



NCTIP

**National Center for Transportation and Industrial Productivity
New Jersey Institute of Technology**

To: Nick Vitillo

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**NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT**

Project Title:	Economic and Quality of Life Impacts of Route 21 Freeway Construction - Year IV		
RFP Number: 2001-08	NJDOT Research Project Manager: R Sasor		
Task Order Number/Study Number: TO-35	Principal Investigator: Golub, Eugene		
Project Starting Date: 01/01/2002 Original Project Ending Date: 12/31/2006 Modified Completion Date:	Period Starting Date: 07/01/2005 Period Ending Date: 09/30/2005		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I: Literature Review	3	0	100	3
Task 1: Pre-construction, economic conditions	4	0	100	4
Task 2: Familiarization with Route 21	4	0	100	4
Task 3: Familiarization with Context Design	4	0	100	4
Task 4: Familiarization with Baseline data	4	0	100	4
Task 5: Develop study methodologies	75	5	50	37.5
Task 6: Prepare interim annual reports	3	0	55	1.65
Task 7: Prepare quarterly / final reports	3	5	70	2.1
Final Report				
TOTAL	100 %			60.3 %

Project Objectives:

The objectives of this study as set forth in the RFP are to:

- (1) Determine the economic and quality of life impacts of the Route 21 missing link freeway construction on the communities it traverses.
- (2) Determine these impacts by using simple indicators that show evidence of change in economic conditions or quality of life.
- (3) Follow up on the baseline data collected in 2001 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.
- (4) Evaluate the communities' reaction to the "Context Sensitive Design" initiatives taken for this highway project, which utilized extensive CSD elements to enhance the quality of public space.
- (5) Evaluate the impacts on traffic volumes and characteristics of removing traffic from local streets.

Project Abstract:

Opened to traffic in December 2000, the "missing section" of the Route 21 Freeway in Clifton and Passaic (Hope Ave. to the Rt. 46 Interchange) was

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designed utilizing the “equivalent” to the CSD approach at that time and will be the highway project used for the evaluation of CSD. A great deal of planning and design work was done to enhance the quality and appearance of this roadway and to maximize positive impacts on and for the surrounding communities.

This research project will evaluate over a five year period how effective the CSD approach was in the design of the Route 21 Freeway. The evaluation will focus on economic and quality of life issues. The type of economic issues that may be reviewed include impacts on neighborhood, residential real estate values, the success of commercial enterprises in the area, demographic characteristics in the area, traffic safety, workload to police, fire, hospitals and other municipal services. The type of quality of life issues that may be reviewed include: impacts on noise in the neighborhood, air quality, aesthetics and viewscape, traffic flow and other factors of concern to the local population.

Public perception initially and over a five year period will be measured by surveys to be taken each year of the project. This is a most critical element in the study because success ultimately must be “seen” by the impacted public literally and figuratively. In addition, traffic counts will be taken to determine changes from pre-construction to post-construction conditions and variations over the five years of the study. Other published data and modeling will be utilized to measure changes in economic and quality of life impacts.

1. Progress this quarter by task:

2005 3rd Quarter

Analysis of sales data on real property continued. Surveys of businesses on Monroe & Parker streets were continued. New forms were generated to survey new businesses developed after the completion of the freeway. A survey to query users of the parks and amenities added by the project has been developed and will be used in the next quarter. Traffic counts have been undertaken at several new intersections to compare with pre-project projections. Analysis of the data gathered continued.

2005 2nd Quarter

Analysis of accident data, and sales data on real property continued. Surveys of businesses on Monroe & Parker streets were continued. A POWERPOINT presentation on the project was presented to NJDOT staff and at a

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conference in Lisbon. Analysis of the data gathered continued.

2005 1st Quarter

This quarter analysis of accident data, and sales data on real property continued. Surveys of businesses on Monroe & Parker streets were conducted. A POWERPOINT presentation on the project was prepared for a research paper and presentation to the NJDOT staff. Analysis of the data gathered continued.

