

Maintenance Inspection

Guidelines for Grading LPA Roads



State of Alabama

Department of Transportation

Bureau of Local Transportation

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GUIDELINES FOR GRADING LPA ROADS

Table of Contents

Roadway	Max Points
Treatment	20
Patching	9
Leveling	9
Edge Repair	8
Settlement	4

Roadside	Max Points
Striping/Pavement Markings	8
Signs	8
Encroachments	6
Shoulder High	6
Shoulder Low	6
Clearing	4
Mowing	4
Ditches	4
Drains	2
Erosion	2

Introduction

The *Guidelines for Grading LPA Roads* manual was developed by a committee of ALDOT and County Engineers in order to establish a grading process to use during maintenance inspections on county roads. Each element is assigned a numerical grade that represents the overall condition of that specific feature. LPA road maintenance inspections are necessary to ensure the safety of the traveling public, monitor projects in accordance with the LPA Maintenance Certification Policy, and help identify and prioritize maintenance needs and expenditures.

The goal of this manual is to clearly define each element and promote uniformity throughout the state during the grading process. However, it should be noted this manual cannot cover every situation and there will always be some subjectivity involved when conducting roadway inspections.

ADMONITION

This document is exempt from open records, discovery or admission under Alabama Law and 23 U.S.C. §§148(h)(4) and 409). The collection of safety data is encouraged to actively address safety issues on regional, local, and site specific levels. Congress has laws, 23 U.S.C. § 148(h)(4) and 23 U.S.C. §409 which prohibit the production under open records and the discovery or admission of crash and safety data from being admitted into evidence in a Federal or state court proceeding. This document contains text, charts, tables, graphs, lists, and diagrams for the purpose of identifying and evaluating safety enhancements in this region. These materials are protected under 23 U.S.C. §409 and 23 U.S.C. §148(h)(4). In addition, the Supreme Court in *Ex parte Alabama Dept. of Trans.*, 757 So. 2d 371 (Ala. 1999) found that these are sensitive materials exempt from the Alabama Open Records Act.

Roadway Element

Treatment: 20 Points

What to grade: The physical condition and riding quality of the surface.

What to look for: Pavement distresses, some of which are listed and defined below:

Longitudinal cracking – cracks are parallel to pavement centerline and may be caused by shrinkage of asphalt or a reflective crack caused by cracks beneath the surface.

Transverse cracking – cracks that occur approximately at a right angle to centerline. The result from surface shrinkage due to low temperature or reflective cracking.

Block cracking – cracks that divide the surface into more or less rectangular pieces; caused mainly by shrinkage of the asphalt and daily temperature cycling. Differs from alligator cracking in that alligator cracks form smaller, many sided pieces with sharp angles.

Alligator cracking – series of interconnecting cracks caused by fatigue failure of the asphalt surface under repeated traffic loading. Occurs only in areas that are subjected to traffic loading. Considered a major structural distress.

Rutting – a rut is a surface depression in the wheel paths. Significant rutting can lead to major structural failure of the pavement and hydroplaning potential. Usually caused by consolidation or lateral movement of the materials due to traffic loads.

Raveling – the wearing away of the pavement surface, caused by the dislodging of aggregate particles and loss of bitumen, causing a roughened surface texture.

Potholes – bowl shaped holes in the pavement. They generally start as small localized spots of alligator cracking or surface disintegration. Excessive moisture infiltrates the area causing small pieces of asphalt and base to dislodge and pop out under traffic.

Roadway Element

Treatment (Cont'd)

The following descriptions should be used as a general guide to grade the Treatment::

Grade	Description
20	Excellent condition – brand new or like new surface.
19-18	Very good/good condition – no problem or minor problems.
17-15	Satisfactory – early stages of distress may be present, such as cracking, rutting, pot holing, raveling, etc. One or more of these distresses are located at a few areas along the road.
14 -13	Fair condition – the above mentioned distresses are more developed and numerous. Begin consideration for resurfacing.
12	Poor condition – the above mentioned distresses have reached an advanced stage. One or more of these distresses are located at numerous locations. Recommend resurfacing at this point.
11-9	Serious condition – severe deterioration of the pavement. Block cracking, alligator cracking, deep rutting and/or pot holing may be present throughout section of road.
8-6	Critical condition – major deterioration of entire section of road. Possibly unsafe for vehicles to drive speed limits.
5-0	Failed condition – possible unsafe for travel.

