



U.S. Department of Transportation
Federal Highway Administration
Puerto Rico Division

Puerto Rico Division Initiative Pavement Preservation Conference

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FHWA-PR Division

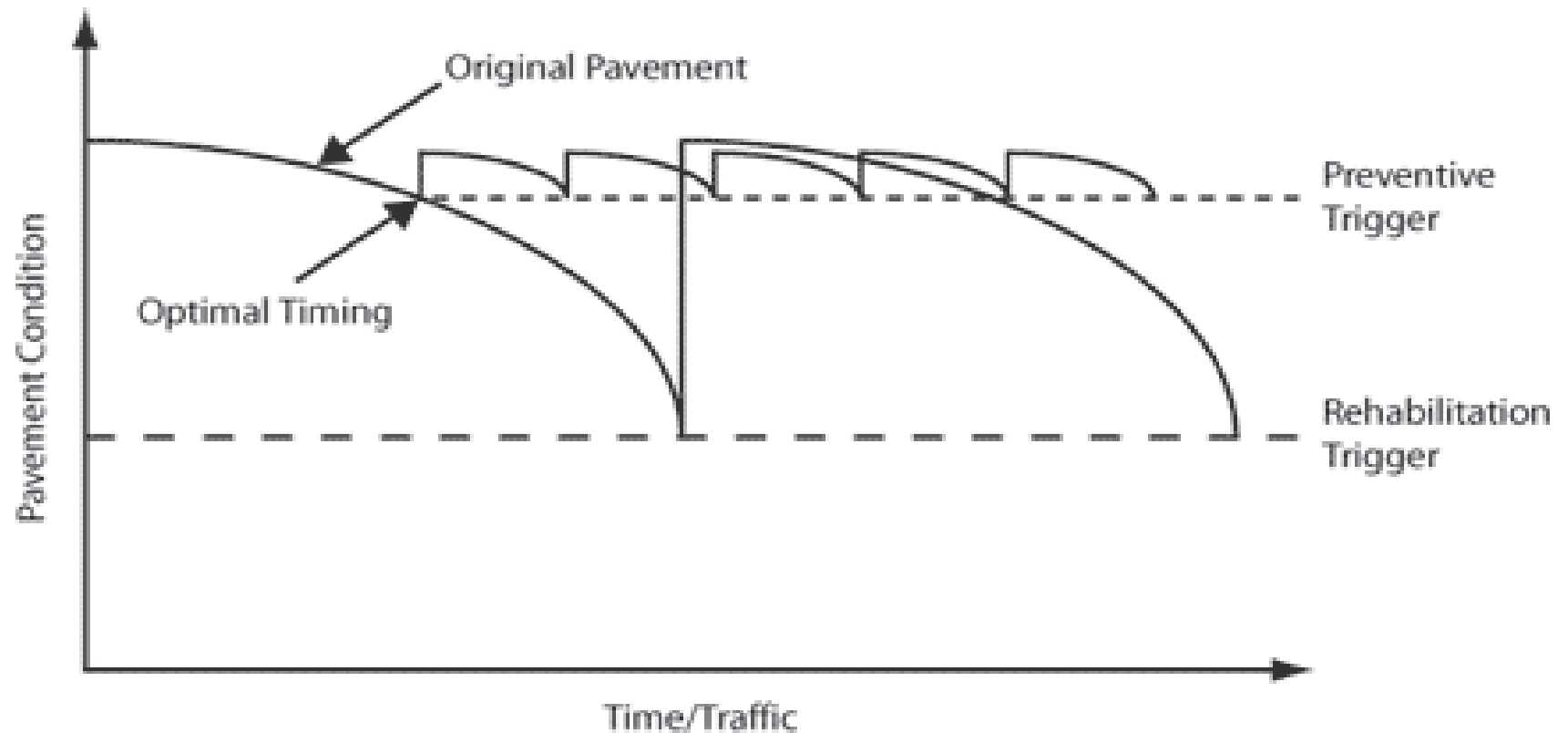
November 15, 2011

San Juan, PR

Pavement Preservation Overview

- Definition
 - Is “ a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost effective set of practices that extend pavement life, improve safety and meet motorist expectations”*
 - Simple words is a proactive approach in maintaining our existing highways
 - This does not include new pavement or pavements that require major rehabilitation.