2004 4th QUARTER

This quarter was spent analyzing data that has been gathered on traffic at key intersections, surveys of residents and statewide accident data in the area of the project. The format of the annual reports has been modified. the new format should be easier to read and understand since it is comprised of significant data.

2004 3rd QUARTER

Analysis of accident data, and sales data on real property will continue. Traffic counts were obtained at key locations to measure improvements as predicted by the original studies. Additional surveys were conducted with merchants at Botany Village. Work was done on updating and improving the prior and new annual report.

2004 2nd QUARTER

The accident data has been placed in a usable form and is being analyzed. Data at critical intersections is being obtained with regard to traffic. The interim annual report has been revised as to form.

2004 1st QUARTER

Analysis of accident data, and sales data on real property has been undertaken. Attempts were made to conduct in person surveys of homes along the Rt 46 corridor. This was not feasible and so the surveys were mailed to the homes.

PRIOR QUARTERS)This progress is recorded in chronological order from the project beginning.)

Phase1 The literature search is complete.

Task3 Familiarization with CSD is almost complete. Additional work includes discussion with other NJDOT personnel as to how CSD was applied on this project.

Task2 Familiarization with the Rt 21 design and Baseline Data is complete.

The NJDOT data has been obtained and has been reviewed. Additional data is

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being developed from other local and County Sources.

Task4 The project team has completed review of NJDOT 2001 baseline data.

Task5 A photographic record of the project has been undertaken and is near completion. It includes photoscapes of the area in proximity of the project as well as photos of the areas thought to be of importance by the NJDOT. These records are compiled on CD's.

Professional staff from both communities were individually interviewed and a compilation is being developed. Further, the local merchant associations have likewise been interviewed.

Surveys have been sent to elected officials & professional staff in both municipalities. Individual surveys are being conducted with merchants in both municipalities.

Traffic counts are being conducted at key intersections as per NJDOT original studies.

Noise readings are being taken at key locations as per original NJDOT studies.

Data is being compiled for Clifton on all sales of properties and the variation in prices as well as the total assessed valuation of the town for the last 10 years. Similar data has been requested from Passaic.

Accident data in the two towns is in the process of being developed to demonstrate changes that have occurred in the last few years. Additional photography has been taken at important locations. Base photographic record is being digitized for a permanent record that is easily organized.

We are obtaining sales reports from City of Passaic. Surveys taken have been digitized and analyzed. An interim annual report has been submitted in draft form. This has been finalized this quarter.

Planning for the second year analysis and data gathering has been completed. The photographic record taken during the project has been digitized and has been organized into a usable computer file.

The Interim Annual Report has been reviewed by NJDOT, Clifton & Passaic and their comments included in the report.

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Interviews were obtained from businesses along Main Avenue in both Passaic & Clifton.

A photographic record was taken along South St in Passaic.

State accident data was obtained for Clifton & Passaic.

Sales data of properties in Passaic & Clifton was obtained.

2. Proposed activities for next quarter by task:

Analysis of accident data, and sales data on real property will continue.

Traffic counts will continue to be obtained at key locations to measure improvements as predicted by the original studies. Additional surveys will be conducted with individuals who were active in the project design and discussion. New photography will be generated for the project.

New photography and repeat photography will be obtained over the project area.

A survey to query users of the parks and amenities added by the project will be used in the next quarter.

