

**COMMONWEALTH OF KENTUCKY  
TRANSPORTATION CABINET  
FRANKFORT, KY 40622**

MANUAL TITLE: Field Operations Guidance Manual

REVISION NO.: 2

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REVISED PROCEDURE
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CHAPTER/ SECTION	EXPLANATION	OLD PAGES TO BE DELETED	NEW PAGES TO BE ADDED
	The purpose of this printing is to include the following revised procedures in the <i>Field Operations Guidance Manual</i> . This revision also includes one index update.		
FOG-00	Table of Contents	FOG-01	FOG-01
FOG-500	Miscellaneous Roadside Overhead (C980) Graffiti Cleanup(C500) Miscellaneous Roadside Maintenance (C990) Miscellaneous Roadside Overhead(C980) Miscellaneous Roadside Maintenance (C990)	FOG-517 FOG-518	FOG-517 FOG-518 FOG-519
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**COMMONWEALTH OF KENTUCKY  
TRANSPORTATION CABINET  
FRANKFORT, KY 40622**

MANUAL TITLE: Field Operations Guidance Manual

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CHAPTER/ SECTION	EXPLANATION	OLD PAGES TO BE DELETED	NEW PAGES TO BE ADDED
	The purpose of this printing is to include the following revised procedure in the <i>Field Operations Guidance Manual</i> . This revision also includes one index update.		
FOG-00	Table of Contents	FOG-01	FOG-01
FOG-1100	Emergency Work or Repairs Other Than Floods, State-Maintained Roads (M140)	FOG-1104	FOG-1104
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**TRANSPORTATION CABINET**

Frankfort, Kentucky 40622  
www.transportation.ky.gov/

**Steven L. Beshear**  
Governor

**Michael W. Hancock, P.E.**  
Secretary

**OFFICE OF THE SECRETARY** 107207  
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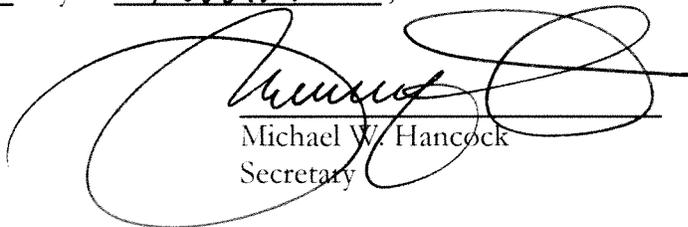
**SUBJECT:** *Field Operations Guidance Manual*

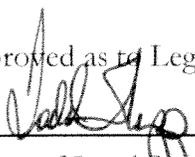
This manual has been prepared to provide information and guidance to personnel of the Kentucky Transportation Cabinet. Its purpose is to establish uniformity in the interpretation and administration of laws, regulations, policies, and procedures applicable to the operations and services of the Division of Maintenance and its relationship with other units of the Cabinet.

The policies and procedures set forth herein are hereby approved and declared effective unless officially changed.

All previous instructions, written and oral, relative to or in conflict with this manual are hereby superseded.

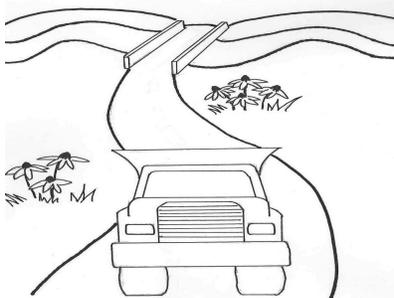
Signed and approved this 8<sup>th</sup> day of November, 2011.

  
Michael W. Hancock  
Secretary

Approved as to Legal Form  
  
Office of Legal Services



# FIELD OPERATIONS GUIDANCE MANUAL



ISSUED BY

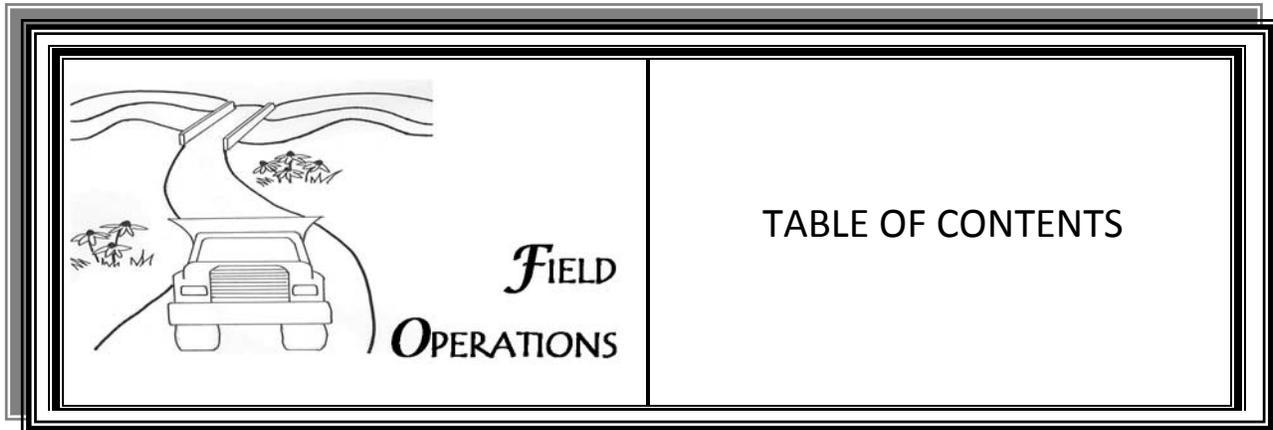
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Office of Human Resource Management





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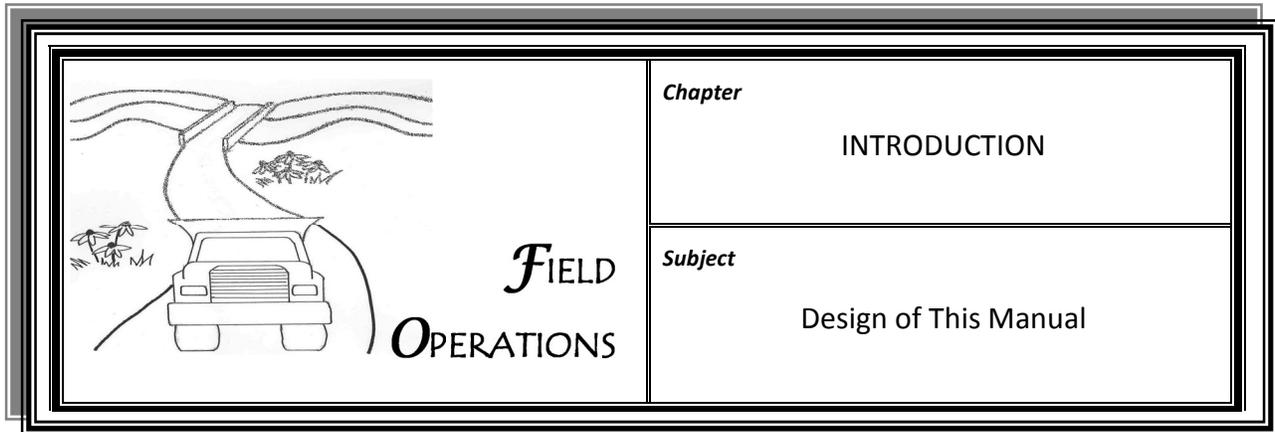
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## ORGANIZATION & NUMBERING

**Chapter Title**—The subject matter in the manual is divided into chapters. The chapter title appears in the upper right-hand corner of the first page of a subject and in the upper left-hand corner of any subsequent page.

**Subject Title**—The title of a subject appears in the upper right-hand corner of the first page of a subject and in the upper left-hand corner of any subsequent page.

**“FOG” Prefix**—Preceding each subject number, this prefix stands for the manual title *Field Operations Guidance (Guide)*.

**Date**—The latest issuance date of a subject appears at the bottom of each page of the subject. This date agrees with the latest issuance date shown for the subject in the Table of Contents ([FOG-01](#)).

**Page Numbering**—Each subject has its own page numbering, which appears at the bottom of each page.

## LOCATING INFORMATION

One index appears at the front of the manual, and two indexes appear at the back:

- **Table of Contents**—This index at the front lists the titles of the manual’s chapters and their subjects, as well as other information, in numerical order. It includes the latest issuance dates of all the subjects. As the manual matures, these dates change.
- **Alphabetical Index**—This index at the back alphabetically lists key information in the manual. Generally, it directs the user to subject titles and to margin, paragraph, and subparagraph headings within subjects.
- **Exhibits**—This index at the back lists the manual’s conversion tables and charts.

**CROSS REFERENCES**

**IN MANUAL**

**Subject Numbers within Narrative**—A subject number within the narrative on a page directs the user to more information about the subject.

**QUESTIONS**

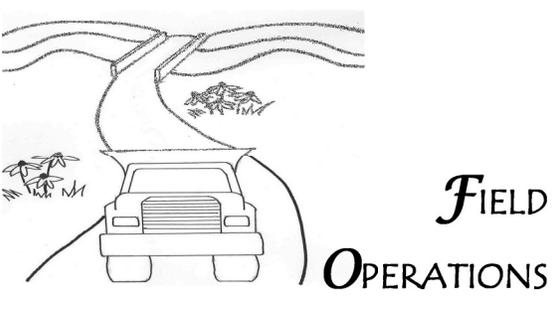
**Whom to Contact**—For answers to questions about the contents of the manual, please contact:

Divisions of [Traffic Operations](#) and [Maintenance](#)  
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For copies of the manual, please contact:

Organizational Management Branch  
Transportation Cabinet Office Building, 6<sup>th</sup> Floor West  
200 Mero Street  
Frankfort, KY 40622  
**(502) 564-4610**



	<p><i>Chapter</i></p> <p>INTRODUCTION</p>
	<p><i>Subject</i></p> <p>Objectives of Maintenance Operation</p>

**OVERVIEW**

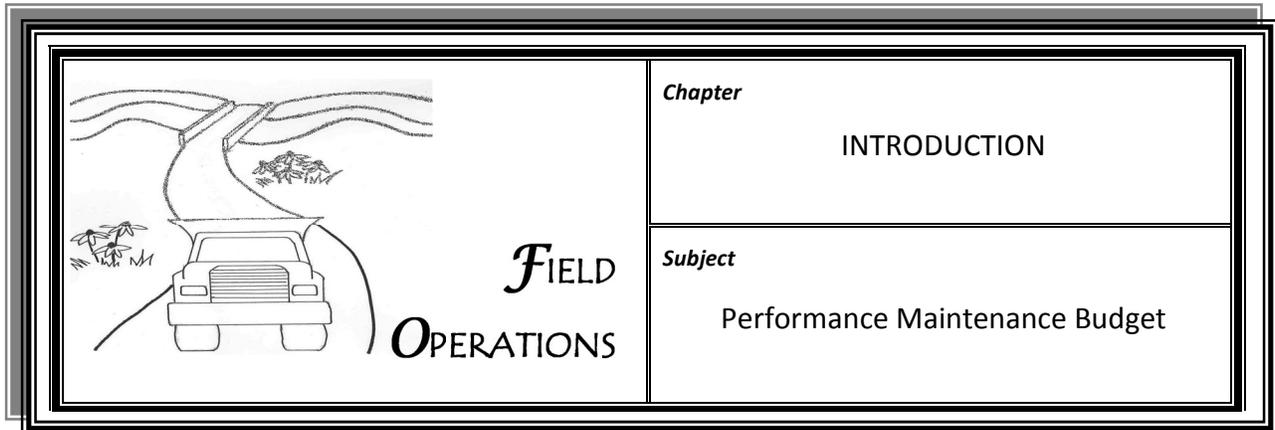
The Division of Traffic Operations and the Division of Maintenance support the Cabinet's mission, which is to preserve and maintain a safe, efficient, environmentally sound, and fiscally responsible transportation system to ensure mobility and access and to promote economic growth for all citizens of the Commonwealth.

**OBJECTIVES**

The primary objective of the two divisions is to perform work as prioritized below:

1. Perform needed **critical maintenance**—Work that must be done to preserve the road or to permit safe usage by motorists, such as pothole patching, snow and ice removal, roadway obstruction removal, and bridge or pipe failures
2. Perform a scheduled amount of **preventive maintenance**—Work that should be done to prevent further deterioration of highways in an effort to keep the work out of the "critical" area, such as roadway ditching, pipe or catch basin cleaning out, bridge deck flushing, and cleaning and erosion control
3. Perform as many **desirable, but not mandatory**, activities as time allows—Work that does not come under critical or preventive maintenance, such as litter pickup, types of sign cleaning, or brush cutting

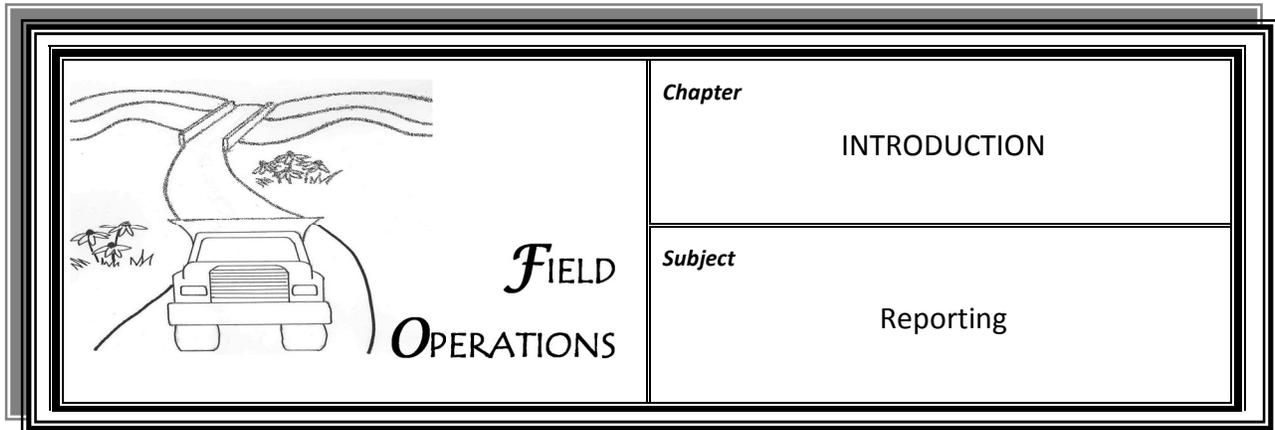


**SUMMARY**

A performance maintenance budget is money budgeted for maintenance activities based on the amount of work to be done. To develop this budget, the Cabinet shall:

- Define work activities (Activity Codes) into categories that uniquely identify all significant work areas and provide for “catch-all” activities in each general work area
- Make an inventory of physical features showing locations and amount of potential work
- Establish quantity standards to obtain a desired level of service
- Determine an annual work program that provides an adequate maintenance program
- Establish performance standards to obtain average productivity
- Determine from the annual program the number of workers and the amount of equipment and materials needed
- Relate all these factors to cost, determining whether or not the Cabinet can afford this level of service (that is, prioritize)
- Develop methods of adjusting the items above to provide a reasonable budget
- Develop a method of scheduling the work and monitoring the results



**OVERVIEW**

The Operations Management System (OMS) is a software package that maintains a computer database of the KYTC maintenance operations. OMS provides users and management with a tool to document, track, and report daily tasks in one central location. OMS can:

- Create work orders that assign personnel, materials, and equipment while tracking location and cost
- Provide asset management by recording data about equipment, including inventory, servicing, and fueling
- Aid inventory control through management of parts and materials, recording where materials are stored and tracking inventory

This information is intended to help maintenance workers do their jobs more effectively and to help management make informed decisions.

**WORK ORDER  
REPORTING  
REQUIREMENTS**

Work performed is recorded on an OMS Work Order, which requires the following information:

- **Beginning and Ending Date** of work  
Work orders may be established for each day or set up to span multiple dates.
- **Activity Code**, from the dropdown list in the Complete>Day Cards window
- **Expected Quantity** (accomplishments)
- **Section**, required depending on the activity chosen  
Activities listed as “General” do not require a road section. All others have at least one section assigned to them. If the work is done on multiple routes, the Set Sections function of OMS is used.
- **Labor, Equipment, and Material** usage recorded daily

**ACCOUNT STRIP****REQUIRED FIELDS**

Each work order has an eMARS account strip associated with it. OMS automatically populates these fields. However, it is sometimes necessary to edit the account strip. The following information is required:

- **Fund** (1100, 12F0, 137R, etc.)
- **Unit Code**—Four-digit field that indicates the district performing the work (simply the district number preceded by one zero and followed by two zeroes, for example, District 7 = 0700)
- **Location**—Two-digit field (district number preceded by one zero, for example, District 3 = 03) that indicates the district paying for the work (usually the same district performing the work; however, for projects paid from the Central Office budget, the Location is 00)
- **Function** (FE01, FK01, etc.)—Equivalent to PBU in eMARS (some activities are charged only to specific functions; for each activity a list of appropriate function charges is given with its description)
- **Sub-Function**—County number where the work is performed (this is dependent on the road section of the project, not the crew that is performing the work; for example, if the Martin County crew performs work in Pike County, the Sub-Function is 098)
- **Activity**—Code for the work performed (should match the activity chosen from the dropdown list of the OMS Work Order)

**ACCOUNT STRIP****OPTIONAL FIELDS**

In addition to the required fields, the following fields are often used in the eMARS account strip but may be left blank depending on the circumstances.

- **Program**—Eight-character code that indicates the route on which the work is performed (if work is performed exclusively on one route, Program requires populating; when multiple sections are used or if the activity does not require a route, Program is left blank)
- **Reporting Code**—Similar to Termini field in eMARS (when Program is used, Reporting Code must be valid for the associated route and county; Reporting Code begins with 625, followed by the 7-digit termini; for example, if work is performed between mile points 7 and 12, Reporting Code is 625007-012; Reporting Code is also used for recording bridge numbers when work is performed on a bridge)
- **Department Object**—Often left blank but may be populated depending on the work performed (for all “K” activities [snow and ice], the Department Object is “SNIC”)

**ACCOUNT STRIP  
OPTIONAL FIELDS  
(CONT.)**

- **Task Order**—Used in place of Job in eMARS
- **Template ID**—Sometimes used when work is performed on a project that has had a Template ID set up (users right-click in the field to click on “Use Template ID” function in OMS, which in turn populates the account strip fields with the appropriate information associated with that project)

**ACTIVITIES FOR  
CONSTRUCTION**

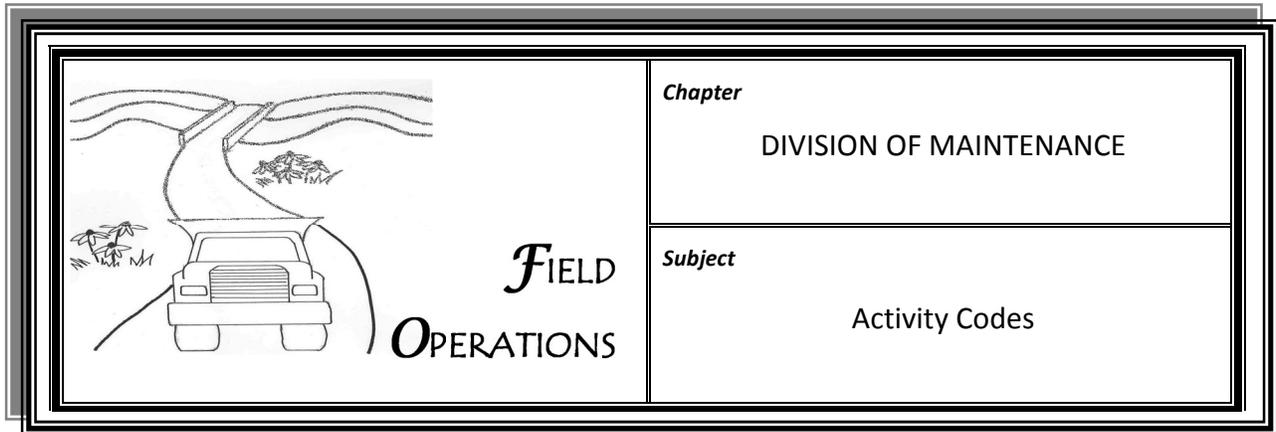
Force account projects are charged to activities listed below:

- 4000 Construction Engineering
- 4010 Roadside Parks and Picnic Grounds—State Forces
- 4020 Shoulders—State Forces
- 4030 Erosion Control—State Forces
- 4040 Surface- State Forces
- 4050 Guardrail and Safety Devices—State Forces
- 4060 Weight Stations and Loadometers—State Forces
- 4070 Construction General—State Forces
- 4090 Bridge Construction—State Forces
- 4100 Traffic Enforcement
- 4300 Construction—Part in Right-of-Way Phase
- 4310 Construction—Part in Design Phase
- 4320 Construction—Part in Utility Phase
- 4500 Construction Engineering—Consult
- 4580 Construction Contracts—Consult
- 4610 City Contracts—(Pay Local Government)
- 4630 Contract Suit Claims
- 7000 Traffic Signs and Devices—State Forces
- 7010 Construction General—State Forces
- 7020 Pavement Markings by Contractor
- 7030 Signing Plans
- 7040 Signal Plans
- 7050 Lighting Plans
- 7060 Contract Supervision—Traffic Personnel
- 7070 Pavement Markings—State Forces

**ACCOMPLISHMENT  
REPORTING**

Accomplishments are reported in the Daily Log of OMS and in the payroll system (KHRIS). For details, see [FOG-202](#).





**PURPOSE** Activity codes allow for the categorization of maintenance activities in order to manage information.

Each activity code has one alphabetical unit and three numerical units, for example, A050—SURFACE-SPOT SEAL COATING. The “A” identifies the activity as a surface operation, and the “050” indicates the type of surface operation. All persons utilizing activity codes should read the entire listing of activity codes to familiarize themselves with the organization of the broad categories.

Activity codes listed in this manual are not to be used for state force account construction projects. These projects will have a Project Authorization Number that is to be used with the construction activity codes listed in [FOG-104](#).

**WORK ON MULTIPLE ACTIVITIES**

When work falls principally within a given activity code but overlaps into other activity codes, it will be unnecessary to change activity codes unless the overlap is greater than 25 percent (the 25 percent shall not exceed two hours in one payroll day).

**SECTION REQUIREMENTS**

Most activities require that a road section be listed on the Operations Management System (OMS) Work Order to:

- Accurately report spending for various activities by route type
- Determine rural secondary (RS) spending by county

At the end of each activity description, a section requirement is listed in parentheses. Those activities that do not require a section are listed as “General.” All others are listed as “Section Required.”

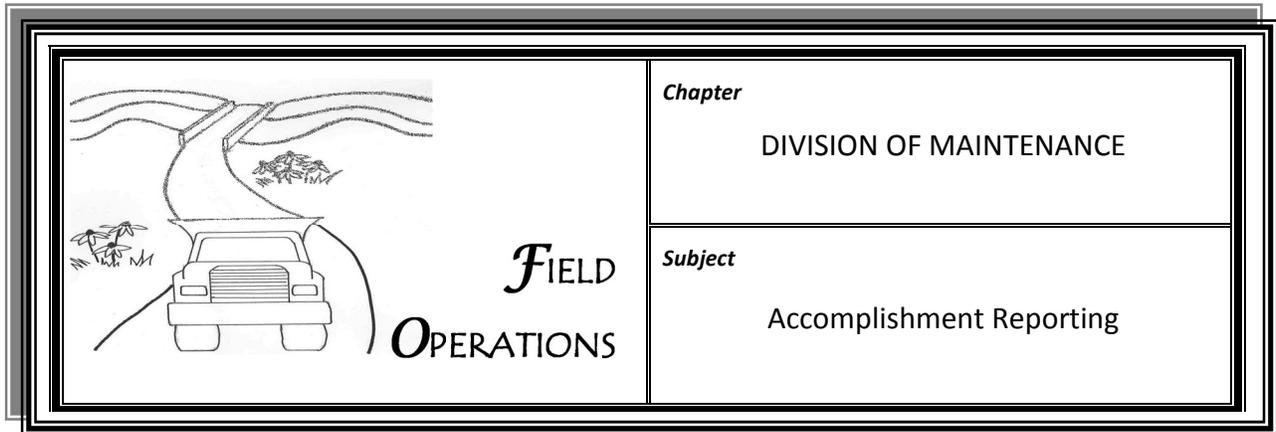
When work is performed on multiple road sections, the “set sections” function is used in OMS to describe where the work has occurred.

**ACTIVITY CODE**

**ASSISTANCE**

District personnel are to direct their questions about activity codes through the chain of command in the district. District command is to direct any inquiries to the [Operations and Pavement Branch](#) of the Central Office Division of Maintenance.





**RECORDING**

**ACCOMPLISHMENTS**

All reporting of maintenance or traffic activities (A010–T990) shall include values for accomplishments. These values shall be recorded on the “Costs and Accomplishments” tab of the Operations Management System (OMS) Daily Log and included for each work order when entering time into the payroll system (KHRIS).

**LENDING**

**PERSONNEL**

When personnel are lent to another crew, the “borrowing” administrative unit will provide all pertinent work order information (county, route, activity, mile points, etc.) to the “lending” administrative unit. A duplicate work order must be created in OMS within the employees’ home administrative units in order to charge their time. However, only the administrative unit actually performing the work will record accomplishments in OMS and KHRIS. The “lending” administrative unit will record zero as the accomplishment for the work order.

**MEASURING**

**ACCOMPLISHMENTS**

Accomplishments are determined based upon the “Accomplishment Unit.” These are listed in this manual under the “Performance Values” section for each activity. Each user shall refer to this listing before entering work into OMS or KHRIS.

**ACCOMPLISHMENT**

**UNITS**

The following lists the various accomplishment units and the method for measuring them. The examples listed for each accomplishment unit do not include all activities for which the particular unit may be used.

- **Acre**—Number of acres mowed (F210) or sprayed (E310)

In case of mowing, the inventory listing is to be used, if available. Otherwise, **Exhibits 9001** and **9002** may be used to compute the acreage, or arithmetic may be used to compute it.

**ACCOMPLISHMENT****UNITS (CONT.)**

In the case of spraying (E310), the tables may be used to compute the acreage. Also, if the rate of application of spray is known, it may be possible to compute the acreage based on the number of gallons sprayed.

- **Each**—Number of items installed, replaced, or repaired
  - ◆ Number of entrances installed (J070)
  - ◆ Number of signs or delineators replaced (T210)
  - ◆ Number of end treatments repaired (C330)
- **Hour**—Number of hours charged to the activity and project code, which includes:
  - ◆ Total time of all personnel assigned to the project, including any personnel borrowed from other administrative units

**Note:** Administrative units that are lending personnel to another administrative unit will enter each employee's time on their own work order but will not record accomplishments.

  - ◆ Hours worked but not adjusted to indicate overtime
- **Lane Mile**—Number of travel lanes in either direction multiplied by the total length of the project

For example, a two-lane road for a distance of three miles equals six lane miles. Total lane miles can be obtained by observing and recording mile points from maintenance records, odometer readings, or rough estimates.

- **Linear Foot**—Distance in feet of the accomplishment
  - ◆ Length in feet of fence repaired (C200)
  - ◆ Length in feet of guardrail repaired or replaced (C300)
  - ◆ Length in feet of bridge joints that were repaired (H130)
- **Mile**—Total length of work performed, in miles
  - ◆ Total length of shoulders graded (B210)
  - ◆ Number of miles inventoried (T640)
  - ◆ Total length of guardrail treated (E290)

**ACCOMPLISHMENT****UNITS (CONT.)**

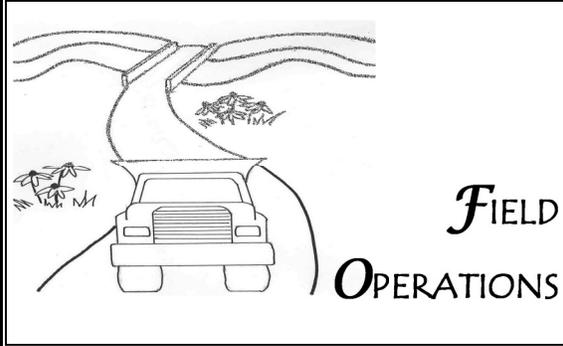
- **Ton**—Number of tons placed on the roadway, with the exception of premix preparation (A880) where tons are put into a stockpile

In all other cases, do not report tonnage going into stockpiles.

Obtain the tons from weight tickets or by counting the truckloads and computing the tonnage using an estimated average load. In reporting A030, tons will be total tons of aggregate and premix.

- **Square Foot**—Number of square feet upon which work was performed (H520)
- **Square Yard**—Number of square yards upon which work was performed (A710)



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Pothole Patching (A010)

**DESCRIPTION** Hand-patching roadway surfaces, including bridge decks, with bituminous material, using hand tools to correct abrupt depressions, edge failures, and other surface deformities (Section Required)

**SCHEDULING** Schedule repairs of surface failures year-round. Unless the failure presents a dangerous condition to motorists, allow the surface area to dry before repairing it.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (5)

**RECOMMENDED EQUIPMENT**

Dump truck	(1)
Pickup truck	(1)
Truck-Mounted Attenuator (optional)	(1)
Distributor (optional)	(1)

**RECOMMENDED MATERIALS**

Bituminous mix	(7 tons)
Liquid asphalt (optional)	(14 gallons)

**ENVIRONMENTAL IMPACTS**

- Precondition equipment before loading.
- Do not use diesel fuel at the job site.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the [Environmental Handbook](#) (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE VALUES**

➤ Hours Per Unit	5.714
➤ Daily Expectation	7
➤ Accomplishment Unit	Ton

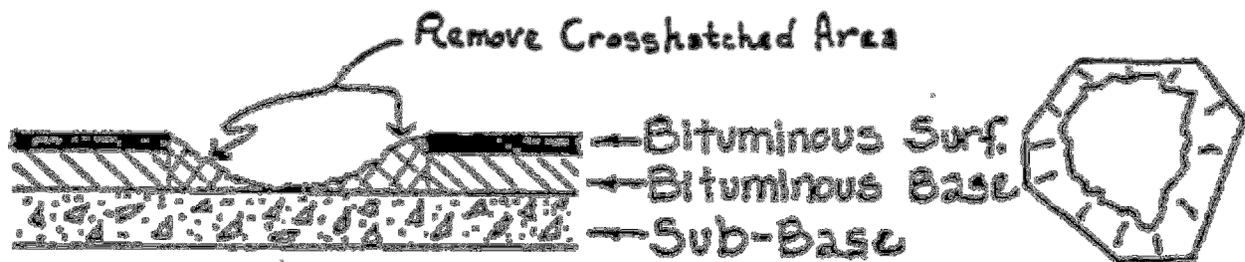
FUNCTION FE01

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Clean out and square up potholes, using hand tools.
3. Apply liquid-asphalt materials as needed.
4. Apply tack coat to area repaired. Be sure to apply tack to total area of pothole.
5. Shovel materials into potholes in layers not exceeding two inches in depth. Hand-stamp each layer before placing the next layer.
6. Be sure that final layer is flush with pavement after compaction.
7. Remove traffic-control devices.

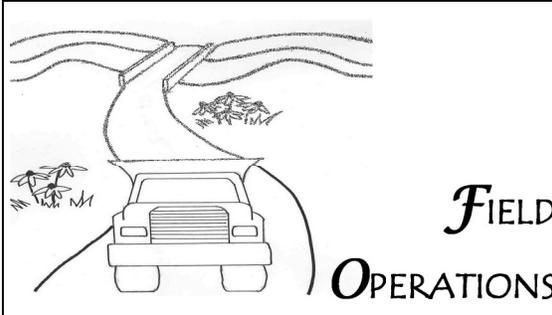
**Note:** Perform patching operations only when the roadway surface is dry and potholes are not ponding water.

**Special Note:** Determine accomplishment before leaving job site.



The sketch above is an example of “squaring” a patch. Note that *squaring* does not necessarily mean “having four equal sides.” It does mean “eliminating all rounded points of contact between old material and new material.”



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Paving Machine or Grader Patching with Bituminous Mix (A020)

**DESCRIPTION** Paving-machine leveling and patching of roadway surface with bituminous mix

Use of any contractor-owned equipment, including trucks, requires charging to A140 or A150. (Section Required)

**SCHEDULING** Temperature requirements restrict the effective placement of bituminous materials with a paving machine or grader to the warmer months. The district office shall coordinate this work with the striping, sealing, and resurfacing programs.

**RECOMMENDED**

**PERSONNEL** Highway Superintendent (1)  
 Highway Equipment Operator (9)

**RECOMMENDED**

**EQUIPMENT** Pickup truck (1)  
 Crew cab (1)  
 Distributor (1)  
 Paving machine or grader (1)  
 Truck trailer\* (1)  
 Truck tractor (1)  
 Water (1)  
 Dump truck (2)  
 Roller (1)  
 Loader (if needed) (1)

\*Use of track-mounted paving machine requires truck tractor and trailer.

**Note:** Distance may require additional trucks.

**RECOMMENDED**

**MATERIALS** Bituminous mix (80 tons)  
 Asphalt tack (120 gallons)  
 Chip (as necessary)

**ENVIRONMENTAL****IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE****VALUES**

- |                       |       |
|-----------------------|-------|
| ➤ Hours Per Unit      | 1.000 |
| ➤ Daily Expectation   | 80    |
| ➤ Accomplishment Unit | Ton   |

**FUNCTION**

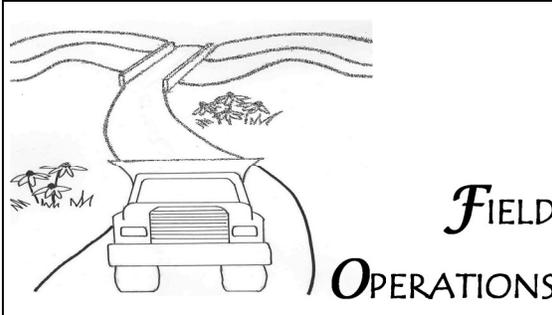
FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job. Emphasize safety.
2. Place traffic-control devices as necessary.
3. Clean surface, if required, prior to application of tack coat to surface.
4. Apply tack coat of heated liquid asphalt to existing surface, making sure entire surface area is covered. Allow tack to "break" before paving.
5. Apply bituminous mix with paver or grader in layers no more than two inches or less than one inch in depth (square ends).
6. Roll for proper compaction after each layer.
7. Check for proper crown or cross slope before leaving project. Correct any deficiencies.
8. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Abnormal Repairs, Removing & Replacing (A030)

**DESCRIPTION** Removing base and sub-base materials and replacing with bituminous and aggregate materials

Replacement of wearing surface is part of this activity, not a separate activity. This activity includes temporary or stop-gap measures to maintain traffic when a surface is under severe distress. This would be rough-patching with bituminous mix or spreading aggregate on roads previously bituminous or concrete. It would also include the same type of operations on traffic bound maintenance (TBM) roads. (Section Required)

**SCHEDULING** Schedule this work year-round. The temperature conditions may dictate the type of material to use.

**RECOMMENDED**

**PERSONNEL** Highway Superintendent (1)  
 Highway Equipment Operator (7)

**RECOMMENDED**

**EQUIPMENT** Pickup truck or crew cab (1)  
 Front-end loader or backhoe or gradall and/or milling machine (1)  
 Distributor (optional) (1)  
 Dump truck (1)  
 Compressor (1)  
 Pavement breaker\* (1)  
 Roller (1)

\*Use two or more pavement breakers and possibly a jackhammer when encountering old concrete base. Also, use more breakers at any time the breaking operation becomes the production control factor.

**RECOMMENDED**

**MATERIALS** Bituminous mix (16 tons)  
 Aggregate (24 tons)  
 Tack oil (24 gallons)

**ENVIRONMENTAL****IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE****VALUES**

- |                       |     |
|-----------------------|-----|
| ➤ Hours Per Unit      | N/A |
| ➤ Daily Expectation   | N/A |
| ➤ Accomplishment Unit | Ton |

**FUNCTION**

FE01

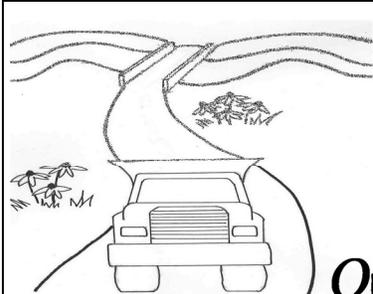
**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Use compressor and air tools as needed to dig out unsuitable material and square up area.
3. Remove broken and unusable material by hand, front end loader, or pavement breaker, depending on the size of the patch and the amount.
4. Tack with liquid asphalt. Be sure to apply tack to total area replaced.
5. Backfill sub-base, if necessary, with aggregate or bituminous material.
6. Compact replaced material after each 2-inch lift or portion thereof.
7. Roll and compact final surface to match existing surrounding grade.
8. Properly dispose of all undesirable and left-over material according to the *Environmental Handbook*.
9. Remove traffic-control devices.

**Note:** Frequently, this operation requires the installation of French drains or underdrains to release water from the base or sub-base, especially when previous repair did not solve the problem.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SURFACE (A000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Portland Cement Concrete Patching Using Nonbituminous Material (A040)</p>

**DESCRIPTION**                      Repairing roadway surfaces by removing faulty surface sections, including base or subgrade material as required, and replacing with nonbituminous material and required base material (Section Required)

**SCHEDULING**                      Schedule this activity on concrete pavement year-round.    Observe temperature requirements for concrete placement.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (8)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Dump truck                      (1)  
    Jackhammer                      (1)  
    Concrete saw equipped w/diamond blade                      (1)  
    Pavement breaker                      (2)  
    Water truck                      (1)  
    Air compressor                      (1)  
    Mortar mixer                      (1)  
    Truck-mounted attenuator (optional)                      (1)

**RECOMMENDED**

**MATERIAL**                      Concrete (quick-set)                      (4 cubic yards)  
    Reinforcing steel

**ENVIRONMENTAL**

**IMPACTS**                      Do not clean equipment near streams.

**PERFORMANCE**

**VALUES**

- Hours Per Unit                      36.00
- Daily Expectation                      2
- Accomplishment Unit                      Cubic yard

**FUNCTION**

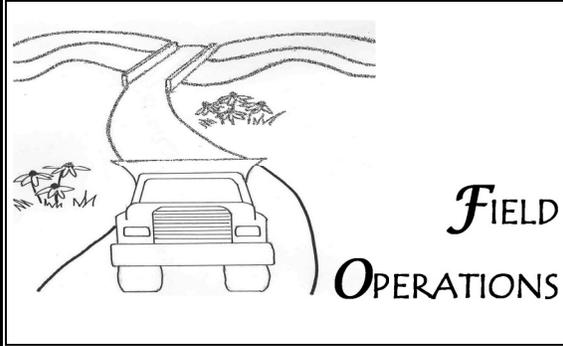
FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Saw-cut to specified depth, outer limits of patch.
4. Break up deteriorated concrete pavement with jackhammer and pavement breaker.
5. Load broken concrete and haul to disposal site.
6. Check base, replace unsuitable material when necessary, and recompact loosened material.
7. Install underdrain if needed.
8. Set forms, install required reinforcing steel, and lightly sprinkle base with water.
9. Pour concrete, screed, float, and broom finish.
10. Apply curing compound, wet burlap or sand.
11. Water-clean finishing equipment and tools.
12. Do not clean into a stream.
13. Do not allow traffic on repaired surface until concrete is adequately cured (check with maintenance engineer on curing time).
14. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Spot Seal Coating, Skin Patching (A050)

**DESCRIPTION** Seal coating surfaces, by hand or mechanical means, with hot liquid bituminous material and covering with aggregate to seal existing flexible or rigid surfaces (Section Required)

**SCHEDULING** Schedule spot-seal operations during the warm summer months because temperature and moisture restrict seal-coating operations. Seal when raveling or cracking becomes prevalent or when surface allows water to penetrate.

**RECOMMENDED PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(8)

**RECOMMENDED EQUIPMENT**

Pickup truck	(1)
Distributor	(1)
Loader	(1)
Spreader (mechanical or tailgate)	(1)
Dump truck	(3)
Broom	(1)
Steel drain roller (optional)	
Rubber tire (if available)	

**RECOMMENDED MATERIALS**

9M limestone	(35 tons)
Emulsion RS-2	(840 gallons)

**ENVIRONMENTAL IMPACTS**

- Do not use diesel fuel at the job site.
- Follow procedures in the *Environmental Handbook* (2.1.1, “Cleaning Asphalt Tools and Equipment”) for cleaning at the end of the job.

**PERFORMANCE****VALUES**

➤ Hours Per Unit	2.057
➤ Daily Expectation	35
➤ Accomplishment Unit	Ton

**FUNCTION**

FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. If necessary, broom surface clean of dirt and debris.
4. Apply liquid bituminous asphalt (rate of application is 0.3 gal/S.Y.)
5. Spread aggregate uniformly over asphalt (rate of application is 25 lbs./S.Y.). Then roll.
6. Remove traffic-control devices.

**Note:** Air temperature in the shade and away from artificial heat is to be above 40°F during the entire seal-coating operation.

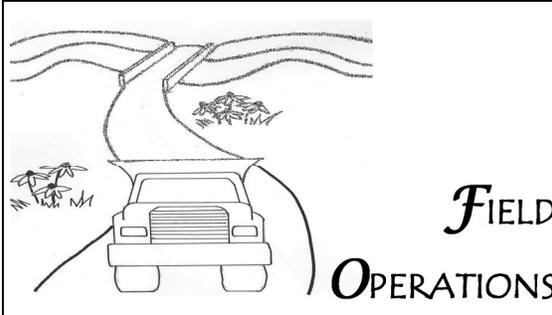
Have adequate bituminous asphalt available so as not to delay the rest of the crew during a reload.

Begin spot seal coating so trucks hauling aggregate to work site will not travel over areas newly sealed.

If performing this operation on high volume (150–300 tons/day) with expanded crew, add a rotary broom and rubber-tire roller to the operation.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Joint Crack Sealing—Asphalt (A060)

**DESCRIPTION** Routing and sealing joints or random cracks in asphalt pavement

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Superintendent (1)  
 Highway Equipment Operator (11)

**RECOMMENDED**

**EQUIPMENT** Router (1)  
 Dump truck (2)  
 Compressor (2)  
 Water truck (1)  
 Crew cab (1)  
 Tractor broom (1)  
 Buckshot saw (wire brush) (3)  
 Heat lance (1)  
 Heated oil jacketed melting tank with applicator wands (1)

**RECOMMENDED**

**MATERIAL** Hot pour joint sealant

**ENVIRONMENTAL**

**IMPACTS** N/A

**PERFORMANCE**

**VALUES**

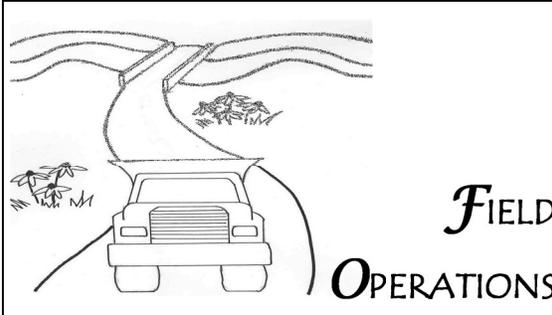
- Hours Per Unit: 12.800
- Daily Expectation: 25,000
- Accomplishment Unit: Linear Feet

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic control devices as necessary.
3. Rout the cracks.
4. Clean and prepare routed areas.
5. Place the hot pour joint sealant.
6. Clean roadway surface.
7. Remove traffic control devices.



