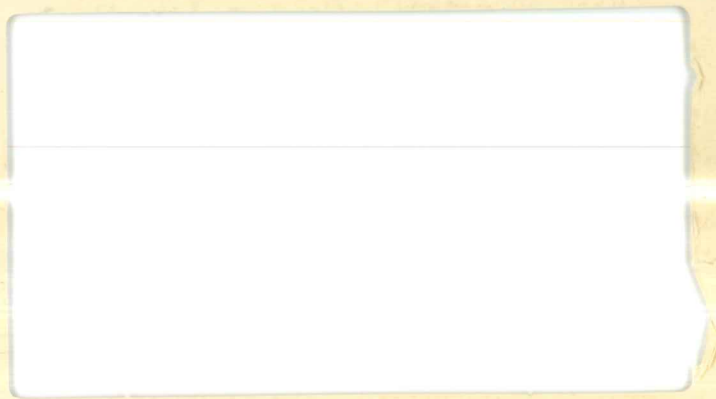




RESEARCH AND STANDARDS

"Implementing research findings"

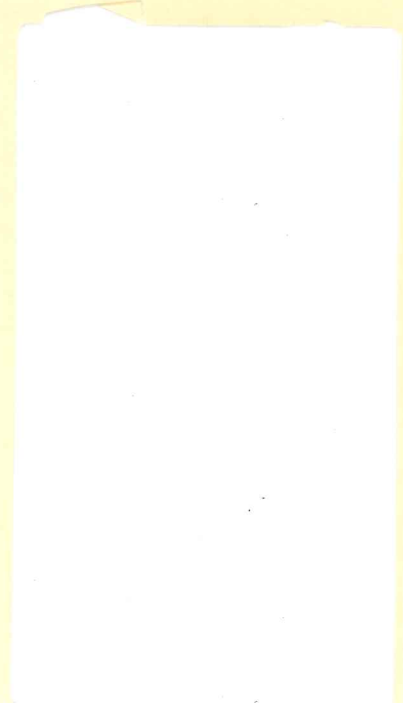


DRAFT

NI
E
178
-M68
e.2

Library & Information Services
Minnesota Dept. of Transportation
B-26A, Transportation Bldg.
St. Paul, MN 55155

Library & Information Services
Minnesota Dept. of Transportation
B-26A, Transportation Bldg.
St. Paul, MN 55155



37715302

MOWING GUIDELINES

Mowing Guidelines

PAGE

1. Introduction	3
2. Urban Areas	4
3. Rural Areas	5
4. Urban-Rural Transition	7
5. Farmer Mowing	7
6. Miscellaneous Mowing	8
7. Mowing Widths	13
8. Permissible Height of Grass	16
9. Mowing Restrictions	18
10. Safe Mowing Practices	18
11. Harvesting Hay on the Interstate R/W	20

List of Figures

<u>Fig.</u>	<u>Description</u>	<u>PAGE</u>
1.	Mowing for Snow-drift Control _____	6
2.	Mowing Around Signs _____	8
3.	Mowing at Intersections _____	9
4.	Mowing at Interchanges _____	11
5.	Mowing at Curves _____	12
6.	Typical Roadway Cross Section _____	13
7.	Mowing Shoulder Inslopes _____	14
8.	Mowing Medians _____	15
9.	Table of Permissible Grass Heights _____	17
10.	Hazards in Mowing _____	19
11-15.	Harvesting Hay on the Interstate R/W _____	21-25
11.	Proposal Sheet 1 _____	21
12.	Condition of Contract _____	22
13.	Equipment Insurance Certificate _____	23
14.	Location of Interstate R/W That May Be Mowed _____	24
15.	Strip Map _____	25

1. Introduction

1.1 The primary purpose for planting a vegetative cover on roadside areas is to prevent erosion of the soil. A secondary purpose is to create an appealing roadside for the motorist. The intent of this guideline is to reduce mowing to a minimum and yet obtain these objectives.

1.2 Roadsides shall be maintained in conformance with adjacent land use. The entire right-of-way may be mowed if the adjacent land is a park, cemetery, church, roadside business, home, or farmstead. Blend full-width mowing into the roadside by mowing to a natural geographical feature or a maximum distance of $\frac{1}{4}$ mile from the park, cemetery, etc. Extra-width mowing is discouraged in rural areas until after July 15 in order to avoid disturbance of nesting cover for wildlife. In urban areas mowing is done as necessary to maintain the proper height (see sec. 2).

1.3 Spot mowing of noxious weeds should be done as necessary to reduce propagation. The state law is quoted below:

"160.23 DESTRUCTION OF NOXIOUS WEEDS. Road authorities, including authorities of cities, villages, and boroughs, shall cause all noxious weeds on their respective highways and streets to be cut down or otherwise destroyed or eradicated as often as may be necessary to prevent the ripening or scattering of seed and other propagating parts of such weeds."

2. Urban Areas

2.1 Definition

This mowing area is that which is within a town or city as defined by its perimeter of development.

2.2 General

Frequent mowing of certain areas may be required and mowing the entire right-of-way is permitted. As a general rule, the roadside area should be maintained in a manner similar to the adjacent property and the level of development present in the area.

Slopes steeper than $2\frac{1}{2}:1$, commonly found on the urban interstate roadsides, are difficult to maintain. A satisfactory turf is difficult to establish and the maintenance effort is time consuming and costly. These slopes should be overseeded with Crownvetch, Birdsfoot Trefoil and other low maintenance species fo grasses and legumes. Shrub beds may also be installed. Mowing on these slopes can then be eliminated.

2.3 Urban High Frequency Mowing

This type of mowing is applied to a typical highway roadside which passes through a residential or business district. The roadside abuts private lawns or business and is conspicuous from these properties. The frequency of mowing must be increased so the vegetation is

maintained between a height of 3 to 6 inches.