3. List of deliverables provided in this quarter by task (product date):

None

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget	\$293,327.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$166,208.00
% of Total Project Budget Expended	56.66%

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Project Title:	Salt Runoff Collection Systems		
RFP Number: 995998	NJDOT Research Project Manager: Dr. Nazhat Aboobaker		
Task Order Number/Study Number: NCTIP-56	Principal Investigator: Golub, Eugene		
Project Starting Date: 1/1/2005	Period Starting Date: 07/01/2005		
Original Project Ending Date: 12/31/2006	Period Ending Date: 09/30/2005		
Modified Completion Date:			

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature search	3	0	95	2.85
1-Review state-of-practice in other states and countries	2	15	90	1.8
2-Analyze factors to address typical environmental issues	10	30	50	5
3a-Prioritize DOT's yard facilities based on receiving water	18	25	25	4.5
3b-Propose innovative technologies for salt containment	18	0	0	0
4-Recommendations for state-of-practice for future design	18	0	0	0
5-Economic methods for each design	19	0	0	0
6-Prepare Quarterly Progress and Final Reports.	12	2	8	0.96
Final Report				
TOTAL	100 %			15.1 %

Project Objectives:

1. Prioritize DOTs yard facilities based on geographic area and receiving water sensitivity
2. Develop methods to prevent runoff, control/treat runoff and truck/equipment washing facilities at the existing maintenance yards without endangering the environment
3. Determine state-of -practice for design and construction of new maintenance yards in future in terms of controlling salt runoff.

Project Abstract:

The New Jersey Department of Transportation has about 84 maintenance yards at different locations in New Jersey. These yards are facing the threats of uncontrolled runoff from the yards to the surrounding environment. Bureau of Facilities Engineering and Design-NJDOT, is concern about salt runoff from their equipment and garage facilities. The Department has identified typical environmental degradation issues relative to their maintenance yards. These

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are; salt spillage during unloading and loading trucks, and truck/equipment washing.

It is required to identify methods to prevent runoff, control/treat runoff, and state-of-practice for cleaning/washing vehicles/equipment that can be best accomplished at yards where no sanitary service is available with possible temporarily as well as permanent systems.

The proposed factors and issues will be considered in future design and construction of new maintenance yards.

1. Progress this quarter by task:

2005 3rd Quarter

The literature search has been completed. Team is still awaiting responses from various states and countries.

The study of truck washing facilities has been continued. A site visit was made to Pennsylvania to observe a working facility.

The database of facilities has been initiated. Many site visits to salt facilities has been conducted. It is anticipated that all of the facilities will be accomplished by the end of this year.

2005 2nd Quarter

The literature search has been completed. Team is awaiting responses from various states and countries. The study of truck washing facilities has been continued. The database of facilities has been initiated. Six site visits to salt facilities has been conducted.

1st Quarter 2005

The literature search has been initiated. The internet search is almost complete and the state of the art in the field is well documented. Letters have been prepared and is being sent to other states and countries.

Documentation on truck washing facilities have been obtained and additional information is being sought.

Meetings have been held with NJDOT personell and information and data has been gathered.

A meeting was held with NJDEP personnel responsible for the regulations on salt facilities. This meeting was very productive. NJDEP personnel were

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invited to attend quarterly meetings to maintain close contact.

Site visits of NJDOT salt facilities has been initiated.

2. Proposed activities for next quarter by task:

Study of truck washing facilities will be continued and a recommendation made..

The database of facilities will be digitized.

Site visits to the salt facilities will be completed.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget	\$275,408.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$100,000.00
% of Total Project Budget Expended	36.31%

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Project Title:	Corrugated Steel Culvert Pipe Deterioration -Year II		
RFP Number: 2002 – 02	NJDOT Research Project Manager: Mr. Robert Sasor		
Task Order Number/Study Number: TO-42	Principal Investigator: Meegoda, Jay N.		
Project Starting Date: 01/01/2003	Period Starting Date: 07/01/2005		
Original Project Ending Date: 12/31/2004	Period Ending Date: 09/30/2005		
Modified Completion Date: 12/31/2005			

