

1. How is your organization using asset management in decision making and resource allocation?

ODOT uses asset management to identify, evaluate and maintain its transportation assets in a steady-state manner. Annual condition assessments are reviewed and these trends are used to predict future asset conditions. The projected conditions are compared to adequacy thresholds to identify lane miles or assets that are deemed deficient. Funding is allocated to the 12 decentralized districts to address the deficient conditions in an effort to maintain the assets at a steady state over time. Performance measures are used to monitor the effectiveness of the asset management process and to adjust management strategies or resource levels. Several documents listed below illustrate examples of ODOT's asset management process.

Organizational Performance Index (monthly, internal document)

<http://intranet.dot.state.oh.us/opi/>

The organizational performance index monitors the monthly performance of all 12 districts in several key areas of construction management, contract administration, equipment and facilities, finance, information technology, plan delivery, quality and human resources, **system conditions**, traffic safety and highway maintenance. These scores are used to monitor several programs and to standardize services across districts. OPI exception reports and action plans are discussed during monthly executive management meetings. Many of these performance measures are used to annually evaluate management and staff.

Organizational Performance Index: Executive Summary Reports

Index Summary

District	Total Index Value	Construction Management	Contract Administration	Equipment and Facilities	Finance	Information Technology	Plan Delivery	Quality and Human Resources	System Conditions	Traffic
1	97.9167	83.3333	100.0	66.4624	100.0	92.5926	100.0	86.6667	100.0	N/A
2	97.9167	79.1667	100.0	83.3333	100.0	100.0	95.0	100.0	93.3333	N/A
3	97.9167	91.6667	100.0	82.1429	100.0	100.0	90.0	90.0	91.6667	N/A
4	100.0	91.6667	100.0	86.119	83.3333	92.5926	100.0	100.0	100.0	N/A
5	97.9167	95.8333	100.0	91.6667	100.0	92.5926	90.0	80.0	100.0	N/A
6	87.5	79.1667	100.0	82.1429	33.3333	92.5926	80.0	90.0	93.3333	N/A
7	100.0	91.6667	100.0	89.881	83.3333	92.5926	95.0	90.0	98.3333	N/A
8	95.8333	91.6667	66.6667	85.7143	100.0	92.5926	100.0	100.0	98.3333	N/A
9	97.9167	87.5	100.0	74.4048	100.0	100.0	100.0	100.0	100.0	N/A
10	95.8333	100.0	100.0	87.5	60.0	100.0	100.0	100.0	95.0	N/A
11	97.9167	79.1667	100.0	95.8333	100.0	100.0	85.0	100.0	100.0	N/A
12	91.6667	75.0	100.0	78.5714	60.0	100.0	100.0	100.0	95.0	N/A
ODOT INDEX	95.3125	91.6667	100.0	87.5	100.0	100.0	95.0	90.0	98.3333	N/A



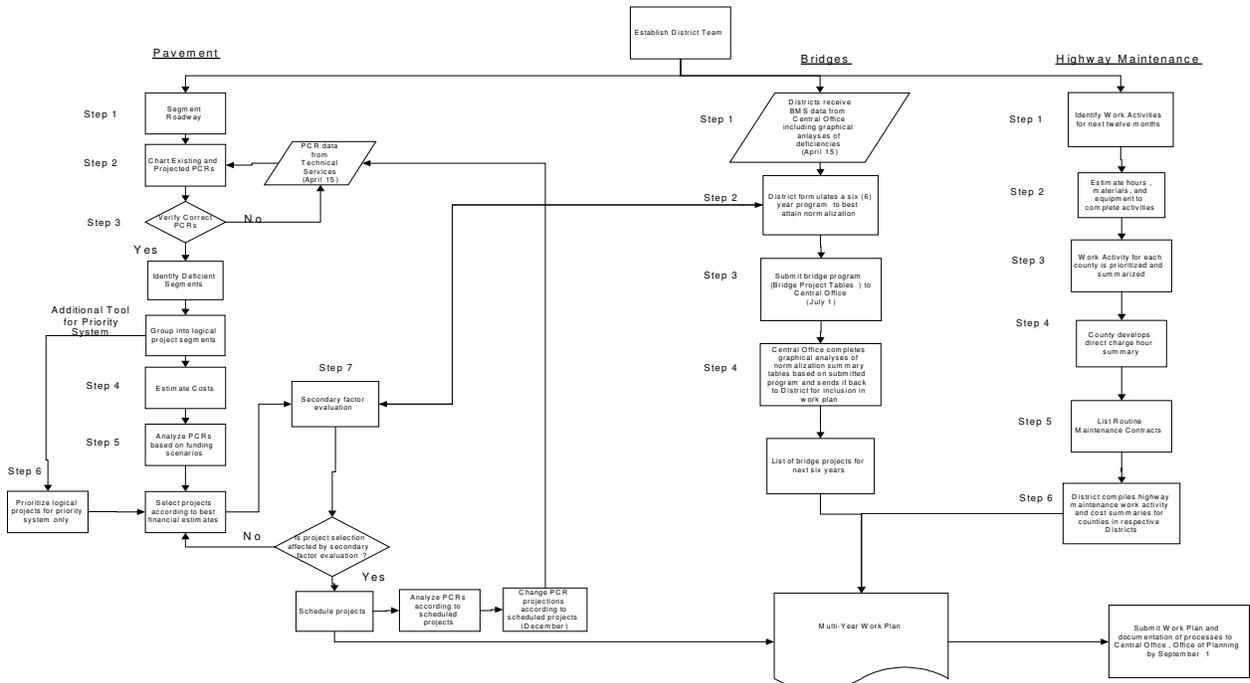
As of July 31, 2004

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District Multi-Year Work Plans (annual)

<http://www.dot.state.oh.us/divplan/SysPlan/workplan.htm>

Each of the 12 district offices is responsible for annually developing a District Multi-Year Work Plan for pavement and bridge preservation and highway maintenance. This plan is developed by multi-disciplined teams including participants from Planning, Production, Highway Management and Finance. The District Multi-year Work Plan is a fiscally constrained plan to identify and predict the future conditions for the priority system (interstate and 4-lane divided NHS highways), urban system (remaining incorporated state highways) and general system (remaining unincorporated highways).



The District Multi-year Workplans include identifying projects and conditions for:

- 10 years priority system pavements
- 6 years general system pavements
- 6 years bridges
- 4 years urban system pavements
- 1 year routine highway maintenance
- 1 year safety projects

This process is now integrated with the Ellis project tracking program. This program tracks all capital construction projects, their development schedules and finances.

