The route 21 freeway completion experience in Passaic County, New Jersey, USA

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Abstract

The New Jersey Department of Transportation (NJDOT), in December 2000, was responsible for completing construction of the last 1.8 miles of roadway on State Highway 21 in Passaic County, New Jersey. This project completed the "missing link" within the Route 21 corridor which, due to a lack of funding, the passage of the National Environmental Policy Act in 1969 and political inattention for over 30 years, created a situation in which motorists traversing Route 21 northbound would have to traverse local streets through two urban municipalities to access other major highways to the north.

The NJDOT, as part of their planning and design process, prepared a comprehensive environmental impact statement, which included information related to numerous meetings and discussions held with municipal and civic leaders for the purpose of assessing their sense of optimizing the highway alignment while minimizing its environmental impact on the municipalities. In addition, through supplemental funding provided from the Federal Highway Administration, a series of amenities and enhancements were provided to the respective communities (i.e. parks, landscaping, aesthetically upgraded noise barriers) as part of the construction process.
Keywords: transportation planning, economic impacts, visual impacts, environmental impacts, transportation aesthetics, context sensitive design.

1 Introduction

In January 2002, the NJDOT contracted with the New Jersey Institute of Technology to perform a five year assessment of the impact of this project after its completion. This process, which is rather unique, is intended to perform some of the following functions:

- Survey political and civic leaders in both communities to discuss their roles and their input in the original process, and their views subsequent to completion of the project.
- Survey business owners, particularly those in proximity to the pre and post highway corridor to obtain their assessment of the impact on their business, customers, etc,
- Survey residents in direct proximity to the newly constructed sound barriers near the new roadway for their assessment of resultant noise, aesthetic and other impacts.
- Analyze real estate data (e.g., assessed valuations, selling prices, turnover, etc.) in both communities to compare changes before and after completion of the Route 21 corridor for parcels of land in close proximity to the new alignment vis-à-vis properties more distant from same.
- Analyze changes in traffic patterns, traffic flow, and accident data in corridors impacted by the completed highway.
- Photograph the impacted area periodically to visually review trends during the study period and compare to expected outcomes as predicted by the preconstruction reports.

The assessment, which is near completion of its third year, provides information and insights which are rarely gathered after operation of a public works project commences.

2 Project objectives

The objectives of this study were to:

- Determine the economic and quality of life impacts of the Route 21 missing link freeway construction on the communities it traverses.
- Determine these impacts by using simple indicators that show evidence of change.
- Follow up on the pre-construction baseline data collected by NJDOT staff, by collecting information on the same indicators and public spaces once each year in Years 2002-2006; thereby, evaluating these impacts over a five year period.
- Evaluate the communities' reaction to the initiatives taken for this highway project, which utilized extensive elements to enhance the quality of public space.
- Evaluate the impacts on traffic volumes and characteristics of removing traffic from local streets.

3 Study methodology and data collection

3.1 Interviews

3.1.1 Utilization of personal interviews and questionnaires

In order to develop an understanding of the perceptions of local elected and appointed officials, as well as local merchants in the Cities of Passaic and Clifton, the following surveys have been conducted:

Door-to-door dissemination and retrieval of completed questionnaires were conducted in commercial areas perceived to be potentially impacted by the project in the City of Passaic. Questionnaires were prepared in both English and Spanish to facilitate the process. In addition, the staff utilized in the surveys included an individual who spoke Spanish fluently to further encourage merchants to respond comfortably. In all cases, respondents were informed that they would remain anonymous as individuals in order to enhance the response.

Similar surveys were conducted in the City of Clifton in the corridor defined as the Botany Village Shopping Area.

Questionnaires were sent to the public officials (i.e. mayor and council) in both cities. In the letter accompanying the questionnaire, it was stated that a personal interview would be conducted with each individual if so desired, and telephone numbers were provided of the principal investigators for this study should any questions arise regarding the questionnaire.

The personal interviews were basically an open dialogue which enabled the interviewees to provide their frank opinions on direct questions posed to them, and to express their feelings about issues that our project team may not have covered.