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Joint Crack Sealing—PCC (A070)

**DESCRIPTION** Resawing and sealing joints and random cracks in PCC pavement

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Superintendent (1)  
 Highway Equipment Operator (11)

**RECOMMENDED**

**EQUIPMENT** Sand Blaster (1)  
 Riding concrete saws (2)  
 Dump truck (2)  
 Compressor (3)  
 Water truck (1)  
 Crew cab (1)  
 Random crack saw (1)  
 Tractor broom (1)  
 Buckshot saw (wire brush) (3)  
 Heat lance (1)

**RECOMMENDED**

**MATERIAL** Hot pour joint sealant  
 Water  
 Sand

**ENVIRONMENTAL**

**IMPACTS** N/A

**PERFORMANCE**

**VALUES**

- Hours Per Unit 12.800
- Daily Expectation 10,000
- Accomplishment Unit Linear Feet

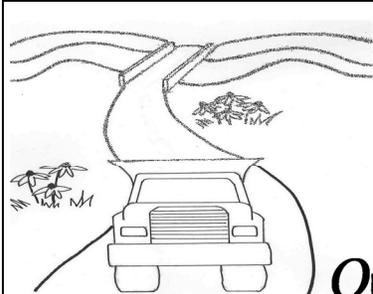
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**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

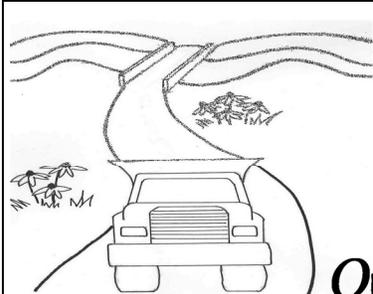
1. Discuss with crew the requirements of the job.
2. Place traffic control devices as necessary.
3. Saw out the old joint material and random cracks.
4. Clean and prepare sawed areas.
5. Place the hot pour joint sealant.
6. Clean roadway surface.
7. Remove traffic control devices.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SURFACE (A000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Maintenance of Protective Devices at Railroad Crossing (A100)</p>

<b>DESCRIPTION</b>	This activity pays the various railroads for cost incurred at railroad crossings for maintenance of protective devices. The Division of Maintenance only processes the payments. (General)
<b>SCHEDULING</b>	N/A
<b>RECOMMENDED PERSONNEL</b>	N/A
<b>RECOMMENDED EQUIPMENT</b>	N/A
<b>RECOMMENDED MATERIAL</b>	N/A
<b>ENVIRONMENTAL IMPACTS</b>	N/A
<b>PERFORMANCE VALUES</b>	N/A
<b>FUNCTION</b>	FE01
<b>RECOMMENDED PROCEDURE</b>	N/A



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SURFACE (A000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Routine Traffic-Bound Maintenance (A110)</p>

**DESCRIPTION** Dragging, blading, or grading traffic-bound surfaces to smooth and reshape them

Blading approaches and mailbox turnouts are incidental. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** Highway Equipment Operator (6)

**RECOMMENDED EQUIPMENT**

Grader	(1)
Pickup truck	(1)
TMA (optional)	

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** N/A

**PERFORMANCE VALUES**

➤ Hours Per Unit	2.667
➤ Daily Expectation	3
➤ Accomplishment Unit	Lane Mile

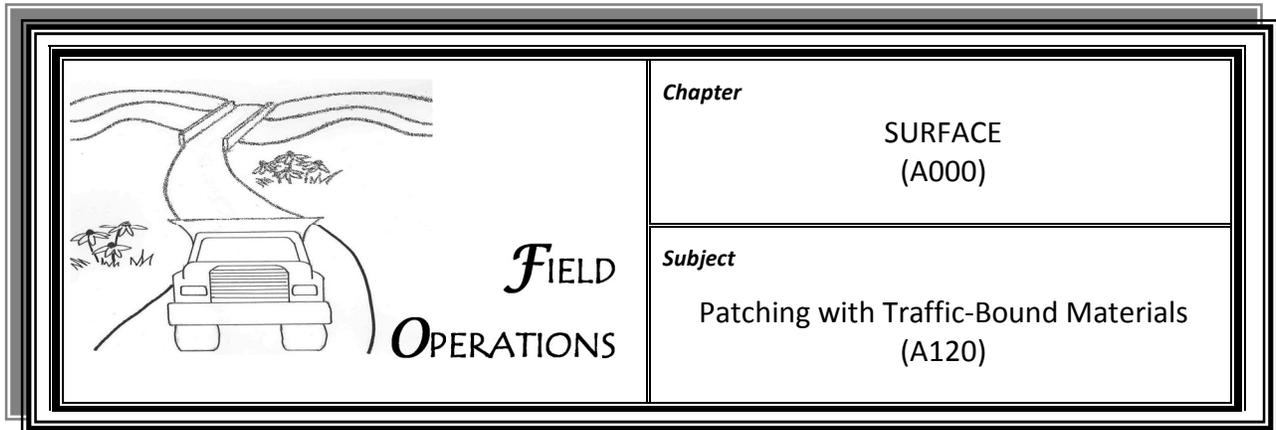
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Blade roadway surface with grader, cutting material to depth of corrugations and depressions.
3. Blade or pull material from road edges toward the center of the road.
4. Make as many passes as necessary to restore cross slope (crown) from ¼ inch to ½ inch per foot.
5. Blade only when moisture is right and road conditions require it. Do not blade when dry, unless a hazard exists.
6. Do not leave windrow on the road. It is a hazard.
7. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Patching or replacing roadway surface using traffic-bound materials hauled by department or vendors

Activity includes incidental spreading of material. (Section Required)

**SCHEDULING** Give patching of all traffic-bound roads special attention during spring and fall because of (1) moisture and temperature conditions and (2) desirability of preparing the gravel surfaces for summer and winter conditions, respectively. Limit attention during summer and winter to the handling of emergency or hazardous conditions only.

**RECOMMENDED**

**PERSONNEL** Highway Equipment Operator (4)  
Traffic Control (1)

**RECOMMENDED**

**EQUIPMENT** Grader (1)  
Pickup truck (1)  
Front-end loader (1)  
Dump truck (3)

**RECOMMENDED**

**MATERIALS** Aggregate (100 tons)

**ENVIRONMENTAL**

**IMPACTS** N/A

**PERFORMANCE**

**VALUES**

- Hours Per Unit 0.400
- Daily Expectation 100
- Accomplishment Unit Ton

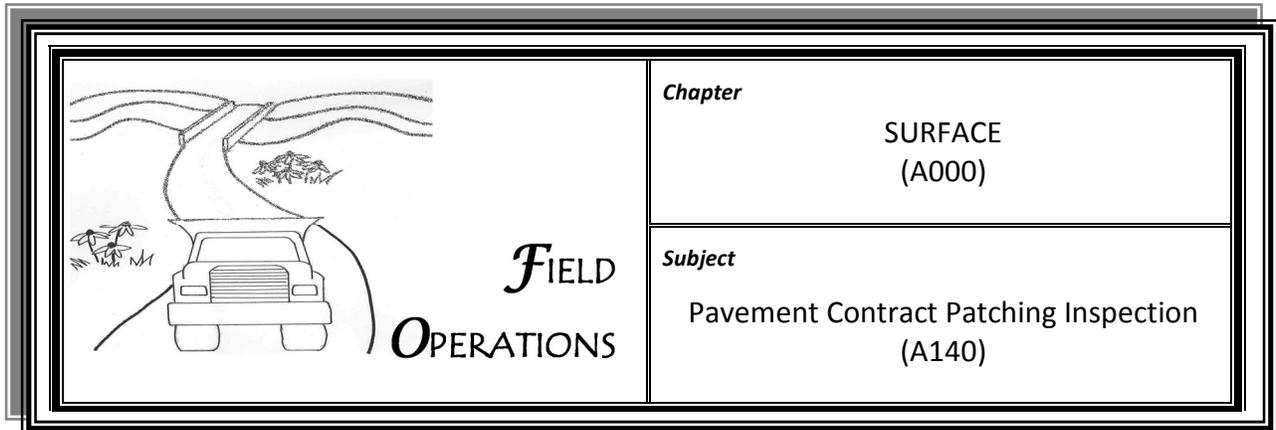
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Spread the new aggregate along roadway. Space the truckloads to provide correct application rate, depending on width and thickness desired, to eliminate the need for moving the aggregate again later.
4. Use grader to spread, shape, and smooth aggregate.
5. Remove traffic-control devices.

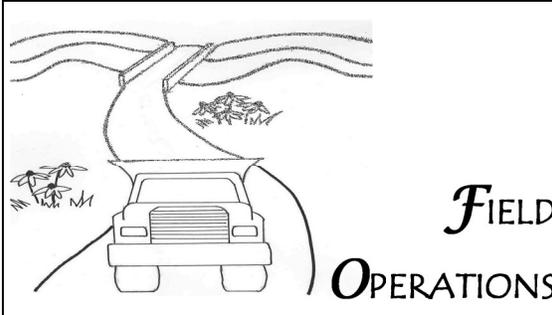
**Note:** Any grading or base preparation required prior to adding traffic-bound materials is performed according to [Activity A110](#).





<b>DESCRIPTION</b>	Pavement patching by contractor only  This activity covers cost of weight ticket taker or inspection when either is a state employee and FE01 maintenance money is used. Take care to see that accomplishment is recorded in OMS—contracts only. (Section Required)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	Highway Equipment Operator or Superintendent	(1)
<b>RECOMMENDED EQUIPMENT</b>	Pickup truck	(1)
<b>RECOMMENDED MATERIALS</b>	N/A	
<b>ENVIRONMENTAL IMPACTS</b>	N/A	
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit: N/A</li> <li>➤ Daily Expectation: 200</li> <li>➤ Accomplishment Unit: Ton</li> </ul>	
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	<ol style="list-style-type: none"> <li>1. Discuss with crew the requirements of the job.</li> <li>2. Pick up and initial tickets and verify delivery number route and type of mix.</li> <li>3. Turn tickets in to administrative specialist or superintendent.</li> <li>4. Make sure to complete and measure striping before sundown.</li> </ol>	



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Vendor-Aided Patching (A150)

**DESCRIPTION** Any patching in which a vendor, along with state forces, participates in a portion of the work (equipment, labor, etc.)

This activity covers cost of all state personnel when using FE01 maintenance money. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** N/A

**RECOMMENDED EQUIPMENT** N/A

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Ton

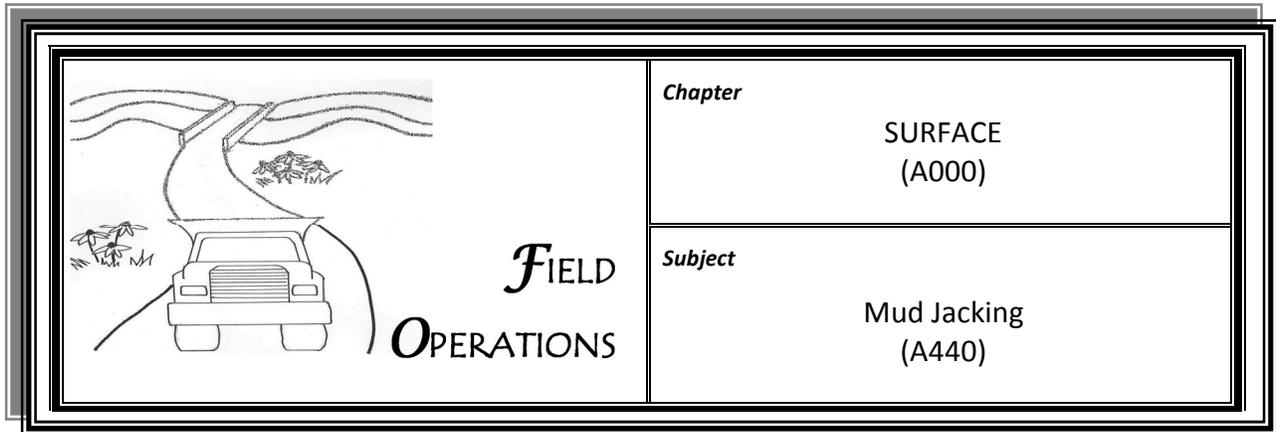
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Clean surface, if required, prior to application of tack coat to surface.
4. Apply tack coat of heated liquid asphalt to existing surface, making sure entire area is covered.
5. Apply bituminous mix with paver or grader in layers no more than two inches or less than one inch in depth. Square ends.
6. Roll for proper compaction after each layer.
7. Check for proper crown or cross slope before leaving project. Correct any deficiencies.
8. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Pumping materials such as soil cement slurry into voids under concrete pavement to raise the pavement to a desired elevation or to fill voids under the pavement (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(7)

**RECOMMENDED EQUIPMENT**

Mud-jack machine	(1)
Dump truck	(2)
Compressor	(1)
Jackhammer	(2)
Water truck	(1)
Crew cab	(1)
Core drill (optional)	(1)

**RECOMMENDED MATERIALS**

- Cement
- Limestone dust
- Water

**ENVIRONMENTAL IMPACTS** N/A

**PERFORMANCE VALUES**

➤ Hours Per Unit	12.800
➤ Daily Expectation	100
➤ Accomplishment Unit	Square Yard

**FUNCTION** FE01

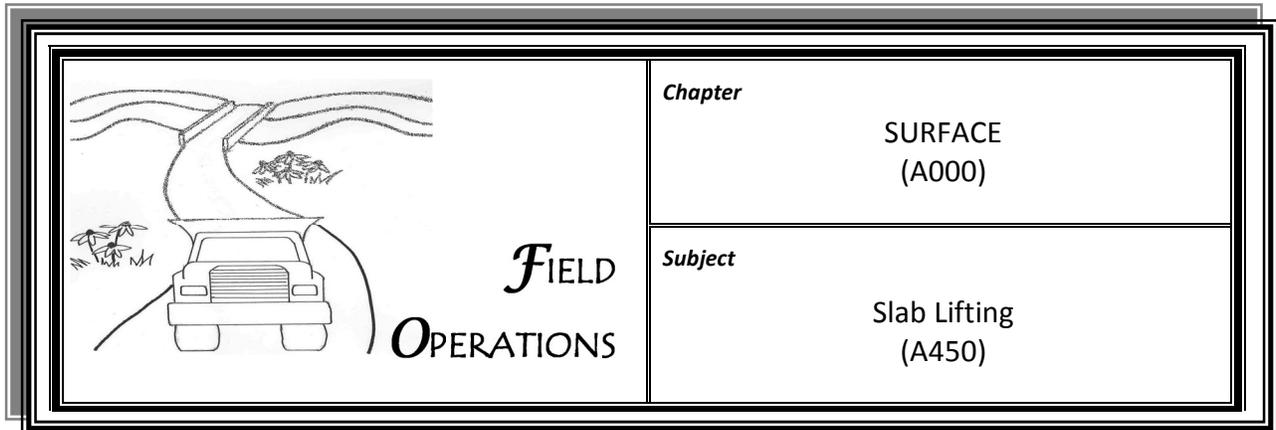
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Drill holes, using jackhammer or core drill.
4. Clean holes, using compressed air.
5. Mix slurry material.
6. Pump slurry material into holes.
7. **Caution:** Raise concrete slab or area being mud-jacked uniformly.
8. Plug the holes.
9. Clean roadway surface.
10. Remove traffic-control devices.

**Note:** This operation may be to fill voids, or it may be an attempt to raise a concrete slab to proper elevation. Void filling is relatively simple; however, raising a pavement requires the establishment of some elevation reference hubs or the provision of elevation measuring devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Pumping polyurethane into voids under concrete pavement to raise the pavement to a desired elevation (Section Required)

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Superintendent (1)  
 Highway Equipment Operator (5)  
 Traffic Control (2)

**RECOMMENDED**

**EQUIPMENT** Dump truck (2)  
 Compressor (1)  
 Jackhammer (2)  
 Water truck (1)  
 Crew cab (1)  
 Core drill (Optional) (1)

**RECOMMENDED**

**MATERIALS** Polyurethane

**ENVIRONMENTAL**

**IMPACTS** N/A

**PERFORMANCE**

**VALUES**

- Hours Per Unit 0.640
- Daily Expectation 100
- Accomplishment Unit Square Yard

**FUNCTION** FE01

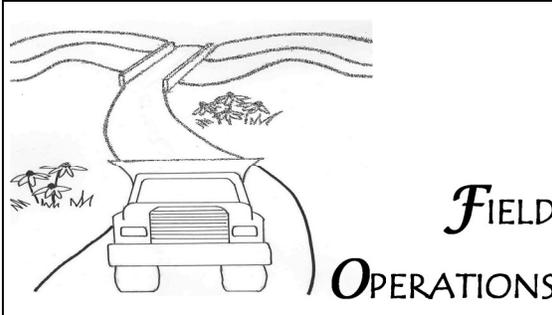
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Drill holes, using jackhammer or core drill.
4. Clean holes, using compressed air.
5. Pump polyurethane into holes.
6. **Caution:** Raise concrete slab or area being mud jacked uniformly.
7. Plug the holes.
8. Clean roadway surface.
9. Remove traffic-control devices.

**Note:** This operation may be to fill voids or it may be an attempt to raise a concrete slab to proper elevation. Void-filling is relatively simple; however, raising a pavement requires the establishment of some elevation-reference hubs or the provision of elevation-measuring devices.

**Special Note:** Determine accomplishment before leaving job site.

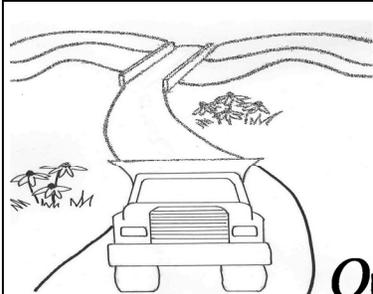


	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Milling (A710)

<b>DESCRIPTION</b>	Surface milling, using milling machine (Section Required)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	Highway Superintendent	(1)
	Highway Equipment Operator	(7)
<b>RECOMMENDED EQUIPMENT</b>	Dump truck	(2)
	Milling machine	(1)
	Broom	(1)
	Pickup truck	(1)
	Loader (optional)	(1)
<b>RECOMMENDED MATERIALS</b>	N/A	
<b>ENVIRONMENTAL IMPACTS</b>	Stockpile materials in a location as designated by superintendent in accordance with best-management practices.	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	0.427
	➤ Daily Expectation	150
	➤ Accomplishment Unit	Square Yard
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	<ol style="list-style-type: none"> <li>1. Discuss with crew the requirements of the job.</li> <li>2. Place traffic-control devices as necessary.</li> <li>3. Mill area as needed.</li> <li>4. Clean milled material, debris, etc., in area.</li> <li>5. Remove traffic-control devices.</li> </ol>	

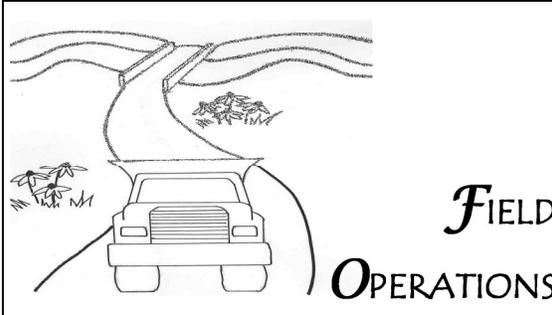
**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SURFACE (A000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Milling—Vendor (A720)</p>

<b>DESCRIPTION</b>	Surface milling using a contractor (Section Required)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	Highway Equipment Operator	(7)
<b>RECOMMENDED EQUIPMENT</b>	Dump Truck	(7)
<b>RECOMMENDED MATERIALS</b>	N/A	
<b>ENVIRONMENTAL IMPACTS</b>	Stockpile materials in a location as designated by superintendent in accordance with best-management practices.	
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit</li> <li>➤ Daily Expectation</li> <li>➤ Accomplishment Unit</li> </ul>	<p>N/A</p> <p>N/A</p> <p>Tons</p>
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	<ol style="list-style-type: none"> <li>1. Discuss with crew the requirements of the job.</li> <li>2. Haul millings.</li> </ol>	



	<b>Chapter</b> SURFACE (A000)
	<b>Subject</b> Bituminous Cold Premix Preparation (A880)

**DESCRIPTION**                      Mixing aggregate with liquid bituminous asphalt and stockpiling for future use, including cold mix materials (General)

**SCHEDULING**                      Schedule during months when liquid asphalt is available. Request mix-design assistance from district materials engineer if needed.

**RECOMMENDED PERSONNEL**                      Highway Equipment Operator                      (3)

**RECOMMENDED EQUIPMENT**

Front-end loader or crane	(1)
Pug mill	(1)
Dump truck (Optional)	(2)

**RECOMMENDED MATERIALS**

Aggregate	(400 tons)
Asphalt emulsion	(5,200 gallons)

**Note:** Amount of asphalt depends on size of aggregate; smaller aggregate requires more asphalt.

**ENVIRONMENTAL IMPACTS**                      Stockpile materials in a location as designated by superintendent in accordance with best-management practices.

**PERFORMANCE VALUES**

➤ Hours Per Unit	0.140
➤ Daily Expectation	400
➤ Accomplishment Unit	Ton

**FUNCTION**                      FE01

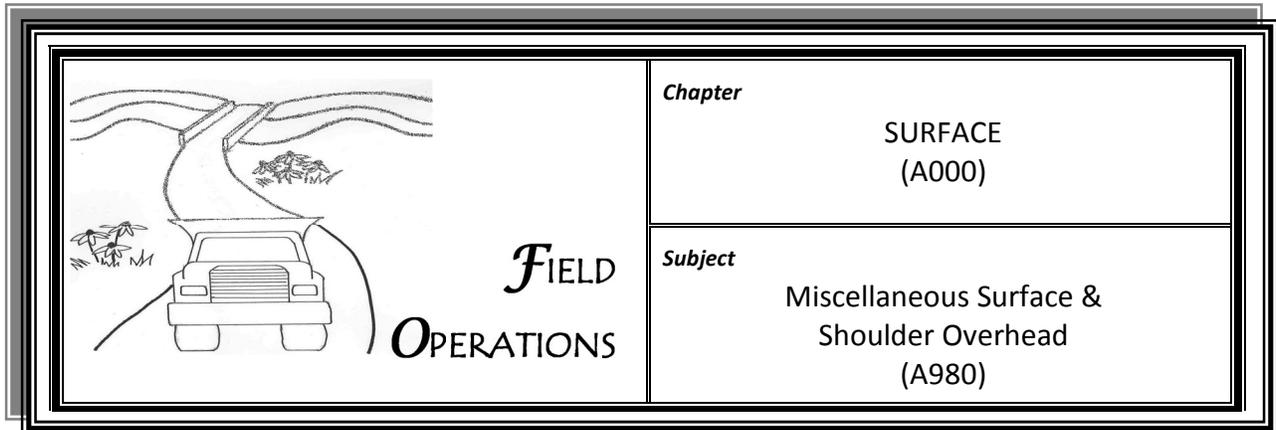
**RECOMMENDED  
PROCEDURE**

1. Prepare site for mixing operation (according to KPDES-BMP plan).
2. Load aggregate from stockpile to plant with a front-end loader.
3. Check the oil application for proper mix proportion.
4. Haul mix material to stockpile.
5. Place stockpile in proper location.

**Note:** If premix is prepared with a road grader, charge to this subledger code.

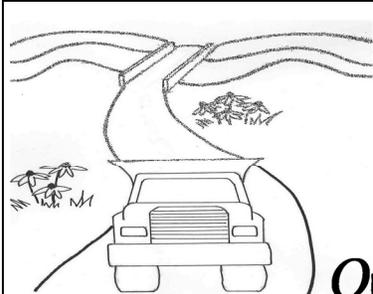
**Special Note:** Determine accomplishment before leaving job site.





<b>DESCRIPTION</b>	<p>Generally, labor and equipment used when stockpiling materials</p> <p>Charge to account FE01 all activities that specifically relate to surface and shoulder maintenance when it is not feasible to charge to projects. (General)</p>
<b>SCHEDULING</b>	As required
<b>RECOMMENDED PERSONNEL</b>	As required
<b>RECOMMENDED EQUIPMENT</b>	As required
<b>RECOMMENDED MATERIALS</b>	As required
<b>ENVIRONMENTAL IMPACTS</b>	N/A
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit <span style="float: right;">N/A</span></li> <li>➤ Daily Expectation <span style="float: right;">N/A</span></li> <li>➤ Accomplishment Unit <span style="float: right;">Hour</span></li> </ul>
<b>FUNCTION</b>	FE01
<b>RECOMMENDED PROCEDURE</b>	As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SURFACE (A000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Surface Maintenance (A990)</p>

**DESCRIPTION** This activity includes crack-sealing, repair of surface contraction and longitudinal joints by cleaning and resealing, rumble-strip replacement, epoxy patching, dust palliatives, and all other roadway surface activities not specified by activities A010 through A980. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** N/A

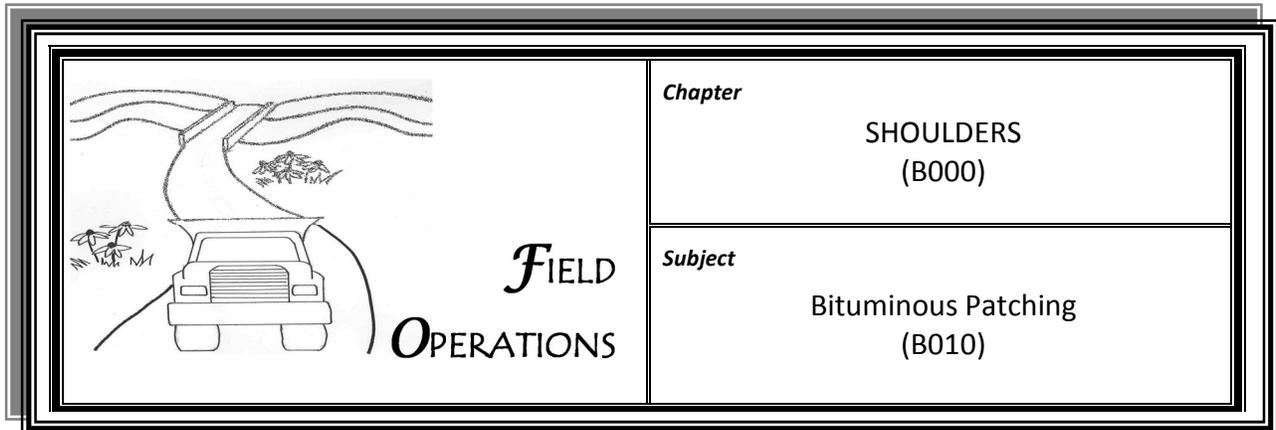
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Hand-patching paved shoulders with bituminous materials to correct abrupt depressions, potholes, and other deformities (Section Required)

**SCHEDULING** Schedule repair of shoulder failures year-round. Unless a failure presents a dangerous condition to motorists, allow the area to dry before repairing.

**RECOMMENDED**

**PERSONNEL**

Highway Equipment Operator	(3)
Highway Laborer	(1)
Traffic Control	(2)

**RECOMMENDED**

**EQUIPMENT**

Dump truck	(1)
Pickup truck	(1)
Bituminous heater (tarpot) or other container for tack	(1)

**RECOMMENDED**

**MATERIALS**

Bituminous mix	(10 tons)
Liquid asphalt	(10 gallons)
Sand (optional)	

**ENVIRONMENTAL IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel at the job site.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE**

**VALUES**

➤ Hours Per Unit	4.000
➤ Daily Expectation	10
➤ Accomplishment Unit	Ton

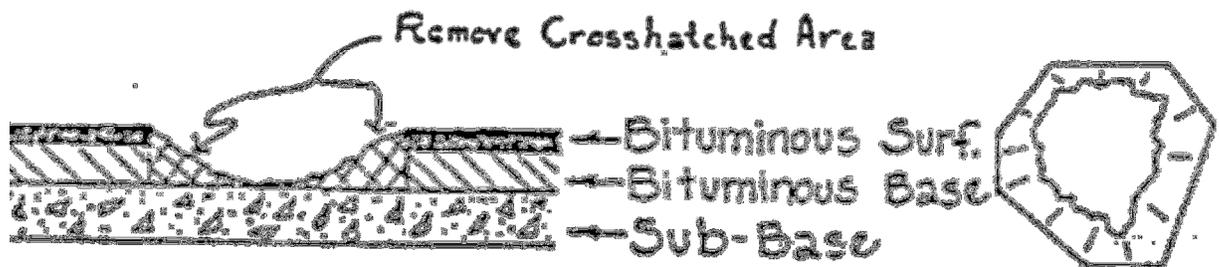
FUNCTION FE01

RECOMMENDED  
PROCEDURE

1. Place traffic-control devices as necessary.
2. Clean out and square up potholes, using hand tools.
3. Apply liquid asphalt materials as needed.
4. Apply tack coat to total area repaired. Be sure to apply tack to total area of pothole.
5. Shovel materials into potholes in layers not exceeding two inches in depth. Hand-tamp each layer before placing the next layer.
6. Flush final layer with shoulder surface after compaction.
7. Remove traffic-control devices.

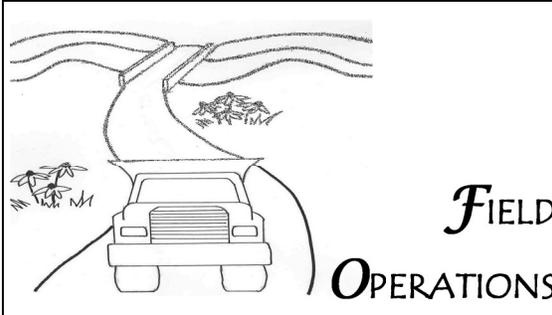
**Note:** Perform patching operations only when the shoulder surface is dry and potholes are not ponding water.

**Special Note:** Determine accomplishment before leaving job site.



The sketch above is an example of “squaring” a patch. Note that *squaring* does not necessarily mean “having four equal sides.” It does mean “eliminating all rounded points of contact between old material and new material.”



	<b>Chapter</b> SHOULDERS (B000)
	<b>Subject</b> Paving Machine or Grader Leveling & Patching with Bituminous Mix (B020)

**DESCRIPTION** Paving machine or grader leveling and patching of paved shoulders with bituminous material to correct shoulder surface irregularities and failures (Section Required)

**SCHEDULING** Temperature requirements restrict the effective placement of bituminous materials with a paving machine or grader to the warmer months.

**RECOMMENDED**

**PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(5)
Traffic Control	(3)

**RECOMMENDED**

**EQUIPMENT**

Crew cab	(1)
Pickup truck (pilot vehicle)	(1)
Distributor	(1)
Paving machine or grader	(1)
Truck trailer*	(1)
Truck tractor*	(1)
Water truck	(1)
Dump truck	(2, distance may require more)
Roller	(1)

\*Use of track-mounted paving machine requires truck tractor and trailer.

**RECOMMENDED**

**MATERIALS**

Bituminous mix	(60 tons)
Liquid asphalt	(57 gallons)
Chip (as necessary)	

**ENVIRONMENTAL****IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE****VALUES**

- |                       |       |
|-----------------------|-------|
| ➤ Hours Per Unit      | 1.200 |
| ➤ Daily Expectation   | 60    |
| ➤ Accomplishment Unit | Ton   |

**FUNCTION**

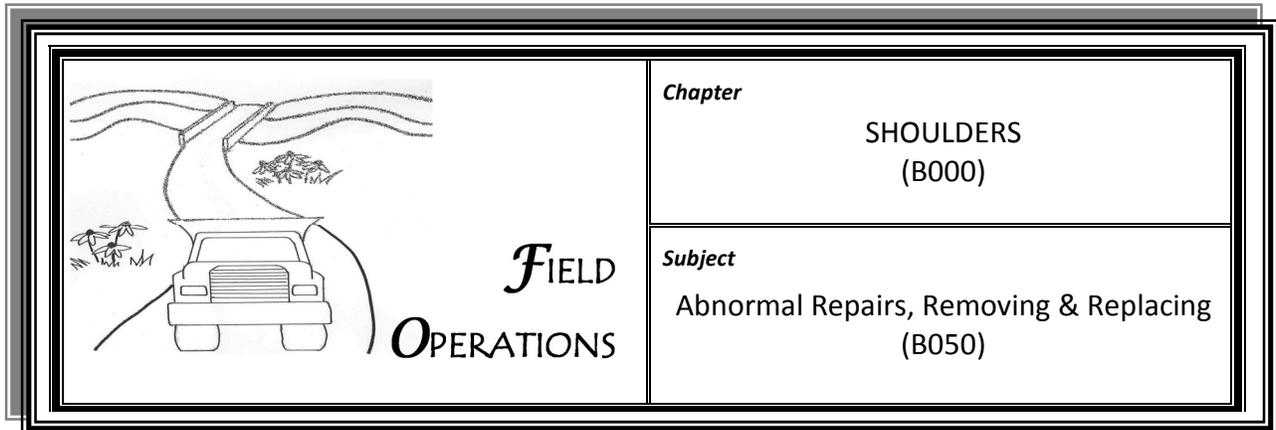
FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job. Emphasize safety.
2. Place traffic-control devices as necessary.
3. Clean surface, if required, prior to application of tack coat to surface.
4. Apply tack coat of heated liquid asphalt to existing surface, making sure entire surface area is covered. Allow tack to "break" before paving.
5. Apply bituminous mix with paver or grader in layers no more than two inches or less than one inch in depth (square ends).
6. Roll for proper compaction after each layer.
7. Check for proper crown or cross slope before leaving project. Correct any deficiencies.
8. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Removing base and sub-base materials and replacing with bituminous or aggregate materials

Replacement of wearing surface is part of this activity, not a separate activity. (Section Required)

**SCHEDULING** Schedule this work year-round. The temperature conditions may dictate the type of material to use.

**RECOMMENDED**

**PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(5)
Traffic Control	(2 or 3)

**RECOMMENDED**

**EQUIPMENT**

Pickup truck or crew cab	(1)
Front-end loader, backhoe, or gradall	(1)
Compressor	(1)
Paving breaker*	(1)
Dump truck	(2)
Roller	(1)

\*Use two or more pavement breakers and possibly a jackhammer when encountering old concrete base. Also, use more breakers at any time the breaking operation becomes the production control factor.

**RECOMMENDED**

**MATERIALS**

Premix	(20 tons)
Aggregate	(30 tons)

**ENVIRONMENTAL  
IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the [Environmental Handbook](#) (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE****VALUES**

➤ Hours Per Unit	1.280
➤ Daily Expectation	50
➤ Accomplishment Unit	Ton

**FUNCTION**

FE01

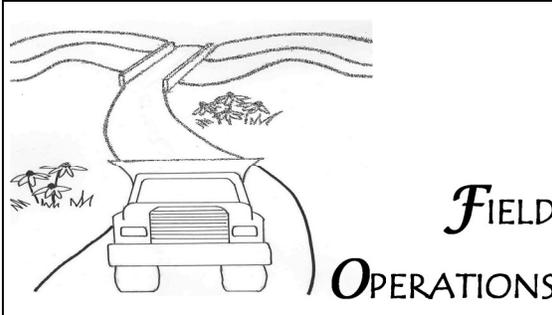
**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Use compressor and air tools as needed to dig out unsuitable material and square up area.
3. Remove broken and unusable material by hand, front-end loader, or pavement breaker, depending on the size of the patch and the amount.
4. Tack with liquid asphalt. Be sure to apply tack to total area replaced.
5. Backfill sub-base, if necessary, with aggregate or bituminous material.
6. Compact replaced material after each 2-inch lift or portion thereof.
7. Roll and compact final surface to match existing surrounding grade.
8. Properly dispose of all undesirable and left-over material according to the *Environmental Handbook* (4.8, "Concrete and Metal Waste").
9. Remove traffic-control devices.

**Note:** Frequently, this operation requires the installation of French drains or underdrains to release water from the base or sub-base, especially when previous repair did not solve the problem.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SHOULDERS (B000)
	<b>Subject</b> Bituminous Wedging, Paved Shoulders (B110)

**DESCRIPTION**                      Mechanically placing bituminous mix along the pavement edge to correct separation and depression of the paved shoulder from the roadway pavement

This activity may be either spot or continuous and include maintenance of bituminous edging (Section Required).

**SCHEDULING**                      Give shoulders special attention during spring and fall because of (1) moisture and temperature conditions and (2) desirability of preparing the shoulders for the summer and winter conditions, respectively. Limit attention during summer and winter to the handling of emergency or hazardous conditions only.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (7)  
    Traffic Control                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck or crew cab                      (1)  
    Distributor                      (1)  
    Grader/Leeboy paver                      (1)  
    Roller                      (1)  
    Dump truck\*                      (3)  
    Broom                      (1)  
    Flasher and signal                      (1)

\*Distance may require additional trucks.

**RECOMMENDED**

**MATERIALS**                      Bituminous mix                      (50 tons)  
    Liquid asphalt                      (68 gallons\*)

\*Depends on depth of depression

**ENVIRONMENTAL  
IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE  
VALUES**

- |                       |       |
|-----------------------|-------|
| ➤ Hours Per Unit      | 1.760 |
| ➤ Daily Expectation   | 50    |
| ➤ Accomplishment Unit | Ton   |

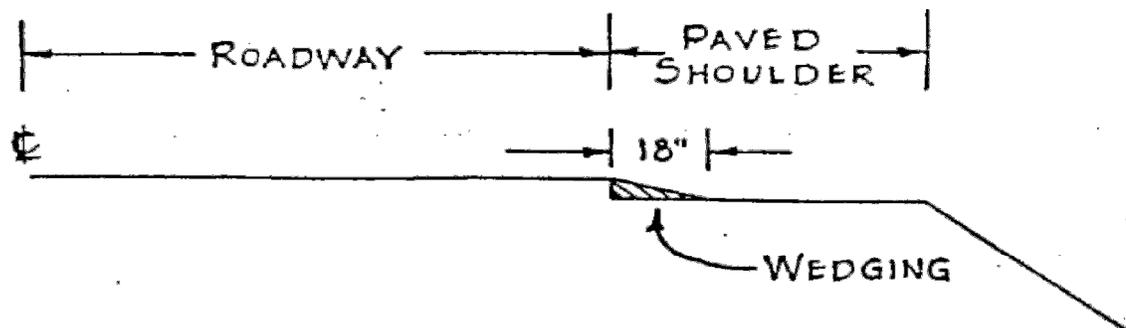
**FUNCTION** FE01

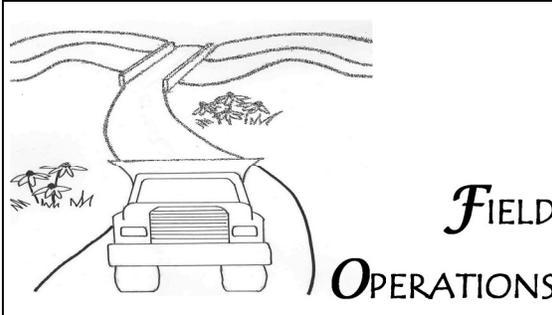
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. If necessary, clean and broom surface.
4. Tack existing surface 18 inches wide. Keep tack material off roadway surface.
5. Place bituminous material along the pavement edge, shape with grader, or pave with Leeboy paver.
6. Smooth material to match grade of existing surface and to meet shoulder grade 18 inches from edge of pavement (see sketch below).
7. Compact material, using a roller.
8. Remove traffic-control devices.

**Note:** Wedging should be no more than 18 inches beyond the edge of the roadway surface.

**Special Note:** Determine accomplishment before leaving job site.



	<p><i>Chapter</i></p> <p>SHOULDERS (B000)</p>
	<p><i>Subject</i></p> <p>Bituminous Edging Shoulders Using Penetration Seal Method (B120)</p>

**DESCRIPTION** Grading, shaping, and adding necessary aggregate and bituminous materials to raise the shoulder grade to match that of the roadway (Section Required)

**SCHEDULING** Schedule as needed when using aggregate only. Schedule during the warm months when using bituminous material.

**RECOMMENDED**

**PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(10)
Traffic Control	(2)

**RECOMMENDED**

**EQUIPMENT**

Pickup truck	(2)
Distributor	(2)
Grader / Spreader	(1)
Grader	(1)
Roller	(1)
Broom	(1)
Dump truck	(3)
Loader	(1)
Tractor to pull broom	(1)

**Note:** Distance may require additional trucks.

**RECOMMENDED**

**MATERIALS**

Coarse aggregate (#57)	(89 tons)
Aggregate (9M)	(11 tons)
Liquid asphalt	(1,200 gallons)

**ENVIRONMENTAL  
IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the *Environmental Handbook* (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE****VALUES**

➤ Hours Per Unit	1.040
➤ Daily Expectation	100
➤ Accomplishment Unit	Ton

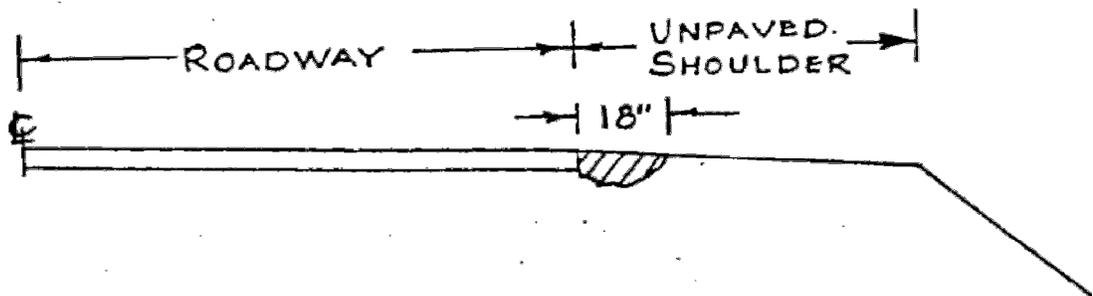
**FUNCTION**

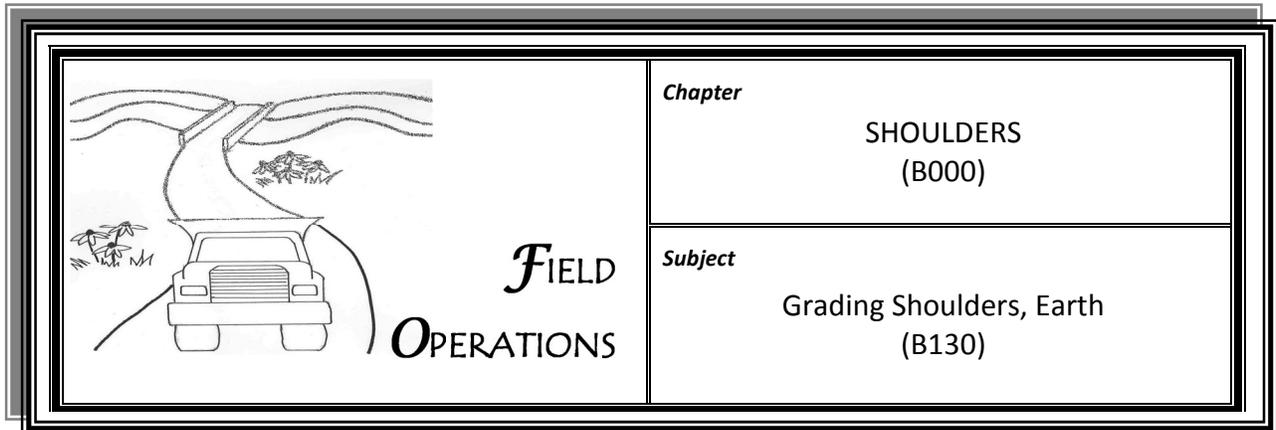
FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Trench area adjacent to roadway surface for edging.
4. Prime area that has been prepared.
5. Place coarse aggregate, penetrate aggregate, and place 9M stone.
6. Edge 18 inches wide. Smooth material to match grade of existing surface and to meet shoulder grade 18 inches from edge to pavement (see sketch below).
7. Compact material, using a roller.
8. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION**                      Cutting high earth shoulders to enable water to drain directly to the roadway ditch

Pick up or leave excess material, depending on quantity. (Section Required)

**SCHEDULING**                      Schedule as needed when shoulders are in workable condition.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                (6)  
    Traffic Control                                    (2)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                                      (1)  
    Grader    (1)  
    Roller    (1)  
    Broom    (1)  
    Dump truck                                        (3)  
    Loader or belt loader                            (1)

**RECOMMENDED**

**MATERIALS**                      N/A

**ENVIRONMENTAL**

**IMPACTS**                              Seed to protect shoulders and ditches after grading and cleaning.

**PERFORMANCE**

**VALUES**

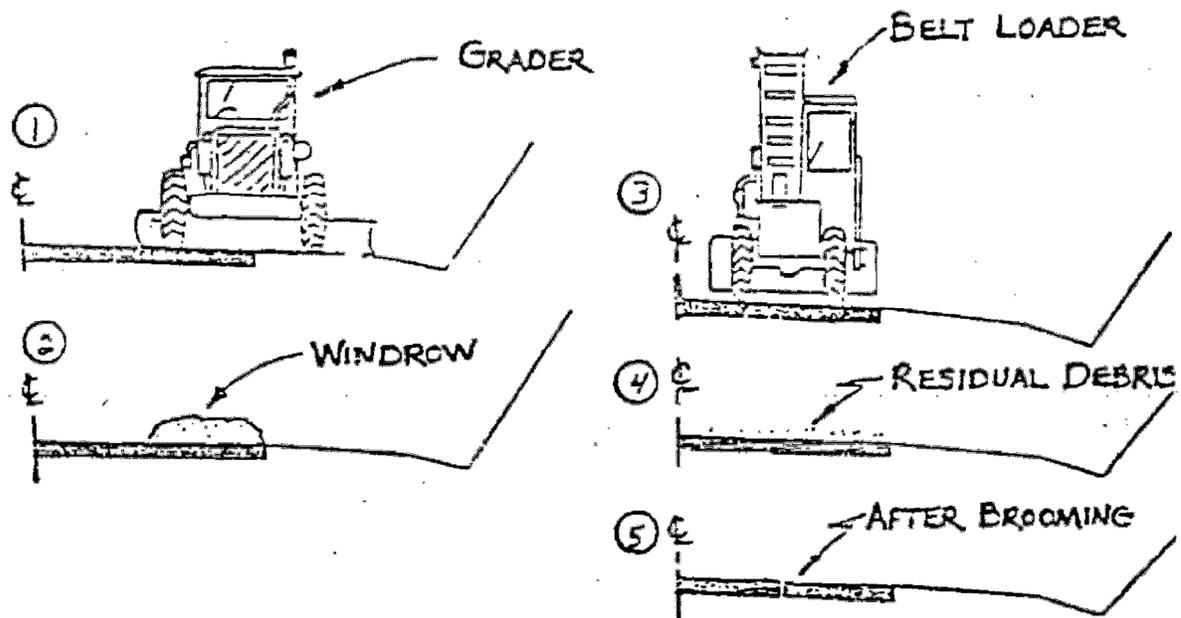
- Hours Per Unit                                      10.286
- Daily Expectation                                    7
- Accomplishment Unit                               Lane Mile

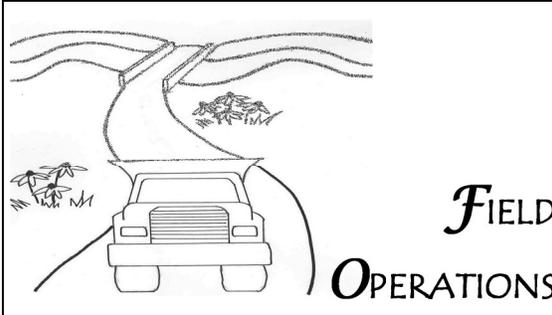
**FUNCTION**                              FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Cut grass shoulder as per sketches below. Be sure to leave sufficient grass between shoulder and ditch for silt control.
4. Haul waste material away.
5. Sweep surface of pavement clean.
6. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SHOULDERS (B000)
	<b>Subject</b> TBM Maintenance (B140)

**DESCRIPTION** Maintaining mailbox turnouts, public-street and county-road intersections, school bus turnoffs, and private and commercial entrances to normal shoulder width and low shoulders, using nonbituminous material (Section Required)

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Equipment Operator (3)  
 Traffic Control (2)

**RECOMMENDED**

**EQUIPMENT** Pickup truck (1)  
 Dump truck (2)

**RECOMMENDED**

**MATERIALS** Aggregate and/or millings (14 tons)

**ENVIRONMENTAL**

**IMPACTS** Maintain stockpiles per KPDES permit.

**PERFORMANCE**

**VALUES**

- Hours Per Unit 2.857
- Daily Expectation 14
- Accomplishment Unit Ton

**FUNCTION** FE01

**RECOMMENDED**

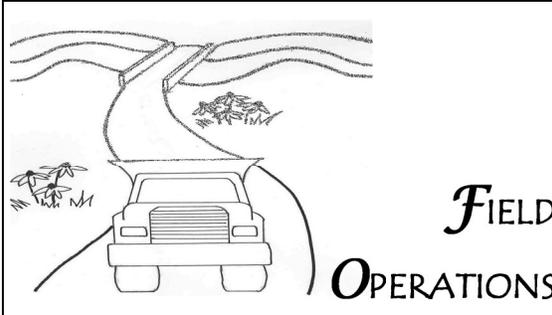
**PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Hand-shovel material into potholes, low areas, etc.
4. Level new material flush with existing area.
5. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





	<p><i>Chapter</i></p> <p style="text-align: center;">SHOULDERS (B000)</p> <hr/> <p><i>Subject</i></p> <p style="text-align: center;">Grade Shoulders, DGA or Other Stone (B210)</p>
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**DESCRIPTION**                      Grading and reshaping shoulders without adding materials, and bringing existing material against the edge of the pavement surface (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (1)  
    Traffic Control                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Motor grader or shoulder maintainer                      (1)  
    Roller (optional)                      (1)  
    Cones and flashing arrows (as needed)

**Note:** Second grader and/or pickup truck is optional.

**RECOMMENDED**

**MATERIALS**                      N/A

**ENVIRONMENTAL**

**IMPACTS**                      N/A

**PERFORMANCE**

**VALUES**

- Hours Per Unit                      5.000
- Daily Expectation                      8
- Accomplishment Unit                      Shoulder Mile

**FUNCTION**                      FE01

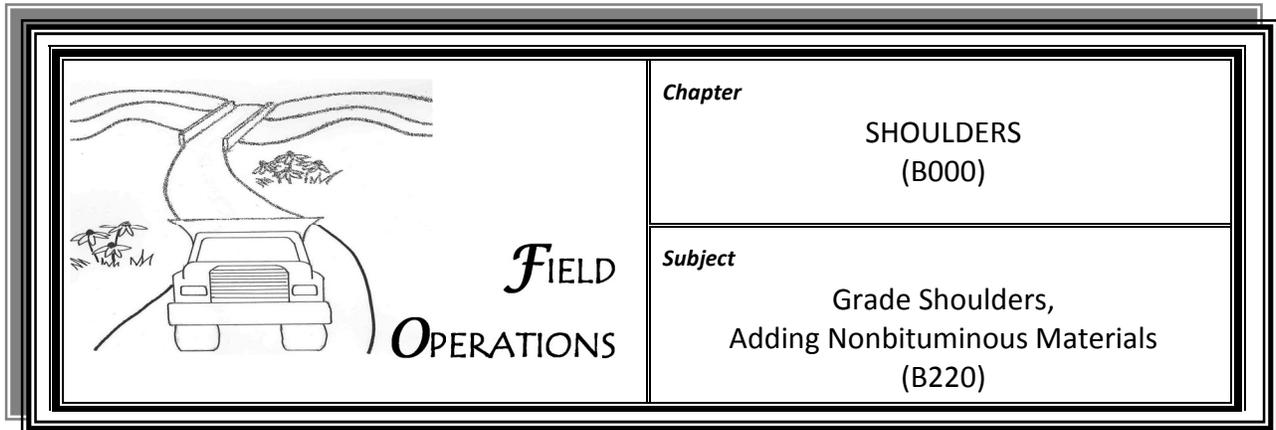
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Use pickup truck to place traffic-control devices as necessary. If required, the truck will follow the grader with a flashing amber light to warn motorists.
3. Pull material up against pavement edge.
4. Make second pass, if necessary, to smooth material to original grade and shape. Slope should be  $\frac{3}{4}$  inch per foot.
5. Remove traffic-control devices.

