

## Glossary & Acronyms

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# Glossary & Acronyms

## A

- ABC**      **Accelerated Bridge Construction (ABC)** is bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the on-site construction time that occurs when building new bridges or replacing and rehabilitation existing bridges.
- ACT51** – A system to collect county reporting data.
- ACRS**      **Administrative Customizable Reporting System** - MDOT application that allows MDOT employees to create their own reports that access data from the MAP database. Used to view job/phase information from the MAP database displayed in several pre-formatted reports.
- Administrative Directive** – Work identified by leadership as a priority for implementation or special funding.
- AERO**      **Aeronautics**
- Aggregate** - A substance composed of mineral crystals or mineral rock fragments, used in pavement.
- Alligator cracking (or fatigue cracking)** - Cracks in an asphalt pavement surface forming a pattern that resembles an alligator's hide or chicken wire. Alligator cracking may begin with a single longitudinal crack in the wheel path. The cracks indicate failure of the surface layer generally caused by repeated traffic loadings.
- AASHTO**      **American Association of State Highway and Transportation Officials** - Association of state departments of transportation that work on common issues. Commonly prepares positions on federal legislation and policies.
- ACEC**      **American Council of Engineering Companies** – Is the voice of America's engineering industry. Council members number more than 5,500 firms throughout the country. The Council's mission is to contribute to America's prosperity and welfare by advancing the business interests of members firms.
- ANSI**      **American National Standards Institute**
- ADA**      **Americans with Disabilities Act**
- As Built** – Common jargon for the official term: As Constructed Final Plans.

<b>APAM</b>	<b>Asphalt Pavement Association of Michigan</b> – Is a nonprofit trade association representing the Hot Mix Asphalt industry in Michigan.
<b>ADD</b>	<b>Assistant Deputy Director</b>
<b>AG</b>	<b>Attorney General</b>
<b>AGCIP</b>	<b>Automated Grade Crossing Inspection</b> – FoxPro database management system is used for the collection and management of program of data. This management system has 4 processing modules, Onsite Inspection Process, In-house Data Processing Notification Process and the Management Approval Process.
<b>AADT</b>	<b>Average Annual Daily Traffic</b> – The estimate of the typical daily traffic on a road segment for all days of the week, Sunday through Saturday, over a period of one year.
<b>ADT</b>	<b>Average Daily Traffic (or Average Daily Traffic Counts)</b> - The average number of vehicles using a roadway in one day.
<b>AUP</b>	<b>Average Unit Price</b>

## B

<b>BMP</b>	<b>Beginning Mile Point</b> - Within a linear referencing system (e.g., Control Section, Physical Road), denotes the associated mile point at the beginning of a segment of road.
<b>BLVD</b>	<b>Boulevard</b> – A wide street with a landscaped center island running the length of the street. Boulevards are usually found in urbanized areas.  <b>Bridge</b> –A structure, including supports, erected over a depression or obstruction, such as water, highway or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercroppings of abutments or springlines of arches, or extreme ends of openings for multiple boxes; it may also include pipes, where clear distance between openings is less than half of the smaller contiguous opening.
<b>BCFS</b>	<b>Bridge Condition Forecasting System</b> – Is an MS Excel program that forecasts bridge condition for up to three strategies given an annual budget (per year), average cost per deck area for replacement, rehabilitation, and preventive maintenance projects, and rate of inflation. BCFS uses Markov chains or transition probability to deteriorate the bridge network using the National Bridge Inspection (NBI) 0 to 9 rating scale. The number of bridges

and deck area for each of the NBI ratings is input at the beginning of the scenario modeling and BCFS adjusts the number of bridges and deck area in each condition state based upon the transition probabilities. The user can adjust what type of projects are chosen for each work category and the effectiveness of the work type, i.e. poor rated bridges (NBI 0-4) will be chosen for replacement projects making them good (NBI 9).

- BIR**                    **Bridge Inspection Report**
- BMS**                    **Bridge Management System** - Allows users to see current physical conditions and inspections data for bridges in Michigan, as well as their locations on the highway system. It consists of a database that can be accessed by an interface specific to Michigan and also by the Pontis system of the American Association of State Highway and Transportation Officials.
- As one of the six components of the Transportation Management System (TMS), the Bridge Management System (BMS) is the decision-support tool responsible for managing the inspection, analysis and maintenance of the numerous components that make up a bridge. To make bridge asset management even more flexible, the American Association of State Highways and Transportation Officials (AASHTO) "Pontis" bridge management system is an integral part of the BMS.
- BOH**                    **Bureau of Highways**
- BTP**                    **Bureau of Transportation Planning** - Develop and implement a comprehensive transportation planning process which results in transportation investments that are consistent with financial, social, economic and environmental policies of the State Transportation Commission.
- UPTRAN**                **Bureau of Urban and Public Transportation** - Administrators Michigan's public transportation and regulatory programs to provide a safe and balanced statewide network of public transportation services to meet the social, safety and economic well-being of the state.
- BL**                    **Business Loop** - A surface route that leads into a downtown business district and returns to the freeway at the other end. Frequently, the Business Loop is the alignment of the original highway before that highway was bypassed. (See Business Route.)
- BR**                    **Business Route** - A Business Route connects the freeway or through highway with the downtown and commercial areas of a city or town. Business Routes are primary arterials and begin and end on the interstate. Business Loops and Business Spurs are types of Business Routes. Business Loop implies that the Business Route will return to the parent route, while a Business Spur implies that the Business Route will only spur into the commercial area and not return to the parent route.
- BS**                    **Business Spur** - A Business Spur is a surface street route leading from the Interstate highway into the central commercial district. The spur route

ends upon reaching a specified point within that urban area. (See Business Route.)

## C

**CFP**      **Call For Projects** - The process used to identify highway mode preservation projects for the Five Year Transportation Program. MDOT issues an annual internal Call for Projects in December, for the upcoming rolling Five Year Transportation Program.

