# Transportation Asset Management Case Studies

## ECONOMICS IN ASSET MANAGEMENT
# The Hillsborough County, Florida, Experience

## Note From the Director

The Federal Highway Administration Office of Asset Management is aggressively promoting a different way for transportation agencies to distribute their resources among alternative investment options. This new way of doing business, referred to as "Asset Management," is a strategic approach to maximizing the benefits resulting from the expenditure of agency resources.

For any transportation agency, the progression toward effective Asset Management practices will involve a range of activities. These endeavors will differ from State to State. For example, some agencies will pursue a data integration strategy in order to ensure comparable data for the evaluation of investment alternatives across different asset classes. Others will move to deploy economic analysis tools to generate fact-based information for decision makers. Still others will want to integrate new inventory assessment methods into their decision-making processes.

Much can be learned from those who are readying their organizations for Asset Management. To spark the exchange of information, in 2003 we initiated a series of case studies focused on agencies that are leading the way. The series involves four tracks: data integration, economics in Asset Management, the Highway Economic Requirements System–State Version, and life-cycle cost analysis. Through the years, we will add new agency reports to each of the tracks and create new tracks addressing other facets of Asset Management, such as change management and performance measurement.

On behalf of the Office of Asset Management, I am pleased to add this case study on economics in Asset Management to the series. We believe the case studies will help agencies meet the challenges of implementing Asset Management programs.

David R. Geiger
Director, Office of Asset Management
May 2005

## Note to the Reader

The Transportation Asset Management Case Study Series is the result of a partnership between State departments of transportation, local government agencies, and the Federal Highway Administration's (FHWA's) Office of Asset Management. FHWA provides the forum in which to share information, and the individual States and local government agencies provide the details of their experiences. For each case study report, the FHWA interviewed State or local government agency staffs, and the State or local government agency approved the resulting material. As such, the reports rely on the agencies' own assessment of their experience. Readers should note that the reported results may or may not be reproducible in other organizations. ∎

# Executive Summary

Over the last 8 years, Hillsborough County, Florida, has planned and implemented a comprehensive Asset Management system for its roadway and stormwater infrastructure. The new system includes all the forecasting elements necessary to do multiyear budgeting of maintenance, operations, and eventual capital replacement of these assets. The Asset Management system replaces a previous management approach that was based largely on historic line-item expenditures, reactions to citizen or political demands, and corrective rather than preventive management strategies.

> While the new Asset Management System will enable the county to save money in the long run, it also provides important near-term benefits.

To accomplish the transformation to an Asset Management approach, the Hillsborough County Public Works Department (department) formed management teams that identified the data and tools it would need to move forward. The department then contracted for the collection of comprehensive location and condition data for its roadway and stormwater assets and had these data loaded into a management information system, known as the Hillsborough County Asset Management System (HAMS). HAMS allows the ready retrieval of the condition and maintenance data, location of assets on the department's geographical information system (GIS) base map, analysis of the data, and the development of efficient strategies to preserve and improve the infrastructure. Included in HAMS is information on more than 6,200 lane-miles of paved roads, 4.2 million feet of storm pipe, and over 500,000 point assets, such as approximately 87,000 signs, 14,000 intersections, 30,000 stormwater inlets, and many other items.

A critical component of Hillsborough County's Asset Management strategy is the use of economic analysis tools to aid in the evaluation of asset maintenance, replacement, and improvement strategies. The county's goal is to bring investment decisions to the dollar level as much as possible. The department uses economic analysis at several different levels in its decision-making process. In some asset categories, such as intersection and sidewalk improvements, the department applies benefit-cost analysis to HAMS and other data to evaluate individual improvement projects and to rank projects by priority. The department also evaluates life-cycle costs when

considering potential actions for pavements, bridges, and stormwater assets. Finally, the county uses economic analysis methods to evaluate investments in new technologies, such as in its recent decision to incorporate light-emitting diode (LED) traffic signals into its traffic signal and intelligent transportation system (ITS) network.

