The purpose of this briefing is to provide an overview of the Pavement Management Program.

To that end, we will cover:

1. Definition of Pavement Management
2. History of the program at the City
3. Status of the program today
4. Path forward
DEFINITION

Pavement Management is the **systematic** planning, design, construction, operation, and maintenance of pavements in a **cost effective** manner.

PM = engineering + economic theory + business decisions

The primary objectives of PM are:

- Improve the condition of the street network
- Maximize pavement performance while keeping construction and repair costs to a minimum
Program Goals

Better Roads

Smooth riding surfaces

Increased customer satisfaction

Lower Life-cycle Costs

Lower cost of ownership over time as a result of strategic maintenance and capital investments

In other words, Better Data for Better Roadways
Program History

- 1975: Pavement Surface Inventory (PSI) program initiated
- Manual, systematic, and annual collection of inventory and condition information via windshield surveys of the City’s street network
- Key data source for development of the Capital Needs Inventory for roadway improvements
- Considered a **benchmark system** at its inception
- 1980s – 1990s: Continued to evolve from 28 to over 60 types of data collected describing the physical composition and condition of riding surfaces, curbs and gutters, sidewalks, and distress types collected by street block and provided input into maintenance and capital programs
- Late 1980s: Early efforts to forecast deterioration of conditions to plan for future repair needs
Program History continued

- 1993: Alley condition inventory began
- 1994: Implemented standardized rating forms and a Pavement Condition Rating formula to recommend repairs
- 1995: “Streets 2010” goals adopted based on program’s historical data and projected needs
- 2005: Began transition from Pavement Surface Inventory (PSI) to Pavement Management Program (PMP) began
  - Reduced annual operating budget from $785K and 13 FTE to $500k and 7 FTE
  - Transitioned from a manual, labor-intensive, paper-based collection of subjective data to semi-automated, sensor-based collection of objective and repeatable data
  - Converting from mainframe database to PC-based software
We’re transitioning from observations recorded by pen and paper to objective and repeatable data collected from a number of synchronized components of a technology based system.
In a September 2005 briefing, our scheduled projected data collection beginning in winter/spring of 2007. Additional effort in the research and system design phases resulted in an eight month delay in procurement. As a result data collection began this month.

Enhanced Pavement Management - ePMP
PMP DATA COLLECTION SYSTEM
The Data Collection Van *Objectively Measures* and *Quantifies* Pavement Distress

- Inertial Navigation
- Rear Video
- Side Video
- Forward Video
- Human Observations
- Distance Measurements
- Mid-Mount Profile Lasers

View Video
Crack Scanner

- Automated Crack Detection (red lines)
- Measures and maps cracks in pavement as small as 1/8” wide

View Video
Roughness Profiler

- Measures roughness of the pavement surface
- Locates bumps and jolts along each street

View Video
Ground Penetrating Radar

- Measures pavement layers.
- View Video

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<td><strong>4.9</strong></td>
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"Data Driven" continued

- **Heavy Falling Weight Deflectometer**
  - Measures the strength of the pavement structure
  - Identifies subsurface issues before construction or maintenance activities in order to better plan and estimate costs
Right-of-Way Video

- Allows simple playback of “Drive by” video (in 4 directions).

View Video
“Data Driven” continued

Location Awareness

- Global positioning links data collected to GIS maps
- Inertial navigation system maintains precise location, even during moments of lost satellite communications

![LV-POSView](image)
“Data Driven” continued

Direct Data Entry

Key-pad data entry of pertinent observations directly into the central database to augment and be analyzed with data collected by other subsystems.
Enhanced Pavement Management - ePMP

Path Forward

**TASK SUMMARY**

- **Complete Acceptance Testing**
  - Date: DEC 2007

- **Collect and Analyze Street Conditions**
  - Date: DEC 2007 - JUL 2008

- **Procure Falling Weight Deflectometer (FWD)**
  - Date: NOV 2007 - MAR 2008

- **Conduct Additional Pavement Structural Analysis**
  - Date: JUN 2008 - DEC 2008

- **Collect and Analyze Alley Conditions (1/3 of the network)**
  - Date: JUL 2008 - SEPT 2008

- **Recommend FY08/09 O&M Street Program**
  - Date: AUG 2008

- **Plan with Potential Stakeholders**
  - Date: On-Going

**DATE**

- DEC 2007
- DEC 2007 - JUL 2008
- NOV 2007 - MAR 2008
- JUN 2008 - DEC 2008
- JUL 2008 - SEPT 2008
- AUG 2008
- On-Going
Potential Items for Spring & Summer 2008 Council Briefings

- Update on data collection progress
- Discussion of frequency of street and alley data collection inventories
- Discussion of street condition grading system
- Discussion of the strategic maintenance and repair strategies proposed to develop recommendations for the FY08/09 maintenance program
Additional Photos and Details

- **Video ROW**
  - Images every 25’ in 4 different directions
  - 3D measurements on images
Questions?

Comments?