

65-8976

S T U D Y R E P O R T

MARTIS-BROWN RECOMMENDATION ON
THE USE OF STEEL MARKER POSTS

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65-8976

FOREWORD

Mr. H. Martis of Jackson and Mr. Wm. Brown of Paw Paw recommended that the wooden posts used to mark snow plowing and mowing hazards on the right-of-ways be replaced with galvanized steel posts.

A study was conducted to identify the costs and results of implementing the Martis-Brown recommendation.

The principal recommendations based on the study are shown first in the following study report, followed by the findings, detailed recommendations and implementation guidelines.

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Principal Recommendations

Two principal recommendations are made below, based on a study of marker posts:

1. Reduce the number of marker posts used.
2. Replace needed wooden marker posts with steel posts within a five-year period.

The bases for these recommendations are as follows:

1. A number of marker posts now in place serve no purpose.
2. The costs of installations will be reduced if steel is used.
3. The costs of post maintenance will be reduced if steel is used.
4. The steel posts will serve as markers equally as well as do the wooden posts.

The data on which the above recommendations are based are discussed in the following section.

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Findings

Number of Posts

An estimated 141,800 wooden marker posts are in place on the trunk-line system.

An estimated 30 to 35 percent of the in-place posts can readily be removed and not replaced.

Wood or Steel

An analysis has been made of the costs of installing and maintaining wooden and galvanized steel posts. The principal factors are shown in Figure 1.

As can be seen in Figure 1, steel posts offer many advantages over wooden posts with regard to installation and maintenance -- and with regard to original costs.

FIGURE 1

ANALYSIS OF INSTALLATION CHARACTERISTICS
WOOD AND STEEL MARKER POSTS

WOODEN POST

Holes must be dug by hand.
Each hole must be large enough
to permit removal of the old
post stub.

Must be tamped into place.

Bevel must be sawed. Post must
be painted. Site must be clean-
ed.

Must be placed in off-winter
months.

Posts supplied by requisition.
Delivered to central location,
pick up by local force and dis-
tributed to garages. No salvages.

Peeling, painting and dressing
up of post is done in shed dur-
ing adverse weather.

Bulky and difficult storage.
Much handling to maintain
orderly piles.

Requires digging to straighten-
summer job only.

STEEL

May be driver with hammer or
maul. Old stubs may be driven
below the surface and left.

Driven straight. Requires
no tamping.

Post can be driver to proper
height. No painting. No
site to clean up.

Can be placed anytime.

Material available at sign
shop or warehouse. Pick up
or common carrier. Limited
supply salvage of sign and
delineator post, after re-
using post may then be sold
for scrap.

Pick up salvaged sign posts
and cut to size.

Stack easily and are easy to
count.

May be straightened any season -
pipe wrench and bar.

WOODEN POST

New posts must be treated as stores.

6" or larger has more visibility.

Cost \$1.61 per 6' X 6" cedar post.

Installation time -- 55 to 70 man minutes, summer; 2 to 4 hours, winter. 2

Annual maintenance cost ---
\$175,000

STEEL

Salvage posts are not stores items. New posts are.

3 3/4" width (use reflectorized paint if visibility is required.)

Cost \$1.31 per 7' galvanized steel delineator posts. (No cost for salvage posts.)

Installation time -- 9 to 10 man minutes, summer and winter.

Annual maintenance cost ---
None.

- 1 In the event that salvage sign posts are not available, new galvanized steel delineator posts can be used.
- 2 The installation times were determined by checking records and by installing sixteen posts for comparative purposes.

Detailed Recommendations

I. Survey the needs for marker posts using the criteria set forth below.

Marker posts should be installed if:

1. A hazard to snow plowing operations needs to be marked.
2. A hazard to mowing operations needs to be marked.
3. The location of a drainage unit can be lost.
4. The inlet location of a drainage structure frequently is covered during flooding.
5. The catch basin or manhole can be missed by cleaning crews.

X X X X X X

II. Replace all broken marker posts -- except those that do not meet the above criteria -- with galvanized steel posts.

The galvanized posts should be so installed that the cut end is placed in the ground. The end to be exposed to the weather should be galvanized -- to prevent unsightly rust marks.