The screenshot shows the 'Ellis - Project Management and Funding' application. The 'View Roadway Segments' window displays a table with the following data:

Available Segment Mileage:		Available Priority Lane Miles	Available General Lane Miles	Available Urban Lane Miles	Available Total Lane Miles
		15.550	0.000	0.000	15.550
Actual Segment Mileage:		Actual Priority Lane Miles	Actual General Lane Miles	Actual Urban Lane Miles	Actual Total Lane Miles
		15.550	0.000	0.000	15.550

Primary	BTRS	Obsolete	County/Route	NLF ID	SLM Log	Project Classification	Snapshot	Segment Summary	Photo Log	Edit	Move	Delete
Yes	Yes	No	CUY-IR-480	SCUYIR00480*NC	0.000 to 1.990	• I F 010						
No	Yes	No	CUY-IR-480	SCUYIR00480**C	25.480 to 26.390	• I F 010						

As new projects are entered into Ellis, the affected highway sections are identified and the pavement condition forecasts are adjusted to show the improved conditions. Bridges are individually identified to show the correction of any of four major deficiency areas. Any subsequent changes to project delivery schedules revise the future projections and are reflected in real-time performance monitoring reports. Ellis uses district specific degradation rates to degrade pavements condition projections for segments with no scheduled rehabilitation projects.

GASB 34 (annual)

<http://www.dot.state.oh.us/finance/GASB34.htm>

The performance of Ohio's assets is also reflected in the annual financial reports. Ohio uses the modified approach with minimal standards of 75% acceptable lane miles of pavements and 85% acceptable square footage of bridge deck area. These standards are less than the internal management standards applied in the Organizational Performance Index.

2004-2005 Business Plan (biennial)

<http://www.dot.state.oh.us/BusinessPlan0405/default.asp>

The Business Plan is a required biennial document the department must file with the Ohio General Assembly under the state law which created ODOT's Career Professional Service. The Business Plan represents the underlying objectives the department's management team are to accomplish in the biennium. From the Business Plan come the action plans for members of ODOT's Career Professional Service.



Ohio is blessed with one of the world's largest transportation systems which creates opportunities for the state but also creates significant demands upon it. As the Ohio Department of Transportation updates its strategic plans, its efforts are focused on addressing the most significant safety, economic development and mobility needs of Ohio's vast system.

As often noted, ODOT is responsible for the nation's

- 10th largest highway system;
- 5th greatest volume of traffic;
- 4th largest interstate system;
- 3rd greatest value of truck freight; and
- 2nd largest inventory of bridges.

This large system reflects Ohio's key strategic location in the Midwest, midway between the East Coast and Chicago. Ohio is a crossroads for manufacturing shipments, automotive production, agricultural commodities and international trade. In its own right, Ohio is the world's 20th largest economy and the eighth greatest producer of exports. Ohio is a key logistical center and central crossroads of trade. International trade and Just-in-Time logistics will continually grow in importance, which will further stress Ohio's transportation network.

CONGESTION, CAPACITY AND SAFETY

Dealing with congestion and freight growth will remain a key issue for ODOT through 2015. Truck volumes have grown 90 percent in the past 25 years and are expected to rise another 60 percent in the next 20 years. The highway system has expanded by less than a tenth of a percent annually in the past 25 years, creating serious congestion and truck capacity issues across Ohio.

Ohio's need to deal with congestion, freight and safety underlie Gov. Taft's Jobs and Progress Plan. That plan calls for a \$5.6 billion, 10-year new capacity and safety program for ODOT. The program will be focused on rebuilding Ohio's congested urban interstates, completing rural corridors, and addressing highway safety. The plan doubles Ohio's annual spending on high-accident, spot-safety locations from \$30 million to \$60 million. For 10 years, ODOT

will commit \$500 million annually to new capacity and \$60 million annually for safety to address the worst congestion and crash locations in Ohio.

Growing congestion and traffic contributes to fatalities and overall crashes which remain unacceptably high in Ohio. The overall crash rate and the number of injury accidents has improved consistently in Ohio over the past 10 years. However, the total number of crashes has remained at about 380,000 crashes annually and 1,300 fatalities a year for the past decade. This plateau of crashes and fatalities since 1990 contrasts with a steady reduction in crashes and fatalities in preceding decades. The effort to regain the momentum on reducing crashes and fatalities stands out as a top transportation priority for Ohio.

ACHIEVING THE STEADY STATE

Any transportation department's first priority is routine maintenance. Without meeting basic maintenance needs, pavements, bridges, signs, guardrail, pavement markings and other roadway features would degrade to the point of being hazardous. Before Ohio can embark on system improvement plans, it needs to ensure basic roadway needs will be met through the forecast period. ODOT has been fortunate in recent years to have the resources to reduce system deficiencies significantly, to low and acceptable levels. Ohio's priority system pavements are 97 percent acceptable. The department's bridge inventory is sound. Ohio's basic roadway deficiencies in such items as signage, pavement markings and guardrail have been cut by half.

The major maintenance challenge now facing ODOT is to sustain these conditions indefinitely for a predictable amount of money and labor. Achieving this steady state of low and acceptable system conditions gives Ohio unprec-





edented ability to accurately plan for future responsibilities. Revenue needs for personnel, equipment and basic roadway maintenance, and improvement contracts become predictable. The ability to accurately predict system condition and expenditure levels allows Gov. Taft's Jobs and Progress Plan to have such a long horizon. ODOT can for the first time provide a 10-year planning horizon for new construction because it has a high degree of assurance revenue will exceed maintenance needs over the time period.

Sustaining momentum is easier than creating momentum. It is harder to get a bicycle moving than it is to keep it moving. Now that ODOT has achieved good condition levels, the task will be to sustain the effort necessary to keep those good conditions steady. ODOT's way of ensuring annual levels of effort are sufficient to sustain future acceptable conditions is the Organizational Performance Index (OPI). The OPI consists of 65 major performance indicators. Each OPI measure has an acceptable level, each has a quarterly reporting process and each has broad institutional recognition. By meeting these OPI levels each quarter, all aspects of ODOT's operation will be performing acceptably. These measures apply to items such as bridge and pavement conditions, operating costs, basic roadway appurtenances, personnel levels and so on. An overriding operational goal of ODOT through 2015 will be to sustain a high level of OPI achievement. This ensures system and operating goals are met within the prescribed budget constraints.

REBUILDING OHIO'S INTERSTATE SYSTEM

An important component of sustaining the steady state is the need to rebuild Ohio's interstate highway system, especially the pavements. This system largely was constructed between 1956 and 1975. By 2006, the interstate system will be commemorating its 50th year, having been created by President Eisenhower in 1956. ODOT had been experiencing in the 1990s accelerated rates of decline on interstate highway pavement conditions because of the system's age and high truck volumes. By 2003, the department had replaced only 32 percent of Ohio's original interstate pavements. ODOT spends approximately \$150 million annually on specific projects to rehabilitate the interstate system in a systematic and predictable way. The department is on track to replace 50 percent of the interstate pavements by 2008 and 60 percent by 2015. This effort represents the

- **Adopt a Refined Pavement Management Process.**
An important component of sustaining the steady state is maintaining pavement conditions at the highest level for the lowest possible cost. ODOT will improve its pavement management practices with cradle-to-grave business processes to build and maintain pavements with greater sophistication than in the past.

largest of all categories of system maintenance within ODOT's system preservation categories.