2.4 Urban Low Frequency Mowing

The highway may pass through a residential or business district but is separated by means of a retaining wall, noise wall, or frontage road. The frequency of mowing can be reduced to allow the vegetation to be maintained between a height of 3 to 12 inches.

3. Rural Areas

3.1 Definition

This mowing area is that which is outside of a town or city as defined by its perimeter of development.

3.2 General

3.21 Mowing of the entire R/W is not permitted unless it is necessary to conform to adjacent land use. (See Introduction par. 1.2.)

3.22 Normal mowing shall consist of a cut 2 swaths wide (about 10') along the shoulder and shoulder inslope to define the edge of roadway and reduce the cover for wildlife. (See table in section 8, Permissible Grass Heights.)

[Animals in this zone may constitute a hazard to motorists.

3.23 In those years when the temperature and rainfall are normal, it will be necessary

to make the shoulder and shoulder inslope cuts twice, once in the spring and once in the fall.

3.3 Snow Drift Control

Mowing for snow drift control shall be in conformance to Fig. 1. This work is done in late fall after most of the growth has taken place.

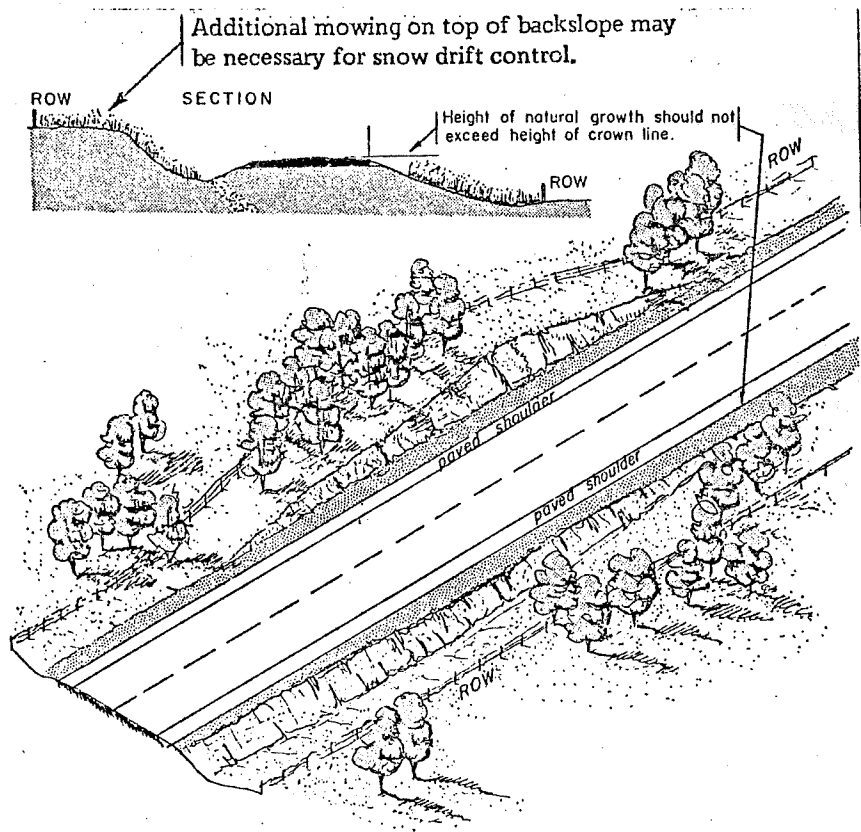


Figure 1. Snow drift control is achieved by maintaining the height of vegetation on the shoulder and the shoulder inslope at a level equal to or lower than the roadway elevation.

4. Urban-Rural Transition

This zone is defined as the area between the urban and rural areas. Mowing of the entire R/W is permitted up to $\frac{1}{4}$ mile from the limits of the urban area or up to the closest crossroad.

5. Farmer Mowing

5.1 Farmers are permitted to harvest hay on the highway R/W (except Interstate R/W, see sec. 11). State law permitting this is quoted below:

"Chap. 160.27 Subd. 5. Misdemeanors. Except for the actions of the road authorities, their agents, employees, contractors, and utilities in carrying out their duties imposed by law or contract, and except as herein provided, it shall be unlawful to:

- (2) Plow or perform any other detrimental operation within the road right of way except in the preparation of the land for planting a perennial hay crop, and the harvesting of said crop."

Farmers should abide by the following rules:

- 5.11 Obtain permission from the Area Maintenance Engineer prior to mowing.
- 5.12 Mow the entire R/W because this presents a more pleasing appearance. However, grasses that have little or no value to the farmer may be left in place after being cut.
- 5.13 Keep mowing equipment off the travelled roadway.
- 5.14 Wait until July 15 in order to not disturb wildlife nesting on the roadsides.

6. Miscellaneous Mowing

6.1 Signs, Signals, and Roadmarkers

Highway directional and warning signs, traffic signals, and other road markers must be kept clearly visible to highway users at all times. Vegetation should not be allowed to grow so high as to obstruct a clear view of them. Approaches to signs should be mowed for approximately 500 feet if necessary for visibility (Fig. 2). This mowing should be blended into the regular shoulder mowing.

