REVISED DRAFT 8/15/03
Based on comments by the CAC, NJDOT Core Group and Reviewing Resource Agencies

TECHNICAL MEMORANDUM
MATRIX CRITERIA

DATE: 8/15/03

RE: I-295/I-76/Rt. 42 Direct Connection – Alternatives vs. Impacts Matrix

---

As part of the alternative evaluation and selection process, 26 conceptual alternatives were developed that appear to have the potential to address the deficiencies of the Interchange as described in the Purpose and Need Statement identified for this project. These Conceptual Alternatives will be evaluated, in accordance with several criteria on a broad brush level. Some of these individual criteria include impacts to the environment, maintenance of the social integrity of the community, disruption to the motoring public during construction and overall improvement of the safety and flow thru the Interchange. From these initial Alternatives, a shortlist will be developed of alternatives that would be subject of more detailed engineering and environmental studies during the EIS process. The attached matrix indicates the anticipated impacts that each alternative could cause. The ratings of the impacts at this initial level are based upon "desktop" evaluations with limited field and analytical evaluations. The following describes the rating system developed for the major potential impacts that the alternatives could cause. The ratings are either qualitative, such as "high", "moderate", or "low," or, if applicable, quantitative, consisting of an actual numerical value of acres, or number of resources impacted (such as wetlands, cultural resources or hazardous contaminated sites). When establishing the short list of alternatives to be considered in the Environmental Impact Statement, consideration would be given to the alternatives with the least overall impact. The short listing scores can not simply be added up to determine the alternative with the highest or least impacts, as all impacts are not equally weighted. In addition, several of the impacts can be either totally or partially mitigated, such as by wetland replacement or the installation of noise walls. The weight of the impacts each reviewer places on the different categories can therefore be considered subjective. It is for this reason reviewers representing different disciplines and backgrounds will be providing their comments, along with the local community thru their local elected public officials and the Community Advisory Committee.

All alternatives have been designed to the same minimum Design Criteria. The following describes the criteria that the impacts of each alternative would be rated for:

Constructibility

For this criterion the alternatives will be reviewed to determine relative probable construction or constructability issues. Evaluation factors include impacts to the local residents and motoring public during construction with an emphasis on traffic delays, impact of detours/diversions and duration of construction duration. Evaluation of the alternatives for constructibility would be quantified as High Impact, Moderate Impact, or Low Impact.

Maintain and Operate

Evaluation factors for this criterion include anticipated ease of routine maintenance or the need for expensive or labor intensive maintenance for the alternatives under development to ensure that the project does not have extensive hidden high life cycle costs or flaws. This evaluation will consider whether the proposed facility can be properly maintained utilizing standard equipment/methods with acceptable labor demands. Examples of elements requiring high future maintenance could include: tunnels or multi-level structures. Impacts of numerous structures and single lane ramps with their inherent maintenance issues of salt usage and snow removal problems during the winter will also be considered.

Each alternative will be rated for maintainability as Highly Difficult, Moderately Difficult, or Low Difficulty.

Comparison of Estimated Construction Cost

The relative relationship of Construction Costs for each alternative will be developed utilizing a comparison of roadway and bridge lengths for each alternatives. The length of new bridge or tunnel lane construction required will be multiplied by a factor of 2 and added to the length of new roadway lanes to determine the relative cost required to construct each alternative. In a similar fashion, the length of new tunnel lane construction will be multiplied by a factor of x. The effective lane length shown on the matrix is the sum of the actual lane length of roadway in feet plus the equivalent lane length of bridges, plus the equivalent lane length of tunnel.

Compliance with Design Criteria

Each alternative would be evaluated for compliance with applicable design standards (NJDOT-Design Manuals or AASHTO 2001 – A Policy on Geometric Design of Highways and Streets). The number of undesirable design features not requiring design exceptions, such as left exits or entrances, will be counted. The number of conflict points present in each of the alternatives will also be identified. This criteria will show the number of undesirable design features as well as the number of proposed conflict points.

Right of Way:

For ROW, each of the following impacts will be considered to quantify the relocation and/or proximity impacts due to the individual Alternative.

