

# Asset Management Workshop

Committee of the Whole – January 31, 2019

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# Workshop Objectives



## **Understand how Capital renewal needs are derived**

What approaches are taken by our largest asset categories?



## **Breakdown of City's Unfunded Renewal Needs**

What makes up the \$126.5 million?



## **Asset Management Financing Plan**

What are the components of the long-term financing plan and how was it developed?



# Asset Management

## Key Questions

What do we own and where is it?

What are these assets worth?

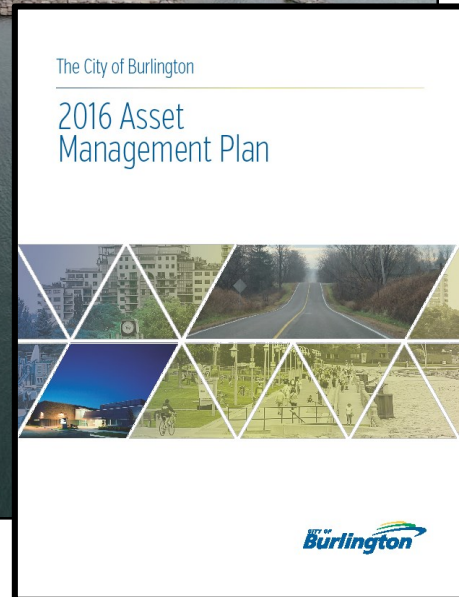
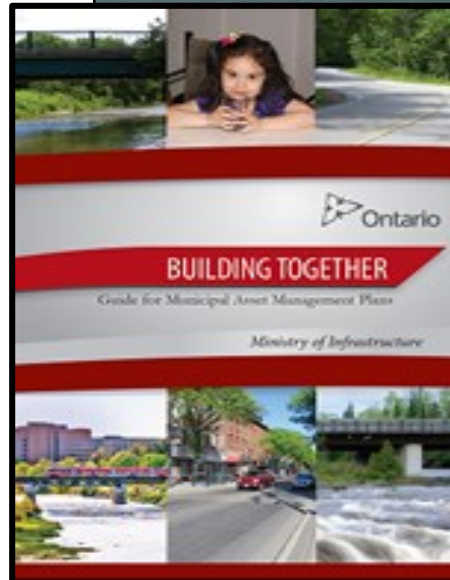
What is its remaining service life?

What condition is it in?

What do we spend and what should we spend/invest?

What is the gap?

How do we get sustainable infrastructure?



# Parks & Land Improvements

What do we own and how much is it worth?



Asset Type	Quantity	Estimated Replacement Cost
Pathway	100 km	\$35,025,000
Sports Field	128	\$29,815,000
Playgrounds	131	\$24,350,000
Unique Assets*	5	\$19,950,000
Shoreline Protection	3.9 km	\$17,702,500
Site Furniture	3727	\$7,492,900
Pedestrian Bridges	101	\$3,508,625
Signs	589	\$2,508,250
Shade Structure	24	\$2,910,000
Fencing	32 km	\$2,715,300
Courts (tennis, basketball)	34	\$2,633,350
Skate park	7	\$2,150,000
Retaining Walls	271	\$1,971,450
Splash pads	5	\$1,250,000
Stairs	6	\$1,100,000
Irrigation (non-sport)	16	\$464,000
Community Garden	4	\$320,000
Leash Free Facilities	4	\$200,000
<b>Subtotal</b>		<b>\$156,066,375</b>

\*Unique Assets include the Brant Street Pier and Shoreline includes the Spencer Smith Seawall.



# Parks & Land Improvements

What do we own and how much is it worth?



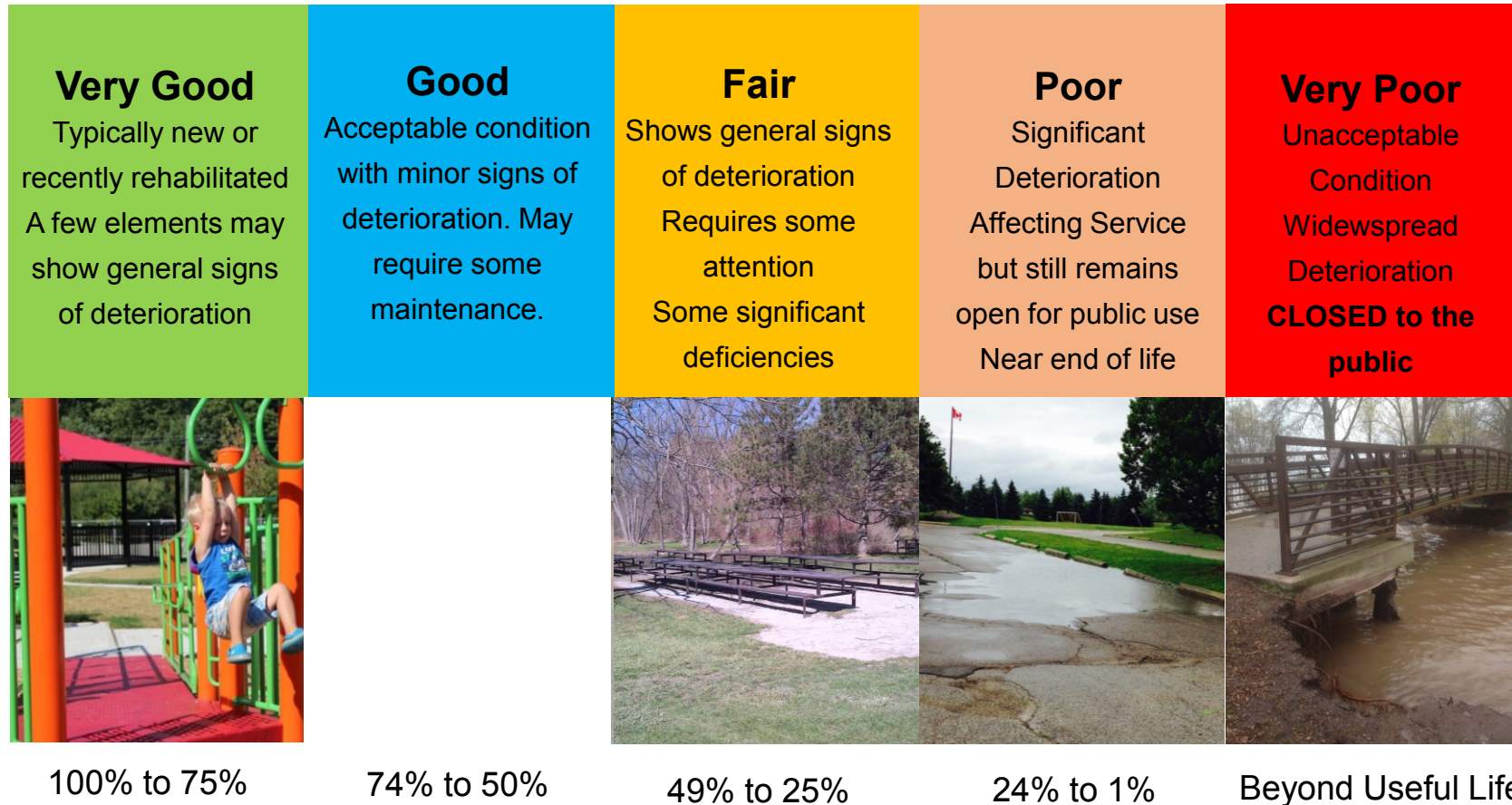
Land Improvements are comprised of park-like assets that are located within the road allowance or on other City property. The land improvement assets including

- ☐ living assets (urban trees),
- ☐ downtown street furniture,
- ☐ facility landscapes (e.g. Tyandga Golf Course) and
- ☐ public art.