Surveys were also sent to residents along the highway corridor in close proximity to noise barriers constructed with this project.

Summarized below are the findings of the surveys. Responses to the questionnaires involved three aspects, namely: numerical scoring of certain issues posed to the respondents, verbal responses to questions posed, and the opportunity to make additional comments on the general impacts (i.e. positive and/or adverse) of the Route 21 freeway project.

3.1.2 Questionnaires from merchants in Passaic and Clifton as well as local appointed and elected officials

As previously noted, local merchants in close proximity to the newly constructed Route 21 access/egress ramps were asked to fill out questionnaires regarding their perceptions of the impact of the Route 21 freeway design and operation on their businesses.

The merchants were asked to grade the impacts of the Route 21 freeway on a number of potential businesses –related factors: The values utilized were 1-major decline, 2-some decline, 3-no effect, 4-some improvement and 5-major improvement. Residents, in close proximity to noise barriers constructed as part of the project, were also surveyed. Table 1, is typical of the survey format.

Table 1: Perception of residents adjacent to noise barriers.

Factors for Local Residents	A	B	C	D	E	F	G	H	I	J	K	L	M	N	**Avg.**
Traffic Noise Levels	5	3	4	1	3	2	4	3	2	4	4	4	na	3	**3.25**
Traffic Congestion	5	4	4	1	3	3	5	2	4	5	4	4	na	3	**3.67**
Ease of Parking Your Car	5	3	3	5	3	3	5	3	3	1	4	1	na	2	**3.25**
Lighting	5	3	2	2	3	3	na	4	4	3	2	1	na	3	**2.91**
Driving Safety	5	1	3	1	2	3	5	4	4	4	3	2	na	2	**3.08**
Pedestrian Safety	5	1	3	1	4	3	5	5	4	5	3	2	na	2	**3.42**
Ease of Local Driving	4	1	3	1	2	2	5	3	2	3	2	1	na	1	**2.42**
Access to Local Highways	5	1	4	na	5	2	5	5	4	4	5	3	na	2	**3.91**
Visual Impact of Noise Barriers	5	na	2	1	5	1	5	5	4	2	3	2	4	4	**3.31**
Change in Visual Landscape	5	1	2	1	4	1	3	5	5	3	2	1	5	4	**3.00**
Appearance of Neighborhood	5	1	2	1	5	1	3	3	5	2	2	1	5	2	**2.71**
Safer to Play in Streets	3	1	3	1	5	3	5	2	4	5	3	1	na	1	**3.00**
Quality of Life	5	1	4	1	5	3	5	4	4	3	3	2	5	1	**3.29**
Pride in Neighborhood	5	1	3	1	5	3	4	4	4	1	2	2	5	2	**3.00**
Appearance of Rt21/46 corridor	5	5	4	1	3	1	4	4	4	2	3	1	5	4	**3.29**
Neighborhood Safety	4	5	4	1	5	3	5	5	3	1	2	3	5	2	**3.43**
Perceived Real Estate Values	na	5	na	na	5	na	5	5	2	1	2	2	na	na	**3.38**
Average	4.8	2.3	3.1	1.3	3.9	2.3	4.6	3.9	3.6	2.9	2.9	1.9	4.9	2.4	**3.19**
Legend 1-Major decline 2-Some decline 3-No effect 4-Some improvement 5-Major improvement NA-Not applicable															
Years at Site	50	4	7	10	11	50	17	3	48	5	9	11	0.7	25	**17.9**

The appointed and elected public officials were asked to grade the impacts of the Route 21 freeway on factors related to traffic on local streets, and on quality of life issues (e.g. noise, amenities provided by the project, aesthetics, safety, access to shopping, etc). The grades chosen for this questionnaire were exactly the same as the questionnaire constructed for the merchants.

In addition, the respondents were asked to offer their perceptions related to their expectations versus the actual outcomes, the sensitivity and responsiveness of the DOT to the affected neighborhoods, the value of the amenities provided by the DOT, the positive and negative impacts associated with the project, and the assessment process (i.e. the Context Sensitive Design or CSD process) utilized by the DOT for this project vis-à-vis other projects by the DOT in the past.

