

XXVIITH WORLD
ROAD CONGRESS
PRAGUE 2023



THE IMPACT OF PUBLIC-PRIVATE PARTNERSHIPS TENDERED UNDER PERFORMANCE STANDARDS

TS13: FINANCE AND PROCUREMENT

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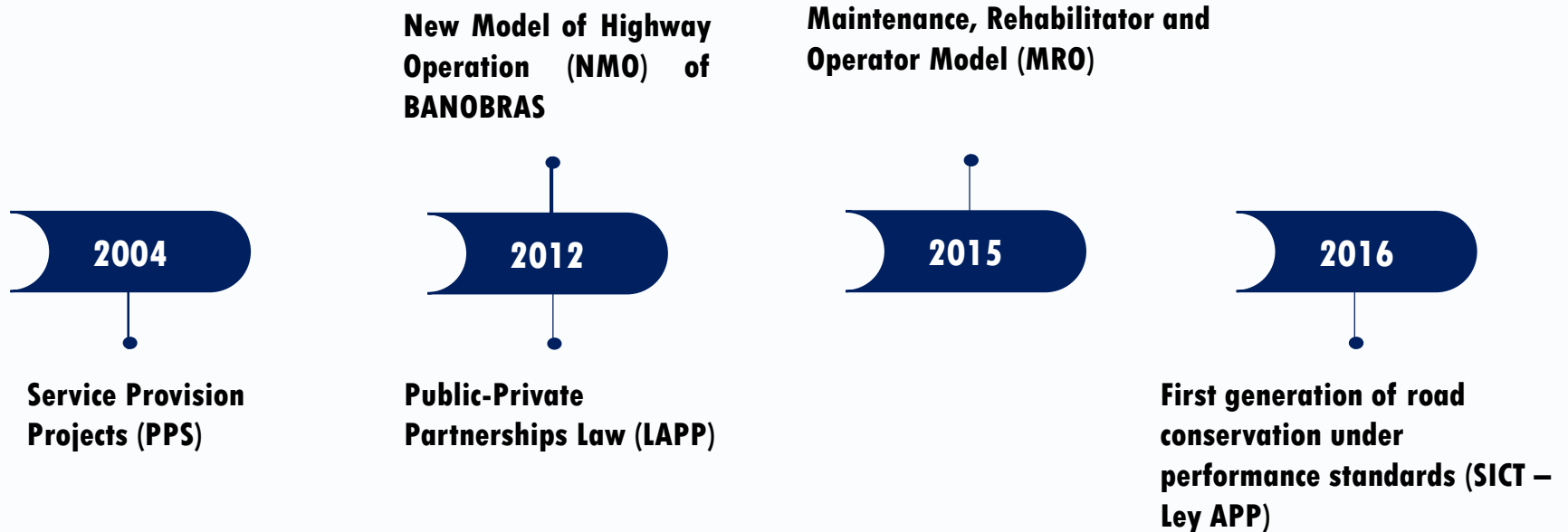
PPP DIRECTOR

WISE S.A DE C.V (MÉXICO)



