Welcome
Roads Committee

ROADS - 101

01/13/2020
Roads Team Members

- **DPW Staff**
  - Director
  - Deputy Director, Megan Mikus
  - City Engineer, Ben Croy
  - Construction Engineer, Aaron Staup
  - Staff Engineer, Rebecca Runkel

- **Consulting Engineers**
  - OHM Advisors
    - Tim Juidici
  - AECOM
    - Mark Koskinen
  - Spalding DeDecker
    - Jeremy Schrot
How Novi Funds Roads

- **202 – Major Roads**
  - Funded by ACT 51 ~ $4M/year
  - Anticipate increase of 8% annually through FY 2022-23

- **203 – Local Roads**
  - Funded by ACT 51 ~ $1.5M/year
  - Anticipate increase of 8% annually through FY 2022-23

- **204 – Municipal Roads**
  - Funded by Metro Act Revenue approx. $185,000/year
  - Funded by Trunkline Revenue approx. $113,000/year
  - Funded by dedicated road millage (1.5 mills) which has generated between $4.9 - $5.3M/year to supplement **202, 203** through FY 2018-19. Due to rollback, millage rates:
    - FY 2016-17 was 1.4923
    - FY 2017-18 was 1.4708
    - FY 2018-19 was 1.4484
    - FY 2019-20 is 1.4273
Supplementary Roads Funding Sources

- **Oakland County Federal Aid Committee (FAC)**
  - 62 Cities, RCOC, MDOT
  - Discuss and disperse federal road funds
  - Apps are scored and ranked in yearly “call for projects”
  - ~$17M in funding, ~$6M goes to CVT’s
  - Wixom Rd, 10 to City Limits (2022), Taft Rd in call, 8 ½ to 10 (2023)

- **Tri-Party**
  - City, County, + RCOC
  - ~$6M ($3M for Twps and $3M Cities and Villages)
  - Dispersed by miles of county roads
  - Can accumulate
  - 12 Mile and Novi Intersection, 10 Mile Road

- **Corridor Improvement Authority (CIA)**
  - Tax Increment Finance capture that can be used on capitol projects
  - Helped fund Ring Roads
Funding, continued

- **Local Road Improvement Program (LRIP)**
  - County Commissioners Office
  - Based on economic development
  - Questionable availability in future
  - Crescent Blvd (NE Ring), Lee BeGole (2019)

- **Highway Safety Improvement Program (HSIP)**
  - Federal program to improve safety
  - Data driven
  - Intersections, 9 Mile and Taft RAB (2023) combined with FAC

- **Transportation Economic Development Fund (TEDF)**
  - Federal job creation and job retention
  - Awarded on case by case basis

- **Better Utilizing Investments to Leverage Development (BUILD)**
  - Federal rigorous merit-based process
  - Beck Road
Other Utilities

- **Road Commission for Oakland County (RCOC)**
  - Even Mile Roads (east-west) and Haggerty, Napier & Novi (8 to 12) (north-south)
  - Strategic Planning, bi-annual
  - 10 Mile, 12 Mile

- **Wayne County Roads Division**
  - 8 Mile (Center to Haggerty)

- **Michigan Department of Transportation (MDOT)**
  - I-96, M-5, etc.
  - Flex Route I-96 (Kensington Road to I-275)

- **Great Lakes Water Authority (GLWA)**
  - Coordinate and planning
  - 14 Mile Redundancy Route

- **DTE Energy**
  - Overhead and Underground relocation
  - NW & SW Ring Roads
Utilities, cont’d

- **Water Resources Commission (WRC)**
  - County water and sewer infrastructure
  - Storm water

- **Environment, Great Lakes & Energy (EGLE)**
  - Formerly MDEQ
  - Permitting wetlands, waters of the state, SESC (Novi handles own)

- **Consumers (natural gas)**
  - Underground relocation

- **ITC Holdings**
  - Independent electricity transmission
  - ITC Trail, Taft Bridge over I-96

- **Franchise Fiber/Cable**
  - Various in Right-of-Way (ROW)
Infrastructure Master Planning

- Infrastructure master plans are important tools in the development of the Capital Improvement Program (CIP).
- The Engineering Division completed the following master plans that are used as the basis for the Year 6 CIP:
  - Master Thoroughfare Plan (2016)
- Scoping Studies
  - 10 Mile Scoping Study (2019)
  - Beck Road Scoping Study (2018)
  - Novi and Grand River Corridor Update (2018)
  - Asset Management Plan (2012)
  - TAMC Road Report 2020-2024 (2019-2020)
Lifecycle of a Capital Project

- Master Plan Development
- Capital Improvement Plan & Budgeting
- Public Information Meeting
- Preliminary Design
- Final Design and Bidding
- Construction/Inspection
- Turnover For Long-Term Maintenance
- Project Close-out
Design & Construction of Capital Projects

- **Design tasks include:**
  - Develop detailed project scope, schedule and budget
  - Contracting with the consultant to complete design of project
  - Easement acquisition (handled primarily by in-house staff)
  - Managing the scope, schedule and budget throughout the design phase of project
  - Communication with the public about the project using mailings and public meetings to deliver information and receive feedback
  - Reviewing bids and recommending award for construction contracts

- **Construction tasks include:**
  - Managing the scope, schedule and budget during construction
  - Communication with residents and businesses during construction
  - Oversight of consultant’s inspection team and the contractor
  - Final inspection and close out of the project
Pavement Condition Assessment: PASER

- PASER = Pavement Surface Evaluation and Rating system
  - Visually inspecting pavement’s surface condition
  - Assigning a quantitative rating on a scale of 1 to 10
    - 1 = failed condition
    - 10 = excellent condition.