STRATEGIC DIRECTION

The trends highlighted here create the greatest challenges for ODOT and serve to focus the department's strategic direction. ODOT is adjusting its strategic direction to address these challenges. The department's efforts are included in three strategic documents. First, these goals are key components of the short-term, two-year Business Plan required for ODOT's Career Professional Service for years 2004-2005. Second, they are inherent within and integral to Gov. Taft's 10-year Jobs and Progress Plan which has a horizon of 2006 through 2015. Finally, they will be included in ACCESS Ohio, Ohio's federally required 30-year long-range transportation plan. The Business Plan comprises the detailed first two years of the Jobs and Progress Plan and the Jobs and Progress Plan represents the first 10 years of the ACCESS Ohio Plan.

With the Business Plan, the 2004-2005 Strategic Initiatives will be:

- **Deliver Gov. Taft's Jobs and Progress Plan.**
ODOT will enhance its project-management and review processes to expedite delivery of the Jobs and Progress Plan projects. Project teams, expedited review processes and improved tracking systems will be used to keep the Jobs and Progress projects on schedule and on budget.
- **Complete ODOT's Safety and Congestion Program.**
ODOT identified a distinct program of projects and maintenance activities to improve Ohio's top crash locations. Delivering the Safety and Congestion Program remains a strategic initiative for 2004-2005 and enacts the first component of the governor's safety effort.
- **Achieve and Sustain the Steady State.**
This initiative seeks to sustain through the biennium the continued achievement of ODOT's Organizational Performance Index goals. These performance measures address all major areas of the department's operations. Adherence to the OPI goals ensures ODOT operates within its long-range budget constraints, that it achieves its basic system conditions and that it meets its operational objectives. Sustained achievement of the OPI measures will keep ODOT on track to maintain its steady state of high system conditions and operational efficiency.

- **Implement ODOT's Highway Technician Series Training.**
A key element of sustaining the steady state is to have a flexible, well-trained year-round work force. The Highway Technician Series and its training will provide a work force skilled in maintenance techniques, construction inspection knowledge and snow and ice expertise.

The ODOT business plan presents current district performance and sets future targets used by the Organizational Performance Index for pavement, bridge and maintenance conditions.



MEASURABLE AND ORGANIZATIONAL PERFORMANCE INDICATORS (OPI)

The information in this section summarizes goals to be met for statewide and district maintenance operations and pavement and bridge conditions. ODOT uses its Organizational Performance Index to monitor progress in attaining the established goals in each of these areas. Each OPI measure highlighted in this section has a direct bearing on the department's ability to achieve its overall performance goals. The pavement, bridge and maintenance operation measures have an acceptable level that managers and career professional employees are expected to achieve and sustain.

The highway network ODOT is responsible for is divided into three categories: priority system (interstate and four-lane divided highways), urban system (state highways within municipalities), and general system (primarily two-lane highways across the state). These systems are evaluated annually using a 100-point Pavement Condition Rating (PCR). Priority system pavements are deficient when the PCR is below 65 points. Urban and general systems pavements are deficient when the PCR is less than 55 points.

ODOT also conducts annual bridge inspections evaluating four categories:

- General appraisal ratings measure the overall condition of a bridge – bridges are considered deficient when this rating drops to 4 or below on a scale of 0 to 9 (the higher the number the better).
- Floor conditions ratings measure the underside of a bridge – bridges are deemed to be deficient when the floor rating is a 3 or 4 on a scale of 1 to 4 (the lower the number the better).
- Wearing surface ratings measure the driving surface of a bridge – bridges are considered deficient when the wearing surface is evaluated at 3 or 4 on a scale of 1 to 4. (the lower the number the better).
- Paint ratings measure the corrosion protection applied to the structural steel – bridges are deemed deficient when they are evaluated at 3 or 4 on a scale of 1 to 4. (the lower the number the better).

Statewide and district performance involving maintenance operations is also monitored through several OPI categories. The charts included in this section for these basic roadside conditions provide historical statewide and district condition levels and establish future goals for these activi-

ties. Central Office and district work units are expected to achieve these conditions and sustain them in the future.

- Guardrail – deficiencies are recorded for damaged or deteriorated guardrail, anchor assembly, bridge anchor assembly or impact attenuator which does not properly function as a safety barrier.
- Pavement Deficiency – deficiencies are recorded for the deterioration (ruts and potholes), obstruction, and bleeding of pavement and excessive crack sealing that is dangerous to motorists.
- Pavement Drop-Off – deficiencies are recorded for drop-offs exceeding two inches deep and six feet long between the pavement and shoulder.
- Vegetation Obstruction – deficiencies are recorded for vegetation obscuring signage, sight distance and guardrail.
- Litter – deficiencies are recorded for any tenth mile segment where litter exceeds 10 items.
- Drainage Obstruction – deficiencies are recorded for any ditch where 50 percent of the cross section is obstructed and includes damaged or obstructed pipes that cause water spillage onto the pavement.
- Sign – deficiencies are recorded for deteriorated signs that includes loss of message, damaged or twisted posts or supports, loss of reflectivity preventing clear visual comprehension, missing delineators, and unnecessary or obsolete signs that confuse motorists.
- Pavement Marking – deficiencies are recorded for missing or faded pavement striping, lane dividing lines, no passing areas, pavement edge lines, crosswalks, turn lanes and school zones. deterioration (ruts and potholes), obstruction, and bleeding of pavement and excessive crack sealing that is dangerous to motorists.



SYSTEM CONDITIONS
STATEWIDE PAVEMENT

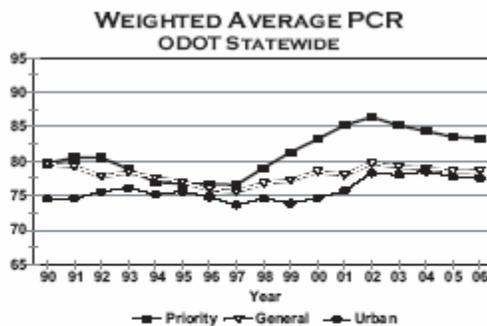
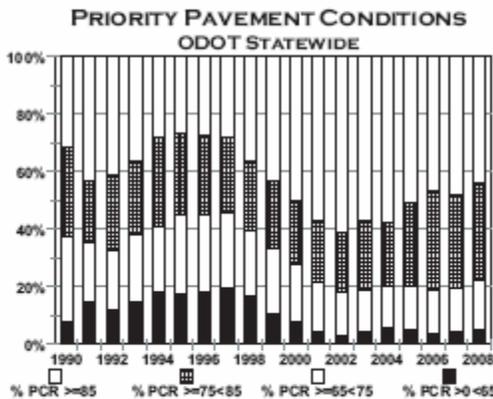
ODOT STATEWIDE PAVEMENT SUMMARY

The statewide goals for pavement conditions are to achieve 90 percent acceptable pavements in 2008. This goal is the same for the priority, urban and general systems. Currently, the department is meeting these goals. The priority system has 96 percent acceptable pavements with a condition rating above 65 PCR. The urban system currently has 96 percent acceptable pavements with a condition rating above 55 PCR. The general system currently has 98 percent acceptable pavement.

