

INFORM Operations
New York State Department of Transportation

- *Project Description*

The consultant team of Parsons Brinckerhoff with Dunn Engineering Associates is operating the INFORM system for the New York State Department of Transportation. INFORM is an ITS/Advanced Traffic Management System (ATMS) aimed at alleviating congested traffic on a 60 mile corridor on Long Island centered around the Long Island Expressway (I-495) and Northern State/Grand Central Parkways. The system includes 32 miles of HOV lane.

- *Progress Since January 2000 Meeting*

On 12/20/99 INFORM completed all Y2K upgrades. Operating system software was modified or replaced on all the computers. This included upgrading December's 'Open VMS', Sun's Solaris, IBM's OS/2 Warp, and WindRiver's VxWorks. All hardware, both at Central and in the field was either certified by the manufacturer to be Y2K compliant or it was replaced. At Central ten Compaq workstations were replaced by faster IBM's, in the field, modules were replaced in the older Variable Message Signs.

Correct Ramp operation in Y2K with the original 1980 quarter second control code could not be confirmed so all of the ramps controllers in the system were replaced with 170E intelligent controllers from BiTran, which are Y2K compliant and are designed to communicate with central only once every 20 seconds. The ramp upgrade had been planned for sometime in the future, but with the risk of Y2K failure DOT accelerated the project, temporarily installing the ramps as 'stand alone'. Work is now underway to tie them in to Central.

Twenty-four new CCTV monitors were installed in the operations room. This enables viewing 56 CCTVs at one time.

A new Vicon Video Router was installed in the Control Room. This router will enable INFORM to expand its present camera capabilities. Vicon has provided the protocols to control all existing CCTVs.

In August, Cablevision, by agreement with NYS DOT, upgraded all of the Control Room's existing CCTV cables, demodulators, distribution amplifiers and cabinets. In turn, INFORM's CCTVs are accessed 24 hours a day by a local Traffic & Weather reporting station on cable TV.

The fiber optic cable installation was completed between Route 110 and Route 111 along the Long Island Expressway. All existing CCTVs, VMSs, ramp meters and intersections were retrofitted to utilize the fiber cable. The installation of additional fiber optic cable, extending east to Exit 61, is planned in the near future.

Twelve new CCTVs came online via the new fiber optic cable installed along Route 110 and Sunrise Highway.

A new Traffic Signal and Maintenance program was developed and installed replacing an obsolete data base system. The new program enhances record keeping and report generation. Expansion of this program to Statewide use, similar to the HELP program is being explored.

The Control Room was just recently connected to the NYS Office building emergency power generation system which is designed to provide power in the event of a major long term power failure in the area. In addition, the old heavy flywheel power conditioning unit within INFORM was replaced by an APC (American Power Conversion) Symmetra 'Power Array' which produces 16KVA and contains 12 massive batteries for over one hour of backup power with all equipment remaining operational. This system continuously filters and monitors the Control Centers power consumption.

- *Lessons Learned*

The successful operation of the INFORM system continues to be the best example that State and government agencies should consider outsourcing to engage consulting engineering firms to provide professional engineering services for systems operation.

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LONG ISLAND ITS

New York State Department of Transportation

- *Project Description*

DEA prepared a comprehensive master plan for deployment of ITS techniques to the transportation infrastructure of Long Island, New York. DEA prepared a PS&E package for the expansion of INFORM to Southern State Parkway. The design includes a new Traffic Management Center (TMC), a new central computer system and a 60 fiber backbone cable running parallel to, but off the parkway right-of-way. Subconsultants to DEA were PB/Farradyne and Eng-Wong Taub and Associates.

- *Progress Since January 2000 Meeting*

Significant progress has been made in construction over the past several months. Much of the infrastructure (cabinets, poles, conduit, etc.) and field equipment (cameras, communications electronics, etc.) have been installed, the central and field software have passed the first battery of tests, and the central computer and communications equipment are ready to be installed. All of the Variable Message Signs have been installed and are currently subject to testing. Also, a significant amount of work on the Fiber Optic Plant has been completed. DEA is actively participating in reviews, testing and problem solving.

