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Guide Rail: Roadside Maintenance

Cornell Local Roads Program
New York LTAP Center

Good maintenance is as crucial to safety as good roadside design. A roadside barrier will not function if it is badly corroded or damaged by crashes. Equally important, roadside safety improvements should be maintainable. This section presents some tips for maintaining your roadsides.

Roadside clear areas need to be managed to prevent tree growth. They should be mowed once a year, unless more is needed for drainage or sight distance reasons. Also, the areas behind guide rails need to be mowed to prevent trees from growing in the deflection zone (see Table 1 in *Choosing the Right Rail*).

Be careful when cleaning ditches. Do not make the ditch deeper than it needs to be, and keep the foreslope and backslope as gentle as possible. Gently graded ditches are safer for road users, and less likely to erode. Rounded changes in slope help keep vehicles from becoming airborne or unstable, and make it easier for the driver to regain control.

Encroachments by adjacent landowners can cause serious concerns. Dangerous mailboxes, landscape boulders, or planters can create serious hazards to the public. If they are in the right–of–way, the municipality can force the landowner to remove them, or remove them with municipal forces and bill the landowner. If they are on an adjacent property, consult with your municipal attorney before acting.

ROADSIDE INSPECTION

Take an inventory of your existing roadsides. Inventory should be a regularly scheduled event. If you answer “yes” to any of these questions, develop a plan to remedy the problems. Prioritize repairs based on how severe a crash would be if it occurred at the problem location, and how likely a crash would be.

- Have clear zones been mown infrequently enough for tree saplings to grow?
- Are there slopes steeper than 1 on 3 within the desired clear zone width? If so, could they be flattened or protected with guide rail?
- Do fixed objects intrude into the clear zone that could be removed, modified, relocated or shielded behind guide rail?

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- Is there unneeded guide rail? Could you remove the hazard it shields from traffic and do away with the rail?
- Is there guide rail with crash damage severe enough to require repair?
- Will the rail fail to protect traffic from the hazard it is meant to shield?
    - Are fixed objects within the rail's deflection distance? (See Table 1 in Choosing the Right Rail)
    - Is the rail too short to protect traffic from the hazard?
        - » Rail must extend beyond the Point of need
        - » Box beam under 125 feet long
    - Are there discontinuities in the guide rail?
    - Are there poor transitions from one type to another (sudden increases in stiffness)?
    - Is the rail too high or too low? (See Table 1)
    - Is there curb in front of a rail on a high speed road?
    - Is the guide rail on a slope steeper than 1 on 10? (1 on 6 for cable)
- Is the rail obsolete or non-standard?
    - Old style 4-strand cable
    - External-splice box beam
    - Heavy post W-beam with older steel blockouts, or worse, no blockouts at all.
    - Rail mounted on concrete posts
- Are there improper end sections?
    - Exposed rail end
    - Boxing gloves and dovetails
    - No anchor
- Are the rails or posts in poor condition?
    - Corrosion
    - Rot in wooden posts
    - Loose or missing bolts
    - Bent posts
    - Erosion around posts or anchors

Table 1: Acceptable heights for guide rail

Barrier Type	Normal Height (in)	Acceptable Heights[1,5]	
		Max (in)	Min (in)
Cable[2]	27	30	24
W-beam (weak post)[3]	30	33	27
W-beam (heavy post)[3]	27	30	24
Box beam[3]	27	30	24
Concrete (NJ) barrier[4]	32	32	30

Notes:

1. Height is normally measured from the ground directly below the barrier. Measure from the pavement surface if curb is present within 12 inches of the railing.
2. Measured at the center of the top cable at the mounting point.
3. Measured at the top of the rail at a post.
4. Measured at the top of the barrier.
5. Measured after resurfacing, when applicable.

When repairing guide rail, keep in mind the questions for treating roadside hazards. If you can remove the need for the rail and the rail itself, you can make the road safer and there will be one less guide rail for you to maintain. When removing a guide rail, consider getting the written concurrence of a professional engineer to help protect you from any future lawsuits.

An advantage of using standard guide rail types is its parts will remain available for a long time. This makes repairing it easier. If not, you may be forced to upgrade it to current standards. Rail that is too high or too low can be removed and reset at the proper height, if it is otherwise in good condition.