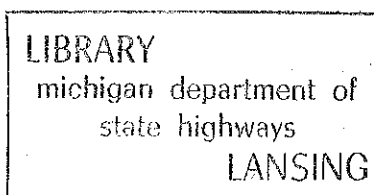
Each post should stand 33 inches above the ground, and should be driven at least 27 inches into the ground.

X X X X X X

III. Do not paint the galvanized posts.

No purpose will be served by painting.

X X X X X X



IV. When approximately half the needed wooden marker posts have been replaced, replace the remainder on a scheduled program.

For consistency purposes, it will be best to use only steel posts. The wooden marker posts will serve for a few years, and a mix of steel and wood will be acceptable until a 50-50 mix is achieved.

X X X X X X

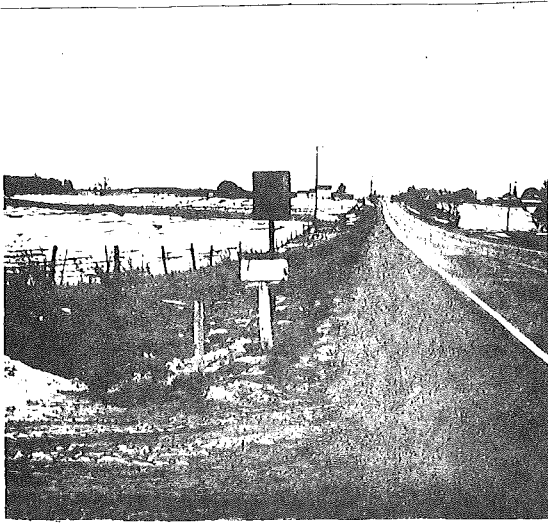
Implementation Guidelines

Salvaged galvanized sign posts are available at all garages surveyed in sufficient quantities to replace wooden marker posts as necessary.

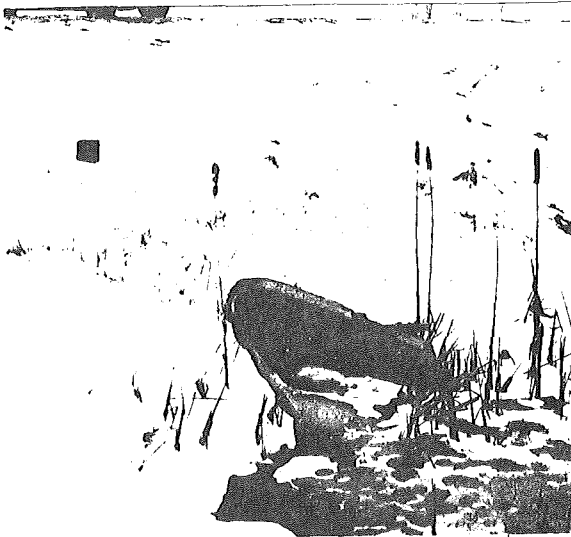
The district sign shops are good sources of supply for salvagable galvanized steel marker posts.

The scrap piles at Kalamazoo and Ann Arbor Sign Shop will each yield 1,000 to 1,500 posts. These posts should be cut to marker post lengths and stored at district locations.

When salvage marker posts are not available, new posts can be used.

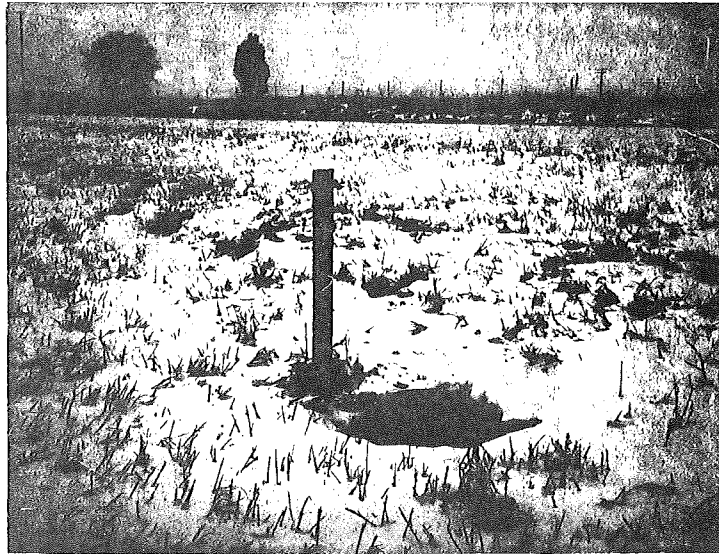


Note duplicate marker posts. In both of these cases, the marker posts can be eliminated rather than replaced.