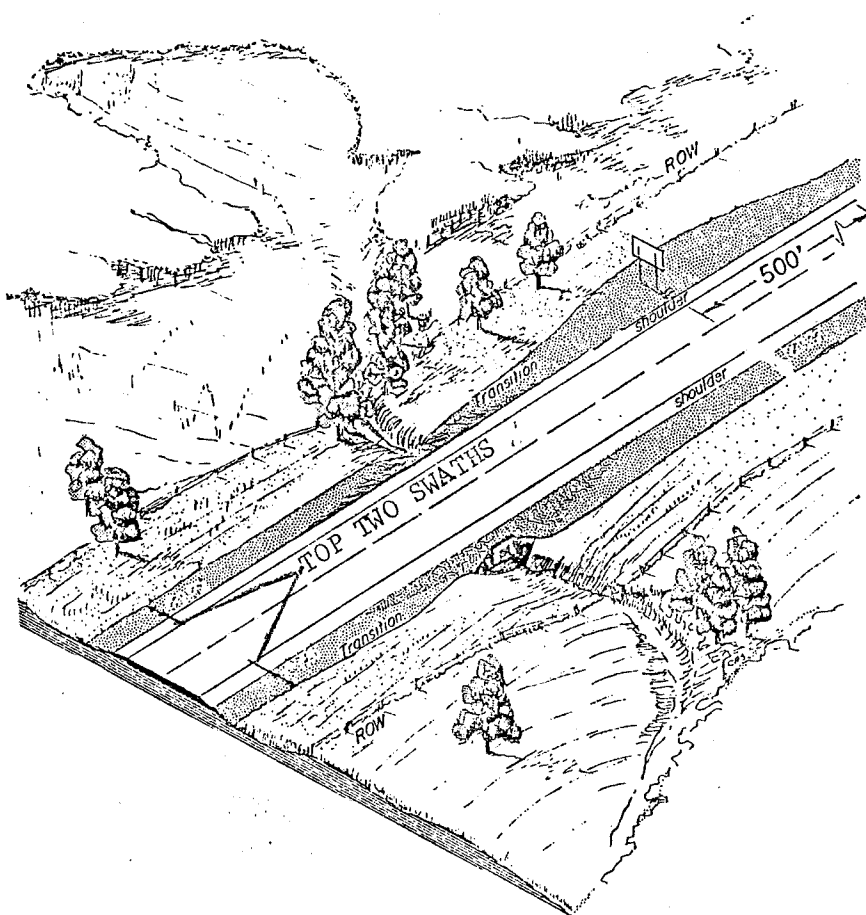


Figure 2. If mowing is needed around signs to maintain sight distance, it should begin 500 feet before the sign. All mowing should blend into the shoulder inslope mowing.

6.2 Guardrails

Vegetation should be controlled for about 18 inches on either side of the guardrail. Sterilants, bituminous mixtures, and road oils are some of the most common treatments for controlling vegetation around guardrails. Mowing with hand mowers is costly but may be necessary.

- 6.3 Intersections should be mowed as necessary to maintain sight distance. This mowing should be blended into the shoulder cut. (Fig. 3)

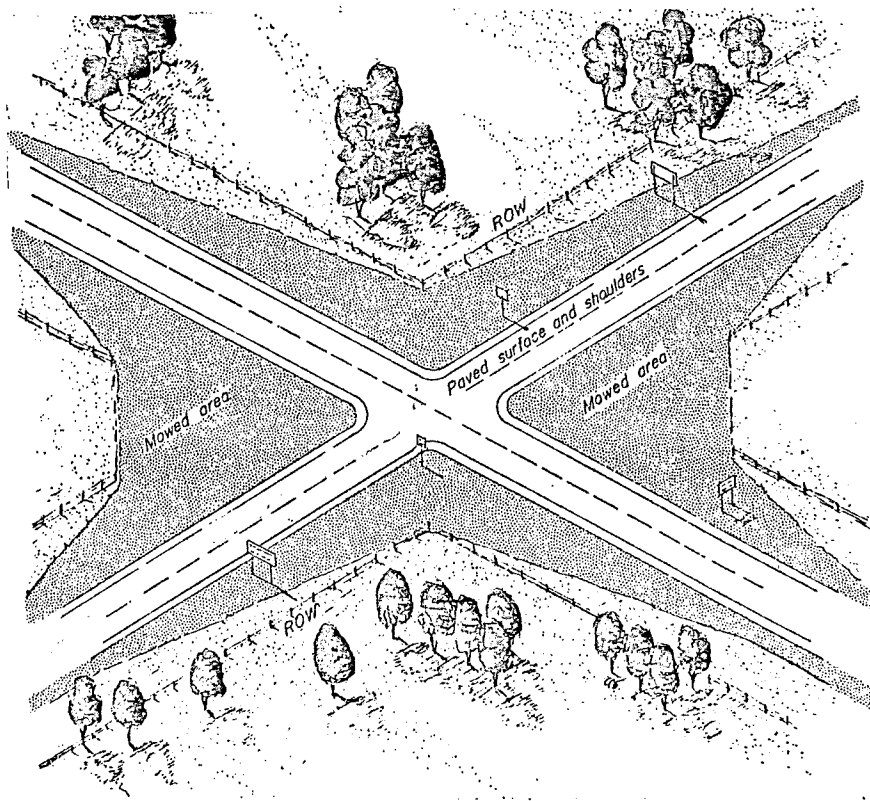


Figure 3. Intersections should be mowed as necessary to maintain sight distance.

6.4 Interchanges

Rural and urban interchanges should be mowed out completely. *may why*

(Fig. 4)

6.5 Curves

Insides of curves should be mowed as necessary to maintain sight distance. (Fig. 5)

6.6 Rest Areas

Mow developed and used portions of rest areas, wayside parks, and over-looks as necessary to present a restful and pleasing appearance.

6.7 Trimming

Hand trimming around signposts, light poles, trees, and shrub beds in urban areas, and all intersections and interchanges *PRODUCES A PLEASING APPEARANCE*
~~is aesthetically pleasing and desirable~~ and should be done if resources permit.

MOWED AREA IS SHADED.
TYPICAL ALL QUADRANTS.

