



Division of Public Works
355 Montevue Lane, Suite 200
Frederick, Maryland 21702

STANDARD PROCEDURES

Effective
Date:

Subject:

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Tractor and Boom Mowing Policy for Vegetation Control

Division Director Signature:

Purpose: To assist Office of Highway Operations (OHO) employees in the promotion of traffic and pedestrian safety, this policy establishes guidelines for the maintenance of roadside vegetation. It also provides guidance for maintenance crews regarding safe mowing, brush cutting, and other methods to control roadside vegetation. Furthermore, this policy addresses limits of vegetation control with respect to the public travelway, furnishes a recommended schedule for tractor and boom mowing, and provides for recognition of property owners' requests for specific action or non-action by OHO staff.

(See the *Highway Operations Mower Training Program Standard Procedures* for additional information regarding the safe operation of the mower.)

Background/Program Objectives: Highway and street agencies facilitate roadway safety with a sound maintenance program. Employees of local road agencies are responsible for reviewing their roads and rights-of-way to identify hazards and foster safe conditions for the public and employees.

Uncontrolled vegetation may be hazardous for many reasons: trees close to the road can present a fixed object hazard; tall grass, weeds, brush, and tree limbs obscure or limit a driver's view of the road ahead, including traffic control devices, approaching vehicles, wildlife, pedestrians, and bicycles. Controlling vegetation helps reduce crashes and injuries.

The benefits achieved by meeting these objectives are clear sight lines, improved drainage conditions, and an unobstructed travelway for all vehicles, including County snowplows, which require a clear height of up to seventeen feet for winter operations, when plow and salting operations require a raised truck bed.

- **Clear Sight Lines** - Tall grass, weeds, and brush along the shoulder, ditch, and back slope areas of a roadside can create problems. Tall grass may hide low fixed-object hazards, such as culvert headwalls, drainage inlets, guardrail ends, and the object markers in front of them, as well as wildlife and livestock. High grass can also obscure the edge of pavement and shoulder condition. OHO performs shoulder and roadside maintenance, such as grading or mowing, to define the edge of shoulder and ditch so that motorists can see the shape, condition, and limits of the roadside.
- **Horizontal Curves** - On the inside of horizontal curves, vegetation growth close to the pavement edge can block a driver's view of motor vehicles, bicycles, and pedestrians traveling in the same or opposite direction. Maintaining roadsides so headlights and taillights are visible around the inside of horizontal curves increases horizontal sight distance.



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- **Drainage** - Weeds, turf, and sod can interfere with roadside drainage. A high shoulder creates a secondary ditch along the edge of the road which may damage the pavement. Water on the pavement due to high shoulders causes safety problems, including hydroplaning and isolated icy conditions during winter. Grading is necessary to ensure the shoulder continues the slope from the road crown smoothly.
- **Side Road Visibility** - The potential for vehicle crashes increases at intersections. Safe and efficient vehicle movement through an intersection requires good visibility. As drivers approach an intersection, they need to check each quadrant of the intersection for entering vehicles. Similarly, drivers pulling out from a STOP sign need a clear view of oncoming traffic. OHO strives to maintain clear site distance at each corner of the intersection for driver safety.

Mowing rights-of-way regularly and consistently

- Ensures regulatory and wayfinding signs are visible to drivers.
- Ensures road users (vehicles, bicycles, and pedestrians) are visible to drivers.
- Helps pedestrians and bicyclists see motor vehicles.
- Improves driver sighting of livestock and wildlife near the road.
- Ensures sidewalks and pedestrian paths are free and clear of overhanging vegetation.
- Removes trees close to the roadway that may cause property damage or severe injury if struck.
- Keeps edge-of-road shoulder area clear of obstructions to maintain a recovery area for vehicles that veer off the road.
- Improves winter road maintenance in snow and ice areas.
- Helps drainage systems function as designed.
- Preserves pavements through daylighting and root system control.



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- Controls noxious weeds and invasive tree species, in accordance with local laws and ordinance, reducing the need for herbicides.

Techniques:

- **Bank Mowing** - Mowing of banks, predominately by boom mowers towards the end of the growing season, discourages fast growing invasive tree species from becoming established. If allowed to establish, trees such as Ailanthus (Tree of Heaven), Bradford pear, and Bamboo can quickly spread, requiring considerable manual labor to keep them from overhanging the road and entering the clear zone. **(See Exhibits 1 and 2.)** Mowing of brush and undergrowth also provides a safe, accessible work area for tree trimming operations.
- **Roadside Tree Maintenance** - One of the most common causes of fatal and serious injury crashes on rural roads involves vehicles leaving the road and striking a tree. The concept of a clear or recovery zone -- an area adjacent to the travelway where slope, surface, and an absence of fixed objects can permit recovery of a vehicle that leaves the roadway -- is important for providing a safe roadside. Trees are potential hazards because of their size and location with respect to vehicular traffic. Trees larger than four inches in diameter can be a hazard to a vehicle. The closer trees are to the travel lane, the more likely a vehicle is to strike them.