**CPM**      **Capital Preventive Maintenance** - "Preventive maintenance is a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves, retards future deterioration and maintains or improves the functional condition of the system without (significantly) increasing structural capacity." Preventive maintenance is applied to pavements having a remaining service life of three years or greater. Examples of capital preventive maintenance include bituminous crack sealing, chip sealing, micro-surfacing, concrete joint resealing, concrete crack sealing, thin bituminous overlays, diamond grinding, full depth concrete repairs, and dowel bar retrofit.

**CSM**      **Capital Scheduled Maintenance** - An MDOT program to preserve bridges in their current condition state for a longer period of time. CSM activities include bridge washing, vegetation control, drain cleaning, spot painting, joint repair, concrete coating, patching, and sealing, crack sealing, pavement relief joints, and pavement repair. For more information, see the CSM Manual in the Miscellaneous Documents chapter.

**Change In Scope** - A change in objectives, work plan, or schedule that results in a material difference from the terms of previously granted approval to proceed.

**CRF**      **Change Request Form** - Users of MDOT databases can make requests for changes to a database (i.e. add users and/or grant privileges) by submitting this form. (Production-Client server; Development -Web based)

**Chip seal** - A surface treatment in which the pavement is sprayed with asphalt (generally emulsified) and then immediately covered with aggregate and rolled. Chip seals are used primarily to seal the surface of a pavement with non load-associated cracks and to improve surface friction. This is typically used to extend the life of the pavement surface by sealing out moisture, which can cause major damage to pavement, until major repairs are made.

**Cold Mill** - Removal of pavement material from the surface of the pavement either to prepare the surface to receive overlays (by removing rutting and surface irregularities) or to restore pavement to the correct

specifications. This process is also used to remove oxidized asphalt concrete.

**CAADT**      **Commercial Annual Average Daily Traffic** - The estimate of typical daily commercial traffic on a road segment for all days of the week, Sunday through Saturday, over the period of one year.

**Comprehensive Project Plan** - This plan consists of all the smaller plans, which includes the following: Schedule; Scope Statement; Budget Plans; Resource/Skill Plan (Includes Team Roster); Change Management Methods; Quality Plan (Includes Testing); Risk Response Plan; Procurement.

**CADD**      **Computer Aided Drafting and Design**

**CMAQ**      **Congestion Mitigation and Air Quality** - A federal program that funds projects designed to reduce vehicle congestion and improve air quality.

**Constraint** - Applicable restriction that will affect the performance of the project. Any factor that affects when an activity can be scheduled.

**Constructability Review** - a process that utilizes construction personnel with extensive construction knowledge *early in the design stages* of a project to ensure that the projects are buildable, cost-effective, biddable and maintainable.

**C&T**      **Construction and Technology** - Construction and Technology Division is responsible for the development and distribution of construction specifications, quality control/quality assurance programs, field consultation standards and training in support of the region's delivery of the annual program.

Additionally, the administration of the annual Bridge and Capital Preventative Maintenance programs are located in the division. This includes the statewide bridge inspection program and the maintenance and operation of both the bridge management and pavement management systems.

The division provides specialized engineering expertise to the regions and other divisions and maintains AASHTO-accredited testing laboratories for all types of highway materials. The division's Testing and Research Section conducts applied research, technical and forensic investigations, as well as administering an extensive contract research program with Michigan's universities.

**CE**      **Construction Engineering** - Construction Engineering is the management of a project during the construction phase. This includes, but is not limited to, specification and plan interpretation, cost control, contract payment, project documentation, material testing, and quality assurance.

- CSS**      **Context Sensitive Solution** – This is “a collaborative, interdisciplinary approach involving stakeholders for the development of a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, cultural and environmental resources, while maintaining safety and mobility.” A program developed in 2003 that requires MDOT to solicit dialogue with local governments, road commissions, industry groups, land use advocates, and state agencies early in a project’s planning phase. This dialog helps to ensure that bridges, interchanges, bikepaths and other transportation projects “fit” into their communities. The CSS approach results in projects that respect a community’s scenic, aesthetic, historic, economic, and environmental character.
- CATS**      **Contract Administration Tracking System** – This system is used to track and maintain information about UPTRAN Checklists, CS-138 forms, contracts, contract amendments, authorizations, authorization revisions, audits and vendors.
- Contingencies** – A provision in the project plan to mitigate cost and/or schedule risk.
- Continuous traffic flow** - A steady, unbroken stream of traffic.
- Contractor** – The successful bidder who is awarded a Contract.
- CS**      **Control Section** – A referencing system represented by a number assigned by MDOT that uniquely identifies an area of operation or activity on the transportation system.
- Controller** - An electrical mechanism for controlling traffic signal operation which is mounted in a cabinet.
- Corridor approach to project coordination** - The effort to do all construction for an area at the same time, to minimize inconvenience to travelers.
- CBA**      **Cost Benefit Analysis** – Provides information to make an informed decision about the cost and benefits, or value, of various economic choices concerning alternatives within the project.
- Crack** - A fracture of the pavement surface not necessarily extending through the entire thickness of the pavement. Cracks generally develop after initial construction of the pavement and may be caused by temperature changes, excess loadings, or excess deflections, which are movements in or under the pavement. (See **working crack**.)
- Crack filling** - Placing materials into non-working cracks to reduce the infiltration of water and other matter, while also reinforcing the adjacent pavement. Crack filling should be distinguished from crack sealing (see **crack sealing**.)

**Crack sealing** - Placing specialized materials into working cracks in unique configurations to keep water and other matter out of the crack and the underlying pavement layers. (See **working crack**.)

## CRIS

**Crash Report Information System** - This system migrates the Michigan State Police Crash related information to an Oracle Database, generates various kinds of reports, prepares the flat file for external customers and archives the historical data.

**Culvert** - A structure, including supports, built over a depression, watercourse, highway, railroad or other obstruction, with a clear span of less than 20 feet measured along the center of the roadway. A structure designed hydraulically to take advantage of submergence to increase hydraulic capacity. Culverts, as distinguished from bridges, are usually covered with embankment and are composed of structural material around the entire perimeter, although some are supported on spread footings with the streambed serving as the bottom of the culvert.