By improving the department's ability to manage these assets and target money more efficiently, HAMS will enable the county to save money in the long run. Near-term benefits are also significant. With HAMS, the department can keep the public informed about pending infrastructure services for several years into the future. The system has increased the department's accountability to the Board of County Commissioners and has led to increased funding of the preventive maintenance program. Using HAMS, Hillsborough County became an early implementer of accounting reforms required under Government Accounting Standards Board Statement No. 34 (GASB 34). Because it informs the department on the current and expected future conditions of all roadway and stormwater assets, HAMS greatly reduces the risk to the public of unexpected infrastructure failure. This reduced risk contributed to an improved flood insurance rating from the Federal Emergency Management Agency. Data in HAMS also facilitated the county's ability to anticipate and respond to damage caused by the hurricanes that struck Florida in August and September of 2004.

Hillsborough County intends to expand the capabilities and coverage of its Asset Management program. Efforts are already underway to implement comprehensive infrastructure asset inventories in other departments: Water; Parks, Recreation, and Conservation; Planning and Growth Management; and Housing and Community Code Enforcement. ■

# INTRODUCTION

Transportation Asset Management is a set of guiding principles and best practice methods for making informed transportation resource allocation decisions and improving accountability for these decisions. The term "resource allocation" covers not only allocation of money to

program areas, projects, and activities, but also covers deployment of other resources that add value (staff, equipment, materials, information, real estate, etc.). Asset Management is policy-driven and performance-based, involves the analysis of options and tradeoffs, makes use of quality information, and monitors performance results to provide clear accountability and feedback. Economic analysis plays a critical role in Asset Management by facilitating tradeoff analysis, in which the net benefits of competing investment options are compared in terms of their "dollars and cents" impacts on the public.

Hillsborough County, Florida, is at the forefront of the Nation's major metropolitan areas in the application of Asset Management principles. It has implemented an active Asset Management program that inventories the location, condition, and dimensions of all roadway and stormwater infrastructure managed by its Public Works Department. Hillsborough County has strongly emphasized the use of economic analysis techniques in its Asset Management program.

FHWA's Office of Asset Management has therefore selected Hillsborough County as a case study for applications of economic analysis techniques in Asset Management. The Hillsborough County Public Works Department personnel represent an important national resource of expertise and practical experience in this area, and have been very active in promoting the application of Asset Management techniques to other local governments across the Nation. The following case study summarizes the department's experience, highlighting the prerequisites, process, and challenges of the successful implementation of an Asset Management system that incorporates economic analysis techniques.

# AGENCY FACTS

Hillsborough County (see map) has an area of approximately 1,100 square miles and a population of 1 million. It is characterized by high rates of growth and development. The county's annual budget exceeds $2.5 billion, and the county employs some 8,000 workers.

The Public Works Department is charged with the responsibility for maintaining and upgrading the transportation and stormwater infrastructure throughout unincorporated Hillsborough County. In addition, the department is responsible for maintenance and upgrading of roadway assets on a number of roads within the county's three municipalities: Tampa, Temple Terrace, and Plant City. The department is located on the 22nd and 23rd floors of the County Center building in Tampa, as well as at 10 remote operational sites strategically situated throughout the county. The department is organized into three principal divisions: Engineering, Transportation Maintenance, and Traffic Services. It employs approximately 650 full-time workers countywide (the majority in Transportation Maintenance), plus a number of temporary personnel. The department controls an annual operating budget of $70 million, and is responsible for $247 million of the county's 6-year Capital Improvement Program.

> Data in the Asset Management system helped the county to anticipate and respond to hurricane damage in fall 2004.

The Public Works Department has three key objectives:

- Preserve the transportation system;
- Provide user safety and mobility; and
- Expand system capacity.

The department provides a variety of services:

- Maintaining and repairing roadway and stormwater infrastructure;
- Managing traffic signals, signs, striping, street lighting, and related infrastructure;
- Managing traffic calming programs;
- Developing and ranking projects for transportation and stormwater systems maintenance, rehabilitation, and improvement;
- Controlling the mosquito population and invasive vegetation using a variety of aerial and surface spraying techniques; and

- Providing Community Stormwater and Environmental Education programs.

  The department is responsible for many types of assets:

- 3,000 centerline miles of paved roadway, including 288 miles of principal arterials;
- 3,656 miles of pavement markings;
- 1,880 miles of sidewalks;
- 246 bridges;
- 14,155 intersections, 450 signalized;
- 86,574 signs;
- 14,914 pedestrian ramps; and
- 63,123 storm mains and culverts.

