

2020

CANADIAN NATIONAL BENCHMARKING INITIATIVE

Roads Framework



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Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit
A Reliable Road Network	Extent of Network Cleaned	Hardtop Surfaces	All Roads	Regular Cleaning		%
				Seasonal Leaf Collection Program		%
			Arterials & Collectors	Regular Cleaning		%
				Seasonal Leaf Collection Program		%
			Locals	Regular Cleaning		%
				Seasonal Leaf Collection Program		%
	Lanes Closures (Days Closed x Lanes-km Involved) / (365 Days x Total Lane-km)	All Surfaces	All Roads	Planned		%
				Unplanned		%
	Signal Outages	All Surfaces	All Roads	Due to Power Outage		# / Total Number of Signalized Traffic Intersections
				Due to Signal Failure		# / Total Number of Signalized Traffic Intersections
	Winter Labour Hours	Hardtop Surfaces	All Roads	Ice Cutting		Hours / Total Lane-km
				Other		Hours / Total Lane-km
				Roadway Preparation		Hours / Total Lane-km
				Sanding / Salting		Hours / Total Lane-km
Snow Removal (Loading)					Hours / Total Lane-km	
Snowplowing					Hours / Total Lane-km	
Sweeping (Spring Clean-Up)					Hours / Total Lane-km	
Winter Road Patrol		Hours / Total Lane-km				
Manage Customer Expectations	Public Education / Engagement Costs	All Surfaces	All Roads	Public Education / Engagement Costs		\$ / Total Population
	Requests for Capital Construction	All Surfaces	All Roads	Requests for Capital Construction		# / Total Lane-km
	Requests for O&M (Non Winter Specific)	All Surfaces	All Roads	Other		# / Total Lane-km
				Potholes		# / Total Lane-km
				Roadway Flooding & Ponding		# / Total Lane-km
				Sweeping		# / Total Lane-km
	Requests for O&M (Winter Specific)	Hardtop Surfaces	All Roads	Other		# / Total Lane-km
				Sanding / Salting		# / Total Lane-km
Snow Clearing					# / Total Lane-km	

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Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit	
Optimize the Transportation System Condition	Avg. Road Roughness of Network	Asphalt Surfaces	Arterials & Collectors	Avg. Road Roughness of Network		Avg. IRI	
			Lanes	Avg. Road Roughness of Network		Avg. IRI	
			Locals	Avg. Road Roughness of Network		Avg. IRI	
	Avg. Road Roughness when Reconstructed	Asphalt Surfaces	Arterials & Collectors	Avg. Road Roughness when Reconstructed		Avg. IRI	
			Lanes	Avg. Road Roughness when Reconstructed		Avg. IRI	
			Locals	Avg. Road Roughness when Reconstructed		Avg. IRI	
	Avg. Road Roughness when Rehabilitated (Major)	Asphalt Surfaces	Arterials & Collectors	Avg. Road Roughness when Rehabilitated (Major)		Avg. IRI	
			Lanes	Avg. Road Roughness when Rehabilitated (Major)		Avg. IRI	
			Locals	Avg. Road Roughness when Rehabilitated (Major)		Avg. IRI	
	Avg. Timing of Road Reconstruction	Asphalt Surfaces	Arterials & Collectors	Avg. Timing of Road Reconstruction		Avg. Years	
			Lanes	Avg. Timing of Road Reconstruction		Avg. Years	
			Locals	Avg. Timing of Road Reconstruction		Avg. Years	
	Avg. Timing of Road Rehabilitation (Major)	Asphalt Surfaces	Arterials & Collectors	Avg. Timing of Road Rehabilitation (Major)		Avg. Years	
			Lanes	Avg. Timing of Road Rehabilitation (Major)		Avg. Years	
			Locals	Avg. Timing of Road Rehabilitation (Major)		Avg. Years	
	Perceived Condition of Network		Asphalt Surfaces	All Roads	Fair		%
					Poor / Very Poor		%
					Very Good / Good		%
				Arterials & Collectors	Fair		%
					Poor / Very Poor		%
					Very Good / Good		%
				Lanes	Fair		%
					Poor / Very Poor		%
					Very Good / Good		%
Locals				Fair		%	
				Poor / Very Poor		%	
				Very Good / Good		%	

Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit
Optimize the Transportation System Condition	Total Network Rehabilitated (Major) or Reconstructed	Asphalt Surfaces	All Roads	Cold In-Place Recycling		%
				Full-Depth Reclamation / Pulverizing		%
				Hot In-Place Recycling		%
				Mill & Overlay / Inlay		%
				Remove & Replace		%
				Total Reconstruction		%
			Arterials & Collectors	Cold In-Place Recycling		%
				Full-Depth Reclamation / Pulverizing		%
				Hot In-Place Recycling		%
				Mill & Overlay / Inlay		%
				Remove & Replace		%
				Total Reconstruction		%
			Lanes	Cold In-Place Recycling		%
				Full-Depth Reclamation / Pulverizing		%
				Hot In-Place Recycling		%
				Mill & Overlay / Inlay		%
				Remove & Replace		%
				Total Reconstruction		%
			Locals	Cold In-Place Recycling		%
				Full-Depth Reclamation / Pulverizing		%
				Hot In-Place Recycling		%
				Mill & Overlay / Inlay		%
				Remove & Replace		%
				Total Reconstruction		%
Protect the Environment	Electricity Consumed from Charging Stations	All Surfaces	All Roads	Electricity Consumed from Charging Stations		kWh / Total Number of Stations
	Network with Permeable Pavement	All Surfaces	All Roads	Network with Permeable Pavement		%
	Number of Electric Charging Stations	All Surfaces	All Roads	Number of Electric Charging Stations		# / 1,000 Population
	Quantity of Bike Shares	All Surfaces	All Roads	Quantity of Bike Shares		# of Bikes / 1,000 Population
	Quantity of Car Shares	All Surfaces	All Roads	Quantity of Car Shares		# of Cars / 1,000 Population
	Use of Non-Chloride Anti-Icing Products	Hardtop Surfaces	All Roads	Use of Non-Chloride Anti-Icing Products		Volume (m ³) / Total Lane-km
	Use of Recycled Content	Asphalt Surfaces	All Roads	Use of Recycled Content		Tonnes (metric) / Total Lane-km Paved
	Use of Salt / Sand	Hardtop Surfaces	All Roads	Anti/De-Icing Products		Volume (m ³) / Total Lane-km
Salt					Volume (m ³) / Total Lane-km	
Sand					Volume (m ³) / Total Lane-km	

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Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit	
Provide a Financially Sustainable Transportation System	Capital Expenditures	All Surfaces	All Roads	Reconstruction		\$ / Total Lane-km	
				Rehabilitation		\$ / Total Lane-km	
			Arterials & Collectors	Reconstruction		\$ / Total Lane-km	
				Rehabilitation		\$ / Total Lane-km	
			Locals & Lanes	Reconstruction		\$ / Total Lane-km	
				Rehabilitation		\$ / Total Lane-km	
	Capital Work Contracted	All Surfaces	All Roads	Capital Work Contracted		%	
	Cost Allocation (Excl. Winter Related)	All Surfaces	All Roads	Capital		%	
				O&M		%	
				Other		%	
	Cost Allocation (Incl. Winter Related)	All Surfaces	All Roads	Capital		%	
				O&M		%	
				Other		%	
	Funding Source Breakdown	All Surfaces	All Roads	External	Grants		%
					Loans from Gov. Orgs.		%
					Loans from Private Orgs.		%
					Other		%
				Internal	User Fees		%
					Development Charges		%
					General Revenue		%
					Interdivisional Transfer		%
	Other		%				
	O&M Work Contracted (Excl. Winter Related)	All Surfaces	All Roads	O&M Work Contracted (Excl. Winter Related)		%	
	Total Expenditures (Excl. Winter Related)	All Surfaces	All Roads	Capital	Reconstruction		\$ / Total Lane-km
					Rehabilitation		\$ / Total Lane-km
				O&M	O&M		\$ / Total Lane-km
					Other		\$ / Total Lane-km
	Total Work Contracted (Excl. Winter Related)	All Surfaces	All Roads	Total Work Contracted (Excl. Winter Related)		%	
Winter O&M Work Contracted	Hardtop Surfaces	All Roads	Winter O&M Work Contracted		%		
Winter Related Expenditures	Hardtop Surfaces	All Roads	Ice Cutting		\$ / Total Lane-km		
			Other		\$ / Total Lane-km		
			Roadway Preparation		\$ / Total Lane-km		
			Sanding / Salting		\$ / Total Lane-km		
			Snow Removal (Loading)		\$ / Total Lane-km		
			Snowplowing		\$ / Total Lane-km		
			Sweeping (Spring Clean-Up)		\$ / Total Lane-km		
			Winter Road Patrol		\$ / Total Lane-km		

Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit
Provide a Mobile and Accessible Transportation System	Breakdown of Pedestrian Signals / Crossings	All Surfaces	All Roads	Intersection Pedestrian Signals (IPS)		%
				Mid-Block Pedestrian Signals (MPS)		%
				Pedestrian Crossovers (PXO)	Level 1 Type A (Ontario Only)	%
					Level 2 Type B (Ontario Only)	%
					Level 2 Type C (Ontario Only)	%
	Intersections with Bike Activated Signals	All Surfaces	All Roads	Intersections with Bike Activated Signals		%
	Intersections with Pedestrian Activated Signals	All Surfaces	All Roads	Audible		%
				Non-Audible		%
	Network with Bike Infrastructure	Hardtop Surfaces	All Roads	Painted Lane		%
				Protected Lane		%
				Shared Lane		%
			Arterials & Collectors	Painted Lane		%
				Protected Lane		%
				Shared Lane		%
			Locals	Painted Lane		%
				Protected Lane		%
				Shared Lane		%
	Network with Sidewalks	Hardtop Surfaces	All Roads	Both Sides		%
				One Side		%
			Arterials & Collectors	Both Sides		%
One Side					%	
Locals			Both Sides		%	
			One Side		%	
Percent of Intersection Legs Compliant with AODA (Ontario Only)	All Surfaces	All Roads	Percent of Intersection Legs Compliant with AODA (Ontario Only)		%	

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Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit
Provide a Safe Transportation System	Accident Rate	All Surfaces	All Roads	Jan-April & Nov-Dec	Driver Fatality Rate	# / Total Lane-km
					Driver Injury Rate	# / Total Lane-km
					Other	# / Total Lane-km
					Pedestrian / Cyclist Only Collision Rate	# / Total Lane-km
					Property Damage Only (PDO) Rate	# / Total Lane-km
				May-Oct	Driver Fatality Rate	# / Total Lane-km
					Driver Injury Rate	# / Total Lane-km
					Other	# / Total Lane-km
					Pedestrian / Cyclist Only Collision Rate	# / Total Lane-km
					Property Damage Only (PDO) Rate	# / Total Lane-km
Municipality Responsible Claim Volume	All Surfaces	All Roads	Escalated	Injury	# / Total Lane-km	
				Motor Vehicle Damage	# / Total Lane-km	
				Real Property Damage	# / Total Lane-km	
			Rejected	Injury	# / Total Lane-km	
				Motor Vehicle Damage	# / Total Lane-km	
				Real Property Damage	# / Total Lane-km	
Provide a Safe Workplace and a Productive and Skilled Workforce	Distribution of Workforce by Age	All Surfaces	All Roads	<= 30 yrs.	%	
				31-40 yrs.	%	
				41-50 yrs.	%	
				51-60 yrs.	%	
				> 60 yrs.	%	
	Lost Time due to Worker Accidents	All Surfaces	All Roads	Lost Time due to Worker Accidents		Hours / Total Field Hours Paid
	Number of Worker Accidents	All Surfaces	All Roads	Number of Worker Accidents		# / 1,000 Field Hours Paid
	Staff Resources by Population	All Surfaces	All Roads	Administrative / Clerical		FTEs / 1,000 Population
				Field Staff		FTEs / 1,000 Population
				Supervisor / Management		FTEs / 1,000 Population
Technical / Engineering					FTEs / 1,000 Population	

Goal	KPI	Applicable Surface Type	Applicable Road Type	Breakdown 1	Breakdown 2	KPI Unit
Provide a Safe Workplace and a Productive and Skilled Workforce	Staff Resources by Road Network Size	All Surfaces	All Roads	Administrative / Clerical		FTEs / Total Lane-km
				Field Staff		FTEs / Total Lane-km
				Supervisor / Management		FTEs / Total Lane-km
				Technical / Engineering		FTEs / Total Lane-km
	Training Hours	All Surfaces	All Roads	Training Hours		Hours / Total Field Hours Paid
	Unavailability of Field Labour	All Surfaces	All Roads	Hours Expended from Banked Time		%
				Long Term Leave Hours		%
				Other		%
				Other Training		%
				Parental Leave		%
				Safety Training		%
				Sick Hours		%
				Union Paid Hours		%
Vacation Hours		%				

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