PAVEMENT INVENTORY REPORT

General: The Pavement Inventory Report is designed to provide an overview, section-by-section analysis of what exists in the pavement network.

Zone Number: A road network is usually divided into various geographic areas called zones. These zones may be delineated by political, maintenance district or geographic boundaries.

Street #- Block #: Each street or road in the network that is tested is given a discrete Street ID# and divided into sections. These sections may each contain several lanes. Each section is given a block number. A street number may contain up to four numeric digits and is found under the "Strt." heading.

Street Name and Limits: Each street or road name is listed followed by the beginning and ending limits. If no geographical appurtenance, such as a cross street, exists at a block end, it will usually be designated by its station length (Main Street 200 m to 400 m).

Lane: Each block may contain several lanes. Each lane tested is given a lane number. The left most lane in a particular direction is given a 1.

DIR: The general direction of travel for each lane is shown by a single letter.

Surface Type: The type of surface existing at the time of testing is indicated by a two-letter designation under the "Surf Type" column. AC indicates asphalt concrete pavement; PC indicates Portland Cement concrete pavement.

Class: Each street or road is assigned a functional classification according to its use type. The most common abbreviations used for classification are as follows:

ART - Arterial	RES - Residential
COL - Collector	IND - Industrial

Width: The width is defined as an average measure of the paved surface perpendicular to the direction of travel divided by the number of surface testing passes or lanes.

Length: The length is displayed in the "Length" column in either imperial (ft.) or metric (m) units.

Area: The area of each block is displayed under the "Area" column in either imperial (sq. yd.) or metric (sq. m.) units.

Traffic: The figure for the total single directional ADT, supplied by the Agency, is displayed under the heading "Traffic" in the inventory report. A database is also provided which averages the inventory data on a street-by-street basis.

PAVEMENT PRIORITY REPORT

General: The Pavement Priority Report is a list of all the processed streets in order by rank from highest to lowest. When the pavement condition is calculated for each test section, an average is also calculated for each street group. A street that contains 10 blocks or test sections, for example, will be reported in the priority report as one line. The block range, street name and limits will reflect the full 10 blocks.

Ranking: The Rank of a street is based on the average pavement condition of the sections within the street weighted by the area of each section. But the rank also reflects a slight penalty for the amount of non-uniformity within the street.

Rank Categorization: In the left-most column of the report is listed the range of rank or rank group. These groups represent the relative general remaining life of the street within the group. A definition of each group is listed in the Priority Definitions Chart.

"Some maintenance" means that routine crack sealing and repair of minor distress areas should be performed on a regular basis. These definitions provide some direction for the non-engineer and general public.

Section Categorization: The right side of the pavement priority report displays a column showing total number of sections within each street. It also displays a distribution of these sections over the same categories as the rank categorization. The section distribution can be used to roughly define the types of rehabilitation that might be expected on the listed number of sections in each category. The general description of each group is listed in the Priority Definition Chart.

PAVEMENT CONDITION REPORT

Data Calculation: Pavement condition data is calculated using different kinds of equipment. The Dynaflect is used for calculating deflection data. This machine applies a load on the pavement and the deflection of the pavement is measured by five sensors spaced at equal distances to each other. This sensor data is then processed to obtain various condition numbers which are shown in I. Pavement Condition Detailed Report and II. Pavement Condition Overview Report.

The surface of the pavement is typically tested using the Laser Road Surface Tester (RST). This device consists of various sensors and lasers specialized for collecting data related to surface distress. This data is augmented by subjective analysis. Data on cracking, rutting, roughness (ride quality) and environment is calculated during the surface condition survey. This data is then processed to produce various condition numbers which are shown in the Pavement Condition Reports.

PAVEMENT CONDITION - DETAILED

The Pavement Condition Detailed Report gives detailed information about each individual section of pavement. This listing is also in numerical order by section number, and includes the street name and limits. The numerical fields, and their relative values, are described in more detail below.

DMD Number: The Dynamic Maximum Deflection Number (DMD) is a measure of the deflection at the first Dynaflect sensor or geophone nearest the load. The programs have been divided into flexible, flexible G, stabilized, stabilized G and rigid systems. The DMD is used primarily as an indicator of the ability of the pavement as a whole to support repetitive loading. The DMD value has the greatest reliability when considering a flexible system. It is slightly less reliable when considering a stabilized system or a rigid system.

Note: Acceptable DMD values vary with, and are inversely proportional to, traffic. Values of DMD can best be interpreted by the use of the Deflection Condition Number, where traffic has been taken into consideration.

SCI: The Surface Curvature Index (SCI) is the difference between the first and second Dynaflect sensor deflections, which represents the strength of the upper layers of the pavement. The SCI is an index of the performance of the base structure. It is of greatest value when considering a rigid base, and slightly less value when considering a stabilized base or a flexible base. General ranges of SCI are found in the Deflection Chart.