**Note:** Place safety devices and signs according to [MUTCD](#).

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Grading and reshaping shoulders, adding material (Section Required)

**SCHEDULING** Schedule this activity in the spring and fall when rainfall provides a sufficient amount of moisture to keep shoulder surface in a workable condition.

**RECOMMENDED**

**PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(6)
Traffic Control	(3)

**RECOMMENDED**

**EQUIPMENT**

Pickup truck	(1)
Motor grader	(1)
Loader	(1)
Dump truck	(2)
Roller	(1)
Broom	(1)

**Note:** Crew recommended is for two-lane road. On four-lane roads, reduce traffic control to one worker, and add flashing arrow.

**RECOMMENDED**

**MATERIALS** Aggregate or milling (100 tons)

**ENVIRONMENTAL**

**IMPACTS** Maintain stockpile per KPDES permit.

**PERFORMANCE**

**VALUES**

➤ Hours Per Unit	0.800
➤ Daily Expectation	100
➤ Accomplishment Unit	Ton

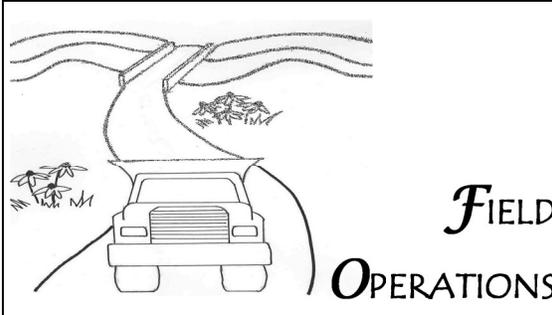
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Blade or smooth and shape existing shoulder with motor grader to provide base for placement of a uniform thickness of new aggregate.
4. Dump the new aggregate along the shoulder, spacing the truckloads to provide the correct application rate depending on width and thickness desired. This procedure eliminates the need for moving the aggregate later.
5. Spread the aggregate uniformly over width of shoulder, blading the material tight against the pavement edge.
6. Remove any excess aggregate from pavement surface.
7. Make sure slope is  $\frac{3}{4}$  inch per foot.
8. Roll finished surface with roller to provide smooth dense surface.
9. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SHOULDERS (B000)
	<b>Subject</b> Grade Shoulders under Guardrail (B230)

<b>DESCRIPTION</b>	Grading and reshaping shoulders under guardrail	
	Add or remove material as necessary by hand or mechanical means to restore to proper slope. (Section Required)	
<b>SCHEDULING</b>	Schedule this activity year-round as necessary.	
<b>RECOMMENDED PERSONNEL</b>	Highway Equipment Operator	(3)
	Traffic Control	(2)
<b>RECOMMENDED EQUIPMENT</b>	Shoulder maintainer or other modified equipment	(1)
	Dump truck	(1)
	Crew cab	(1)
<b>RECOMMENDED MATERIALS</b>	Varies	
<b>ENVIRONMENTAL IMPACTS</b>	N/A	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	0.080
	➤ Daily Expectation	500
	➤ Accomplishment Unit	Foot
<b>FUNCTION</b>	FE01	

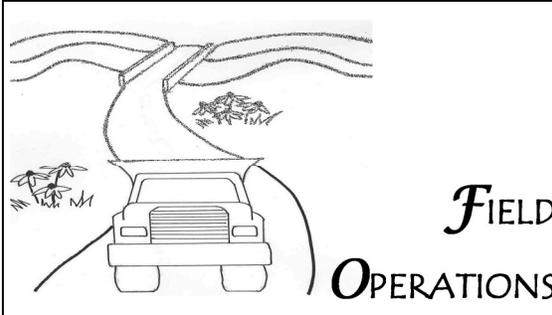
**RECOMMENDED**

**PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Remove or add material under guardrail or around guard post as required.
4. Smooth material to required slope.
5. Remove traffic-control devices.

**Note:** Place safety devices and signs according to [MUTCD](#).



	<b>Chapter</b> SHOULDERS (B000)
	<b>Subject</b> Bituminous Edging, Unpaved Shoulders (B540)

**DESCRIPTION** Grading, shaping, and adding the necessary bituminous mix to raise the shoulder grade to match the roadway surface (Section Required)

**SCHEDULING** Schedule this activity during the warm months.

**RECOMMENDED**

**PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(9)
Traffic Control	(2)

**RECOMMENDED**

**EQUIPMENT**

Pickup truck	(1)
Dump truck	(3)
Loader	(1)
Grader	(1)
Roller	(1)
Distributor	(1)
Broom	(1)
Grader/Spreader	(1)
Tractor to pull broom	(1)

**Note:** Distance may require additional trucks.

**RECOMMENDED**

**MATERIALS**

Liquid asphalt	(92 gallons)
Bituminous mix (hot or cold)	(100 tons)
Chip (as necessary)	

**ENVIRONMENTAL IMPACTS**

- Precondition equipment before loading bituminous material.
- Do not use diesel fuel.
- Return tool-cleaning solvents to the lot.
- Follow procedures in the [Environmental Handbook](#) (2.1.1, "Cleaning Asphalt Tools and Equipment") for cleaning at the end of the job.

**PERFORMANCE****VALUES**

➤ Hours Per Unit	0.960
➤ Daily Expectation	100
➤ Accomplishment Unit	Ton

**FUNCTION**

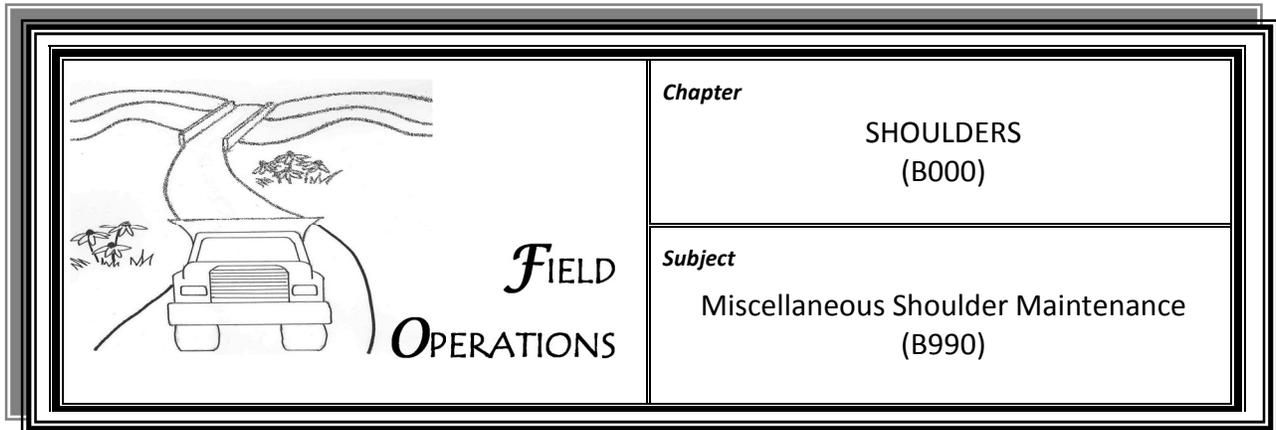
FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary
3. Trench area adjacent to roadway surface for edging.
4. Prime area that has been prepared.
5. Place bituminous mix.
6. Edge 18 inches wide. Smooth material to match grade of existing surface and to meet shoulder grade 18 inches from edge of pavement.
7. Compact material, using a roller.
8. Remove traffic-control devices.

**Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Performing miscellaneous shoulder maintenance not specified in the "B" activities, cutting bleeders through shoulder to release pocketed water on pavement, and maintaining bituminous curb and/or seal under guardrail

If stockpiling material for shoulder maintenance, see Activity A980 in [FOG-318](#). (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** N/A

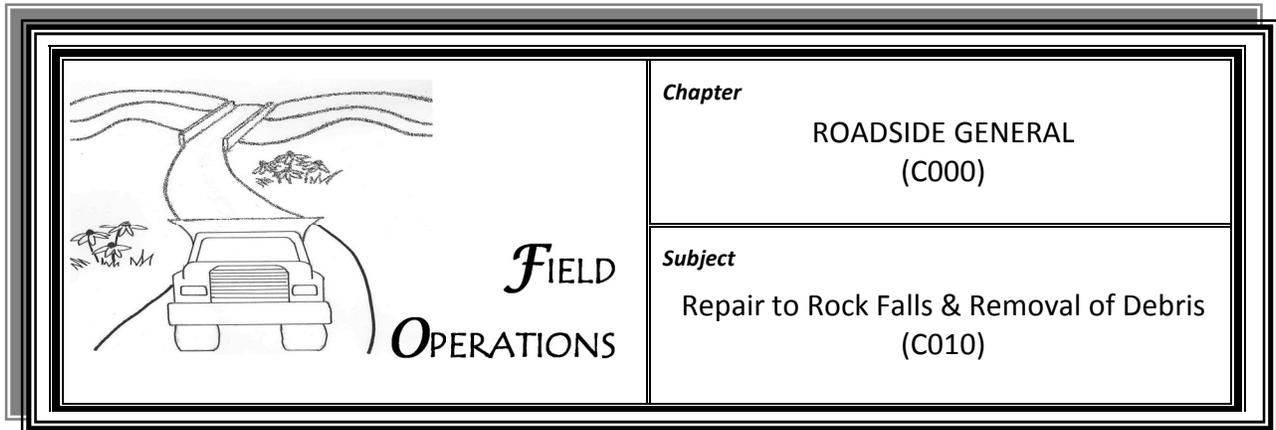
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Removing rock falls, earth, or debris that has fallen near or on the roadway (Section Required)

**SCHEDULING** Schedule as necessary. Direct special attention to this activity during periods of extended rainfall and after periods of freezing and thawing.

**RECOMMENDED PERSONNEL**

Highway Equipment Operator	(3)
Traffic Control	(3)

**RECOMMENDED EQUIPMENT**

Dump truck	(2)
Front-end loader or shovel*	(1)
TMA (optional)	

\*Includes backhoe, drott, bantam, or gradall

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** Dispose of waste material per the *Environmental Handbook*.

**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION** FE01

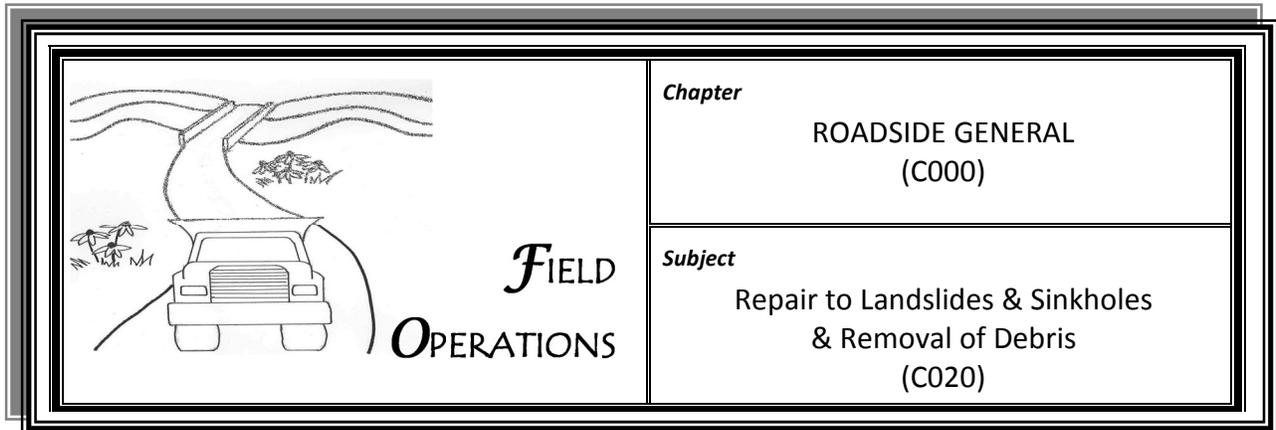
**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Pick up rock fall, earth, or debris from ditch, shoulder, or surface of road.
3. Remove traffic-control devices.

**Note:** Should loading equipment not be necessary or not be available, utilize a nonstandard crew. Frequently, a rock-pickup patrol, two workers in one truck, performs this operation.

**Special Note:** Determine accomplishment before leaving job site. Be sure to properly dispose of all waste material.





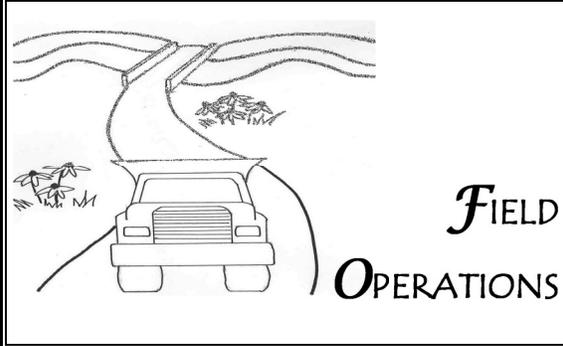
<b>DESCRIPTION</b>	<p>Repairing fills and roadways damaged by slips or settlements</p> <p>Contractor cost is included as a direct cost in this activity. (Section Required)</p>
<b>SCHEDULING</b>	<p>Schedule this activity as soon as a situation occurs or as soon as assembly of proper equipment and materials can occur.</p>
<b>RECOMMENDED PERSONNEL</b>	<p>As required</p>
<b>RECOMMENDED EQUIPMENT</b>	<p>As required</p>
<b>RECOMMENDED MATERIALS</b>	<p>Piling (timber, sheet, railroad rail) Rip rap Gabions Cribbing Other materials as needed</p>
<b>ENVIRONMENTAL IMPACTS</b>	<ul style="list-style-type: none"> <li>➤ CORPS of Engineers may require a permit to work around streams.</li> <li>➤ Perform the work according to the <i>Environmental Handbook</i> (Sections 2.3.8 through 2.3.15).</li> </ul>
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit <span style="float: right;">N/A</span></li> <li>➤ Daily Expectation <span style="float: right;">N/A</span></li> <li>➤ Accomplishment Unit <span style="float: right;">Hour</span></li> </ul>
<b>FUNCTION</b>	<p>FE01</p>

**RECOMMENDED**

**PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Drive piling, place fill material, construct gabions, or perform other corrective action as necessary.
4. Remove traffic-control devices.



	<b>Chapter</b> ROADSIDE GENERAL (C000)
	<b>Subject</b> Rest Area Attendant Service (C040)

**DESCRIPTION**                      Pertaining to all salaries and expenses, including utilities, related to regular attendant crews or any personnel temporarily assigned to these manned rest-area crews (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      Varies

**RECOMMENDED EQUIPMENT**                      Power mowers    (2)  
 Hand tools

**RECOMMENDED MATERIALS**                      Cleaning materials  
 Laundry and cleaning  
 Light bulbs

**ENVIRONMENTAL IMPACTS**                      Refer to the *Environmental Handbook* for details of waste-water treatment and disposal.

**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE07

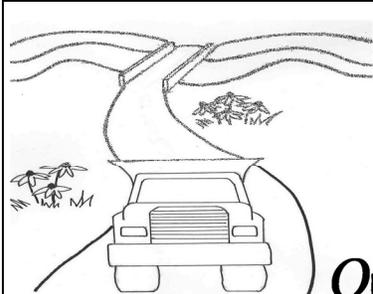
**RECOMMENDED**

**PROCEDURE**

Responsibilities of rest-area attendants include:

- Collecting litter and removing trash
- Mowing areas inaccessible to tractor mowers
- Cleaning restrooms and other facilities
- Making minor repairs to tables, etc.
- Reporting any deficiencies that other agencies of the Department of Highways need to correct



 <p style="font-size: 2em; font-weight: bold; margin: 0;">FIELD OPERATIONS</p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p> <hr/> <p><i>Subject</i></p> <p style="text-align: center;">Contract Rest Area Attendant Service (C050)</p>
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**DESCRIPTION**                      Pertaining to all contract expenses related to contract rest area attendant service, including cost of inspector

Do not charge utilities, materials etc., to this activity, but to activity C040. Also charge maintenance of waste-water treatment plant (sewage) to C040. (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      N/A

**RECOMMENDED EQUIPMENT**                      N/A

**RECOMMENDED MATERIALS**                      N/A

**ENVIRONMENTAL IMPACTS**                      N/A

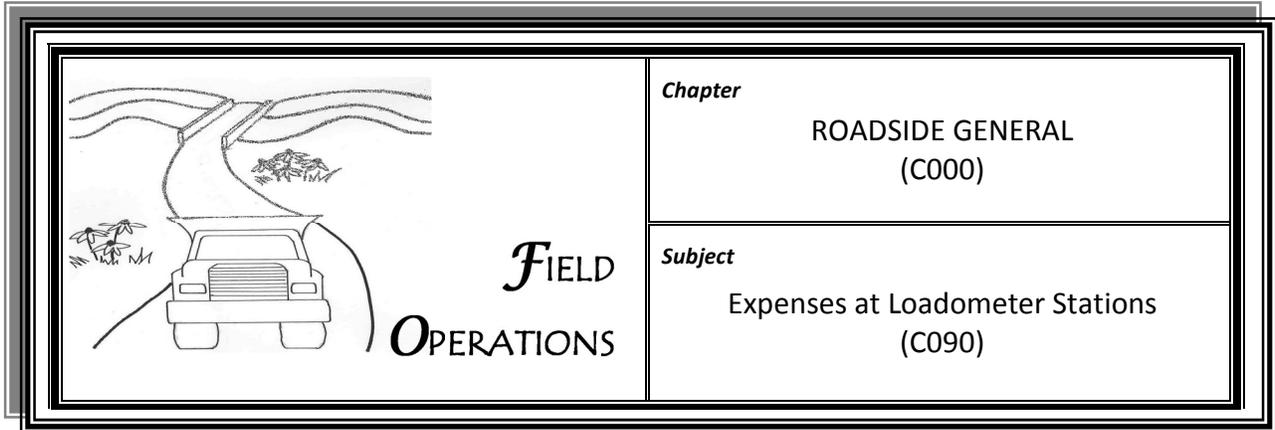
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE07

**RECOMMENDED PROCEDURE**                      As required





**DESCRIPTION** Using FE01 funds to pay all labor and equipment expenses at the loadometer stations

Apply charges against the project, which consists of the mile point, the route, etc. of the location. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** N/A

**RECOMMENDED EQUIPMENT** N/A

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** N/A

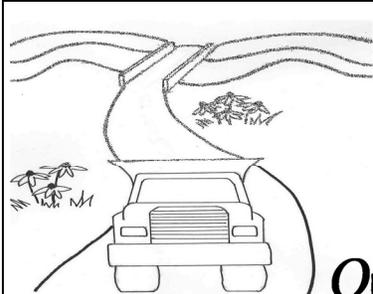
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Litter Cleanup, Express Run (C100)</p>

**DESCRIPTION**                      Covering all costs (including those for Adopt-A-Highway activities) for clearing and disposing of litter from the driving surface and the shoulders

Use a pickup truck to collect objects that could cause injury and damage to the traveling public, and empty litter barrels as necessary (General).

**SCHEDULING**                      Schedule this activity only as needed and as directed.

**RECOMMENDED PERSONNEL**                      Highway Equipment Operator                      (2)

**RECOMMENDED EQUIPMENT**                      Pickup truck                      (1)

**RECOMMENDED MATERIALS**                      N/A

**ENVIRONMENTAL IMPACTS**                      Dispose of litter per the *Environmental Handbook* (Sections 2.1.2 and 2.1.4).

**PERFORMANCE VALUES**

- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION**                      FE01

**RECOMMENDED  
PROCEDURE**

1. When removing debris from the driving surface of an interstate or high-traffic facility, one person should watch for traffic while the other removes the debris from the roadway.
2. If the size or location of the debris prevents the safe removal by a single individual, the second employee may assist if traffic conditions permit. Otherwise, additional personnel or a lane closure may be necessary.
3. Use amber light on vehicle, and move with the traffic when picking up litter.
4. When stopping to pick up large debris, park on shoulder an adequate distance from moving traffic so as not to create a traffic hazard.
5. Dispose of litter per the *Environmental Handbook* (Sections 2.1.2 and 2.1.4). Empty litter barrels as needed.

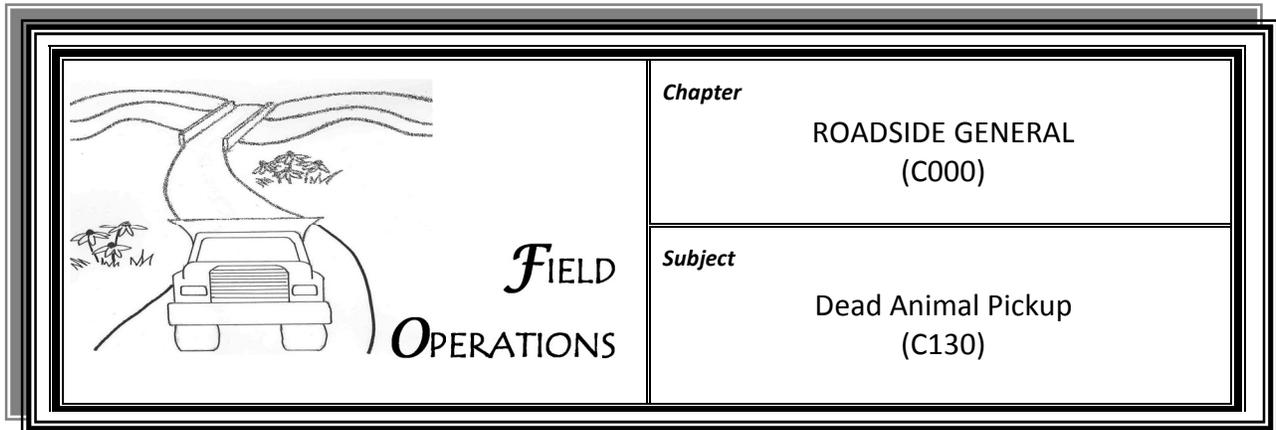




**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Wear safety vests, and use amber light on truck if available.
3. Two employees start litter pickup at the beginning of the assigned area with litter containers.
4. Truck driver drives ahead approximately 500 feet or to an appropriate place to park the truck off the roadway and starts litter pickup.
5. When employees have picked up the litter in that area and deposited it into the truck, the driver moves the truck forward, and the cycle above starts again.
6. When the truck has a full load, the driver places the empty litter bags or other similar containers along the route where the crew is to pick up litter next so that the crew can continue working while the driver is emptying the load.
7. This operation continues until the end of the day or until the crew has covered the assigned area.
8. Remove traffic-control devices.





**DESCRIPTION** Picking up and disposing of dead animals, including the use of a commercial rendering service

Charge to this activity only when making a special run. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** Highway Equipment Operator (2)

**RECOMMENDED EQUIPMENT** Truck (with amber light, if available) (1)

**RECOMMENDED MATERIALS** None

**ENVIRONMENTAL IMPACTS** Follow procedures in the [Environmental Handbook](#) (2.1.3, "Dead Animal Pickup").

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

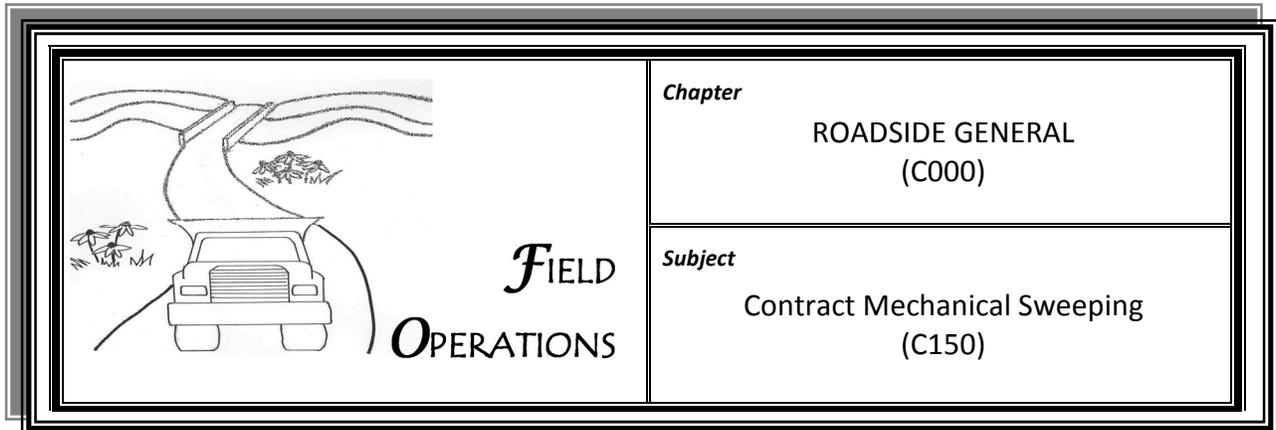
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. When removing an animal from the driving surface of an interstate or other high-traffic facility, one person should watch for traffic while the other removes the animal from the roadway.
2. If the size or location of the animal prevents the safe removal by a single individual, the second employee may assist if traffic conditions permit. Otherwise, additional personnel or a lane closure may be necessary.
3. If the animal is larger or heavier than two workers can handle, use a commercial rendering service.
4. Dispose of dead animals in accordance with the [Environmental Handbook](#) (2.1.3, "Dead Animal Pickup") if a commercial rendering service does not dispose of the bodies.
5. Do not stop on roadway unless required. If required to stop on roadway, use safety precautions. Use amber light if available.

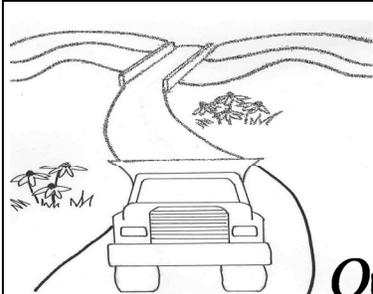






<b>DESCRIPTION</b>	Using a mechanical sweeper to clear litter from roadway
	Include cost of inspector and all other related costs. Take care to see that the inspector records accomplishment in OMS. (Section Required)
<b>SCHEDULING</b>	As required
<b>RECOMMENDED PERSONNEL</b>	N/A
<b>RECOMMENDED EQUIPMENT</b>	N/A
<b>RECOMMENDED MATERIALS</b>	None
<b>ENVIRONMENTAL IMPACTS</b>	N/A
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit <span style="float: right;">N/A</span></li> <li>➤ Daily Expectation <span style="float: right;">N/A</span></li> <li>➤ Accomplishment Unit <span style="float: right;">Hour</span></li> </ul>
<b>FUNCTION</b>	FE01
<b>RECOMMENDED PROCEDURE</b>	N/A



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Energy-Absorbing Barriers, Crash Cushions (C190)</p>

**DESCRIPTION** Charges made for expenditures in the maintenance and inspection of energy-absorbing barriers (crash cushions)

This activity is for use of state workforce only. For contract repairs, charge to C390. (Section Required)

**SCHEDULING** Schedule this activity as soon as possible after the damage of any energy-absorbing barrier (crash cushion).

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** Various

**ENVIRONMENTAL IMPACTS** N/A

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

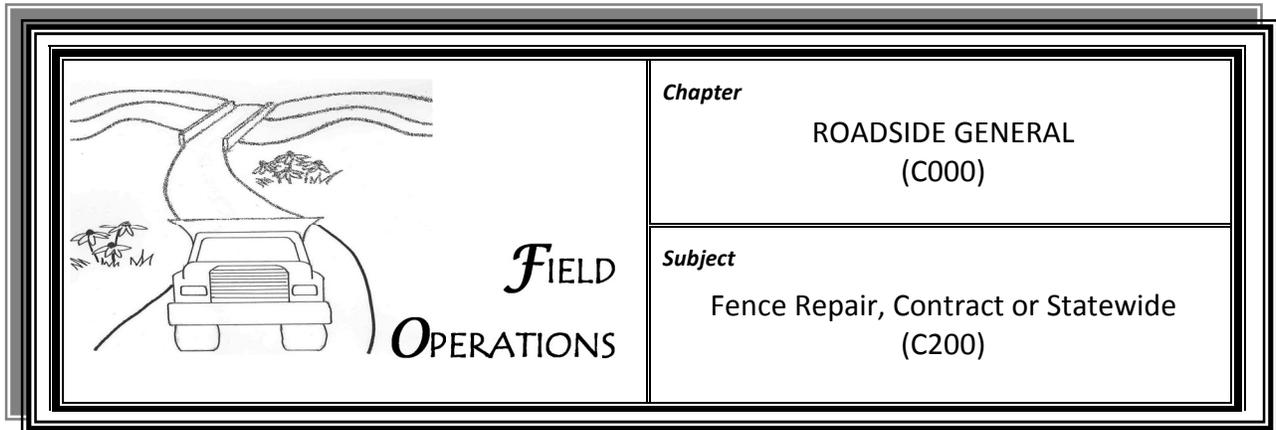
**FUNCTION** FE01

**RECOMMENDED**

**PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Remove damaged parts of energy-absorbing barrier (crash cushion).
4. Replace damaged parts, and put entire unit back as originally installed.
5. Clean entire area of debris.
6. Remove traffic-control devices.





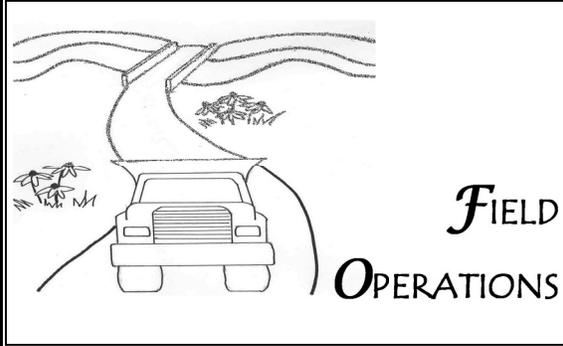
<b>DESCRIPTION</b>	Repairing and inspecting fences (Section Required)	
<b>SCHEDULING</b>	Schedule this activity as soon as situation arises or as soon as assembly of proper equipment and materials can occur.	
<b>RECOMMENDED PERSONNEL</b>	Highway Equipment Operator	(5)
<b>RECOMMENDED EQUIPMENT</b>	Pickup truck	(1)
	Posthole digger	(1)
	Fence stretcher	(1)
	Post driver	(1)
	Small tools	
	Tool truck (optional)	
<b>RECOMMENDED MATERIALS</b>	Posts	
	Wire fence	
	Staples	
	Wire ties	
	Concrete (quick-setting)	
<b>ENVIRONMENTAL IMPACTS</b>	N/A	
<b>FUNCTION</b>	FE01	
<b>PERFORMANCE VALUES</b>		
	➤ Hours Per Unit	0.400
	➤ Daily Expectation	100
	➤ Accomplishment Unit	Linear Foot

**RECOMMENDED**

**PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Remove damaged parts of the fence.
4. Replace or straighten posts.
5. Replace fencing.
6. Remove traffic-control devices.



	<b>Chapter</b> ROADSIDE GENERAL (C000)
	<b>Subject</b> Repair or Installation of Steel-Beam Guardrail (C300)

**DESCRIPTION**                      Repairing, aligning, replacing, or making minor additions to steel-beam guardrail

Check with a maintenance engineer to confirm that performance of work is according to current design standards. If end treatment is required, see Activity C330 in [FOG-514](#). (Section Required)

**SCHEDULING**                      Schedule repair or replacement of damaged sections as soon as possible after reported damage.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (4)  
    Traffic Control                      (2)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Dump truck                      (1)  
    Tractor with posthole digger                      (1)  
    Tilt trailer                      (1)  
    Small tools

**Note:** Use post driver if available

**RECOMMENDED**

**MATERIALS**                      Replacement sections  
    Posts  
    Hardware

**ENVIRONMENTAL  
 IMPACTS**

- Recycle scrap metal.
- Dispose of wood waste per the [Environmental Handbook](#).

**PERFORMANCE****VALUES**

➤ Hours Per Unit	0.560
➤ Daily Expectation	100
➤ Accomplishment Unit	Foot

**FUNCTION**

FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Station flagger as required.
4. Remove parts damaged beyond repair.
5. Realign loose parts and recompact earth.
6. Be sure to align, using engineering methods if required.
7. Install new posts, guardrail, and hardware.
8. Clean up debris. Salvage reusable items.
9. Remove traffic-control devices.

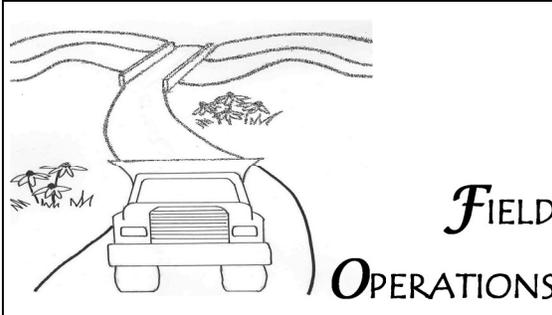
**Note:** Prior to mobilizing crew, determine the amount and type of guardrail required (for example, proper radius section).

If end treatment is required, charge as C330.

When installing guardrail at a new location or when adding more than two sections, report to the district office for inventory update.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> ROADSIDE GENERAL (C000)
	<b>Subject</b> Repair or Installation of Guardrail End Treatment (C330)

**DESCRIPTION**                      Repairing, realigning, replacing, or making minor additions to guardrail end treatments

Install per current design standards. (Section Required)

**SCHEDULING**                      Schedule repair or replacement of damaged sections as soon as possible after reported damage.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (4)  
    Traffic Control                      (2)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Dump truck                      (1)  
    Tractor with posthole digger                      (1)  
    Tilt trailer                      (1)  
    Portable concrete mixer                      (1)  
    Small tools

**Note:** Use post driver if available

**RECOMMENDED**

**MATERIALS**                      Replacement sections  
    Posts  
    Hardware

**ENVIRONMENTAL**

**IMPACTS**                      Dispose of waste material per the *Environmental Handbook*.

**PERFORMANCE**

**VALUES**

- Hours Per Unit                      24.000
- Daily Expectation                      2
- Accomplishment Unit                      Each

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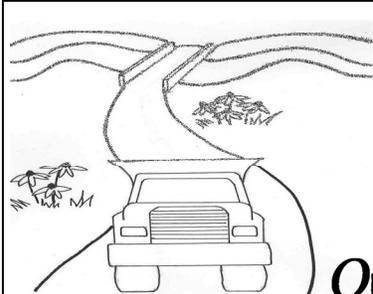
**FUNCTION** FE01**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary. Use amber lights when available.
3. Station flagger as required.
4. Remove parts damaged beyond repair.
5. Realign loose parts and recompact earth.
6. Be sure to align, using engineering methods if required.
7. Install new posts, guardrail, and hardware.
8. Clean up debris. Salvage reusable items.
9. Remove traffic-control devices.

**Note:** Prior to mobilizing crew, determine the amount and type of end treatments required. Schedule installation of concrete if needed.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Contract Guardrail Maintenance (C390)</p>

**DESCRIPTION**                      Guardrail maintenance, including end treatment, and energy-absorption devices repair by a contractor

This activity covers the cost of an inspector or other state employee when using FE01 MP account maintenance money. Take care to see that the inspector records accomplishment in OMS. (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

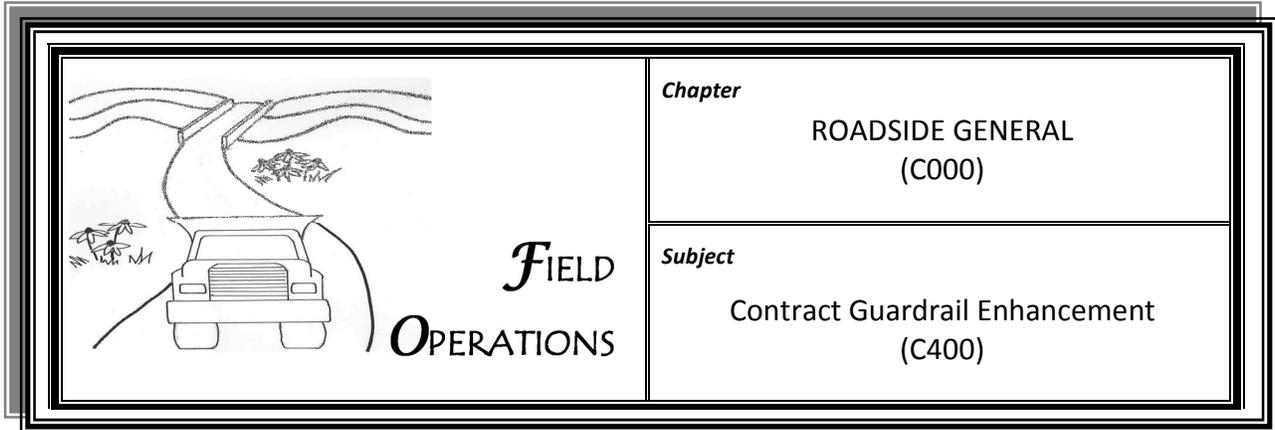
**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**                      As required





<b>DESCRIPTION</b>	Guardrail installation, including end treatment, by a contractor
	This activity covers the cost of an inspector or other state employee when using FE01 MP account maintenance money. Take care to see that the inspector records accomplishment in OMS. (Section Required)
<b>SCHEDULING</b>	N/A
<b>RECOMMENDED PERSONNEL</b>	N/A
<b>RECOMMENDED EQUIPMENT</b>	N/A
<b>RECOMMENDED MATERIALS</b>	N/A
<b>ENVIRONMENTAL IMPACTS</b>	None
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit <span style="float: right;">N/A</span></li> <li>➤ Daily Expectation <span style="float: right;">N/A</span></li> <li>➤ Accomplishment Unit <span style="float: right;">Hour</span></li> </ul>
<b>FUNCTION</b>	FE01
<b>RECOMMENDED PROCEDURE</b>	As required

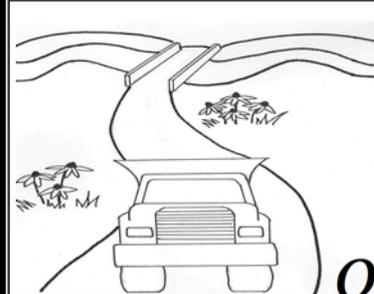




**RECOMMENDED  
PROCEDURE**

1. Place traffic control devices as necessary.
2. Wear safety vests, safety glasses, and use amber light on truck.
3. Two or more employees take the pickup truck and park as close to the site as possible.
4. Determine the means in which to remove the graffiti and gather necessary materials from the truck.
5. Pressure wash, sand blast or paint over the graffiti until satisfactorily removed.
6. These operations continue until the end of the day or until the crew has covered the assigned area.
7. Remove traffic control devices.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Roadside Overhead (C980)</p>

**DESCRIPTION** Including all charges specifically relating to roadside maintenance when not feasible to charge to projects

Materials—guardrail, paint, posts, litter barrels, lumber, or hardware—are to be secondary to project and activity. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

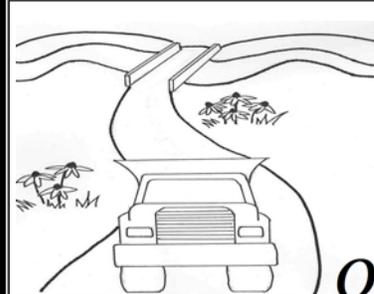
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Roadside Maintenance (C990)</p>

**DESCRIPTION** Including maintenance of median barrier walls, sound barrier walls, man-hole adjustment, curb repair, retaining walls, sidewalks, and picnic tables

Use for any maintenance activities relating to "Roadside General" but not covered by C010 through C980. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

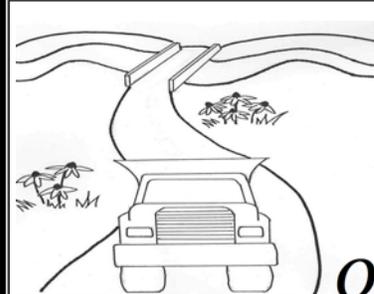
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE GENERAL (C000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Roadside Maintenance (C990)</p>

**DESCRIPTION** Including maintenance of median barrier walls, sound barrier walls, man-hole adjustment, curb repair, retaining walls, sidewalks, and picnic tables

Use for any maintenance activities relating to "Roadside General" but not covered by C010 through C980. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

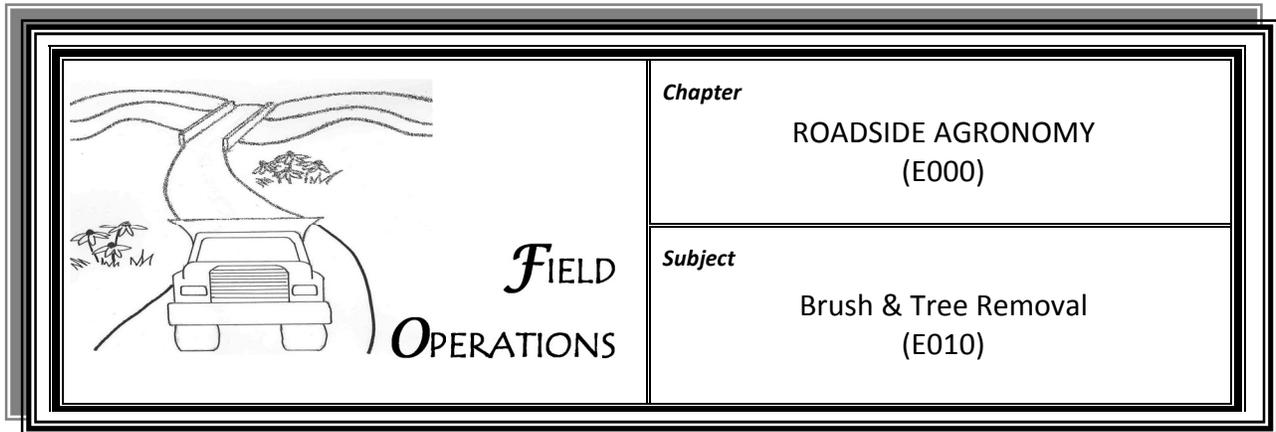
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Cutting and disposing of brush, trees, and tree limbs, including herbicide stump treatment (Section Required)

**SCHEDULING** Schedule by districts, with emphasis on hazardous sight-distance conditions of encroaching brush and trees. The *Maintenance Manual* and *Pesticide Manual* detail the Cabinet’s Vegetation Management Program including planning guidance.