I. BACKGROUND

PUBLIC-PRIVATE PARTNERSHIPS TENDERED UNDER PERFORMANCE STANDARDS



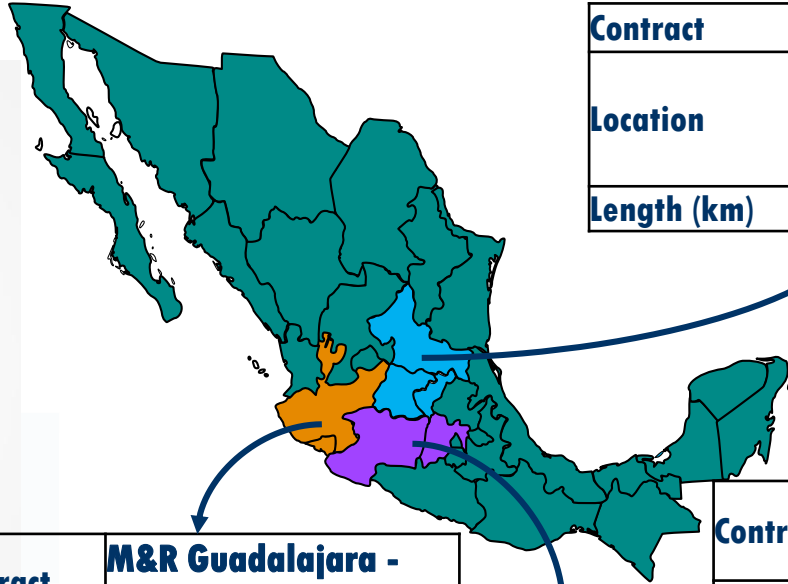
I. BACKGROUND

PPP CONSERVATION SCHEME APP VS TRADITIONAL SCHEME

Concept/Scheme	Conservation PPP Scheme	Traditional Scheme
Scope	More complete contracts (DBFOM, DBFO)	Infrastructure Development
Payments	Payment for performance standards subject to deductions	Unit Price or Lump Sum Payments
Term of contracts	Long-term contracts	Short or medium-term contracts
Parameters	Performance Indicators	Specifications and standards
Risks	Substantial risk transfer to the private sector	Substantial risk retention
Financial effort	Medium and long-term	Short-term
Public sector purchases	<u>Services</u>	<u>Assets</u>

Source: 1er. International Seminar on Road Maintenance by Salvador Pou Boix

II. CONTRACTS DESCRIPTION



Contract	APP Querétaro - SLP
Location	Querétaro San Luis Potosí Guanajuato
Length (km)	167 km

Contract	M&R Guadalajara - Colima
Location	Jalisco y Colima
Length (km)	148 km

Contract	MRO Atlacomulco - Maravatío
Location	Edo. México Michoacán
Length (km)	64 km

III. CONTROL AND VERIFICATION METHODOLOGIES

PERFORMANCE STANDARDS (PAVEMENTS)

Indicador	M&R	APPQRO	MRO
Surface defects	No potholes Cracking $\leq 5\%$ w. lane Detachment $< 5\%$	No potholes Cracking $< 5\%$ w. lane Detachment $< 5\%$	No potholes Cracking $< 10\%$ e/100m Detachment $< 10\%$
Structural fatigue	$> 1\%$ structural fatigue per segment per year	Deflections $\leq 500\text{mm}/100$	Not measured
IRI	$\leq 2.5\text{m}/\text{km}$		
Rut depth	$< 10\text{mm}$	$\leq 12\text{mm}$	$\leq 8\text{mm}$
Coefficient of friction	≥ 0.45	$0.4\text{mm} < U \leq 0.9\text{mm}$	
Macrotexture	Not measured	$> 0.75\text{mm}$	Not measured

III. CONTROL AND VERIFICATION METHODOLOGIES

PERFORMANCE STANDARDS (ROAD SIGNS, LINES AND RIGHT OF WAY)

Indicador	M&R	APPQRO	MRO
Road lines	100% presents, visible and adhered. Retroreflection according to the Mexican Official Standard		
Road signs	100% present, clean, well positioned, structurally sound Retroreflection according to the Mexican Official Standard		
Defenses and barriers	100% present, well positioned, and undamaged (SCT regulations)- Incl. Anti-glare screens		
Vegetation control	10m from curb edge Height <20cm	From curb edge to fence Height <20 cm	From curb edge to fence Height <20 cm Reused waste
Right of way	Clean and unobstructed		
Fence	Concrete posts and cattle netting 100% present and undamaged		

III. CONTROL AND VERIFICATION METHODOLOGIES

OTHER PERFORMANCE STANDARDS

Indicator	M&R	APPQRO	MRO
Slopes	Slopes in cuts and embankments: no cracking and in good condition		
	Not measured		+ Hydro seeding (80%)
Landslide removal	No obstructions in Crown and drainage Works due to landslides		
Structures	Bridge management system (SIAP: 3,4 o 5)	Bridge management system (SIPUMEX:0,1 o 2)	Bridge management system (SIAP: 3,4 o 5)
Drainage Works	Clean, unclogged and unobstructed culverts, ditches, washes, curbs and waterways		
Special pavements	Cracks < 3mm Detachments <75mm	Not measured	Cracking < 3mm
Improved Danger Index	Yes	Not measured	Standard operation

III. CONTROL AND VERIFICATION METHODOLOGIES

OTHER CONTROLS



Supervision

- **Supervising Administrative Agent (MR y MRO)**
- **Supervising Manager (APPQRO)**

Self-Monitoring Unit

- **Required in the 3 contracts**

Road Management System

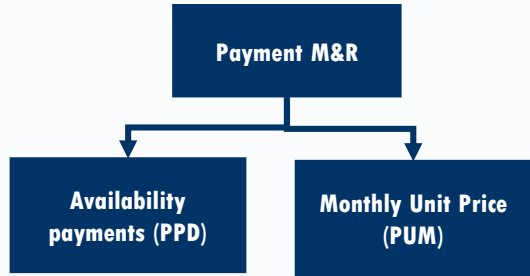
- **Required in the 3 contracts**
- **Inventory, inspections, Pavement Management and preservation, Conservation Management**

