



highways

and byways

By Louis Pilla

With the help of Primavera software, the New Jersey Department of Transportation is smoothing out the bumps in its road and bridge projects.

► Driving in New Jersey, with its 8.4 million inhabitants and more than six million registered vehicles, can rattle the nerves of even the most seasoned road warrior. With so many vehicles zooming around in the nation's fourth smallest state, New Jersey needs an up-to-date roadway and bridge system to keep traffic moving.

"We're bumper-to-bumper, wall-to-wall people on roads here," says Frank

Palise, manager in the quality assurance and improvements area at the New Jersey Department of Transportation (NJDOT), based in the state capital of Trenton, N.J. In the Garden State, "everything's crowded," he says.

To smooth construction projects, NJDOT's Capital Program Management Division, which manages NJDOT road and bridge construction, has begun to deploy the latest release of Primavera

planning and scheduling software. With responsibility for over 10,000 miles of roadway (counting all road lanes), NJDOT will use Primavera to plan and schedule its construction projects.

These projects can take from six months to three years to complete and cost anywhere from \$1 million to more than \$80 million. When fully implemented, the software will help NJDOT manage about 120 projects per year.

Design and construction

Overseeing roadway and bridge construction at NJDOT involves keeping tabs on two major categories of effort: project design and project construction. The Primavera database will hold NJDOT's Capital Program Management Division schedule and budget for each project's design process. It also will contain the designers' and contractors' schedules for construction work. The timeframe for implementing Primavera will occur in different stages for the design and construction processes, the goal being to incorporate all projects into the system within two years. (Work on implementing

including such items as acquiring right-of-way and utility agreements.

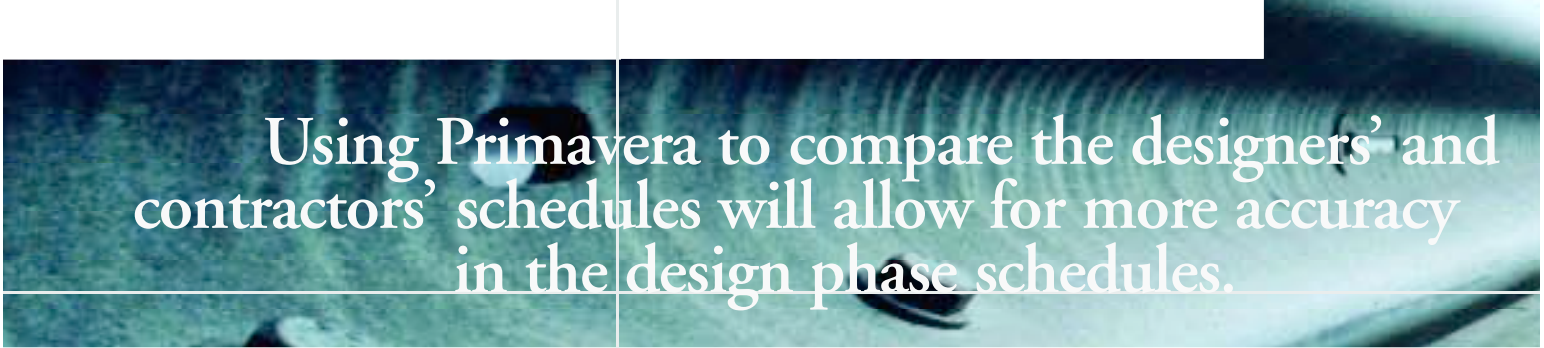
The project construction phase involves two schedules: a designer's construction schedule and a contractor's schedule submitted for approval. The designer's construction schedule represents the designer's best guess during the design phase about the project timeline. The schedule establishes project milestones, which are used to assess bonuses and penalties. Similarly, the contractor's schedule represents the contractor's timeline for the job.

Prior to the implementation of the latest version of the software for the construction phase, which is scheduled

designers will submit schedules using Primavera planning and scheduling software or "approved equivalent software," according to NJDOT.

All of these schedules will be held in the database of the latest version of Primavera. Using this planning and scheduling software to compare the designers' and contractors' schedules will allow for more accuracy in the design phase schedules, ultimately saving taxpayers' money.

The move to new software also presented the opportunity to standardize the format of the designers' and contractors' schedules, according to Emerson Misner, project engineer, who is in charge of construction



Using Primavera to compare the designers' and contractors' schedules will allow for more accuracy in the design phase schedules.