**RECOMMENDED**

**PERSONNEL** Highway Superintendent (1)  
Highway Equipment Operator (3)  
Traffic Control (2)

**RECOMMENDED**

**EQUIPMENT** Dump truck (1)  
Crew cab (1)  
Chipper (1)  
Small tools

**RECOMMENDED**

**MATERIALS** Arsenal  
Glyphosate

**ENVIRONMENTAL  
IMPACTS**

- Spread chips uniformly across dirt on right of way.
- Refer to the *Environmental Handbook* (2.2.1, “Vegetation Management”) for other methods.

**PERFORMANCE**

**VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices and station flaggers as necessary.
3. Cut trees and brush as close to the ground as possible. Treat stumps with herbicides within one hour of cutting to eliminate regrowth.
4. If unable to dispose of trees and brush on the right of way, haul to disposal area.
5. Remove traffic-control devices.

**Note:** Employees shall have certification in Category 6 herbicide training prior to applying herbicides to cut stumps. The [Pesticide Manual](#) further details herbicide application and training.

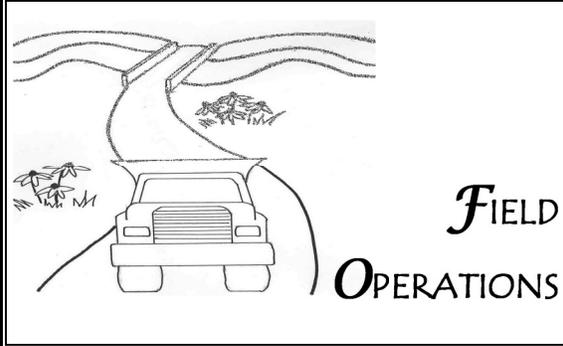
Determine area for brush and tree cutting prior to the dormant season.

Areas include those with sight-distance problems, drainage obstructions, and encroachments on roadway, as well as areas around bridge abutments for inspection.

**PROCEDURE FOR  
USE OF CHIPPER**

1. Follow steps 1, 2, and 3 above.
2. Establish proper signing and flagging.
3. Carefully feed brush into chipper.
4. Remove traffic safety and warning devices.
5. Move to the next pile and repeat operation.



	<b>Chapter</b> ROADSIDE AGRONOMY (E000)
	<b>Subject</b> Mechanical Brush Cutting (E020)

**DESCRIPTION** Using a rotary mower to cut and dispose of brush, trees, and tree limbs, including herbicide stump treatment (Section Required)

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Equipment Operator (1)  
 Traffic Control (2)

**RECOMMENDED**

**EQUIPMENT** Rotary mower (1)  
 Pickup truck with flashing arrow (1)  
 Small tools

**RECOMMENDED**

**MATERIALS** Arsenal  
 Glyphosate

**ENVIRONMENTAL**

**IMPACTS** Refer to the *Environmental Handbook* (2.2.1, "Vegetation Management") for suggested methods.

**PERFORMANCE**

**VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

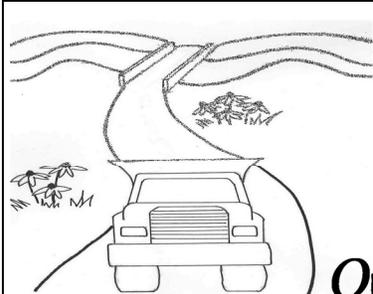
1. Discuss with crew the requirements of the job.
2. Place traffic-control devices and station flaggers as necessary.
3. Cut trees and brush as close to ground as possible. Treat stumps with herbicides within one hour of cutting to eliminate regrowth.
4. When unable to dispose of trees and brush on the right of way, haul to disposal area.
5. Remove traffic-control devices.

**Note:** Employees shall have certification in Category 6 herbicide training prior to applying herbicides to cut stumps. The [Pesticide Manual](#) further details herbicide application and training.

Determine area for brush and tree cutting prior to the dormant season.

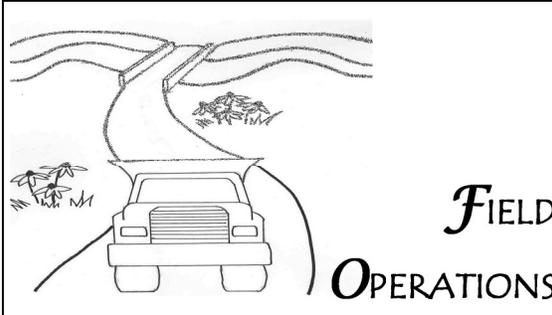
Areas include those with sight-distance problems, drainage obstructions, and encroachments on roadways, as well as areas around bridge abutments for inspection.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE AGRONOMY (E000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Brush &amp; Tree Removal by Contract (E030)</p>

<b>DESCRIPTION</b>	Cutting and disposing of brush, trees, and tree limbs by contract	
	Activity includes cost of inspection and all other related costs. (Section Required)	
<b>SCHEDULING</b>	N/A	
<b>RECOMMENDED PERSONNEL</b>	N/A	
<b>RECOMMENDED EQUIPMENT</b>	N/A	
<b>RECOMMENDED MATERIALS</b>	N/A	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	N/A
	➤ Daily Expectation	N/A
	➤ Accomplishment Unit	Hour
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	As required	



	<b>Chapter</b> ROADSIDE AGRONOMY (E000)
	<b>Subject</b> Tree & Shrub Maintenance (E110)

**DESCRIPTION** Maintaining all roadside trees and shrubs by pruning, spraying, controlling weeds by herbicides, mulching, watering, fertilizing, removing stakes, and replacing as required (Section Required)

**SCHEDULING** As designated

**RECOMMENDED PERSONNEL** Light Equipment Operator (3)  
 Traffic Control (as needed)

**RECOMMENDED EQUIPMENT** Flatbed dump truck and/or crew cab (1)  
 Sprayer (as needed) (1)  
 Small tools

**RECOMMENDED MATERIALS** Fertilizer  
 Mulch  
 Glyphosate

**ENVIRONMENTAL IMPACTS** Dispose of waste (brush) per the *Environmental Handbook* (2.2.1, "Vegetation Management").

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

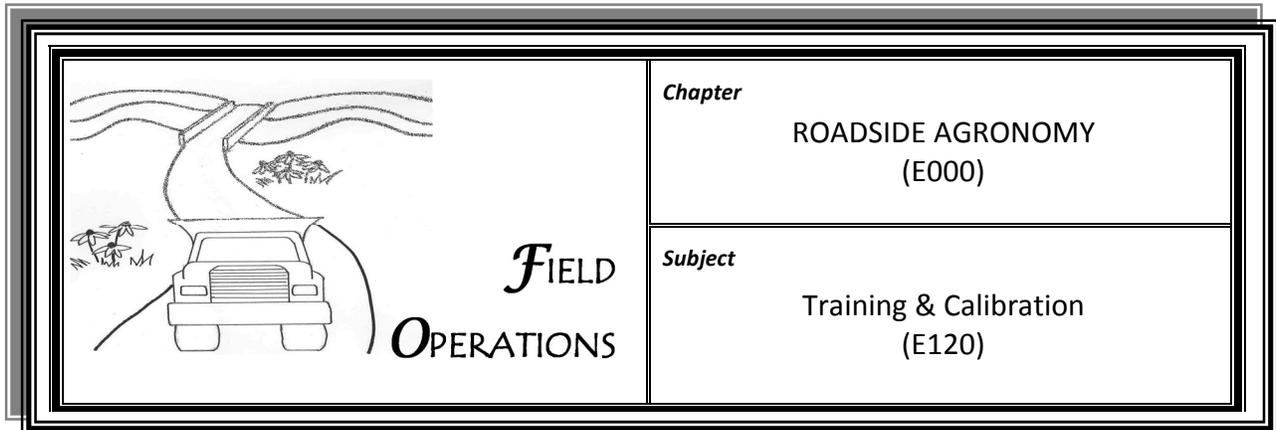
1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as needed. Use amber lights on vehicle when needed.
3. Properly calibrate sprayers before applying pesticides before application.
4. Use pesticides properly, and observe label precautions and instructions when applying.
5. Apply herbicides for weed control in accordance with the label.
6. Remove traffic-control devices.

**Note:** Employees shall receive certification in Category 3 pesticide training prior to applying pesticides. A district roadside environment administrator shall oversee spraying operations. The [Pesticide Manual](#) further details pesticide application and training.

Perform routine maintenance of landscape plants in designated areas as needed.

The [Maintenance Manual](#) and [Pesticide Manual](#) detail the Cabinet's Vegetation Management Program.





**DESCRIPTION** Initial training and testing for pesticide applicator certification; continuing education training for all certified pesticide applicators and calibration of pesticide application equipment including roadside sprayers

**SCHEDULING** Anyone who applies pesticides, makes pesticide recommendations, or directly supervises pesticide applicators must be licensed and certified by the [Kentucky Department of Agriculture](#). Continuing education training must be conducted annually to maintain certification. The calibration of roadside spray equipment should be performed weekly during the spray season and when required due to application rate changes or sprayer repairs.

**RECOMMENDED PERSONNEL** All certified pesticide applicators

**RECOMMENDED EQUIPMENT** Roadside sprayer  
Stopwatch  
5-gallon bucket  
Measuring wheel  
Calculator  
[Pesticide Manual](#)

**RECOMMENDED MATERIAL** Clean water

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Pesticide Applicator Certification or Pesticide Applicator Certification Continuing Education Units (CEUs)

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

**Calibration**

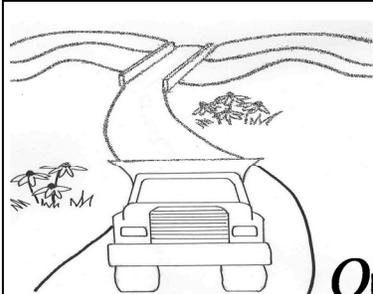
1. Discuss with crew the requirements of the job.
2. Fill spray tank with water.
3. Measure and mark a known distance.
4. Drive the roadside sprayer truck over the marked distance at the normal application speed. Time it with the stopwatch.
5. Measure the output of the roadside sprayer by collecting the output of the spray head in the bucket for 1 minute.
6. Use the rates determined by these procedures to plug in the formulas found in the *Pesticide Manual* to complete the sprayer calibration.
7. Repeat calibration weekly during spray season or as often as needed due to change of application rates or sprayer repair.

**RECOMMENDED  
PROCEDURE**

**Training**

1. Contact the training coordinator for a schedule of classes.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADSIDE AGRONOMY (E000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Erosion Control by Vegetative Methods (E210)</p>

**DESCRIPTION** Initial seeding and protection, sodding, and ditch stabilization by using fiberglass, etc.

Charge erosion control utilizing rip rap, stone, or concrete to Activity J110. (Section Required)

**SCHEDULING** Schedule during normal vegetation-growing season.

**RECOMMENDED PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(3)

**RECOMMENDED EQUIPMENT**

Tractor and disk harrow	(1)
Flatbed truck	(1)
Straw blower	(1)
Hydroseeder	(1)
Crew-cab pickup truck	(1)
Small tools	

**RECOMMENDED MATERIALS**

- Seed (determined by agronomist)
- Straw
- Fertilizer
- Mulch netting
- Hydromulch

**ENVIRONMENTAL IMPACTS**

- Seed and protect all bare soil areas.
- To perform work that involves disturbance of soil in an area of more than one acre, file a KPDES, KYR10 permit, BMP Plan, and Notice of Intent with the Kentucky Division of Water.

**PERFORMANCE****VALUES**

- |                        |          |
|------------------------|----------|
| ➤ Hours Per Unit       | 6.400    |
| ➤ Daily Expectation    | 5        |
| ➤ Accomplishment Unit: | 0.1 Acre |

**FUNCTION**

FE01

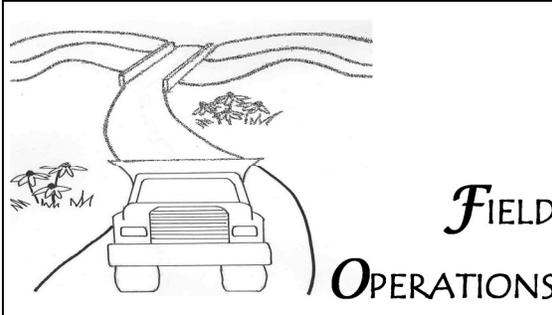
**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary. Use amber light on truck, if available.
3. Prepare the soil area before applying erosion-control material.
4. Apply the erosion-control material. Refer concerns to district roadside environment administrator.
5. Remove traffic-control devices.

**Note:** Determine areas needing vegetation establishment or repair.

**Special Note:** Determine material needs by individual project.



	<b>Chapter</b> ROADSIDE AGRONOMY (E000)
	<b>Subject</b> Wildflower Establishment & Maintenance (E220)

**DESCRIPTION**                      Preparing seedbed, initial seeding, controlling weeds by mechanically applying herbicide, and purchasing seeds of selected wildflower and native-grass species (Section Required)

**SCHEDULING**                      Schedule during dormant season.

**RECOMMENDED PERSONNEL**                      Highway Equipment Operator                      (3)

**RECOMMENDED EQUIPMENT**

Tractor	(1)
Flatbed truck	(1)
No-till blower	(1)
Tilt trailer	(1)
Pickup truck	(1)

**RECOMMENDED MATERIALS**

- Seed
- Plateau
- 2-4 D
- Glyphosate

**ENVIRONMENTAL IMPACTS**                      Refer to the [Environmental Handbook](#) for additional proceedings.

**PERFORMANCE VALUES**

- Hours Per Unit                      4.800
- Daily Expectation                      5
- Accomplishment Unit                      0.1 Acre

**FUNCTION**                      FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary. Use amber light on truck, if available.
3. Prepare the soil area before seeding.
4. Apply seed mixtures.
5. Remove traffic-control devices.

**Note:** Determine areas needing wildflower establishment. Determine material needs by individual project.

**Special Note:** Determine accomplishment before leaving job site.





**ENVIRONMENTAL****IMPACTS**

Refer to the *Environmental Handbook* (2.2.2, “Pesticide Delivery, Storage, and Handling”) for container disposal, spills, etc.

**PERFORMANCE****VALUES**

➤ Hours Per Unit	1.600
➤ Daily Expectation	10
➤ Accomplishment Unit	Acre

**FUNCTION**

FE01

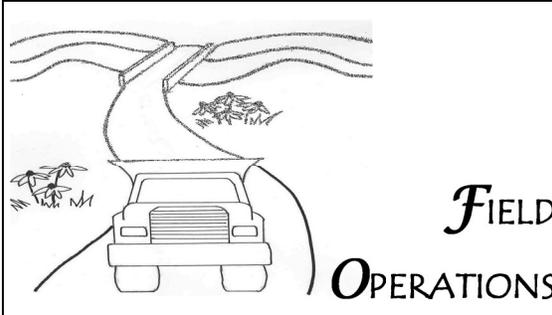
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Follow all instructions and precautions on weed control.
4. Follow use of herbicides according to the label.
5. Remove traffic-control devices.

**Note:** Employees shall receive certification in Category 6 pesticide training prior to applying pesticides. A district roadside environment administrator shall oversee spraying operations. The *Pesticide Manual* further details pesticide application and training.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> ROADSIDE AGRONOMY (E000)
	<b>Subject</b> Herbicide Treatment Under Guardrails & Around Posts by State Forces (E290)

**DESCRIPTION** Mechanically applying herbicides under guardrails and around posts for control of vegetation (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** Highway Equipment Operator (2)  
 Traffic Control (as needed)

**RECOMMENDED EQUIPMENT** Truck-mounted sprayer (1)  
 Pickup truck (1)

**Note:** Truck-mounted sprayer with greater than 1,000-gallon tank requires CDL-tanker endorsement.

**RECOMMENDED MATERIALS** Oust  
 Endurance  
 2-4 D  
 Glysophate  
 Arsenal

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) (2.2.2, "Pesticide Delivery, Storage, and Handling") for container disposal, spills, etc.

**PERFORMANCE VALUES**

- Hours Per Unit 1.600
- Daily Expectation 10
- Accomplishment Unit Acre

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary. Use pickup truck as trail vehicle.
3. Follow all instructions and precautions on weed and brush control.
4. Follow use of herbicides according to the label.
5. Treat minimum of 2-foot wide pattern under guardrails or guard posts (varies from 2—8 feet).
6. Remove traffic-control devices.

**Note:** Employees shall receive certification in Category 6 pesticide training prior to applying pesticides. A district roadside environment administrator shall oversee spraying operations. The [Pesticide Manual](#) further details herbicide application and training.

**Special Note:** Determine accomplishment before leaving job site.





**PERFORMANCE****VALUES**

➤ Hours Per Unit	2.286
➤ Daily Expectation	7
➤ Accomplishment Unit	Acre

**FUNCTION**

FE01

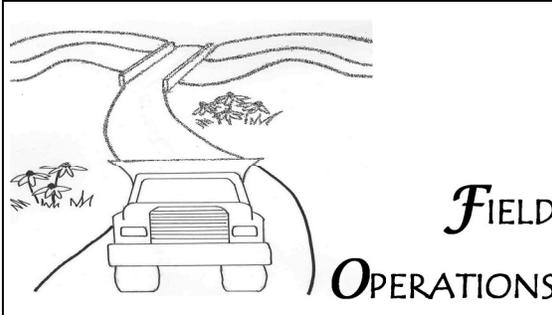
**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Follow use of herbicides according to label.
4. Remove traffic-control devices.

**Note:** Employees shall receive certification in Category 6 pesticide training prior to applying pesticides. A district roadside environment administrator shall oversee spraying operations. The *Pesticide Manual* further details herbicide application and training.

**Special Note:** Determine accomplishment before leaving job site.



	<p><i>Chapter</i></p> <p>ROADSIDE AGRONOMY (E000)</p>
	<p><i>Subject</i></p> <p>Mechanical Broadcast-Spraying of Herbicides (E310)</p>

**DESCRIPTION** Mechanically broadcast-spraying liquid herbicides to control undesirable vegetation on right of way or to retard desirable grass vegetation on right of way (summer weeds) (Section Required)

**SCHEDULING** Schedule on the basis of need in selected areas.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (2)  
Traffic Control (as needed)

**RECOMMENDED EQUIPMENT** Truck-mounted sprayer (1)  
Pickup truck (1)

**Note:** Truck-mounted sprayer with greater than 1,000-gallon tank requires CDL-tanker endorsement.

**RECOMMENDED MATERIALS** Stronghold  
2, 4-D  
Outrider  
Telar  
Fusion  
Garlon-3A  
Transline  
Arsenal  
MSMA  
Krenite-S  
Escort

**ENVIRONMENTAL IMPACTS** Refer to *Environmental Handbook* (2.2.2, "Pesticide Delivery, Storage, and Handling") for container disposal, spills, etc.

**PERFORMANCE****VALUES**

➤ Hours Per Unit	0.533
➤ Daily Expectation	30
➤ Accomplishment Unit	Acre

**FUNCTION**

FE01

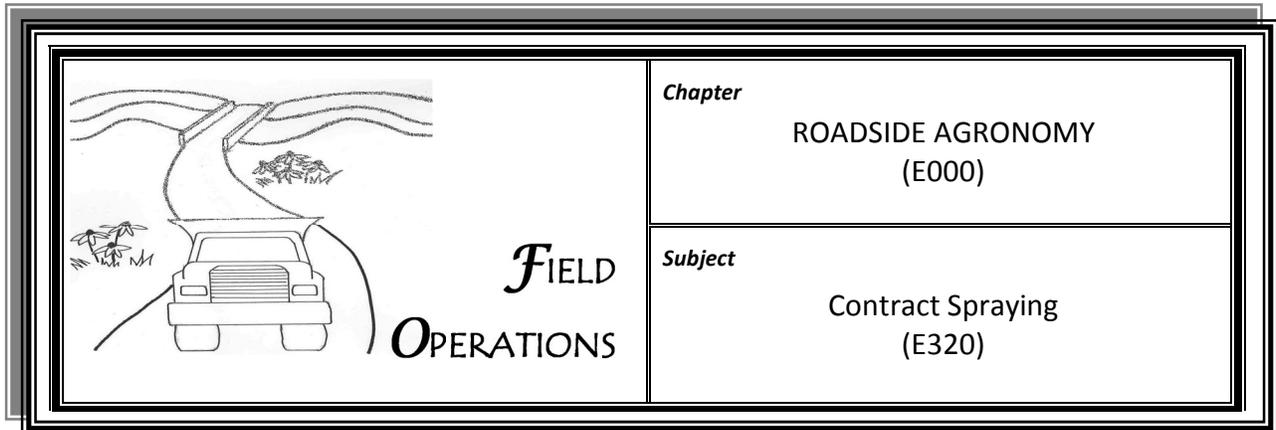
**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Follow use of herbicides according to label.
4. Remove traffic-control devices.

**Note:** Employees shall receive certification in Category 6 pesticide training prior to applying pesticides. A district roadside environment administrator shall oversee spraying operations. The [Pesticide Manual](#) further details herbicide application and training.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Complete spraying using a contractor. Include state employee to perform inspection only.

Include all charges that are part of the spraying contract, such as spraying under guardrails and broadcast spraying. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** N/A

**RECOMMENDED EQUIPMENT** N/A

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** None

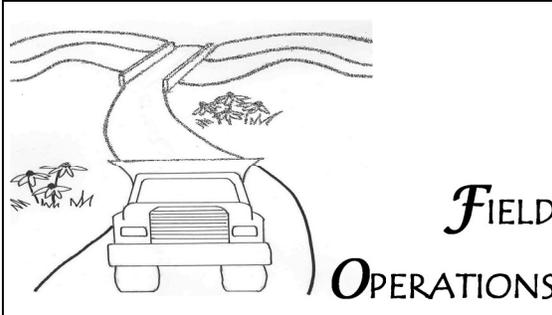
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> ROADSIDE AGRONOMY (E000)
	<b>Subject</b> Mechanical Application of Granular Fertilizer (E330)

**DESCRIPTION**                      Mechanically spraying liquid herbicides to control undesirable vegetation on right of way or to retard desirable grass vegetation on right of way (summer weeds) (Section Required)

**SCHEDULING**                      Schedule on the basis of need in selected areas.

**RECOMMENDED PERSONNEL**                      Highway Equipment Operator                      (3)  
 Traffic Control (as needed)

**RECOMMENDED EQUIPMENT**                      Tractor or hydroseeder                      (1)  
 Fertilizer spreader                      (1)  
 Flatbed truck                      (1)

**RECOMMENDED MATERIALS**                      Dry granular fertilizer  
 Analysis 19-19-19  
 Ammonium nitrate

**ENVIRONMENTAL IMPACTS**                      Refer to the *Environmental Handbook* (Sections 2.2.3 and 3.16) for stockpiling on lot.

**PERFORMANCE VALUES**

- Hours Per Unit                      1.500
- Daily Expectation                      16
- Accomplishment Unit                      Acre

**FUNCTION**                      FE01

**RECOMMENDED**

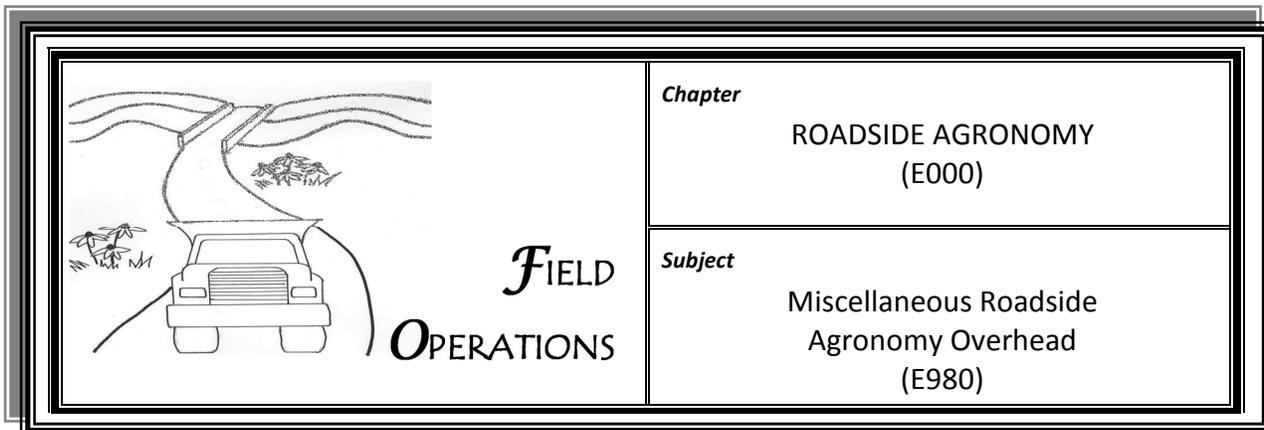
**PROCEDURE**

1. Place traffic-control devices as necessary.
2. Apply fertilizer at planned rate of application.
3. Remove traffic-control devices.

**Note:** Make determination of analysis and amount of fertilizer per acre prior to application. Properly calibrate equipment to apply fertilizer before application.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Lodge all charges that specifically relate to roadside agronomy when not feasible to charge to projects. Charge to account FE01. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

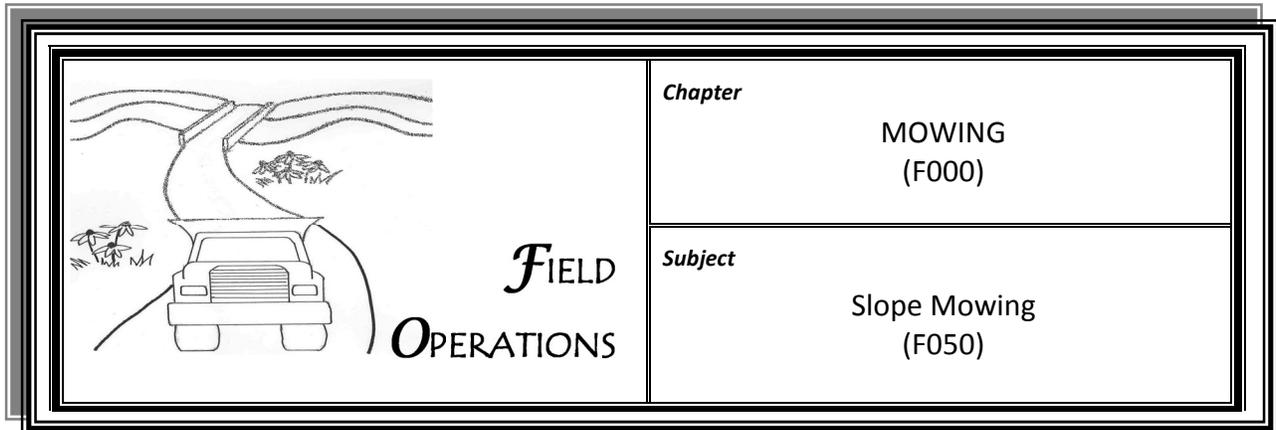
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required







**DESCRIPTION** Mowing vegetation with an extension-arm mower behind guardrail sections or other designated slope areas not accessible to regular tractor mowers

Charge machine brush cutting to E020. (Section Required)

**SCHEDULING** Schedule every day during mowing season until all "Slope Mow Areas" are adequate. Begin with highest-priority roads, and work down to rural secondary roads. One mowing per year should suffice, but no more than twice a year.

**RECOMMENDED PERSONNEL**

Highway Equipment Operator	(1)
Traffic Control	(1)

**RECOMMENDED EQUIPMENT**

Mower (slope)	(1)
Pickup truck with flasher	(1)
(Dump truck may substitute)	

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Acres

**FUNCTION** FE01

**RECOMMENDED**

**PROCEDURE**

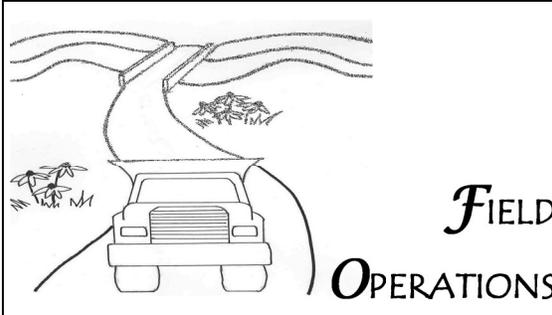
The "Slope Mow Area" is an area designated as a mowable area within the mowing limits but inaccessible to regular tractor mowers.

1. Begin with highest-priority roads, and work down to rural secondary roads.
2. Place traffic-control devices as necessary.
3. Use the truck with flashing light to warn motorists of mowing operation. Make two swath passes if necessary.
4. Remove traffic-control devices.
5. When the mowing is complete, notify the district office before beginning another cycle.

**Special Note:** Determine accomplishment before leaving job site.





	<b>Chapter</b> MOWING (F000)
	<b>Subject</b> Hand Trimming & Lawn-Type Mowing (F090)

**DESCRIPTION** Hand trimming and small power-mower cutting and trimming areas inaccessible to or unsafe for tractor mowers (Section Required)

**SCHEDULING** Schedule area for cutting and trimming with machine mowing in order to present a completely mowed appearance.

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#).

**PERFORMANCE VALUES**

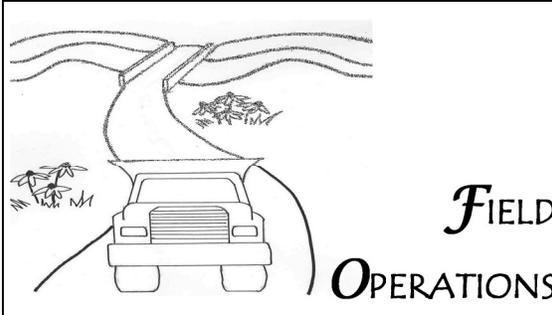
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE**

1. Prepare equipment at yard or job site.
2. Place traffic-control devices as necessary.
3. Mow and trim area.
4. Clean up, load, and dispose of excess cuttings and trimmings.
5. Remove traffic-control devices.



	<b>Chapter</b> MOWING (F000)
	<b>Subject</b> Contract Mowing on Roadway Embankment Dams (F150)

**DESCRIPTION** Mowing roadway embankment dams, as well as picking up litter, under contract (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** N/A

**ENVIRONMENTAL IMPACTS** As required

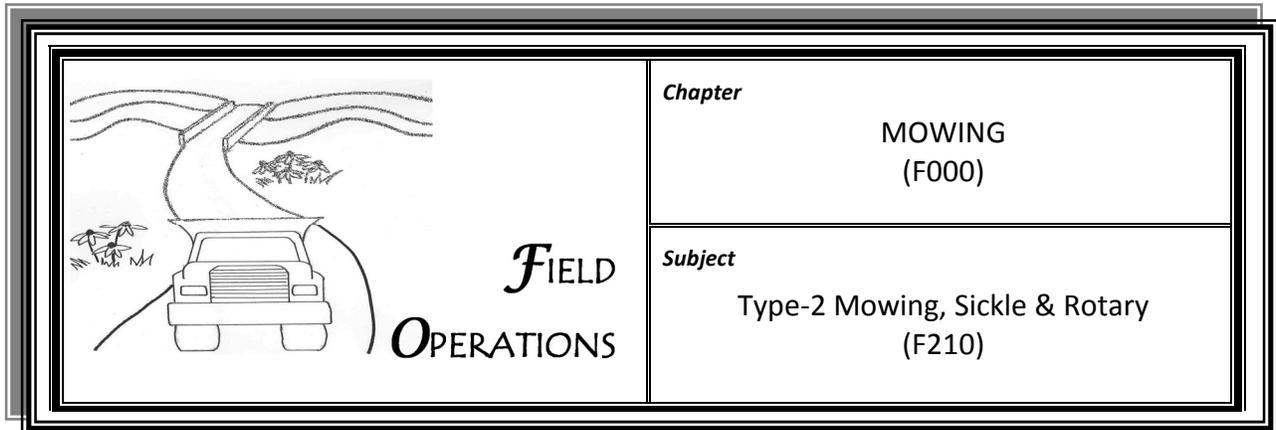
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hours

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





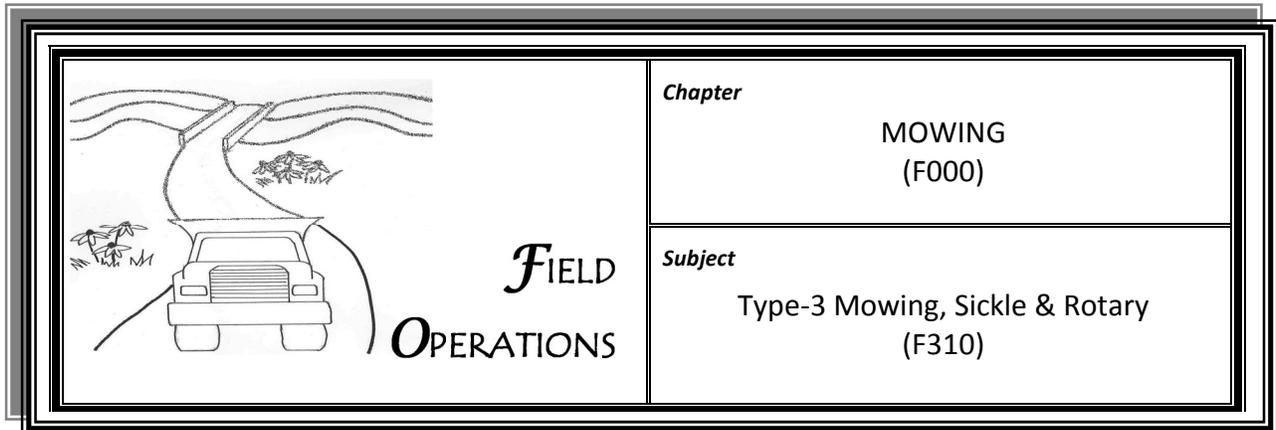
<b>DESCRIPTION</b>	Mowing on all roads by state personnel for safety and sight distance	
	Haul mower operators to and from work, assisting operators in breakdowns, providing liaison between foreman and mower operators, assisting operators in safety signing, sharpening and repairing blades, etc. (Section Required)	
<b>SCHEDULING</b>	Schedule the first mowing on all roads.	
<b>RECOMMENDED PERSONNEL</b>	Highway Equipment Operator	(3)
<b>RECOMMENDED EQUIPMENT</b>	Rotary, flail, or sickle-bar mower and tractor or combination of two types	(2)
	Crew-cab pickup truck	(1)
	Service truck	(1)
<b>RECOMMENDED MATERIALS</b>	N/A	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	N/A
	➤ Daily Expectation	N/A
	➤ Accomplishment Unit	Acres
<b>FUNCTION</b>	FE01	

**RECOMMENDED  
PROCEDURE**

1. Plan mowing routes according to priority and maximum efficiency of mowers.
2. Adjust mower to cut no shorter than 4 inches in height.
3. Place traffic-control devices as necessary before beginning the mowing operation each day.
4. Schedule mowing to begin when grass reaches a height of 8 inches or more or as directed.
5. Limit mowing to a maximum of 10 feet on each shoulder. Pay special attention to mowing areas around intersections and private entrances for added sight distance and safety.
6. Perform all mowing in accordance with the “Mowing Policy” in the *Maintenance Guidance Manual* ([MAIN-705](#)).
7. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





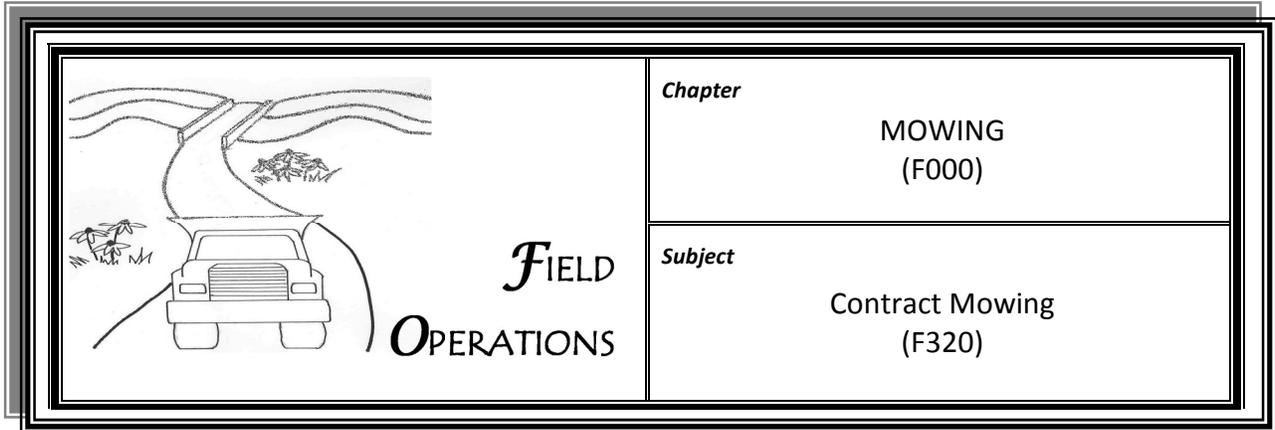
<b>DESCRIPTION</b>	<p>Mowing on all roads by state personnel for safety and sight distance</p> <p>Haul mower operators to and from work, assist operators in breakdowns, serve as liaison between foreman and mower operators, assist operators in safety signing, sharpen and repair blades, etc. (Section Required)</p>
<b>SCHEDULING</b>	<p>Schedule this mowing only after operators have mowed all roads for safety and sight distance.</p>
<b>RECOMMENDED PERSONNEL</b>	<p>Highway Equipment Operator (3)</p>
<b>RECOMMENDED EQUIPMENT</b>	<p>Rotary, flail, or sickle-bar mower and tractor or combination of two types (2)</p> <p>Crew-cab pickup truck (1)</p> <p>Small tools</p> <p><b>Note:</b> For efficient use, operators may substitute a 15-foot rotary mower for one of the mowers above on roads where suitable terrain exists.</p>
<b>RECOMMENDED MATERIALS</b>	<p>N/A</p>
<b>ENVIRONMENTAL IMPACTS</b>	<p>Follow the <a href="#">Environmental Handbook</a> for fueling and servicing equipment.</p>
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit 1.333</li> <li>➤ Daily Expectation 12</li> <li>➤ Accomplishment Unit Acre</li> </ul>
<b>FUNCTION</b>	<p>FE01</p>

**RECOMMENDED  
PROCEDURE**

1. Develop a plan for mowing operations to minimize “dead heading” and to create maximum efficiency of types and numbers of mowers assigned.
2. Adjust mowers to cut no shorter than 4 inches in height.
3. Place traffic-control devices as necessary before beginning the mowing operation each day.
4. Perform all mowing in accordance with the “Mowing Policy” in the *Maintenance Guidance Manual* (**MAIN-705**)
5. Remove traffic-control devices.

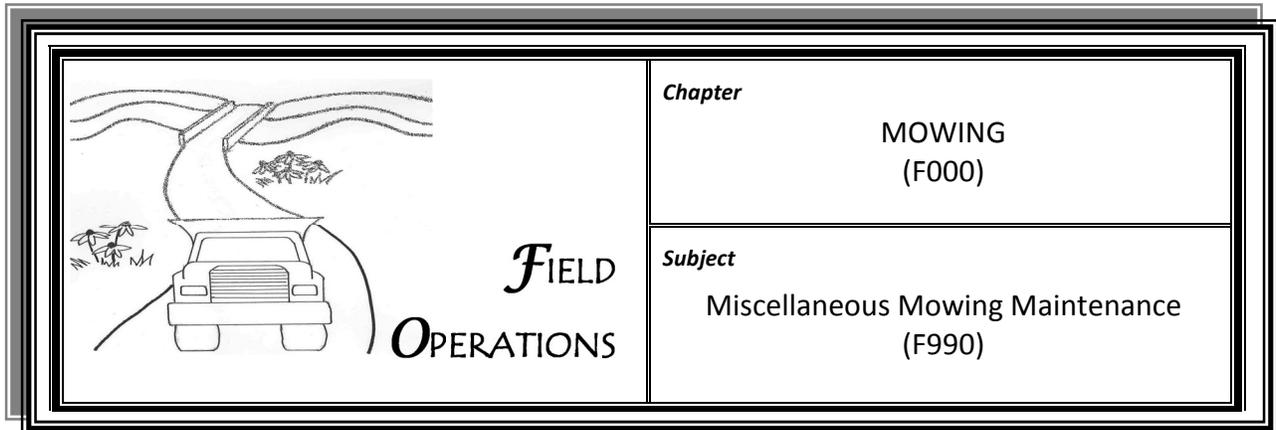
**Special Note:** Determine accomplishment before leaving job site.