  In total, the department manages more than 20,000 miles of linear assets and more than 500,000 point assets.
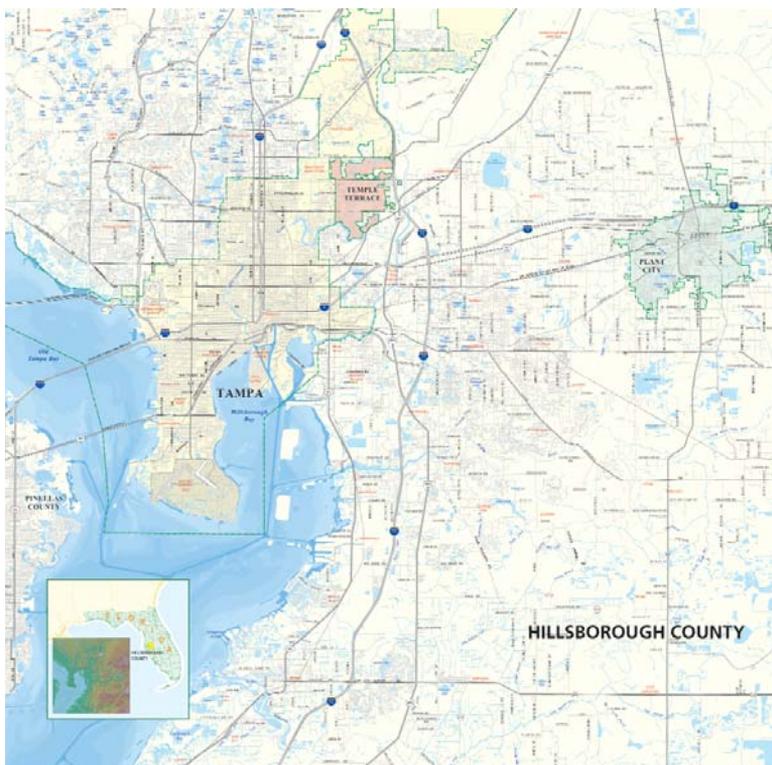
# SETTING THE STAGE

## What Did Hillsborough County Have?

During the last decade, Hillsborough County recognized that it needed better coordination of its activities to maintain, operate, and improve roadway and stormwater infrastructure. Accordingly, the county created the Hillsborough County Public Works Department as part of the County Administrator's internal reorganization in the summer of fiscal year 1996. The new department consolidated the functions of the former Engineering and Construction Services Department and the former Road and Street Maintenance Department. A director position was created to head this new department.

The new department inherited several data management systems, including a GIS, a proprietary infrastructure management system that was only partially populated with location and condition data, and other unlinked systems (e.g., a bridge program). These systems were not integrated, making it difficult to plan and coordinate maintenance activities. Moreover, the department had no formal procedures to predict future expenditure requirements, instead reacting to citizen or political demands and relying on corrective maintenance strategies—responding to asset failure—rather than preventive ones. Budgets were based on historic line-item expenditures.

The new department quickly recognized that the pre-existing management systems and procedures would not be adequate to meet the needs to maintain and operate county infrastructure in the future. Among the factors that contributed to or reinforced this recognition were the following:

> The department envisioned a management information system incorporating a comprehensive inventory of all types, locations, and conditions of transportation and stormwater infrastructure assets.

- The failure of the county's transportation networks to deliver expected services, due to insufficient planning and risk management;
- Pending changes to financial accounting regulations by GASB 34, issued in June 1999, requiring that all long-lived capital assets (including roads and bridges) be reported in State and local government financial statements;

- Growing public expectations for efficient infrastructure and accountability;
- Flooding associated with the El Niño event of 1998, when 8 feet of rain fell over a 10-month period, which highlighted the need to maintain and upgrade the stormwater system; and
- The availability of new technology and management models with the capability to monitor, evaluate, and optimize Asset Management activities and expenditures.

## What Did Hillsborough County Want?

Leadership in the Public Works Department resolved that Hillsborough County needed to replace the pre-existing management approach with one that reflects the objectives of Asset Management, particularly the ability to make cost effective and timely resource allocation decisions. Put another way, the department sought a system that would "make the right choice, at the right time, and in the right place." Officials realized that a centralized Asset Management system, fully populated with data on a comprehensive range of assets, was needed.