Pavement Preservation Concept



Pavement Preservation Goals

- Provide DOT's an economical alternative for improving condition of pavements
- Extend pavement life
- Better performance with limited budget
 - \$1 spent in preservation today saves \$6-\$10 in the future
 - Increased return on investment
- Avoid worst case scenarios
- Improved safety and mobility
- Reduced congestion

Pavement Preservation

PUERTO RICO EXPERIENCE

PP and rehab strategies – Rigid (PCC)

- Preservation
 - **Diamond grinding**
 - **Dowel bar retrofit**
 - **Full depth repair**
 - **Partial depth repair**
 - **Joint sealing**
- Rehabilitation
 - **Crack and seat with HWA overlay**
 - HMA overlay without slab fracturing
 - White topping
 - Structural overlay

Diamond Grinding



Grinding and full depth repair



Dowel Retrofit and full depth repair



Crack and seat



Crack and seat



PP and rehab strategies - Flexible

- Preservation
 - **HMA overlay**
 - **Mill and resurfacing**
 - Chip seals
 - Micro surfacing
 - Crack sealing
 - Hot in place recycling
 - Cold in place recycling
 - Slurry seals
 - Fog seals
- Rehabilitation
 - Full depth reclamation
 - White topping
 - Structural overlay

Mill and resurfacing



Mill and resurfacing



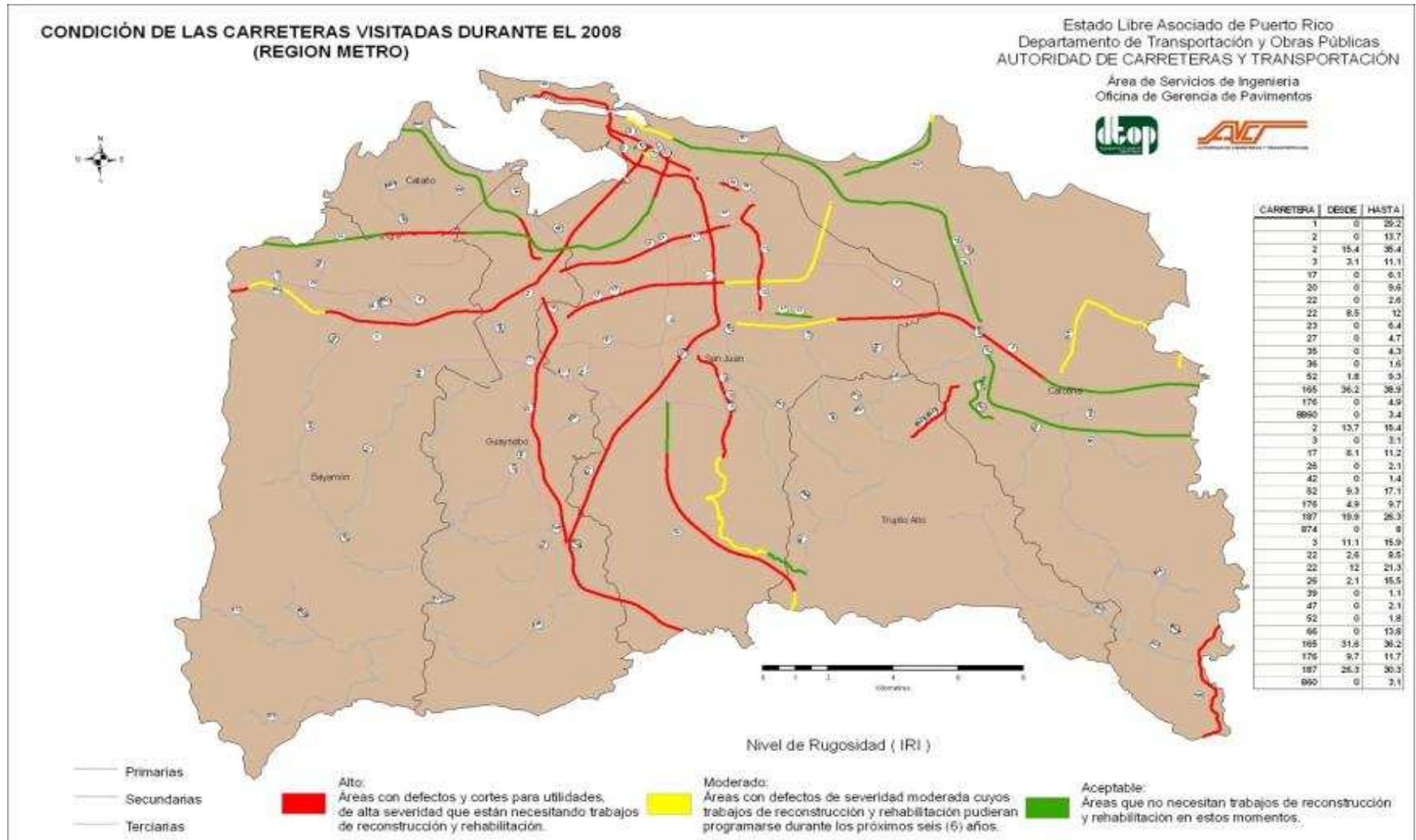
Puerto Rico Data

AUTORIDAD DE CARRETERAS Y TRANSPORTACION
AREA DE SERVICIOS DE INGENIERIA
OFICINA DE GERENCIA DE PAVIMENTOS

Prioridad 1, Rugosidad Alta: Requieren Rehabilitación a Corto Plazo, 2008

Carretera	Municipios	Regional ACT	Regional OP	Desde DMI*	Hasta DMI	AADT	Costo Estimado
PR-1	San Juan - Caguas	Metro - Este	San Juan - Humacao	0.0	29.2	96550	\$ 30,137,000
	Ponce	Sur	Ponce	121.9	126.4	41300	\$ 3,893,000
PR-2	San Juan - Bayamón	Metro	San Juan	0.0	13.7	110300	\$ 12,321,000
	Bayamón - Vega Baja	Metro - Norte	San Juan - Arecibo	15.4	35.4	56100	\$ 15,984,000
	Vega Baja - Manatí	Norte	Arecibo	36.5	51.5	48500	\$ 10,362,000
	Barceloneta - Arecibo	Norte	Arecibo	54.0	66.2	36300	\$ 8,728,000
	Arecibo	Norte	Arecibo	74.2	80.4	45300	\$ 4,376,000
	Hatillo - Camuy	Norte	Aguadilla	88.8	93.3	41401	\$ 4,370,000
	Aguadilla	Oeste	Aguadilla	116.0	126.3	63200	\$ 6,521,000
	Mayaguez	Oeste	Mayaguez	152.9	159.1	68200	\$ 6,552,000
	Guánica	Oeste	Mayaguez	186.5	192.0	22100	\$ 3,788,000
	Guánica - Yauco	Oeste - Sur	Mayaguez	194.8	199.8	39300	\$ 3,576,000
	Guayamilla	Sur	Ponce	203.9	207.3	43252	\$ 3,008,000
	Peñuelas	Sur	Ponce	212.4	215.7	55600	\$ 2,480,000
	Ponce	Sur	Ponce	220.0	230.5	57219	\$ 10,744,000