<b>DESCRIPTION</b>	Mowing by a contractor and inspecting only by state employees	
	Include all charges that are part of the mowing contract, such as for litter removal and slope mowing. (Section Required)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	N/A	
<b>RECOMMENDED EQUIPMENT</b>	N/A	
<b>RECOMMENDED MATERIALS</b>	N/A	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	N/A
	➤ Daily Expectation	N/A
	➤ Accomplishment Unit	Hour
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	As required	





**DESCRIPTION**                      Miscellaneous mowing maintenance not specified in Activities F050–F320; taking mowing inventory, staking, training for mowing, and inspecting (General)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

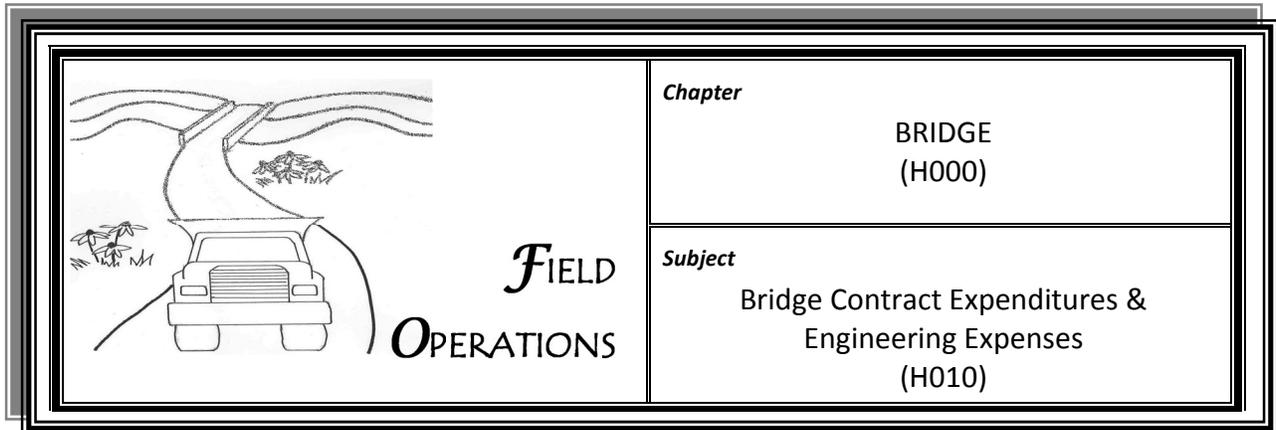
**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION**                      FE01

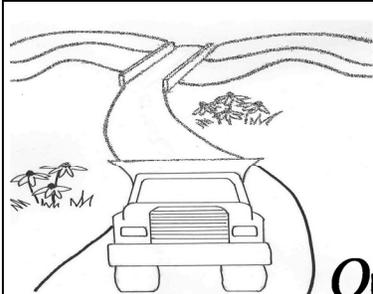
**RECOMMENDED PROCEDURE**                      As required





<b>DESCRIPTION</b>	<p>Inspecting bridges and tunnels, including underwater and aerial inspections</p> <p>This activity is for highway personnel other than maintenance personnel and for consultant or contract inspection. Apply construction contract (Program FE02 only) payments for bridge repair to this activity. (Section Required)</p>
<b>SCHEDULING</b>	As required
<b>RECOMMENDED PERSONNEL</b>	As required
<b>RECOMMENDED EQUIPMENT</b>	As required
<b>RECOMMENDED MATERIALS</b>	As required
<b>ENVIRONMENTAL IMPACTS</b>	None
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit <span style="float: right;">N/A</span></li> <li>➤ Daily Expectation <span style="float: right;">N/A</span></li> <li>➤ Accomplishment Unit <span style="float: right;">Hour</span></li> </ul>
<b>FUNCTION</b>	<p>FE01: District</p> <p>FE02: Central Office</p> <p>FD04: Six-Year Plan</p> <p>CB01: Rural Secondary "Emergency"</p> <p>CB06: Rural Secondary "Regular"</p>
<b>RECOMMENDED PROCEDURE</b>	As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Cleaning Bridge Decks &amp; Other At-Grade Bridge Items (H110)</p>

**DESCRIPTION**                      Cleaning gutter lines, drains, sidewalks, expansion dams, and troughs of all debris

Apply charges for snow removal from bridge decks to [K990](#). (General)

**SCHEDULING**                      As required

**RECOMMENDED**

**PERSONNEL**                      Highway Equipment Operator                      (2)  
    Traffic Control    (2)

**RECOMMENDED**

**EQUIPMENT**                      Dump truck    (1)  
    Pickup truck    (1)  
    Power sweeper (if necessary)                      (1)  
    Small tools

**RECOMMENDED**

**MATERIALS**                      N/A

**ENVIRONMENTAL**

**IMPACTS**                              Refer to the [Environmental Handbook](#) for proper waste-disposal methods.

**PERFORMANCE**

**VALUES**

- Hours Per Unit                                      8.000
- Daily Expectation                                      4
- Accomplishment Unit                                      Number cleaned

**FUNCTION**

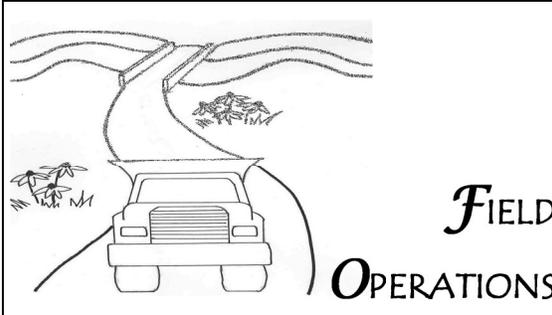
FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Load materials and debris on the dump truck, and dispose at disposal site per the [Environmental Handbook](#).
3. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> BRIDGE (H000)
	<b>Subject</b> Bridge Joint Sealing (H130)

**DESCRIPTION**                      Cleaning and sealing existing expansion joints on bridges (Section Required)

**SCHEDULING**                      Schedule as required; however, it is necessary to have a temperature of 35°F or higher to clean joints with water. It is more desirable to seal joints in cold weather. Clean anytime, but fill cracks only when joints are dry.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (4)  
    Traffic Control                      (2)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Flatbed truck (1-ton)                      (1)  
    Hot pot (double-jacketed, 705)  
                         or pneumatic caulking gun                      (1)  
    Sand blaster (640)                      (1)  
    Compressor                      (1)  
    Water blaster\*                      (1)  
    Flatbed truck (2½ to 3-ton)\*                      (1)  
    Water tank (1,000-gallon minimum, 535)                      (1)  
    Concrete saw                      (1)  
    Miscellaneous small hand tools

\*Use when cleaning with water; manual method will not increase manpower.

**RECOMMENDED**

**MATERIALS**                      Cork with appropriate width                      (45 square feet)  
    Hot joint-sealing material for bridges                      (30 gallons)  
    Blasting sand                      (3 tons)  
    Component silicone caulk                      (2)

**ENVIRONMENTAL**

**IMPACTS**                      Dispose of waste material per the *Environmental Handbook*.

**PERFORMANCE****VALUES**

- |                       |             |
|-----------------------|-------------|
| ➤ Hours Per Unit      | 0.747       |
| ➤ Daily Expectation   | 75          |
| ➤ Accomplishment Unit | Linear foot |

**FUNCTION**

- FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

**RECOMMENDED****PROCEDURE**

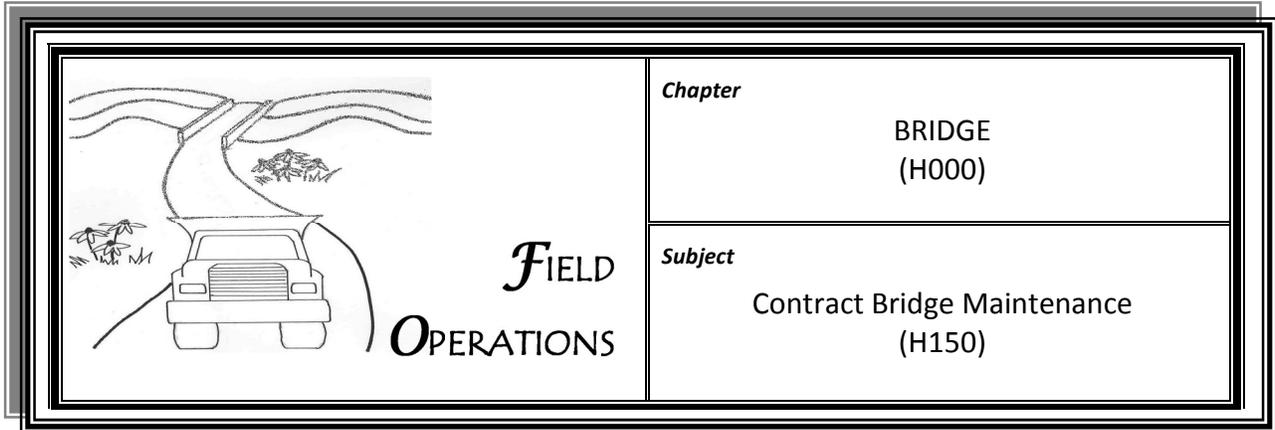
1. Place traffic-control devices, station flaggers.
2. Clean out joints by water-blasting or by manual methods. If water-blasting, check weather during times of possible freezing temperatures. Water-blast only when temperature is 35°F or higher. Allow time, usually one day, for the joint to dry after water-blasting.
3. Check joint for cleanliness and dryness. If the joint is clean and dry, sandblast it until it is absolutely clean.
4. Clean joint of all loose sand and foreign matter by using a blowpipe attached to an air compressor.
5. Insert the proper size of cork to the depth of 1½ inches below the bridge deck surface or twice the width of the joint, whichever is greater.
6. The joint is then poured from hot joint-sealing material which has been preheated to the proper temperature.
7. Allow the joint-sealing material to cool until it is comfortable to the hand or not tacky to the shoe and in no danger of displacement by vehicle wheels, which would pass on the fresh material.
8. Remove traffic-control devices. Open joints to traffic.

**Note:** Joint-sealing material shall meet the requirements of Section 807, "Joint Materials," in the *Kentucky Department of Highways Standard Specifications for Road and Bridge Construction*.

**Special Note:** Heat joint-sealing material in a double-jacketed hot pot. No substitute is available. Place a fire extinguisher near the hot pot, since this material could catch on fire if the pot were to leak.

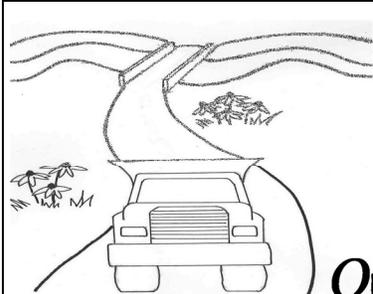
**Special Note:** Determine accomplishment before leaving job site.





<b>DESCRIPTION</b>	<p>Bridge maintenance by a contractor</p> <p>This activity covers cost of inspections by state employees when use of FE01 MP maintenance money occurs. (Section Required)</p>
<b>SCHEDULING</b>	As required
<b>RECOMMENDED PERSONNEL</b>	As required
<b>RECOMMENDED EQUIPMENT</b>	As required
<b>RECOMMENDED MATERIALS</b>	None
<b>ENVIRONMENTAL IMPACTS</b>	None
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit <span style="float: right;">N/A</span></li> <li>➤ Daily Expectation <span style="float: right;">N/A</span></li> <li>➤ Accomplishment Unit <span style="float: right;">Hour</span></li> </ul>
<b>FUNCTION</b>	<p>FE01: District</p> <p>FE02: Central Office</p> <p>FD04: Six-Year Plan</p> <p>CB01: Rural Secondary "Emergency"</p> <p>CB06: Rural Secondary "Regular"</p>
<b>RECOMMENDED PROCEDURE</b>	As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Repairing Bridge Handrails (H210)</p>

**DESCRIPTION**                      Repairing or replacing bridge handrails and guardrails (Section Required)

**SCHEDULING**                      Replace handrail as needed. No temperature restrictions apply except in replacement of concrete handrails. Department specifications govern replacement of concrete handrails.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent (as required)                      (1)  
    Highway Equipment Operator                                      (2)  
    Traffic Control    (1)

**RECOMMENDED**

**EQUIPMENT**                      Crew-cab pickup truck    (1)  
    Flatbed    (1)  
    Welder, 250 to 300 amp (as required)                      (1)  
    Compressor    (1)

**RECOMMENDED**

**MATERIALS**                      As required (dependent on type needing replacement)

**ENVIRONMENTAL**

**IMPACTS**                              None

**PERFORMANCE**

**VALUES**

- Hours Per Unit    1.400
- Daily Expectation    40
- Accomplishment Unit    Linear foot

**FUNCTION**

FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

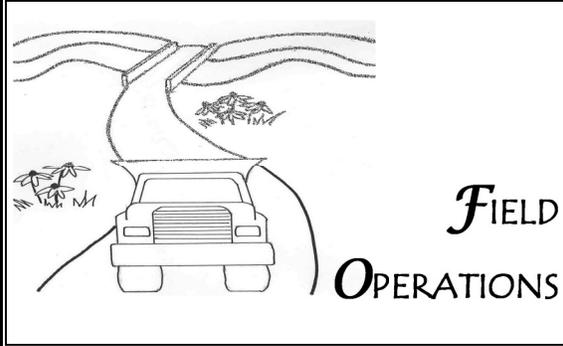
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices and station flaggers as necessary.
3. Prepare area for repair.
4. Make repair.
5. Paint handrails as required.
6. Remove traffic-control devices.

**Note:** When an accident causes the deficiency, take special care to keep accurate time and charges on use of labor, equipment, and materials.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> BRIDGE (H000)
	<b>Subject</b> Maintenance of Bridge Drainage Channels (H320)

**DESCRIPTION** Removing or clearing debris, such as logs, brush, silt, and trash, from the drainage channel under a bridge; controlling erosion around the substructure of a bridge

Check with a bridge engineer or maintenance engineer for conformance to environmental requirements. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** Gabions  
Rip rap

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) (Sections 2.3.5, 2.3.6, and 2.3.7) for working in and around streams.

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

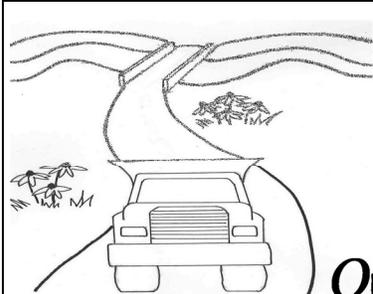
**FUNCTION** FE01: District  
FE02: Central Office  
FD04: Six-Year Plan  
CB01: Rural Secondary "Emergency"  
CB06: Rural Secondary "Regular"

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Remove and dispose of unwanted debris and material from ditch or channel.
4. Remove traffic-control devices.

**Note:** To perform work on private property, obtain the property owner's signature on a TC 71-14 form, *Consent and Release* before beginning the work.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Repairing or Replacing Wooden Decks (H410)</p>

**DESCRIPTION**                      Repairing wooden decks or replacing existing decks with wooden decks  
(Section Required)

**SCHEDULING**                      As required

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Structures Repairperson                      (4)  
    Highway Equipment Operator                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Flatbed truck                      (1)  
    Crew-cab pickup truck                      (1)  
    Air compressor                      (1)  
    Backhoe                      (1)  
    Tilt trailer                      (1)  
    Nail driver

**RECOMMENDED**

**MATERIALS**                      Timber as required

**ENVIRONMENTAL**

**IMPACTS**                      Refer to the *Environmental Handbook* for disposal of waste material.

**PERFORMANCE**

**VALUES**

- Hours Per Unit                      1.371
- Daily Expectation                      35
- Accomplishment Unit                      Square yard

**FUNCTION**

FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

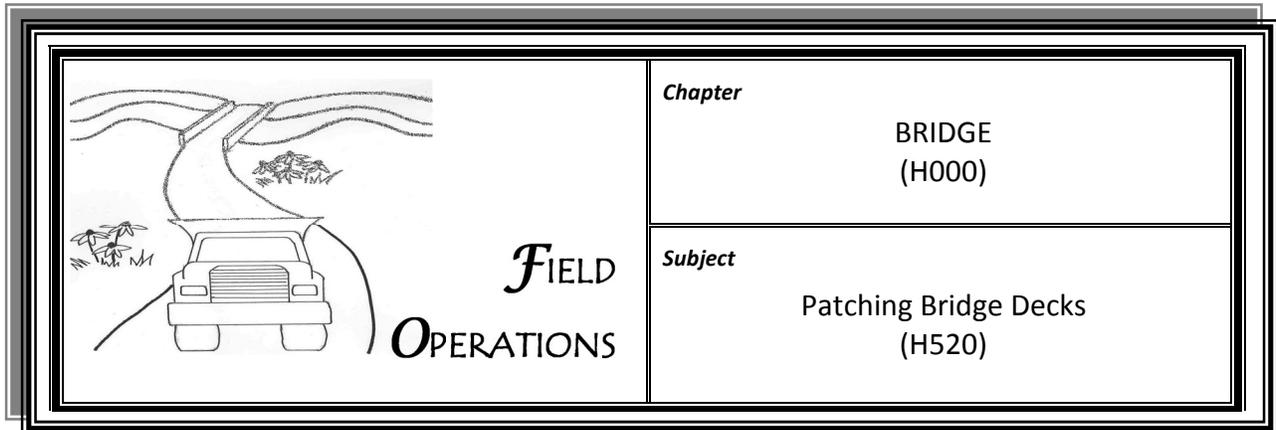
**RECOMMENDED**

**PROCEDURE**

Procedure will vary depending upon job conditions.

**Special Note:** Determine accomplishment before leaving job site.





<b>DESCRIPTION</b>	<p>Repairing and patching concrete decks</p> <p>Charge patching with bituminous premix to applicable bituminous surface repairs. (Section Required)</p>														
<b>SCHEDULING</b>	Schedule per manufacturer's recommendations.														
<b>RECOMMENDED PERSONNEL</b>	<table border="0"> <tr> <td>Highway Superintendent</td> <td style="text-align: right;">(1)</td> </tr> <tr> <td>Highway Equipment Operator</td> <td style="text-align: right;">(3)</td> </tr> <tr> <td>Traffic Control</td> <td style="text-align: right;">(2)</td> </tr> </table>	Highway Superintendent	(1)	Highway Equipment Operator	(3)	Traffic Control	(2)								
Highway Superintendent	(1)														
Highway Equipment Operator	(3)														
Traffic Control	(2)														
<b>RECOMMENDED EQUIPMENT</b>	<table border="0"> <tr> <td>Flatbed truck</td> <td style="text-align: right;">(1)</td> </tr> <tr> <td>Crew-cab pickup truck</td> <td style="text-align: right;">(1)</td> </tr> <tr> <td>Compressor</td> <td style="text-align: right;">(1)</td> </tr> <tr> <td>Mortar mixer</td> <td style="text-align: right;">(1)</td> </tr> <tr> <td>Sand blaster</td> <td style="text-align: right;">(1)</td> </tr> <tr> <td>Pavement breaker &amp; hammer</td> <td style="text-align: right;">(4)</td> </tr> <tr> <td>Concrete saw</td> <td style="text-align: right;">(1)</td> </tr> </table>	Flatbed truck	(1)	Crew-cab pickup truck	(1)	Compressor	(1)	Mortar mixer	(1)	Sand blaster	(1)	Pavement breaker & hammer	(4)	Concrete saw	(1)
Flatbed truck	(1)														
Crew-cab pickup truck	(1)														
Compressor	(1)														
Mortar mixer	(1)														
Sand blaster	(1)														
Pavement breaker & hammer	(4)														
Concrete saw	(1)														
<b>RECOMMENDED MATERIALS</b>	<p>Fast-set mortar mix</p> <p>Water (general use)</p> <p>Dry No. 9 stone</p> <p>Dry concrete sand</p> <p>Blasting sand</p>														
<b>ENVIRONMENTAL IMPACTS</b>	Portable traffic control if needed														
<b>PERFORMANCE VALUES</b>	<table border="0"> <tr> <td>➤ Hours Per Unit</td> <td style="text-align: right;">1.600</td> </tr> <tr> <td>➤ Daily Expectation</td> <td style="text-align: right;">30</td> </tr> <tr> <td>➤ Accomplishment Unit</td> <td style="text-align: right;">Square yard</td> </tr> </table>	➤ Hours Per Unit	1.600	➤ Daily Expectation	30	➤ Accomplishment Unit	Square yard								
➤ Hours Per Unit	1.600														
➤ Daily Expectation	30														
➤ Accomplishment Unit	Square yard														

<b>FUNCTION</b>	FE01: District FE02: Central Office FD04: Six-Year Plan CB01: Rural Secondary "Emergency" CB06: Rural Secondary "Regular"
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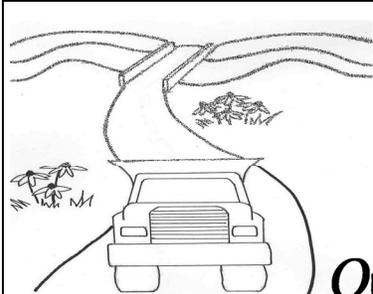
**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job, including the manufacturer's recommendations for curing material.
2. Place traffic-control devices and station flaggers as necessary.
3. Sound bridge deck, and delineate the areas of deterioration.
4. Saw the perimeter of deteriorated area with a concrete saw to a minimum depth of  $\frac{3}{4}$  inch if not encountering steel.
5. Use pavement breakers to remove deteriorated concrete within the sawed area. Use more breakers at any time the breaking operation becomes the production control factor.
6. If a reinforcement bar is exposed, remove  $\frac{3}{4}$ -inch concrete under the bar.
7. Sweep and remove all trimmings.
8. Blast-clean all steel exposed to white metal and clean concrete.
9. Mix quick-setting concrete material in accordance with manufacturer's recommendations.
10. Paint the hole and the steel with a grout, if recommended.
11. Place mixed material in prepared hole.
12. Screed patch to proper elevation.
13. Allow patching material to cure other material in strict accordance with manufacturer's recommendations.
14. Remove traffic-control devices.

**Note:** To perform this operation efficiently, allow two flaggers to work an additional two hours each day, thereby allowing patch to cure after quitting time. Have flaggers pick up traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Concrete Bridge Deck Waterproofing (H550)</p>

**DESCRIPTION**                      Installing approved waterproofing and reflective crack-suppression-system material on concrete bridge decks, along with 1½-inch minimum bituminous riding surface

This activity requires approval by Central Office Division of Maintenance or Division of Structural Design. (Section Required)

**SCHEDULING**                      Schedule under appropriate weather conditions.

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Square yard

**FUNCTION**                      FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

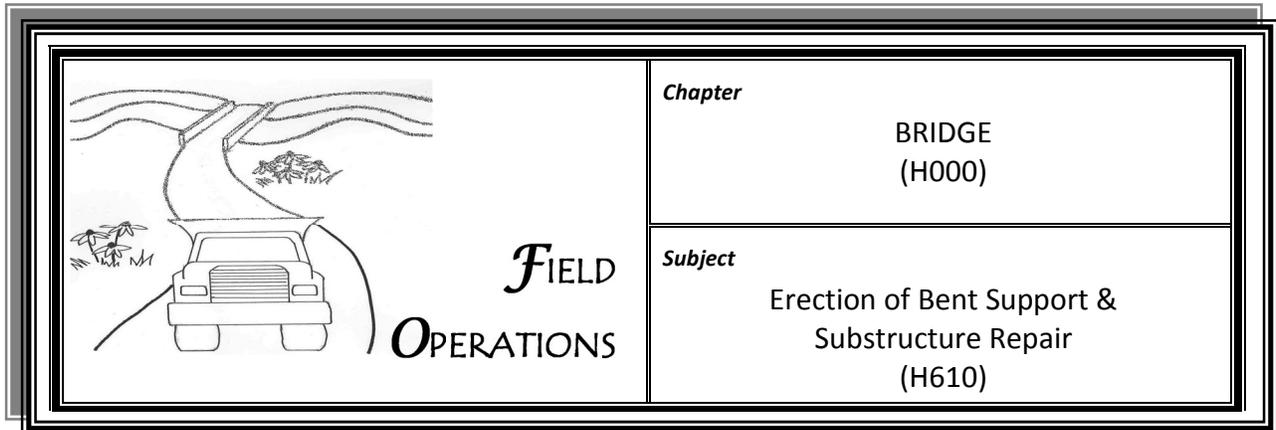
**RECOMMENDED**

**PROCEDURE**

Procedure varies depending upon job conditions, weather, and manufacturer's recommendations.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Performing all work necessary for a maintenance operation performed on end bent or substructure of a bridge

Charge all substructure repairs to this activity. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

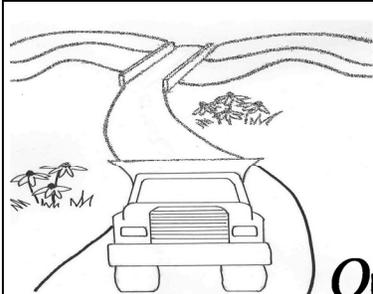
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01: District  
FE02: Central Office  
FD04: Six-Year Plan  
CB01: Rural Secondary "Emergency"  
CB06: Rural Secondary "Regular"

**RECOMMENDED PROCEDURE** Recommended personnel, equipment, and materials for this activity vary on a job-to-job basis. It is recommended that districts consult the Central Office before undertaking projects of this type.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Repairing Superstructure (H620)</p>

**DESCRIPTION** Performing all work necessary for a maintenance operation performed on the superstructure of a bridge, excluding repair of steel members (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION**

FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

**RECOMMENDED PROCEDURE** Recommended personnel, equipment, and materials for this activity vary on a job-to-job basis. It is recommended that districts consult the Central Office before undertaking projects of this type.



	<b>Chapter</b> BRIDGE (H000)
	<b>Subject</b> Repairing Steel Bridge Members (H710)

**DESCRIPTION**                      Repairing and painting steel bridge members, including rockers, bearing devices, and expansion dams (Section Required)

**SCHEDULING**                      Schedule painting as weather conditions permit.

**RECOMMENDED PERSONNEL**                      Varies by job

**RECOMMENDED EQUIPMENT**                      Varies by job

**Note:** Scaffolding may be required for areas not accessible from the ground or substructure.

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**

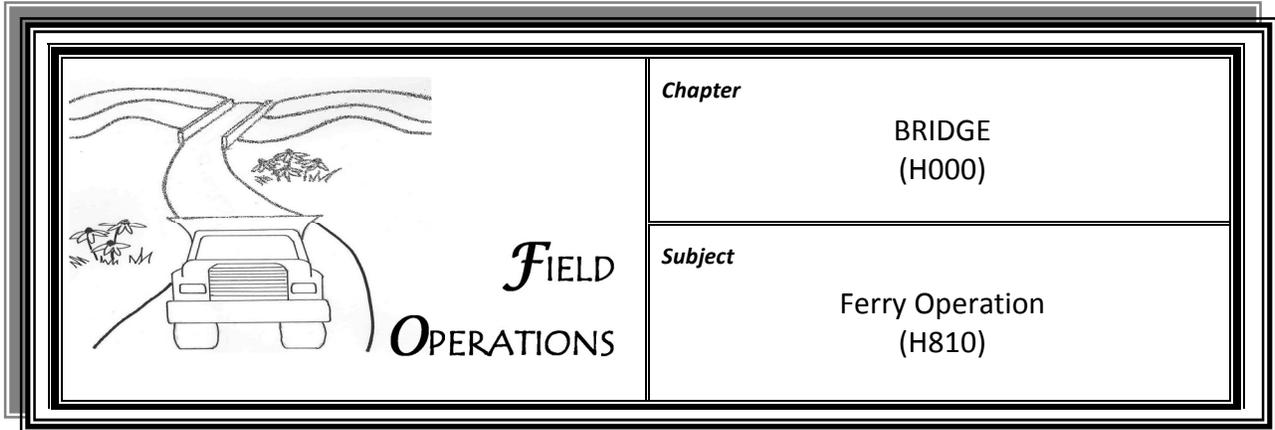
- FE01: District
- FE02: Central Office
- FD04: Six-Year Plan
- CB01: Rural Secondary "Emergency"
- CB06: Rural Secondary "Regular"

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Rig bridge for painting as required.
3. Clean bridge to bare metal.
4. Prime bridge.
5. Place finish coat of paint.
6. Remove rigging as required.
7. Remove traffic-control devices.

**Note:** Recommended procedure varies in accordance with job requirements. When rockers and bearing devices of more than one structure in an immediate area require cleaning and painting, arrange an assembly-line operation.





**DESCRIPTION**                      Established to charge the Turkey Neck Bend Ferry operation so that no other project can use this activity code (FE01 Account) (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

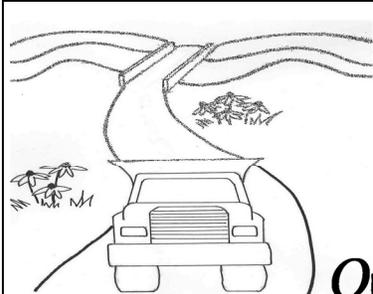
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE01: District  
     FE02: Central Office  
     FD04: Six-Year Plan  
     CB01: Rural Secondary "Emergency"  
     CB06: Rural Secondary "Regular"

**RECOMMENDED PROCEDURE**                      As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Operation of Central Office Bridge Storage Yard (Central Office Use Only) (H880)</p>

**DESCRIPTION**                      Applying charges performed by the Central Office bridge yard crew when not feasible to charge to any specific project or activity (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

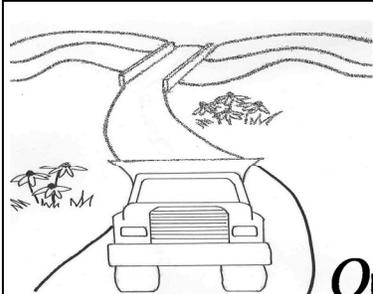
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE01: District  
     FE02: Central Office  
     FD04: Six-Year Plan  
     CB01: Rural Secondary "Emergency"  
     CB06: Rural Secondary "Regular"

**RECOMMENDED PROCEDURE**                      As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Bridge Materials Overhead (H980)</p>

**DESCRIPTION**                      Charging various bridge materials when not feasible to charge to projects until used on those projects (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

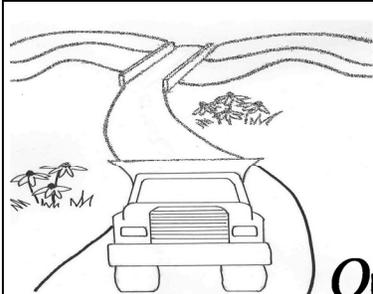
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE01: District  
     FE02: Central Office  
     FD04: Six-Year Plan  
     CB01: Rural Secondary "Emergency"  
     CB06: Rural Secondary "Regular"

**RECOMMENDED PROCEDURE**                      As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">BRIDGE (H000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Bridge Maintenance (H990)</p>

**DESCRIPTION** Maintenance activities on bridges not covered by Activities H010–H980, including tunnel maintenance (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

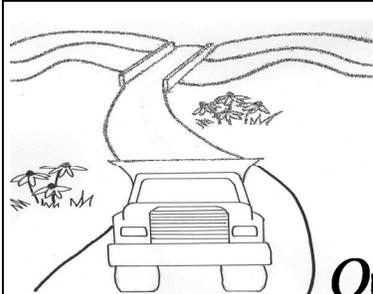
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hours

**FUNCTION**

FE01: District  
 FE02: Central Office  
 FD04: Six-Year Plan  
 CB01: Rural Secondary "Emergency"  
 CB06: Rural Secondary "Regular"

**RECOMMENDED PROCEDURE** As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Hand-Clearing Culverts &amp; Pipes (J010)</p>

**DESCRIPTION** Inspecting and hand-cleaning culverts, cross drains, and entrance pipes, as well as ditches on the inlet and outlet ends of the right-of-way limits

If using any powered equipment, charge to J020. (Section Required)

**SCHEDULING** Inspect culverts and pipes once a year, and clean, if required, to ensure proper drainage. Some structures may need special attention after periods of heavy rainfall.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (3)

**RECOMMENDED EQUIPMENT** Dump truck (1)  
Hand tools (shovel, rake, pick, ax, brush ace, etc.)

**RECOMMENDED MATERIALS** None

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) (Sections 2.3.5, 2.3.6, and 2.3.7) when working in streams.

**PERFORMANCE VALUES**

- Hours Per Unit 2.000
- Daily Expectation 12
- Accomplishment Unit Number cleaned

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

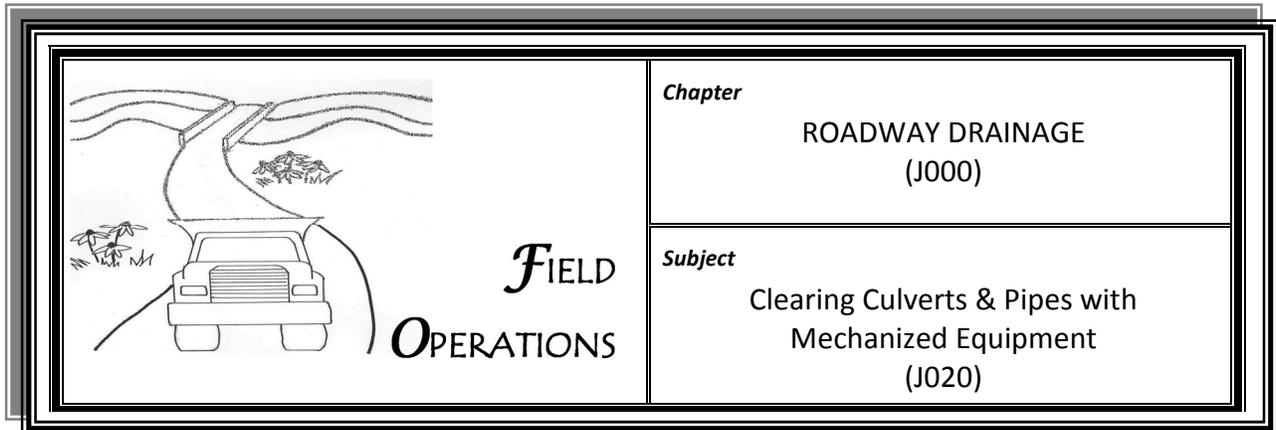
1. Place traffic-control devices as necessary.
2. Clean culvert or pipe openings with hand tools.
3. Remove debris, unwanted vegetation, or other obstructions from inlet and outlet channels, and restore original grade on inlet and outlet ditches.
4. Check for damage to structure and scouring around ends of culvert or pipe. Schedule further maintenance if necessary.
5. Remove traffic-control devices.
6. Report to the foreman any structures requiring repair or cleaning as described in Activity J020 or J030.

**Note:** When silt and debris block channels beyond the economic use of hand tools, use backhoes or other ditching equipment, and charge to Activity J020.

Use a rotor roter (Go Devil), when available, for cleaning pipe when situations require the rotor roter. Report the need to the district maintenance engineer.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** In-place cleaning culverts, cross drains, and entrance pipes, as well as ditches on the inlet and outlet ends of the right-of-way limits, using mechanized equipment (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** Highway Equipment Operator (6)

**RECOMMENDED EQUIPMENT**

- Dump truck (2)
- Pickup or crew-cab truck (1)
- Shovel\*
- Hand tools (shovel, pick, ax)
- Myers sewer (optional)

\*The shovel may be a Gradall, Drott, Bantam, Crane, Backhoe, or other brand-name shovel. Use a rotor rooter (Go Devil) when available.

**RECOMMENDED MATERIALS** None

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) (Sections 2.3.5, 2.3.6, and 2.3.7) for working in and around streams.

**PERFORMANCE VALUES**

- Hours Per Unit 6.000
- Daily Expectation 8
- Accomplishment Unit Number cleaned

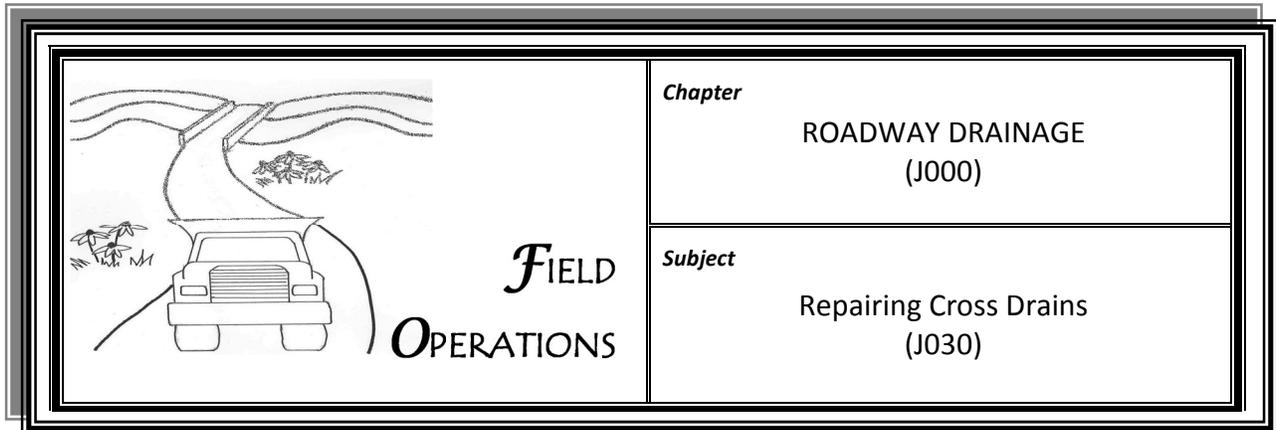
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Clean interior of culvert or pipe.
3. Remove debris, unwanted vegetation, or other obstructions from inlet and outlet channels, and restore original grade on inlet and outlet ditches.
4. Check for damage to structure and scouring around ends of culvert or pipe. Schedule further maintenance if necessary.
5. Dispose of removed material.
6. Remove traffic-control devices.
7. Report to the foreman any structures that require repair or replacement as described in Activity J030.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION**                      Repairing pipes and culverts, including full or partial replacement of structures

Charge in-place cleaning to J010 or J020. Charge any maintenance structure that does not have a bridge number to this activity, J030. (Section Required)

**SCHEDULING**                      Perform this activity throughout the year as required, with emphasis during periods of minor maintenance requirements. Do not charge entrance pipe construction or maintenance to this activity.

**RECOMMENDED**

**PERSONNEL**                      Highway Superintendent                      (1)  
    Highway Equipment Operator                      (3)  
    Traffic Control                      (2)

**RECOMMENDED**

**EQUIPMENT**                      Dump trucks (single-axle)                      (2)  
    Pickup truck                      (1)  
    Compressor                      (1)  
    Gradall, drott, bantam, crane,  
    front-end loader, or backhoe                      (1)  
    Myers sewer (optional)

**Note:** Activity may require pavement breaker, spade, jackhammer, air wrench, or other accessories.

**RECOMMENDED**

**MATERIALS**                      Ready-mix concrete  
    Reinforced concrete pipe  
    BCCM or aluminum pipe  
    Rip rap  
    Other materials as needed

**ENVIRONMENTAL****IMPACTS**

Refer to the *Environmental Handbook* (Section 2.3.7, "Sediment Removal from Structures") for working in streams.

**PERFORMANCE****VALUES**

- |                       |        |
|-----------------------|--------|
| ➤ Hours Per Unit      | 24.000 |
| ➤ Daily Expectation   | 2      |
| ➤ Accomplishment Unit | Each   |

**FUNCTION**

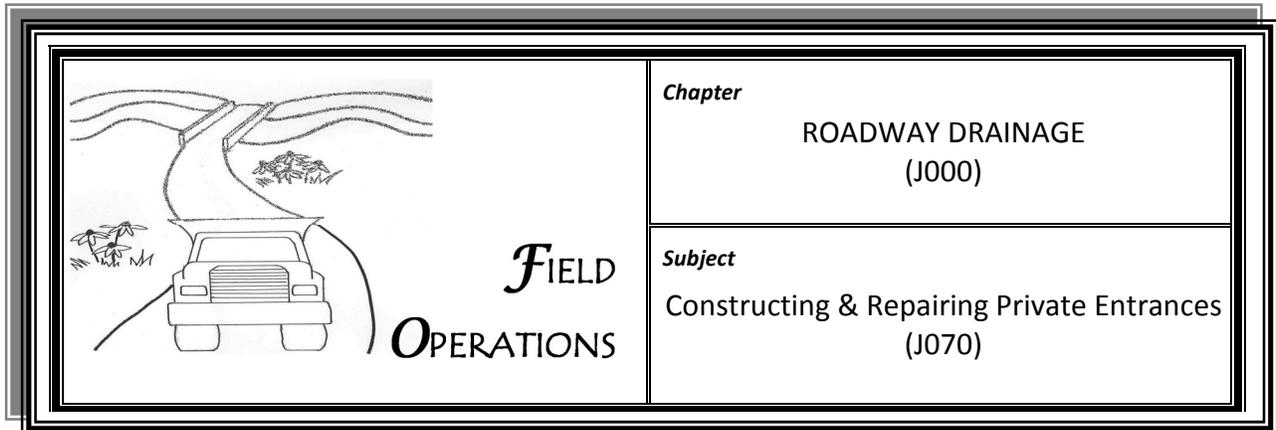
FE01

**RECOMMENDED****PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices.
3. Remove damaged portion of structure or pipe.
4. Repair or replace damaged portion of structure or pipe.
5. Remove undesirable debris from job site.
6. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION**                      Constructing private entrances under the authority of a permit and repair of existing private entrances

If entrance pipe is 36 inches or greater, check with a maintenance engineer before repairing. Charge in-place cleaning to J010 or J020. (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**

Highway Equipment Operator	(5)
Traffic Control	(1)

**RECOMMENDED EQUIPMENT**

Dump truck	(2)
Backhoe or grade	(1)
Hand tools	

**RECOMMENDED MATERIALS**

Aggregate	(6 tons)
-----------	----------

**ENVIRONMENTAL IMPACTS**                      Refer to the *Environmental Handbook* for working in streams.

**PERFORMANCE VALUES**

➤ Hours Per Unit	24.000
➤ Daily Expectation	2
➤ Accomplishment Unit	Each

**FUNCTION**                      FE01

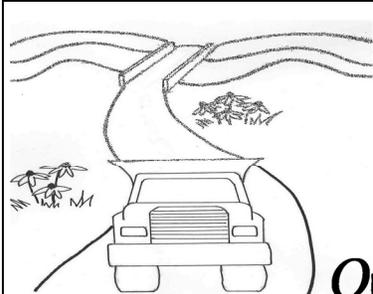
**RECOMMENDED**

**PROCEDURE**

Request engineering assistance as needed for proper installation of entrance pipe.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Slope Protection, Using Rip Rap, Rock, Concrete, Reclaimed Materials, Gabions, Etc. (J110)</p>

**DESCRIPTION**                      Placing and maintaining ditch checks, slope protection on fill areas, inlet and outlet ends of drainage structures, and other areas where scouring action may occur

Charge slope control using vegetative methods to [Activity E210](#). Charge any maintenance work around a bridge or structure with a "B" or bridge number to [H320](#). (Section Required)

**SCHEDULING**                      Perform this activity throughout the year as required, with emphasis during periods of minor maintenance requirements.

**RECOMMENDED PERSONNEL**                      Highway Equipment Operator                      (6)

**RECOMMENDED EQUIPMENT**                      Dump truck                      (2)  
Pickup or crew-cab truck                      (1)

**Note:** Add boom equipment if required.

**RECOMMENDED MATERIALS**                      Rip rap                      (50 tons)  
Ready mix concrete  
Gabions

**ENVIRONMENTAL IMPACTS**                      Refer to the [Environmental Handbook](#) (Sections 2.3.8 through 2.3.15) for working in streams.

**PERFORMANCE VALUES**

- Hours Per Unit                      0.960
- Daily Expectation                      50
- Accomplishment Unit                      Ton

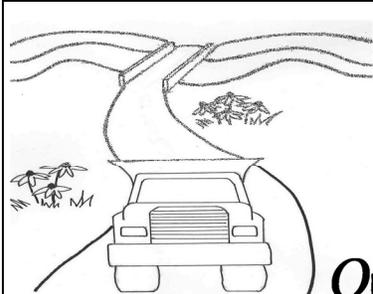
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare site for placement of slope protection.
3. Place slope protection.
4. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Contract Drainage (J150)</p>

**DESCRIPTION**                      Incidental shoulder-improvement ditching, drainage, shoulder cleaning and replacement entirely by contractor (inspector charge only)

This activity covers cost of weight ticket taker and/or inspection when either is a state employee and the use of FE01 maintenance money occurs. (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

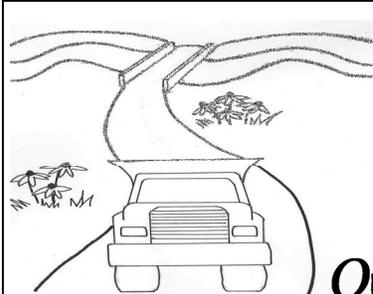
- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**                      As required

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Ditching Using Graders (J210)</p>

**DESCRIPTION** Ditching with incidental shoulder improvement, using graders and belt loader or hi-lift for pickup of material (Section Required)

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL**

Highway Superintendent	(1)
Highway Equipment Operator	(6)
Traffic Control	(2)

**RECOMMENDED**

**EQUIPMENT**

*Grader (lead grader equipped w/ King sloper, if available)	(2)
Belt loader or front loader	(1)
Dump truck	(3)
Pickup truck (pilot truck)	(1)
Mechanical sweeper	(1)

**RECOMMENDED**

**MATERIALS** As required

**ENVIRONMENTAL**

**IMPACTS**

- Seed and protect all bare soil areas. For work that involves disturbance of soil with an area of more than 1 acre, file a KPDES, KYR10 permit, BMP Plan, and Notice of Intent with the Kentucky Division of Water.