3.1.3 Interpretation of survey findings in Passaic by the NJIT project team

In general, discussions with elected and public officials in the cities of Passaic and Clifton reveal quite different perceptions regarding the overall impacts of the Route 21 freeway on their communities. In Passaic, there is a sense that the city is benefiting from the project in that the new access/egress ramps in the Monroe Street/ Parker Avenue area are helping to provide better access to a proposed redevelopment area near the Passaic River east of Route 21 which may enhance its redevelopment prospects. In addition, there presently is a strong demand for residential and commercial properties in the city whenever and wherever vacancies arise. Passaic is pleased with the amenities and new parks provided by the DOT in conjunction with the project. However, there are concerns with respect to regulating hours of operation because of problems with graffiti and the homeless frequently utilizing parks in their city.

Problems with takings associated with the freeway in Passaic were a moot point, because they were taken in the 1960's by the NJDOT well in advance of the actual construction. As such, whatever political issues may have existed in the past regarding takings were not an issue when the NJDOT was involved in its assessment process in the early 1990's.

In summation, based on questionnaires completed and interviews conducted to date in the City of Passaic, there is a sense of optimism regarding the impacts of the Route 21 freeway on the community and its residents. This was a project generally welcomed by the City for sometime before its completion because of the traffic problems associated with the lack of the freeway connecting Route 46 in place.

3.1.4 Interpretation of survey findings in Clifton by the NJIT project team

The decision by the NJDOT to redesign the Route 21/46 connection from a full interchange to a partial interchange in the early 1990's, in response to a resolution by the Mayor and Council of the City of Clifton in 1987 to avoid any takings of ratables associated with the construction of the freeway, resulted in a design which eliminated direct access from Route 46 eastbound traffic to Randolph Avenue.

In general, the main conclusion one draws from both appointed and public officials as well as merchants in the Botany Village area and in the Botany

Village Merchants Association in the City of Clifton is the following: the removal of direct access from Route 46 eastbound traffic to Randolph Avenue associated with the DOT design of the Route 21 freeway at its connection with Route 46 has had a severe economic impact on Botany Village merchants. In fact, this issue is virtually paramount in most of the discussions held with representatives of the municipality.

There is documentation of concerns by the Botany Village Merchants Association since 1993 of the above noted perceived impacts to the Village. In recent years, the merchants as well as officials of the City of Clifton have continued to seek potential options to modify the current alignment.

3.1.5 Summary

At this time, there appears to be a considerable difference of opinion by the parties surveyed in the cities of Passaic and Clifton related to the impacts of the Route 21 Freeway. The surveys conducted to date will serve as a baseline to assess possible changes (if any) in perceptions within the two communities as the project assessment continues in subsequent years of study and analysis.

3.2 Traffic volumes

The Route 21 Project was an extension of the Route 21 Freeway 1.8 miles along the western side of the Passaic River from its terminus in 2000 on Monroe Street in Passaic to Rt. 46 in Clifton. Prior to the extension, there was a designated Rt. 21 path along local streets with two-way traffic from Rt. 21 through Dayton Ave. and Randolph Ave. to Rt. 46. Traffic surveys prior to the extension showed that about 2400 trucks per day traveled on the local street "Rt. 21" network, with 670 or 28% classified as heavy trucks. Impacts included traffic safety problems with insufficient turning radii for these trucks on local narrow streets, potential safety hazards to pedestrians with additional traffic and truck traffic, noise and vibration impacts to local residences and businesses and related quality of life (negative) impacts.

For the key traffic links in the study area, the results shown indicate substantial reductions in traffic for the build alternative v. the no-build scenario. For example, traffic reductions on local streets were predicted to range from 30 to 60 percent with the construction of the Rt 21 Extension.

From survey data taken in August, September, and October 2002, truck traffic has been dramatically reduced as a percentage of total traffic as compared to the pre-extension traffic.

