


# Performance Guidelines

**PP-16-12**

**Maintenance Division  
Inter Agency Contract**

**Summer 2016**




## Performance




- Routine maintenance
- Preventive maintenance
- Rehabilitation

## Sources of Information

- Workshops with 12 Districts
- Meetings with 11 Districts
- Forensic analyses of 4 specific roadways
- Structured performance study
  - Design/build South Texas
  - Bid/build West Texas

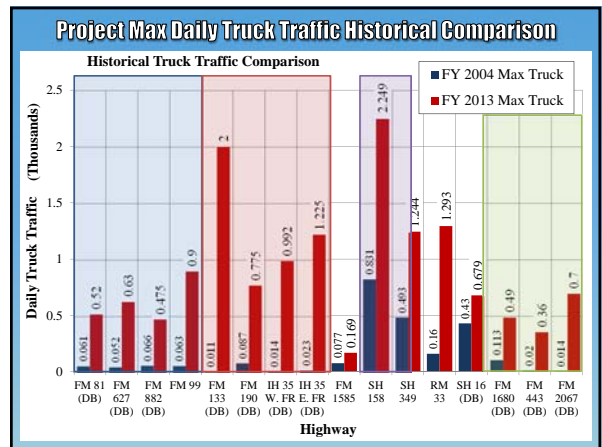
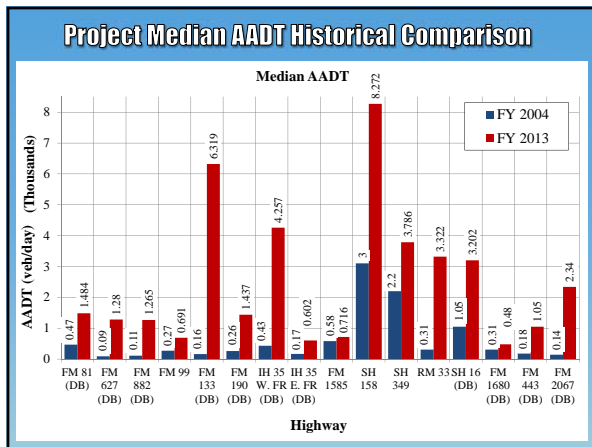


## Premature Distress

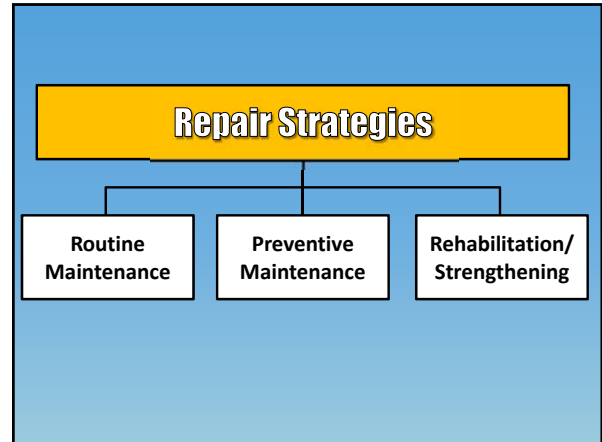


- Traffic
- Design
- Materials
- Mixture designs
- Workmanship
- Environment

Usually more than one cause  
Relatively small percent of projects



Performance Monitoring Project Pavement Structures				
Roadway	District	CTB Depth	FB Overlay Depth	Surface
FM 81	Corpus	0 in.	0 in.	0 in.
FM 627	Corpus	8 in. at 2%	6 in.	2CST
FM 882	Corpus	8 in. at 2%	6 in.	2CST
FM 133	Laredo	9 in. at 3%	0 in.	3.5 in. TY C HMA
FM 190	Laredo	0 in.	9.5 in.	2.5 in. TY C HMA
IH 35 W. FR	Laredo	10 at 3%	0 in.	2.5 in. TY C HMA
IH 35 E. FR	Laredo	10 at 3%	0 in.	2CST
FM 1585	Lubbock	4.5 in. at 3%	6 in.	2CST
SH 158	Odessa	0 in.	6 in.	3CST
RM 33	San Angelo	0 in.	10 in.	2CST
FM 1680	Yoakum	6 in. at 4%	8 in.	TCST
FM 443	Yoakum	8 in. at 3%	0 in.	TCST
FM 2067	Yoakum	10 in.	0 in.	2 in. TY D HMA



### Patching



- Temporary/permanent patch
- Cold patching materials
  - Hot mixed – cold laid
  - LRA
  - Proprietary
- Hot patching materials

### Pavement Edge Repairs



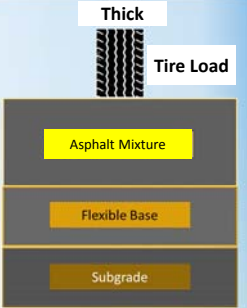
- Non-continuous patching – temporary
- Strip seals (chip and fog)
  - Reduce edge raveling (break-up)
  - Some success in West Texas
- Widening
  - Width (structural & safety)
  - Traffic
  - Structural design

### Quarter Point Rehabilitation



- No longer used by several Districts
- Ride quality of repaired area
- Pavement distresses in area not rehabilitated

### STEP 4 THICKNESS DESIGN



- Traditional method
  - FPS
  - ATHWLD Check
  - Mechanistic
- Simplified method

### Four Layer System

- Cement modify (2-3%) FDR & widen
- Flexible base quality
- Cement stabilized base
- Thickness of hot mix asphalt

### STEP 4 THICKNESS DESIGN

Hot Mix Asphalt /Surface Treatment(s)

Cold In-place Recycling

+Full Depth

+Partial Depth:

- Cement
- Asphalt
- No stabilizer

Material Properties

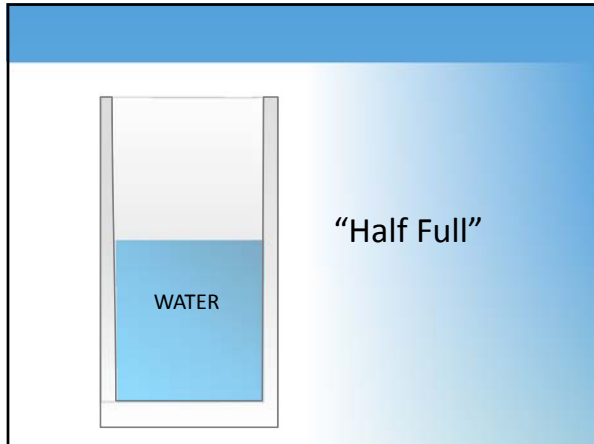
### Three Layer System

- Little performance history
- Early traffic
- Early raveling
- Early stability
- Water sensitivity

### Seal Coats (Chip Seals)

- Bleeding
  - Heavy traffic (weight & volume)
  - Asphalt binder stiffness
  - Chip into base
  - Turning movement
  - Stop/start
- Aggregate loss
  - Turning movement
  - Stop/start
- Designs





### Overview of Repair Guidelines Documents

Document Number	Title
ESB-16-10	Performance of Pavements in the Energy Sector
IR-14-01	Current TxDOT Practices for Repair of Road Damage Associated with Energy Development and Production
IR-16-05	Project and Pavement Performance Associated with Energy Development and Production
RR-16-02	Project and Pavement Performance Associated with Energy Development and Production

Documents available on TxDOT Maintenance Division SharePoint site at <https://txdot.sharepoint.com/sites/division-mnt/site/pages/home.aspx>