Historically, pavement conditions have fluctuated year to year, district by district, as funding levels and pavement preservation projects varied. The department goal is to achieve a "Steady State" condition level which is both acceptable and manageable.

From 1990 to 1997, pavement condition levels for the most heavily used priority system were not in Steady State. The priority system is made up of only 25 percent of the state highway lane miles but handles 56 percent of the total vehicle traffic and more than 70 percent of the truck traffic. The pavement condition levels dropped from 92 percent acceptable to a low of 81 percent acceptable.

Over the past 5 years, much has been done to reverse this trend. The recent efforts to focus on this system, including reconstructing parts of the original interstate highway system has brought the acceptable pavement condition to an all-time high of 97 percent.



FY 2004 - 2007 SUMMARY	
Average Annual Preservation Program	\$493.18 M
New Construction - Lane Miles	127.46
Major Rehabilitation - Lane Miles	805.34
Minor Rehabilitation - Lane Miles	10,415.14
Preventive Maintenance - Lane Miles	17,397.45

DISTRICT PAVEMENT GOALS			
System	FY 2004	FY 2006	FY 2008
Priority > 65 PCR	91%	90.5%	90%
General > 55 PCR	93%	91.5%	90%
Urban > 55 PCR	93%	92%	90%

SYSTEM	LANE MILES
Priority	12,287
General	30,297
Urban	5,969
Total	48,552
Truck VMT	24,807,467
Total VMT	185,377,721

OVERALL RATING:
★★★★★
VERY GOOD

SYSTEM CONDITIONS
STATEWIDE BRIDGES

ODOT STATEWIDE BRIDGE SUMMARY

The 2008 goals for bridge conditions are to keep bridge deficiency levels at below 4 percent for bridge general appraisal ratings, below 5 percent for bridge floor condition rating deficiencies, below 4 percent for bridge wearing surface deficiencies and below 11 percent for bridge paint deficiencies.

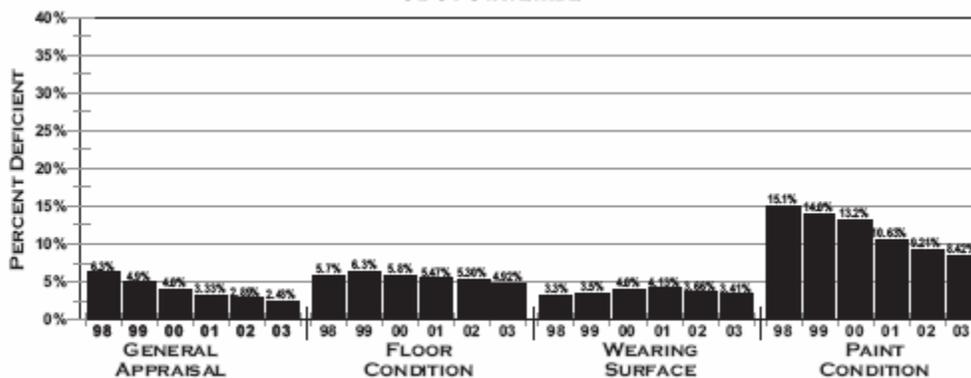
Currently, the statewide bridge conditions are meeting each of these goals. For bridge general appraisal ratings, 2.4 percent of the statewide square footage of bridges is considered deficient. Bridge floor ratings indicate 4.9 percent of the bridges are deficient. Bridge wearing surface rating are at 3.4 percent deficient and bridge paint ratings are at 8.42 percent deficient.

ODOT owns 15,048 bridges, or about one-third of Ohio's

45,000 bridges. The department maintains nearly all of Ohio's large bridges, with ODOT's bridge inventory comprising about two-thirds of all deck area, or size, of Ohio's bridges. The department's structures also carry 86 percent of all traffic which crosses bridges in Ohio and 95 percent of all truck freight which uses Ohio's bridges.

Bridge conditions have steadily improved over the last five years as bridge deficiency levels have stabilized. These overall conditions are expected to be sustainable and continue at below 4 percent deficient for general appraisal ratings, below 5 percent deficiencies for floor condition ratings, below 4 percent wearing surface deficiencies and below 11 percent paint deficiencies through 2015.

**BRIDGE DEFICIENCIES
ODOT STATEWIDE**



General Appraisal – a composite measure of the major structural items of a bridge, such as piers and abutments.

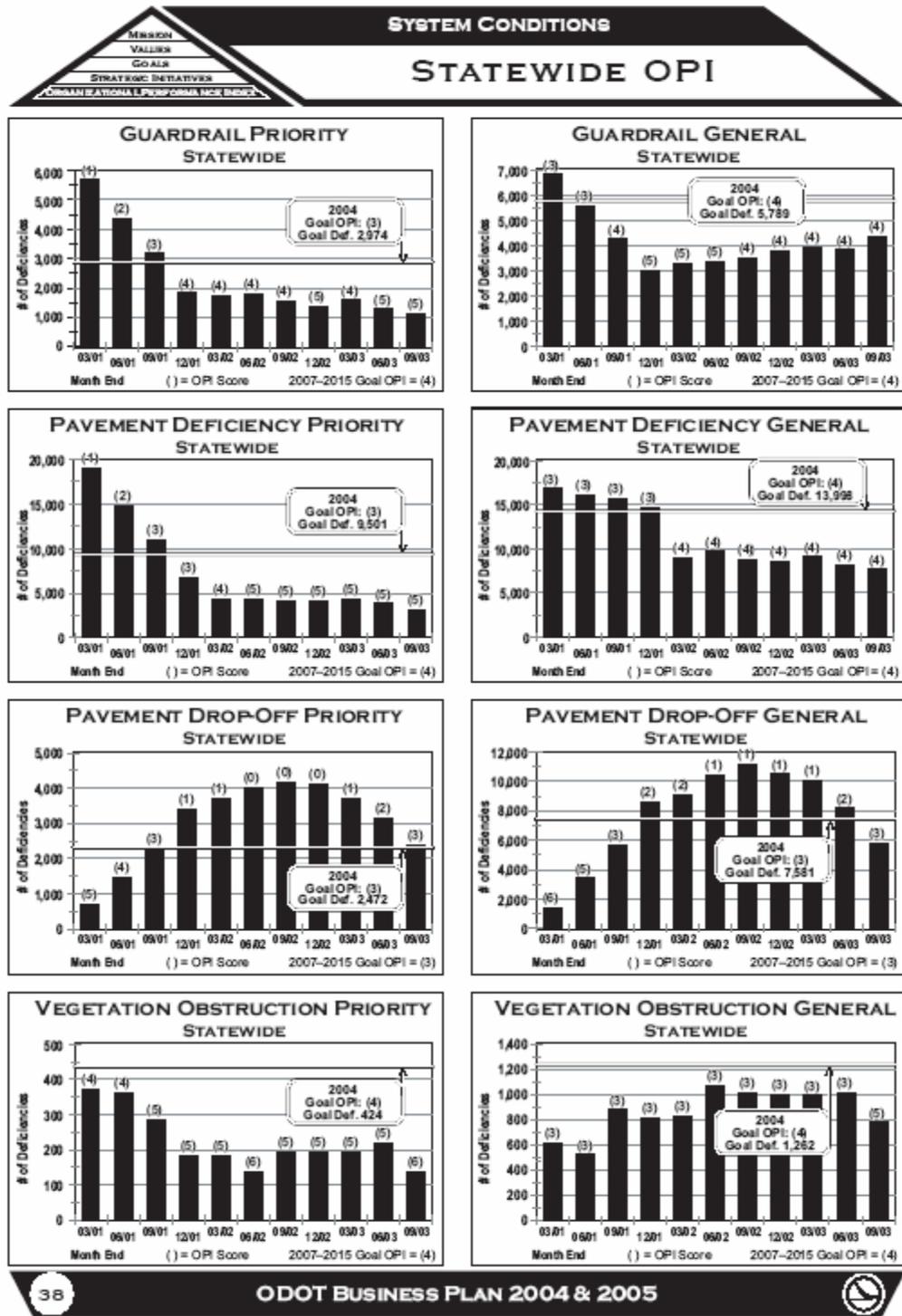
Floor Condition – the major horizontal structural element which carries the riding surface.