3.3 Noise level data

The NJDOT performed a noise assessment as part of the overall environmental impact statement prepared in conjunction with the Route 21 Freeway extension. The purpose of the study was to establish baseline data by which the impacts of the project could be measured.

The noise assessment data, as shown below, contains the results of the monitoring of existing sound levels at seven locations in the cities of Passaic and Clifton in 1985, as well as sound level monitoring at the same locations in 2002. The locations, as well as the noise levels monitored (using the Leq noise descriptor in the study) are shown below.

All of the seven sites monitored by the NJDOT were either in close proximity to noise barriers constructed in conjunction with the project, or close to elevated sections of the roadway. In discussions with the City Engineers from both Passaic and Clifton, they both noted that there have been no formal complaints registered related to traffic noise from the Route 21 extension subsequent to its opening in December 2000.

Table 2: Comparison of projected v. actual sound levels at monitoring sites.

Noise Monitoring Location	1985 Sound Levels (dBA* Leq)	2002 Sound Levels (dBA Leq)
Site 1 – Cheever Avenue	60	58-59.5
Site 2 – Merselis Avenue	61	51.5-56
Site 3 – Christie Avenue	61	46.5-48
Site 4 – Nash Park	64	57-58.5
Site 5 – George Street	66	58.5-61
Site 6 – Passaic School	64	59-59.5
Site 7 – Third Street	64	58-58.5

* A-weighted decibel level

3.3.1 Analysis of noise data

A comparison of recently monitored sound levels at the same seven locations monitored for sound in 1985 by the NJDOT (in conjunction with the subject Route 21 extension) reveals that the noise barriers constructed by the NJDOT have been very effective in attenuating traffic-induced sound from Routes 21 and 46 highway traffic onto local streets in close proximity to either the noise barriers or elevated sections of the new roadway. In fact, sound levels on local streets adjacent to the above roadways are impacted more by sound from a few vehicles traversing the streets each minute than from the highway traffic.

In conclusion, it appears that, from a noise perspective, the Route 21 freeway extension has had a negligible noise impact on local residents residing in close proximity to the Route 21 corridor. In fact, it has probably reduced local noise levels by removing traffic from local streets near the old terminus of Route 21, and by providing noise barriers adjacent to Route 46 in Clifton.

3.4 Economic indicators

3.4.1 Botany Village District

Botany Village is a commercial district in the City of Clifton. Botany Village merchants supported by their elected officials have the strong view that the Rt. 21 construction changed the local traffic patterns and thereby impacted their business activity. Specifically, they attribute the change to the loss of Rt. 46 interchanges at Randolph Avenue in Clifton.

Of the total of 110 businesses in the Village, professional services represent 39/110 or 35% of the total. In general, clients that go to professional offices are not constrained heavily by travel time and further do not represent a large number of people visiting the office each day. There are 14/110 or 13% of the businesses are categorized as personal services which in general are local customers. Retail comprises 42% of the businesses in the Village. The majority of these (excepting specialty stores) have a local clientele.

Based on conversations with the Botany Merchants Association, there is a change in the type of businesses in the Village. Retail establishments are being replaced by professional services. The impacts, themselves, are caused by many factors. It is difficult to assign levels of responsibility, however, the national economic downturn coupled with the UEZ (urban enterprise zone have a lower sales tax rate) surrounding the City of Clifton bears a major responsibility.

3.4.2 Merchants along Main Avenue

In order to supplement surveys taken in the first year of the assessment, merchants were surveyed along the Main Avenue Shopping Corridor extending in Passaic from Monroe Street north to the City of Clifton border, and continuing thereon.

The general findings indicate that the merchants on Main Avenue in both Passaic and Clifton have noticed, on average, no effect to a slight improvement in the factors they responded to in the survey as a result of the completion of the Route 21 freeway.

3.4.3 Real estate sales data

The project team has obtained data to quantify the economic impacts associated with the completion of the Route 21 freeway in the cities of Passaic and Clifton in December of 2000.

