

CHICAGO AREA FREEWAY OPERATIONS

Since the creation of the Chicago Area Expressway Surveillance Project in 1961, the Illinois Department of Transportation (IDOT) has continued an active freeway traffic management program in the Chicago area. For more than 38 years, the first "smart" freeway section has been continuously operated and expanded. The real-time instrumented network operated by the IDOT Traffic Systems Center (TSC) now covers nearly 150 centerline miles with 2,400 loop detectors, including circular loops for the most recent mainline installations.

Ramp metering stations total 113, all centrally controlled and supervised. On-line changeable message signs/dynamic message signs (CMS/DMS) total 22:1 reflective-disk matrix, 11 fiber-disk matrix, and 10 fiber-disk retrofits. Seventeen additional sites have been targeted for installation that will complete a 39 sign system. Remote dial-up CB radio monitoring sites for incident verification number 24.

The CCTV expansion project to install 10 new cameras for full-motion video over analog microwave and to upgrade the initial 3 camera sites from codec to full-motion is nearing completion. Adjustments to signal levels are being tried to improve/optimize picture quality. In other CCTV efforts as part of an I-55 Reconstruction Advance Work Contract, 3 camera sites were installed near CMS/DMS locations on the Stevenson Expressway. Using Integrated Service Digital Network (ISDN) technology, each field location can be dialed up from the TSC over 3 ISDN circuits to get 3 video transmissions simultaneously. The early experience with the "snapshot" quality video images has been operationally favorable and the system will be expanded over proposed fiber optic cable to 13 additional sites in this year's I-55 rehabilitation. The provisions included will result in a 35-mile network along I-55/I-90-94/I-290 to the TSC in Oak Park.

The contract to replace the TSC's central computer and renovate its control room is now in its third year. Computer hardware procurements are in the final phase and application software development/testing continues. A major milestone yet to be met is the cut-over of operations from the existing computer system/control room to the new computer system/temporary control center. Final plans and specifications for the Control Room renovations have been submitted and reviewed. The agreement for sub-contract of this work is not yet finalized and its expected construction will require four months to complete. Project completion is now estimated to be fall 2000.

The IDOT Emergency Traffic Patrol ("Minutemen") continues to provide about 100,000 expressway motorist assists each year. Some 22% are lane blocking incidents; about 7,000 involve trucks. Clearance times average 12 minutes for incidents blocking one lane and 22 for two lanes. The equipment fleet includes 35 medium-duty patrol units, 11 light 4x4s, and numerous specialty and heavy-duty units. The fleet of 35 patrol trucks has now been completely upgraded with the advanced technology, hands-free vehicle relocation units. Operator safety has been greatly improved; incident clearance duration has been reduced. In addition, an effort to develop an ETP vehicle location capability using global positioning and existing infrastructure and computer capabilities.

The *999 Cellular Express Line continues to operate and produced nearly 235,000 incoming calls last year with most call classified as "Good Samaritan." In 1997, this emergency phone operation was enhanced to provide automated distribution of real-time incident information to agency users.

The 26-year-old comprehensive public/private network of radio/TV stations and others using traffic reports provided through hookups with the IDOT TSC computer continues to expand. The IDOT computerized reports provide near-real-time congestion and travel time information as often as every minute around-the-clock. Special messages, including commuter rail transit and suburban bus information, and traffic incident bulletins, are added as warranted through keyboard use. Internet access to the Chicago area traffic maps was initiated in 1995 in partnership with the IDOT Intelligent Transportation Systems Office (ITS) and the University of Illinois at Chicago:

(<http://gcm.travelinfo.org>). Full development of this Internet access will include information on all expressways and tollways in the three-state Gary-Chicago-Milwaukee ITS Corridor Initiative.

Highway advisory radio (HAR) stations continue to operate in a real-time automatic update mode feed by the surveillance sensors. The revamped 3rd generation system (December 1998) now outputs both congestion limits and travel time information to all eleven transmitter sites for broadcast over radio 530AM or 1610AM depending upon location. A public information hotline (#312-DOT-INFO, or #847-705-4618, or #847-705-4620) also uses this traffic data, along with a commercial cellular service.

In October 1994, major expressway reconstruction on the I-90/94 Kennedy Expressway was completed. Extensive traffic management measures were in use, including changeable message signs, HAR stations, accident/incident investigation sites, alternate route improvements, and a public information program. Since the roadway reconstruction completion, a new mechanized closure of entry ramps to the expressway s reversible lanes along seven miles has been in successful operation, improving safety and operational effectiveness during the twice-daily (occasionally four times) reversal of traffic flow. The system incorporates several types of advance signing, swing gates which rotate out of concrete barrier walls to re-direct traffic away from reversible lane entry ramps, and restraining barrier mechanisms which are deployed across entry ramps to safely stop errant vehicles before a wrong-way incursion into the reversibles. As part of final project work, extensive telemetry, programming, CCTV, and communications systems were integrated. Programming was designed to automatically detect and diagnose failures, to maintain operating integrity by working around these failures, and then to automatically return to normal operations following repairs.

In order to improve the quality of traffic flow on major regional arterials, many of which are in freeway corridors, IDOT contracted the Northwestern University Traffic Institute to develop quick clearance and other incident management guidelines for use by the multiple agency teams involved in arterial traffic operations. This project is now completed. From a signal coordination and timing standpoint, IDOT also continues to add "closed loop" signal systems, at the rate of about 25 per year. There are currently 228 systems involving 1,594 intersections in operation.

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