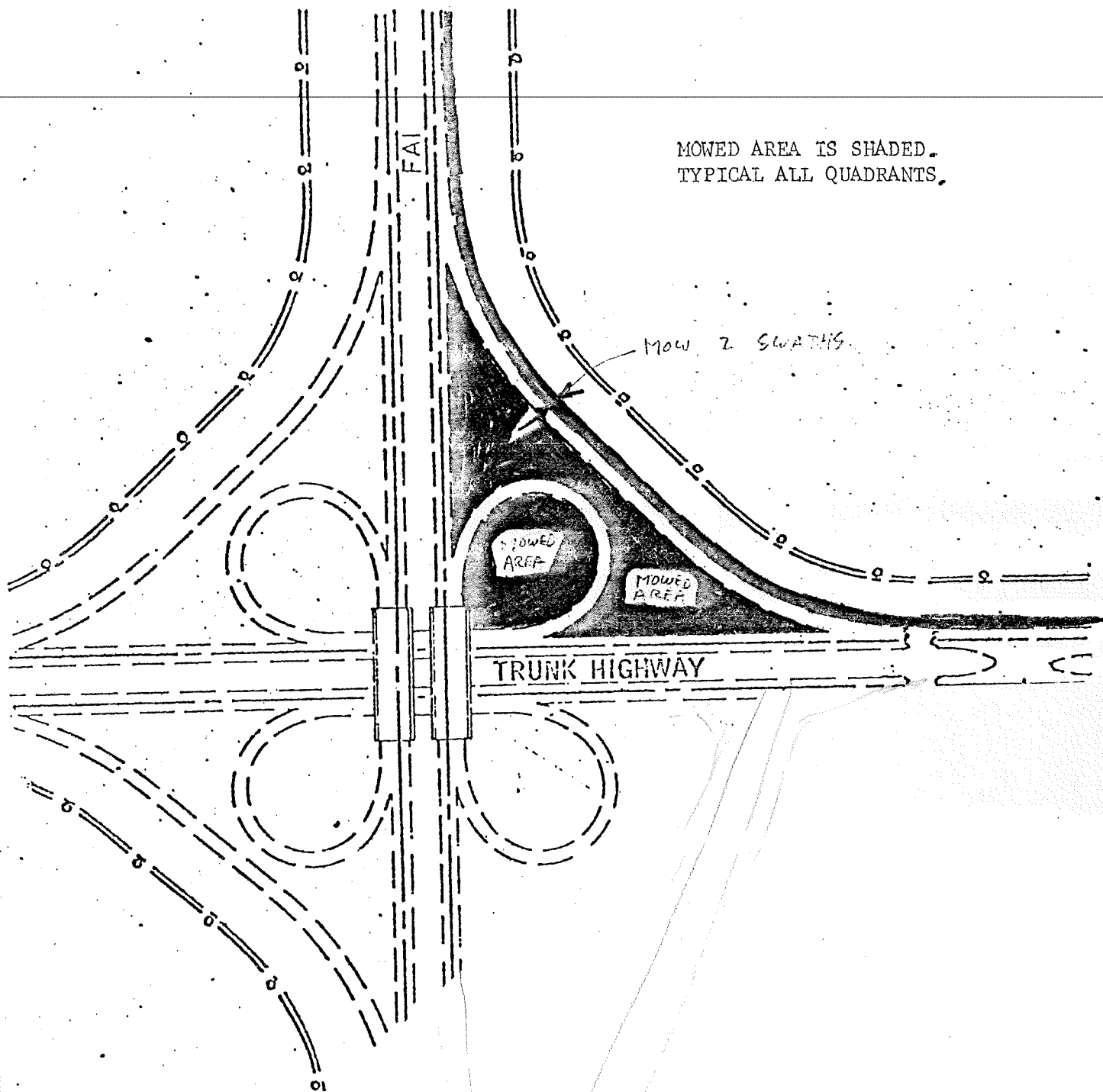


FIG. 4
RURAL & URBAN INTERCHANGES
SHOULD BE MOWED OUT COMPLETELY

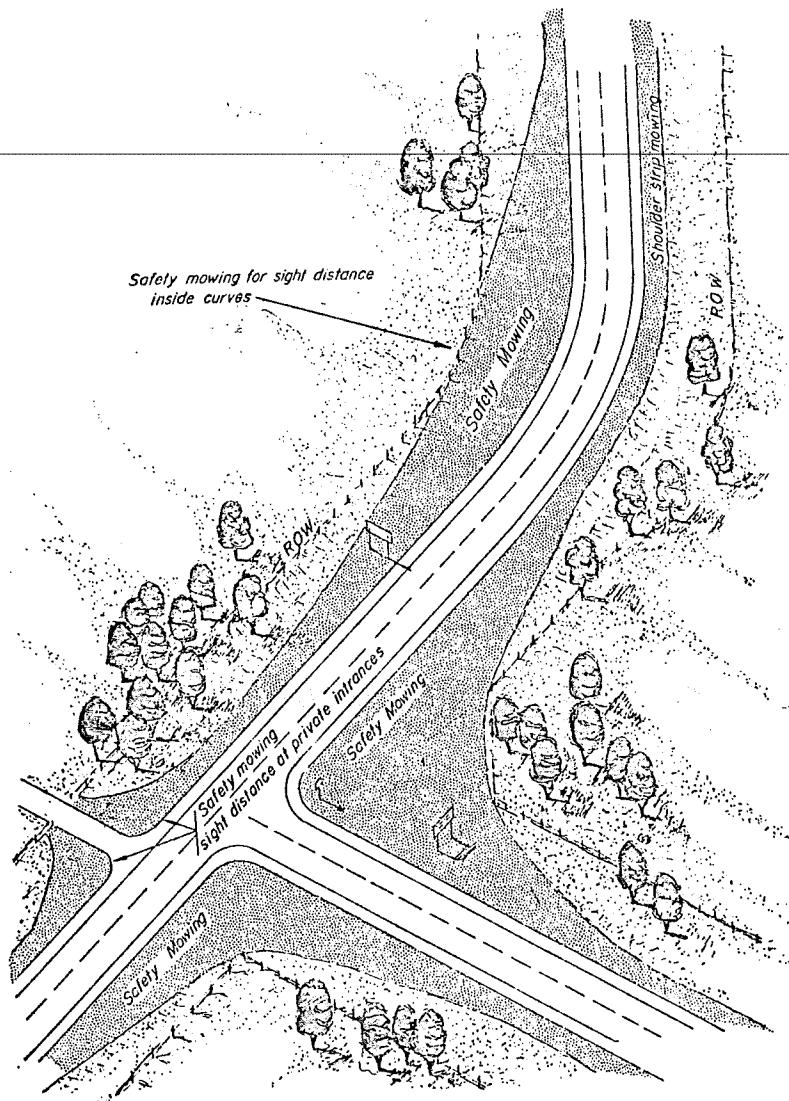
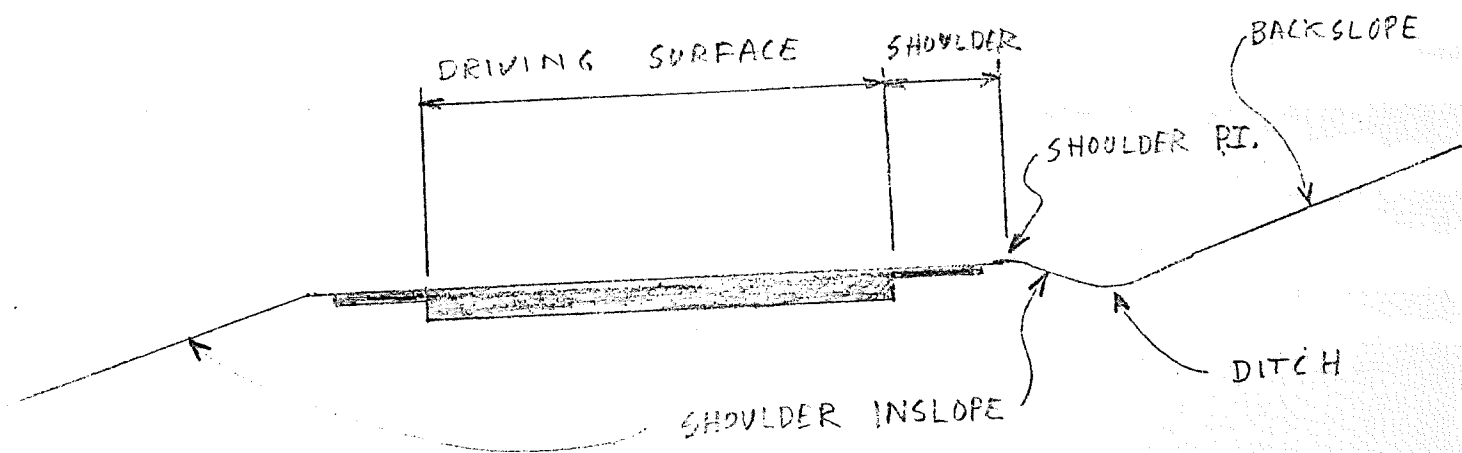


Figure 5. The right-of-way on the insides of curves should be mowed as necessary to maintain sight distance.

7. Mowing Widths

7.1 Shoulders

Vegetation should be controlled in the shoulder area for safety reasons. The shoulder is defined as the area from the edge of the traveled roadway to the PI. (Fig. 6)