Why place marker posts at these locations?

X X X X X X



How can we miss this catch basin? The post creates a mowing hazard.

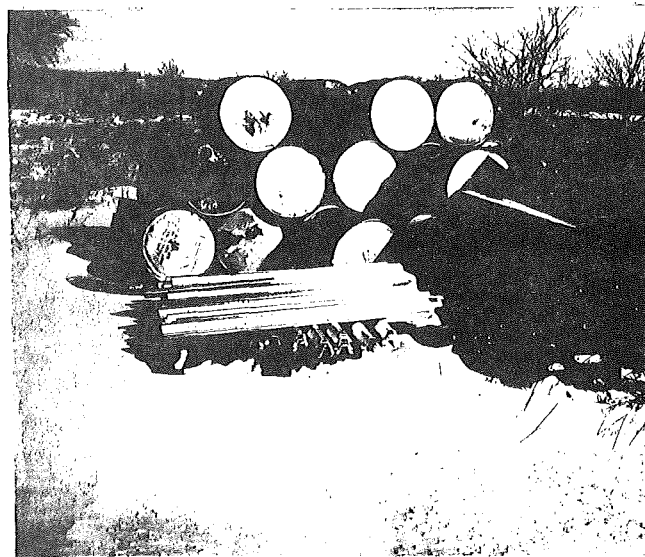


Note how well the steel post serves to mark the shoulder.

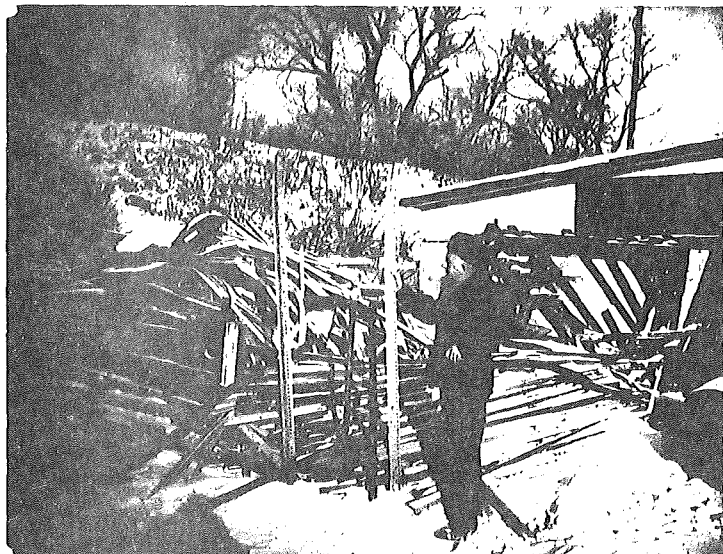
An obvious need.



Available Posts



Typical stockpile of steel marker posts.



Most bent old sign posts will provide needed straight sections without straightening.

**IMPLEMENTATION INSTRUCTIONS
USE OF STEEL MARKER POST**

INTRODUCTION

Mr. H. Martis of Jackson and Mr. W. Brown of Paw Paw recommended that the wooden posts used to mark snow plowing and mowing hazards on the right-of-ways be replaced with galvanized steel posts.

A study was conducted to identify the costs and results of implementing the Martis-Brown recommendation.

Based on the study the following conclusions were reached:

1. Reduce the number of marker posts used
2. Replace needed wooden marker posts with steel posts prior to the need for scraping and repainting.

The bases for these conclusions are as follows:

1. A number of marker posts now in place serve no purpose.
2. The costs of installations will be reduced if steel is used.
3. The costs of post maintenance will be reduced if steel is used.
4. The steel posts will serve as markers equally as well as do the wooden posts.

The information to implement this plan follows.

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GUIDE FOR IMPLEMENTATION

To implement the change the following steps are required:

1. Initiate at the Foreman level a survey of all existing marker posts, physically identifying all posts that can be eliminated.

To qualify as a location where a marker post is required the criteria as shown in Figure 1 must be met.