**Cure** - A period of time following placement and finishing of a material such as concrete, during which desirable engineering properties (such as strength) develop. Improved properties may be achieved by controlling temperature or humidity during curing.

**Curing** - The maintenance of a satisfactory moisture content and temperature in concrete during its early stages so that desired properties may develop.

## D

**Data Collection** - Gathering and recording of facts, changes and forecasts for status reporting and future planning.

**Delineators** - Road markers that define lanes and shoulders; safety measures intended to guide drivers.

**Deliverable** - Any measurable, tangible, verifiable outcome, result or item that must be produced to complete a project or part of a contract.

## DEQ

### **Department of Environmental Quality**

**Design Life** - The anticipated life of the pavement section at the time of initial construction. Design life, as fix life, does not include any additional life estimates provided by anticipated future preventive maintenance. This term is also used to define the number of years for which design Equivalent Single Axle Loads are calculated as an input parameter for formal pavement design calculations.



**Diamond grinding** - A process that uses a series of diamond-tipped saw blades mounted on a shaft to shave the upper surface of a pavement to remove bumps, restore pavement rideability, and improve surface friction.

**DI** **Distress Index** - An index that quantifies the level of distress that exists on a pavement section based on 1/10 mile increments. The scale starts at zero and increases numerically as distress level increases (pavement condition worsens).

**DI-Proj** Name of an MDOT pavement management system software application which allows a user to define a specific pavement section (project) length and obtain both a calculated Distress Index value and a summary of the observed distress type/severity combinations upon which the value is based.

**Dowel** - A plain round steel bar which extends into two adjoining slabs of pavement at a joint. Dowels are used to keep concrete slabs from heaving up and down.

**Dowel bar retrofits** - A rehabilitation technique used to distribute the weight of vehicles across existing joined pavements by placing dowel bars across joints and/or cracks.

## E

**EPE** **Early Preliminary Engineering** - The Early Preliminary Engineering phase includes planning, environmental, and engineering analysis, prior to the formal Design or Preliminary Engineering (PE) phase. Specific activities include, but are not limited to, the following: Financial Analysis, Feasibility Studies, Access Management Studies, Alternative Analysis, Project Scoping, Traffic Operation and Crash Analysis, NEPA Environmental Clearance Activities (CE, EA, EIS), Contaminated Site Assessment, Soil and Material Testing, and Engineering Analysis necessary for completing previously noted and/or related activities.

**Emerging Technologies** - Treatments that are not Standard Capital Preventative Treatments that show promise, but do not have proven performance and cost effectiveness. These treatments will require monitoring and reporting of findings consistent with the "AASHTO Research Protocol for Pavement Preservation," adopted January 6, 2000 by Engineering Operations Committee (EOC).

**EMP** **Ending Mile Point** - Within a linear referencing system (e.g., Control Section, Physical Road), denotes the associated mile point at the end of a segment of road.

- EOC**      **Engineering Operations Committee** - MDOT's principal technical policy making body in the department on engineering, research, and related matters.
- EA**      **Environmental Assessment** - As part of the environmental clearance process, public document that a federal/state agency prepares under the National Environmental Policy Act (NEPA) to provide sufficient evidence and analysis to determine whether a proposed agency action would require preparation of an environmental impact statement (EIS) or a finding of no significant impact (FONSI).
- EIS**      **Environmental Impact Statement** - A detailed written statement required by the National Environmental Policy Act (NEPA) for a proposed major federal/state action significantly affecting the quality of the human environment. The statement includes information and discussions of the environmental impacts of the proposed action, all reasonable alternatives, and adverse environmental effects that cannot be avoided.
- ESAL**      **Equivalent Single Axle Load** - A unit of measurement equating the amount of pavement consumption caused by an axle, based on the loaded weight of the axle group, to the consumption caused by a single axle weighing 18,000 lbs.

**Estimate** - An assessment of the likely quantitative result.

## F

**Feasibility Study** - A formal document in the Initiation Phase that analyzes and discusses the technical feasibility of the project.

- FAUB**      **Federal Aid Urban Boundary** - Federal aid urban boundaries are the adjusted census boundaries. FAUBs begin with census boundaries and are established for any area for which the census identifies an urban cluster boundary or urbanized area boundary. The census identifies urban cluster boundaries for areas with a population of at least 2,500. According to Title 23, the minimum threshold population for an urban area is 5,000. Thus, FAUBs are established for census urban clusters with a population 5,000 - 49,999. FAUBs are also established for census urbanized areas; the population threshold for an urbanized area is 50,000.
- FHWA**      **Federal Highway Administration** - Part of the Department of Transportation and is headquartered in Washington, D.C. with field offices located across the United States. For Michigan, there is a division office located in Lansing, Michigan. FHWA's Roles: Leaders for National Mobility, Stewards for National Highway Programs, Innovators for a Better Future. FHWA's Services: Deliver the Federal Aid and Federal Lands Highway Program, Advance the State-of-

the-Art in the Transportation System, Enhance Safety and Protect the Environment, and Customer and Partner Service.

**FTA**            **Federal Transit Administration**

**FY**            **Financial Year** - For MDOT, the financial year begins October 1 and goes through September 31. The financial year is named for the next year after that October. *Example:* A project begun in October '06 is called an '07 job, because the funding comes in 2007.

**FONSI**        **Finding of No Significant Impact** - A determination by FHWA that the environmental impacts that will result from construction of a project will be minor. Also used to refer to the written document that presents the reasons why an action will not have a significant effect on the social, economic, and natural environment making it unnecessary to prepare an Environmental Impact Statement (EIS).

**Five Year Plan** - A report of five year Trunkline Road and Bridge Program submitted annually to the Governor and the State Transportation Commission for approval. To include: Trunkline road and bridge, transit, rail, aviation and non-motorized elements.

**Fix Life** - The anticipated pavement life provided by the fix, excluding any future preventive maintenance treatments.

**FA**            **Force Account** - Construction Work Performed by Local Agencies.

**Framework** - MDOT application system

**Frost Heave** - A process in which the ground freezes and thaws, creating potholes.

## **G**

**GIS**            **Geographic Information System** - A term used to describe the creation, manipulation, analysis and storage of spatial data. This technology integrates common database operations such as query and statistical analysis with geographic data through visualization and maps.

