An introduction to Pavement Preservation / Rehabilitation / Replacement (PRR) Design Guidelines
What Exactly are PRR Design Guidelines and Why do we need them?
The department of transportation and development shall adopt minimum safety guidelines with respect to highway and bridge design, construction, and maintenance. These guidelines shall correlate with and, so far as possible, conform to the system then current as approved by AASHTO allowing flexibilities incorporated therein. Hereafter, the state highway system shall conform to such safety guidelines.
Design Guidelines are published and adopted to guide DOTD policies and procedures related to highway design and Plan development.
The Design Guidelines define the critical design elements for the functional system of roadway. Values are given for preferred and acceptable conditions with a directive to strive for the preferred design except for when conditions warrant otherwise.
When do the Design Guidelines apply?

The Design Guidelines apply to new construction projects or where the department is reconstructing the roadway.

Examples include:

- New Roadway including subbase
- New alignment
- Major changes to alignment
- Addition of travel lanes
Where the scope of the project is to maintain or rehabilitate an existing roadway, the law allows the department to develop guidelines with design values that may be less than those required in the Design Guidelines. In such cases the department has developed and adopted PRR guidelines.

LRS 48:35:B

The chief engineer may designate highways within the state highway system for reconstruction or repair at guidelines which are less than those as approved by the American Association of State Highway and Transportation Officials....
3R Guidelines

3R Guidelines are design guidelines applicable to NHS (National Highway System) Urban, Suburban, and Rural Non-Interstate Routes.

Generally:

PRR < 3R < DOTD Minimum Design Guidelines

Note: In cases where certain PRR design values are more stringent than 3R design guidelines, PRR design values would govern
Definitions

Reconstruction
Typically consists of new pavement structure (pavement, base, and subbase), the addition of travel lanes, or extensive changes in horizontal and vertical geometry, typically requiring right-of-way.

Reconstruction projects Typically are designed according to DOTD Minimum Design Guidelines
Replacement

The replacement of the existing pavement structure with an equivalent or increased pavement structure generally within the existing crown. These pavements would be designed for a 20 year design life.
Rehabilitation

Consists of structural enhancements that extend the service life of an existing pavement and/or improve its load-carrying capability generally within the existing crown. These pavements would be typically designed for a minimum 10 to 15 year design life.

Examples of Major Rehabilitation

- Rubblization and Overlay
- Bonded Concrete Overlay
- Unbonded Concrete Overlay
- Single lift and Multi-lift Asphaltic Concrete Overlay (>2”)
- Base Rehabilitation
- Minor Widening and Overlay
- Minor Geometric Changes to Alignment
- Addition of Turn Lanes or Lengthening of Ramps, etc.
Minor Rehabilitation

Single lift Asphaltic Concrete Overlay (≤ 2”) of which the existing pavement required prior cold planing and/or patching. Typical Examples include:

- Patching with Single-Lift Overlay (≤ 2”) (Patching is limited to 10% of area within project limits)
- Cold Plane with Single-Lift Overlay (≤ 2”)
Preservation

Refers to Pavement Preservation, which consists of light minor rehabilitation, preventative maintenance, and routine maintenance.

Light Minor Rehabilitation
Refers to Pavement Preservation, which consists of light minor rehabilitation, preventative maintenance, and routine maintenance.

Typical Examples include:

- Single Lift Asphaltic Concrete Overlay (≤ 2”) (no patching or cold planing required)
- Asphalt or Concrete Patching Only
- Pavement Diamond Grooving/Grinding only
- Load Transfer Restoration only, etc.
Preservation

Preventative Maintenance
Is a planned strategy of cost-effective, non-structural treatments to the existing pavements that preserves the current condition and retards future deterioration.

Typical Examples include:

- Chip Seals
- Micro-Surfacing
- Thin Asphaltic Concrete Overlay (<1.5”)
- Micro-Overlays
- Joint Cleaning and Resealing
- Crack Sealing (working cracks)
- Crack Filling (Non-working cracks)
Preservation

Routine Maintenance
Repair work typically performed by Department forces that is planned and carried out on a scheduled basis to maintain the pavement.