The department envisioned a comprehensive inventory of all types, locations, and conditions of transportation and stormwater infrastructure assets, including lane-miles of pavement, markings, sidewalks, and guardrails, and 25 different types of point objects, including bridges, railroad crossings, driveways, intersections, signs, traffic signals, and speed humps. This information would be loaded into a management information system that would be able to model deterioration over the life cycle of infrastructure assets, identify the most economical maintenance actions, and, in time, quantify benefits of different actions to users of the infrastructure.

# HOW DID HILLSBOROUGH COUNTY IMPLEMENT ITS ASSET MANAGEMENT PROGRAM?

## Overall Approach

In 1997, the Public Works Department assembled two management teams to launch its Asset Management program, focusing initially on creating comprehensive inventories of the department's infrastructure assets. Three asset categories were defined:

1. Roadway: Traffic devices, pavements, markings, lighting, bridge and intersection infrastructure, signals, poles, etc.;
2. Road-edge: Sidewalks, shoulders, curbs and gutters, inlets, driveways; and
3. Roadside: Stormwater pipes, ditches, vegetation, boundaries, topography.

One team, consisting of Public Works Department staff from its Engineering, Transportation Maintenance, and Traffic Divisions, was charged with establishing the scope of services for contracts to develop inventories of the first two categories (collectively referred to as the "Roadway Asset Inventory"). The department's Engineering Division's Stormwater Management Section was charged with developing a separate scope of services for the stormwater and drainage asset inventory contract (the "Stormwater Asset Inventory").

## Establishing the Inventories

The goal for establishing the inventories was not only to number and locate the infrastructure assets, but also to develop a condition assessment for each of these assets. To accomplish this feat, the scopes of services for the roadway and stormwater asset inventories required the use of innovative, state-of-the-art data collection techniques.

For the roadway assets, the department selected a local general contractor and two subcontractors with specialized expertise to collect the data. Using vans equipped with four digital cameras, a global positioning system (GPS) receiver, and an inertial navigation system, the contractor field personnel drove all of Hillsborough County's 3,000 centerline roadway miles

in both directions, taking snapshots of roadside attributes every 35 feet to provide 360-degree coverage. This method allowed the contractor team to capture data at traffic speeds. Roadway conditions were assessed based on surface distress, cross slope, roughness, rutting, curb reveal, shoulder drop-off, and deflection. Point assets were precisely located to sub-meter accuracy and data were provided on their condition. Subsequently, the contractors, working with department personnel, identified and catalogued the assets using advanced recognition software and assigned the assets a rating of good, fair, or poor.

The contractor team collected more than 400 gigabytes of photographic data on roadway assets from September 1999 to January 2000. Inventory and condition assessment data were extracted on all of the more than 20,000 miles of linear assets and 500,000 point assets that the department manages.

For the stormwater asset elements, the department contracted with the University of South Florida to collect the data. The university developed protocols that used GPS units and GIS data collectors for field data collection. The university also created the protocols for GIS post-processing for quality assurance and data loading into the department's Asset Management system. Condition data were supplemented by digital images of stormwater assets.

## Populating the Asset Management System

The Public Works Department decided to integrate all of the roadway asset data into its existing Hansen Infrastructure Management System Roadway Module and to link this system to its GIS base map. Accordingly, the contractor team was charged with entering the roadway inventory and condition data collected by the mapping vans into the roadway module. The team also entered data from the Florida Department of Transportation's bridge management program.

During 2000, the team successfully incorporated the new data into the roadway module. The team established a link between the mapped data recorded in the roadway module

With data integration completed, personnel can display a county roadway asset's location, ascertain its condition and maintenance history, view its photographs, and update its data.

and the county's preexisting GIS base map through a linear referencing system, associating any asset in the GIS base map with an asset key in the roadway module. Newly surveyed assets in the roadway module were incorporated into the GIS base map using a technique called dynamic segmentation. With this data integration effort completed, county personnel can display where the county's roadway assets are located, ascertain their condition and maintenance history, view photographs of the assets, and update the asset data. The referencing system will facilitate future additions to and links with these data as the county expands its Asset Management program.