Remaining life (years)

- **M&R 2 years**
- **APPQRO 3 years**
- **MRO 5 years**



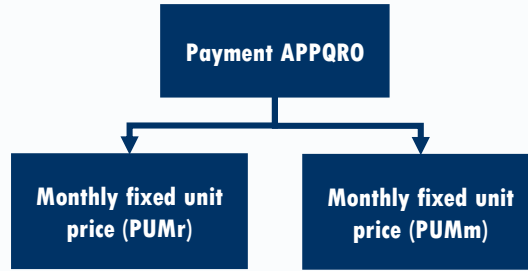
IV. PAYMENT MECHANISMS



Payment for initial rehabilitation

Payment for standard compliance (deductions apply)

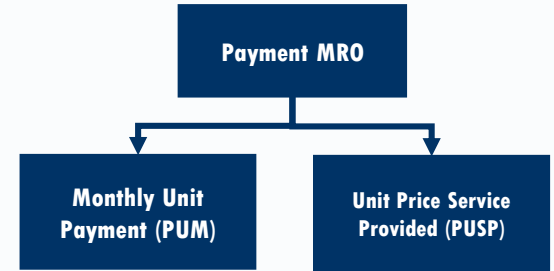
- ✓ Deduction by degree of impact, days and weighting by segment.
- ✓ Payment Scheme allowed Initial Rehabilitation to be concluded earlier.
- ✓ Segmentation reduces the deductions.
- ✓ PUOT payments for issues not considered in the contract.



Payment for initial rehabilitation. Includes Financing + Risk capital

Internal Return Rate + standard maintenance (deductions apply)

- ✓ Accomplishment factor.
- ✓ Deductions for: allowed threshold, not resolved in time, and for additional corrective time.



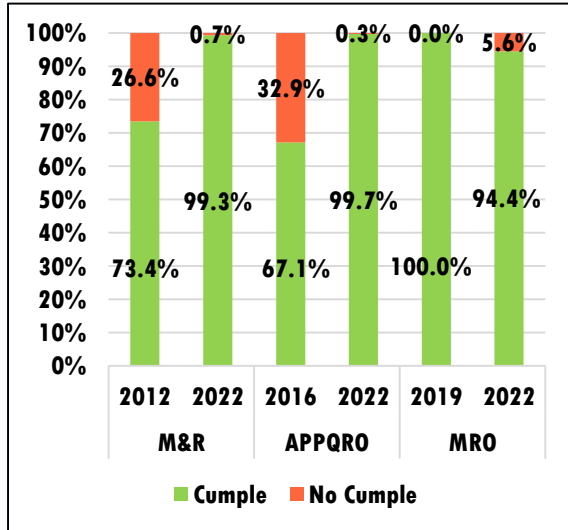
Payment for standard compliance. (MR y 0) Deductions apply

Payment for Initial improvement work (paid upon completion of work)

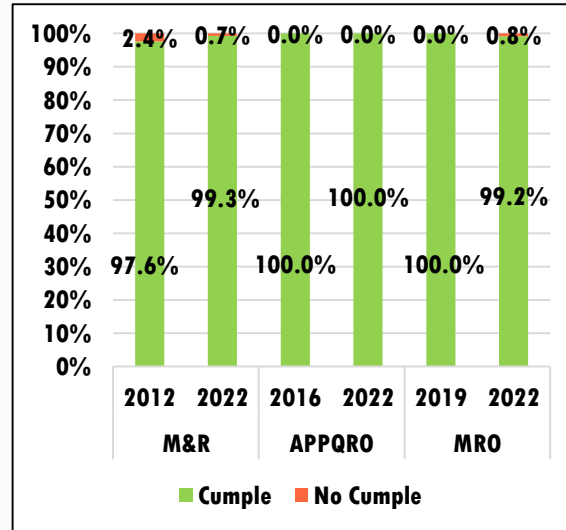
- ✓ Initial deduction, corrective deduction and reiterative deduction.
- ✓ Deduction established for each standard and affection method.
- ✓ Adjustment by area.
- ✓ No penalty for days passed.