CROSS SECTION

FIG 6

7.2 Shoulder Inslope

This area begins at the PI and continues to the ditch bottom (Fig. 7). Mow the top 2 swaths of this area.

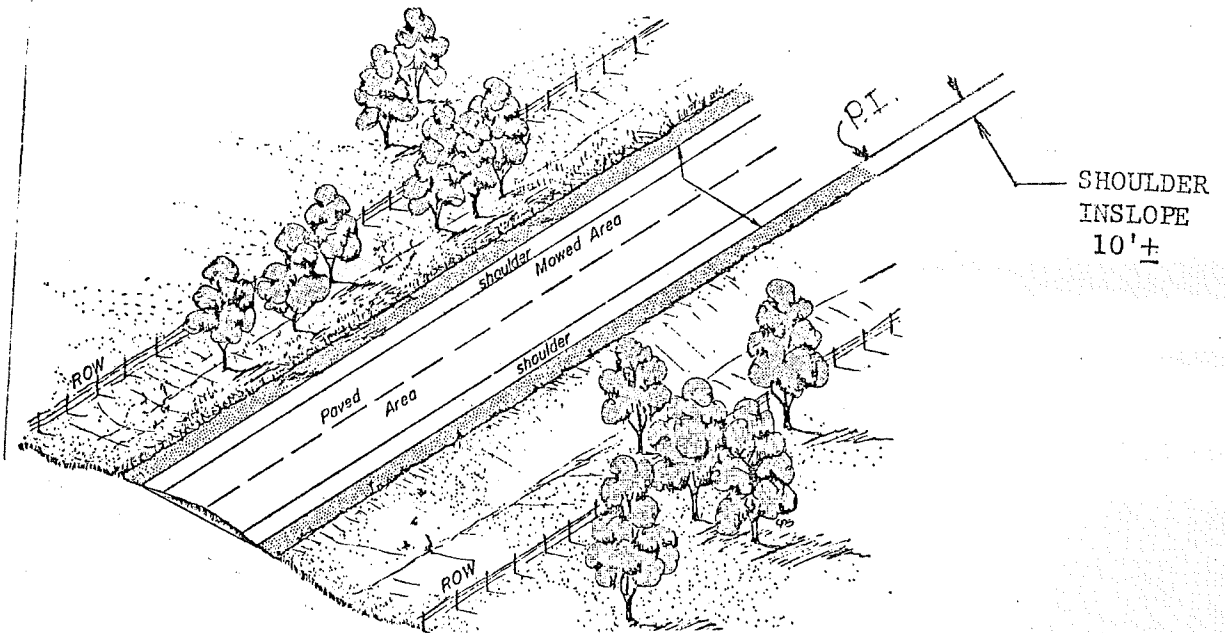


Figure 7. The top 2 swaths will be mowed on the shoulder inslope.

7.3 Medians

Mow the entire median if the width is less than 55 feet between the inside shoulders. If the median width is greater than 55 feet, the shoulder inslope mowing criteria shall apply.