Design of the new NYSDOT Region10 TMC is almost complete. The work includes the complete rehabilitation of an abandoned warehouse. The structural/architectural design is being done by subconsultant Parsons-Brinckerhoff, and the TMC architectural design is complete. DEA is completing the design of the Central ITS.

The first section of ITS coverage will be activated and become operational in one to two months.

- *Operational Concepts, Procedures and Experience*

The central equipment will be temporarily housed in the existing INFORM facility until the refurbishing of the building designated as the site of the new TMC is completed.

- *Lessons Learned*

Fatigue analyses were used in the design of support structures for variable message signs.

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I-287, CROSS WESTCHESTER EXPRESSWAY, STAGE II
New York State Department of Transportation

- *Project Description*

This design project is for the reconstruction of (\pm) 4.3 kilometer of Cross Westchester Expressway (I-287) (Stage II) from the east end of the viaduct over Saw Mill River Parkway to the west end of the duct over the Bronx River Parkway in Westchester County, New York. This project includes reconstruction of pavements and shoulders; rehabilitation of bridges; construction of an Intelligent Transportation System (ITS); and modification of ramp termini and auxiliary lanes for operational and safety improvements. Minor work on the viaduct over the Bronx River Parkway is also included under this contract. The consultant team is led by HDR with subconsultants of DEA, LKB, SIMCO and Howard Stein Hudson. DEA is designing the ITS details for Stage II and is also responsible for signing, striping and signalization.

The eastern portion of Stage II was broken out into a separate project with an accelerated schedule (Stage IIA). Stage IIA consists of an early action ITS and is presently in construction. Stage I is scheduled to be bid in a few months. The design of the rest of Stage II is scheduled to be completed by next year.

- *Progress Since January 2000 Meeting*

Significant progress has been made on Stage II. ITS equipment locations and interconnections have been designed and are in the process of being finalized. Signing, striping and signalization tasks are also being finalized.

- *Operational Concepts, Procedures and Experience*

When the project was advertised, one of the main features was the inclusion of an HOV lane. After the consultant team was selected, negotiations were delayed due to public concern on the HOV impacts. Consequently, Governor Pataki eliminated the HOV concept. Although HOV lanes were criticized by opponents and the media, they will be included statewide in projects with the merits of HOV being examined on a project-by-project basis.

- *Lessons Learned*

New project.

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LINCOLN AND HOLLAND TUNNELS ITS
Port Authority of New York and New Jersey

- *Project Description*

Dunn Engineering Associates (DEA) is continuing to support the Port Authority during the major upgrade of the traffic management capabilities utilizing ITS technologies at the Lincoln and Holland Tunnels. DEA completed the RFP Technical parameters for a design/build Contract at these facilities.

DEA will continue support this project through system design, installation and acceptance.

- *Progress Since January 2000 Meeting*

DEA completed the ITS Technical Parameters including the Basic Contract Drawings for the RFP of the design/build contract to implement ITS at the Lincoln and Holland Tunnels. The RFP will be released in June 2000.

- *Operational Concepts, Procedures and Experience*

A design/build procurement is utilized. The ITS will have many traffic subsystems including access metering, queue balancing, Automatic Vehicle Location (AVL) for emergency vehicles, Road Weather Information Systems (RWIS), Closed Circuit Television (CCTV), Variable Message Signs (VMS) and Highway Advisory Telephone (HAT). The system will use both probe vehicle (electronic tag) detectors and point detectors for traffic measurements and incident detection both inside and outside of the Tunnels.

- *Lessons Learned*

The project has not yet been implemented.

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*ROADWAY INCIDENT DIVERSION PRACTICES, NCHRP PROJECT 20-5, TOPIC 29-02
NCHRP-TRB*

- *Project Description*

This project prepared a synthesis summarizing current roadway incident diversion practices based upon a selected survey of transportation agencies that have developed and deployed alternate route plans. The aggregation of survey responses served to identify specific trends in the practice, and the examination of individual practices resulted in the identification of unique plans, processes, and technologies which other agencies may find as useful applications.