**PERFORMANCE**

**VALUES**

- |                       |                |
|-----------------------|----------------|
| ➤ Hours Per Unit      | 4.800          |
| ➤ Daily Expectation   | 15             |
| ➤ Accomplishment Unit | 0.1 Ditch mile |

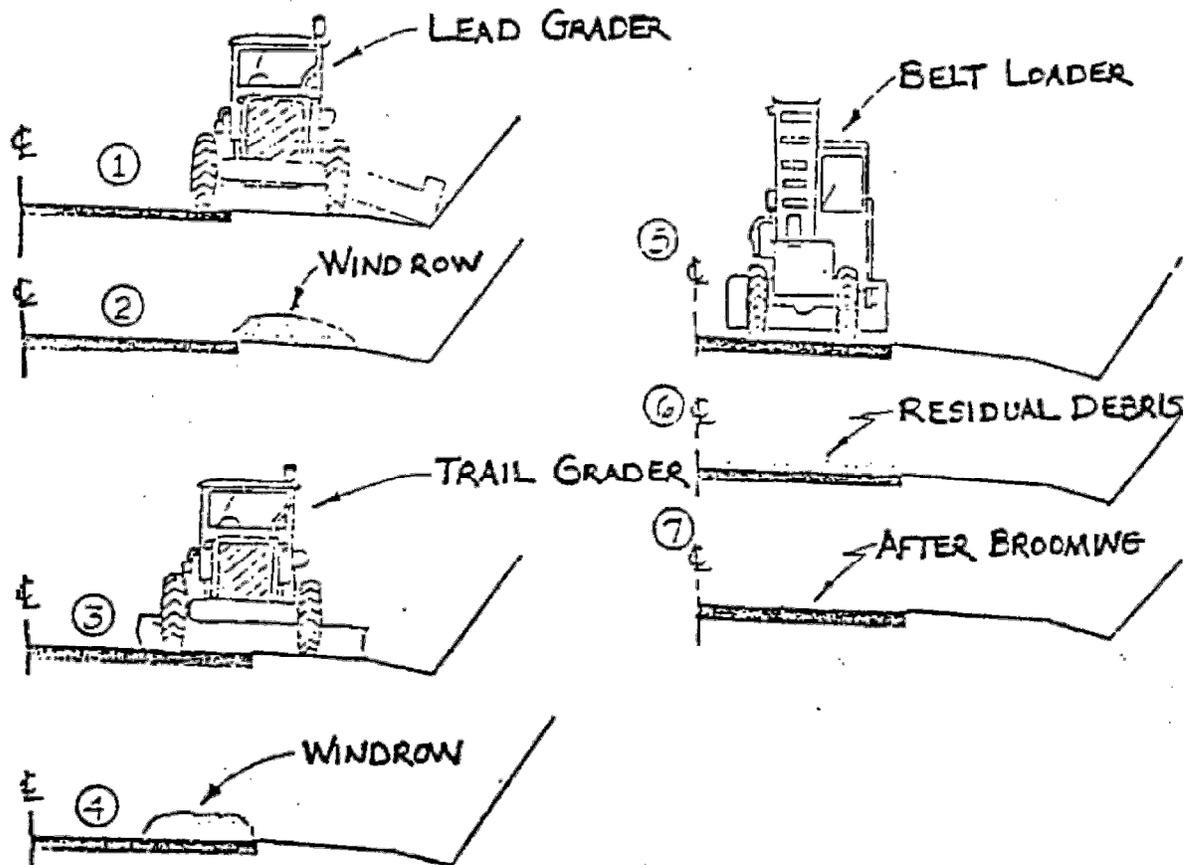
FUNCTION

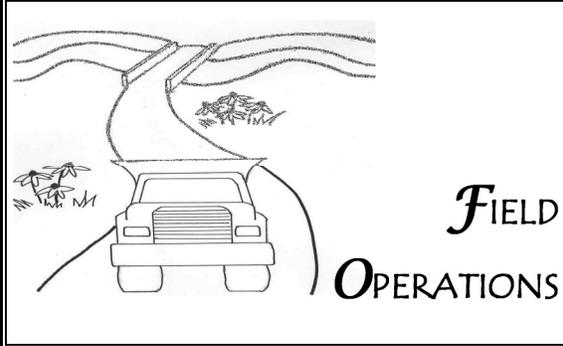
FE01

RECOMMENDED  
PROCEDURE

1. Discuss job requirements with crew.
2. Place traffic-control devices as necessary.
3. Clean ditches or silt, unwanted vegetation, and debris (see sketches).
4. Haul waste material from site.
5. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<p><i>Chapter</i></p> <p>ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p>Ditching Using Boom Equipment (J230)</p>

**DESCRIPTION** Removing or replacing material from/in ditches where graders cannot be utilized (Section Required)

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Equipment Operator (4)  
Traffic Control (2)

**RECOMMENDED**

**EQUIPMENT** Crane (may use gradall, drott, front-end loader, backhoe, or other boom equipment) (1)  
Dump truck (3)  
Pickup truck (1)

**RECOMMENDED**

**MATERIALS** As required

**ENVIRONMENTAL IMPACTS**

- Refer to the [Environmental Handbook](#) (2.1.4, “Operations That Generate Dust”) for removal of waste material.
- Seed and protect all bare soil areas. For work that involves disturbance of soil with an area of more than 1 acre, file a KPDES, KYR10 permit, BMP Plan, and Notice of Intent with the Kentucky Division of Water.

**PERFORMANCE VALUES**

- Hours Per Unit 12.000
- Daily Expectation 4
- Accomplishment Unit 0.1 Ditch mile

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**FUNCTION** FE01

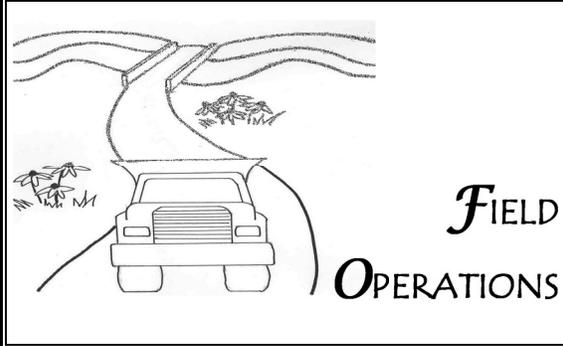
**RECOMMENDED  
PROCEDURE**

1. Discuss job requirements with crew.
2. Place traffic-control devices as necessary.
3. Remove unwanted material from ditch.
4. Dispose unwanted material.
5. Remove traffic-control devices.

**Note:** When cleaning a ditch, check flow line for proper grade. Seek engineering help if required.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> ROADWAY DRAINAGE (J000)
	<b>Subject</b> Paved & Rock-Lined Ditches (J310)

**DESCRIPTION** Replacing, repairing, cleaning out, extending, or performing any other maintenance of paved and rock-lined ditches (Section Required)

**SCHEDULING** As required

**RECOMMENDED**

**PERSONNEL** Highway Equipment Operator (3)  
 Highway Laborer (2)

**RECOMMENDED**

**EQUIPMENT** Backhoe (1)  
 Dump truck (2)

**RECOMMENDED**

**MATERIALS** Ready-mix concrete  
 Gabion mats  
 Other repair material

**ENVIRONMENTAL**

**IMPACTS** Refer to the [Environmental Handbook](#) (2.1.4, "Operations That Generate Dust") for removal of waste material.

**PERFORMANCE**

**VALUES**

- Hours Per Unit 0.200
- Daily Expectation 200
- Accomplishment Unit Linear foot

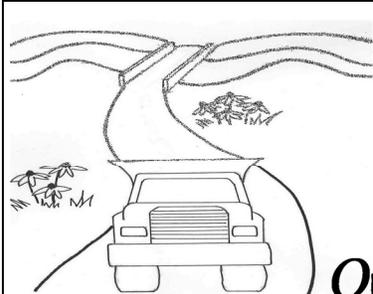
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss job requirements with crew.
2. Place traffic-control devices as necessary.
3. Prepare the site for the type of maintenance required.
4. Make the repair.
5. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Cleaning Drainage Channels (J320)</p>

**DESCRIPTION** Working on drainage channels, including special ditches, sinkholes, channel changes, etc., constructed as part of the roadway drainage

This activity may include work off the right of way. If it does, secure a signed TC 71-14 form, *Consent and Release* from the private property owner before beginning work. Charge H320 for maintenance of bridge drainage channels. Activity requires approval by a maintenance engineer for environmental clearance. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS**

- Ready-mix concrete
- 1/3 round pipe
- Gabion mats
- Other repair material

**ENVIRONMENTAL IMPACTS**

- Refer to the *Environmental Handbook* (2.1.4, "Operations That Generate Dust") for removal of waste material.
- For work greater than 200 feet of stream, obtain approval from the CORPS Engineer and/or the Division of Water.

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

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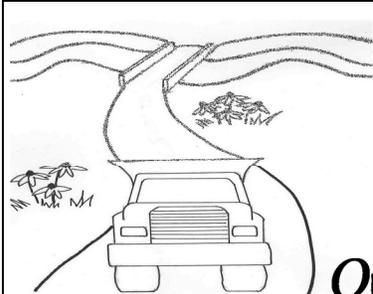
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss job requirements with crew.
2. Place traffic-control devices as necessary.
3. Remove unwanted debris and material from ditch or channel.
4. Dispose of unwanted debris and material.
5. Remove traffic-control devices.

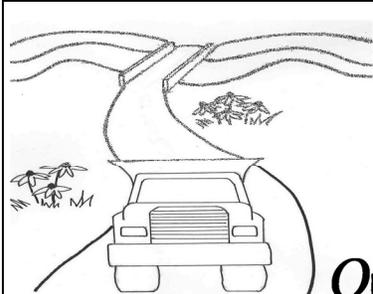
**Note:** For work on private property, obtain a TC 71-14 form, *Consent and Release* signed by the property owner before beginning work.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Pump Station Repair &amp; Maintenance (J350)</p>

<b>DESCRIPTION</b>	(Section Required)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	As required	
<b>RECOMMENDED EQUIPMENT</b>	As required	
<b>RECOMMENDED MATERIALS</b>	As required	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	N/A
	➤ Daily Expectation	N/A
	➤ Accomplishment Unit	Hour
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	As required	



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">ROADWAY DRAINAGE (J000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Drainage (J990)</p>

**DESCRIPTION** Working on pumping stations, catch basins, medians, or any other roadside drainage activity not covered by Activities J010 through J350 (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) for removal of waste material.

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required

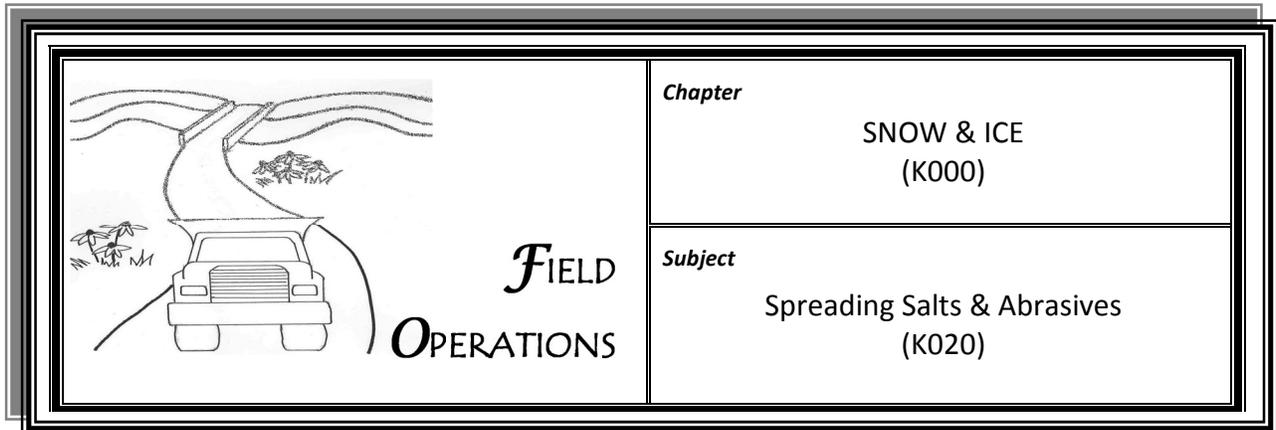




**RECOMMENDED  
PROCEDURE**

1. Become thoroughly familiar with the current operating procedure of the snow and ice removal policy, as detailed in the *Maintenance Manual* ([MAIN-1000](#), "Snow & Ice").
2. Keep a record of accomplishments in a Storm Log.





**DESCRIPTION** Spreading salt, chemicals, sand, cinders, or other abrasives for control of snow and ice

Conditions may warrant an extra rider with district office approval. The extra rider should use this time to become familiar with the operation of the truck and attached equipment. (Section Required)

**SCHEDULING** Perform this activity in accordance with the snow and ice removal season.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (1)

**RECOMMENDED EQUIPMENT** Dump truck/spreader (may be single-axle or tandem) (1)

**RECOMMENDED MATERIALS** Salt  
Cinders  
Sand  
CaCl  
Liquid calcium  
Salt brine

**ENVIRONMENTAL IMPACTS** Handling of materials for snow and ice removal shall be in accordance with the [Environmental Handbook](#), GWPP, and KPDES.

**PERFORMANCE VALUES**

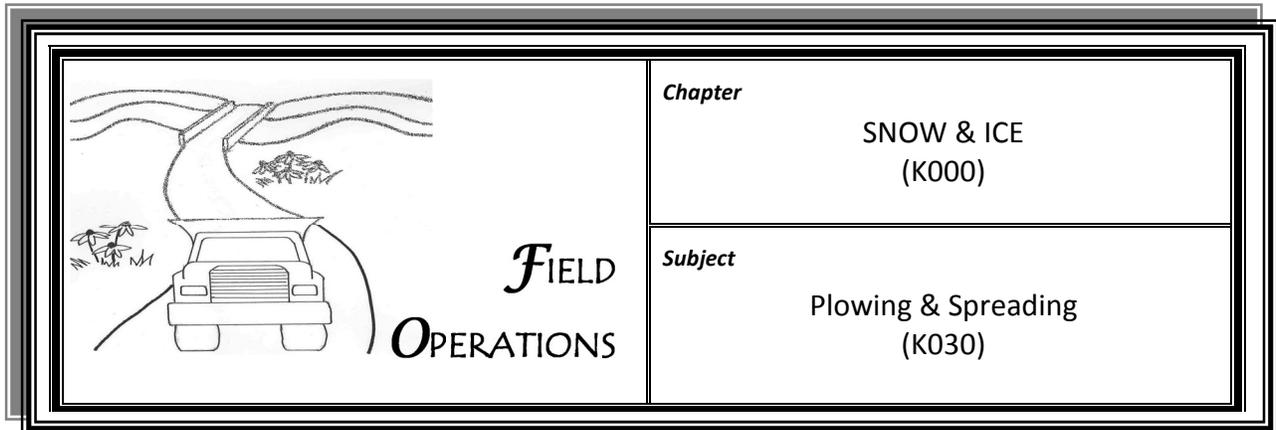
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Become thoroughly familiar with the current operating procedure of the snow and ice removal policy, as detailed in the *Maintenance Manual* ([MAIN-1000](#), "Snow & Ice").
2. Keep a record of your accomplishments in a Storm Log.





**DESCRIPTION** Combining operations of plowing snow and spreading salt and abrasives

Conditions may warrant an extra rider with district office approval. The extra rider should use this time to become familiar with the operation of the truck and attached equipment. (Section Required)

**SCHEDULING** Perform this activity in accordance with the snow and ice removal season.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (1)

**RECOMMENDED EQUIPMENT** Dump truck/spreader (may be single-axle or tandem) (1)

**RECOMMENDED MATERIALS** Salt  
Cinders  
Sand  
Calcium chloride  
Liquid calcium chloride  
Salt brine

**ENVIRONMENTAL IMPACTS** Handling of materials for snow and ice removal shall be in accordance with the [Environmental Handbook](#), GWPP, and KPDES.

**PERFORMANCE VALUES**

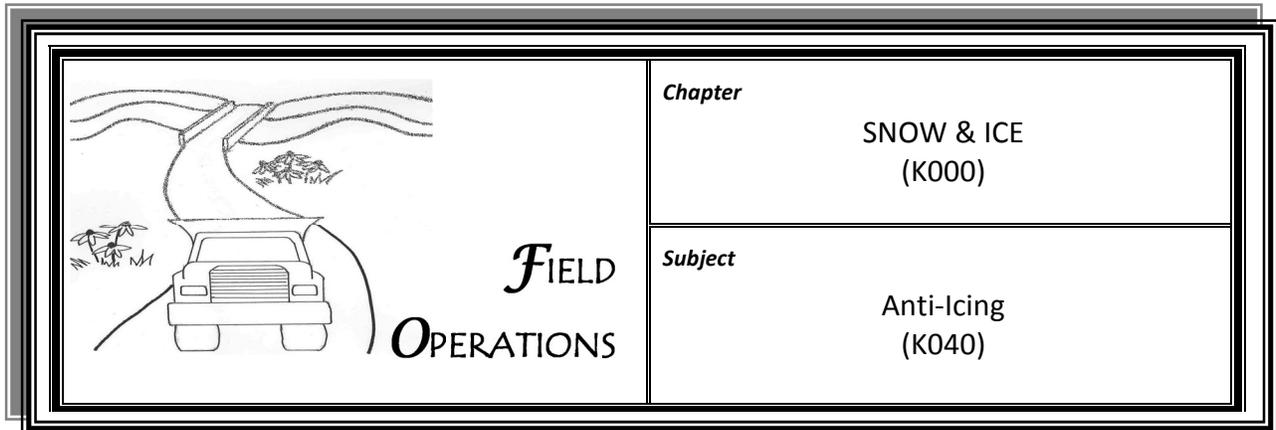
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Become thoroughly familiar with the current operating procedure of the snow and ice removal policy, as detailed in the *Maintenance Manual* ([MAIN-1000](#), "Snow & Ice").
2. Keep a record of your accomplishments in a Storm Log.





**DESCRIPTION**                      Applying salt brine to roadway pavements prior to storm events

Do not use calcium chloride. (Section Required)

**SCHEDULING**                      Perform this activity in accordance with the snow and ice removal season.

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**

Dump truck	(1)
Pickup truck mounted	(1)
Semitrailer truck	(1)

**RECOMMENDED MATERIALS**                      Salt brine

**ENVIRONMENTAL IMPACTS**                      Handling of materials for snow and ice removal shall be in accordance with the *Environmental Handbook* (Sections 2.4.1 through 2.4.6), GWPP, and KPDES.

**PERFORMANCE VALUES**

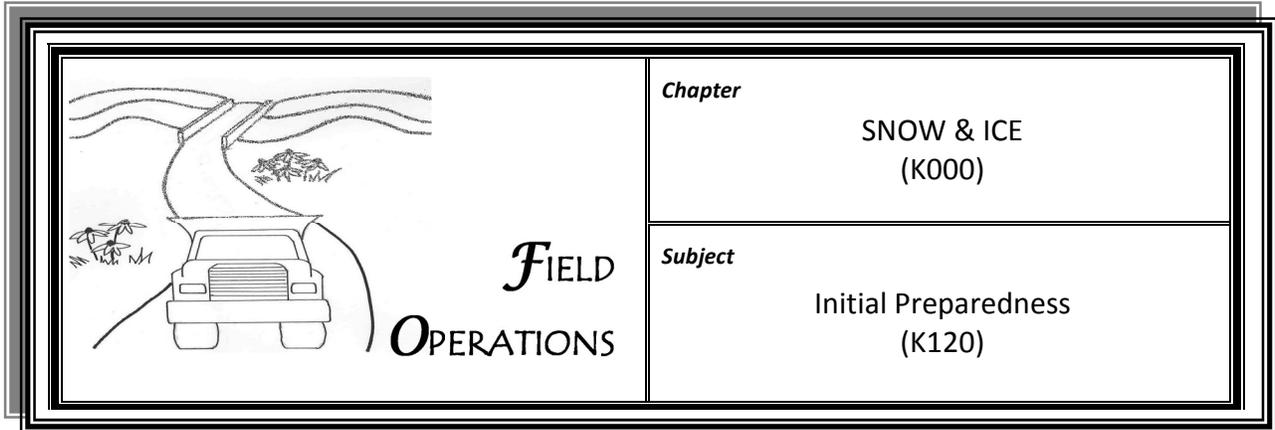
➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION**                      FE01

**RECOMMENDED  
PROCEDURE**

1. Become thoroughly familiar with the current operating procedure of the snow and ice removal policy, as detailed in the *Maintenance Manual* ([MAIN-1000](#), "Snow & Ice").
2. Keep a record of your accomplishments in a Storm Log.





**DESCRIPTION** Performing all activities for initial preparedness for snow and ice, including those pertaining to snow and ice meetings, training, salt brine preparation, equipment, initial preparedness by maintenance personnel, calibrations, and practice runs (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIAL** As required

**ENVIRONMENTAL IMPACTS** Handling of materials for snow and ice removal shall be in accordance with the *Environmental Handbook* (Sections 2.4.1 through 2.4.6), GWPP, and KPDES.

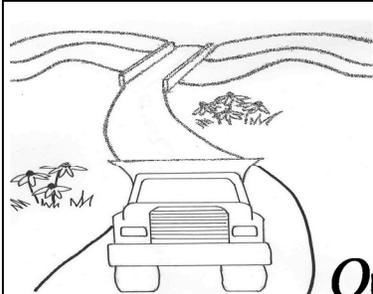
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

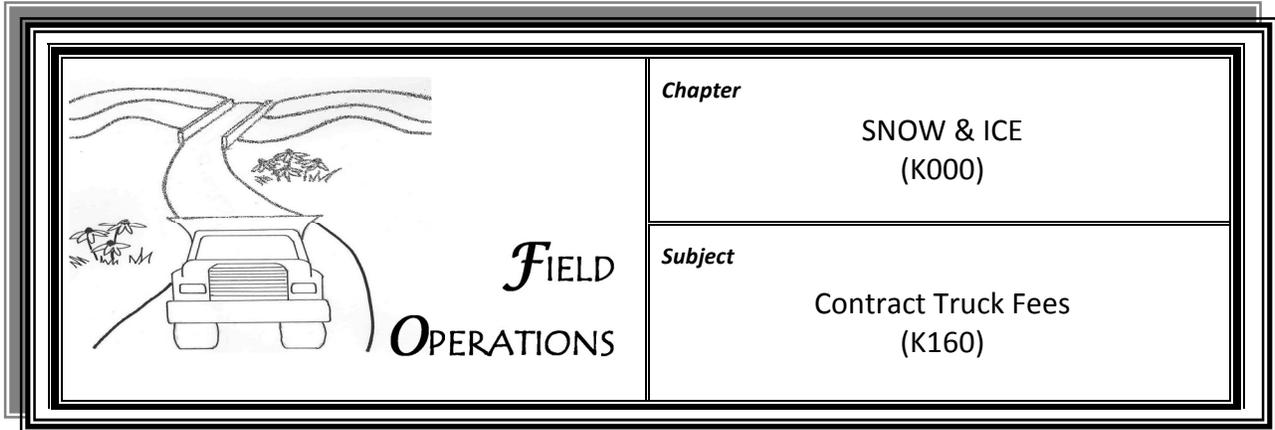
**RECOMMENDED PROCEDURE** As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SNOW &amp; ICE (K000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Miscellaneous Expenses by Outside Vendors (K150)</p>

<b>DESCRIPTION</b>	Having work done completely by outside vendors	
	Rarely allow use of this activity. An example would include the rental of a grader (or other piece of equipment not covered by contract) during a storm. (General)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	As required	
<b>RECOMMENDED EQUIPMENT</b>	As required	
<b>RECOMMENDED MATERIALS</b>	As required	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	N/A
	➤ Daily Expectation	N/A
	➤ Accomplishment Unit	Hour
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	As required	





**DESCRIPTION**                      Covering the retro-fit and dedicated service fees for contractors

Do not charge usage to this activity. (General)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

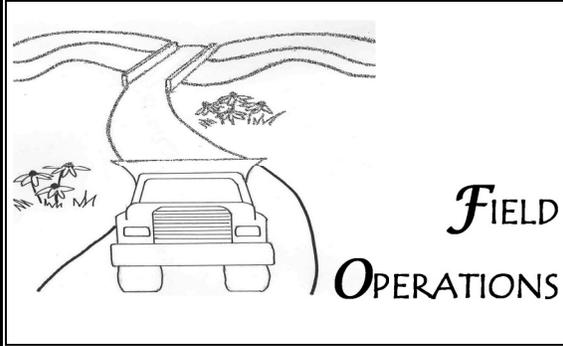
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    N/A

**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**                      **Special Note:** Perform in accordance with terms of current contracts for this service.



	<b>Chapter</b> SNOW & ICE (K000)
	<b>Subject</b> Contract Truck Usage (K170)

**DESCRIPTION** Charge usage to this activity. This activity shows “Section Required” because it is necessary to choose a section when creating the work order. Most often, this activity requires using the “set sections” functionality in OMS in order to list multiple road sections on the work order. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS**  
 Salt  
 Cinders  
 Sand  
 Calcium chloride  
 Liquid calcium chloride

**ENVIRONMENTAL IMPACTS** Handling of materials for snow and ice removal shall be in accordance with the [Environmental Handbook](#) (Sections 2.4.1 through 2.4.6), GWPP, and KPDES.

**PERFORMANCE VALUES**

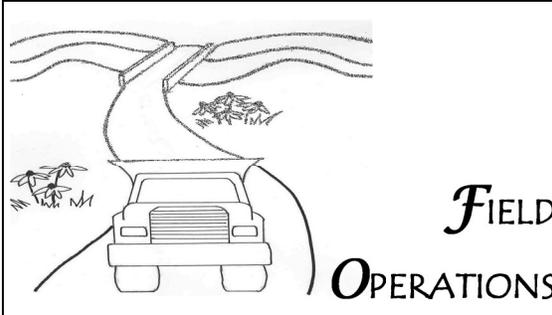
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

**Special Note:** Perform in accordance with terms of current contracts for this service.



	<b>Chapter</b> SNOW & ICE (K000)
	<b>Subject</b> Salt Storage Building Maintenance (K500)

**DESCRIPTION** Repairs on salt storage facilities located on the lot with the maintenance crew headquarters building

Such buildings include those for storage of salt, liquid chloride, and materials. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

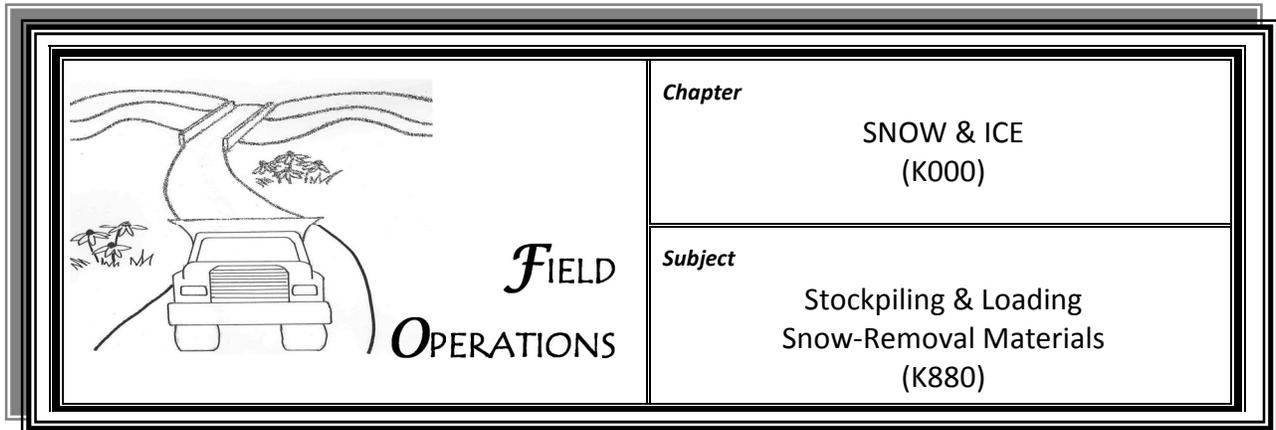
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Loading and stockpiling salt and abrasive materials for snow and ice control (General)

**SCHEDULING** Perform this operation prior to the winter months and throughout the winter as needed to maintain an adequate supply. Also perform during storms as required by spreading chemicals and abrasives.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (2)

**RECOMMENDED EQUIPMENT**

Front-end loader	(1)
Dump truck	(1)
Tender truck	(1)
Conveyor	(1)

**RECOMMENDED MATERIALS**

- Cinders
- Sand
- Salt (sodium chloride)
- Calcium chloride
- Salt brine

**ENVIRONMENTAL IMPACTS** Handling of materials for snow and ice removal shall be in accordance with the *Environmental Handbook* (Sections 2.4.1 through 2.4.6), GWPP, and KPDES.

**PERFORMANCE VALUES**

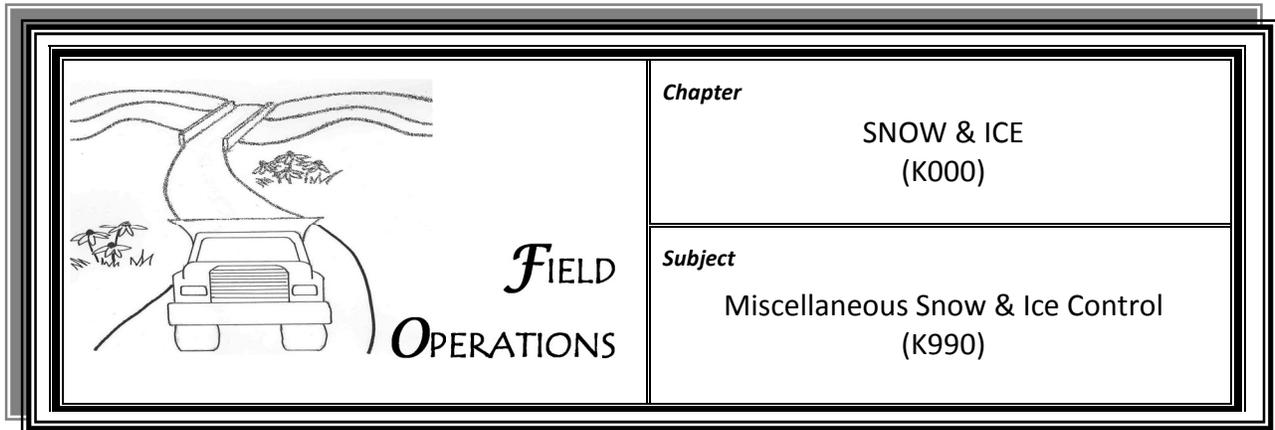
➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE** As required

**Note:** Take necessary safety precautions especially during a storm or at night.





**DESCRIPTION** Performing any activity relating to snow and ice control not covered by Activities K010—K880

Activities include standby time, snow and ice control work by superintendent or administrative specialist other than regular duty hours, individual storm preparedness and cleanup thereafter, and cleaning bridge decks of snow and ice. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS**

- Handling of materials for snow and ice removal shall be in accordance with the *Environmental Handbook* (Sections 2.4.1 through 2.4.6), GWPP, and KPDES.
- Clean equipment in accordance with the *Environmental Handbook* and KPDES.

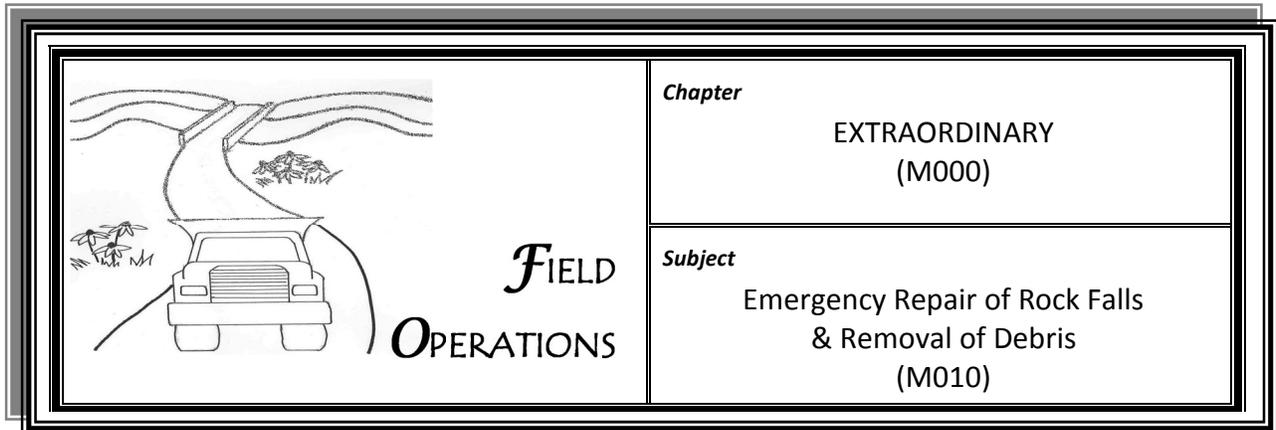
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE** As required





**DESCRIPTION** Performing emergency removal of rock falls, earth, or debris fallen onto the roadway (Section Required)

**SCHEDULING** Perform only as higher authority directs.

**RECOMMENDED**

**PERSONNEL** Highway Equipment Operator (3)  
Traffic Control (3)

**RECOMMENDED**

**EQUIPMENT** Dump truck (2)  
Front-end loader or shovel (includes backhoe, drott, bantam, gradall) (1)  
TMA (optional)

**RECOMMENDED**

**MATERIALS** N/A

**ENVIRONMENTAL**

**IMPACTS** Dispose of waste material according to the [Environmental Handbook](#).

**PERFORMANCE**

**VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

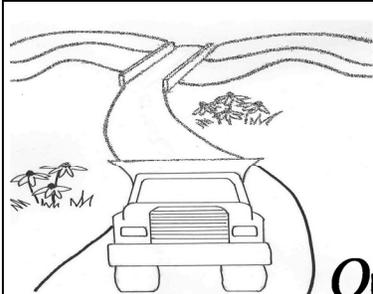
**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Pick up rock fall, earth, or debris from ditch, shoulder, or roadway surface.
3. Pick up traffic-control devices.

**Note:** If loading equipment is not required or available, use a nonstandard crew. Frequently, a rock pickup patrol, using two men in one truck, performs this operation.

**Special Note:** Determine accomplishment before leaving job site. Properly dispose of all waste.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">EXTRAORDINARY (M000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Emergency Repair of Landslides &amp; Sinkholes &amp; Removal of Debris (M020)</p>

**DESCRIPTION** Performing emergency repair of fills and roadway damaged by slips or settlements

Include contractor cost as a direct cost in this activity. (Section Required)

**SCHEDULING** Perform only as higher authority directs.

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS**

- Piling (timber, sheet, railroad rail)
- Rip rap
- Gabions
- Cribbing
- Other material as needed

**ENVIRONMENTAL IMPACTS**

- CORPS of Engineers may require a permit to work around streams.
- Perform all work in accordance with the [Environmental Handbook](#).
- Seed and protect all bare soil areas. For work that involves disturbance of soil with an area of more than 1 acre, file a KPDES, KYR10 permit, BMP Plan, and Notice of Intent filed with the Kentucky Division of Water.

**PERFORMANCE VALUES**

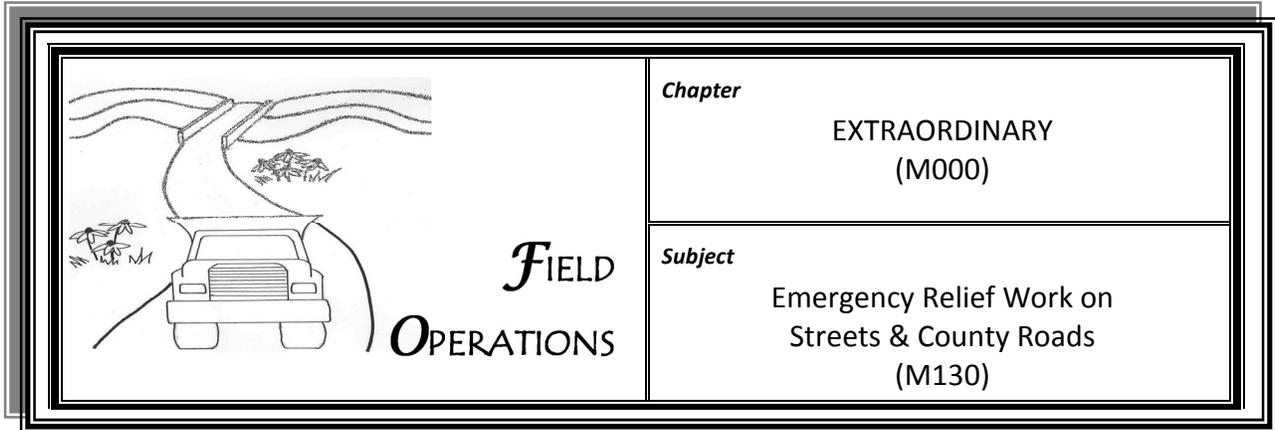
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Discuss with crew the requirements of the job.
2. Place traffic-control devices as necessary.
3. Drive piling, place fill material, construct gabions, or perform other necessary corrective actions.
4. Pick up traffic-control devices.





**DESCRIPTION** Performing emergency work necessary to open the traveled way of roads and streets to traffic or to move people and supplies during floods or other disasters

This applies to only roads or streets not under state maintenance. (General)

**Special Note:** Keep a detailed written log of the names of streets or county roads worked and the kind of work performed (for example, labor, equipment, and materials used).

**SCHEDULING** Perform only as higher authority directs.

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

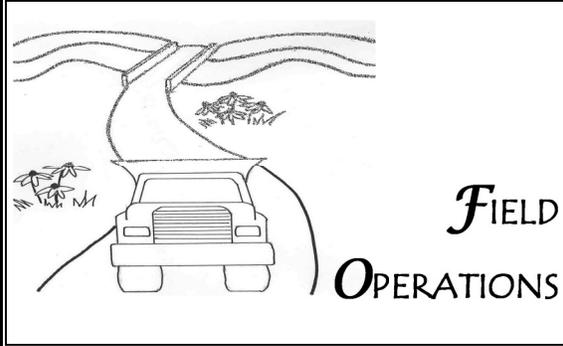
**FUNCTION** FE01

**RECOMMENDED**

**PROCEDURE**

Perform upon approval from higher authority.



	<b>Chapter</b> EXTRAORDINARY (M000)
	<b>Subject</b> Emergency Work or Repairs Other Than Floods, State-Maintained Roads (M140)

**DESCRIPTION** Performing all maintenance activities (routine or special) scheduled primarily as a result of natural disasters (other than floods) and performing all work necessary to remove debris from rights of way of state-maintained roads due to local storms, vandalism, accidents, etc.

This may be charged during regular working hours. (Section Required)

**SCHEDULING** The highway superintendent has the authority to this work when travel becomes hazardous. The highway superintendent shall contact the district office if it appears that it will take more than two hours to attain a safe condition.

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** Refer to the *Environmental Handbook* [5.1, “KYTC Spill Responses” and 5.3, “Hazardous or Unknown Wastes or Spills on the Right-of-Way (ROW)”] for waste disposal and spills.

**PERFORMANCE VALUES**

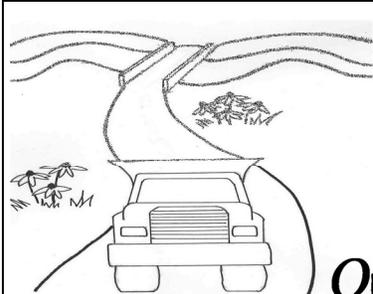
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED**

**PROCEDURE**                      As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">EXTRAORDINARY (M000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Emergency Work or Repairs Due to Floods, State-Maintained Roads (M170)</p>

**DESCRIPTION** Performing all maintenance activities (routine or special) scheduled primarily as a result of floods, including placing of high-water signs and barricades at high-water locations and notifying district office of road closures (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

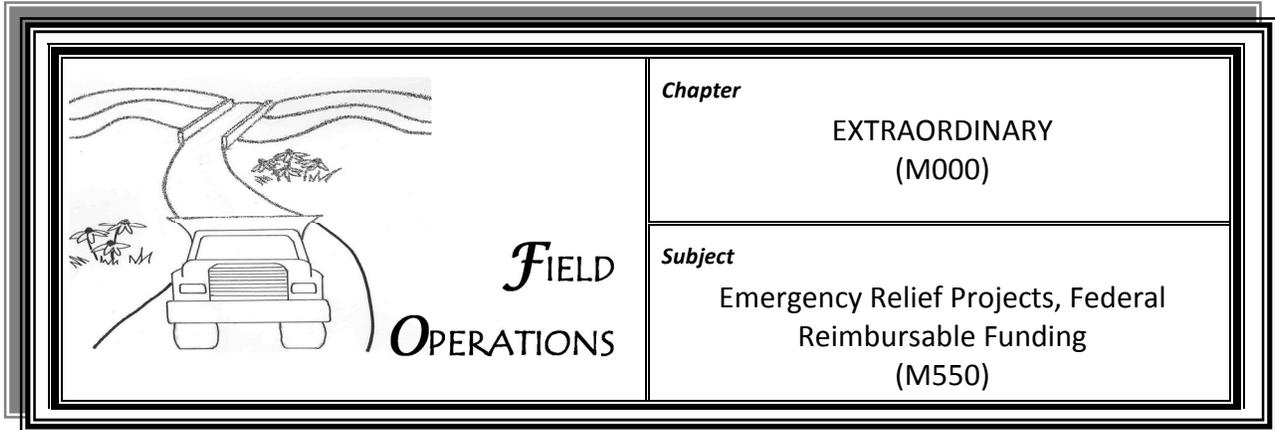
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION**                      Making repairs to state-maintained roads and bridges as a result of a natural disaster

Report work location termini to the nearest <sup>1</sup>/<sub>10</sub> of a mile. Keep a notebook or diary, describing location, personnel, equipment, materials, and type of work. Notify district office of road closures. (Section Required)

**SCHEDULING**                      Perform only as higher authority directs.

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

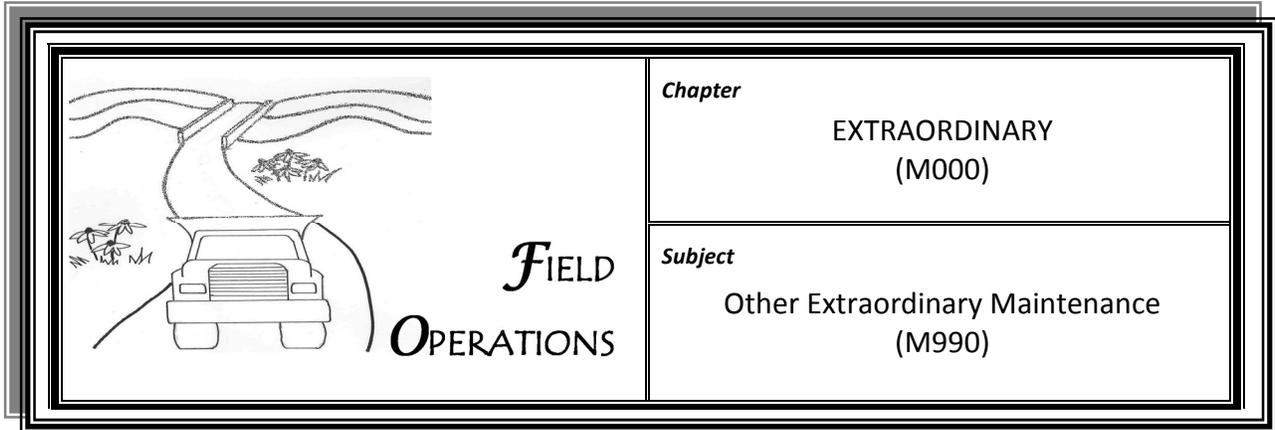
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**                      Perform this work upon approval from higher authority.





**DESCRIPTION** Work required for unspecified causes or natural disasters not covered in Activities M010–M550 (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

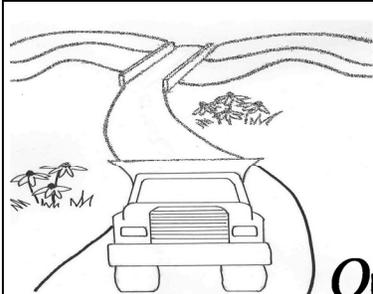
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



 <p style="font-size: 2em; font-weight: bold; margin: 0;">FIELD OPERATIONS</p>	<p><i>Chapter</i></p> <p style="text-align: center;">SERVICE &amp; OVERHEAD (N000)</p> <hr/> <p><i>Subject</i></p> <p style="text-align: center;">Building &amp; Ground Housekeeping (N010)</p>
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**DESCRIPTION** Housekeeping of building and grounds of maintenance and traffic crew headquarters, including maintaining janitorial supplies, mowing grass, sweeping, orderly arranging tools and materials, etc.

This activity does not include repairing buildings, utilities, and equipment or servicing equipment. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) (Sections 3.2 through 3.14) for waste disposal.