2. Broken marker posts that qualify under the recommended criteria are to be replaced with a salvaged section of galvanized steel sign or delineator post.
3. When approximately half of the wooden marker posts have been replaced, the remainder should be replaced on a scheduled program. The conversion program shall be coordinated by the District Maintenance Engineer based on the amount of salvaged posts that are available.

STEEL POST INSTALLATION

A quantity of damaged posts are available at each garage site. The salvaged post should be cut to proper length and stored for future use. The District Sign Shop is an additional source of post supply. This source of supply should be utilized and the salvaged posts distributed on a district-wide basis as needed.

The salvaged post should be a minimum of 60" in length and shall retain the original galvanized end of post. The cut end should be driven into the ground with original galvanized end exposed. This is to prevent rust staining the post.

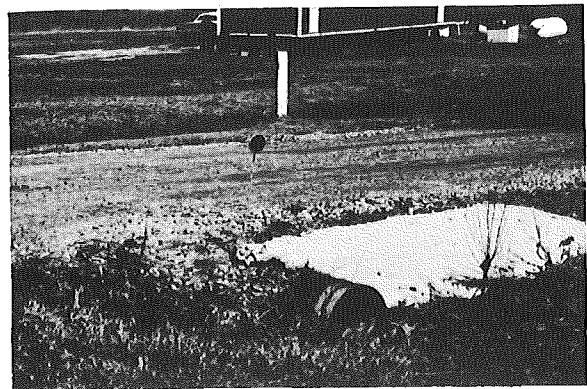
The standard post height of 33" above ground should be retained. This would allow a minimum of 27" in the ground and give ample support for the post.

DO NOT PAINT GALVANIZED POST.

CRITERIA FOR MARKER POSTS

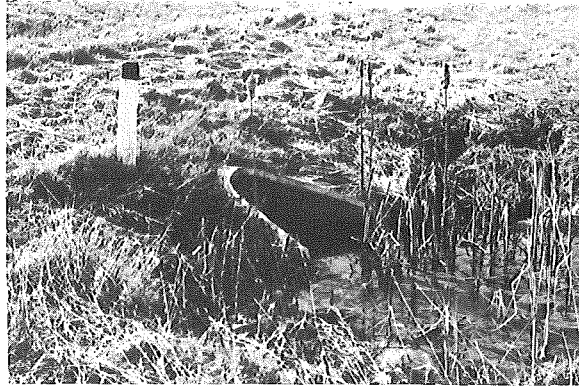
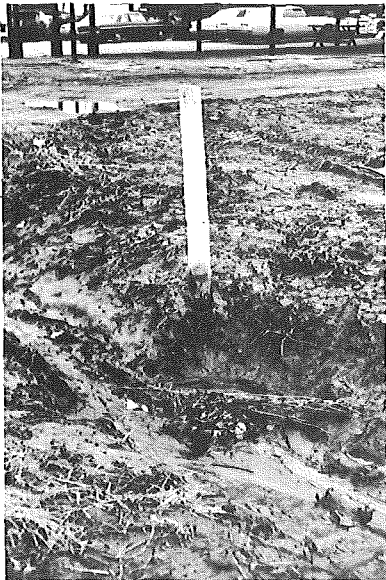
To establish the need for a marker post, each location must qualify in accordance with the following criteria:

1. The post must serve a definite purpose for the Highway Department. (To provide a convenience for abutting property owner does not qualify).