BCI: The Base Curvature Index (BCI) is the difference between the fourth and fifth Dynaflect sensor deflections. The BCI is an index of the performance of the substructure. The BCI is most often used as a representation of the relative strength of the lower layers of the pavement structure. The BCI value has the greatest reliability when considering a flexible system. It is slightly less reliable when considering a stabilized system or a rigid system.

A general guide to the accepted ranges of BCI for each of these five types is found in the Deflection Chart.

W5: The W5, or the 5th sensor reading, is used to determine when Marshy subgrade exists. When the value exceeds 1.0 an "M" pavement type is established.

% SP (Spreadability): The spreadability is the summation of all five Dynaflect sensor deflections divided by five times the first sensor deflection (DMD Value) further expressed as a percentage value. Its reliability factor is approximately equal for flexible, stabilized and rigid systems.

A general guide to the accepted ranges of %SP for each of these five types is found in the Deflection Chart.

CRACK: The CRACK rating figure, varying from 10 to 100 where 100 is best, is based on the size, number, and types of cracks objectively counted and measured by the laser test vehicle or manual collection.

RUT: An average rut depth for the section is calculated in real time by the RST. A percentage of distance where the rut exceeded 10 mm and 20 mm is also recorded which allows analysis of localized ruts. These figures are combined using an algorithm which yields a RUT condition number between 10 and 100 where 100 is the best.

RQ#: In order to calculate the Ride Quality Number, 3 devices are used. The lasers in the wheel path continuously measure the distance from the vehicle to the pavement. An accelerometer is integrated to determine the continuous vertical position of the vehicle. A distance measuring device is used to record the position and velocity of the vehicle. These figures are used to calculate the longitudinal profile of the pavement in the time domain. A theoretical roughness model is then superimposed on the profile to determine the quality of the ride, as perceived by passengers. The "RQ" rating varies from 10 to 100, where 100 is best.

Because ride quality cannot be measured accurately in a walking study this column on the report will contain "N/A" to indicate "Not Applicable" for those pavements manually tested.

Pavement Types: The six types of pavement are defined as follows:

1. F - FLEXIBLE pavements are those pavements whose deflection resembles construction of non-rigid materials such as Bituminous matrix and aggregate layered systems.
2. S - STABILIZED pavements are those pavements whose deflection resembles pavement construction with semi-rigid base courses such as pozzolanic materials or Portland cement stabilized bases.
3. R - RIGID pavements are those whose deflection resembles pavements with bases constructed of rigid materials such as Portland Cement Concrete.
4. FG - FLEXIBLE G pavements are the same as flexible pavements except their deflections reflect very thick granular bases or shallow bedrock or other anomalies that dampen deflection readings.
5. SG - STABILIZED G pavements are the same as stabilized pavements except their deflections reflect very thick granular bases or shallow bedrock or other anomalies that dampen deflection readings.
6. MR, MS, MF - MARSHY pavements are the same as flexible and stabilized pavements except the subbase is extremely weak and the 5th sensor exceeds 1.0 milli-inches.

Note: The data has not been aged and therefore reflects the condition **IN THE YEAR IT WAS TESTED.**

PAVEMENT CONDITION - OVERVIEW

General: The first part of the Pavement Condition Report lists all the roadway segments in order by section number, and permits a preliminary screening to determine their present condition. Each pavement section is identified by street name and limits, and its unique section number. The condition description ratings appear for each section, with an average and standard deviation figure shown for each street grouping. Each type of pavement rating is described in greater detail below.

Pavement Condition Number: The Pavement Condition Number is an overall rating figure composed of the Dynamic Condition Number, Deflection Condition Number, Surface Condition Number, traffic, and other factors, weighted according to their affect on overall life. When a Static Condition Number is established, it is also used in determining the Pavement Condition Number. The Pavement Condition Number is computed on the basis of a ten-year pavement performance.

Dynamic Condition Number: The Dynamic Condition Number ranges from 10 to 100 and is established primarily from the condition of the base structure, substructure and lateral load transfer. It is an indication of the pavement layer system interaction.

Deflection Condition Number: The DMD can be compared to pavements of similar type and identical loading to determine to what degree the pavement being tested is supporting and will continue to support the estimated traffic. After this comparison is made, a condition number, called the Deflection Condition Number, is derived to reflect this comparison. The Deflection Condition Number ranges from 10 to 100 where 100 is the best.

Surface Condition Number: The Crack condition, the Rut condition and the Ride Quality are combined to form a surface condition number. This number also ranges from 10 to 100 where 100 is the best.

Pavement Type: Based on behavior of the pavement structure, the pavement management program classifies pavements into six categories:

F - Flexible
FG - Flexible Deep Granular
S - Stabilized
SG - Stabilized Deep Granular
R - Rigid
MR, MS, MF - Marshy

Note: The data has not been aged and therefore reflects the condition **IN THE YEAR IT WAS TESTED**.