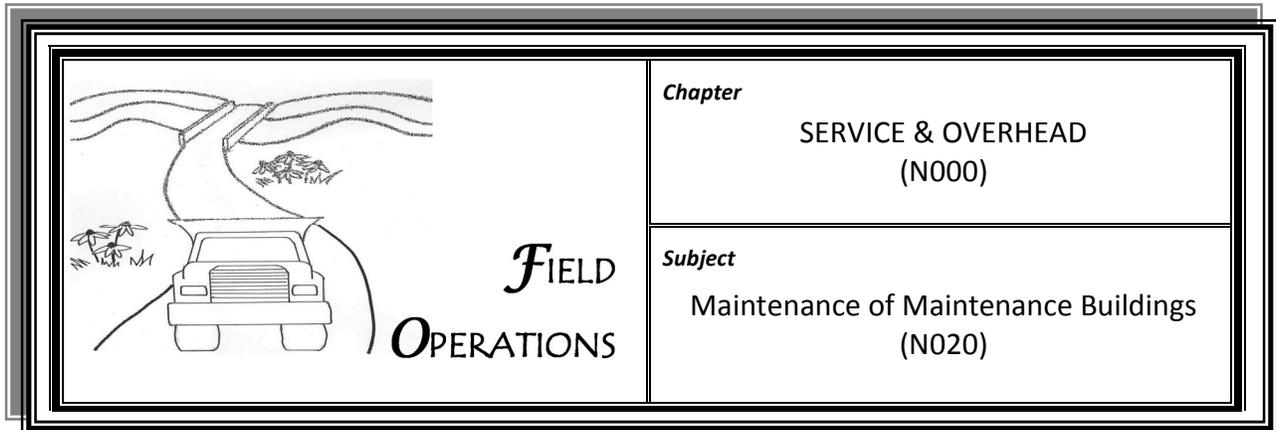
**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Work on any building located on the lot with the maintenance crew headquarters building

Such buildings include those for storage of satellite or section office and any special crew's equipment or materials. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

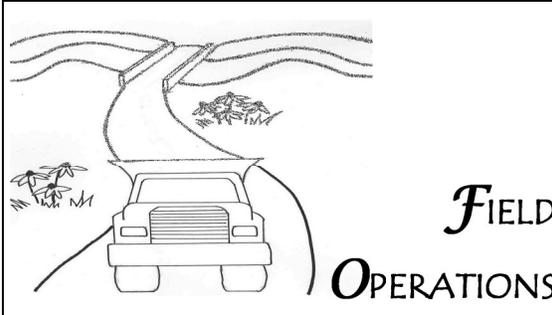
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Equipment Service (N040)

**DESCRIPTION** Servicing equipment such as changing oil and oil filters, washing, and cleaning at the maintenance facility or on the project

This does not include repairs made by equipment personnel or mechanics assigned to maintenance crews. Do not charge cleaning of snow and ice removal equipment to this activity but to [K990](#). (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** Refer to the [Environmental Handbook](#) (Sections 3.2 through 3.14 and Sections 4.1 through 4.8) for waste disposal.

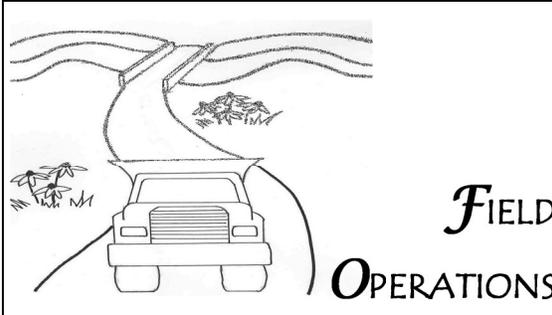
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Inclement Weather & Standby (N050)

**DESCRIPTION** Standby time for maintenance or traffic personnel due to weather conditions

Do not include standby time for snow and ice removal. Do not charge against this activity for performing building and ground maintenance due to inclement weather. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

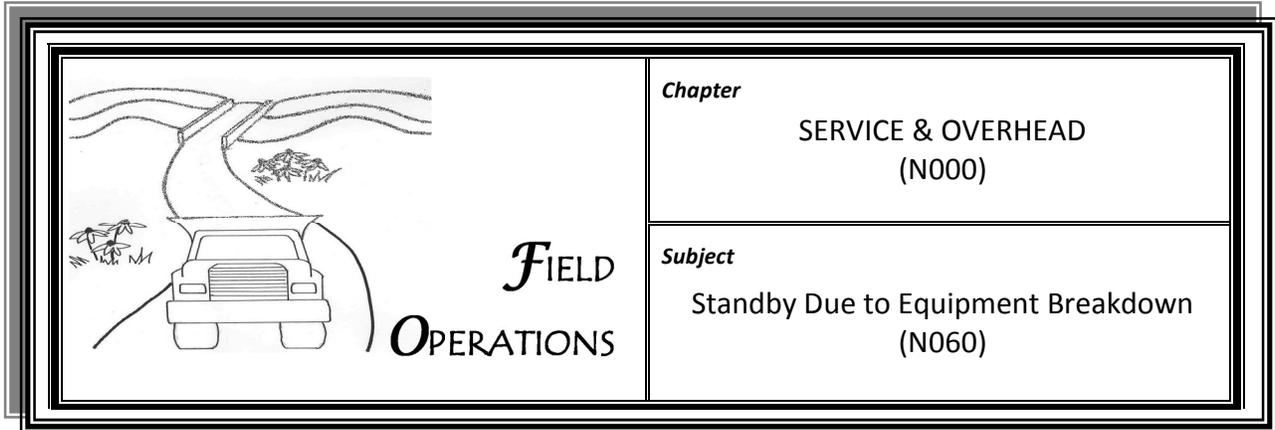
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Standby time for maintenance or traffic personnel due to equipment breakdown

This time shall not exceed one-half day for any activity for a specific day.  
(General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

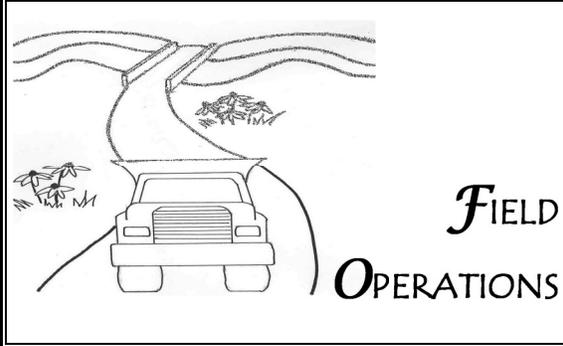
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Engineering & Right of Way (N080)

**DESCRIPTION** This activity is for state personnel other than maintenance or traffic personnel who perform services for the Division of Maintenance or the Division of Traffic Operations or for district maintenance or traffic sections, such as engineering, legal, right of way, etc. This activity excludes inspectors and weight-ticket takers on contract maintenance activities. They are to charge to appropriate activity code. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

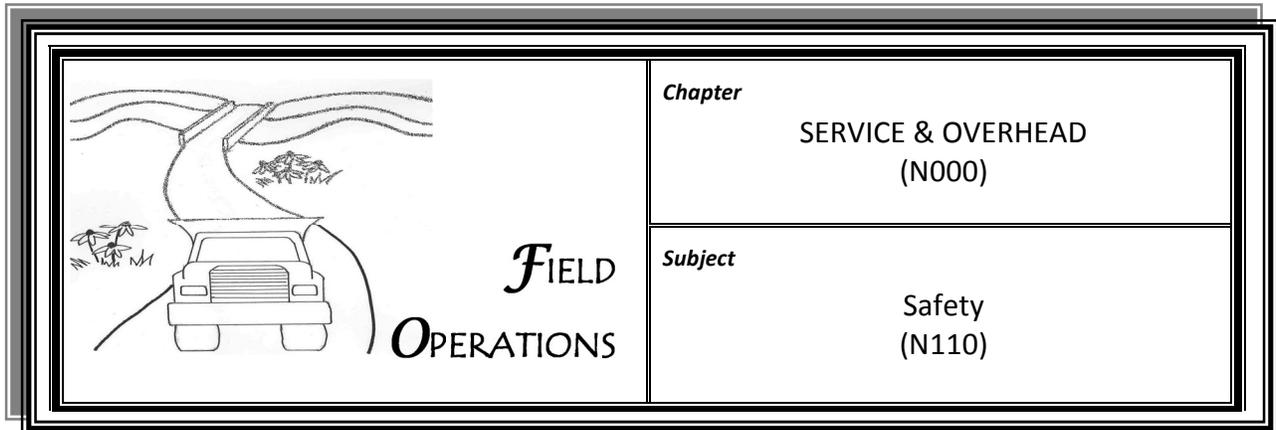
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** This activity is for all maintenance and traffic expenditures related to safety, personnel safety equipment, and safety equipment in maintenance and traffic facilities, including time for safety schools and training sessions, as well as purchases of hard hats, safety glasses, flags, vests, plastic barrels, and other related items. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

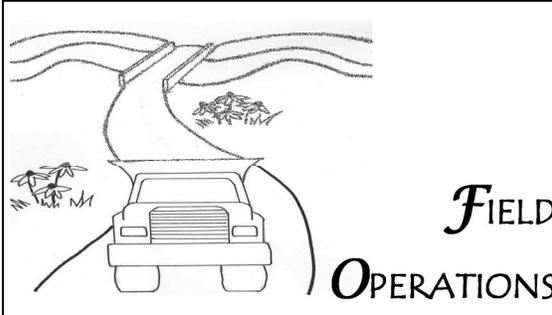
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Training Overhead (N120)

**DESCRIPTION** Expenditures for any courses, training sessions, or seminars—other than for safety training, roadside agronomy training, and snow and ice removal training—conducted for Central Office or district office personnel

Charge safety training to [N110](#), snow and ice removal training to [K120](#), and roadside agronomy to [E120](#). (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

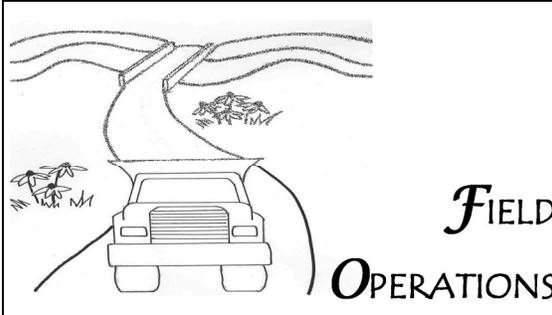
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Permits Supervision (N130)

**DESCRIPTION** Charges made by district office and Central Office personnel assigned to Traffic who work on the evaluation and issuance of permits, including district permits engineers, their assistants, and/or inspectors, but not clerical personnel assigned to the district office (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS**

- Seed and protect all bare soil areas.
- For work that involves disturbance of soil with an area of more than 1 acre, file a KPDES, KYR10 Permit, BMP Plan, and Notice of Intent with the Kentucky Division of Water.

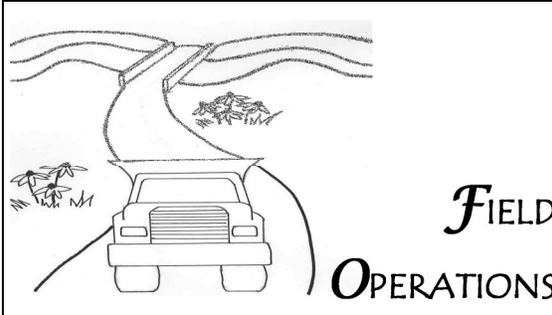
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Central Office General Expense (N140)

**DESCRIPTION** Administrative, supervisory, secretarial, or clerical duties essential to the operations of the Central Office Division of Maintenance and Division of Traffic Operations, as well as the duties of the Central Office Division of Traffic Operations crew and the duty of traffic signal removal (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

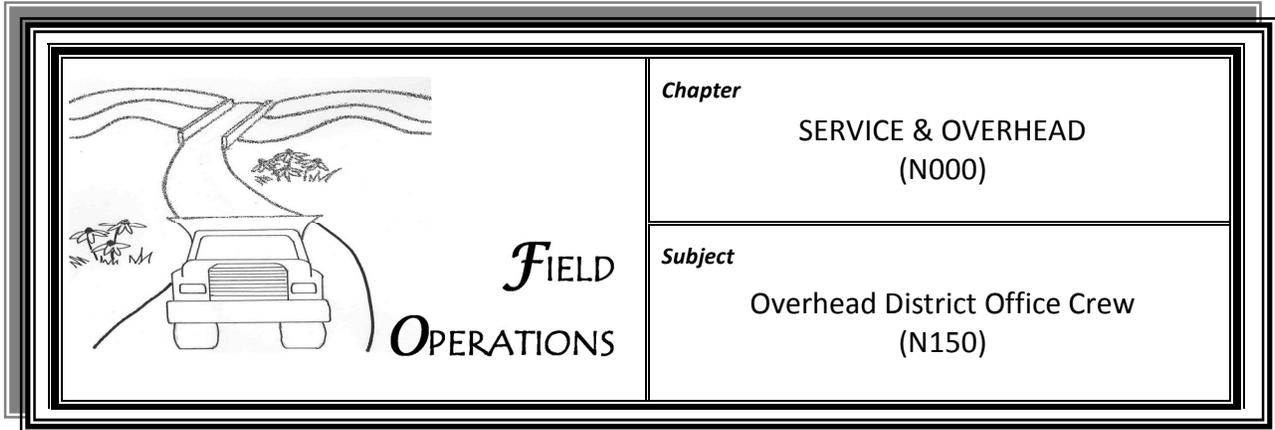
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** All expenditures for district office Project Delivery and Preservation Branch and Engineering Support Branch personnel—except those covered by the permits supervision activity code (N130)—and their related expenses that cannot be charged to a project, including those for district office maintenance or traffic engineers, traffic supervisors, engineer technicians, and agronomists

When possible, charge the expenditures for personnel to a project. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

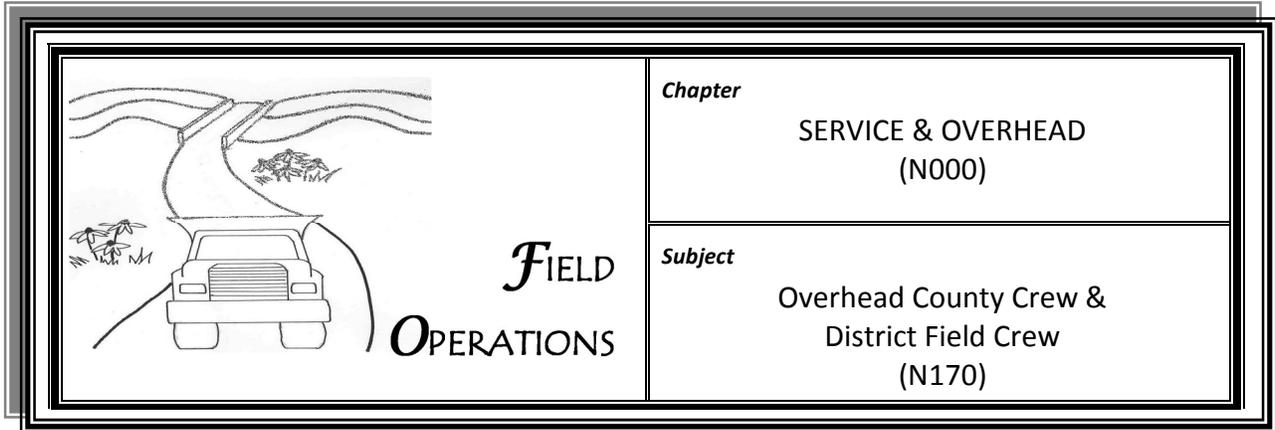
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** All expenditures of a general nature that cannot be charged to a project, including salaries of county foremen and administrative specialists; utilities; purchases and repairs of small tools; supervisory or clerical duties established for the operations of district traffic field crews; and traffic signal removal. When possible, highway superintendents should charge to projects. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

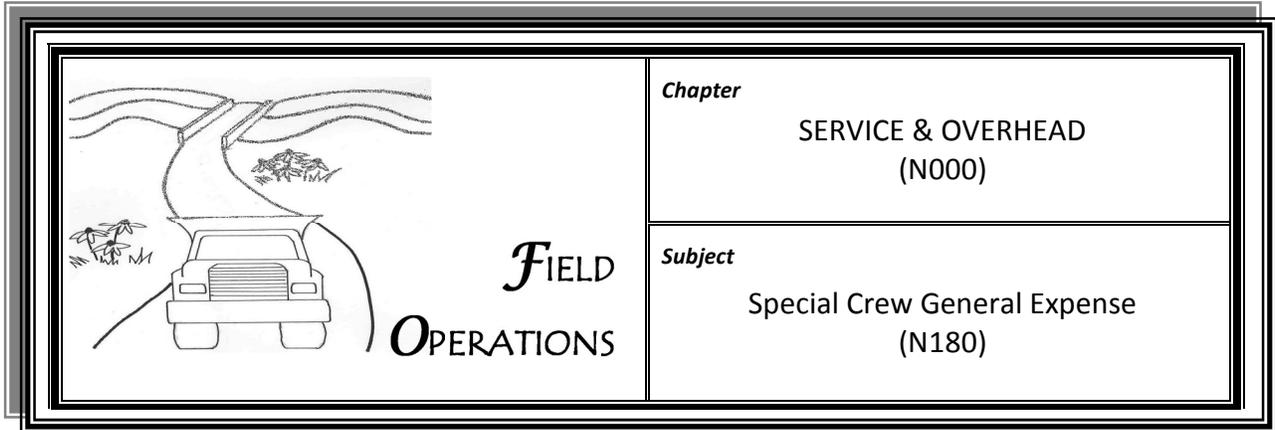
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** All expenditures of a general nature that cannot be charged to a project, including utilities for crew headquarters if different from maintenance crew headquarters and for purchases and repairs of small tools

Charge expenditures for personnel to a project whenever possible. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

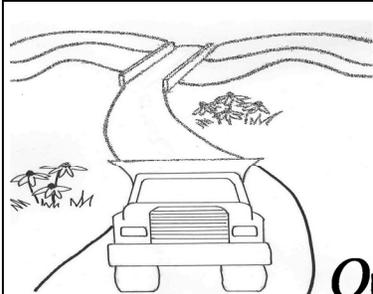
**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p>SERVICE &amp; OVERHEAD (N000)</p>
	<p><i>Subject</i></p> <p>Equipment Overhead (N200)</p>

**DESCRIPTION** Travel and other nonproductive time required to repair and return a piece of equipment; related functions required to make the equipment operable other than repair done by the equipment garage

Do not use this activity code to move a piece of equipment from one project to another. (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

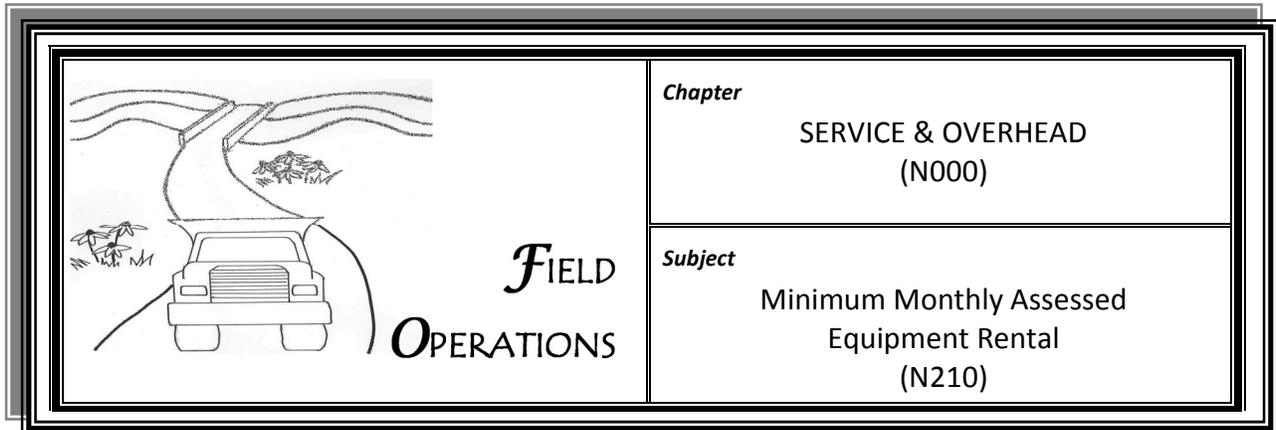
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION**                      Charging for monthly equipment rental fees, using computer

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

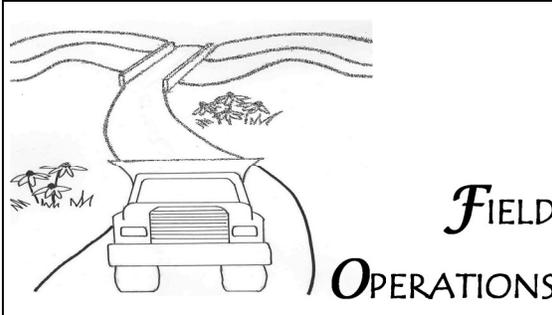
**PERFORMANCE VALUES**

- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**                      Charge made by computer, never manually



	<b>Chapter</b> SERVICE & OVERHEAD (N000)
	<b>Subject</b> Fixed Monthly Charge for Minor Equipment (N220)

**DESCRIPTION**                      Charging for monthly rental fees on minor equipment, using computer

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

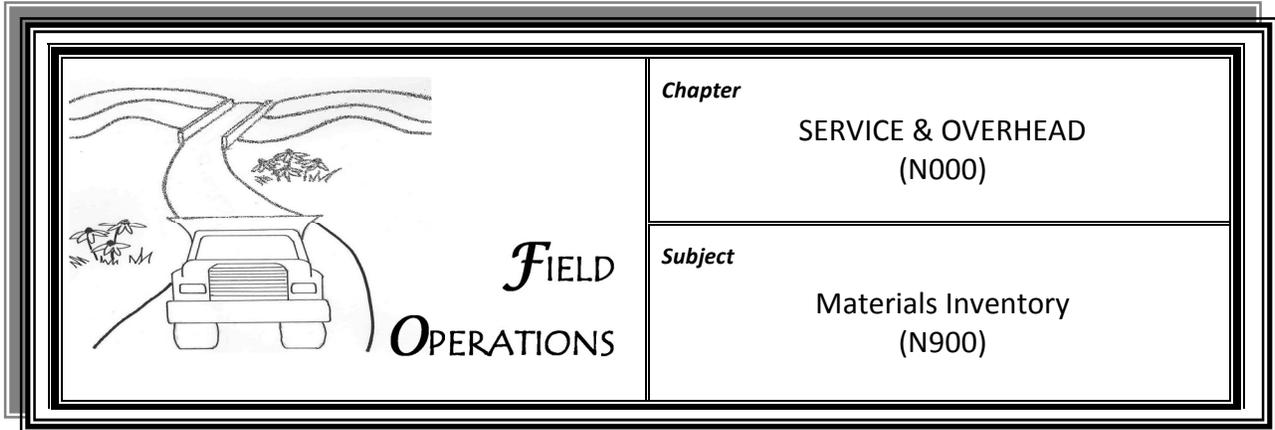
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                                      FE01

**RECOMMENDED PROCEDURE**                      Charge made by computer, never manually





**DESCRIPTION**                      Conducting inventory of parts, supplies, and materials at Central Office and district office levels at the end of each fiscal year or other designated times

Charge all materials purchased for inventory to this activity. (General)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

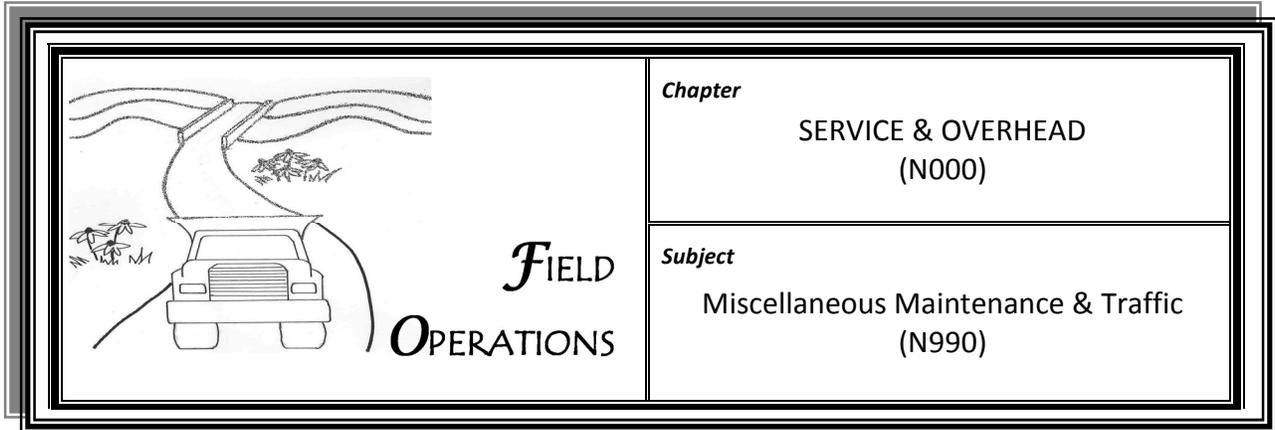
**PERFORMANCE VALUES**

- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**                      As required





**DESCRIPTION** Any maintenance or traffic activity not covered by Activities A010–T990, including Board of Claims hearings, Personnel Board hearings, and Property Loss Control Committee hearings (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

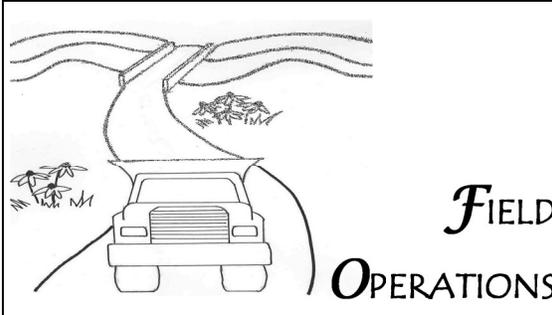
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01, FE04

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> INSPECTION (P000)
	<b>Subject</b> Rest Area Inspections (P010)

**DESCRIPTION** Charges by cross-district teams and Central Office team performing impromptu inspections of rest areas (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

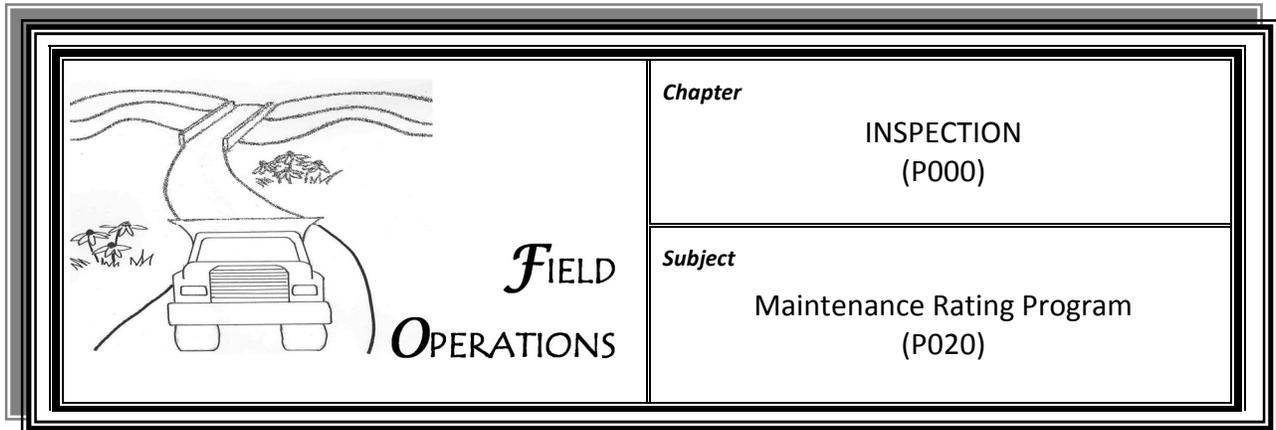
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE07

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Charges by district office and Central Office personnel for data collection for the Maintenance Rating Program (MRP) (General)

**SCHEDULING** Central Office shall provide sections each summer for data collection. Once the district has completed the collection, Central Office staff shall conduct follow-up surveys to identify any potential issues related to recording or collecting data.

**RECOMMENDED PERSONNEL** Highway Equipment Operator or others (2-3)

**RECOMMENDED EQUIPMENT**

Pickup truck or other vehicle with DMI	(1)
Rolling wheel measure	(1)
Rut bar (6 feet long straight 1-inch by 1-inch aluminum)	(1)
Reflectometer for striping, if available	(1)

**RECOMMENDED MATERIALS**

- Marking paint
- Clipboard and pencils
- MRP inspection forms and manual
- Route log
- Ruler
- Traffic paddles
- Safety vest for each team member

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

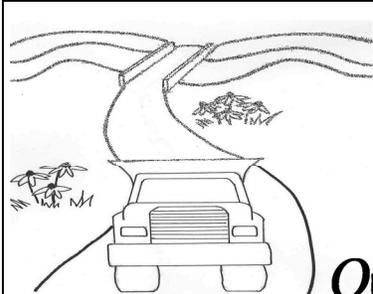
**FUNCTION**

FE01

**RECOMMENDED  
PROCEDURE**

- Sampling unit shall be a 500-foot roadway segment, including all adjacent right of way.
- If a bridge, large intersection, or construction zone is within the segment, move forward in the direction the segment runs to the beginning point of the first clear section. If a construction zone is so long that it reaches another sample segment before becoming clear, note that in the bottom margin of the *MRP Inspection Form* and skip the segment.
- Remain constantly aware of the team's safety and the safety of the traveling public. Each team member shall wear a safety vest when outside any vehicle at an inspection site.
- Mark the beginning mile point (the starting point of the segment) with paint on the edge of the pavement. Then, in the specified direction, mark every 100 feet.
- Unless the inspection form indicates a direction, record measurements and observations on both sides of the roadway segment. If the form indicates a direction, record measurements and observations in only that direction (usually interstates and parkways).
- To avoid recording in the wrong line on the inspection form, do not skip lines or leave them blank. Always write "0" when there is no measure to record. Never record "N/A" or a dash on the form.
- Refer to the [MRP Manual](#) for specific guidelines on how to make and record observations.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">INSPECTION (P000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Environmental Compliance (P030)</p>

**DESCRIPTION** Charges by district office and Central Office personnel related to environmental compliance (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** See the [Environmental Handbook](#) (3.15, "Stormwater Management").

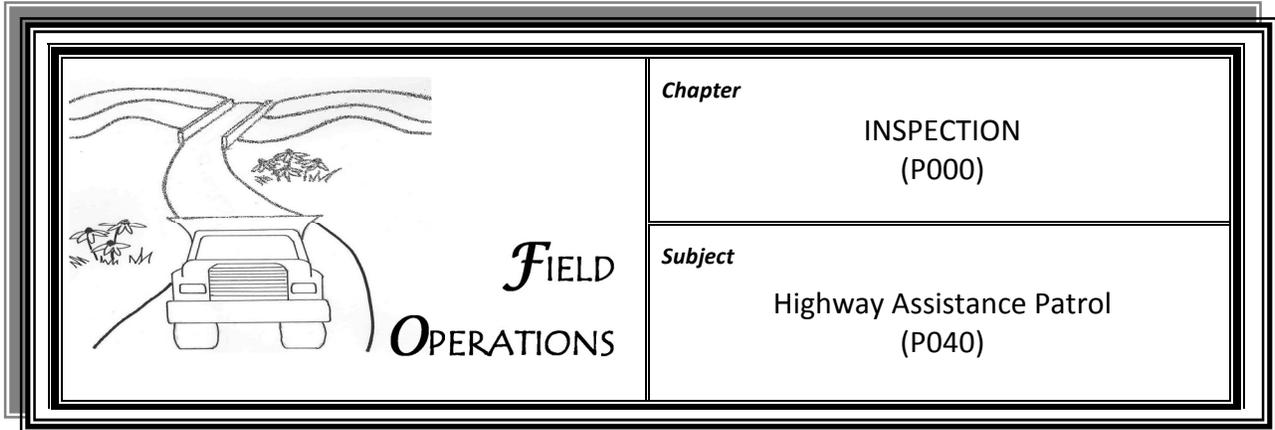
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Charges by district office personnel for operation of SAFE patrol vehicles (Section Required)

**SCHEDULING** Generally, perform year-round between 5 a.m. and 9 p.m. weekdays or as required in emergencies.

**RECOMMENDED PERSONNEL** Highway Equipment Operator (1)

**RECOMMENDED EQUIPMENT** 1-ton cargo van (1)

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

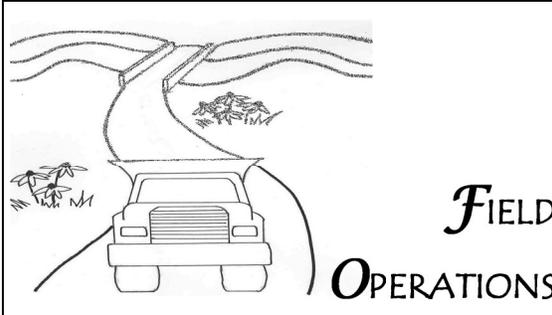
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE04

**RECOMMENDED PROCEDURE**

1. Traverse a continuous loop throughout defined patrol area.
2. Provide basic mechanical and emergency assistance to stranded motorists.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Painting Centerlines (T010)

**DESCRIPTION**                      Painting the centerline markings on all roadway surfaces for vehicular control and delineation of permitted or prohibited passing

Include pavement marking layout. Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING**                      Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint centerline markings as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED**

**PERSONNEL**                      Heavy Equipment Operator                      (2)  
    Highway District Crew Foreman                      (1)  
    Light Equipment Operator                      (1)  
    Special Equipment Operator                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Centerline striper                      (1)  
    Pickup truck                      (1)  
    Paint truck                      (1)

**RECOMMENDED**

**MATERIALS**                      Yellow paint  
    Glass beads  
    Thinner (for cleaning purposes)

**ENVIRONMENTAL**

**IMPACT**                              Use procedures in compliance with the *Environmental Handbook* to manage all wastes created by painting and by cleaning of equipment after painting. Wastewater from cleaning paint equipment is not allowed in a Type B floor drain.

**PERFORMANCE****VALUES**

- |                       |       |
|-----------------------|-------|
| ➤ Hours Per Unit      | 2.000 |
| ➤ Daily Expectation   | 20    |
| ➤ Accomplishment Unit | Mile  |

**FUNCTION**

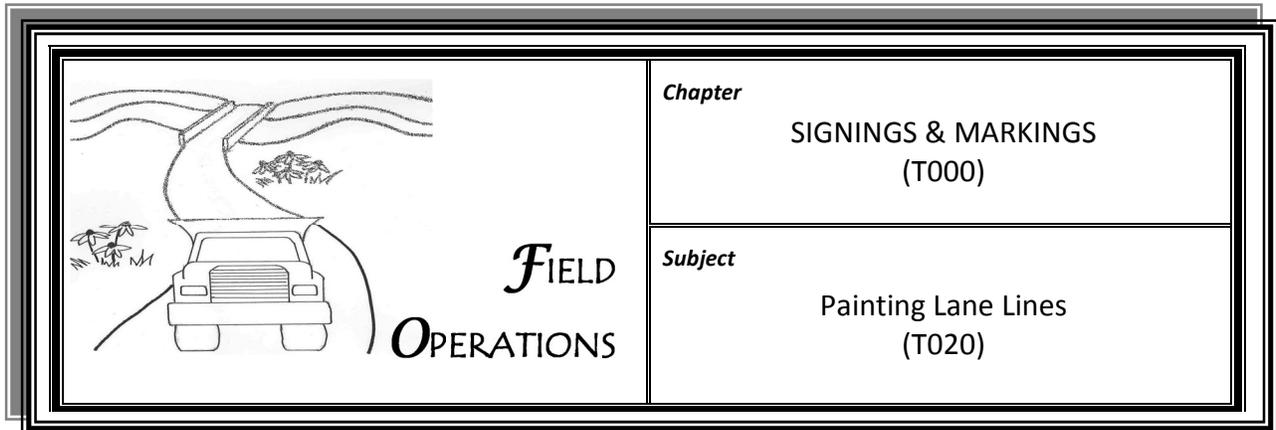
FE01

**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming if necessary.
3. Assign personnel as follows:
  - Two or three workers set up striper.
  - One worker drives pilot vehicle ahead of striper.
  - Three workers operate striper.
  - One worker drives paint-supply truck and relocates safety devices.
4. Clean up equipment, and remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION**                      Painting the lane-line markings on all roadway surfaces for vehicular traffic control and for delineation of lane separation for roadway use

Include pavement markings layout. Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING**                      Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint lane-line markings as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED**

**PERSONNEL**                      Heavy Equipment Operator                      (2)  
    Highway District Crew Foreman                      (1)  
    Light Equipment Operator                      (1)  
    Special Equipment Operator                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Centerline striper                      (1)  
    Pickup truck                      (1)  
    Paint truck                      (1)

**RECOMMENDED**

**MATERIALS**                      White paint  
    Glass beads

**ENVIRONMENTAL**

**IMPACTS**                      Use procedures in compliance with the *Environmental Handbook* to manage all wastes created by painting and by cleaning of equipment after painting. Wastewater from cleaning paint equipment is not allowed in a Type B floor drain.

**PERFORMANCE****VALUES**

- Hours Per Unit 2.000
- Daily Expectation 20
- Accomplishment Unit Mile

**FUNCTION**

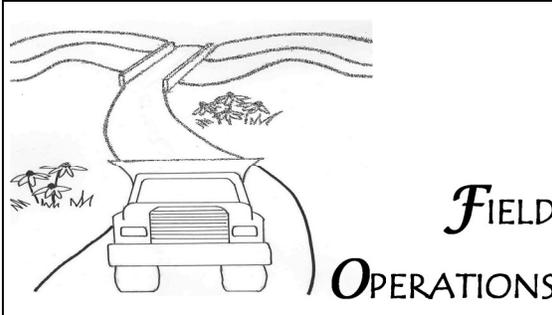
FE01

**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming if necessary.
3. Assign personnel as follows:
  - Two or three workers set up striper.
  - One worker drives pilot vehicle ahead of striper.
  - Three workers operate striper.
  - One worker drives paint-supply truck and relocates safety devices.
4. Clean up equipment, and pick up traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Painting Edge Lines (T030)

**DESCRIPTION** Delineating the edge of a traveled way, using white paint to separate the right lane from the shoulder and using yellow paint to distinguish the left edge of the pavement

Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING** Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint edge-line markings as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED**

**PERSONNEL**

Heavy Equipment Operator	(2)
Highway District Crew Foreman	(1)
Light Equipment Operator	(1)
Special Equipment Operator	(1)

**RECOMMENDED**

**EQUIPMENT**

Centerline striper	(1)
Pickup truck	(1)
Paint truck	(1)

**RECOMMENDED**

**MATERIALS**

- White paint
- Yellow paint
- Glass beads
- Thinner (for cleaning purposes)

**ENVIRONMENTAL**

**IMPACTS** Use procedures in compliance with the *Environmental Handbook* to manage all wastes created by painting and by cleaning of equipment after painting. Wastewater from cleaning paint equipment is not allowed in a Type B floor drain.

**PERFORMANCE****VALUES**

- |                       |       |
|-----------------------|-------|
| ➤ Hours Per Unit      | 2.000 |
| ➤ Daily Expectation   | 20    |
| ➤ Accomplishment Unit | Mile  |

**FUNCTION**

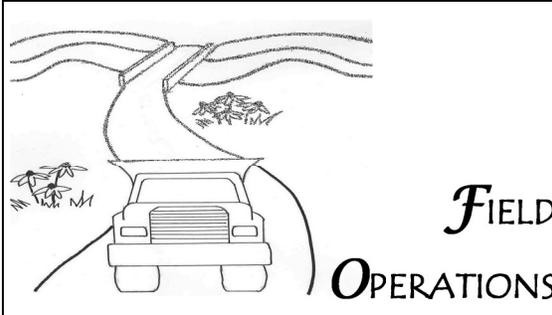
FE01

**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming if necessary.
3. Assign personnel as follows:
  - Two or three workers set up striper.
  - One worker drives pilot vehicle ahead of striper.
  - Three workers operate striper.
  - One worker drives paint-supply truck and relocates safety devices.
4. Clean up equipment, and pick up traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Hand-Placing Pavement Markings (T040)

**DESCRIPTION** Delineating the edge of a traveled way, using white paint to separate the right lane from the shoulder and using yellow paint to distinguish the left edge of the pavement

Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING** Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint edge-line markings as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED PERSONNEL** Light Equipment Operator (3)

**RECOMMENDED EQUIPMENT** Pickup truck (1)

**RECOMMENDED MATERIALS**  
 Tape  
 Yellow paint  
 White paint  
 Glass beads

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

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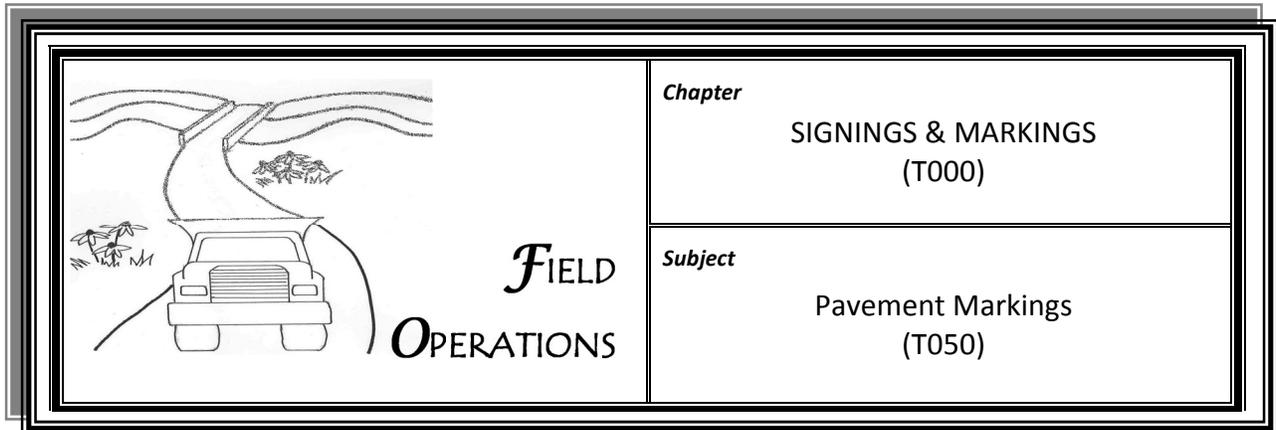
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming if necessary.
3. Place cones.
4. Prepare layout, or set stencils.
5. Place symbols and markings.
6. Place glass beads by hand.
7. Retrieve cones.
8. Clean up, and pick up traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION** Delineating the edge of a traveled way, using white paint to separate the right lane from the shoulder and using yellow paint to distinguish the left edge of the pavement

Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING** Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint edge-line markings as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED PERSONNEL** Light Equipment Operator (3)

**RECOMMENDED EQUIPMENT** Paint truck (1)  
Hand-pushed striper (1)

**RECOMMENDED MATERIALS** Yellow paint  
White paint  
Glass beads  
Thinner (for cleaning purposes)

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

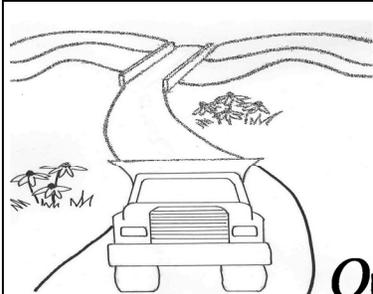
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Place cones and traffic-control devices as necessary.
2. Prepare roadway by hand brooming.
3. Prepare layout, and locate markings to be placed.
4. Paint markers.
5. Place glass beads by hand.
6. Retrieve cones.
7. Clean up equipment, and pick up traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="font-size: 2em; font-weight: bold; margin: 0;">FIELD OPERATIONS</p>	<p><i>Chapter</i></p> <p style="text-align: center;">SIGNINGS &amp; MARKINGS (T000)</p> <hr/> <p><i>Subject</i></p> <p style="text-align: center;">Hand-Placing Pavement Markers (T060)</p>
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**DESCRIPTION**                      Placing pavement markers by hand; installing new markers or replacing damaged and worn ones (not a moving operation) (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      Light Equipment Operator                      (3)

**RECOMMENDED EQUIPMENT**                      Pickup truck                      (1)

**RECOMMENDED MATERIALS**                      Adhesives  
Pavement markers

**ENVIRONMENTAL IMPACTS**                      Recycle packaging materials, when possible.

**PERFORMANCE VALUES**

- Hours Per Unit                      0.240
- Daily Expectation                      100
- Accomplishment Unit                      Marker

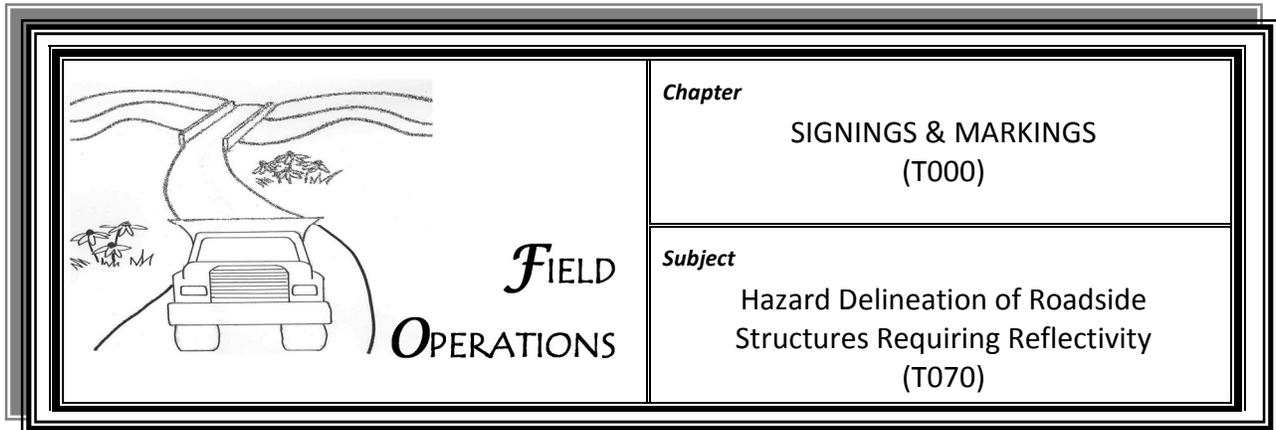
**FUNCTION**                      FE01

**RECOMMENDED PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare pavement for installations.
3. Mix adhesive, or prepare other attachment devices.
4. Place pavement markers.
5. Pick up traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.