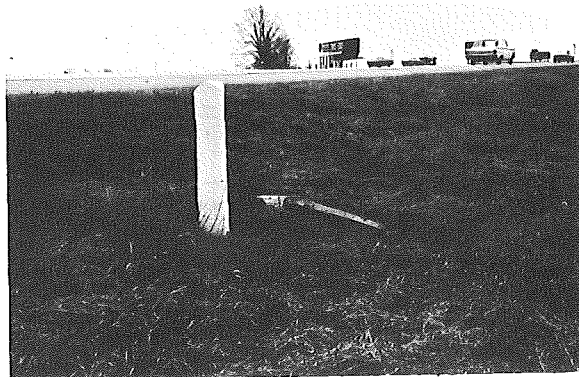


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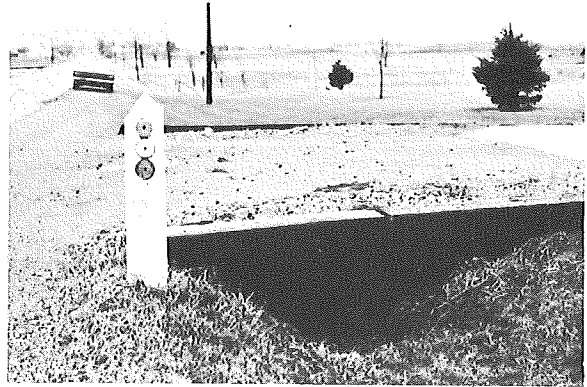
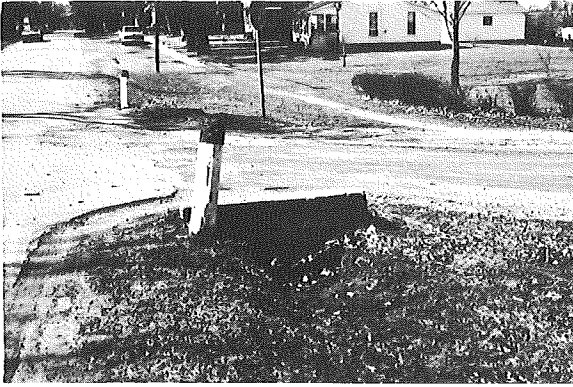
2. Identifies drainage structures which have a history of problems.



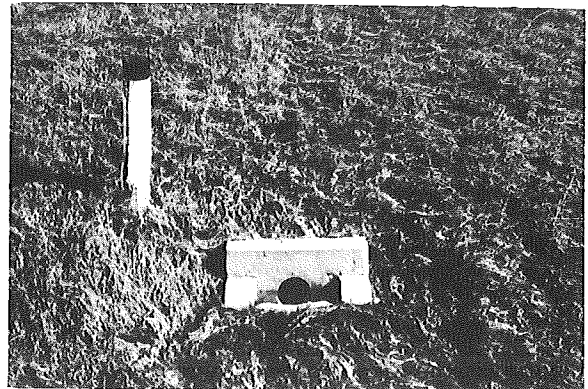
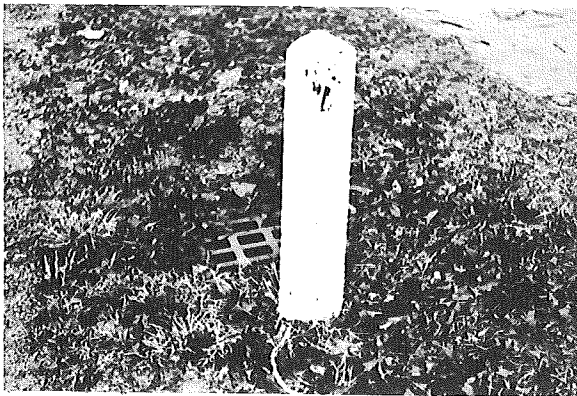
3. If a marker is required due to a drainage problem at a culvert, mark inlet end only.
4. Mark hidden obstacles that have been historically hazardous to mower operator or damaging to equipment.



5. Mark a structure that is a hazard to snow plowing operations.

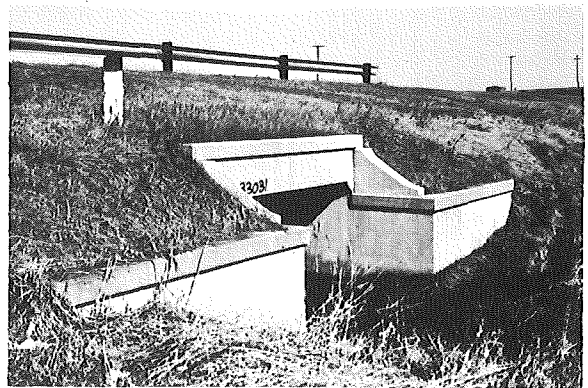
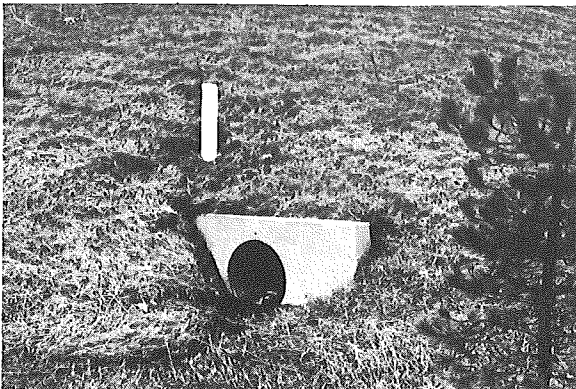


6. Mark a structure that may be missed due to its obscure locations or small size. Such as edge drains, remote catch basins, man holes, etc.