**GPS**            **Global Positioning System**

**GR**            **Guardrail** - A protective rail placed along roadways for safety.

**Guidelines** - Used to define a collection of steps that are recommendations to be followed for meeting a stated policy.

# H

- HSIP**      **Highway Safety Improvement Program** - The Federal Highway Administration currently administers two infrastructure-related highway safety improvement programs, the Highway-Rail Grade Crossing Program and the Hazard Elimination Program, as part of an overall effort to reduce human and economic losses on the nation's highway system. To optimize the implementation/execution of these programs, a formalized Highway Safety Improvement Program (HSIP) has been established. The current requirements for an HSIP are defined in the Code of Federal Regulations, Title 23, Part 924.
- HSM**      **Highway Safety Manual** - The ASHTO Highway Safety Manual.
- HMA**      **Hot mix asphalt** - A carefully controlled mixture of asphalt binder and well-graded, high quality aggregate thoroughly compacted into a uniform density. HMA pavements may also contain additives such as anti-stripping agents and polymers.

# I

- Impact Statement** - A cause-and-effect report generated at the managerial level to show the impact that new projects will have on the current schedules and resources as they enter the work stream.
- IT**      **Information Technology** - A combination of electronic hardware, software, and procedures used to compile, manage, analyze, and report information or to otherwise facilitate business functions.
- Initiation** - Committing the organization to begin a project phase.
- ITSOM**      **Integrated Transportation Systems Operation and Management** - Integrated Transportation Systems have been defined as: the application of advanced sensor, computer, electronics and communication technologies and management strategies in an integrated manner to improve the safety and efficiency of the surface transportation system. This definition encompasses a broad array of systems and technologies.
- ITS**      **Intelligent Transportation System** - ITS, previously known as the Intelligent Vehicle Highway Systems (IVHS) program, was designed to promote the use of advanced technologies in multi-modal transportation. Still evolving with technology, ITS uses electronics, telecommunications, and information technology to improve safety and travel time in all modes of transportation.

**Interchange** - The junction of freeway and another road. Interchanges keep the traffic flowing on the freeway, but there may be some restrictions on the connecting routes. A complete interchange provides for movements in all directions; a partial interchange has some missing connections.

**ISTEA**      **Intermodal Surface Transportation Efficiency Act** - A law established in 1991 to “maintain and expand the nation’s transportation system; foster a sound financial base for transportation; keep the industry strong and competitive; promote safety; protect the environment and quality of life; and advance U.S. technology and expertise.” ISTEA broadened the scope of eligibility for funding and required wider participation in the project selection process.

**IRI**      **International Roughness Index** - A standardized mathematical function of a pavement section’s longitudinal profile that is used, in part, to summarize surface roughness in relation to overall ride quality. As the IRI value increases (from zero), ride quality decreases (referenced from *The Little Book of Profiling*, UMTRI, 1998).

## J

**JIT**      **Just-in-Time**

## K

## L

**Lane miles** - The number of miles of pavement going in one direction on any given road. Miles of roadway x (times) the number of lanes = lane miles.

**Letting Date** - The date project quotes are opened and read to determine lowest bid. Links to plans and proposals on the Project Advertisement become inactive, or will be removed, on the Letting Date. There is a typically one Letting Date a month although there are sometimes special or invitational lettings.

<b>LOS</b>	<b>Level of Service</b>
<b>LCCA</b>	<b>Life Cycle Cost Analysis (LCCA)</b> – Calculates the cost of a system or product over its entire life span. This objective, nationally recognized method is used to quantify the cost effectiveness of various investment alternatives. Michigan law requires LCCA for each project for which total pavement cost exceed one million dollars. MDOT must design and award paving projects utilizing material having the lowest life cycle costs. The law also requires comparison of equivalent designs and use of Michigan’s actual historic project maintenance, repair and resurfacing schedules, and costs, including estimates of user costs throughout the entire pavement life.
<b>LA ROW</b>	<b>Limited Access Right of Way</b> - A highway or section of highway designed for travel by registered motor vehicles. Access is limited to intersections, and driveways are generally not allowed. Freeways are a common type of limited access highway.  <b>Load Transfer</b> - The ability to distribute the weight of vehicles across joined sections of pavement. This is a critical factor in extending pavement life.
<b>LA</b>	<b>Local Agency</b>
<b>LRP</b>	<b>Long Range Transportation Plans</b>  <b>Longitudinal Profile</b> - The set of perpendicular deviations of the pavement surface from an established horizontal reference plane taken along a travel lane.
<b>M</b>	
<b>MOT</b>	<b>Maintenance of Traffic</b> - Plan and/or method for keeping motorists moving. Typically associated with construction and permit activities.
<b>MMS</b>	<b>MAP Management System</b> - A MDOT computer system linked to the MAP database, used to manage program template targets, transfers, and adjustments which align funding and work to accomplish approved goals and performance standards. It is used to tag jobs as Administrative Directives.
<b>MPINS</b>	<b>MAP Project Information System</b> - A MDOT computer system linked to the MAP database, used to collect and tracks information about projects from scoping through design and builds documentation for projects. Coordinates project tasks between staff and transmits project changes for review and approval (for inclusion in the department’s capital programs).
<b>M&amp;T</b>	<b>Materials and Technology</b> – see Construction and Technology