The total replacement value of land improvement assets is estimated at **\$44.2 million**. (2016 data)

# Parks & Land Improvements

How do we determine condition?

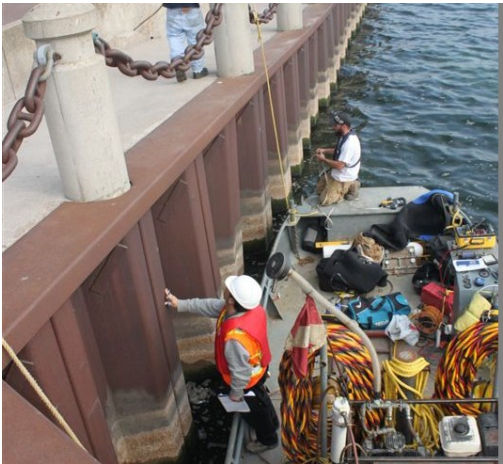


Percentage of Useful Life  
Remaining



# Park & Landscape Improvements

Current Asset Condition (2016 data)



Example: Spencer Smith Seawall Inspection



Asset Type	Condition Grade
Pathway	Good
Sports Fields	Good
Playgrounds	Good
Unique Asset	Good
Shoreline Protection	Good
Site Furniture	Good
Pedestrian Bridges	Fair
Sign	Good
Shade Structure	Good
Fencing	Fair
Courts (tennis, basketball)	Good
Skate park	Very Good
Wall	Fair
Splash Pads	Very Good
Stairs	Good
Community Garden	Very Good
Leash Free	Good









# Facilities & Buildings

What do we own and how much is it worth?



Community Centres – (Brant Hills)



Pools – (Centennial)



Arenas – (Appleby Ice Centre)



Burlington Performing Art Centre

## Asset Management Workshop

# Facilities & Buildings

What do we own and how much is it worth?

Transit Operations Facilities



City Hall



Fire Stations



## Asset Management Workshop



# Facilities & Buildings

What do we own and how much is it worth?

Park Buildings



Libraries



Museum – Ireland House



## Asset Management Workshop

# Facilities & Buildings

What do we own and how much is it worth? (2016 Data)

## Facilities & Buildings - Inventory

Group	# of Assets	Square Metres	% of Total Square Metres	Estimated Replacement Value
Administration and Operations Facilities	14	42,973	28.33%	
Fire Department	9	7,793	5.14%	
Parks & Recreation	59	68,164	44.95%	
Local Boards - Library	4	8,503	5.61%	
Local Boards - Museum	4	1,459	0.96%	
Local Boards - Performing Arts Centre	1	5,860	3.86%	
Local Boards - Art Gallery	1	4,970	3.28%	
Joint Venture Organizations	17	11,947	7.87%	
<b>Total</b>	<b>109</b>	<b>143,876</b>	<b>100.00%</b>	<b>\$547,696,300</b>

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# Facilities & Buildings

How do we determine condition?

## Determining Renewal Needs

- 2010 – Corporate Wide Facility Condition assessment completed
- Data is entered into the VFA Facility Capital Planning Tool
- Detailed Assessments on Major Building Components every 5 Years
- Continuous Condition data updating – Completed Renewal Projects



## Asset Management Workshop

# Facilities & Buildings

How do we determine condition?

## Current Asset Condition – Facility Condition Index (FCI)

**FCI** is the de facto industry standard for benchmarking building condition across a portfolio of buildings.






$$\mathbf{FCI} = \frac{\text{Sum of Renewal Needs in a given Period of Time (5 years)}}{\text{Current Replacement Value (CRV)}}$$

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# Facilities & Buildings

How do we determine condition?

<b>Very Good</b> Typically new or recently rehabilitated  <b>FCI 0.00 – 0.05</b>	<b>Good</b> Acceptable condition with minor signs of deterioration.  <b>FCI 0.06 – 0.10</b>	<b>Fair</b> Shows general signs of deterioration Some significant deficiencies  <b>FCI 0.11 – 0.15</b>	<b>Poor</b> Significant Deterioration Affecting Service  <b>FCI 0.16 – 0.20</b>	<b>Very Poor</b> Unacceptable Condition High Risk of Building System Failure  <b>FCI &gt;0.20</b>
				
<b>Haber Recreation</b>	<b>Brant Hills</b>	<b>Fire Stn #5</b>	<b>City Hall</b>	<b>Skyway Arena</b>

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# Facilities & Buildings

Asset Condition (2016 Data)

<b>Very Good</b> Typically new or recently rehabilitated  <b>FCI 0.00 – 0.05</b>	<b>Good</b> Acceptable condition with minor signs of deterioration.  <b>FCI 0.06 – 0.10</b>	<b>Fair</b> Shows general signs of deterioration Some significant deficiencies  <b>FCI 0.11 – 0.15</b>	<b>Poor</b> Significant Deterioration Affecting Service  <b>FCI 0.16 – 0.20</b>	<b>Very Poor</b> Unacceptable Condition High Risk of Building System Failure  <b>FCI &gt;0.20</b>
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Condition Grade	Buildings	% by Square Metres
Very Good	25	33.2%
Good	13	9%
Fair	15	14.1%
Poor	15	20%
Very Poor	41	23.7%
<b>Total</b>	<b>109</b>	<b>100.00%</b>

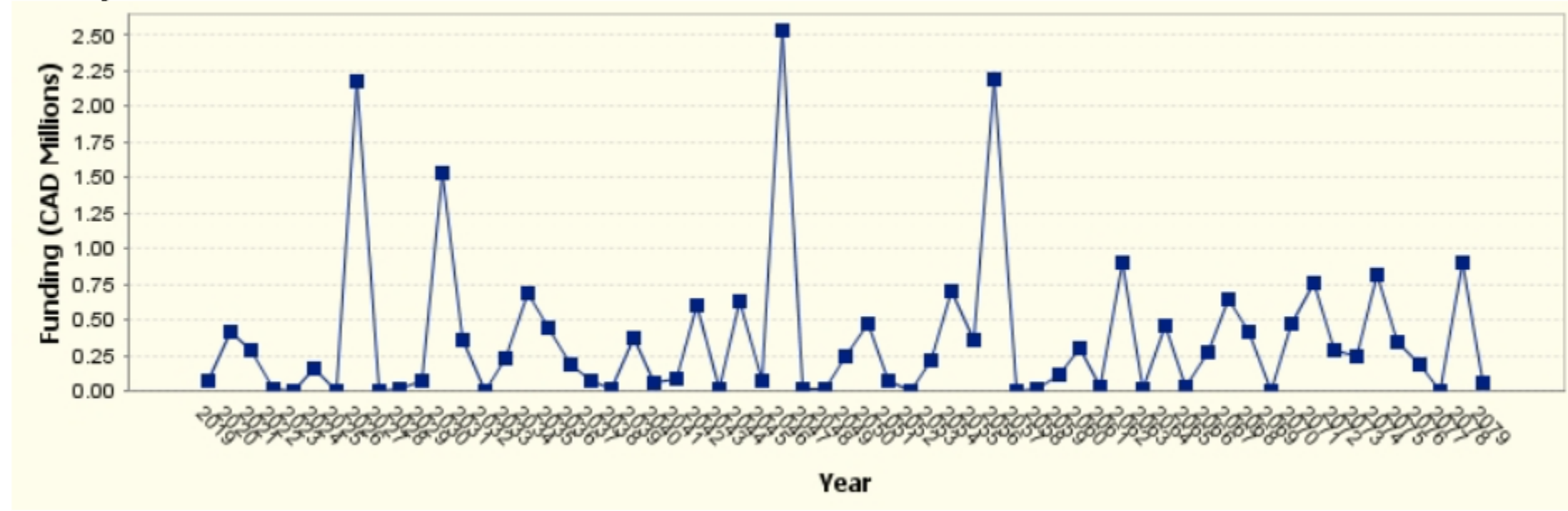
## Asset Management Workshop



# Facilities & Buildings

Asset Life Cycle Modeling

Facility Renewal Forecast



## Asset Management Workshop

# Facilities & Buildings

What do we do first?