- *Progress Since January 2000 Meeting*

The period from July 1998 through August 1998 marked the completion of all data collection and the processing of subject matter. By the beginning of September 1998, a synthesis draft was prepared and submitted, based on 57 survey questionnaire responses returned by transportation agencies in 36 states and Puerto Rico. After review by the Topic Panel during a November 1998 meeting in Washington, DC., a second draft was submitted in February 1999. This second draft included five additional survey questionnaire responses. Final comments from the Topic Panel and the NCHRP Project 20-5 Committee were received in April 1999, and a final draft, incorporating the comments received, was submitted in July 1999. The NCHRP published the synthesis in December 1999.

- *Operational Concepts, Procedures and Experience*

The synthesis 1) summarizes the literature that discusses incident diversion plan development and deployment, 2) surveys selected transportation and other agencies that have developed and deployed incident diversion plans, 3) reports on the detection, communications and management technologies used to effect these plans, 4) profiles successful practices as reported by transportation agencies that currently divert traffic using incident diversion plans, and 5) identifies additional information (e.g., potential further study, outreach efforts and training materials) that transportation agencies need for their incident diversion practices.

- *Lessons Learned*

- *Research and consider the successes and failures of other practices.*
- *Establish memorandum of understanding with local agencies.*
- *Promote public awareness of the practice*
- *Investigate the use of various technologies for the dissemination of pre-trip and en-route travel information.*
- *Conduct regular qualitative reviews of the practice to identify needed improvements.*

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*DEVELOPMENT OF MESSAGE SETS FOR EXTERNAL TRAFFIC MANAGEMENT CENTER (TMC)
COMMUNICATIONS (MS/ETMCC)
Institute of Transportation Engineers*

- *Project Description*

As part of the overall U.S. standards program, Dunn Engineering Associates (DEA) is supporting the US DOT's development of national architecture standards through a near term priority project to develop standard message sets for external TMC communications. The scope of this project includes center to center messages between a TMC and an ISP (Information Service Provider); a TMC and another TMC; a TMC and an EMC (Emergency Management Center). The MS/ETMCC consists of 19 message sets organized into six message groups.

- *Progress Since January 2000 Meeting*

A message group was identified by the Steering Committee that addresses the needs of travelers outside of metropolitan areas. The Event Report Message (ERM) provides a transmission of broadly defined traffic/roadway/weather events to a wide variety of traffic related institutional organizations and jurisdictions in a rural environment.

At the February meeting, modifications to this Event Report Message were requested by the Steering Committee. At the May, 2000 meeting, the ERM was approved for incorporation into the MS/ETMCC standard.

The base Message Set Standard is available for purchase from ITE. The next Committee meeting is August, 2000.

- *Lessons Learned*

The lessons learned show that an aggressive standardization program (of which this project is one part) utilizing US DOT support is needed to achieve accelerated widespread deployment of ITS. The MS/ETMCC message set provides a national standard for an agreed upon set of messages for the ITS area of traffic management systems. These message sets, in conjunction with the supporting data dictionary(s) are then the basis for design and implementation for a particular location and set of traffic management functions. Thus, the MS/ETMCC along with the companion TMDD is intended as the core set of messages that will form the basis of ITS based traffic management systems.

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*RAMP METERING ALGORITHMS FOR IMPROVING OPERATIONAL EFFICIENCY OF A
FREEWAY CORRIDOR
Federal Highway Administration*

- *Project Description*

The objective of the project is to create a ramp metering control system that operates effectively in a corridor environment. The members of the Ball Aerospace and Technologies Corp. team include Dunn Engineering Associates, the University of Colorado and Dr. Steve Cohen. DEA will contribute to the development of a set of testable functional requirements as well as the development of ramp metering algorithms. Furthermore, DEA will assist in the design and execution of field tests.

- *Progress Since January 2000 Meeting*

The project was initiated in October 1997. DEA has developed a Local Regulator Algorithm that can be used in connection with system wide ramp metering strategies. DEA has also developed a queue spillback control algorithm. These are being incorporated into the overall project software by Ball.