<b>MFOS</b>	<b>MDOT Financial Obligation System</b> - A MDOT computer system linked to the MAP database, used to manage the financing of approved job phases. Includes coordination of federal fund obligation and disbursement; communication between Program Management, Program Control, Project Initiation, Project Accounting, and the Federal Highway Administration.
<b>MPO</b>	<b>Metropolitan Planning Organization</b> - Represents the transportation planning process in urbanized areas (metropolitan areas with a population of 50,000 or greater).
<b>MAP</b>	<b>Michigan Architecture Project (database)</b> - MDOT's Oracle database that stores information about capital program projects. This database supports the management of transportation projects and programs, and funding. Underlies many systems, including MPINS, MFOS, PPMS, etc.
<b>MBIS</b>	<b>Michigan Bridge Inspection System</b> - MDOT application that allows bridge owners and inspectors to enter and retrieve bridge inspection information.
<b>MBRS</b>	<b>Michigan Bridge Reporting System</b> - MDOT application that allows bridge owners and inspectors to retrieve bridge inspection information.
<b>MDOT</b>	<b>Michigan Department of Transportation</b> - State department responsible for providing transportation facilities and services for the state of Michigan.
<b>MGF</b>	<b>Michigan Geographic Framework</b>
<b>MTF</b>	<b>Michigan Transportation Fund</b>
<b>MITP</b>	<b>Michigan Transportation Plan</b>
	<b>Microsurfacing</b> - A mixture of polymer-modified asphalt emulsion, mineral aggregate, mineral filler, water, and other additives, properly proportioned, mixed, and spread on a paved surface. Unlike slurry seal, microsurfacing can be used on high-volume roadways to correct wheel path rutting and provide a skid-resistant pavement surface.
<b>MP</b>	<b>Mile Point</b> - Within a linear referencing system (e.g., Control Section, Physical Road), denotes the measuring system of the road. Distance between points is one mile.
	<b>Milling</b> - Grinding off the top layer of pavement.
	<b>Mix of Fixes</b> - A variety of methods for road construction or improvement. For example, mill and fill (where the road is milled over, then filled), new construction, grading, etc. Mix of fixes is considered a best practice because some fixes do not need to last as long as others, so different construction methods are appropriate at different times.

**Movable Bridge** - A movable bridge is a structure which has been designed to have two alternative positions and which can be moved back and forth between those positions in a controlled manner. The two primary purposes of movable bridges are to allow conflicting flows of traffic to pass through a crossing point or to move traffic across a waterway.

## N

- NBI**      **National Bridge Inspection** - A compilation of data supplied by the states as required by the National Bridge Inspection Standards for bridges located on public roads. The database is maintained in a format prescribed by the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges. The NBI information is available to FHWA's field offices through the National Bridge Inventory Information System.
- NEPA**      **National Environmental Policy Act** - The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.
- NFC**      **National Functional Class** - The process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide (Principal arterials, Minor arterial roads, Collector roads, Local roads).
- NHI**      **National Highway Institute**
- NHS**      **National Highway System** - Approximately 160,000 miles (256,000 kilometers) of roadway important to the nation's economy, defense, and mobility. This system includes local roads and state trunklines.
- NFRP**      **Non-Freeway Resurfacing Program** - Is a four-year program began by MDOT in FY (financial year) 2004 to focus about \$40 million on low-volume, non-freeway roadways in poor condition. FY 2007 was the last year for the NFRP program.

## O

- OEC**      **Omissions and Errors Check** - In the Plan Development QA Process, this is the last opportunity for the various disciplines to review the plan/proposal



package for completeness. Plans are to be 100% complete prior to scheduling this review.

**Overbanding** - Overfilling of a joint or crack reservoir so that a thin layer of crack or joint sealant is spread onto the pavement surface over the joint or crack.

## P

**Patch** - Repair of a localized defect in the pavement surface.

**PHD** **Pavement Historical Data** - Historical database of the cross section and materials for all trunklines maintained by MDOT. Allows users the ability to research a trunkline's history, perform material trend analysis, query capability and quantification of materials used.

**PaveMaPP** **Pavement Management Process Plan** - A MDOT formal IT development project focused on creating a relational database environment with an integrated set of software tools to facilitate detailed pavement condition data processing, analysis, and accessibility.

**PMS** **Pavement Management System** - This is used to forecast pavement condition based on estimates of future annual types of repairs to pavements. Types of data collected include faulting, roadway curvature, pavement grade, cross slopes, rutting, and pavement distress. Data is used to calculate remaining service life.

**Pavement Miles** - The number of miles of pavement in both directions of a road/freeway.

**P3** **Pavement Preservation Plan** - A MDOT tool to automatically track past projects from the MAP database and apply future fixes based on typical or user-defined deterioration rates for roadways on the state highway system. Information can be sorted by location, fix type, cost, or year and be used to help select projects for the annual Call for Projects. It will also help with planning and estimating future network needs by various sort criteria.

**Pavement Reconstruction** - Complete removal and replacement of the existing pavement structure; may include new and/or recycled materials.

**Pavement Rehabilitation** - Structural enhancements that extend the service life of an existing pavement and/or improve its load carrying capability. Rehabilitation techniques include restoration treatments and structural overlays.

**Pavement Service Life**- The estimated number of years, from a specified date in time, until a pavement section reaches the threshold distress index. Also see **Remaining Service Life**.

**PASER**      **Pavement Surface Evaluation and Rating** - Method for rating and classifying roadways using windshield surveys.

**PTR**      **Permanent Traffic Recorder** - Permanent traffic recorders are permanently placed at specific locations throughout a region to record the distribution and variation of traffic flow by hours of the day, days of the week, and month of the year from year to year.

**PR**      **Physical Road** – A single segment of roadway identified by a Physical Road Number. Physical Roads are made as long as practical within the PR Referencing system. A Physical Road is a roadway path traveled by a vehicle with wheels (i.e., roadbeds, bike paths and rail) with the state of Michigan.

**Pontis** - (Latin for bridge) is an AASHTOWare computer program and relational database designed to be a comprehensive bridge management system. Pontis stores element level bridge inventory and inspection data; formulates network-wide preservation and improvement policies for use in evaluating the needs of each bridge in a network; and makes recommendations for what projects to include in an agency’s capital plan for deriving the maximum benefit from limited funds.

**Poor Pavement** – A pavement that has an RSL of 0 to 2 years, and RQI greater than 70, or an IRI greater than 170 in/mi.

**Potholes** - A hole in the pavement surface, commonly caused by moisture.

**PBES**      **Prefabricated Bridge Elements and Systems (PBES)** are structural components of a bridge that are built offsite, or near-site of a bridge and include features that reduce onsite construction time and the mobility impact time that occurs when the building of new bridges or rehabilitating or replacing existing bridges relative to conventional construction methods. Use of PBES is one strategy that can meet the objectives to Accelerate Bridge Construction while providing additional benefits beyond those with reducing on-site construction time.