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I – Literature Search	9.5	0	100	9.5
Phase II – Task 1 Contact other state DOT's	6	0	100	6
Phase II – Task 2 Methods for inventorying, inspecting, and cleaning CSCP used by other states	6	0	100	6
Phase II – Task 3 Predicting service life for pipes	6	0	100	6
Phase II – Task 4 Methodologies for determining the appropriate corrective action	6	0	100	6
Phase II – Task 5 Best methods and materials for repairing, rehabilitating, or replacing CSCP	6	0	100	6
Phase II – Task 6 Methods of inspection and maintenance record keeping and data storage used by other states	9.5	0	100	9.5
Phase II – Task 7 Cost of the statewide preventative maintenance program	6	0	100	6
Phase II – Task 8 Framework for developing an effective, statewide, preventative maintenance program for CSCP	15.0	5	25	3.75
Phase II – Task 9 Determine the conditions for which CSCP should be used in new construction	15.0	2	82	12.3
Final Report	15.0	0	20	3
TOTAL	100 %			74.1 %

Project Objectives:

- (1) To develop a plan for implementing an effective, statewide, preventative maintenance program for CSCP so that pipe can be repaired and rehabilitated before failure occurs. In this way, instead of reacting to failures, NJDOT can be proactive in preventing failures.
- (2) To determine the best practice for using CSCP in new construction. In cases where it should not be used, recommend a type of pipe that can be used as a replacement.

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Project Abstract:

Corrugated steel culvert pipe (CSCP) has been widely used in New Jersey for many years, both along side and under roadways. Most CSCP that has been in place for 30 or more years has become deteriorated, especially at the inverts. NJDOT Maintenance has identified this as a significant problem because many installed pipes are at or near this age. Most of this older pipe, currently in the field, exhibits 80-90% section loss or in many cases 100% section loss at the inverts of the pipe. If this deterioration is not addressed within the next several years, many areas will exhibit soil transfer from under the pipe resulting in erosion and/or collapse. A pipe collapse may result in the above roadway settling, or itself collapsing, which would prove very costly in terms of traffic delays and roadway repair.

1. Progress this quarter by task:

The progress of the project to date is approximately 73%

Task 8- A meeting was held regarding the data format for the straight-line Diagram (SLD) database.

Task 9- A preliminary report was generated with data and submitted to NJDOT for review.

Final report- A draft final report was generated based on work performed to date.

2. Proposed activities for next quarter by task:

Phase II Task 8 - Recommend a framework for developing an effective, statewide, preventative maintenance program for CSCP. Development of user interface to view the culvert inspection data that will be stored in the straight-line Diagram (SLD) database.

Phase II Task 9 - Determine the conditions for which CSCP should be used in new construction. The laboratory test to evaluate the effectiveness of Instrumented Cathodic Protection system will be continued.

The draft final report for the project will be refined.

3. List of deliverables provided in this quarter by task (product date):

None.

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

6. Budget summary:

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Total Project Budget	\$214,614.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$171,474.00
% of Total Project Budget Expended	79.90%

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Project Title:	Parking Management and Architectural Development Strategy		
RFP Number:	NJDOT Research Project Manager: Karl Brodtman		
Task Order Number/Study Number: 54	Principal Investigator: Sollohub, Darius		
Project Starting Date: 09/01/2004 Original Project Ending Date: 12/31/2006 Modified Completion Date:	Period Starting Date: 07/01/2005 Period Ending Date: 09/30/2005		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search and State of the Practice	10	0	100	10
Project Definition	10	0	100	10
Develop Database of Existing and Proposed Facilities	10	30	90	9
Case Study Selection	10	0	100	10
Develop Design Guidelines and Management Standards	30	10	20	6
Design Testing	30	10	10	3
Final Report				
TOTAL	100 %			48.0 %

Project Objectives:

To Develop Guidelines for the Design and Management on NJTransit Parking Facilities adjacent to Rail Facilities.

Project Abstract:

Activities will include two graduate design studios, one at Rutgers and one at NJIT. In addition, several symposia will be held at which experts in the field will be invited to comment on the process. Work will commence in September of 2004 and conclude in December of 2006.