- PASER helps provide the basis for determining the level of future investment required to achieve acceptable pavement conditions throughout the City.

- Guidelines for rating the pavement surface using the PASER system have been developed by the State of Michigan’s Transportation Asset Management Council (TAMC).

- Having an asset management program is now a requirement for ACT 51 dollars.
PASER Ratings

Asphalt Streets

<table>
<thead>
<tr>
<th>PASER Rating</th>
<th>Condition</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 &amp; 10</td>
<td>Excellent</td>
<td>No maintenance required</td>
</tr>
<tr>
<td>8</td>
<td>Very Good</td>
<td>Little or no maintenance</td>
</tr>
<tr>
<td>7</td>
<td>Good</td>
<td>Crack sealing and minor patching</td>
</tr>
<tr>
<td>5 &amp; 6</td>
<td>Fair – Good</td>
<td>Preservative treatments (non-structural)</td>
</tr>
<tr>
<td>3 &amp; 4</td>
<td>Poor – Fair</td>
<td>Structural improvement (overlay)</td>
</tr>
<tr>
<td>1 &amp; 2</td>
<td>Failed</td>
<td>Reconstruction</td>
</tr>
</tbody>
</table>

Concrete Streets

<table>
<thead>
<tr>
<th>PASER Rating</th>
<th>Condition</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 &amp; 10</td>
<td>Excellent</td>
<td>No maintenance required</td>
</tr>
<tr>
<td>7 &amp; 8</td>
<td>Very Good</td>
<td>Routine maintenance</td>
</tr>
<tr>
<td>5 &amp; 6</td>
<td>Fair – Good</td>
<td>Surface repairs, sealing, partial-depth patching</td>
</tr>
<tr>
<td>3 &amp; 4</td>
<td>Poor – Fair</td>
<td>Extensive slab or joint rehabilitation</td>
</tr>
<tr>
<td>1 &amp; 2</td>
<td>Failed</td>
<td>Reconstruction</td>
</tr>
</tbody>
</table>
## 2019 PASER Roads by Percentage

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Total (lane miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent (9-10)</td>
<td>Very Good (8)</td>
</tr>
<tr>
<td>Major</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Local</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Total Mileage</td>
<td>32</td>
<td>29</td>
</tr>
<tr>
<td>% of Road Network</td>
<td>8%</td>
<td>7%</td>
</tr>
</tbody>
</table>
PASER Average by Year

Road Condition by Year

- % of Centerline Miles
- Poor (1-4)
- Fair (5-7)
- Good (8-10)

- 2008
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2017
- 2018
General Pavement Considerations

- **Drainage Provisions**
  - Surface & subsurface drainage

- **Subgrade**
  - Support capacity for pavement & during construction

- **Traffic & Loading**
  - Traffic volumes, heavy vehicles

- **Coordination with utility improvements**
Asphalt Pavement

- “Flexible” pavement – loads distribute to base
- Typical design life 15-20 years
  - 30+ years of life with maintenance/rehab
- Lower initial construction cost vs. concrete
- More frequent maintenance required
- Shorter initial construction & less impactful maintenance durations
- Overall lifecycle cost considers service life and required maintenance
Concrete Pavement

- Rigid” pavement – higher loads & distribution

- Typically long service life - 25 to 35 years design
  - 70+ years of life with proper maintenance

- Higher initial construction cost vs. asphalt

- Less frequent maintenance, but repairs impactful

- Overall lifecycle cost considers pavement longevity and required maintenance
Pavement Deterioration Curve
Typical Pavement Section

- Asphalt
- Gravel Base
- Sand Sub-Base
- Native Soil (sub grade)
Environment
Pavement Crack
Water Intrusion
Base Weakening
Distress Propagation
## Pavement Costs

<table>
<thead>
<tr>
<th>Pavement Type</th>
<th>Treatment</th>
<th>Cost per Lane Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>Crack Sealing/Minor Patching</td>
<td>$1000 - $7500</td>
</tr>
<tr>
<td>Asphalt</td>
<td>Preservation Treatment (non-structural)</td>
<td>$150,000 - $350,000</td>
</tr>
<tr>
<td>Asphalt</td>
<td>Structural Improvement (Overlay)</td>
<td>$350,000 - $500,000</td>
</tr>
<tr>
<td>Asphalt</td>
<td>Reconstruction</td>
<td>$800,000 - $1,250,000</td>
</tr>
<tr>
<td>Concrete</td>
<td>Joint &amp; Crack Sealing</td>
<td>$1000 - $5000</td>
</tr>
<tr>
<td>Concrete</td>
<td>Surface Repairs, Minor Patching</td>
<td>$175,000 - $250,000</td>
</tr>
<tr>
<td>Concrete</td>
<td>Major Slab or Joint Replacement</td>
<td>$350,000 - $500,000</td>
</tr>
<tr>
<td>Concrete</td>
<td>Reconstruction</td>
<td>$1,000,000 - $1,500,000</td>
</tr>
</tbody>
</table>
Questions???

- Introduction to Meeting 2 – 2019 Road Report