Isolated trees provide a better opportunity for removal compared to forest conditions, where removal involves significant cost. OHO recognizes that removing individual trees may be controversial and bases its decisions to proceed with removal primarily upon potential crash frequency and severity. OHO assigns trees closest to the road removal priority; assesses trees in critical locations, such as curves and intersections, for removal; and pays particular attention to trees that drivers have previously struck.

- Snagging occurs when a vehicle undercarriage catches on a stump or other object. Generally, any stump higher than four inches above the surrounding ground can cause snagging.
 - Cut trees close to the ground so that no stump remains as a fixed object or snagging hazard or schedule the stump to be ground flush.
 - Cut small-diameter trees no more than four inches from the ground.
 - Cut large-diameter trees flush with the ground.
 - Cut trees of any size growing on a slope flush with the ground.



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- Remove all trees within the clear zone when they are small saplings rather than small trees. At that time, they are easy to cut off at ground level and cause no stump problems.
- Fell and dispose of via approved methods any dead and leaning trees within the road right-of-way that endanger the traveling public.
- Contact property owners prior to removal of any potentially hazardous trees outside the right-of-way. Note that an emergency may warrant immediate OHO intervention. Documentation is especially important in these situations. OHO must maintain records regarding receipt of emergency notice, date of review, OHO employees involved in resolution, and other relevant facts.
- **Winter Maintenance** - When trees and shrubs (particularly evergreens) in the right-of-way cast shadows on the pavement (trees growing on the south side of the road cause this issue), freeze/thaw cycles may create isolated icy patches on the pavement. Since the rest of the road is dry, drivers do not anticipate these icy patches and loss-of-control crashes result.
 - Work on the south and west sides of the roads first if time and money for brushing are limited.
 - “Daylight” by cutting taller vegetation to enable the sun to help with thawing and ice control (and generally to help preserve pavement).
 - In areas receiving heavy snow, provide vegetation clear zones for snow storage.
 - In the fall, when crews perform winter maintenance dry runs, identify dead limbs overhanging the road and remove. Dead branches overhanging roadways are problematic because winter snow and ice accumulate on the dead branches and the extra weight often causes them to fall on the roadway and traffic.

Resources:

OHO utilizes tractor mowers and boom mowers, as well as mowing contractors, to control vegetation along County rights-of-way. Contractors or Homeowner’s Associations primarily mow medians because the County does not have the equipment to maintain this part of the right-of-way safely, nor does it have enough median area to justify the purchase of this type of equipment.



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Tractor mowers mow the flat shoulder areas. These mowers can mow a five-foot-wide pass, mowing one or two passes per mowing, depending on the time of year. Boom mowers mow hard-to-reach areas, such as behind guardrail, around culverts and headwalls, and along the steeper banks where the deck on the tractor mower cannot reach. When mowing in high-traffic or high-posted-speed roads, OHO may employ a chase vehicle with warning lights to enhance safety.

Operations:

OHO utilizes tractor mowers to make single and double five-foot-wide passes to the roadside to control vegetation. For those areas the tractor mower cannot reach (behind guardrail, around culverts/headwalls, and on banks), OHO will use boom mowers.

- ***Various factors influence off-the-road-edge limit decisions:***

- Safe sight distance around curves and at intersections.
- Visibility of traffic control devices, such as regulatory signs and roadside delineators.
- Visibility of infrastructure in the right-of-way, such as culvert headwalls and bridge abutments.
- Controlling the growth of trees adjacent to the roadway that may become hazardous to the traveling public due to their size and/or location.
- Maintaining a recovery zone for vehicles that may leave the travel surface.

(Exhibits 1 and 2 identify the optimal clear zone dimensions for the safety of the traveling public, including OHO equipment employed in snow and ice maintenance operations. OHO may not always be able to maintain the optimal clear zone, where mowing operations will need to occur outside the dedicated or prescriptive right-of-way.)

- ***Frequency***

- **Tractor mowing** begins in April with the objective of making a pass every four to six weeks. The primary purpose of the tractor mower is to maintain clear sight distance, keep drainage swales open, and clear the recovery area of vegetation, brush, and stumps. Mowers will make a single pass while vegetation is growing rapidly. They will then make a double pass during the slower summer months.