V. SOCIAL AND ECONOMIC IMPACT

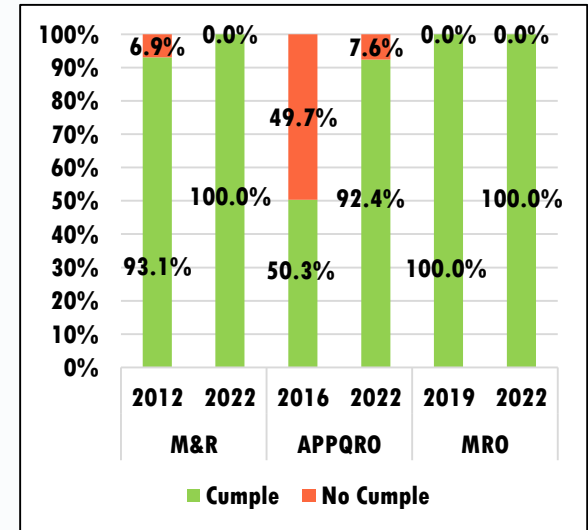
International Roughness Index



Rut depth



Coefficient of friction



V. SOCIAL AND ECONOMIC IMPACT

PAVEMENTS



V. SOCIAL AND ECONOMIC IMPACT

PAVEMENTS



V. SOCIAL AND ECONOMIC IMPACT

DRAINAGE



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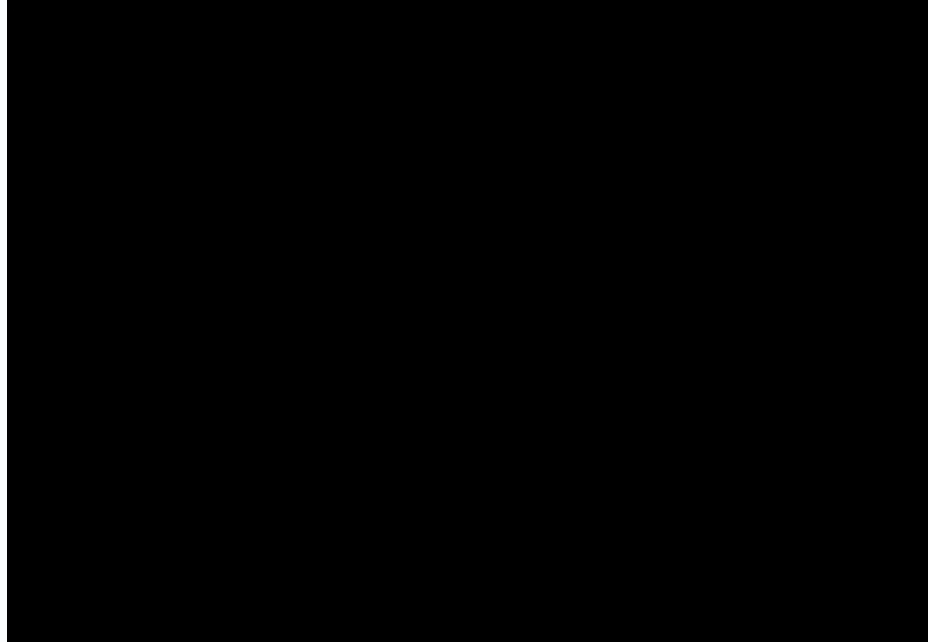
V. SOCIAL AND ECONOMIC IMPACT

SIGNS AND SAFETY DEVICES



V. SOCIAL AND ECONOMIC IMPACT

APPQRO



V. SOCIAL AND ECONOMIC IMPACT

What are the benefits of this type of contracts to the society?

Concept	M&R (mdp)**	APPQRO (mdp)
Annual social benefit*	321.21	848.61
Annual payment to the developer	216.36	686.91
Difference/Benefit	104.85	161.70

* Calculation realized considering the improvements achieved in IRI and Speed by type of vehicle and valued with the Vehicle Operation Costs document IMT 2021. VST IMT 2022.

** Millions of Mexican Pesos

V. SOCIAL AND ECONOMIC IMPACT

How expensive are this type of contracts?

Costs per kilometer per vehicle (Mexican Pesos)

Concept	M&R	APPQRO	MRO	Average of 46 toll roads	Lower cost toll road
Cost x kilometer x vehicle	0.25	0.37	0.47	5.09	0.56

VI. CONCLUSIONS

- ✓ **A correct structuring of PPP contracts under performance standards have social benefits by reducing vehicle operation costs, travel time, and increasing road safety.**
- ✓ **The more stringent the standards are, the more expensive the PPP contract will be.**
- ✓ **The payment mechanism is an element of the PPP contract that can encourage or discourage the Developer.**
- ✓ **The implementation of projects under performance standards have economic savings for governments ,and can maintain and conserve the roads with high performance standards bringing a lot of benefits to the society.**



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