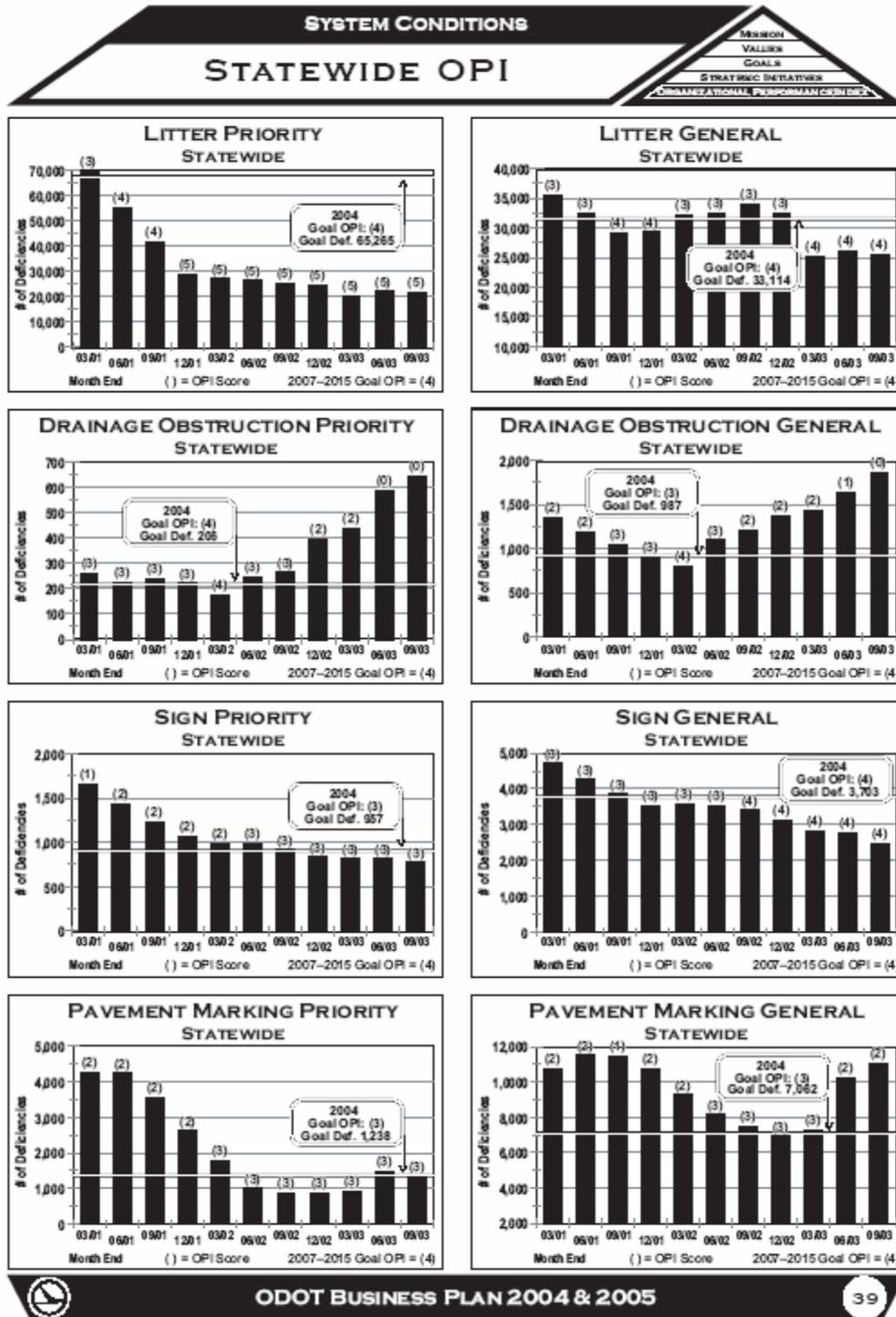
Wearing Surface – the actual riding course, or pavement surface, which is exposed to the vehicle's tires.

Paint Condition – intended to prohibit corrosion of the structural steel.

BRIDGE DEFICIENCY GOALS			
System	FY 2004	FY 2006	FY 2008
General Appraisal	5%	4.5%	4%
Floor Condition	6%	5.5%	5%
Wearing Surface	3%	3.5%	4%
Paint Condition	12%	12%	11%

FY 2003 BRIDGE STATISTICS	
Number of Bridges	15,048
Total Bridge Deck Area (sq. ft.)	105,375,019
Number of Bridges Carrying Interstate	2,510
Interstate Bridge Deck Area (sq. ft.)	26,296,743
Longest Bridge (ft.)	7,440
Maximum Deck Area (sq. ft.)	590,739





State of the Transportation System Report (biennial)