Residential Property Impacts

Impacts to residents will be evaluated for each of the alternatives by counting the number of discrete residential structures that could require taking and are therefore considered as a relocation. Residential structures that are located within 50 feet of the alignment will be less likely to incur relocation but will have proximity impacts and will therefore also be counted. For the Bellmawr Park area and other multifamily structures, each individual residential unit will be counted separately.

Commercial Property Impacts

Impacts to commercial properties will be evaluated for the alternatives in the same manner as the residential properties.

Institutional Properties

There are several institutional properties such as churches, schools cemeteries, etc. that may potentially be impacted. The impacts to these facilities will be shown the same as residential above except that the categories will be the number of facilities impacted severely, moderately, or only slightly.

Recreational Properties

There are several recreational properties that may potentially be impacted. The evaluation of the impacts will be performed in the same manner as the institutional properties. A probable relocation, and therefore a severe impact, would be where the impacts are extensive enough to make the facility nonfunctional. An example of a moderate property impact might be rearrangement of the layout of some ball fields. No differentiation will be made for recreational properties having or lacking protected 4(f) status.

Wetlands

Wetlands can be broken into 2 categories - tidal and non-tidal. For this evaluation each type of wetland will be evaluated separately. The total wetlands impacted in acres for each alternative will be determined from existing published wetland mapping and confirmed by limited field observations.

The wetlands have been identified through the use of Department of Environmental Protection and Army Corps of Engineer maps. Each alternative will be evaluated on the basis of total wetland acreage impacted for each category.

Floodplains

The extent of floodplains has been identified through the use of Federal Emergency Management Agency maps. Each alternative will be evaluated on the basis of total acreage impact to the 100-year floodplain.

Noise

Each alternative will be evaluated for its relative probable noise impact without mitigation. Factors considered will be proximity to and type of receptors and the height of the new facility over the existing ground. The increase in noise will be rated as High, Moderate, or Low.

Air Quality

Each alternative will be evaluated for its relative probable impact to air quality. The effects to air quality will also be rated as High, Moderate, or Low.

Socioeconomics

The study area consists of residential, industrial, commercial, recreational and public/quasi-public land uses. The only vacant land in the project area consists of wetlands and floodplains. Community facilities located in the project area also have been identified. Each alternative will be assessed for its' impact to the quality of life of the community, including impacts to public and community facilities. The subjective evaluation will include impacts to community cohesion, (i.e. division of existing neighborhoods). The impacts will be identified as High, Moderate, and Low.

Environmental Justice

Preliminary data regarding environmental justice (EJ) populations has been gathered through Census data and initial public outreach in the study area. Since impacts to EJ populations may include impacts resulting from displacement of residences or community facilities, disruption of community cohesion, air quality impacts, noise impacts, etc., data evaluated included census blocks or census block groups located within 100 feet of the alignment for each alternative. Based on the preliminary evaluation conducted, there are no significant differences between alternatives; therefore, EJ was not used as a screening criterion.

Archaeological Resources

Within the project study area there are current areas of archeological resources that have not yet been evaluated for significance. The potential level of sensitivity of the sites has been determined and mapped as: low, moderate or high. Criteria used to determine the level of sensitivity of the impact is: the level of current disturbance, the degree of the slope of the land, the site's proximity to water, the soil type, the level to which the sites are disturbed under current conditions and artifacts found during excavations. This level of sensitivity is used to determine the probability level of the existence of an archeological site. The alternatives will be evaluated based on the total acreage impacts to either the low, moderate, or high sensitivity sites.

Historic Resources

Within the project study area there are areas or sites of varying Historic significance. The number of sites potentially impacted physically, visually, or audibly for each degree of impact – High, Moderate or Low will be identified.

Hazardous/Contaminated Sites

Information regarding potential hazardous waste sites was obtained from available NJDEP databases and a site reconnaissance of the study area. The data evaluated was within 250 feet of the alignment for each alternative. Several sites have been identified as potentially hazardous/contaminated sites in the project area. However, based upon the preliminary review conducted, there are no significant differences between alternatives; therefore, Hazardous/Contaminated Sites was not used as a screening criterion.

Visual/Contextual Impacts

Under this criterion, an evaluation will be made of whether an alternative introduces a visual intrusion that does not fit into the context of the project area. The evaluation is relative and will be based on a review and understanding of the proposed construction and its potential visual impacts on the surrounding communities. Impacts will be qualified as High, Moderate or Low.