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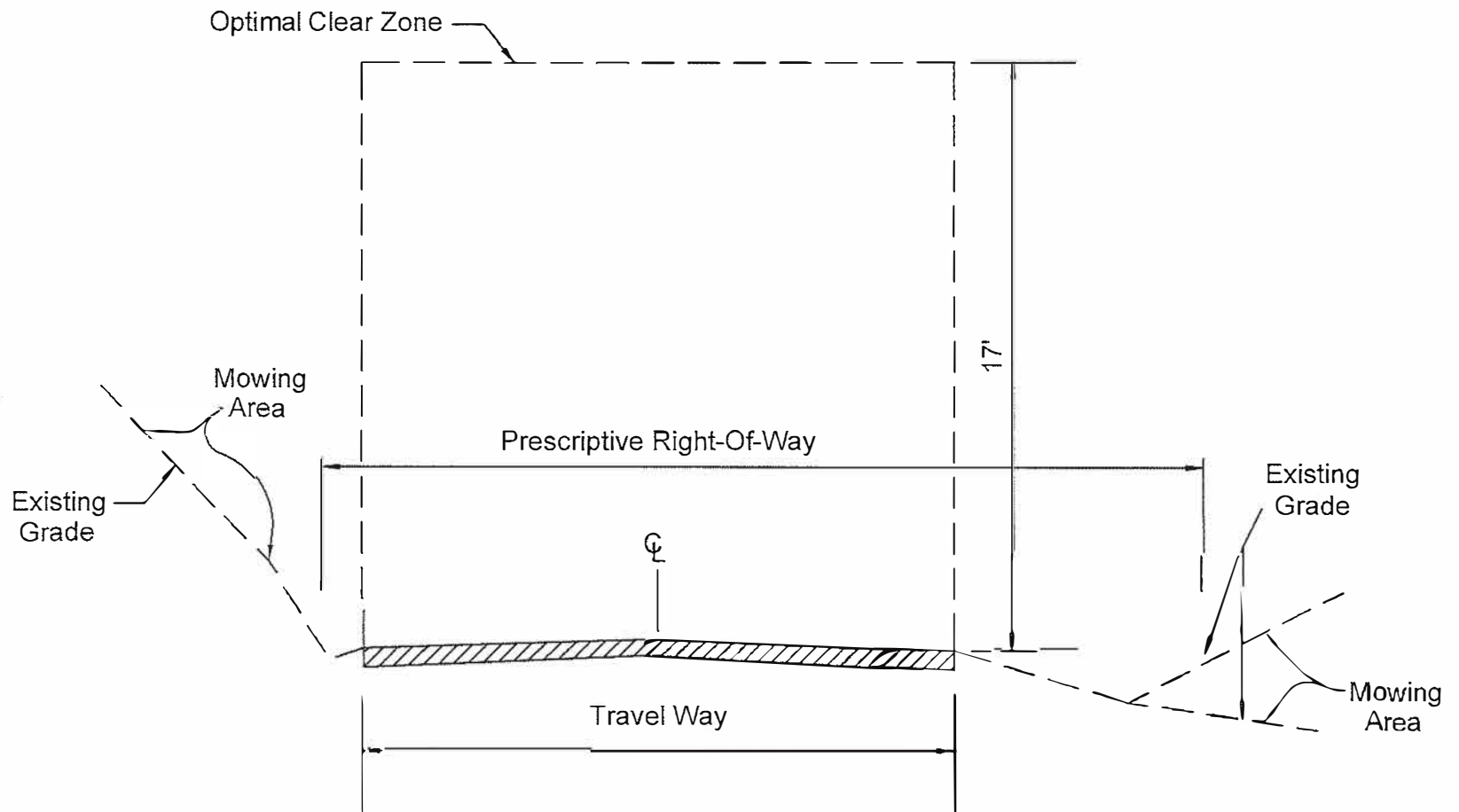
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- **Boom mowers** will mow banks and behind guardrail yearly, or more often where sight distance is a major issue. OHO may mow other locations once every two to four years due to scheduling, weather, or equipment availability.
- **Tree trimming** begins early December and continues through mid-April. OHO inspects roads to identify overhanging limbs, sight distance issues at intersections, dead trees, and trees affected by scheduled road improvements. Tree trimming will continue to a lesser extent throughout the remainder of the year, as OHO identifies issues when trees are in full foliage, after storm damage, or upon receipt of citizen complaints.
- **Property Owner Requests** - OHO respects the rights of property owners and understands that some property owners may request assistance from its workforce to provide maintenance of roadside vegetation.
- OHO does not mow outside the right of way if the area is mowed by the property owner.
- OHO approves "no mow" requests along individual properties on a case-by-case basis if the property owner maintains their frontage to OHO standards, for the safety for all who utilize the road network.
- OHO approves requests to mow farther off the road edge on a case-by-case basis, when there is a definitive safety benefit to the County, such as increasing sight distance, enlarging the recovery area, or eliminating overhanging trees. For these cases, the property owner must complete a liability waiver before OHO equipment may enter upon private property.