<http://www.dot.state.oh.us/sos00/default.htm>

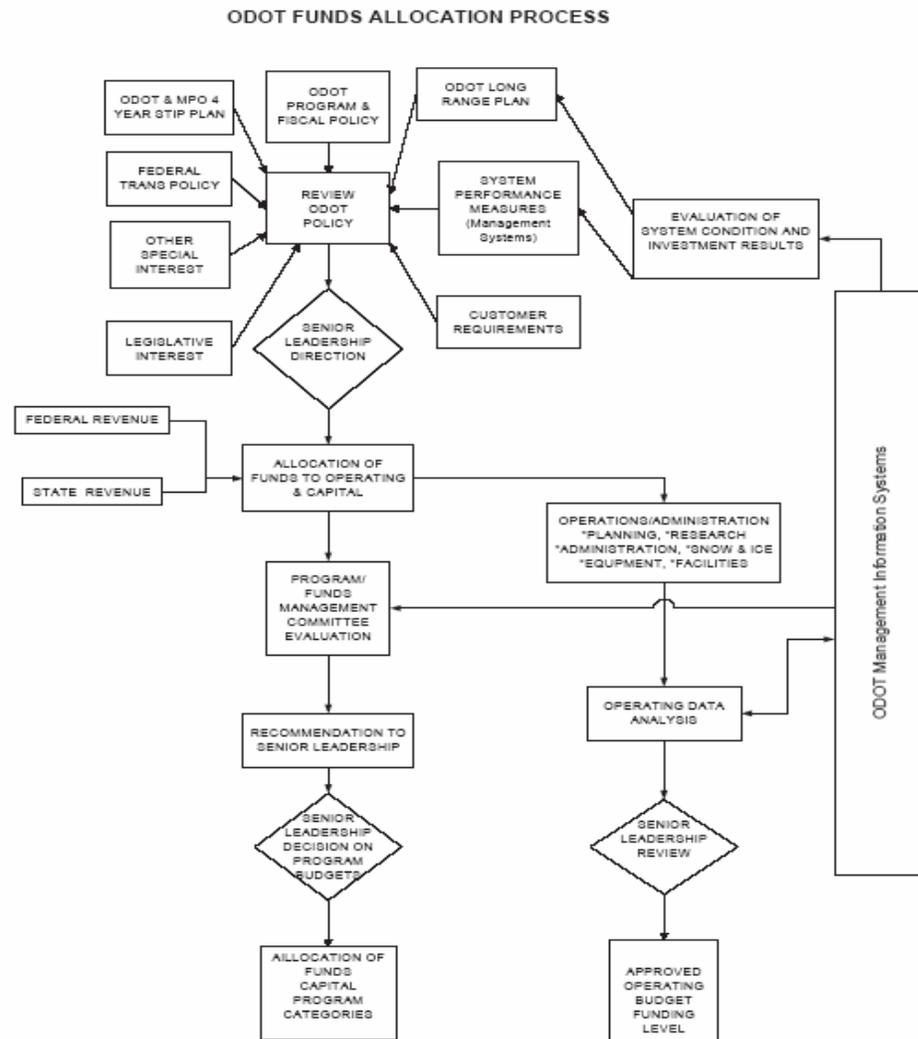
The State of the Transportation System Report was first produced in 1996 to share with transportation stakeholders a report on the health of the state transportation system. This report has served as an annual report card of the state transportation assets. Much of this report is now integrated into the biennial business plan.

Funds Allocation Process (biennial, internal document)

<http://intranet.dot.state.oh.us/finance/Manuals/Funds%20Mgmt.pdf>

The Funds Management Committee is an advisory body created by the Director in March 2001 to make fact-based recommendations on how the department can best allocate available funding based on the condition and needs of Ohio's transportation network.

Funding recommendations for all highway capital programs are based on one overriding goal: allocate money in a manner that drives down transportation deficiencies statewide until we reach a desirable state, then maintain it over time.



Governor’s Jobs and Progress Plan

<http://www.dot.state.oh.us/JobsAndProgress/>

The Governor’s Jobs and Progress Plan is a 10 year program to address Ohio’s most pressing congestion, safety and rural access needs.

Access Ohio (30 year plan updated every 5 years)

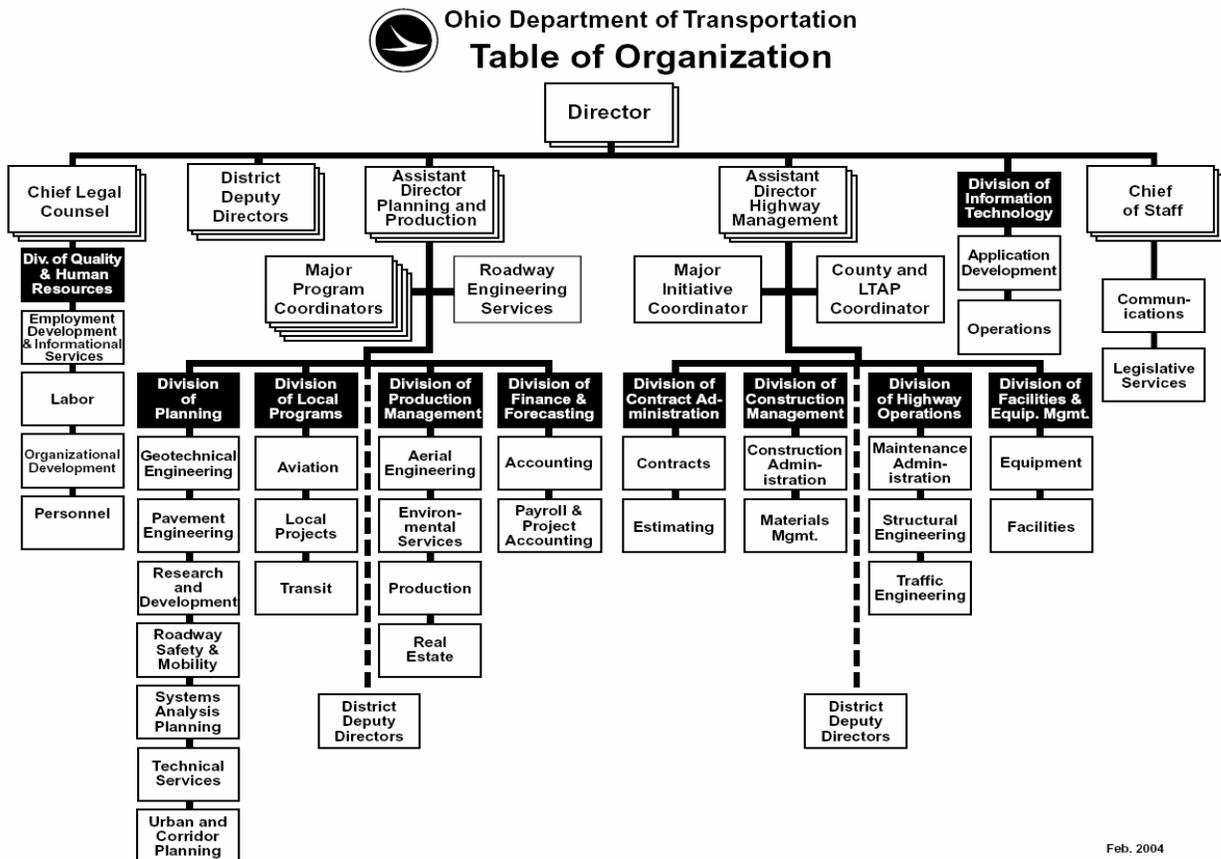
<http://www.dot.state.oh.us/planning/File%20Directory/AccessOhio.htm>

ACCESS OHIO 2004 - 2030 is Ohio’s statewide transportation plan. It includes a comprehensive analysis of existing transportation conditions, a 26-year projection of the needs and recommendations for Ohio’s multi-modal transportation system, including roads, bridges, bicycle and pedestrian trails, rail systems, and air and water ports.

- a. Who are the primary users of asset management and how are they using it (staff level only, director, governors, etc.)?