- *Operational Concepts, Procedures and Experience*

New ramp metering algorithms will first be tested through simulation and then verified in live traffic at a site to be determined in the study. The primary test site is in Orange County, California. Test site planning is expected to start shortly.

- *Lessons Learned*

None to report.

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*TOC OPERATIONAL SUPPORT
Rhode Island Department of Transportation*

- *Project Description*

The consultant team of Frederic R. Harris, Inc. and Dunn Engineering Associates began operating the RIDOT TOC on January 11, 1999. The TOC will serve as the catalyst in accomplishing many of the recommendations presented in the recent Congestion Management Plan, including strategies addressing incident management, traffic operational improvements, ITS applications, advanced public transit information and transportation systems management. The TOC will serve as the heart of the various hardware and software components designed to better manage transportation on the state's highways.

- *Progress Since January 2000 Meeting*

- *Now operating TOC 6 AM to 6 PM.*
- *Completed Regional ITS architecture.*
- *Completed ITS deployment plan.*
- *Developing training program.*
- *Continuing work on automated maintenance management system.*
- *Developed incident tracking and logging program for operators to use while handling incidents in the TOC.*
- *Initiated "Rhodewatcher" program using State employees as traffic "probes".*
- *Developing an interagency United Response Manual, under the Incident Command System management framework, to ensure agencies follow consistent response procedures, including approaches to varying levels of highway incident severity.*

- *Lessons Learned*

Using State employees during their normal commute as traffic probes can be a cost effective incident detection/verification technique.

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June 2000
Dunn Engineering Associates

EASTERN QUEENS ATMS
New York State Department of Transportation

- *Project Description*

Dunn Engineering Associates has been designated by NYSDOT as prime consultant to design an ATMS in Eastern Queens County, New York City. The system will cover approximately 30 miles including the Cross Island (Belt) Parkway, Clearview Expressway, Nassau Expressway and portions of the Long Island Expressway and Grand Central Parkway. Workslope includes preliminary and final design, construction support, and operation. Subconsultants are Edwards and Kelcey, Eng-Wong Taub & Associates and El Taller Colaborativo.

- *Progress Since January 2000 Meeting*

New project.

- *Lessons Learned*

New project.

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June 2000
Dunn Engineering Associates

*I-490 ROCHESTER
New York State Department of Transportation*

- *Project Description*

Dunn Engineering Associates will serve as sub-consultant to Erdman Anthony in the design of a project wide Intelligent Transportation System (ITS) for a section of I-490 in Rochester, New York. The overall project, referred to as the Western Gateway Project, concerns the reconstruction of a segment of approximately 3.5 miles of the Rochester Western Expressway (I-490) from I-390 at the Erie Canal to the Genesee River including the Troup Howell Bridge. Design of the ITS infrastructure will include Variable Message Signs, Highway Advisory Radio, and Closed Circuit Television Cameras.

- *Progress Since January 2000 Meeting*

New project.

- *Lessons Learned*

New project.

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SCOPING PROCEDURES FOR ITS
New York State Department of Transportation

- *Project Description*

This study will develop improved ITS planning/project scoping guidance and methodologies for the project development process. This guidance will facilitate the identification of where and when ITS strategies and advanced traffic management systems (ATMS) should be considered as appropriate solutions to identified congestion and safety problems and transportation needs, on a project/corridor/system wide basis.

The study will include the following efforts:

- *Identify opportunities and criteria for considering ITS strategies including ATMS, on a project, corridor, and system wide basis.*
 - *Determine available methodologies, procedures, and practices for identifying, quantifying, and assessing congestion and transportation needs and determine if these methodologies are appropriate for ITS and ATMS applications.*
 - *Identify opportunities for new and/or enhanced methods, procedures, and practices and relate them to the Department's processes.*
 - *Develop new and/or enhanced methods, procedures, practices and guidelines and demonstrate their function.*
 - *Document findings and results, and provide staff presentation/instruction, and training.*
- *Progress Since January 2000 Meeting*

New Project

- *Lessons Learned*

New Project

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