**PE**      **Preliminary Engineering** - All design activities and plan preparation performed for the construction of a transportation project.

**Preserve** - A project type involving rehabilitation of existing roadways; may include resurfacing or reconstruction of existing roads and bridges.

**Profilameter** - A computer-aided device used to measure the smoothness of the road.

**P/PMS**      **Program/Project Management System** - A MDOT tool to enable managers to plan, schedule, monitor, and control both long-term and short-term programs, projects, and resources within the highway program. The system standardizes the procedures involved in initiating, reviewing, and approving projects before they are actually programmed and scheduled.

**P/PRB**      **Program/Project Review Board** - A MDOT committee that oversees statewide and region highway capital programs. The board has the decision-making authority for project budget increases over \$3 million, schedule changes that move a letting outside of the Five Year Transportation Program, significant changes in project scope, and additions of projects or phases. The Program/Project Review Board consists of the Chief Deputy Director, Director of Highway Development, Director of Highway Delivery, Director of Transportation Planning, Chief Operations Officer (as chair and facilitator), and Chief Administrative Officer.

**PLRS**      **Project Letting and Reporting System** - A MDOT computer program that queries reports from the MAP database for project letting information. It is used by program and project managers to monitor the preliminary engineering and construction engineering costs of projects.

**PM**      **Project Manager** - The main person responsible for a job or group of jobs during plan development, including schedule, cost and quality.

**Project Scope** - The work that must be done to deliver a product with the specified features and functions.

## Q

**QA**      **Quality Assurance** - MDOT's (owner) assurance of a product through monitoring and acceptance testing.

**QC**      **Quality Control** - A producer's process control through monitoring and testing.

## R

**Reconstruction** - A fix that typically removes and replaces the entire pavement structure. Sometimes the sand subbase may be left in place and incorporated in the new pavement structure. Reconstruction fixes have a design or fix life of twenty years or more. This fix is typically applied to pavements with a remaining service life of two years or less.

- ROD**      **Record of Decision** - This is the conclusion of the NEPA approval process for an Environmental Impact Statement (EIS). This public document identifies the basis for the decision and selected alternative summarizes mitigation action measures that will be incorporated into the projects and documents any 4 F approvals.
- RM**      **Reactive Maintenance** - Reactive maintenance is an activity that must be done in response to events beyond the control of the Department. Reactive maintenance cannot be scheduled because events occur without warning and often must be immediately addressed. Examples of reactive maintenance activities include snow plowing, pothole patching, removing and patching pavement blowups, unplugging drainage facilities, replacing a regulatory sign knocked down by traffic, removing tree limbs and branches fallen on the pavement, cleaning and inspecting underdrains, and responding to a road closing because of flooding.
- RTP**      **Regional Transportation Plan** - A forum consisting of counties, cities, villages, and townships. The forum for a cooperative transportation planning process for decision making.
- Rehabilitation** - A fix that has an estimated design or fix life of ten to twenty years. Rehabilitation fixes are typically applied to pavements with a remaining service life of two years or less. These fixes include: two or three course bituminous overlays, concrete patching & diamond grinding, crush & shape with bituminous overlay, rubblize & multiple course bituminous overlay, and unbonded concrete overlays.
- R&R**      **Rehabilitation and Reconstruction** -
- Rehabilitation is a pavement treatment that has an estimated design or fix life of 10 to 20 years. These fixes are generally applied to pavements with an RSL estimate of two years or less and typically include two or three course bituminous overlays, concrete patching and diamond grinding, crush and shape with bituminous overlay, rubblize and multiple course bituminous overlay, and unbonded concrete overlays.
- Reconstruction is a pavement treatment that typically removes and replaces the entire pavement structure. Sometimes the sand subbase may be left in place and incorporated in the new pavement structure. Reconstruction fixes have a design or fix life of 20 years or more. This fix is typically applied to pavements with an RSL estimate of two years or less.
- RSL**      **Remaining Service Life** - The estimated number of years, from a specified date in time, until a pavement section reaches the threshold distress index. RSL is a function of the distress level and rate of deterioration.
- RFP**      **Request For Proposal** - A package of materials intended to accomplish exactly what the name implies. The most important part of an RFP is the

Scope of Services. The scope informs the vendor what MDOT wants them to do. The remainder of the RFP package covers instructions, information, and rules of the process.

**RQI**      **Ride Quality Index** - An index developed by Michigan that quantifies the user's perception of pavement ride quality. It is reported in tenth mile increments. The scale starts at zero and increases numerically as ride quality decreases.

**ROW**      **Right of Way** - A described area in which MDOT has legal rights for transportation related facilities. These rights range from fee (owned) easements, statutory, legally recorded rights, aerial rights and etc.

**Road Diet** - This is a strategy employing a reduction in existing lanes or lane widths to accommodate evolved transportation needs within or along the roadway. These needs may include among other features, center turn lanes, bicycle lanes, sidewalks or to induce traffic speed reduction (traffic calming) within a corridor.

**RDM**      **Road Design Manual**

**RQFS**      **Road Quality Forecasting System** - A MDOT network-level pavement management tool where users can estimate the best combination of pavement treatment strategies (reconstruction, rehabilitation, and preventive maintenance) to utilize in order to maximize future overall pavement network condition within a restricted budget.

**Roughness** - The deviation of a surface from a true planar surface with characteristic dimensions that affect vehicle dynamics and ride quality. In this practice, the term roughness is the average of the two IRI statistics calculated from the longitudinal profile measurements, one in each pavement wheelpath.

**Roundabout** - This should be considered as a potential intersection option within MDOT-sponsored or funded planning studies/design projects since they offer improved safety, cost savings, and enhanced traffic operations in many situations.

**Routine Maintenance** - Routine maintenance is the day-to-day maintenance activities that are scheduled or whose timing is within the control of maintenance personnel. Examples of routine maintenance activities include mowing and cleaning roadsides, cleaning ditches, sealing cracks in the pavement, painting pavement markings and pruning trees.