The Ohio Department of Transportation is a state agency of 6300 employees who are decentralized into 12 district offices with 88 county outposts. Ohio is a home rule state with 17 Metropolitan Planning Organizations and 88 county engineers, 1309 townships and 942 corporations.

Internally the department is organized at the district level into four key areas. Planning, Production, Highway Management and Finance who report to the District Deputy Directors. The central offices set policy, provide training and perform quality assurance reviews.



Feb. 2004

Each of the previously described transportation reports are directed towards different transportation stakeholders. These stakeholders are identified below.

Organizational Performance Index

Director, Executive Management Team (includes Assistant Directors, Deputy Directors and District Deputy Directors, Planning Staff

District Multi-Year Work Plans

Executive Management Team, Planning, Design, Maintenance teams.

GASB 34

State Auditor, Finance

2004-2005 Business Plan and State of the Transportation System Report

Governor, Legislature, Director, Executive Management Team, Planning, Design, Maintenance, Finance, Major Program Coordinators, Personnel, MPOs

Funds Allocation Process

Director, Executive Management Team, Finance, Planning

Governor’s Jobs and Progress Plan

Governor, Legislature, Director, Major Program Coordinators, Planning, Finance. MPOs

Access Ohio (30 year transportation plan)

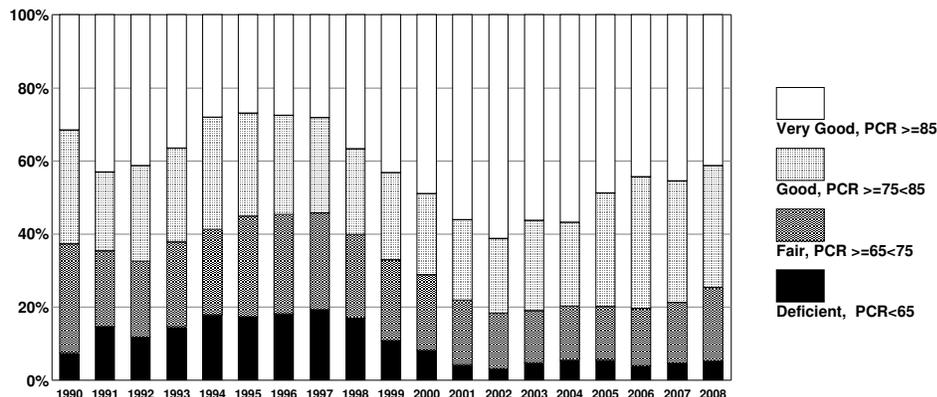
Governor, Legislature, Director, Major Program Coordinators, Planning, Finance. MPOs, general public

2. Benefits to using Asset management

- a. How has your system improved or your program changed due to the use of asset management principle and data?

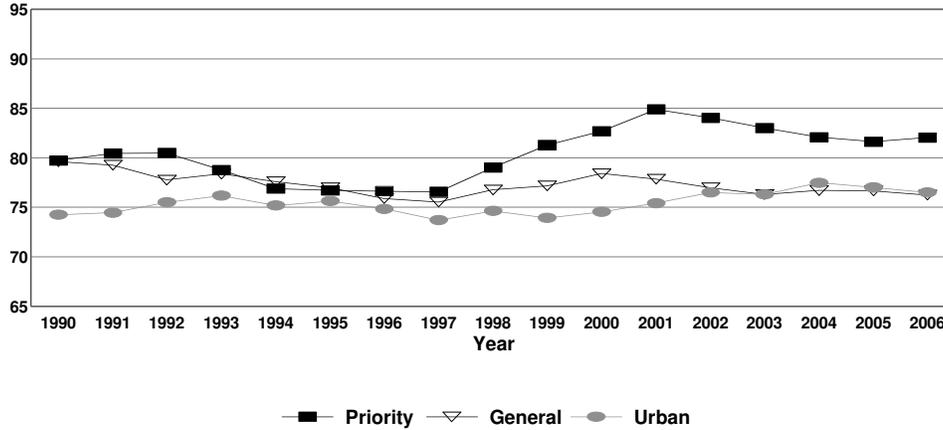
Before embarking on the current asset management strategy, the priority system pavements were becoming increasingly deficient each year. These deficiencies included nearly 20 percent of the total lane mileage of interstate and 4-lane divided highways. These deficient roads each had pavement condition ratings below 65 and many experienced high rates of annual deterioration. Using asset management strategies, the percentage of deficient lane miles has been reduced to only 7 percent and will remain at a steady state, below 10 percent deficient, each year.

Priority System Pavement Conditions
Statewide Lane Miles



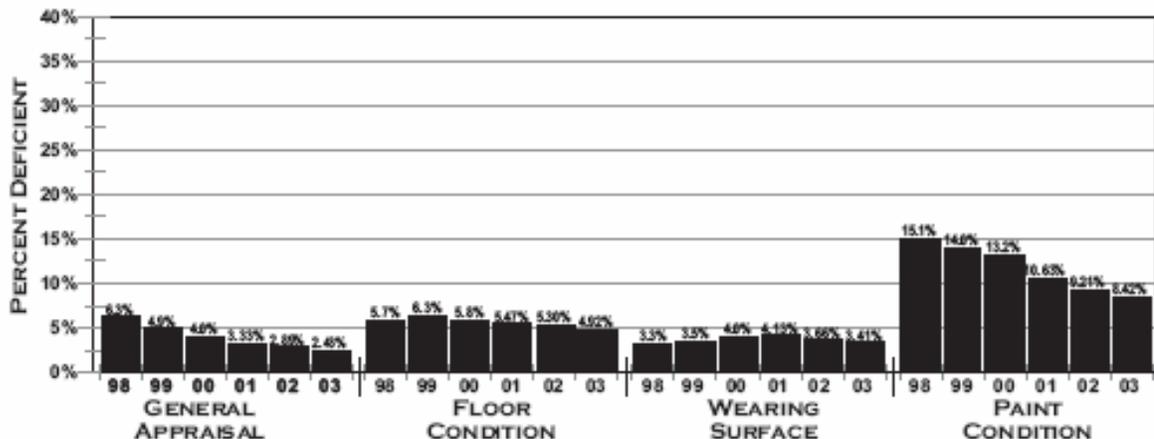
The overall average pavement condition rating has increased most dramatically for the priority system pavements. These pavements represent 25% of the state highway lane miles. They handle 56 percent of the total vehicle miles of travel on the state system and also carry 70 percent of the truck travel.

Statewide Pavement Conditions Weighted Average PCR



Bridge conditions are assessed by four major deficiency categories. General appraisal describes the overall condition of the structure and involves the most costly rehabilitation requirements. Floor condition is an evaluation of the substructure of the bridge deck and is second in cost to repair. Wearing surface describes the riding surface of the bridge and paint condition is a measure of paint applied to structural members to reduce corrosion. Over the past six years, there has been a reduction of statewide bridge deficiencies that is similar to improvement trend experienced for pavements. Sound asset management practices have resulted in observable improvements across the state.

BRIDGE DEFICIENCIES ODOT STATEWIDE



General Appraisal – a composite measure of the major structural items of a bridge, such as piers and abutments.