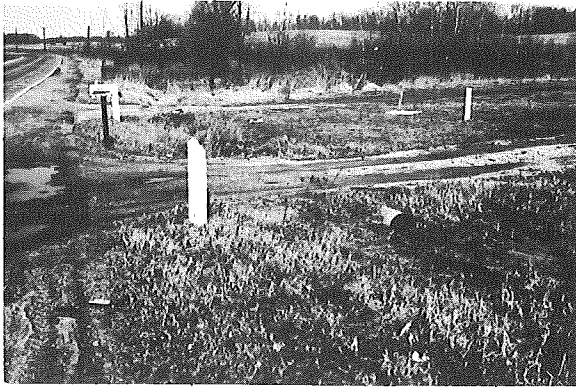


Examples of locations where marker posts shall be eliminated.

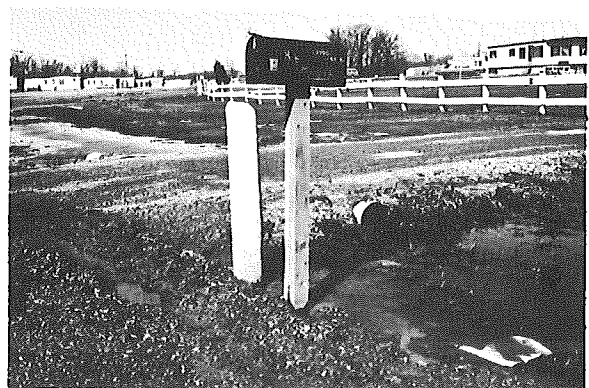
1. Structures or obstacles which are large enough to be visible or because of the surrounding area no hazard is obvious.




2. Location serves no highway needs.



3. Repetitious marker post.



 <p style="text-align: center;">OPERATING INSTRUCTIONS</p>	DATE May 18, 1971	NUMBER 5130.06
	PREPARED/ISSUED BY Maintenance Division	RELATED FUNCTIONS
MICHIGAN DEPARTMENT OF STATE HIGHWAYS		
SUBJECT: Galvanized Steel Marker Posts	SUPERSEDES NUMBER DATED:	

I. Purpose:

To reduce the total number of marker posts now installed and convert all qualified wooden markers to galvanized steel posts.

II. Information:

A. General Plan

1. Determine the location where markers are necessary.
2. Replace broken posts with galvanized steel posts.
3. When practical convert a complete route section to galvanized steel posts.

B. Criteria

To establish the need for a marker post each location must qualify in accordance with the following criteria:

1. The post must serve a definite purpose for the Department (to provide a convenience for the abutting property owner does not qualify).
2. Identify a drainage structure which has a history of problems.
 - a. If a marker is required due to a drainage problem at a culvert, mark only inlet end.
3. Mark hidden obstacles that have been historically hazardous to mower operators or equipment.
4. Mark a structure that is a hazard to snow plowing operations.
5. Mark a structure that may be missed due to its obscure location or small size.

DIRECTIVE TYPE	PREPARED/ISSUED BY	DATE	NUMBER
01	Maintenance Division	May 18, 71	5130.06

Procedure:

ResponsibilityAction

Maintenance
Operations Section

1. Prepares implementation instructions and distributes to District Maintenance Engineer.

District Maintenance
Engineer

2. Distributes implementation instructions, to both contract and direct - counties/areas.

3. Determines sources of salvage post available and coordinates conversion program.

Area/County
Superintendent


4. Instructs Foremen on criteria and prepares plan for post survey.

5. Submits to District Maintenance Engineer proposed program for conversion to steel.

Foreman

6. Conducts survey and identifies location where posts are required.

7. Recommends sections to convert to steel and schedules the installation.



 Engineer of Maintenance