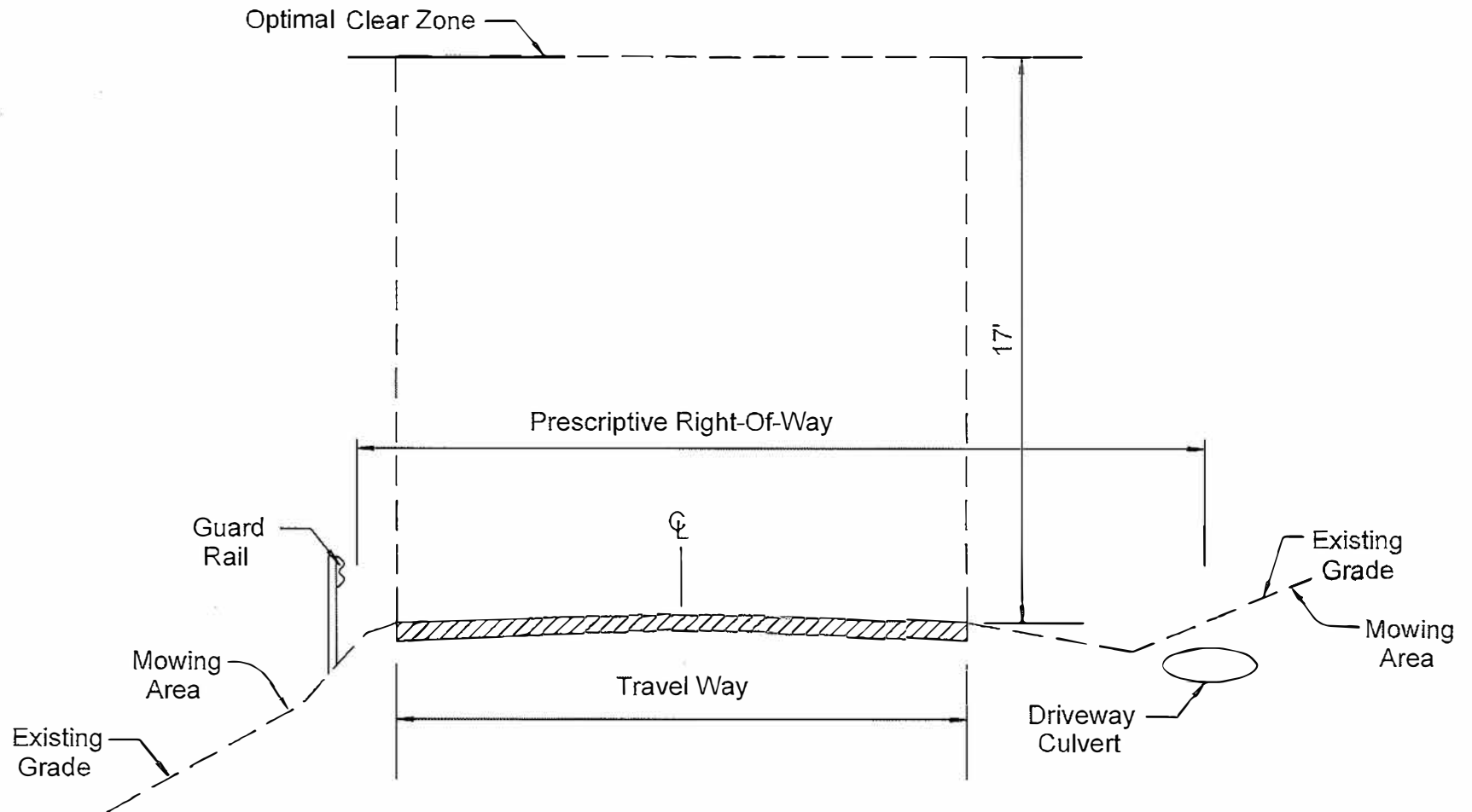
EXHIBIT 1



TYPICAL CLEAR ZONE

NOT TO SCALE

EXHIBIT 2



TYPICAL CLEAR ZONE

NOT TO SCALE