Typical Examples include:
- Pothole Patching
- Bump Grinding
- Spot Leveling
- Machine Leveling
# Guidance for PRR Projects

## GUIDANCE FOR PRESERVATION/REHABILITATION/REPLACEMENT (PRR) PROJECTS

<table>
<thead>
<tr>
<th>System</th>
<th>Classification</th>
<th>Type of Work</th>
<th>Design Guidelines</th>
<th>Design Exception Approval</th>
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<tbody>
<tr>
<td>NHS</td>
<td>NHS</td>
<td>Replacement and Major Rehabilitation</td>
<td>DOTD Minimum Design Guidelines</td>
<td>FHWA/DOTD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minor Rehabilitation</td>
<td>Match Existing</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preservation</td>
<td>Match Existing</td>
<td>N/A</td>
</tr>
<tr>
<td>NON-INTERSTATE</td>
<td>Replacement and Major Rehabilitation</td>
<td>PRR Design Guidelines (required) 3R Guidelines (desirable)</td>
<td>FHWA/DOTD</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minor Rehabilitation</td>
<td>Match Existing</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preservation</td>
<td>Match Existing</td>
<td>N/A</td>
</tr>
<tr>
<td>Non-NHS</td>
<td>ALL ROADS</td>
<td>Replacement and Major Rehabilitation</td>
<td>PRR Design Guidelines</td>
<td>FHWA/DOTD</td>
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<tr>
<td></td>
<td></td>
<td>Minor Rehabilitation</td>
<td>Match Existing</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preservation</td>
<td>Match Existing</td>
<td>N/A</td>
</tr>
</tbody>
</table>
3R Guidelines
(Rural Non-Interstate Routes)

3R Minimum Design Guidelines
Rural
NHS - Non Interstate Routes
Replacement and Major Rehabilitation

<table>
<thead>
<tr>
<th>Posted Speed</th>
<th>Current ADT</th>
<th>Trucks &lt; 10%</th>
<th>Trucks ≥ 10%</th>
<th>Bridge Width***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LANE WIDTH*</td>
<td>SHLDR WIDTH** (2'- min. paved)</td>
<td>LANE WIDTH*</td>
</tr>
<tr>
<td>≤ 50</td>
<td>0 - 1000</td>
<td>1'</td>
<td>2'</td>
<td>1'</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>1501 - 4000</td>
<td>1'</td>
<td>2'</td>
<td>1'</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>4001 - 6000</td>
<td>1'</td>
<td>2'</td>
<td>1'</td>
</tr>
<tr>
<td>ALL</td>
<td>&gt; 6000</td>
<td>1'</td>
<td>2'</td>
<td>1'</td>
</tr>
</tbody>
</table>

*Minimum widths.
**Minimum widths. For divided highways, provide 4' inside shoulder with 2' min. paved. 4' minimum paved outside shoulder is desirable.
***If clear width < travel width plus shoulder widths, delineate approaches by striping and/or signing. Update approach guard rail and end treatments, as applicable.

Roadway Cross slope = 2.5%.
Horizontal Clearance = 10' minimum.
Horizontal Curve - Match existing.
If curve advisory speed < posted speed minus 15 mph, low cost safety improvements shall be considered.
Use 12' lanes in curves if degree of curve exceeds 5° for ADT < 1500 and 4° for ADT > 1500.
Vertical Curve - Match existing.
Stopping Sight Distance (SSD) - Match existing. If SSD < required for roadway posted speed minus 20 mph, low cost safety improvements shall be considered.
Superelevation & Transitions - Match existing but not less than minimum shown in "Superelevation Values for Preservation/Rehabilitation/Replacement (PRR) Projects".
When existing forelope rates can be maintained within existing right-of-way, desirable values for superelevation and transitions are to be used.
Forelope - Match existing. If grade history, 3:1 or flatter is desirable.
Roadway Grade - Match existing.
Vertical Clearance - Match existing.
Structural Capacity - Match existing. Capacity must be checked by Bridge Design Section if any work is done to bridge deck and/or bridge rails.

