	205	50	1510
T1 *(LRT: Secaucus)*	370	590	145	299	170	1574
T2 *(LRT: Meadowlands)*	450	600	85	311	170	1616
T3 *(Busway)*	430	370	215	248	50	1313
M1 *(LRT & Roadway:11th/18th)*	530	660	80	259	70	1599
M2 *(1 Lane Bus&HOV3, 1 All: 11th/18th)*	600	650	215	235	50	1750
M3 *(2 Lane Bus & HOV3)*	590	350	215	185	50	1390