Primavera for the design process began in September, 2001. Prior to that, NJDOT used single-project version of Primavera planning and scheduling software for the design process, and originally had no database for the construction process.)

In the design phase, most of the designs come from outside firms (NJDOT's internal designers handle just up to 15 percent of them). The design schedule outlines the activities involved in designing a project,

to go live on April 1, designers submitted only Gantt charts, except for a few larger projects. And contractors, depending on project size, submitted Gantt charts outlining their schedules.

But starting in April, for projects costing less than \$5 million, contractors and designers will submit a CPM schedule using software compatible with Primavera. For projects over \$5 million, or those that meet other requirements, such as significant right-of-way impacts, contractors and

scheduling and assessment.

Why the move?

In selecting Primavera for its project management solution, NJDOT based its decision on such diverse factors as integration with current software and the ability to view construction projects by region.

On a practical level, because the Capital Program Management Division already had more than 20 licenses for Primavera, it made sense

to “move up to the next step with the same program,” Palise explains. “We felt that the learning curve would be minimal by doing that.” Ultimately, some 80 to 100 individuals should be using the software when fully rolled out.

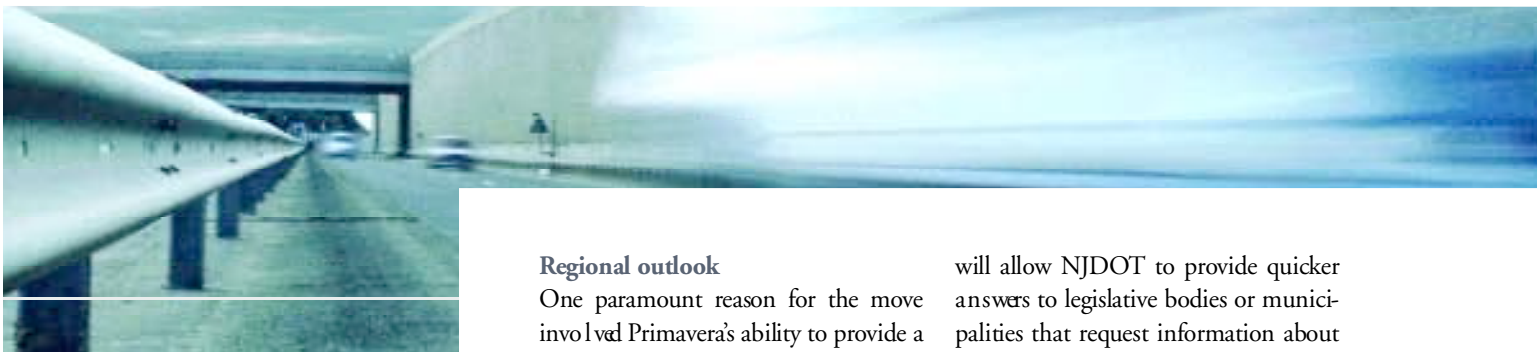
The platform also seemed ideal to marry with existing systems and at the same time help improve those systems, says Palise. For instance, Primavera integrates with NJDOT internal software called Project Reporting System (PRS), which many people use to track the progress of jobs.

Much of the impetus for moving to the latest version of Primavera soft-

NJDOT Transportation Capital Program

Fiscal Year 2002 (July 1, 2001 to June 30, 2002)

Item	Budget
Construction and related activities	\$964 million
Local assistance (funds for municipalities)	\$395 million
Planning, engineering, purchasing right of way	\$261 million



ware came indirectly from the federal government. About two-and-a-half years ago, the U.S. Department of Transportation's Federal Highway Administration (FHWA), which provides federal funding for transportation projects, audited various NJDOT construction projects. The federal government provides most of the funds for New Jersey's highway system, Palise says, so NJDOT has to work closely with FHWA to ensure that federal funds are spent correctly.

Regional outlook

One paramount reason for the move involved Primavera's ability to provide a regional view of construction projects. When fully implemented, Primavera will allow anyone using the software to determine if construction activities will overlap and affect each other.

This information will be key as managers and designers establish schedules, so that multiple jobs aren't scheduled in one location, helping to eliminate traffic snags caused by more than one project occurring in the same area.

Having all the data stored in the software means that information about such projects, whether in the design or construction stage, will be readily available. Immediate access to projects also

will allow NJDOT to provide quicker answers to legislative bodies or municipalities that request information about construction efforts. The system will avoid the traditional process of contacting many different parties to get that information together.