(Fig. 8)

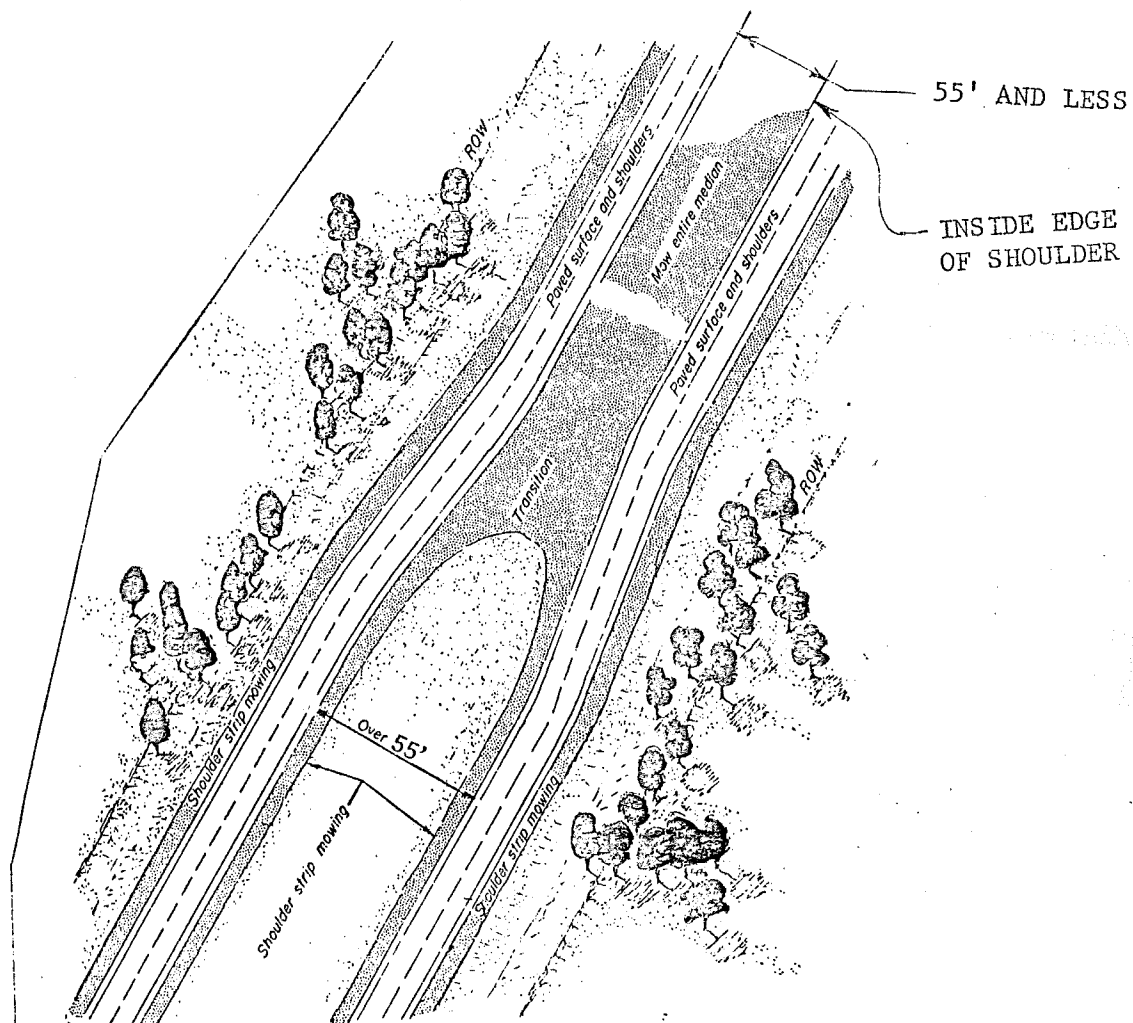


Figure 8. The entire median of a divided roadway should be mowed if the distance between the inside shoulders is less than 55 feet. If this distance is greater than 55 feet, the shoulder inslope mowing criteria should normally apply.

7.4 Blending

The appearance of a roadside can be improved by blending to provide a smooth transition between the different types of mower cuts. The smooth flowing lines obtained by blending are much more desirable than the choppy lines obtained when blending is not done. (Figures 2,3, 5 and 8).

8. Permissible Height of Grass

The recommended minimum height of cut is 3 inches. It is important that all equipment be set to operate no lower than this. If grass is cut to this minimum height, it will be more resistant to the harmful effects of drought and weed infestation. Consequently, it will be in a better condition to resist erosion damage.

Minimum and maximum grass heights should be in accordance with the following table:

Area	Urban Height (inches)		Rural Height (inches)	
	Minimum	Maximum	Minimum	Maximum
<u>Shoulder Sod</u>	3	6	3	12
Gravel or Paved	Vegetation growing on gravel shoulders will be controlled by blading. Vegetation growing in cracks in bituminous shoulders should be destroyed by herbicides, soil sterilants, or other acceptable methods.			
<u>Shoulder Inslope</u> (Top 2 swaths)*	3	12	3	18
<u>Ditches and Back Slopes</u> (Below top 2 swaths)*	3	12	terminal	terminal
<u>Steep Slopes</u> (Steeper than 2½:1)	terminal	terminal	terminal	terminal
<u>Medians</u> Less than 55' Greater than 55'	3 3	12 12	3 terminal	18 terminal
<u>Interchanges</u>	3	12	3	18

*each swath is approximately 5' wide.