**Rubblize** - A process where concrete is broken up into uniform size pieces, rolled flat and covered with a new surface (usually asphalt).

**RTF** **Rural Task Force** - A group consisting of counties and associated cities, villages, and townships, working cooperatively to see priorities and oversee transportation investments for a region of the state.

## S

**SAFETEA-LU** **Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users** - Legislation signed on August 10, 2005 by President George W. Bush that authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009.

**SR2S** **Safe Route to School** - An international movement to make it safe, convenient and fun for children to bicycle and walk to school. The federal SR2S program was created by SAFETEA-LU. It allocated funding for infrastructure (sidewalks, traffic calming/diversion, etc.) and non-infrastructure (community outreach, traffic enforcement, etc.) projects.

**Sand Seal** - An application of asphalt binder, normally an emulsion, covered with a fine aggregate. It is used to improve the skid resistance of slippery pavements and to seal against air and water intrusion.

**Sandblasting** - A procedure in which compressed air is used to blow sand particles at a pavement surface to abrade and clean the surface. Sandblasting is a construction step in partial-depth patching and joint resealing.

**Scope Creep** - Any increase in the project scope (products and services described by the project) that happens incrementally and is subtle in recognition.

**Scoping** - The process of determining the type, extent, and cost of a proposed project.

**Seal coats** - See **surface treatment**.

**Sealant** - A material that has adhesive and cohesive properties to seal joints, cracks, or other various openings against the entrance or passage of water or other debris in pavements.

**Sealing** - The process of placing sealant material in prepared joints or cracks to minimize intrusion of water and incompressible materials. This term is also used to describe the application of pavement surface treatments.

**Service Life (Analysis Period)** - The anticipated life of a rehabilitation or new/reconstruction, including additional pavement life provided by anticipated future preventive maintenance. This term is used to describe the number of years from the initial new construction, reconstruction or

rehabilitation of a pavement to a subsequent rehabilitation or reconstruction. A service life or analysis period equals the sum of the original design/fix life plus any additional pavement life provided by future anticipated preventive maintenance. Analysis period is the term typically used to describe the time used in a life cycle cost analysis.

**Signal cycle** - The time required for all phases of a signal to take place, from beginning of green to beginning of green.

**SPUI**

**Single-Point Urban Interchange** - A variant on the standard diamond interchange, whereby all traffic meets at one single traffic signal in the center of a bridge over the freeway (or underneath the freeway). These interchanges can accommodate more traffic in smaller spaces, hence their appear in urban areas.

**Signal warrants** - A set of guidelines designed to determine the need for a stop-and-go traffic signal.

**Slurry** - Mixture of a liquid and fine solid particle that together are denser than water.

**Slurry seal** - A mixture of slow-setting emulsified asphalt, well-graded fine aggregate, mineral filler, and water. It is used to fill cracks and seal areas of old pavement, to restore a uniform surface texture, to seal the surface to prevent moisture and air intrusion into the pavement, and to improve skid resistance.

**Sound wall** - A structure built alongside a roadway to reduce vehicular noise in nearby neighborhoods. Also called noise wall.

**SLRP**

**State Long Range Plan** - required by federal law in order to be eligible for federal funding. For MDOT, the SLRP is a policy document, covering a 25-year period which provides a vision for the future development of the transportation system, defines goals, objectives and strategies with different levels of specificity. Updated at least every five years, or more often as needed, to reflect changes in issues and Michigan's long range transportation goals and objectives for the ensuing 25 years.

**SPR**

**State Planning and Research** - The State Planning and Research (SPR) Program is generally 80% federally funded, requiring a 20% state or local match (some Research categories are eligible for 100% federal aid). The apportionment is calculated using 2% of the state's portion of federal construction program funds (CMAQ, STP, Bridge, IM, NHS and Min Guarantee). Of the 2%, 25% MUST be used on Research. The annual SPR Planning Program is used to fund activities that support a federally required planning process. The activities can be completed through contractual services or through MDOT salaries, travel and other requests. The SPR Part II Program is a multi-modal program addressing MDOT's research needs. The purpose of this program is to identify cutting edge research topics, conduct research, and implement results. Major research categories include: Congestion Management; Traffic and Safety;

Intelligent Transportation Systems (ITS); and Infrastructure (Bridges and Highways). Eligible SPR activities and projects are submitted and approved by the Federal Highway Administration each fiscal year.

- STC**                    **State Transportation Commission**
- STF**                    **State Trunkline Fund**
- SPMAC**                **Statewide Pavement Management Advisory Committee** - A 14-member cross functional team with representation from regions, TSC's, and three Lansing bureaus. It was formed in 2005 to develop a comprehensive outline to identify how MDOT currently manages pavement and to implement change and/or make recommendations to management about resource adjustments, changes to organization/function, goals, performance measurements, and policies/guidelines.
- STIP**                    **Statewide Transportation Improvement Plan** - A staged, multi-year, statewide, intermodal program of transportation projects which is consistent with the statewide transportation plan and planning processes and metropolitan plans, TIPs and processes. This includes rural and urbanized area projects (example: MPO TIPs).
- STDM**                    **Statewide Travel Demand Manual** - MDOT's statewide passenger model used to forecast travel patterns under varying conditions. Travel demand modeling refers to the development and application of a series of interrelated mathematical equations and relationships specifically designed to simulate existing and forecasted travel patterns. The models are used to identify existing and future highway capacity deficiencies and analyze potential transportation improvements. These analyses are incorporated into Statewide and Urban Long-Range Transportation Plans, Sub Area Plans, and a continuous planning process which are prerequisites for receiving federal funds for project implementation.
- SUTA**                    **Statewide and Urban Travel Analysis** - within the Bureau of Transportation Planning at MDOT has responsibility for travel demand modeling for the department. SUTA is responsible for providing travel demand modeling analysis. Travel demand models (TDM) are developed, maintained, and updated for each of the urbanized areas population between 50,000 and 100,000 population. The five urban areas over 200,000 population are responsible for the development of their own travel demand models. The SUTA Section has a copy of those models in-house for project level analysis. The Statewide Model Unit is responsible for the statewide passenger and truck models, as well as freight and economic analysis.
- SHSP**                    **Strategic Highway Safety Plan**
- Streetscape** - Equipment, such as lights, plant material or benches placed off the street to improve or enhance the appearance and usability of a street.
- Superstructure** - A bridge.