More timely

Though in use only since September 2001, users on the design side are noticing clear benefits from Primavera. For instance, previously workers had to re-key data in order to update the design project. That meant that project managers typically had to wait several weeks for an update to their projects.

Today, the database gets a daily electronic update. This “allows managers to

know how things stand on a project in real time,” says Palise.

This also frees up time for the workers who re-keyed that information, and who now can be used elsewhere. With billion-dollar shortfalls looming in New Jersey’s state budget, that’s no small benefit.

“This is going to allow us to take our existing resources and still be able to do the job,” says Palise.

Making improvements

As is common with any comprehensive software implementation, bringing Primavera up to speed required a little fine-tuning. As NJDOT worked with the software, it called on Primavera to address compatibility issues between the two versions of the planning and scheduling software. It also asked the company to tailor the software more specifically for the transportation industry.

“Of course, they were more than

happy to work with us to correct what we felt were shortcomings that wouldn’t allow us to maximize the advantages of Primavera,” says Palise. As a consequence, NJDOT ended up with a product that was even more effective than originally thought. “We’re both gainers out of that,” he says.

Road to the future

Though it’s too early to quantify any specific outcomes from using Primavera, Palise sees the prospect for expanded use of the software. This could involve using Primavera to coordinate projects from municipalities, for example (See *Sideroads*).

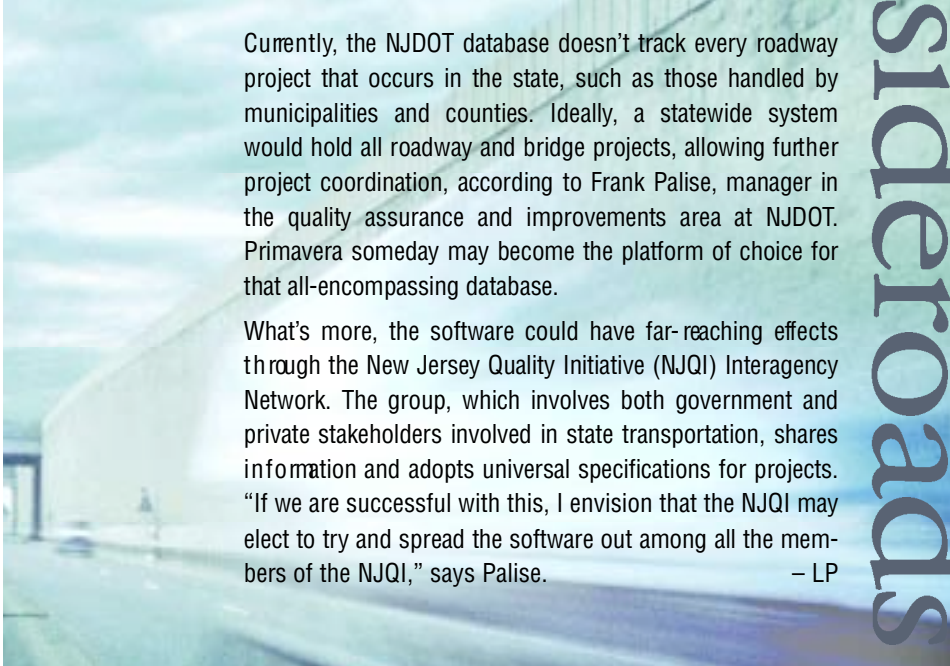
In the future, the system also might allow NJDOT to better coordinate its construction projects with utility companies, adds Misner.

Smoother ride

Although NJDOT can’t guarantee a smooth ride for every vehicle on New Jersey’s roadways, drivers might travel more easily knowing that construction projects are planned to minimize disruptions.

Behind the scenes, Primavera is helping to pave that clearer path. •

Louis Pilla is a freelance writer based in Horsham, Pa. Contact him at pilla@netreach.net.



Currently, the NJDOT database doesn’t track every roadway project that occurs in the state, such as those handled by municipalities and counties. Ideally, a statewide system would hold all roadway and bridge projects, allowing further project coordination, according to Frank Palise, manager in the quality assurance and improvements area at NJDOT. Primavera someday may become the platform of choice for that all-encompassing database.

What’s more, the software could have far-reaching effects through the New Jersey Quality Initiative (NJQI) Interagency Network. The group, which involves both government and private stakeholders involved in state transportation, shares information and adopts universal specifications for projects. “If we are successful with this, I envision that the NJQI may elect to try and spread the software out among all the members of the NJQI,” says Palise.

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