FIG. 9
PERMISSIBLE GRASS HEIGHTS

9. Mowing Restrictions

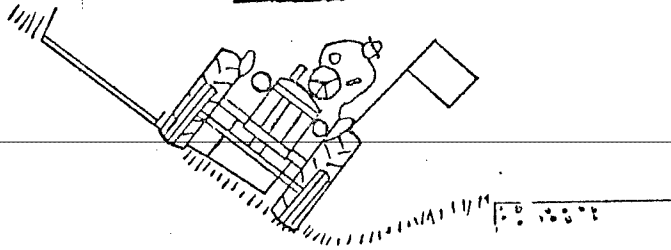
- 9.1 Prior to mowing, all debris should be cleared from the area to be mowed. This will prevent possible damage to mowing equipment and eliminate the hazard to passing pedestrians and vehicles.
- 9.2 ~~Operating~~ ^{BECOME UNSAFE} tractor-driven mowers on slopes steeper than $2\frac{1}{2}:1$, ~~is not safe and should not be permitted.~~ These slopes require specialized slope mowing equipment, ~~or should be mowed by hand guided mowers (e.g., Jari).~~ However, steep slopes should be left unmowed whenever possible.
- 9.3 Tractor mowers should not be used in swampy areas nor on unstable surfaces where road side damage could result from wheels digging in or slipping.
- 9.4 Mower operators should avoid cutting or hitting landscape trees and shrubs. Legumes such as Crownvetch and Birdsfoot Trefoil need not be mowed. These legumes remain green until late fall and do not present a fire hazard.

10. Safe Mowing Practices

Operators should abide by the following safety rules:

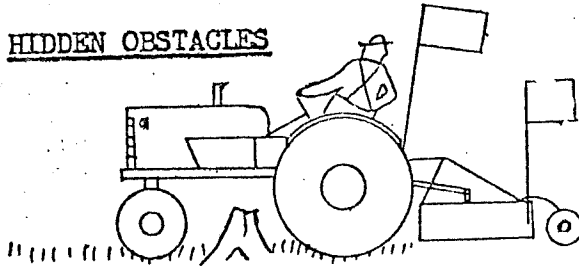
- 10.1 Be careful. If a slope is too steep, don't try to mow it. A hole, bump, or quick turn can bring tragedy on a slope.
- 10.2 Be alert, slow down for tall weeds or grass; a hidden log, culvert, stump, or rock can throw you.
- 10.3 Avoid heavy traffic; high-speed traffic and slow-speed mowers don't mix.
- 10.4 If the mower is equipped with a roll-over-protection-system (ROPS), use the seat belts provided. Wear all approved safety equipment in accordance with approved safety policies.

SLOPES



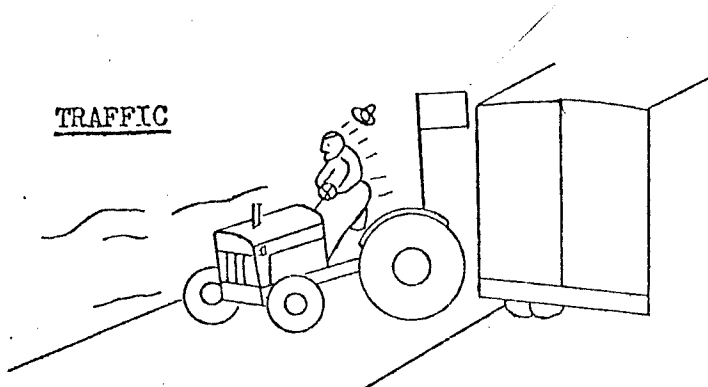
A hole, bump, or quick turn can bring tragedy on a slope. Be extra careful.
If the slope is too steep, don't try to mow it.

HIDDEN OBSTACLES



A big tractor tire has lots of "bounce."
A hidden log, stump, or rock can throw you.
Be alert! slow down for tall weeds or grass.

TRAFFIC



High-speed traffic and slow-speed tractors
don't mix. Avoid heavy traffic.

HAZARDS IN MOWING

FIG 10

11. Harvesting Hay on the Interstate R/W

Farmers or other interested people are not permitted to harvest hay on the interstate R/W except when the AME has determined that sufficient interest exists in his area to warrant this activity and after the applicant has entered into a contract with Mn/DOT.

A complete proposal for this activity is illustrated in Fig. 11-15. Fig. 11 illustrates sheet 1. The appropriate blank spaces are filled in by the applicant and/or district personnel. Fig. 12 lists the conditions of the contract to which the applicant must agree. Fig. 13 illustrates the equipment insurance certificate required. Fig. 14 identifies each segment in detail. Fig. 15 illustrates part of a strip map furnished to each applicant.

MINNESOTA DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

----- P R O P O S A L -----

FOR REMOVING STANDING HAY FROM THE INTERSTATE RIGHT OF WAY

PROPOSAL OF
NAME (Print or Type)

.....
ADDRESS (Print or Type)

.....
PHONE NUMBER

SEALED BIDS WILL BE RECEIVED BY THE MN/DOT - HIGHWAY DIVISION AT ITS DISTRICT MAINTENANCE OFFICE (CIRCLED BELOW) UNTIL 10:00 A.M. ON June 16, 1977, 1977, FOR THE RIGHT OF CUTTING, BALING AND REMOVING HAY FROM THE INTERSTATE RIGHT OF WAY AS DESCRIBED IN THIS PROPOSAL. A MAP OF THE INTERSTATE ROUTE SHOWING THE INDIVIDUAL SEGMENTS TO BE MOWED MAY BE OBTAINED FROM THE DISTRICT MAINTENANCE OFFICE. EACH OF THE INDIVIDUAL SEGMENTS WILL BE BID AND AWARDED ON A LUMP SUM BASIS. THE RIGHT IS RESERVED TO REJECT ANY OR ALL PROPOSALS.

BIDS MUST BE SUBMITTED ON BLANKS FURNISHED BY THIS DEPARTMENT, MUST BE MAILED TO OR OTHERWISE DEPOSITED WITH THE APPLICABLE DISTRICT MAINTENANCE OFFICE AND SHALL BE SEALED WITH THE ENVELOPE MARKED "BID FOR STANDING HAY". BID BLANKS ARE AVAILABLE AT THE RESPECTIVE DISTRICT MAINTENANCE OFFICES OR AT THE OFFICE OF THE DEPARTMENT'S MAINTENANCE ENGINEER IN THE TRANSPORTATION BUILDING IN ST. PAUL, MINNESOTA.