Roadway Element

Patching: 9 Points

What to grade.: The physical condition and ride quality of the patch.

What to look for: The need for patching and condition of existing patches.

The following should be used as a general guide to grade patching:

Grade	Description
9	Excellent condition – does not require patching or existing patches are in excellent condition.
8	Good condition – existing patches are performing satisfactorily.
7-6	Fair condition – existing patches are somewhat deteriorated or new patches may be needed.
5-4	Poor condition – ride quality significantly affected by existing patches or the need for new patches.
3-0	Failed condition—pothole showing through existing patch or new patch needed.

Roadway Element

Leveling: 9 Points

What to grade: Reliability of the longitudinal and transverse profile of the pavement.

What to look for: Rutting, settlement at embankments and overall roadway profile and cross-section.

Grade	Description
9	Excellent condition—no rutting, no settlement, etc.
8-7	Good condition—minor rutting, minor settlement, etc.
6-4	Fair condition—moderate rutting, moderate settlement, etc. Leveling should be considered.
3-2	Poor condition—rutting and settlement adversely effects ride quality or allows water to stand on pavement.
1-0	Critical condition—allows water to stand on pavement in multiple locations, condition of roadway prevents travel at posted speed.

Roadway Element

Edge Repair: 8 Points

What to grade.: The physical condition of existing edge repairs or the need for edge repairs.

What to look for: Sections of roadway where the outer edge of the pavement has been raveled or broken off by traffic.

The following descriptions should be used as a general guide to grade edge repairs:

Grade	Description
8	Excellent condition – does not require edge repairs or existing edge repairs are in excellent condition.
7	Good condition – all repairs are performing satisfactorily.
6	Fair condition – repairs are starting to deteriorate or repairs are possibly needed.
5-4	Poor condition – repairs have significantly deteriorated or repairs are needed.
3-0	Failed condition – repairs have failed or numerous edge failures have not been repaired.

Roadway Element

Settlement: 4 Points

What to grade: Profile of pavement over pipes, culverts, utility cuts, etc.

What to look for: Depressions in pavement due to settlement over or under pipes, utility cuts, bridge ends, etc.

The following descriptions should be used as a general guide to grade settlement:

Grade	Description
4	Excellent condition—little or no settlement.
3	Good condition—minor settlement.
2-1	Fair condition—moderate settlement.
0	Poor condition—major settlement.

Roadside Element

Striping/Pavement Markings: 8 Points

What to grade: Physical condition of striping and pavement markings.

What to look for: Visibility and reflectivity.

The following descriptions should be used as a general guide to grade, striping/pavement marking:

Grade	Description
8	Excellent condition—new stripe/pavement markings and good reflectivity.
7-6	Good condition—striped and good/fair reflectivity.
5-3	Fair condition—faded stripe with fair/poor reflectivity.
2-0	Poor condition—faded with poor/non-existent reflectivity.

Signs: 8 Points

What to grade: Physical condition and conformity to the Manual on Uniform Traffic Control Devices (MUTCD).

What to look for: Presence, reflectivity, readability, etc.

The following descriptions should be used as a general guide to grade signs:

Grade	Description
8	Excellent condition—all signs are in good condition and conform to MUTCD.
7-6	Good condition—all signs in good/fair condition and generally conform to MUTCD.
5-3	Fair condition—some signs are in fair condition and partially conform to MUTCD.
2-0	Poor condition—most signs in fair/poor condition and partially conform to MUTCD.