PR-3	San Juan - Carolina	Metro	San Juan	3.1	11.1	106200	\$ 12,552,000
	Fajardo	Este	Humacao	36.9	48.1	44400	\$ 9,528,000
	Naguabo	Este	Humacao	65.9	76.3	10100	\$ 1,729,000
	Humacao - Yabucoa	Este	Humacao	77.9	91.7	50867	\$ 7,011,000
	Yabucoa - Pabillas	Este	Humacao - Guayama	96.6	113.4	13800	\$ 5,888,000
	Pabillas	Este	Guayama	115.6	121.2	11827	\$ 2,220,000
	Pabillas - Guayama	Este - Sur	Guayama	126.6	135.0	32700	\$ 4,059,000
PR-12	Ponce	Sur	Ponce	4.3	6.8	35300	\$ 1,950,000
PR-14	Ponce	Sur	Ponce	2.1	5.3	48500	\$ 1,248,000
PR-17	Juana Díaz - Coamo	Sur	Ponce	20.2	24.4	7300	\$ 1,656,000
PR-20	San Juan	Metro	San Juan	0.0	6.1	97960	\$ 7,696,000
PR-22	Guaynabo	Metro	San Juan	0.0	9.6	85600	\$ 12,090,000
	San Juan	Metro	San Juan	0.0	2.6	242100	\$ 2,674,000
	Guaynabo - Cabato	Metro	San Juan	8.5	12.0	136563	\$ 4,373,000
	Manatí	Norte	Arecibo	50.2	53.7	64105	\$ 2,541,000
	Hatillo	Norte	Aguadilla	80.7	84.0	38100	\$ 3,494,000
PR-23	Guaynabo - San Juan	Metro	San Juan	0.0	6.4	46020	\$ 7,856,000
PR-27	San Juan	Metro	San Juan	0.0	4.7	48600	\$ 4,788,000
PR-30	Las Piedras	Este	Humacao	26.4	23.2	64072	\$ 2,256,000
	Humacao	Este	Humacao	24.2	30.1	44400	\$ 4,672,000
PR-34	Caguas	Este	Humacao	0.0	3.1	21400	\$ 2,496,000
PR-35	San Juan	Metro	San Juan	0.0	4.3	20482	\$ 6,836,000
PR-36	San Juan	Metro	San Juan	0.0	1.6	49510	\$ 616,000
PR-52	San Juan - Trujillo Alto	Metro	San Juan	1.8	9.3	158442	\$ 11,741,000
	Caguas	Este	Humacao	21.3	24.1	91200	\$ 3,948,000
	Salinas - Juana Díaz	Sur	Guayama - Ponce	66.1	88.9	42100	\$ 24,311,000
PR-53	Guayama - Salinas	Sur	Guayama	79.6	93.1	22078	\$ 11,712,000
PR-101	Lajas - Cabo Rojo	Oeste	Mayaguez	3.3	18.9	13300	\$ 10,314,000
PR-109	San Sebastián	Oeste	Aguadilla	25.2	29.5	10048	\$ 1,700,000
PR-110	Aguadilla	Oeste	Aguadilla	22.5	27.9	19121	\$ 2,443,000
PR-115	Rincón - Aguada	Oeste	Aguadilla	15.1	18.3	12635	\$ 1,272,000
PR-121	Sabana Grande - Yauco	Oeste - Sur	Mayaguez	6.0	12.1	7300	\$ 2,440,000
PR-122	San Germán	Oeste	Mayaguez	0.0	1.9	27500	\$ 983,000
PR-128	Yauco - Maricao	Sur - Oeste	Mayaguez	24.4	33.9	2900	\$ 3,776,000
PR-133	Ponce	Sur	Ponce	0.0	1.6	18700	\$ 774,000
PR-134	Hatillo	Norte	Aguadilla	11.5	15.3	2500	\$ 1,512,000
PR-140	Utuado	Norte	Arecibo	36.1	41.7	1200	\$ 2,216,000
PR-149	Juana Díaz	Sur	Ponce	64.4	68.4	25300	\$ 2,227,000
PR-155	Morovis - Vega Baja	Norte	Arecibo	52.1	58.1	6600	\$ 1,672,000
PR-164	Naranjito	Norte	Arecibo	3.5	6.7	10500	\$ 1,317,000
PR-165	Guaynabo	Metro	San Juan	36.2	38.9	64000	\$ 2,547,000