The University of South Florida developed a Stormwater Atlas from all existing and newly collected stormwater and drainage asset data using GIS software. The university then designed a customized stormwater module/GIS interface that county personnel can use to identify stormwater features, view photographs and attribute data, plot maps, and update the asset data.

Collectively, the linked roadway and stormwater modules and GIS systems form the core of HAMS, incorporating data on all roadway and stormwater infrastructure assets.

## Application of Economic Analysis Tools

Hillsborough County began the pursuit of improved information management systems with the goal of making the best possible asset investment decisions. The county recognized that economic analysis tools, combining technical and accounting data, could make a valuable contribution toward this decision-making goal and has actively sought to apply such tools within HAMS or in conjunction with HAMS data.

Assembling the infrastructure asset inventory database was an important step toward the county's comprehensive use of economic analysis techniques. By providing information on asset location, condition, deterioration rate, and dimensions, the database enables analysts to prioritize and anticipate replacement and maintenance needs for many years to come. With the addition of cost and benefit data to this data mix, analysts can use economic analysis tools to determine the best actions to take from the standpoint of lowest overall costs and greatest net benefits to the public.

The department is implementing economic analysis applications in different types of asset decision-making:

- Investment in new projects;
- Minimizing asset life-cycle costs through activities to evaluate and preserve infrastructure and materials; and
- Evaluation of new technologies.

Asset coordinators can now retrieve data from HAMS on pavement condition; road classification (e.g., principal arterial, collector); and quantity, condition, and preservation choices for more than 38 types of road assets.

With regard to program- and project-level investments, the department has implemented benefit-cost analysis as a means of ranking competing intersection and sidewalk investments. The example of benefit-cost analysis of intersection investments illustrates the new economic approach to Asset Management.

Before adopting an Asset Management strategy, the department's method of prioritizing intersection capital improvement projects was ad hoc and largely subjective. County staff would make judgments about the desirability and relative importance of competing projects and consider public and official complaints about traffic operations. To improve accountability and public service, the county has replaced the old process with the Intersections Program Management Information Systems (IPMIS). Under the new methodology, the county prioritizes intersection projects based upon the following benefit-cost ratio formula, applied over the project's life cycle:

$$\frac{\text{Benefit}}{\text{Cost}} = \frac{\text{Present worth (economic benefit of vehicle delay savings + crash reduction savings associated with the improvement + salvage value)}}{\text{Present worth of cost of the improvement}}$$

Present worth is calculated in dollars over a 20-year timeframe using a 7 percent discount rate to reflect the opportunity cost of money.

Potential intersection projects are initially identified based on the crash numbers and crash rates of all 14,000 intersections. Benefit-cost ratios are then calculated for the top 100 to 150 intersection projects, and the projects are ranked in order of these ratios for selection. Intersection crash data are provided by the Hillsborough County Sheriff's Office and the Florida Highway Patrol and recorded in the county's accident reporting software system. Traffic data are collected at the intersections to determine potential

delay reduction using highway capacity software. The dollar values used for reduced crashes and saved time are based on traffic engineering data and other published sources. Project costing and salvage value are based on data in HAMS and technical and real estate cost estimates. The county plans to integrate IPMIS fully with HAMS in the future.

Life-cycle cost analysis of assets, particularly with regard to extending the life of assets through timely preservation treatments, is greatly facilitated by HAMS. Asset coordinators can retrieve data from HAMS on pavement condition; road classification (e.g., principal arterial, collector); and quantity, condition, and preservation choices for more than 38 types of road assets.

As an example, the pavement information can be used with a pavement management decision model that guides the analyst through a series of questions regarding roadway condition, traffic, and alternative treatment strategies to determine reasonable treatment strategies. These potential strategies (see table) are further refined based on life-cycle cost criteria, verified against field inspections, and, finally, mapped on the

### Preservation Treatment Costs in Hillsborough County

| Treatment | Estimated Life (Years) | Unit Cost per Lane-Mile ($) |
|---|---|---|
| Crack seal | 3 | 1,250 |
| Rejuvenation | 3–5 | 3,700 |
| Sand seal | 5–7 | 7,000 |
| Chip seal | 10–15 | 14,000 |
| Micropaving | 7 | 14,800 |
| Microsurfacing | 7 | 14,800 |
| Hot-in-place asphalt | 7–10 | 34,000 |
| Ultrathin bonded asphalt | 3 | 34,500 |
| Resurfacing | 7–10 | 44,000 |
| Reconstruction | 10–15 | 250,000 |

GIS base map to determine the best coordinated treatment for roads in a given area. As a matter of good practice, it is the policy of the department to perform some form of treatment on every road at least once every 7 years.