## Prioritizing Renewal Needs

### Prioritizing Renewal Needs

- Pair Wise Analysis on Building Systems
- Based on Risk and Consequence of Failure

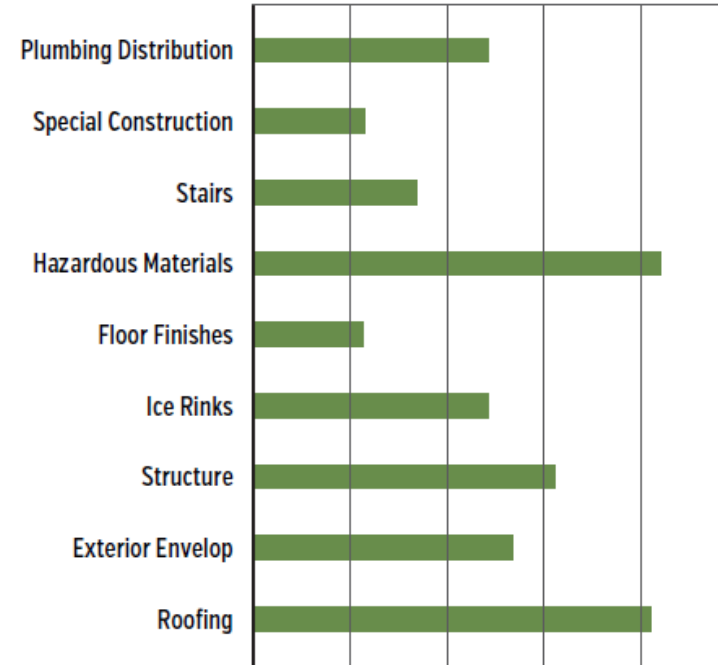
Eg. Interior Painting VS. Replacing a Roof



VS.



Less Importance → More



## Asset Management Workshop



# Facilities & Buildings

What do we do first?

## Prioritizing Renewal Needs

Calculated Rank ▲	Calculated Score	Calculated Fiscal Year	Override	Estimated Cost (CAD)	Requirement Prime System
1	93	2019		\$1,725	D5092-Emergency Light and Power Systems
2	89	2019		\$10,000	D5038-Security and Detection Systems
3	89	2019		\$7,350	D5037-Fire Alarm Systems
4	89	2019		\$18,552	B30-Roofing
5	89	2019		\$51,938	B30-Roofing
6	89	2019		\$56,272	B30-Roofing
7	89	2019		\$188,484	B30-Roofing
8	88	2019		\$26,600	D5022-Lighting Equipment
9	88	2019		\$1,849	B1015-Exterior Stairs and Fire Escapes
10	86	2019		\$6,897	D5022-Lighting Equipment

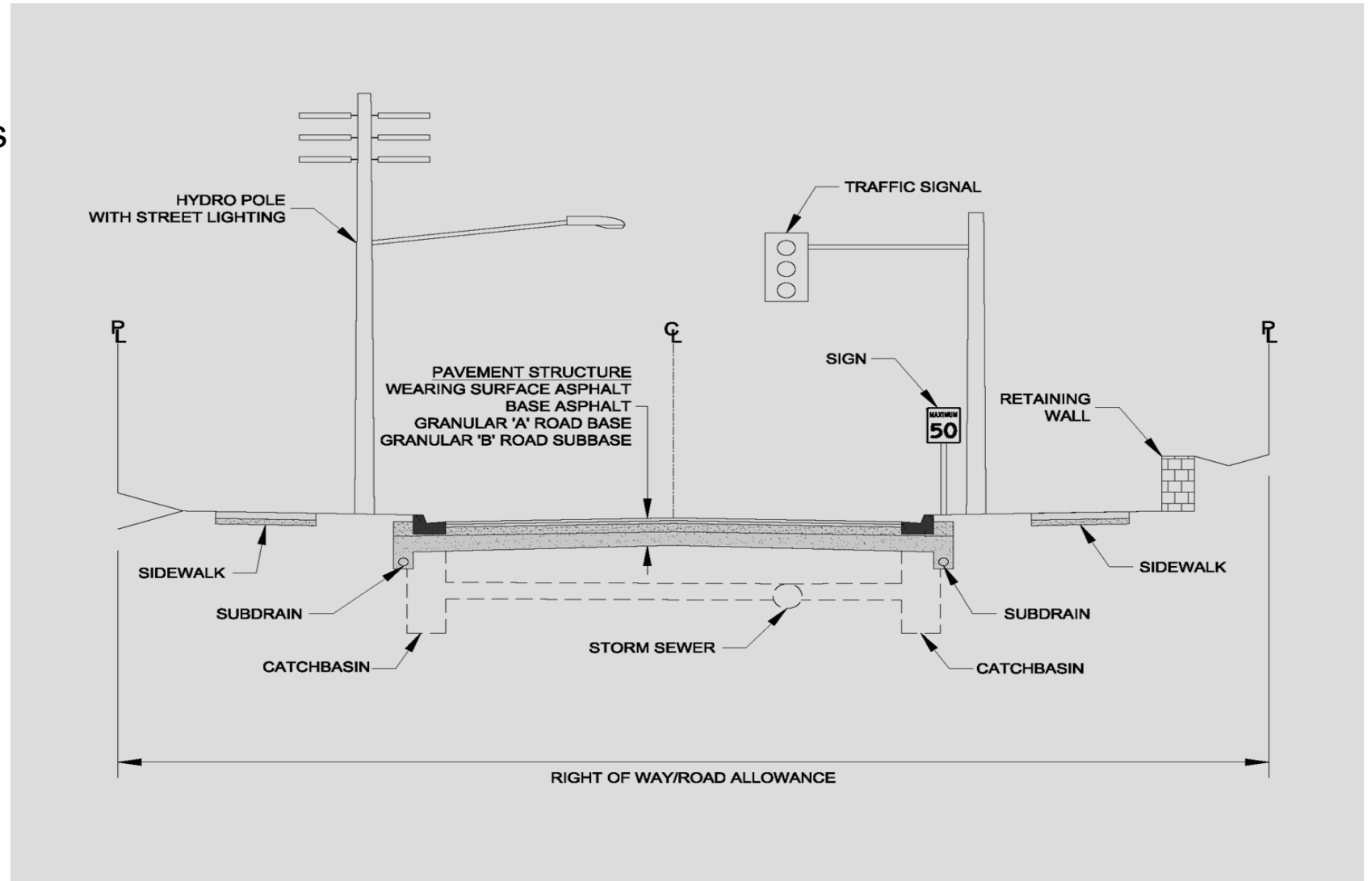
## Asset Management Workshop

# Roadways

What do we own and Where is it?

•Roadways category includes:

- Pavement and Curbs
- Bridges and Large Culverts
- Storm sewers
- Sidewalks
- Traffic Signals
- Street Lights
- Retaining Walls
- Noise Walls





# Roadways

Roadways – What do we own and Where is it?

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# Roadways

What Condition is it in?

- Pavements:
  - Pavement management system implemented in 1995
  - Road segments mapped in GIS
  - Contracted condition assessments every 5 years (ARAN Vehicle)
  - Annual spring road tours to validate condition deterioration





# Roadways

What Condition is it in?