Pavement Condition



PRHTA's ARAN



Pavement Preservation – National

- Changes in current Surface Transportation Bill
- Performance based program
- Improve decision making and resource allocation
- Improves transparency on use of federal funds
- Focus in safety and infrastructure condition
- Enhanced NHS (NHS+)

FHWA Budget Highlights

- Simplify the highway program structure by consolidating over 55 programs to 5 core programs
- **Focus investment on safety, state of good repair, and livability**
- Increase attention to highways of national interest through the **enhanced National Highway System**
- **Establish a performance-based highway program**

FHWA Budget Highlights

- Want relatively few performance areas that broadly reflect national interests
 - **Safety**
 - **Pavement and bridge condition**
 - **Reliability**
 - Freight/economic competitiveness
 - Environment/climate change
 - Livability

Performance Management Process

- Secretary, with input, establishes performance measures and national performance goals
 - NHS+
 - Limitation on new capacity
 - Focus on infrastructure condition and operation
- States work in partnership with FHWA to set state targets
- Calls on States to report annually on progress in meeting targets
- Provides additional flexibility when targets are met
 - Fund then can be used on any federal aid highway
 - No limitations on new capacity
- Requires performance improvement plan when targets not met

Federal Funding for Maintenance

- 23 USC 116 (d) *...if the State demonstrates that the activity is a cost-effective means of extending the useful life of a Federal-aid highway*
- *This include the following;*

Pavements

- *joint repair,*
- *seal coats*
- *pavement patching*
- *thin overlays*
- *shoulder repair*
- *restoration of drainage systems*

Bridges

- *crack sealing*
- *joint repair*
- *seismic retrofit*
- *scour countermeasures*
- *painting*

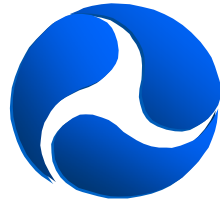
What's next?

- The new performance based federal aid highway program
 - Preservation is key in achieving success
- Will require commitment from PRHTA leadership and engineers
 - Establish Pavement/Bridge Preservation guidelines
 - Agency needs a champion on leading efforts
 - Change paradigm (focus on extending life of pavements in good condition)
- Need the industry support and PPP's

What's next (cont.)

- FHWA will be proactive with DOT into establishment of a preservation component
 - Sponsor workshops
 - Focus attention on activities that address;
 - Aging, Oxidation, etc
 - Surface deterioration
 - Normal wear and tear
 - Possible candidates
 - PR-52 Salinas and Juana Diaz
 - PR-22 Hatillo, Arecibo, and Barceloneta - Metropistas
 - PR-2 (South Region)
 - FHWA will support use of federal funds for cost effective preventive maintenance activities

Thank You



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