**Surface seal** - See **surface treatment**.

**Surface treatment** - Any material applied to asphalt pavement to restore or protect the surface. Surface treatments are typically less than 25 millimeters thick. Also called **surface seal**

**SS&SP**

**Supplemental Specification & Special Provisions**

## T

**Template Category** - Represents the type of work activities, facilities or features that receive an allocation of financial resources to accomplish approved transportation improvement strategies.

**Template Target** - Is the annual estimated dollar amount required to finance a set of work activities to accomplish approved transportation improvement strategies for implementation of transportation system components or objectives.

**Threshold Distress Index** - A minimum pavement condition level where a rehabilitation or reconstruction project should be seriously considered. The threshold DI is equal to 50.

**Threshold Ride Quality Index** - The minimum threshold index for poor pavement ride quality is equal to 70 on the RQI scale (170 in/mi on the IRI scale).

**Timing permit** - A form indicating/authorizing how a traffic signal will operate; when it will flash, how much "green time" will be allotted to each leg of the intersection, how it will operate in relation to adjacent signals, and what special provisions will be made for high-volume, peak-hour traffic.

**TOR**

**Time of Return**

**Tine** - To create grooves in the pavement for traction.

**Traffic calming** - A set of street designs and traffic rules that slow and reduce traffic while encouraging walkers and cyclists to share the street. Traffic calming measures include traffic circles, raised crosswalks, sidewalk extensions, speed humps, and medians.

**Traffic circle** - An intersection where traffic moves around a circular center island. Some traffic circles have traffic signals. Also called a Roundabout.

**T&S**

**Traffic and Safety** - MDOT/Bureau of Highway Operations/Division of Operations (previously known as Traffic & Safety Division). The Traffic and

Safety Support Area participates in all phases of the Department's effort to reduce traffic crashes and injuries, vehicle delay, fuel consumption, pollution and operating costs. This can be done by increasing the safety, efficiency and capacity of the state highway trunkline system.

**Traffic volume** - The actual number of vehicles passing a given point.

**TransCAD** A software package that assists MDOT and the Metropolitan Planning Organizations in travel model development including Geographic Information System/mapping capabilities.

**TEDF** **Transportation Economic Development Fund** - A fund consisting of state and federal money that provides a means for state government, local agencies, and businesses to work together on highway, road, and street projects that support economic growth. It was enacted by the Michigan State Legislature in 1987.

**TEDF-A** **Transportation Economic Development Fund – Category A** - A TEDF fund for projects related to target industry development and redevelopment opportunities. Target industries include agriculture or food processing; tourism; forestry; high technology research; manufacturing; mining or office centers of not less than 50,000 square feet.

**TEDF-B** **Transportation Economic Development Fund – Category B** - A TEDF fund supporting conversion of local roads to state trunk lines. It was repealed in 1993.

**TEDF-C** **Transportation Economic Development Fund – Category C** - A TEDF fund for projects that relieve urban traffic congestion in developing areas.

**TEDF-D** **Transportation Economic Development Fund – Category D** - A TEDF fund intended to upgrade rural roads to all season standards.

**TEDF-E** **Transportation Economic Development Fund – Category E** - A TEDF fund to construct roads essential to the development of commercial forest in Michigan.

**TEDF-F** **Transportation Economic Development Fund – Category F** - A TEDF fund for road and street improvement in cities and rural counties.

**TE** **Transportation Engineer**

**Transportation Enhancement Funds** - Also known as the **Transportation Enhancement Activity Fund**. This federal fund sets aside a portion of **Surface Transportation Funds** (STF) specifically for landscaping and street improvements, bike and foot paths, mitigating highway runoff and the historic preservation of transportation-related structures.

**TEP** **Transportation Enhancement Program** - A competitive federal grant program that funds projects such as non-motorized paths, streetscapes, and

historic preservation of transportation facilities, that enhance Michigan's transportation system and improve the quality of life for Michigan citizens.

- TIP**      **Transportation Improvement Program** – A staged, multi-year, intermodal program of transportation projects which is consistent with the MPO transportation plan and planning processes. These are multiple urbanized areas within the state responsible for developing TIPs.
- TMS**      **Transportation Management System** – MDOT's transportation asset inventory that contains attributes location and condition data over time. The overall framework which the PMS operates to include subsystems for pavements, bridges, public transit, congestion, safety and intermodal systems. Also includes output from PaveMaPP.
- TSC**      **Transportation Service Center** – An MDOT office assigned to represent and service a designated geographic area regarding transportation needs.
- TWA**      **Transportation Work Authorization**
- TRNS\*PRT**      **The State of Michigan transportation database**

## U

**UD10** - An accident report filed by the state police.

**Urban area** - As defined by the U.S. Bureau of the Census, an area located outside of an urbanized area, with a population over 5,000.

**Urbanized area** - An area containing a city or twin cities of 50,000 or more people surrounded by a closely settled incorporated area which also meets specified criteria of population and density.

## V

- VMT**      **Vehicle Miles of Travel** – Average Sunday through Saturday vehicle movement on a specific road segment, reported in the form of daily and annual vehicle miles of travel.

## W

**Weigh station** - A set of scales located alongside a freeway that verifies that trucks and buses are within the legal weight limit.

**WMS**

**Wetland Mitigation System** - Assists environment division in tracking sites created to mitigate wetlands which were destroyed by construction projects.

**Working crack** - A crack in a pavement that changes, becoming narrower or wider under different temperature conditions. A working crack develops through movement in or under the pavement; for example, when an old expansion joint fails.

**WIRS**

**Work item Reporting System** - Provides project bid tab price and quantity reporting from the Trns\*port database by individual item or by contract ID.

**X**

**Y**

**Z**