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- Bridges & Culverts:
  - Inventory data for Bridges & Culverts is managed in the GIS
  - Structures inspected every 2 years as per provincial legislation (OSIM)
  - Inspections generate a Bridge Condition Index (100 = Excellent, 0 = Failed)



# Roadways

What condition is it in?

- Storm Sewers
  - Storm sewer lines and structures mapped in GIS
  - Preventative CCTV inspections, pipes inspected on 15 year cycle
  - Inspections generate a PipeScore
  - Thematically visualized in GIS
  - Inspection reports linked to Storm lines in GIS





# Roadways

What condition is it in?

- Pedestrian network
  - Inventory managed in GIS
  - Condition assessment by Roads and Parks Maintenance
  - Tablets used to collect point defects
- Other Linear Assets (Traffic Signals, Street Lights, Guiderails, etc.)
  - Inventory managed in GIS
  - Condition assessments by Transportation Operations





# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

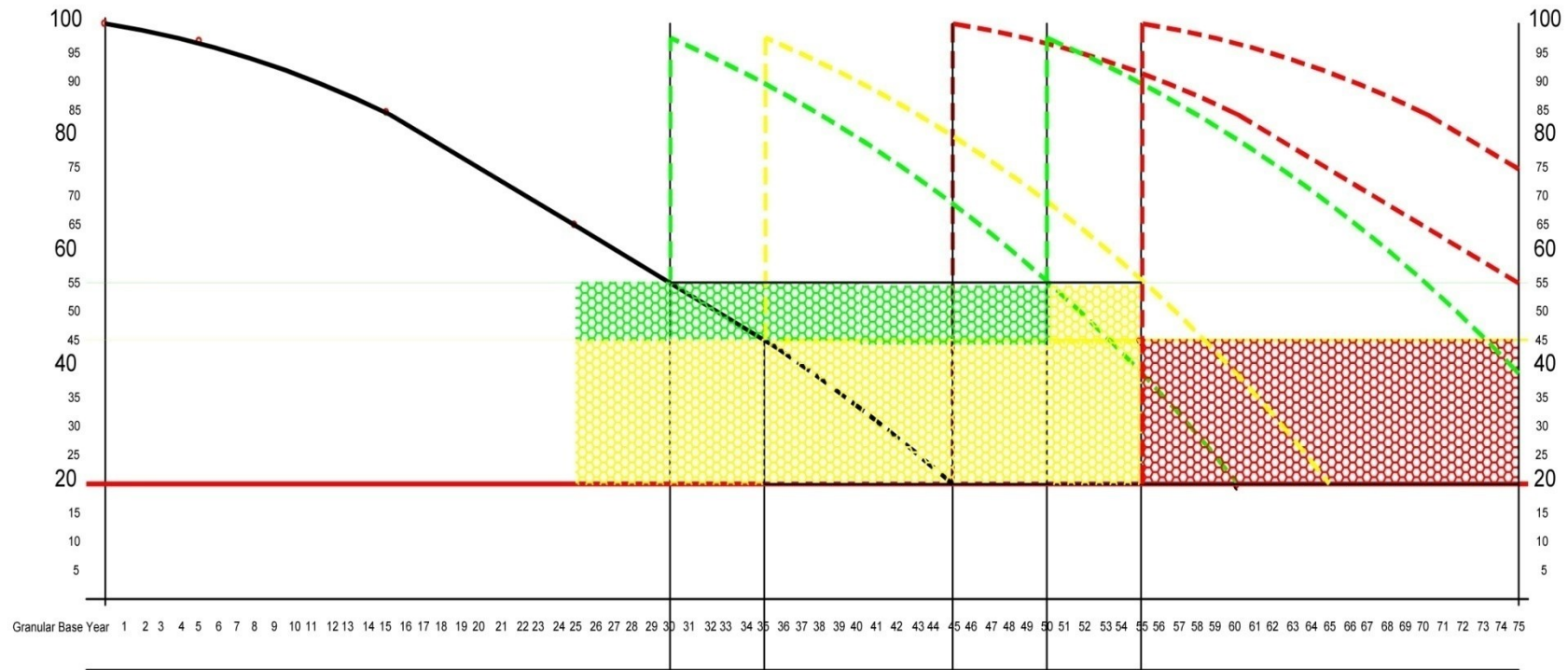
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- The Decision Support acts as the planning level tool designed to map out the life cycle costs for all Linear assets
- City staff designed custom life cycle events
- Establish cost for the rehabilitation treatments
- 60 year prediction horizon
- Utilize source system data
- “Made in Burlington” solution
- Established in house expertise
- Outputs are meaningful and can be relied upon to make financial decisions.

# Asset Life Cycle Modeling

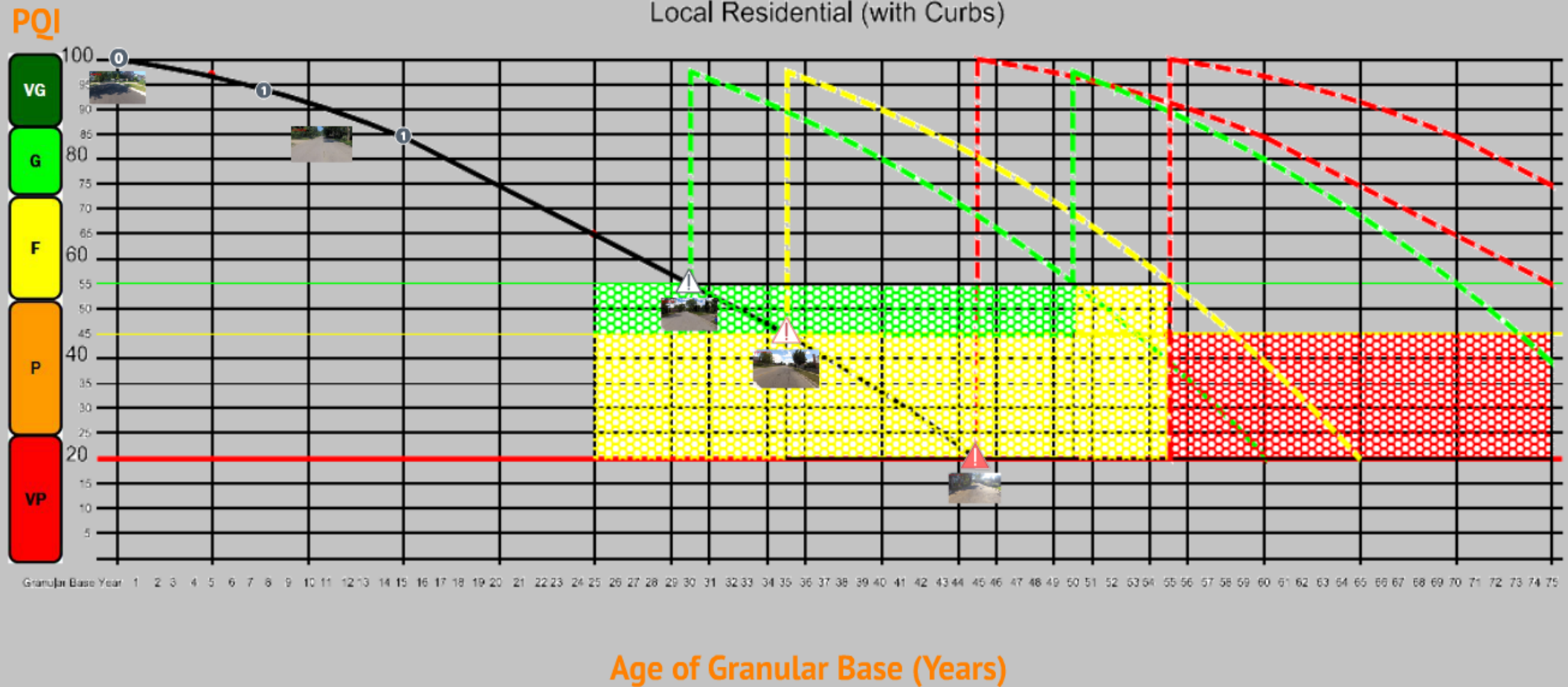
Roadways – Event, Timing, Cost?