With regard to the evaluation of new technologies, Hillsborough County recently completed a comprehensive economic evaluation of the cost of replacing incandescent traffic signal lights with LED lights. In addition to the well-documented energy saving, safety, and maintenance life-cycle benefits associated with LED lights, the evaluation also considered the cost of integrating the LED technology into the county's ITS network. The comprehensive accounting of traffic signals in the HAMS database expedited this evaluation. The county has applied similar economic evaluations to its decisions to select various software packages used in the ITS network.

The department will add more economic applications to HAMS data as its experience increases. Its stated goal is to apply a "dollars and cents" criterion to all of its infrastructure decisions.

## MOVING AHEAD

### Commitment to the Full Potential of Asset Management

Over the next several years, Hillsborough County will continue its effort to apply Asset Management methods to its transportation and stormwater infrastructure programs. The ultimate goal will be to use HAMS to plan a continuously updated, multidecade preventive maintenance and prioritized replacement program based on engineering, economic, and safety criteria. This goal has already been attained, in significant part, with the greatly improved budgeting and maintenance procedures enabled by the system's current capabilities.

> Ultimately, the goal is to use HAMS to plan a continuously updated, multidecade preventive maintenance and prioritized replacement program based on engineering, economic, and safety criteria.

The effort to reach the overall goal will take place at several levels:

- Integrate additional management systems into the HAMS framework. As already noted, the IPMIS will be linked into HAMS. Other systems,

such as the crash-reporting database, will be tied to HAMS through the GIS base map link.

- Incorporate more economic analysis tools into the HAMS framework. HAMS facilitates economic applications by providing current and accurate data on infrastructure assets. These and other data are used with economic analysis tools to decide on optimal preventive maintenance for assets and to evaluate new investment options. In time, such tools will be fully integrated into HAMS.
- Develop information management systems for other county departments and link these systems into HAMS. Likely departments include Water; Parks, Recreation, and Conservation; Planning and Growth Management; and Housing and Community Code Enforcement. Thus, the Water Department could easily access HAMS for information on roadways that overlie water mains, and the Public Works Department could coordinate its resurfacing plans with expected water main repairs.

## WAS IT WORTH IT?

The implementation of Asset Management can be expensive. Hillsborough County has spent over $3 million to collect and enter data into HAMS. The county fully expects that the improved, detailed, capital planning enabled by HAMS will, over time, create equal or greater savings in annual maintenance costs. These savings will reduce the tax burden on county residents and help fund infrastructure enhancements, congestion mitigation programs, and other quality of life improvements.

The switch from reactive infrastructure management to an active, "get it done right" program is already yielding substantial benefits to the Public Works Department and to the residents of Hillsborough County:

- *Improved financial efficiency.* The ability to use HAMS to calculate future maintenance actions and to target funds where they will yield the greatest benefit lends much more credibility to the budget process. Accordingly, the Board of County Commissioners has recognized the need for preventive maintenance and has assured increased annual infrastructure funding of $10 million for the next 20 years.
- *Improved communication with service users.* Now, when a citizen calls to ask about the status of his or her streets, sidewalks, or drainage system,

the county can respond with information on when and what type of preventive maintenance is scheduled for the asset over the next several years. Similarly, when a request comes in for an improvement, the county is able

Savings will help fund infrastructure enhancements, congestion mitigation programs, and other quality of life improvements.

to respond objectively to the public about the relative priority of the requested improvement based on the budget and the need for improvements elsewhere in the county. Although evidence is anecdotal at this point, the perception of Public Works personnel is that the public is receptive to this information and that the number of complaint calls from the public about infrastructure has diminished.