AREA	LOCATION OF DISTRICT MAINTENANCE OFFICE
1A	1123 Mesaba Avenue, P.O. Box 39, Duluth, MN 55811
3B	Box 370, 3725-12th St. No., St. Cloud, MN 56301
4A	1000 W. T.H. 10, Box 666, Detroit Lakes, MN 56501
4B	2 So. St., Box 410, Morris, MN 56267
5	2055 No. Lilac Drive, Golden Valley, MN 55422
6A	North Highway 52, Box 6177, Rochester, MN 55901
6B	West Highway 14, Box 307, Owatonna, MN 55060
7A	501 S. Victory Drive, Mankato, MN 56001
7B	Box 272, Windom, MN 56101
9	3485 Hadley Avenue No., Box 2050, No. St. Paul, MN 55109

NOTICE TO BIDDERS: IN SUBMITTING A BID, YOU MUST RETURN THIS COMPLETE PROPOSAL.

F16 11

C. W. Christie
C. W. Christie
State Maintenance Engineer

CONDITIONS OF CONTRACT

1. The area to be mowed is from the bottom of the ditch to the outer right of way line. No mowing will be permitted in the median area between the two paved roadways, the area occupied by interchanges, and in other areas which will be identified in the field by the Area Maintenance Engineer; these include, but are not limited to, areas that are occupied by plantings, and areas that have been sprayed for weeds.
2. Each segment of roadway to be bid on will be for one side only.
3. All equipment must enter and leave the right of way by gates or openings in the right of way fence and must be parked near the right of way fence when not in use. The Area Maintenance Engineer will determine the points of entry. The Department assumes no responsibility for access roads outside the right of way. Under no condition will it be permissible to enter or leave the area to be mowed by way of the paved areas.
4. Where it is necessary to cross private property, the successful bidder shall receive permission from the property owner.
5. Mowing will be permitted between July 15 and September 15, 1977 only.
6. Seven (7) days will be allowed the successful bidder to pick up the hay bales after the hay is baled unless an extension of time is given by the Area Maintenance Engineer. If the hay is not removed in the time allowed, the State may remove it with its own forces and bill the successful bidder for all expenses involved.
7. The Minnesota Department of Transportation gives no warranty as to the condition of the hay nor is the Department responsible for hay bales left on the right of way to be picked up by the successful bidder.
8. Mowing must be done in a workmanlike manner under the supervision of the Area Maintenance Engineer. Violation of the terms of the contract will result in an immediate termination of the contract.
9. Payment of the bid price lump sum must be made within seven (7) days after receipt of the notice of award and must be made before any mowing is done. This payment must be either by bank draft, bank money order, cashier's check, postal money order or certified check and made out to the Commissioner of Mn/DOT.
10. The successful bidder will be held responsible for any damage to the highway right of way caused by his haying operations. Damage includes but is not limited to, rutting of ditches and cutting of landscape plantings.
11. The successful bidder shall provide Workmens Compensation protection as required by State Law covering all operators furnished by him.
12. The owner of the equipment used within the right of way shall carry and maintain public liability insurance of not less than \$50,000 for one person and \$100,000 for one accident, and property damage insurance of not less than \$10,000 for one accident protecting the State against any and all claims of any kind or character whatsoever arising from damage, injury or death to persons or property caused by or from the operation and use of said equipment. Such insurance must be in full force and effect from the time the equipment is initially delivered to the site of the work ready for use until such time as the equipment is removed from the site of the work.
13. The successful bidder shall furnish a certificate of insurance evidencing Public Liability and Property Damage coverage and coverage under the Workmens Compensation Law of the State of Minnesota on the form included in this proposal titled "Equipment Insurance Certificate".
14. In consideration of the issuance of this permit and of the premises, it is hereby further covenanted and agreed by and between said Owner and State herein, anything to the contrary herein notwithstanding that the Commissioner of Transportation of the State of Minnesota, or his authorized agents, shall not be personally liable or responsible in any manner to said Owner or to any other persons whomsoever any claims, demand, damages, actions or causes of action of any kind or character arising out of or by reason of the use of his equipment within the right of way limits.
15. No work provided for in this contract will be permitted within the highway right of way between sunset and sunrise.
16. Any proposal containing a bid price lump sum of less than \$25 per segment will be rejected by the department. This minimum of \$25 is necessary in order to allow the department to recover its costs to prepare and administer this contract.
17. Bidders must reside in Minnesota.

FIG 12

MINNESOTA DEPARTMENT OF TRANSPORTATION

EQUIPMENT INSURANCE CERTIFICATE

.....
NAME OF INSURED OWNER

.....
ADDRESS OF INSURED OWNER

TYPE OF EQUIPMENT

MANUFACTURER'S
NAME

YEAR &
MODEL

SERIAL OR
MOTOR NO.

TYPE OF INSURANCE

POLICY NUMBER

LIMITS OF LIABILITY

WORKMEN'S COMPENSATION **

As required by Minnesota
Statutes, Chapter 176

PUBLIC LIABILITY:
BODILY INJURY

\$

EACH PERSON

PUBLIC LIABILITY:
BODILY INJURY

\$

EACH ACCIDENT

PROPERTY DAMAGE

\$

EACH ACCIDENT

** IF OPERATED BY OWNER ONLY, WORKMEN'S COMPENSATION INSURANCE IS NOT REQUIRED

This certifies that the above described equipment is insured by said Insurance Company and that the insurance policies described herein have been issued to the Insured named above, and that such insurance is in force on the date this certificate is issued.

This certificate is not valid unless signed by a duly authorized representative of said Insurance Company.

.....
NAME OF INSURANCE COMPANY

.....
ADDRESS OF INSURANCE COMPANY

.....
SIGNATURE OF AUTHORIZED AGENT

.....
DATE

.....
ADDRESS OF AUTHORIZED AGENT

FIG 13

23