RC01 - Local Residential (with curbs)



# Asset Life Cycle Modeling

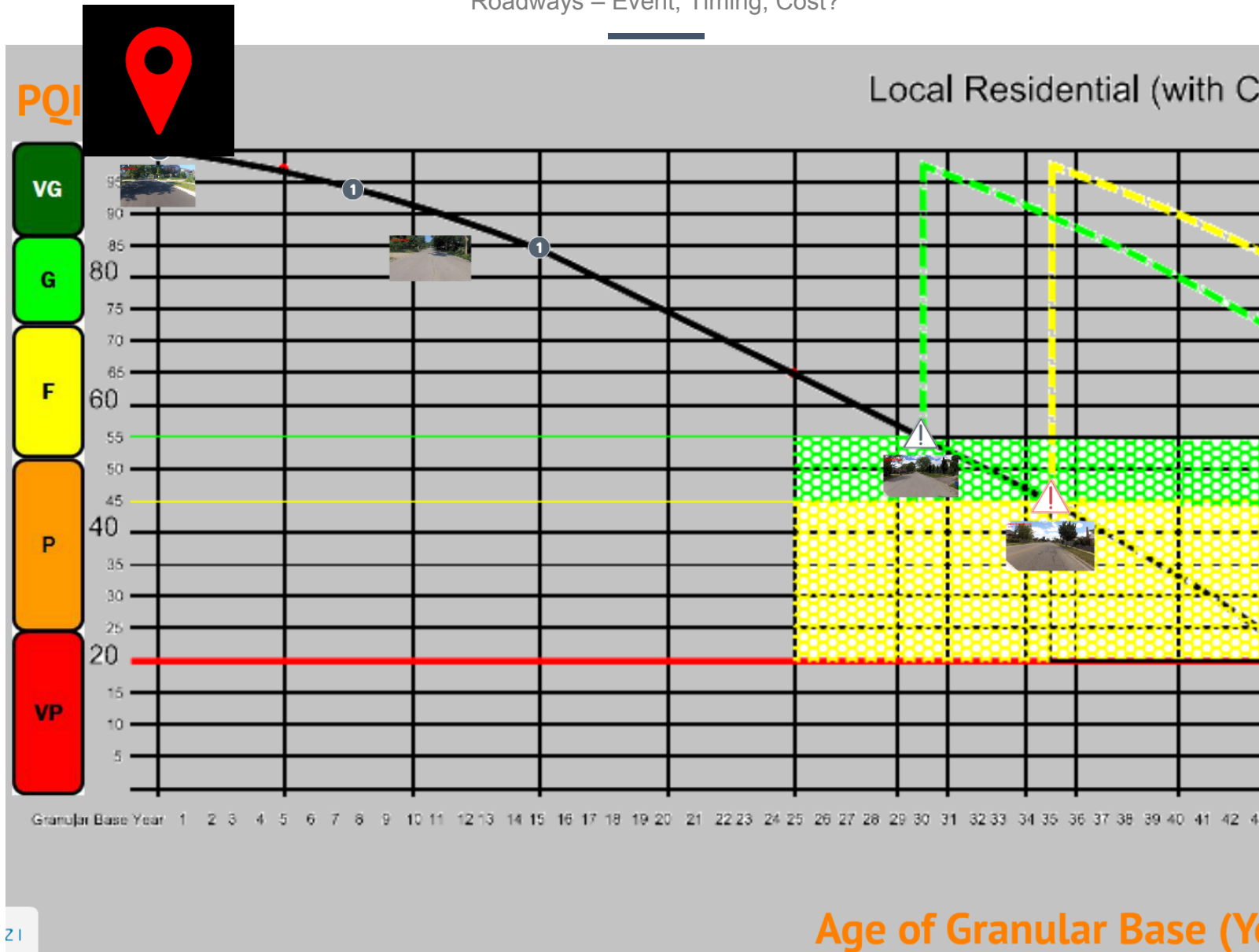
Roadways – Event, Timing, Cost?





# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

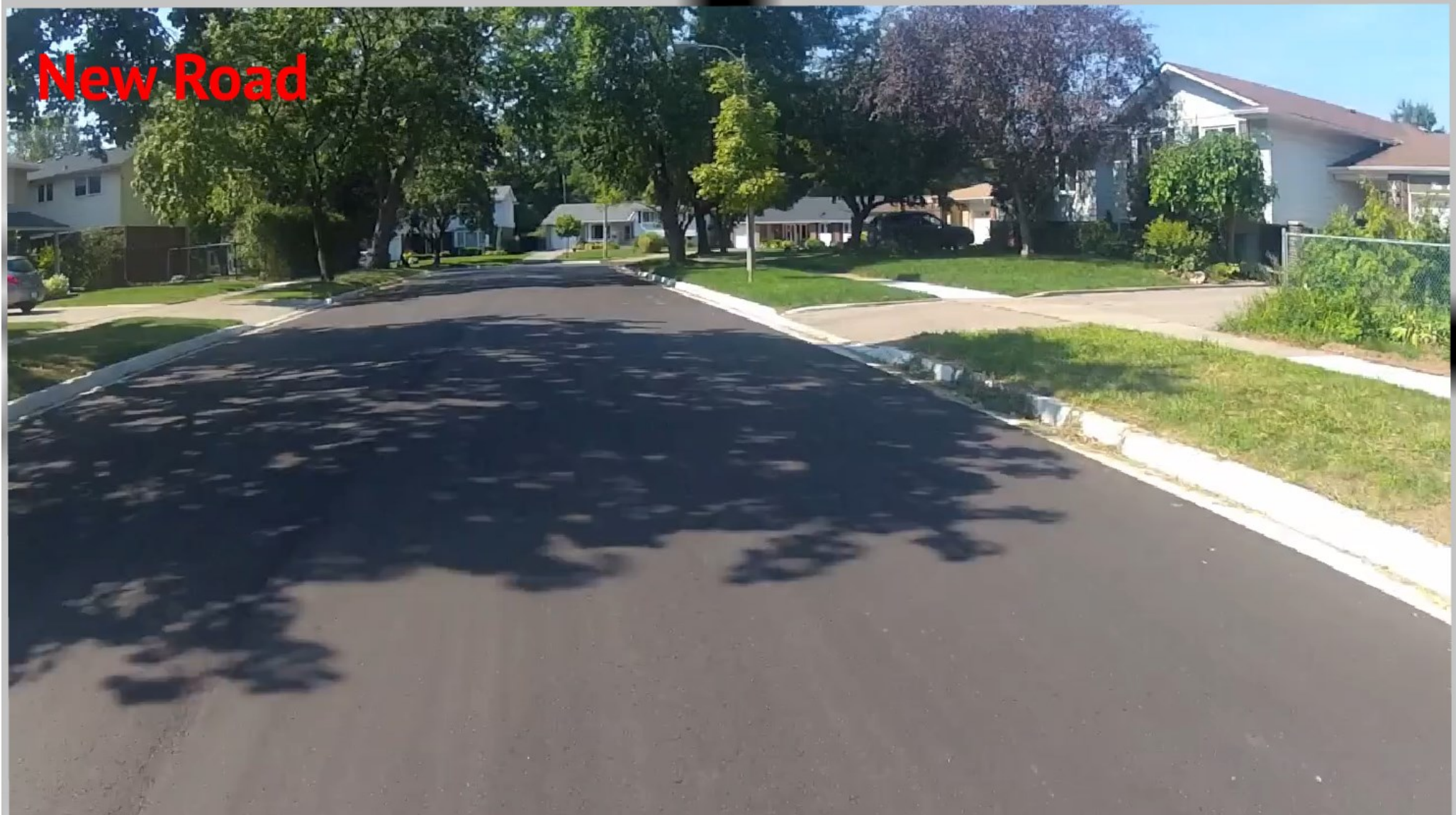


# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

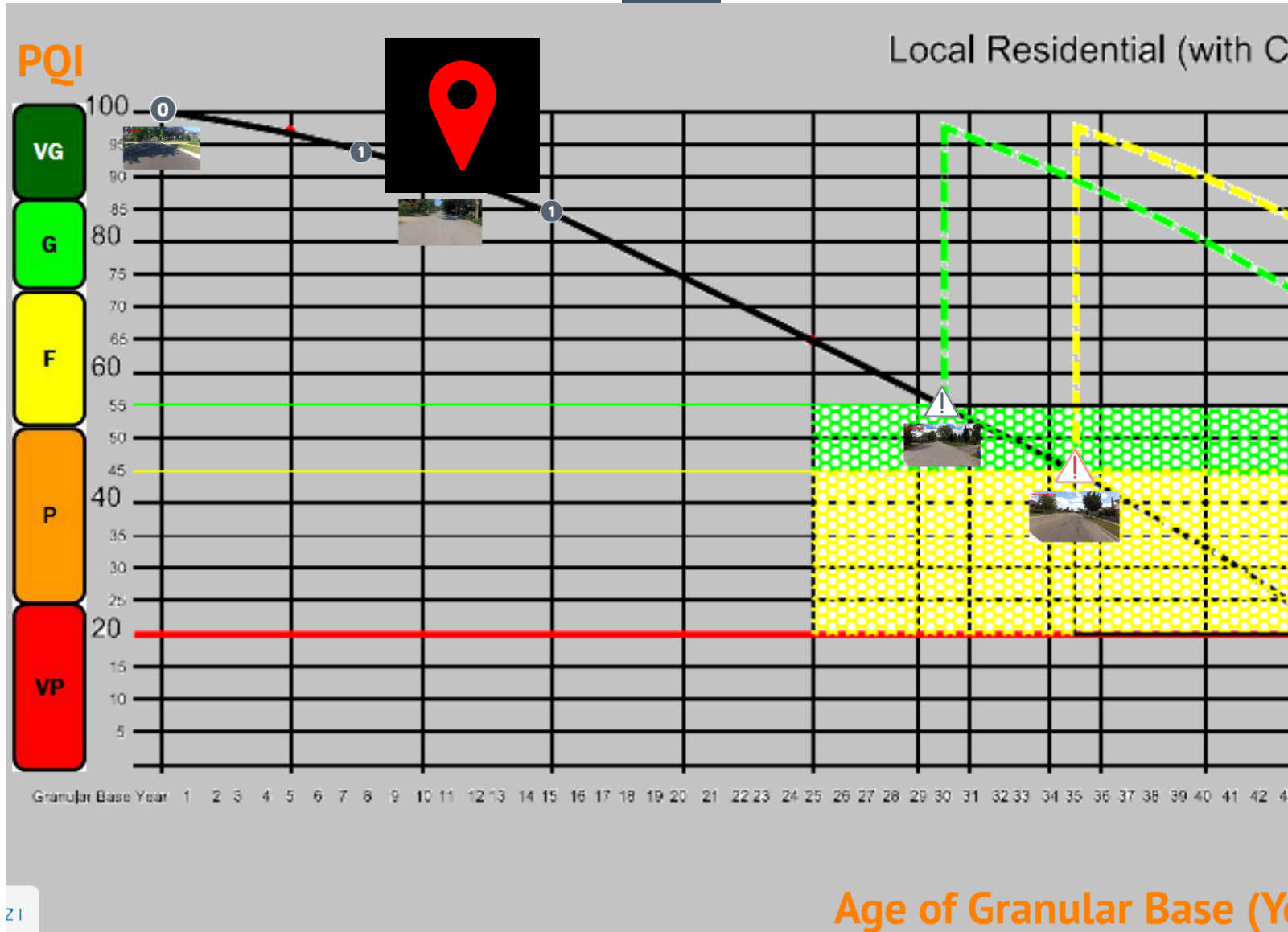
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**New Road**



# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?





# Asset Life Cycle Modeling

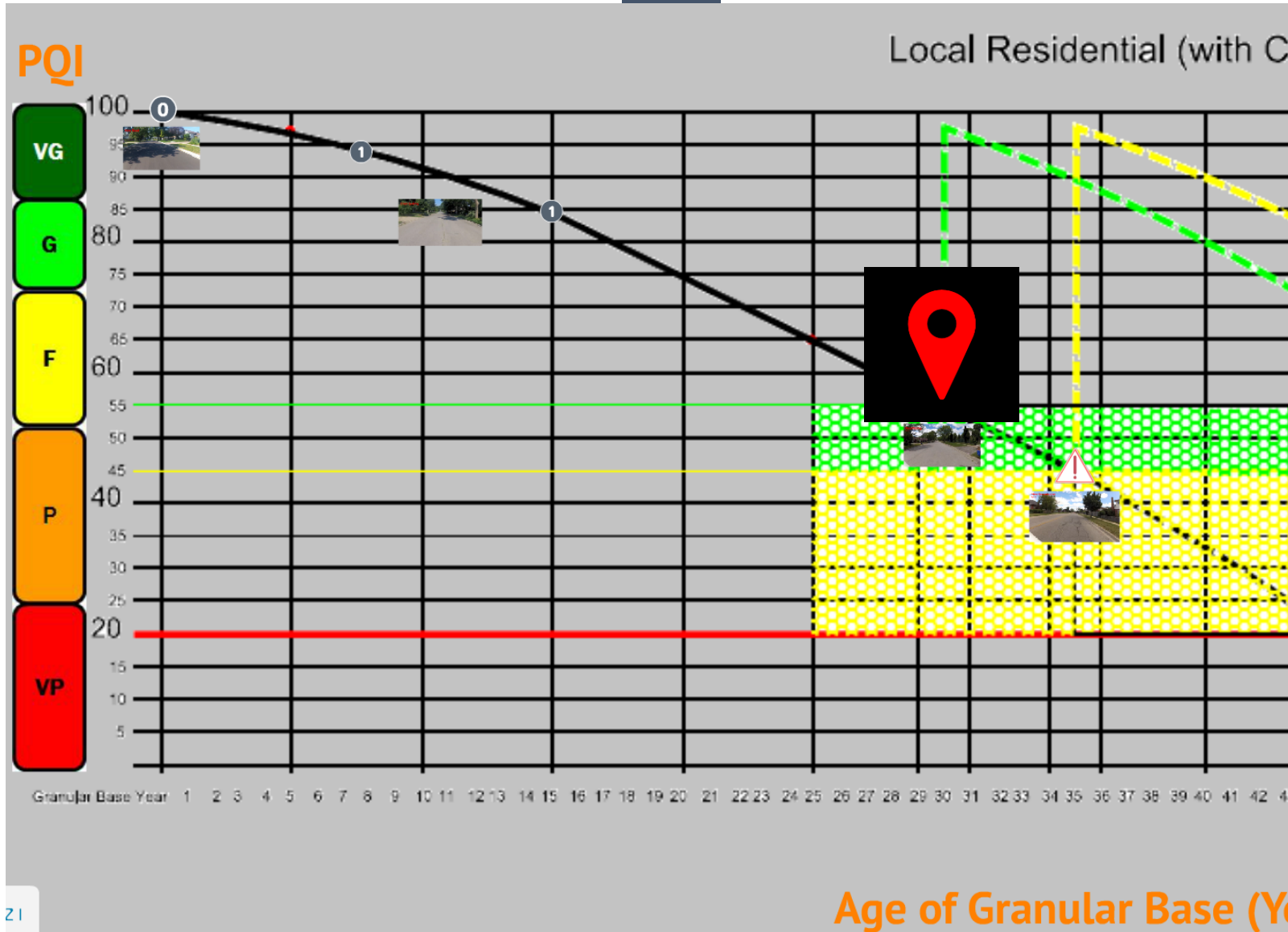
Roadways – Event, Timing, Cost?

