Asset Management & Maintenance
“Partners for Life”
Outline:

1. City of Prince George
2. AM Tools
3. Predictive & Preventative Maintenance
   a) Sanitary Sewer Main Cleaning
   b) Paved Road Condition
4. Next Steps
City of Prince George

Largest City in the region

- City population 74,000
- Regional population 320,000 who use our amenities
- Roughly 8 hours drive from Vancouver, Calgary and Edmonton
City Owned Infrastructure Inventory

- 1,554 lane km of Paved Roads
- 256 lane km of Gravel Roads
- 14 Bridges & Structures

- 794km of Pipe
- 7 Wells
- 15 Reservoirs
- 7,100 Valves
- 10 Boosters
- 2,100 Hydrants

- 408km of Pipe
- 3,944 Manholes
- 6 Liftstations
- 5,463 Catchbasins

- 690km of Pipe
- 31 Lift Stations
- 5,340 Manholes
- 6 Treatment Facilities

- 65 Buildings
  - Approx 178,000 m² floor area

- 362 Parks & Green Spaces
- 273 Benches
- 29 Courts
- 100km Trails

- 190 km Sidewalks
- 15 km Walkways (Between Roads)

- 4,115 Street Lights
- 43 Traffic Controlled Intersections
The City’s Asset Replacement Value

2017 Approx Replacement Value (in $ millions)

- Roads, $1,201
- Solid Waste
- Water, $448
- Sanitary Sewer, $430
- Storm Sewer, $207
- Fleet, $36
- Sidewalks & Walkways, $72
- Civic Facilities, $460
- Parks & Trails, $58
- Street Lights, $15
- District Energy, $19

Total: $2.95 billion
Using Technology to Advance AM....

Asset Management Tools Framework

Strategic
- POWERPLAN AMP
- JDE Financial System

Tactical/Operational
- Cityworks
- Tempest

Data Maintenance Tools
- geode
- BC One Call EBMS Stone Orchard

Asset Registry
- ArcGIS
- City Sourced - Service Requests
Maintenance Types

• **Corrective Maintenance** – repairs are made after the asset has failed and can no longer perform its normal function; *Examples* – fixing potholes, fixing watermain breaks.

• **Preventative Maintenance** – maintenance that is regularly performed on an asset to lessen the likelihood of it failing and can be based on industry standards and manufacturers recommendations. This is also known as periodic maintenance and is necessary to ensure the reliability or to sustain the design life of the asset; *Examples* – annual watermain flushing, motor lubrication

• **Predictive Maintenance** – condition monitoring activities used to predict failure before it happens. *Examples* – building condition assessments, pavement condition assessments.
Predictive & Preventative Maintenance Example:

Sanitary Sewer Gravity Main Cleaning
Performance Indicator

% Sewer Main Cleaned
Previous Preventative Maintenance Work Documentation
Cityworks Process

“The Sucker”
Sewer Main Inspections using SL-RAT Tool
Sewer Main Inspection & Flushing Performance Metrics

**Percent of Network (450km) SLRATEd This Year**

- **YTD Cost:** $30,006.31
- **KM Done:** 119.12
- **Segments Done:** 1,503
- **Cost / KM:** $251.89

**Percent of Network (450km) Flushed This Year**

- **YTD Cost:** $90,139.28
- **KM Done:** 14.42
- **Segments Done:** 217
- **Cost / KM:** $6,251.16
Predictive Maintenance Example:

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<th>Street Name</th>
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<th>To Street Name</th>
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CITY OF PRINCE GEORGE
Road Condition Assessment Data

Collect Condition Data Every 3-5 yrs

Create Cityworks Inspections

Update Powerplan

Update Current Condition in GIS
Road Condition Analysis in Cityworks

Using Cityworks Condition Assessment Inspections:
Query Inspections for Defects
Road Work Activities & Condition Updates

Perform Work
Create Cityworks Inspections
Update Powerplan
Update Current Condition in GIS
Capital Planning

Condition

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CITY OF PRINCE GEORGE
Capital Planning Con’t

![Recommended Re-Investment Chart]

- Recommended Re-Investment
- Millions
- 2018: $50
- 2019: $5
- 2020: $5
- 2021: $5
- 2022: $5

CITY OF PRINCE GEORGE
Capital Planning Con’t

Re-Investment Over 5 Years

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$11.5M/Yr
Capital Planning Con’t

Re-Investment Over 10 Years

$5.8M/Yr

BACKLOG

2018 2019 2020 2021 2022 2023 2024 2025 2026 2027

$50 $45 $40 $35 $30 $25 $20 $15 $10 $5 $0

Millions

CITY OF PRINCE GEORGE
Aligning Capital Work

Using the GIS and eventually Cityworks to align capital projects

- Water and Sewer Master Plans
- Pedestrian Network Study
- Powerplan AMP Road Rehab Recommendations
Benefits of Condition Assessments

- Prioritize work
- Eliminate unnecessary work
- Determine short and long term budgets
- Determine remaining service life
- Risk modeling
- Custom depreciation curves
- Mitigate the risk of surprise asset failures
- Align work
Next Steps

- Consequence (Impact) of failure

- Levels of Service development and performance metrics
QUESTIONS?

Kristy Bobbie
Asset Manager, City of Prince George
kristy.bobbie@princegeorge.ca
www.princegeorge.ca