Data collected from both cities include information such as assessed valuations, sales prices, and dates of sales for both residential and commercial properties for periods before and after completion of the Route 21 corridor. The above data is being compiled for locations within close proximity to the reconfigured Route 21 corridor, as well as for commercial properties which represent local or regional shopping areas in both cities. The intent is to ultimately provide a means to quantify the change in real estate values for properties located in immediate versus close proximity to the new alignment, taking into account the basic changes in real estate values across the two cities as

a whole. Preliminary results show that the value of real estate has not been negatively impacted.

3.5 Traffic accident database

The accident data base for the state was downloaded from the NJDOT website for Passaic County for the available years, 1997 to 2003. The number of accidents recorded in the county and in the cities of Clifton and Passaic were found as:

Table 3: Traffic accident database.

Year	Accidents in County	Accidents in Passaic and Clifton
1997	23,857	7,480
1998	19,325	5,906
1999	19,367	5,883
2000	21,916	7,104
2001	20,663	6,543
2002	20,809	6,422
2003	20,800	6,439

As may be seen, the number of accidents for each year over the period of record was reasonably uniform with the exception of 1997 which was approximately twenty percent larger. There was also an increase in 2000 and a smaller increase in subsequent years.

3.6 Photographic records

An important part of this project is to document the visual impact of the construction of the Route 21 Connector. The NJDOT took special care to enhance the visual perspective of this section of Rt. 21. The Environmental Impact Statement (EIS) performed for the project included projections of how the design team thought the viewscapes would appear at important locations. The photographic record will be augmented in each of the remaining years of the project to record how the planted foliage as well as other developments affects the view. Figure 1 shows the pre-construction, anticipated and actual viewscape at Dayton Avenue and Monroe Street.

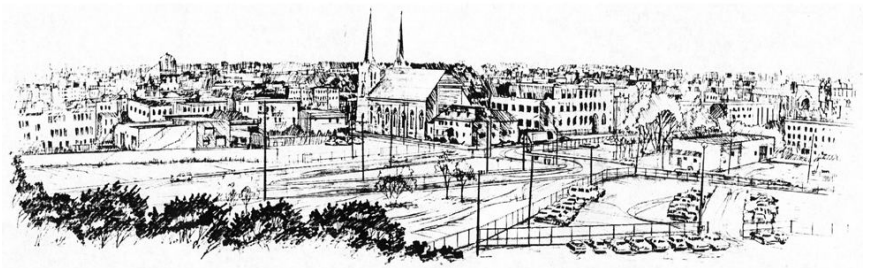
4 Conclusions

The assessment described herein is unique in that it reviews a public works project after its construction and operation and examines expectations made with the actual findings.

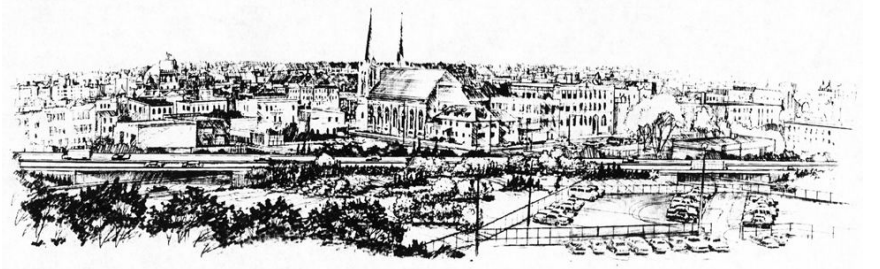
The study under discussion assessed projections of visual, traffic, noise, and economic impacts on the municipalities of interest as well as perceptions of the project by local merchants, citizens and elected officials.

The assessment for the five year study, to date, indicates that the technical projections made by the NJDOT staff and general perceptions by the public have been reasonably accurate.

The expenditure of extra funds for aesthetic enhancements to the project was judged by the public to be an excellent investment.



Existing View Of Monroe St. & Dayton Ave.



Recommended View Of Monroe St. & Dayton Ave.

Actual View of Monroe St. and Dayton Ave.

Figure 1: Pre-construction, anticipated and actual viewscape.

References

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