Roadside Element

Encroachments: 6 Points

What to grade: The presence of fixed objects in the clear zone that create a safety hazard.

What to look for: Illegal signs, fences, parked vehicles, headwalls, non-break away mailboxes, etc.

The following descriptions should be used as a general guide to grade encroachments:

Grade	Description
6	Excellent condition—encroachments not present.
5-4	Good condition—few encroachments present.
3-2	Fair condition—several/many encroachments present.
1-0	Poor condition—many encroachments present with possible sight distance limitations.

Roadside Element

Shoulder Condition

What to grade: Shoulder elevation in relation to edge of pavement and loss of usable width due to slope failure, erosion, drainage structures, etc.

What to look for: The need for clipping shoulders or adding material to shoulders.

High: 6 Points

The following descriptions should be used as a general guide to grade high shoulders:

Grade	Description
6	Excellent condition—shoulder grade matches pavement edge with adequate cross slope for drainage.
5-4	Good condition—few locations of minor high spots.
3-2	Fair condition—several locations of minor high spots and/or few locations of major high spots.
1-0	Poor condition—shoulders generally high throughout causing water to stand on pavement after rain.

Low: 6 Points

The following descriptions should be used as a general guide to grade low shoulders:

Grade	Description
6	Excellent condition—shoulder grade matches pavement edge with adequate cross slope for drainage.
5-4	Good condition—few locations of minor low spots.
3-2	Fair condition—several locations of minor low spots and/or few locations of major low spots.
1-0	Poor condition—shoulders generally low throughout.

Roadside Element

Clearing: 4 Points

What to grade: Visibility along shoulder and roadway.

What to look for: Trees, foliage, etc., that obstruct vision along roadway.

The following descriptions should be used as a general guide to grade clearing:

Grade	Description
4	Excellent condition—shoulder, front slope and back slope cleared.
3-2	Good/Fair condition—shoulder and front slope cleared.
1-0	Poor condition—shoulder and/or front slope not cleared.

Mowing: 4 Points

What to grade: How well shoulder and other accessible areas are mowed.

What to look for: Overgrown grass on shoulder.

The following descriptions should be used as a general guide to grade mowing:

Grade	Description
4	Excellent condition—shoulder and other accessible areas mowed.
3-2	Good/Fair condition—shoulder mowed.
1-0	Poor condition—shoulder overgrown.

Roadside Element

Ditches: 4 Points

What to grade: The ability of the ditch to adequately drain runoff away from the shoulder and pavement.

What to look for: Check to see if ditches are clear of debris and foliage and of adequate capacity.

The following descriptions should be used as a general guide to grade ditches:

Grade	Description
4	Excellent condition—clear of debris, foliage and of adequate capacity.
3	Good condition—minor reduction of capacity due to debris and foliage.
2	Fair condition—partially filled and/or inadequate capacity.
1-0	Poor condition—ditches are filled or non-existent.

Cross Drains/Side Drains: 2 Points

What to grade: Functionality and structural soundness.

What to look for: Partially or completely filled cross drains, side drains, and structural deterioration.

The following descriptions should be used as a general guide to grade cross drains and side drains:

Grade	Description
2	Excellent/Good condition—appears to function properly and structurally sound.
1	Fair condition—some reduced capacity and/or moderate structural deterioration.
0	Poor condition—does not function adequately due to inadequate capacity and/or structurally unsound.

Roadside Element

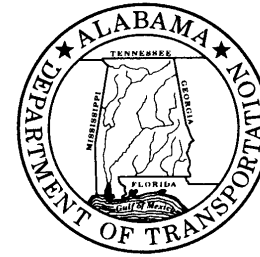
Erosion: 2 Points

What to grade: Stability of material in ditches and around headwalls.

What to look for: Loss of material in ditches and from around headwalls.

The following descriptions should be used as a general guide to grade erosion:

Grade	Description
2	Good condition— No erosion or very minor scour.
1	Fair condition—moderate erosion or scour.
0	Poor condition—major erosion or scour.



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