For minor rehabilitation and preservation projects, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".
For reconstruction projects (new structure including substructure, new alignment, major changes to alignment, or addition of travel lanes), refer to DOTD Minimum Design Guidelines.
For ADA requirements, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".
Justification is required in the PRR Report if any of the above criteria is not met.
DOTD Pavement PRR Minimum Design Guidelines also apply.

[Signature]
DOTD Chief Engineer
Date

DOTD Louisiana Department of Transportation & Development
3R Guidelines
(Urban & Suburban Non-Interstate Routes)

### 3R Minimum Design Guidelines
#### Urban & Suburban
NHS - Non Interstate Routes
Replacement and Major Rehabilitation

<table>
<thead>
<tr>
<th>POSTED SPEED</th>
<th>CURRENT ADT</th>
<th>SECTION</th>
<th>TRUCKS &lt; 10%</th>
<th>TRUCKS ≥ 10%</th>
<th>BRIDGE WIDTH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>ALL</td>
<td>CURB</td>
<td>10'</td>
<td>7'</td>
<td>11' (12' desirable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO CURB</td>
<td>11'</td>
<td>6' Outside, 4' Inside</td>
<td>6' Outside, 4' Inside</td>
</tr>
</tbody>
</table>

* Minimum widths

- Roadway Cross Slope = Match existing for curved sections. 2.5% desirable.
- Roadway Cross slope = 2.5% for non curbed sections.
- Horizontal Clearance = Match existing.
- Vertical Clearance = Match existing.
- Roadway Grade = Match existing.
- Structural Capacity = Match existing. Capacity must be checked by Bridge Design Section if any work is done to bridge deck and/or rail.

**Urban/Suburban refers to functional class of roadway and not geographic location.**

For minor rehabilitation and preservation projects, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects". For reconstruction projects (new structure including subbase, new alignment, major changes to alignment, or addition of travel lanes), refer to DOTD Minimum Design Guidelines. For ADA requirements, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".

Justification is required in the PRR Report if any of the above criteria is not met.

DOTD Pavement PRR Minimum Design Guidelines also apply.

Approved: [Signature] 9-30-13

Date: 9/1/2010
## PRR Guidelines
### (Rural Non-Interstate)

**DOTD Pavement PRR Minimum Design Guidelines**

**Rural Non-Interstate Routes Replacement and Major Rehabilitation**

| Current ADT | LANE WIDTH | TRUCKS < 10% | SHOULDER | Type | LANE WIDTH | TRUCKS ≥ 10% | SHOULDER | Type | BRIDGE WIDTHS** | **
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 400</td>
<td>9' - 10'</td>
<td>Width</td>
<td>Aggregate</td>
<td>#</td>
<td>10'</td>
<td>Aggregate</td>
<td>#</td>
<td></td>
<td>Existing</td>
<td></td>
</tr>
<tr>
<td>401 - 1500</td>
<td>11'</td>
<td></td>
<td>Aggregate</td>
<td>#</td>
<td></td>
<td>Aggregate</td>
<td>#</td>
<td></td>
<td>Existing</td>
<td></td>
</tr>
<tr>
<td>1501 - 4000</td>
<td>11' (12' desirable)</td>
<td>#</td>
<td>2' min. paved is desired</td>
<td>12'</td>
<td>Aggregate</td>
<td>2' min. paved is desired</td>
<td>12'</td>
<td></td>
<td>Existing</td>
<td></td>
</tr>
<tr>
<td>&gt; 4000</td>
<td>11' (12' desirable)</td>
<td>#</td>
<td>2' min. paved is desired</td>
<td>12'</td>
<td>Aggregate</td>
<td>2' min. paved is desired</td>
<td>12'</td>
<td></td>
<td>Existing</td>
<td></td>
</tr>
</tbody>
</table>

* 9' acceptable to remain with concurrence from District Traffic Operations Engineer
# Width as necessary to maintain existing crown. 2' minimum is desired.
** Existing