Floor Condition – the major horizontal structural element which carries the riding surface.

Wearing Surface – the actual riding course, or pavement surface, which is exposed to the vehicle's tires.

Paint Condition – intended to prohibit corrosion of the structural steel.

3. Barriers to using Asset Management

a. Data problems/integration/collection

The Ohio Department of Transportation began using dynamic segmentation tools from GIS to initially integrate asset management data. Even with this tool, many files were not compatible due to different referencing notations. The Base Transportation Referencing System was created and several of the departmental legacy systems were brought in compliance with the BTRS standard. As a result, road inventory, traffic count, pavement condition, bridge condition, vehicle crash, capital project and other data is now integrated through a common BTRS link identifier and mileage log point. A continuing challenge is related to the fact that the base roadway network is not static and data that was logged historically may no longer match the current roadway network. A road inventory modernization effort is underway to explore solutions to better deal with spatial and temporal highway data.

The high level of collaboration included in the district multi-year work plans has resulted in extensive corporate knowledge of system conditions. Previously, pavement and bridge data was reserved for those who collected it, small offices that analyzed it and a few designers who used it. Now, this asset data is shared across the organization and is familiar topic for planners, maintenance personnel, management and external stakeholders. ODOT is continuing efforts to review and improve this asset management process throughout the department.

b. Percent of system or operation covered

One hundred percent of bridges are inspected annually. These inspections include state owned bridges and bridges owned by the local governments. One hundred percent of state owned pavements are inspected annually. Local pavements for all federal aid qualifying routes have been inspected and will be repeated on a three year cycle. Traffic data is update on a three-year cycle. ODOT buildings and rest areas are inspected annually.

c. Interagency cooperation

The Ohio Revised Code has several laws that identify responsibilities for keeping the state highway information up to date. This data is used for distribution of state gas tax dollars to the 88 counties, 1309 townships and 942 corporations. Ohio's 118,00 centerline miles of roadways are made up of 20,000 centerline miles of state maintained highways, 30,000 centerline miles of county highways, 43,000 centerline miles of township roads and 25,000 centerline miles of municipal roads. ODOT cooperates with 17 Metropolitan Planning Organizations and other state agencies including the Ohio Department of Public Safety, The Ohio Highway Patrol, the Ohio Rail Commission and the Ohio Turnpike Commission.

Major capital and capacity improvement projects are governed by the Transportation Review Advisory Council <http://www.dot.state.oh.us/trac/>. The TRAC policies have created a criterion driven, fair and open evaluation process for identifying major capacity projects of greater than \$5 million.

Preservation of existing highways is paramount. Transportation efficiency, economic development and safety factors are used to best identify statewide needs and priorities. The separation of routine preservation projects from major new projects have helped the department to maintain continual focus on preserving existing facilities in a steady state fashion without external political pressure.

Major New Project Selection Criteria

Goal	Factors	Maximum Score
Transportation Efficiency	Average Daily Traffic - Volume of traffic on a daily average	20
	Volume to Capacity Ratio - A measure of a highway's congestion	20
	Roadway Classification - A measure of a highway's importance	5
	Macro Corridor Completion - Does the project contribute to the completion of a Macro Corridor?	10
Safety	Accident Rate - Number of accidents per 1 million miles of travel during 3 year period.	15
Transportation points account for at least 70% of a project's base score		70
Economic Development	Job Creation - The level of non-retail jobs the project creates.	10
	Job Retention - Evidence that the job will retain existing jobs.	5
	Economic Distress - Points based upon the severity of the unemployment rate of the country.	5
	Cost Effectiveness of Investment - A ratio of the cost of the jobs created and investment attracted, Determined by dividing the cost to Ohio for the transportation project by the number of jobs created.	5
	Level of Investment - The level of private sector, non-retail capital attracted to Ohio because of the project	5
Economic Development Points account for up to 30% of a projects base score		30
Additional Points		
Funding	Public/Private/Local Participation - Does this project leverage additional funds which allow state funds to be augmented?	15
Unique Multi-Modal Impacts	Does this project have some unique multi-modal impact?	5
Urban Revitalization	Does this project provide direct access to cap zone areas or brownfield sites?	10
Total Possible Points including Transportation, Economic Development, and additional categories		130

TRAC Project Evaluation Matrix

4. Are you using Asset Management for non-highway modes and how?

Asset management principles have been applied to the Lands and Buildings area to assess and predict the condition of ODOT offices, county garages, rest areas and water treatment facilities. Statewide general aviation facilities are inventoried and runways inspected annually. A stand alone pavement management system is used to assess runway and taxiway conditions. Transit buses, light rail facilities and rolling stock are inventoried and inspected annually. Information from these condition assessments is used to select capital replacement projects.

For local programs, ODOT has performed pavement condition ratings on all federal aid qualified highways regardless of jurisdiction. This information is shared with the local governments and will be updated on a three year cycle. ODOT operates a small cities program to fund pavement capital improvement projects for cities between 5,000 – 24,999 populations that are outside of a Metropolitan Planning Organization. Additionally, ODOT funds local bridges through its municipal bridge program.

5. What improvements would you recommend in the implementation of Asset Management?

a. Areas that need improvement

Data integration and dynamic segmentation are two key issues for asset management. Most agencies individually collect many of the needed attributes for asset management. The roadway inventory or road-logs that have been maintained for decades can serve as a foundation for attaching condition attribute data. Data for pavements and bridges are often kept by their respective departments and project data and traffic volumes is a product of the design and planning departments. Asset management involves the integration of these data sets along with business rules to model changes in conditions over time. The lack of standard definitions and schema for transportation data results in custom solutions for each agency. Improving the standardization of data formats and definitions for transportation related data would promote better interchange of data between functions and enable developers or third party vendors to write generic applications to be used by many agencies. Some standardization currently exists, such as HPMS and research is currently underway on TransXML <http://www4.trb.org/trb/crp.nsf/All+Projects/NCHRP+20-64> which may increase standardization of transportation data formats.

b. Future research

Automated data collection, such as ITS data, crash data or the real time traffic speeds as shown on Zipdash <http://www.zipdash.com/> hold promise for the collection real time data. However, real-time data in this form is often of limited use to transportation planners. Methods to warehouse data and to transform it so that recurring conditions and trends can be identified would make this dynamic information better suited for asset management purposes.

c. Data

Continuing transportation developments such as ITS and the lack of standardization of legacy asset inventories have resulted in many forms of data serving similar purposes. Pavement condition data is frequently incompatible between agencies and limit transferal of business processes and benchmarking. Some specialized data, such as HPMS is limited to samples due to collection requirements. Breakthroughs in standardization and automated or shared data collection can reduce the overall cost of needed data. External sources, such as cellular phone GPS http://www.nextel.com/about/enterprise/wbs/packaged_apps_tran.shtml and satellite data may soon become economical ways to collect data across many jurisdictions.

Management processes are just as important as the data that drives them. Improved performance measures, funding mechanisms and operational business rules will pay dividends in the future.

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