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Guidance Document for:

Item 585

Ride Quality for Pavement Surfaces

General. This guidance document is provided to assist TxDOT engineers in specifying the appropriate ride quality requirements. These guidelines should not be viewed as Department Policy nor should they be used in lieu of engineering judgment. The 2004 version of Item 585 contains a number significant changes compared to previous ride quality specifications. Item 585 should be reviewed carefully before consulting this guidance document.

Select the Pay Adjustment Schedule for Surface Test Type B (inertial profiler) based on what is achievable using engineering judgement. Select the appropriate "Pay Adjustment Schedule" using the following guidelines. For further assistance, please contact the Construction Division.

1. Item 585 includes provisions for Surface Test Type B with Pay Adjustment Schedule 3 as the default**. General notes or display on typical sections are required to change the Pay Adjustment Schedule** or use Surface Test Type A. It is strongly advised that the designer show on the plans which pay schedule they wish to use rather than rely on the default conditions listed above. You must use a general note if you want to use surface Test Type B on **Service Roads and Ramps or Short Projects (less the 2,500 ft.).** In addition, any areas that you wish to designate as **Leave-out Sections** (such as driveways, intersections, etc), must be shown on the plans. These "Leave-out Sections" will be evaluated with Surface Test Type "A" rather than Surface Test Type "B".
2. Use engineering judgment and the guidelines in Table 1 to determine the appropriate "Pay Adjustment Schedule" (1, 2, or 3) to be used for the project. When making this selection, take into account the **existing condition (roughness) of the pavement, previous experiences on similar projects, the ability of a contractor to improve the existing ride with the number of smoothness opportunities specified, and the need for higher ride quality**. Note that Table 1 does not cover all possible construction scenarios.
3. As a general rule, the roughness (IRI value) can be reduced approximately 50% with each lift of hot mix; however, there is a point of diminishing returns once the IRI values get below 60. Typically an IRI value less than 60 is considered excellent and an IRI greater than 95 requires corrective action. Note that the most recent international roughness index (IRI) values are stored in the Department's Pavement Management Information System (PMIS) database. It is recommended that these values be obtained early in the decision making process.
4. The pay adjustment schedules listed in Item 585 are shown graphically in Figure 1.
5. Smoothness opportunity definition: A smoothness opportunity is defined as a continuous level-up regardless of the thickness, a specified lift of 1.0 inches or more of asphaltic concrete pavement, in place recycling, and grading for base courses. Spot level-ups, milling operations, and seal coats, will not be considered as a smoothness opportunity. Mill and fill operations that require matching the existing pavement are not considered to be a smoothness opportunity.
6. Please note that diamond grinding is the default method (on both flexible and rigid pavements) for removing localized roughness (bumps and dips). There are several exceptions to the requirement for diamond grinding. These exceptions are spelled out in detail in Item 585.

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7. In some cases where only a single lift of hot mix is specified, it may be advantageous to diamond grind some of the larger bumps and dips prior to the hot mix overlay. In such cases, diamond grinding should be set up as a separate bid item and the roadway should be profiled in advance to identify the existing bumps. Note that diamond grinding is an effective method of removing bumps yet somewhat less effective at removing dips.
8. On projects that have 3 or more lifts of hot mix, the designer should consider adding a plan note requiring that the contractor (at his own expense) be required to profile the pavement and diamond grind areas of localized roughness prior to placing the final lift of hot mix.

Table 1
Guidance for Selecting Pay Adjustment Schedules

<table>
<tr><th colspan="5">Project Description</th><th>Recommended Pay Adjustment Schedule</th></tr>
<tr><td rowspan="3">New Construction or Major Rehabilitation (IH , US, Multilane divided highways)</td><td rowspan="2">Rigid Pavements</td><td colspan="3">CRCP</td><td>2</td></tr>
<tr><td colspan="3">JCP</td><td>3</td></tr>
<tr><td colspan="4">Flexible Pavements with a total HMA thickness > 1.5”</td><td>1</td></tr>
<tr><td rowspan="7">Overlays or Minor Rehabilitation</td><td colspan="4">Rigid Pavements
(bonded and unbonded concrete overlay)</td><td>3</td></tr>
<tr><td colspan="4">Flexible Pavements with total HMA thickness < 1.5” such as an overlay with a Permeable Friction Course (PFC). Note that in some cases Surface Test Type “A” may be more appropriate for this application.</td><td>3*</td></tr>
<tr><td rowspan="5">Flexible Pavements Total HMA thickness > 1.5”</td><td colspan="2">All roads with posted speed < 45MPH</td><td>3*</td></tr>
<tr><td rowspan="2">When there are 2 or more smoothness opportunities</td><td>All highway classifications other than 2-lane undivided</td><td>1*</td></tr>
<tr><td>2-lane undivided highways</td><td>2*</td></tr>
<tr><td rowspan="2">When there is only 1 smoothness opportunity</td><td>All highway classifications other than 2-lane undivided</td><td>2*</td></tr>
<tr><td>2-lane undivided highways</td><td>3*</td></tr>
</table>

* It may be appropriate to increase or decrease this number depending on the ride quality of the existing pavement. For example: if the ride quality of the existing pavement is poor (IRI > 170), it may be appropriate to increase this number if applicable. Conversely, it may be appropriate to decrease this number if applicable and if the ride quality of the existing pavement is good (IRI< 95).

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Figure 1

Graphical Illustration of Pay Adjustment Schedules