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# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?





# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

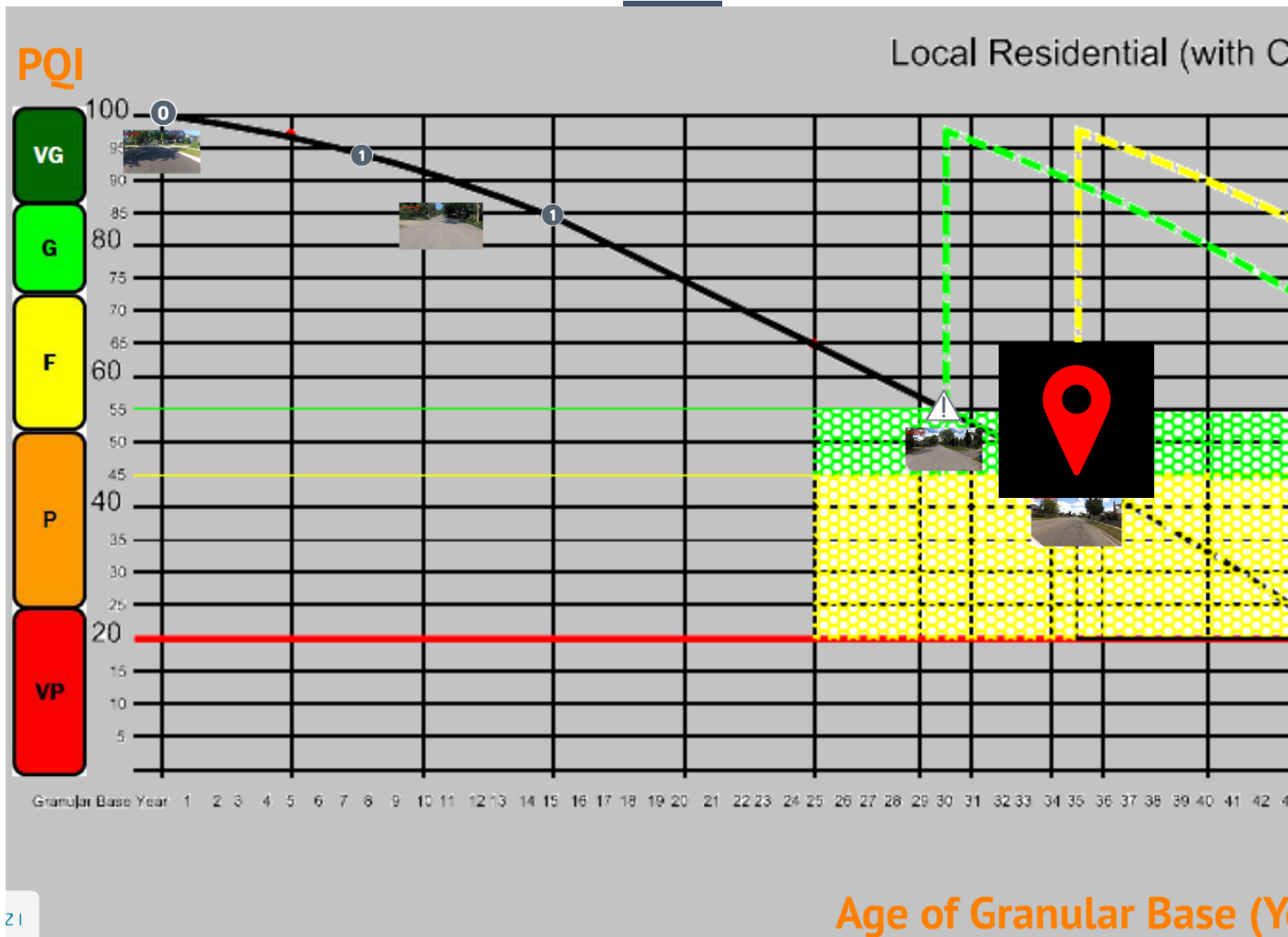
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**Resurfacing**  
PQI: 55

# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?





# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

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**Minor Reconstruction**

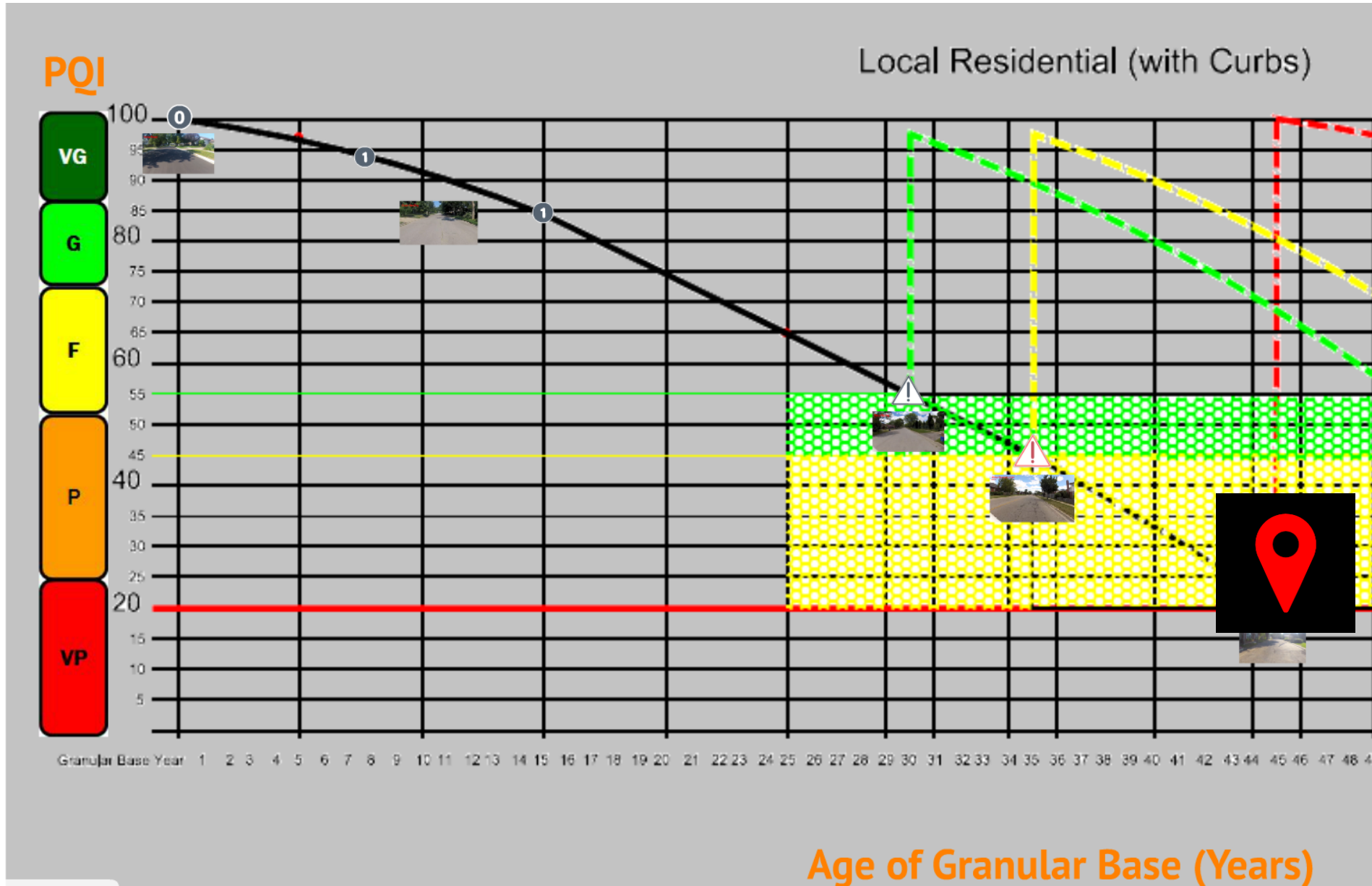
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# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?





# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

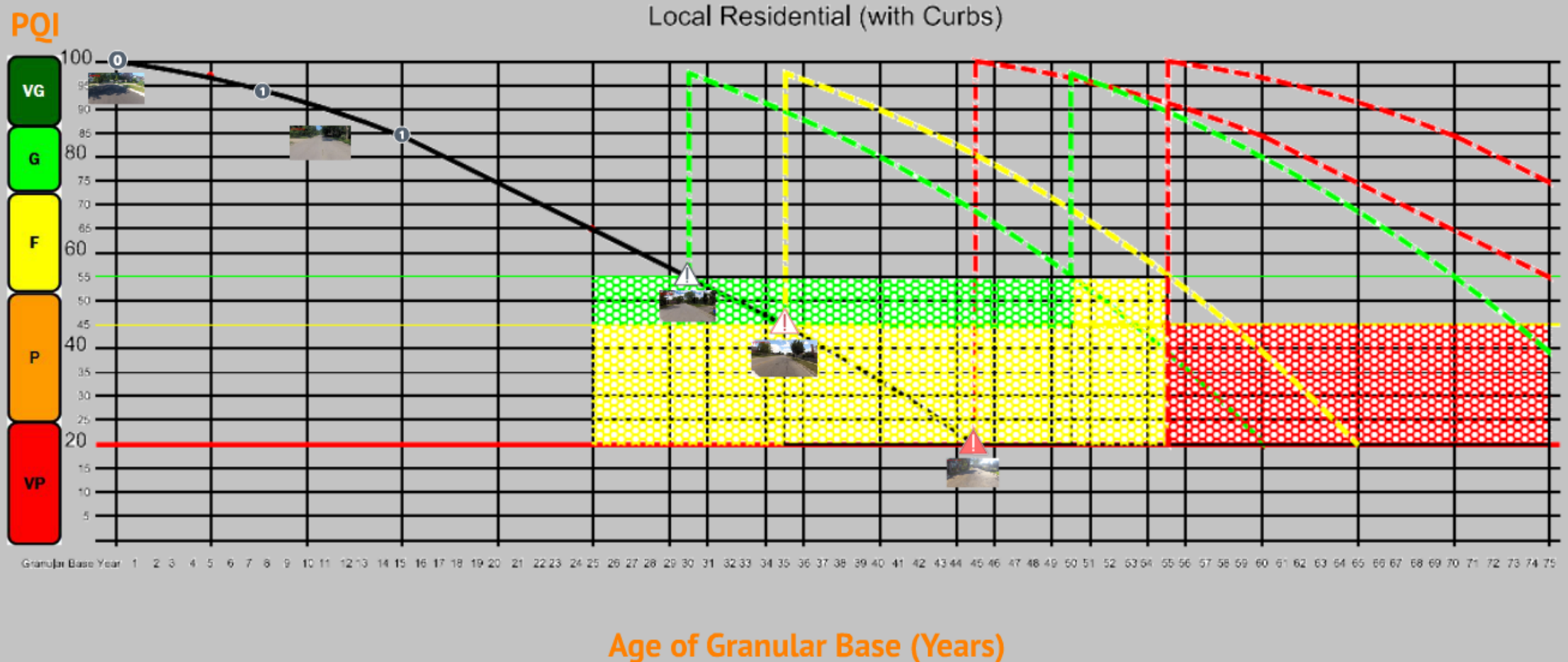
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# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?





# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?



# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

Years	Functional Class	Road Section	Cost	Event Name
2018	Arterial (with curb)	0000013700 - FAIRVIEW ST from APPLEBY LINE to END	\$2,107.4	RC10: Crack Seal 1
2018	Arterial (with curb)	0000003000 - NORTH SERVICE RD from WATERDOWN RD to 300m EAST OF W...	\$641.65	RC10: Crack Seal 1
2018	Arterial (with curb)	0000101701 - WATERDOWN RD from MASONRY CRT to SOUTH OF CNR	\$57,548.4	RC10: Resurfacing
2018	Arterial (with curb)	0000007600 - JAMES ST from BRANT ST to MARTHA ST	\$127,704.5	RC10: Resurfacing
2018	Arterial Composite Pavement	0000000301 - PLAINS RD (W) from HOWARD RD to WATERDOWN RD	\$253,803.2	RC12: Resurfacing (1 Lift 50mm)
2018	Arterial (with curb)	0000001701 - NEW ST from WALKER'S LINE to SHOREACRES RD	\$443,145	RC10: Resurfacing
2018	Arterial (with curb)	0000101705 - WATERDOWN RD from CRAVEN AVE to PANIN RD	\$758.5	RC10: Crack Seal 1
2018	Arterial Composite Pavement	0000000300 - PLAINS RD (W) from BOOTHMAN AVE to HOWARD RD	\$271,932	RC12: Resurfacing (1 Lift 50mm)
2018	Arterial (with curb)	0000013401 - FAIRVIEW ST from GUELPH LINE to CUMBERLAND AVE	\$230,454	RC10: Resurfacing
2018	Arterial (with curb)	0000101710 - WATERDOWN RD from SOUTH OF CNR to GO STATION ACCESS...	\$389.5	RC10: Crack Seal 1
2019	Arterial (no curb)	0000705301 - CEDAR SPRINGS RD from 150m S OF WATSON DR to NO. 1 SIDE...	\$658,812	RC11: Resurfacing (2 Lifts 100mm)
2019	Arterial (with curb)	0000002000 - NEW ST from HAMPTON HEATH RD to BURLOAK DR	\$302,157	RC10: Resurfacing
2019	Arterial (with curb)	0000006200 - MAPLE AVE from LAKESHORE RD to LOCKHART RD	\$252,857.7	RC10: Resurfacing
2019	Arterial (with curb)	0000006400 - MAPLE AVE from (N) BEND IN ROAD to FAIRVIEW ST	\$254,336.4	RC10: Resurfacing
2020	Arterial (with curb)	0000013402 - FAIRVIEW ST from CUMBERLAND AVE to WOODVIEW RD	\$89,621	RC10: Resurfacing
2020	Arterial (with curb)	0000001702 - NEW ST from SHOREACRES RD to BRECKONWOOD RD	\$388,275	RC10: Resurfacing
2020	Arterial (with curb)	0000011000 - APPLEBY LINE from LAKESHORE RD to SPRUCE AVE	\$174,052.6	RC10: Resurfacing
2020	Arterial (with curb)	0000013100 - FAIRVIEW ST from MAPLE AVE to CNR	\$1,404.25	RC10: Crack Seal 1

# Asset Life Cycle Modeling

Roadways – Event, Timing, Cost?