- *Rapid compliance with new accounting requirements for asset valuation.* The ready access to asset data through HAMS made it possible for Hillsborough County to comply quickly with the accounting reforms required under GASB 34. GASB 34 requires that all long-lived capital assets (including roads and bridges) be reported in State and local government financial statements. The transportation infrastructure currently owned by the county is valued at $5.82 billion. GASB has formally recognized Hillsborough County for the speed with which it complied with GASB 34 requirements.

- *Lower borrowing costs.* The county's well-managed finances and ability to plan for the long term, evidenced in part by its ability to quickly comply with GASB 34, have contributed to its continuing to receive favorable bond ratings. The key credit rating agencies recently upgraded these ratings, ranking Hillsborough County in the highest level for Florida counties.

- *Enhanced response to emergencies.* Florida was struck by four severe hurricanes in a period of 5 weeks in August and September 2004. Three of the hurricanes—Charley, Jeanne, and Frances—impacted the Hillsborough County area. HAMS provided critical information to the county in its response to these events. The county used information collected in the HAMS stormwater and drainage inventory to pinpoint those locations most likely to experience drainage problems based on prior experience. GIS information in the database was critical to locating and responding to the sites and facilities where flooding was reported during the hurricanes. Data in HAMS also facilitated the county's ability

to locate and clean up debris spread by the storms from streets and sidewalks across the county.

- *Improved risk management and lower insurance rates.* By pursuing preventive strategies and by having comprehensive data on asset conditions, there is a much lower risk of unexpected failure of critical infrastructure elements. Unexpected failures can impose major costs on society and are expensive to insure against. Good asset maintenance planning reduces risk and lowers insurance costs. For instance, the county believes that its Stormwater Master Plan, developed using HAMS data, likely contributed to an improved flood insurance rating from the Federal Emergency Management Agency.

## WHAT HAS HILLSBOROUGH COUNTY LEARNED?

> Leadership, staff participation, contractor support, public outreach, and an ongoing committee are all essential to setting up the tools to do Asset Management.

Hillsborough County understood from the outset of its implementation of Asset Management principles that the process would involve significant time and expense. Experience bore out this expectation. The process of setting up contracts, collecting comprehensive inventory and condition data, and placing it in an information management system took 3 years, and, as noted previously, cost more than $3 million to complete. This cost does not reflect the ongoing expense of keeping the system current as new infrastructure is added and existing infrastructure is maintained and replaced.

Given these challenges, Hillsborough County learned that several factors are key to setting up the tools to do Asset Management:

- Leadership. Due to the necessarily large-scale investment of time and resources, a comprehensive effort to establish an Asset Management system such as Hillsborough County's can only occur if there is strong and committed leadership from the top of the organization. The leadership must understand the benefits of the system, bring others to understand these benefits, advocate for funding the system to the highest levels of the government, and see the system through to implementation.

- Staff participation. The willingness of employees to use the information to its full potential is vital to getting the best return on the Asset Management investment. Once HAMS became operational, Public Works Department employees immediately appreciated the new ability that it gave them to anticipate future maintenance and replacement needs, thus enabling the system to generate benefits quickly. They also worked hard to design and implement tools to analyze the inventory data to facilitate decision-making.

- Contractor support. Hillsborough County worked extensively with contractors to design and build HAMS. In this case, the county was able to benefit from state-of-the-art data collection methods to assemble a comprehensive infrastructure inventory—something that would have been unaffordable using in-house labor and resources. Contractor support has also been valuable for setting up and operating economic analysis tools for programs such as the intersection program.

- Public outreach. Hillsborough County discovered that good public outreach about its Asset Management effort was critical to maintaining funding and support for the development of HAMS. Citizens and elected leaders are receptive to measures to improve infrastructure management if they are given information on how the measures will work. National attention to the effort has also reinforced the public's awareness of the innovative nature of the effort.

- Commitment. The creation of a comprehensive asset inventory is a starting point, not an end point. Hillsborough County is committed to updating the inventory data while it continues to investigate new applications of economic analysis and other tools to make use of the data.