1. Progress this quarter by task:

The project began nine months after it was originally scheduled to begin. Events are following the same calendar schedule as originally proposed, except one year late. However, several aspects have changed. The Case Study selection process was accelerated at the request of the client and with the approval of the sponsor. In lieu of sending a blanket mailing to all qualified communities, the project team worked closely with NJ Transit staff and all the planning directors in the study area to draft a list that included four preferred communities and four alternates. All 4 of the preferred communities agreed to participate, thus none of the alternates were asked. The four communities are Ridgewood, East Orange/Brick Church, Metuchen and

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Red Bank. The Urban Land Institute advisory panel was moved from its original May date to September.

2. Proposed activities for next quarter by task:

Professor Sollohub will teach a graduate architectural design studio of approximately 15 students who will develop comprehensive urban design strategies for the four case study communities. This work will be coordinated with the Urban Land Institute Advisory Services Panel, the 19 - 21st of September 2005. Panelists will be Chair: Bill Eager (TDA, Inc.), Karina Ricks (Washington DC Office of Planning), Fred Dock, (Parsons Brinkerhoff), Robert Dunphy (ULI), Chris Luz (formerly with HNTB), Will Fleisig (Denver Developer). Panel will visit the four communities and provide preliminary findings followed by formal findings in December 2005.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget	\$293,000.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$32,881.00
% of Total Project Budget Expended	11.22%

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Project Title:	Analysis and Modeling of Cape May County Roadway Elevations and Evacuation Routes			
RFP Number: Special Project 2003	NJDOT Research Project Manager: Vincent Nichnadowicz			
Task Order Number/Study Number: 57	Principal Investigator: Chien, Steven I-Jy			
Project Starting Date: 01/01/2005	Period Starting Date: 07/01/2005			
Original Project Ending Date: 12/31/2005	Period Ending Date: 09/30/2005			
Modified Completion Date:				

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task I-1 Literature Review	5	0	100	5
Task II-1 Detailed Literature Review	5	0	100	5
Task II-2 Identification of Roadway Inundation	25	20	80	20
Task II-3 Calculation of Evacuation Times	50	5	10	5
Task II-4 Final Report Summarizing Results	15	5	5	0.75
Final Report		0	0	
TOTAL	100 %			35.8 %

Project Objectives:

1. Determine the timing of evacuation to be used in a Routes 47/347 Reversal Lane operation.
2. Determine the best feeder routes into 47/347 to support the reversal objective.
3. Establish roadway elevations throughout the study area.
4. Identify potential problem areas for roadway closures resulting from storm surge flooding.

Project Abstract:

The NJIT team proposes to develop a comprehensive GIS based database that would include roadway centerline information. Such a database would enable state, county and local officials to not only identify key routes that are appropriate for evacuation, but could also provide a basis for identifying where roadway elevations should be increased. Other features could also be added to this database, such as physical roadway conditions, presence of guiderail, and location of traffic safety devices.

In addition to the development of an electronic database for roadway centerline information, the NJIT team proposes the development of a traffic simulation model that is capable of quantifying the impacts associated with implementing a lane reversal strategy on Route 47/Route 347. Through the use of state-of-the art traffic simulation modeling tools, the following can be

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achieved:

- Evacuation times can effectively determined,
- Traffic operational deficiencies can be identified,
- Alternative strategies can be explored.

1. Progress this quarter by task:

the work progress in this quarter (i.e. will be done by end of June);

- collection of data for model development (Done)
- construction of model in Paramics (Done)
- calibration of model for base conditions
- generating 12 evacuation scenarios (Done)
- simulation modeling of the above 12 scenarios
- OD trip table has been created (for normal commuter conditions)

2. Proposed activities for next quarter by task:

the proposed work in next quarter;

- simulate the matrix of evacuation scenarios, including:
 - what threat level of storm (i.e. what population needs to be evacuated from what area)
 - what sections of 47/347 are to be reversed
 - what area population is at risk (i.e. what seasonal population is present and where)
- produce analyses of scenarios
- prepare report of analysis