### Notes:
- Roadway Cross slope = 2.5%
- Horizontal Clearance = Match existing.
- Horizontal Curvature = Match existing. If curve advisory speed < roadway posted speed minus 15 mph, low cost safety improvements shall be considered.
- Use 12' lanes in curves if degree of curve exceeds 5° for ADT 401 - 1500 and 4° for ADT >1500.
- Vertical Curvature = Match existing.
- Stopping Sight Distance (SSD) = Match existing. If SSD < required for roadway posted speed minus 20 mph, low cost safety improvements shall be considered.
- Superelevation & Transitions = Match existing but not less than minimum shown in "Superelevation Values for Preservation/Rehabilitation/Replacement (PRR) Projects".
- When existing superelevation rates can be maintained within existing right-of-way, desirable values for superelevation and transitions should be used.
- Foreslope = Match existing. If crash history, 3h:1v or flatter is desirable.
- Roadway Grade = Match existing.
- Vertical Clearance = Match existing.
- Structural Capacity = Match existing. Capacity must be checked by Bridge Design Section if any work is done to bridge deck and/or bridge rails.

For minor rehabilitation and preservation projects, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".

For ADA requirements, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".

A formal exception is required, via justification, in the PRR Report, if any of the above criteria is not met.

For non-interstate NHS routes, 3R Minimum Design Guidelines also apply.

Approved: [Signature]

DOTD Chief Engineer

Date: 6/1/2016
PRR Guidelines
(Urban & Suburban Non-Interstate)

DOTD PAVEMENT PRR
MINIMUM DESIGN GUIDELINES
URBAN & SUBURBAN
NON-INTERSTATE ROUTES
REPLACEMENT AND MAJOR REHABILITATION

<table>
<thead>
<tr>
<th>CURRENT ADT</th>
<th>SECTION</th>
<th>TRUCKS &lt; 10%</th>
<th>TRUCKS ≥ 10%</th>
<th>BRIDGE WIDTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>D ≤ 2000</td>
<td>CURB</td>
<td>LANE WIDTH*</td>
<td>LANE WIDTH*</td>
<td>PAVED SHLDR WIDTH*</td>
</tr>
<tr>
<td></td>
<td>NO CURB</td>
<td>0'</td>
<td>0'</td>
<td>10'</td>
</tr>
<tr>
<td>D &gt; 2000</td>
<td>NO CURB</td>
<td>10' (11' desirable)</td>
<td>#</td>
<td>11' (12' desirable)</td>
</tr>
</tbody>
</table>

* Minimum Widths
** Sum of Lane and Shoulder Width = 12' minimum
# Width as necessary to maintain existing crown. 2' minimum is desired.

Roadway Cross Slope = Match existing for curved sections. 2.5% desirable.
Roadway Cross slope = 2.5% for non curved sections.
Horizontal Clearance = Match existing.
Horizontal Curvature = Match existing. If curve advisory speed < roadway posted speed minus 15 mph, low cost safety improvements shall be considered.
Vertical Curvature = Match existing.
Stopping Sight Distance (SSD) = Match existing. If SSD < roadway posted speed minus 20 mph, low cost safety improvements shall be considered.
Super elevation & Transitions = Match existing but not less than minimum shown in "Super-elevation Values for Preservation/Rehabilitation/Replacement (PRR) Projects".
Fireslope = Match existing. If crash history, 3:1 or flatter is desirable (No Curb).
Roadway Grade = Match existing.
Vertical Clearance = Match existing.
Structural Capacity = Match existing. Capacity must be checked by Bridge Design Section if any work is done to bridge deck and/or rails.
Urban & Suburban applies to functional classification of roadway and not geographic location.

For minor rehabilitation and preservation projects, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".
For reconstruction projects (new structure including subbase, new alignment, major changes to alignment, or addition of travel lanes), refer to DOTD Minimum Design Guidelines.
For ADA requirements, refer to "Guidance for Preservation/Rehabilitation/Replacement (PRR) Projects".
A formal exception is required, via justification in the PRR Report, if any of the above criteria is not met.
For non Interstate NHS routes, 5% Minimum Design Guidelines also apply.

Approved: [Signature]
DOTD Chief Engineer
Date: 9/30/19
Questions???

Josh Harrouch
225-242-4640
Joshua.harrouch@la.gov

It’s almost that time…..