## WHAT'S NEXT?

After much effort, HAMS is a fully operational system that is being used to support day-to-day decision-making in Hillsborough County. Even so, the county is committed to expanding the capabilities of HAMS through its further integration with other management systems and greater application of economic analysis techniques to the HAMS data. This ongoing process has the full commitment of county leadership, departmental staff, and the contractors supporting HAMS.
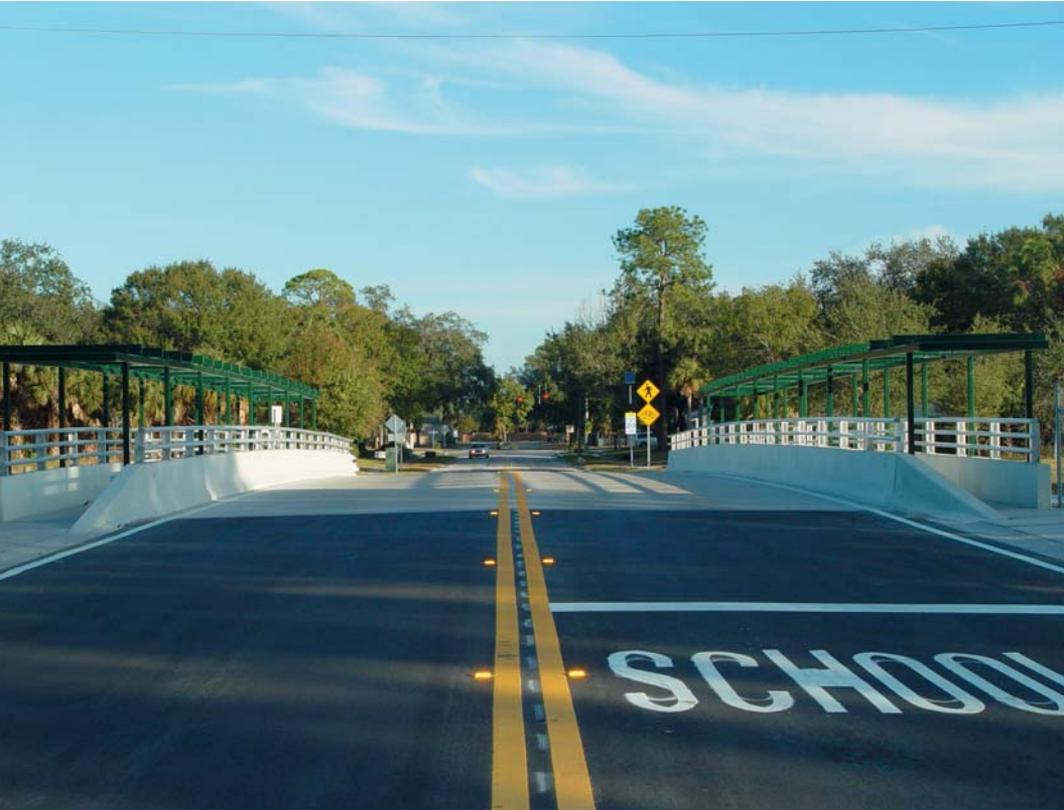
**Photography Credits**

Photographs of asset improvements courtesy of Hillsborough County, FL, Department of Public Works

Front cover: Providence Road

Inside front cover: Himes Avenue at Humphrey Street

Page 2: Linebaugh Avenue

Page 7: Hillsborough County map

Page 9: Linebaugh Avenue east of Anderson Road

Above: Webb Road Bridge

## Further Information

This document was prepared by U.S. Federal Highway Administration headquarters and division staff in cooperation with officials and employees of Hillsborough County, Florida. In particular, the case study relies heavily on the expert guidance, commentary, and information provided by Bernardo Garcia, Assistant County Administrator, Office of Planning & Infrastructure, and Frederick Nutt, Operations & Fiscal Administration Division Director, Public Works Department. These officials can be contacted at the addresses listed below.

Bernardo Garcia
Assistant County Administrator
Office of Planning & Infrastructure
601 E. Kennedy Boulevard, 26th floor
Tampa, FL 33602
813-276-2591
GarciaB@hillsboroughcounty.org

Frederick C. Nutt
Operations & Fiscal Administration Division Director
Public Works Department
601 E. Kennedy Boulevard, 22nd floor
Tampa, FL 33602
813-307-1705
NuttF@hillsboroughcounty.org

Note: A number of private vendors assisted Hillsborough County in the development of its Asset Management system. Information about the vendors and Hillsborough County's management of the development effort is available from the officials named above.