3. List of deliverables provided in this quarter by task (product date):

Presentation of Status for Data Collection and Proposed Simulation Modeling

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

None

6. Budget summary:

Total Project Budget	\$246,384.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$64,784.00
% of Total Project Budget Expended	26.29%

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Project Title:	Development of a Simulation and Prototype Data Warefouse Model for Evaluating ITS Projects		
RFP Number: Special Project 2003	NJDOT Research Project Manager: Nick Vitillo		
Task Order Number/Study Number: 58	Pincipal Investigator: Chien, Steven I-Jy		
Project Starting Date: 01/01/2005	Period Starting Date: 07/01/2005		
Original Project Ending Date: 12/31/2005	Period Ending Date: 09/30/2005		
Modified Completion Date:			

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1: Detailed Literature Review	5	10	90	4.5
Task 2: Developing Simulation Model for the Studied Network	30	10	30	9
Task 3: Design of Prototype Data Warehouse	10	30	40	4
Task 4: Evaluation of Selected ITS Strategies	40	0	0	0
Task 5 Final Report	15	0	0	0
Final Report				
TOTAL	100 %			17.5 %

Project Objectives:

- (1) Develop a microscopic traffic simulation model to evaluate the impact of potential ITS strategies for the studied network, and
- (2) Design a prototype data warehouse model as a reliable data center for storing, processing, and analyzing transportation related data.

Project Abstract:

A traffic micro-simulation model will be developed to evaluate the anticipated traffic congestion due to upcoming construction in the area of NJ Route 139 and the impact of the construction on the Portway's Northern Extension. The boundaries for the network are to be determined, but may be roughly bounded by the following highways:

- NJ Route 3 to the north
- NJ Route 21 to the west
- NJ Turnpike Interchange 14 with US Routes 1&9 to the south
- NJ 440 and US 1 & 9 to the east

This network will be finely defined within the boundaries of the analysis area, but would only include the major routes and arterials outside of the analysis area. The simulation model will be set up in way as to allow for future expansion, should further analysis be required on the outlining areas, such as

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the interchange between US 1&9 and NJ 3. As part of this proposal NJIT will work with the NJDOT as well as the area ITS Stakeholders group to test various traffic mitigation scenarios utilizing ITS simulated tools. The scenarios are: Traffic Signal Improvements, Promotion of Car/Van-pooling, Optimal Diversion of travelers to NJ Transit Hudson-Bergen Light Rail, PANYNJ's Path and NY Waterway and Yellow Taxi Ferry Systems, Variable Message Signs (to be used with Advanced Traffic Management Systems and Advanced Traveler Information Systems), Contra-flow lanes, etc. The use of TRANSMIT readers for traffic data is proposed. The NJIT team would co-ordinate with the NJDOT task member to select the different scenarios to be analyzed. Coordination meetings are proposed. The scenarios will be displayed as video clips suitable to be incorporated into PowerPoint presentations via AVI files.

The proposed work will be done in two phases. Phase I, encompassing Tasks 1 and 2, involves the NJ 139 simulation and will be done within the first four months from the date of award. Phase II, encompassing Tasks 3 – 5, will be completed in months 5 to 12 from the commencement of the project.

1. Progress this quarter by task:

- (1) Attend two meetings at NJDOT for understand the current congestion mitigation strategies in the studied site and data warehouse related projects in NJDOT.
- (2) Identify the studied network and data sources.
- (3) Collect data
- (4) Simulation network modeling

2. Proposed activities for next quarter by task:

- (1) Collect all data required for simulation (existing geometric, demand , and traffic condition)
- (2) Finalize simulation network development

- (3) Developing a prototype format of the proposed data warehouse to store the data required for this project.

3. List of deliverables provided in this quarter by task (product date):

Presentation of developed simulation network

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

None

6. Budget summary:

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Total Project Budget	\$160,021.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$22,521.00
% of Total Project Budget Expended	14.07%