**DESCRIPTION**                      Placing reflective materials on structures that need illumination to identify and make motorists aware of position (Section Required)

**SCHEDULING**                      Place as needed to identify existing markers as reflectivity deteriorates.

**RECOMMENDED PERSONNEL**                      Light Equipment Operator                      (2)

**RECOMMENDED EQUIPMENT**                      Pickup truck                      (1)  
Paintbrushes

**RECOMMENDED MATERIALS**                      Yellow paint  
White paint  
Glass beads  
Adhesive markers  
Reflective liquid  
Reflective tape

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION**                      FE01

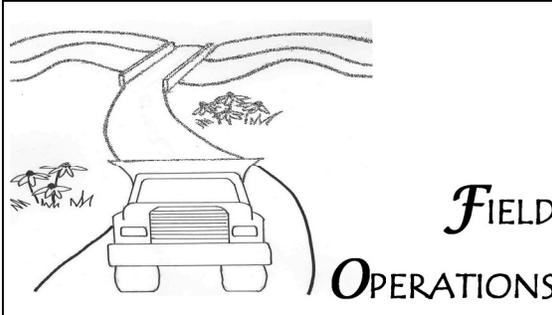
**RECOMMENDED**

**PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare surfaces to be painted by cleaning, laying out, or drying.
3. Apply material, tape, codit, panel, and beads to surface.
4. Clean equipment.
5. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Thermoplastic Pavement Markers (T080)

**DESCRIPTION** Placing different symbols, lines, or legends on pavement with thermoplastic material (including placing of precut thermoplastic); setting up, picking up, and applying signs and cone (Section Required)

**SCHEDULING** Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Observe seasonal and temperature limitations for thermoplastic.

**RECOMMENDED PERSONNEL**

Highway District Crew Foreman	(1)
Light Equipment Operator	(3)

**RECOMMENDED EQUIPMENT**

Pickup truck	(1)
Flatbed truck (1 ton)	(1)
Thermoplastic machine (if used)	(1)
Propane torch (if used)	(1)

**RECOMMENDED MATERIALS**

- Thermoplastic material
- Glass beads

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

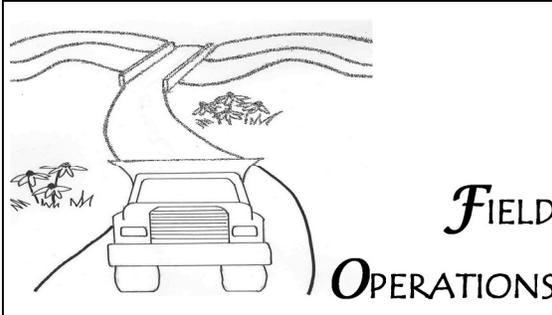
**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming.
3. Place cones.
4. Prepare layout, or set stencils.
5. Place symbols and markings.
6. Retrieve cones.
7. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<p><i>Chapter</i></p> <p>SIGNINGS &amp; MARKINGS (T000)</p>
	<p><i>Subject</i></p> <p>Painting Centerlines &amp; Edge Lines (T100)</p>

**DESCRIPTION**                      Painting the centerline and edge line markings on all roadway surfaces for vehicular control to delineate where permitted or prohibited passing

Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING**                      Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint markings as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED**

**PERSONNEL**                      Highway Equipment Operator                      (2)  
    Highway District Crew Foreman                      (1)  
    Light Equipment Operator                      (3)  
    Special Equipment Operator                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Paint truck                      (1)  
    Centerline striper                      (1)

**RECOMMENDED**

**MATERIALS**                      Yellow paint  
    White paint  
    Glass beads  
    Thinner

**ENVIRONMENTAL**

**IMPACTS**                      Recycle packaging materials when possible.

**PERFORMANCE****VALUES**

- Hours Per Unit 1.600
- Daily Expectation 25
- Accomplishment Unit Mile

**FUNCTION**

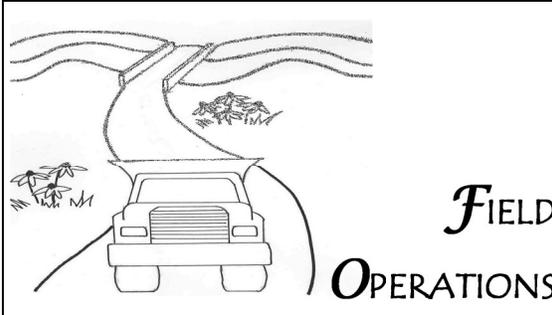
FE01

**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming, if necessary.
3. Assign personnel as follows:
  - Two or three workers set up striper.
  - One worker drives pilot vehicle ahead of striper.
  - Three workers operate striper.
  - One worker drives paint-supply truck and relocates safety devices.
4. Clean up equipment, and remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<p><i>Chapter</i></p> <p>SIGNINGS &amp; MARKINGS (T000)</p>
	<p><i>Subject</i></p> <p>Painting Lane Lines &amp; Edge Lines (T110)</p>

**DESCRIPTION**                      Painting the lane lines and edge lines on all roadway surfaces for vehicular traffic control to delineate lane separations for roadway use

Report accomplishments by recording the number of miles the striper traveled when painting the subject line, that is, the speedometer mileage for the distance striped. (Section Required)

**SCHEDULING**                      Schedule at the region in coordination with resurfacing and sealing activities that destroy existing markings. Paint lane lines and edge lines as soon as possible after resurfacing operations. Observe seasonal and temperature limitations for painting.

**RECOMMENDED**

**PERSONNEL**                      Highway Equipment Operator                      (2)  
    Highway District Crew Foreman                      (1)  
    Light Equipment Operator                      (1)  
    Special Equipment Operator                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Pickup truck                      (1)  
    Paint truck                      (1)  
    Centerline striper                      (1)

**RECOMMENDED**

**MATERIALS**                      Yellow paint  
    White paint  
    Glass beads  
    Thinner

**ENVIRONMENTAL**

**IMPACTS**                      Use procedures in compliance with the *Environmental Handbook* to manage all wastes created by painting and by cleaning of equipment after painting. Wastewater from cleaning paint equipment is not allowed in a Type B floor drain.

**PERFORMANCE****VALUES**

- Hours Per Unit 1.600
- Daily Expectation 25
- Accomplishment Unit Mile

**FUNCTION**

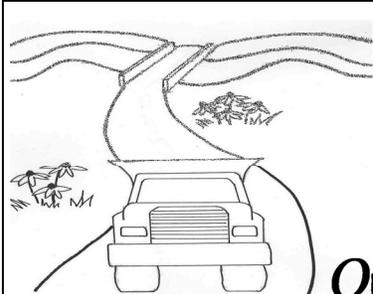
FE01

**RECOMMENDED****PROCEDURE**

1. Place traffic-control devices as necessary.
2. Prepare roadway by brooming, if necessary.
3. Assign personnel as follows:
  - Two or three workers set up striper.
  - One worker drives pilot vehicle ahead of striper.
  - Three workers operate striper.
  - One worker drives paint-supply truck and relocates safety devices.
4. Clean up equipment, and remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">SIGNINGS &amp; MARKINGS (T000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Traffic Contract Expenditures &amp; Engineering Expenses for Pavement Marking Projects (T190)</p>

**DESCRIPTION**                      Inspecting pavement-marking projects to ensure compliance with Cabinet standards

This activity may involve Department of Highways personnel other than Division of Traffic Operations personnel for consultants or contract inspection and supervision. (Central Office Use Only)

**SCHEDULING**                      None

**RECOMMENDED PERSONNEL**                      None

**RECOMMENDED EQUIPMENT**                      None

**RECOMMENDED MATERIALS**                      None

**ENVIRONMENTAL IMPACTS**                      None

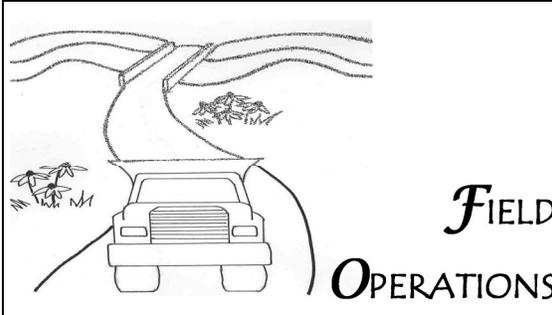
**PERFORMANCE VALUES**

- Hours Per Unit    N/A
- Daily Expectation    N/A
- Accomplishment Unit    Hour

**FUNCTION**                                      FE01

**RECOMMENDED PROCEDURE**                      None



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Placement of New Sheeting Signs, Mileposts, & Posts (T200)

**DESCRIPTION** Installing new signs (all classifications), with sheeting background; making field preparation; erecting post-mounting signs

**SCHEDULING** Perform as needed for additional guidance, warning, or informing motorists of required regulations.

**RECOMMENDED PERSONNEL** Light Equipment Operator (3)

**RECOMMENDED EQUIPMENT** Pickup truck (with necessary tools) (1)

**RECOMMENDED MATERIALS** Steel post  
Wood post  
Signs

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

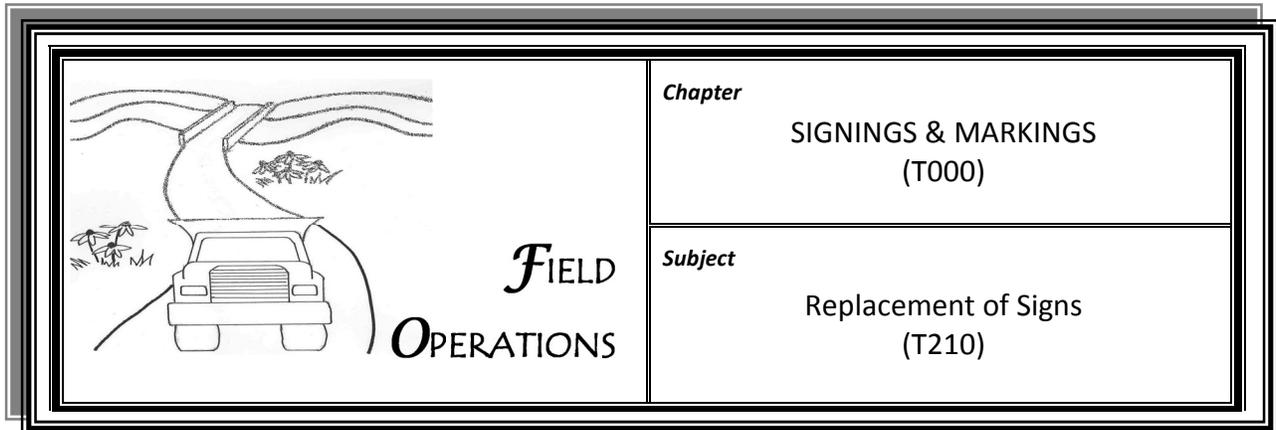
- Hours Per Unit 1.600
- Daily Expectation 15
- Accomplishment Unit Sign

**FUNCTION** FE01

**RECOMMENDED  
PROCEDURE**

1. Obtain from the shop the necessary hardware for installing posts and signs.
2. Load necessary number of signs and posts.
3. Place traffic-control devices as necessary.
4. Take out and put away necessary tools, equipment, and materials when necessary.
5. Set new posts. Drill or dig hole, set plumb, and backfill post to required height.
6. Attach sign. Drill holes through post at proper location. Attach sign (usually before erecting post).
7. Remove traffic-control devices.





**DESCRIPTION**                      Placing new sheeting signs to replace existing signs that have been removed or destroyed by accidents or vandalism or that have become illegible due to normal weather and age

This activity does not include the reuse or reinstallation of an existing sign. Charge such activity to T240. This activity does include the replacement of mileposts. (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      Light Equipment Operator                      (3)

**RECOMMENDED EQUIPMENT**                      Pickup truck (with necessary tools)                      (1)

**RECOMMENDED MATERIALS**                      Steel or wood post, as required  
Signs

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

- Hours Per Unit                      1.600
- Daily Expectation                      15
- Accomplishment Unit                      Sign

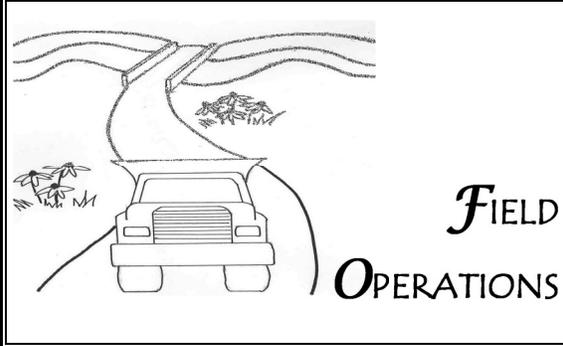
**FUNCTION**                      FE01

**RECOMMENDED**

**PROCEDURE**

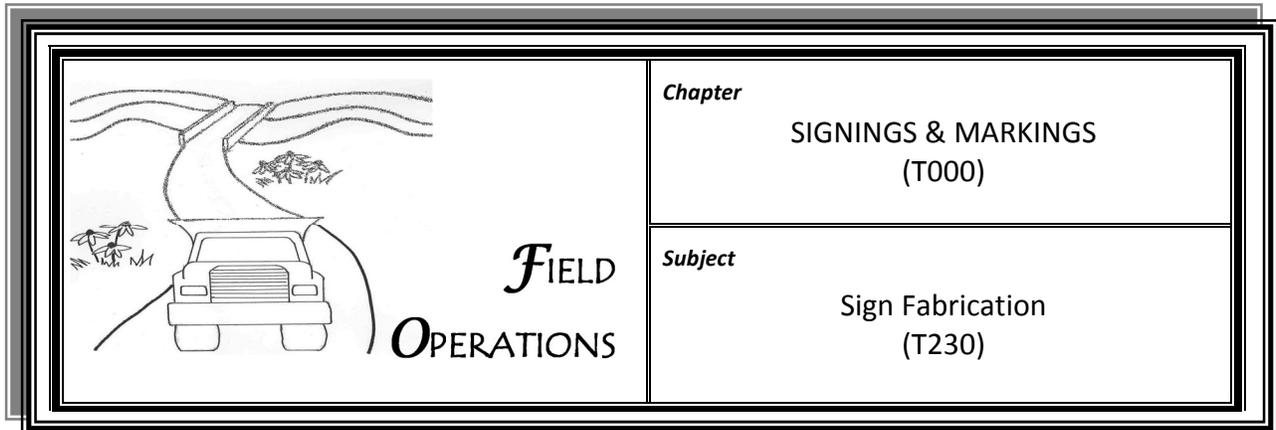
1. Locate sign or milepost needing replacement.
2. Load truck with necessary equipment and materials.
3. Place traffic-control devices as necessary.
4. Remove old sign or milepost.
5. Set new post, if necessary.
6. Attach new sign.
7. Remove traffic-control devices.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Applying Reflective Sheeting (T220)

<b>DESCRIPTION</b>	Applying reflective sheeting with no message to sign blanks	
	Do not charge materials to this activity. (General)	
<b>SCHEDULING</b>	Perform this activity as sign needs dictate. Plan scheduling to fabricate a large quantity of signs for more efficient operation.	
<b>RECOMMENDED PERSONNEL</b>	Light Equipment Operator	(1)
	Sign Painter	(1)
<b>RECOMMENDED EQUIPMENT</b>	Vacuum applicator	(1)
	Miscellaneous shop equipment	
<b>RECOMMENDED MATERIALS</b>	Reflective products	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	0.320
	➤ Daily Expectation	50
	➤ Accomplishment Unit	Sign
<b>FUNCTION</b>	FE01	
<b>RECOMMENDED PROCEDURE</b>	1. Schedule and plan sign needs. 2. Apply sheeting in vacuum applicator.	





**DESCRIPTION**                      Making signs on prepared blanks

The process may involve the application of message only by silk screening or cutout letters or the application of prepared sign face in the vacuum applicator to a sign blank. Do not charge materials to this activity. (General)

**SCHEDULING**                      Perform this process as sign needs dictate. Plan scheduling to fabricate a large quantity of signs for more efficient operation.

**RECOMMENDED PERSONNEL**

Light Equipment Operator	(1)
Sign Painter	(1)

**RECOMMENDED EQUIPMENT**

Vacuum applicator	(1)
Miscellaneous shop equipment	

**RECOMMENDED MATERIALS**

Reflective products  
Silk screen enamel

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

➤ Hours Per Unit	0.640
➤ Daily Expectation	25
➤ Accomplishment Unit	Sign

**FUNCTION**                      FE01

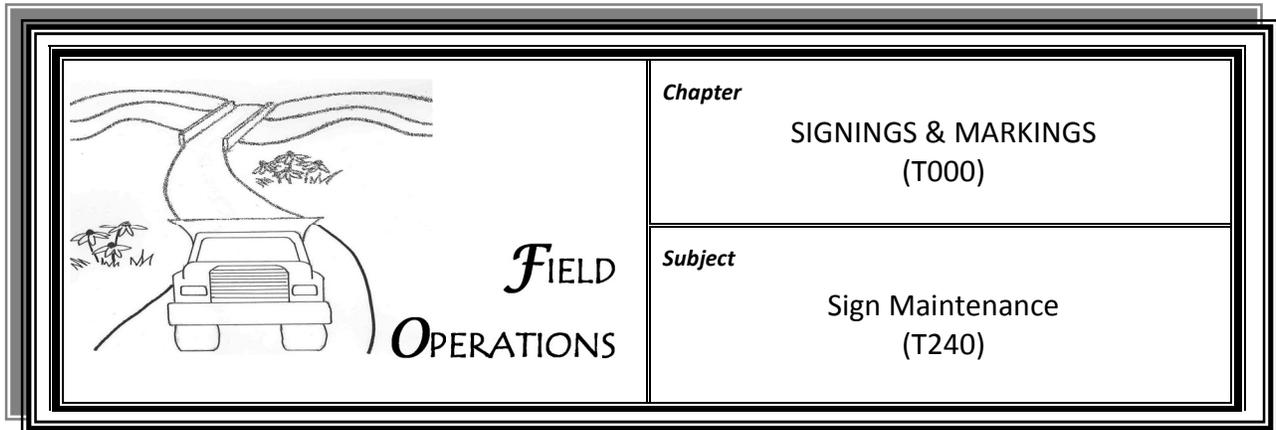
**RECOMMENDED  
PROCEDURE I**

1. Schedule and plan sign needs.
2. Apply sheeting in vacuum applicator.

**RECOMMENDED  
PROCEDURE II**

1. Schedule and plan sign needs.
2. Apply legends by silk screening or in vacuum applicator with cutout letters.
3. Allow signs ample time to dry.





**DESCRIPTION**                      Repositioning, straightening, patching, cleaning, or replacing bolts on existing sign installations

This activity also includes work accomplished by replacing signposts and reinstalling existing signs knocked down or blown over.

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      Light Equipment Operator                      (3)

**RECOMMENDED EQUIPMENT**                      Pickup truck                      (1)

**RECOMMENDED MATERIALS**                      Steel or wood post, as required

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

- Hours Per Unit                      1.000
- Daily Expectation                      24
- Accomplishment Unit                      Sign

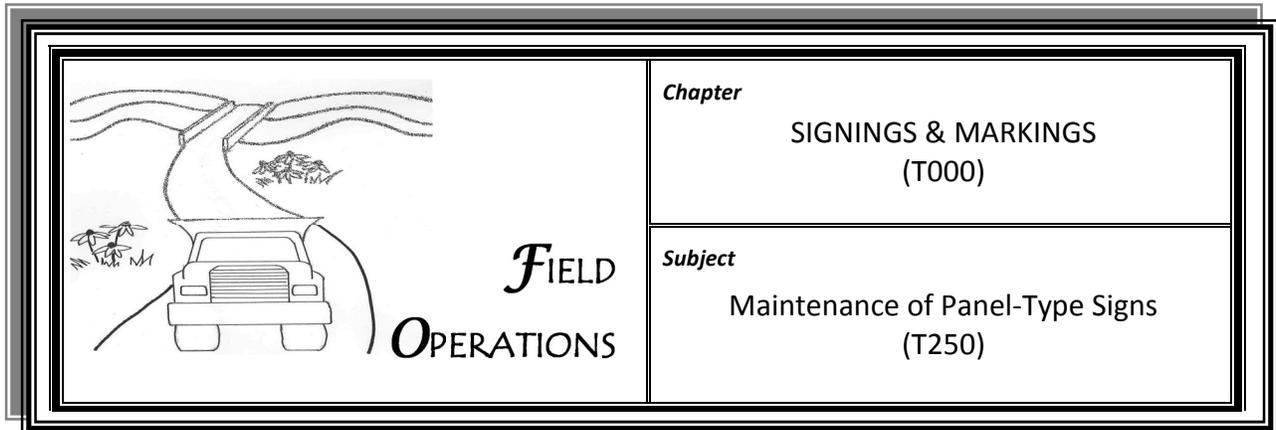
**FUNCTION**                      FE01

**RECOMMENDED**

**PROCEDURE**

1. Locate signs needing repair.
2. Load truck with necessary equipment and materials.
3. Place traffic-control devices.
4. Repair old sign and post as needed.
5. Set new post, if necessary.
6. Reinstall existing sign.
7. If new post unnecessary, straighten post.
8. Remove traffic-control devices.





**DESCRIPTION**                      Straightening or cleaning panels on existing signs or repairing or replacing damaged panels

**SCHEDULING**                      Perform as required to maintain effective service as a traffic-control device.

**RECOMMENDED**

**PERSONNEL**                      Heavy Equipment Operator                      (1)  
    Light Equipment Operator                      (3)  
    Highway District Crew Foreman                      (1)

**RECOMMENDED**

**EQUIPMENT**                      Truck with necessary tools                      (1)  
    Bucket or ladder truck                      (1)  
    Sign-cleaning equipment  
    Flashing arrows

**RECOMMENDED**

**MATERIALS**                      Sign panel and necessary equipment

**ENVIRONMENTAL**

**IMPACTS**                              None

**PERFORMANCE**

**VALUES**

- Hours Per Unit                              40.000
- Daily Expectation                              1
- Accomplishment Unit                              Sign

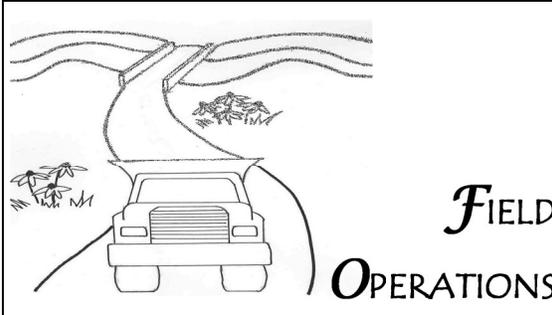
**FUNCTION**                              FE01

**RECOMMENDED  
PROCEDURE**

1. Prepare trucks with necessary equipment and materials.
2. Place traffic-control devices as necessary.
3. Make necessary maintenance operation by cleaning, straightening, replacing, or repairing panel.
4. Remove traffic-control devices.

**Special Note:** Determine accomplishment before leaving job site.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Placement of New Delineators (T260)

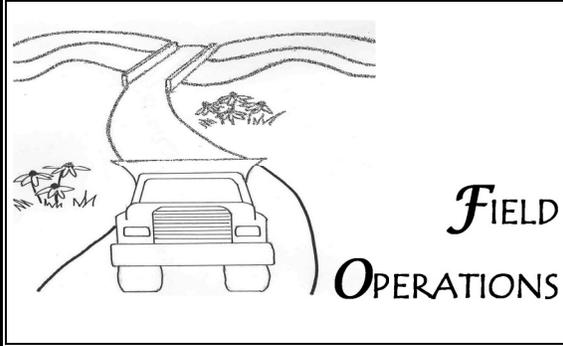
<b>DESCRIPTION</b>	Installing new delineators, which includes field preparation, erecting posts, attaching delineators	
<b>SCHEDULING</b>	Perform as needs for additional guidance or warnings to motorists are required.	
<b>RECOMMENDED PERSONNEL</b>	Light Equipment Operator	(3)
<b>RECOMMENDED EQUIPMENT</b>	Truck w/necessary tools	(1)
<b>RECOMMENDED MATERIALS</b>	Steel post Delineators	
<b>ENVIRONMENTAL IMPACTS</b>	None	
<b>PERFORMANCE VALUES</b>	➤ Hours Per Unit	0.800
	➤ Daily Expectation	30
	➤ Accomplishment Unit	Delineator
<b>FUNCTION</b>	FE01	

**RECOMMENDED**

**PROCEDURE**

1. Obtain necessary hardware (tools, equipment, and materials) for installing posts and delineators from shop.
2. Load necessary number of delineators and posts.
3. Place proper traffic-control devices.
4. Set new posts by drilling and/or digging, plumb, and backfill posts to required height.
5. Attach delineators.
6. Replace tools and remove traffic-control devices.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Delineator Maintenance (T270)

**DESCRIPTION**                      Repositioning, straightening, or replacing existing delineators, including the replacement of posts and reinstallation of delineators stolen or broken

**SCHEDULING**                      Schedule throughout the year as required for adequate delineation performance.

**RECOMMENDED PERSONNEL**                      Light Equipment Operator                      (3)

**RECOMMENDED EQUIPMENT**                      Pick-up truck w/necessary tools                      (1)

**RECOMMENDED MATERIALS**                      Steel post  
Delineators

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

- Hours Per Unit                      0.800
- Daily Expectation                      30
- Accomplishment Unit                      Delineator

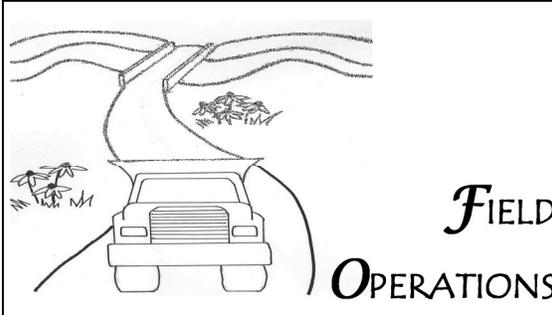
**FUNCTION**                      FE01

**RECOMMENDED**

**PROCEDURE**

1. Locate delineators needing repair.
2. Load truck with necessary equipment and material.
3. Place traffic-control devices.
4. Repair existing delineators and/or posts.
5. Set new posts, if necessary.
6. Repair or replace delineator.
7. Straighten post, if necessary.
8. Remove traffic-control devices.



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Traffic Contract Expenditures & Engineering Expenses for Traffic Signing Projects (T290)

**DESCRIPTION** Inspecting traffic-signing projects to ensure observance of Cabinet standards

This activity could include Department of Highways personnel other than the Division of Traffic Operations personnel for consultants or contract inspection and supervision. (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** None

**RECOMMENDED EQUIPMENT** None

**RECOMMENDED MATERIALS** None

**ENVIRONMENTAL IMPACTS** None

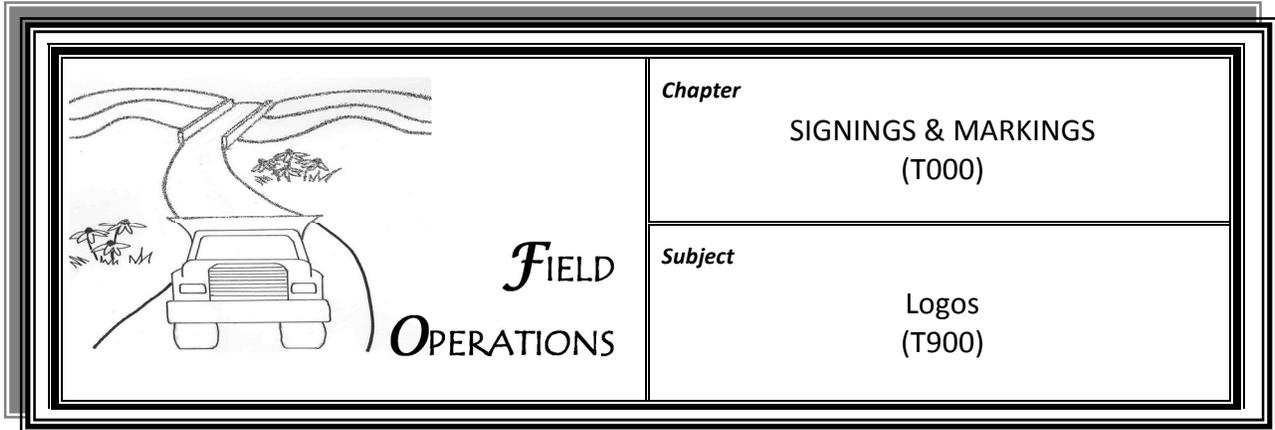
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** None





**DESCRIPTION** Work relative to logos performed by traffic personnel in the Central Office or district offices (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

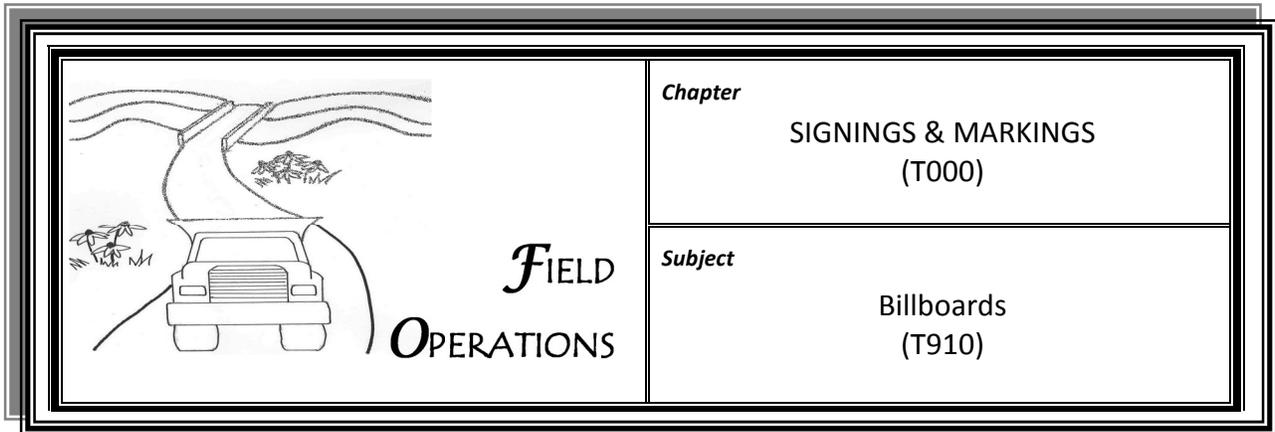
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION** Work relative to billboards performed by traffic personnel (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

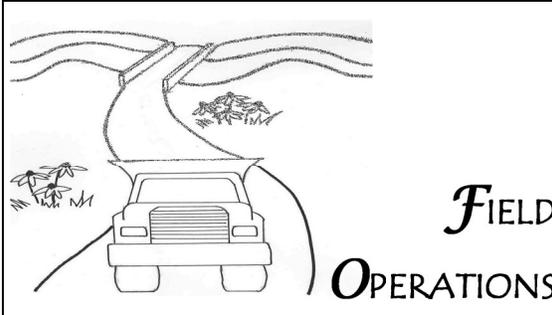
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> SIGNINGS & MARKINGS (T000)
	<b>Subject</b> Junkyards (T920)

**DESCRIPTION** Work relative to junkyards performed by traffic personnel (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

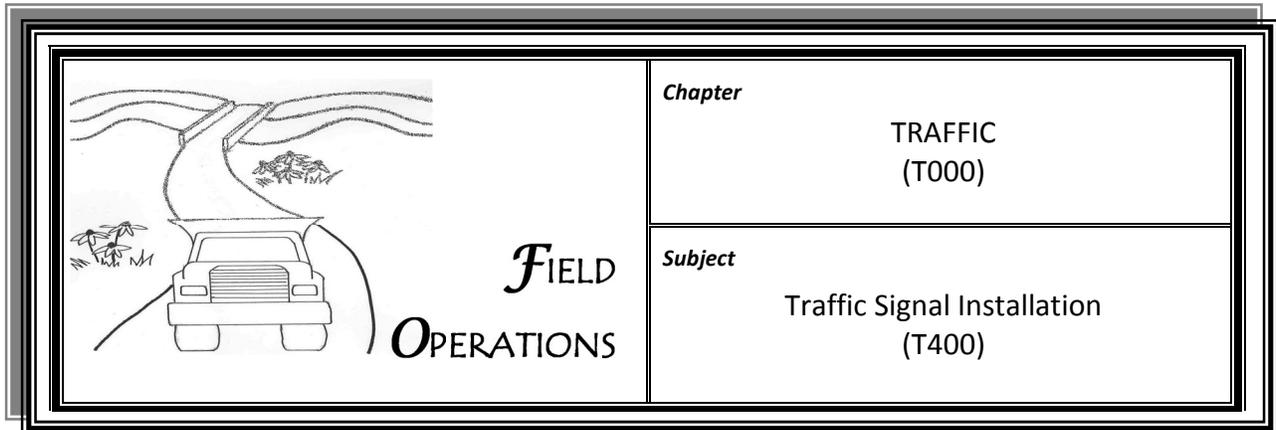
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01

**RECOMMENDED PROCEDURE** As required





**DESCRIPTION**                      Preparing signal controllers for specific demands by intersection; installing poles, controller cabinet, detection devices, if needed; and wiring, spanning, and hooking up service (Section Required)

**SCHEDULING**                      Schedule as warrants are justified and engineering judgment dictates a need for traffic signal control.

**RECOMMENDED**

**PERSONNEL**                      Highway Signal Installer/Repairer                      (1)  
    Highway Signal Crew Leader                      (1)  
    Engineer                      (1)  
    Light Equipment Operator                      (1)  
    Necessary Safety Personnel

**RECOMMENDED**

**EQUIPMENT**                      Bucket or ladder truck                      (1)  
    Line truck                      (1)  
    Concrete saws  
    Flatbed                      (1)  
    Crew cab                      (1)  
    Trenching machine                      (1)  
    Levelator                      (1)

**RECOMMENDED**

**MATERIALS**                      Signals and controllers  
    Hardware

**ENVIRONMENTAL**

**IMPACTS**                      None

**PERFORMANCE**

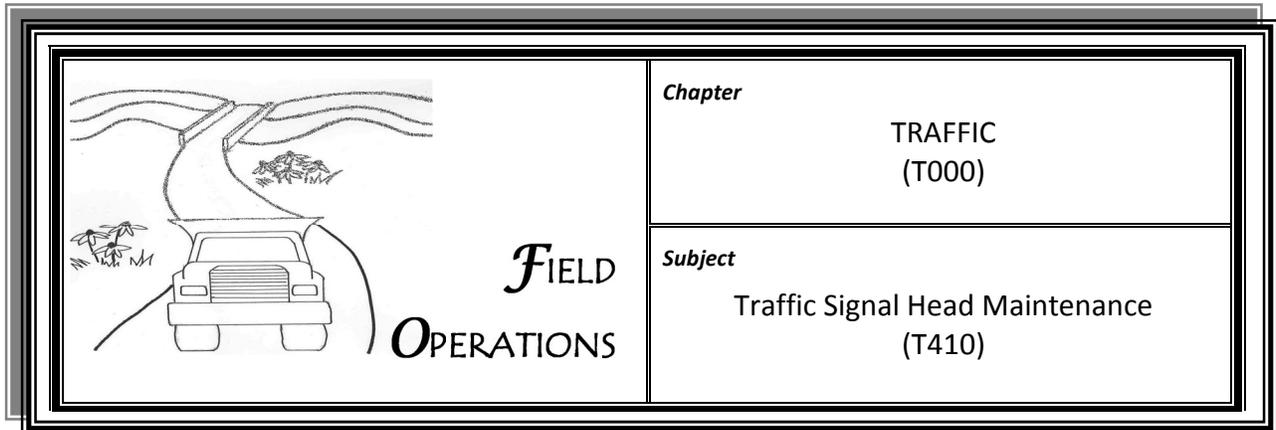
**VALUES**

- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION** FE04**RECOMMENDED  
PROCEDURE**

1. Prepare controller wiring in shop to meet specific needs of intersection demands.
2. Place safety-control devices.
3. Set poles and anchors for spanning.
4. Install span wires.
5. Install controller cabinet and hand-signal head.
6. Install detectors for actuated signals.
7. Complete wiring from signal indications to controllers.
8. Complete hook-up to electrical service.
9. Check out signal operation for efficient timing and correct operation of traffic signals.
10. Remove traffic-control devices.





**DESCRIPTION**                      Repairing signal heads; realigning, cleaning, and relamping signal indications; replacing damaged signal heads and poles for public safety (Section Required)

**SCHEDULING**                      Schedule cleaning, relamping, and realignment operations in a maintenance program once a year. Complete repairs due to damage as required, or make temporary corrections until permanent repairs are possible.

**RECOMMENDED PERSONNEL**                      Highway Signal Installer/Repairer                      (1)  
Necessary Safety Personnel

**RECOMMENDED EQUIPMENT**                      Bucket or ladder truck                      (1)  
Levelator                      (1)  
Miscellaneous equipment needed to clean, realign, or repair damage

**RECOMMENDED MATERIALS**                      Signal heads  
Package of signal hardware  
Bulbs and tubes

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

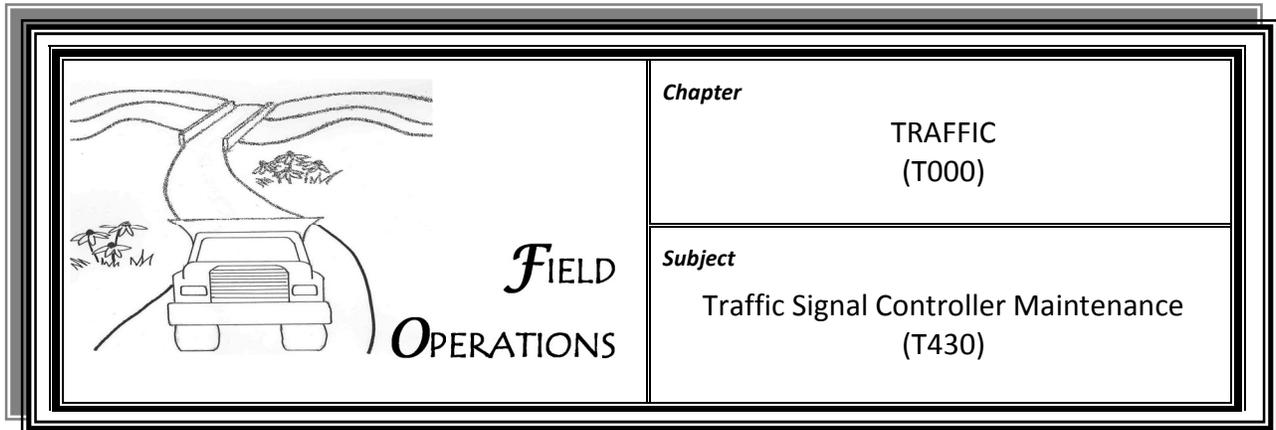
- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION**                      FE04

**RECOMMENDED  
PROCEDURE**

1. Prepare equipment at traffic shop.
2. Place safety-control devices.
3. Clean and relamp signals from bucket truck.
4. Replace sockets, lenses, or reflection as needed.
5. Check to see whether lamps are burning after finishing each signal head.
6. If damaged signals, make repairs or temporary correction.
7. Clean up work area.
8. Remove traffic-control devices.





**DESCRIPTION** Performing shop repairs at workbench to signal controller, including checking and recording all repairs made to each controller (General)

**SCHEDULING** As required for each installation

**RECOMMENDED PERSONNEL** Highway Signal Installer/Repairer (1)

**RECOMMENDED EQUIPMENT** N/A

**RECOMMENDED MATERIALS** Signal hardware

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

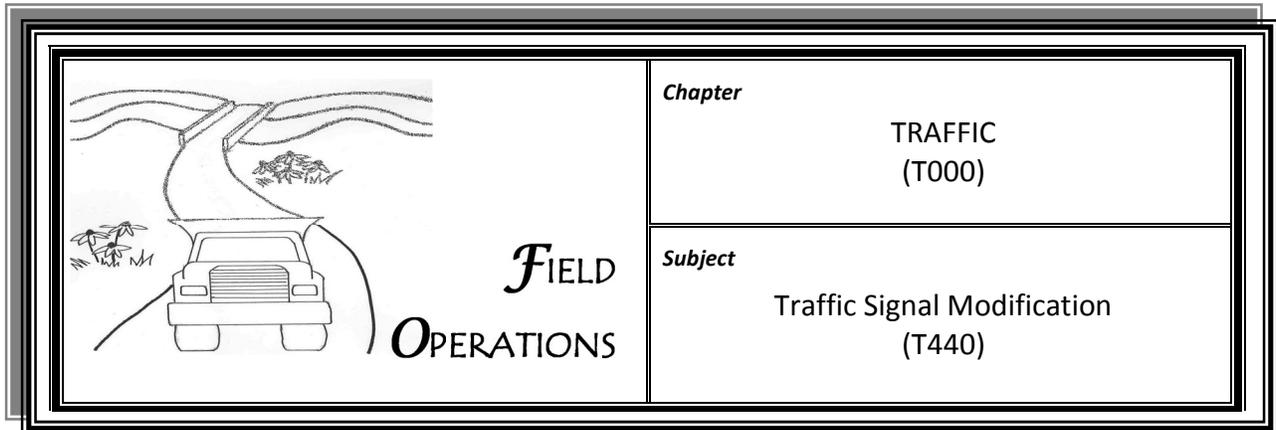
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE04

**RECOMMENDED PROCEDURE**

1. Test controller and determine malfunction.
2. Repair or replace defective component.
3. Test controller to assure proper functions.
4. Record repairs.





**DESCRIPTION** Modifying existing traffic signal installations, which include improving signal head arrangements and configurations or providing additional signal phasing, which requires sophisticated new controllers or detection

This activity includes any improvements to signal installations not due to signal malfunctions or breakdowns. Exchanging controller of the same kind due to failure does not apply. (Section Required)

**SCHEDULING** Schedule modification of signal installation as the changes to traffic flows and operations dictate the need for additional signal phasing or features.

**RECOMMENDED PERSONNEL** Highway Signal Installer/Repairer (1)  
Necessary Safety Personnel

**RECOMMENDED EQUIPMENT** Bucket or ladder truck (1)  
Concrete saw (1)

**RECOMMENDED MATERIALS** Signals and controllers  
Hardware

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

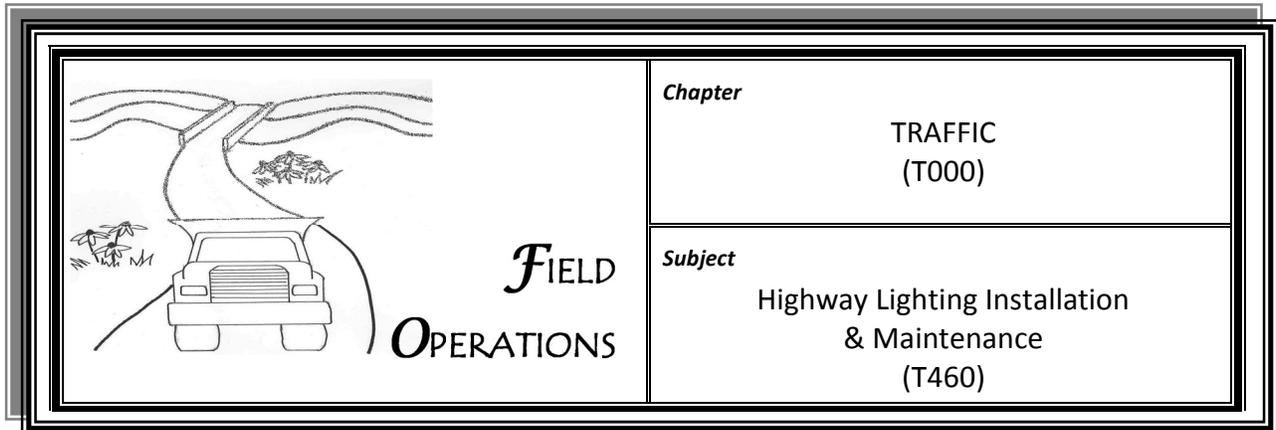
- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE04

**RECOMMENDED  
PROCEDURE**

1. In the shop, prepare needed signal controller equipment or detection devices or signal indications.
2. Place traffic-control devices as necessary.
3. Make necessary modifications.
4. Remove traffic-control devices.





**DESCRIPTION**                      Repairing poles; wiring; relamping; cleaning; or realigning luminaries to restore service to highway lighting

The activity also includes utilities for lighting. (Section Required)

**SCHEDULING**                      Make repairs promptly. Develop maintenance schedules for relamping and cleaning luminaries according to type.

**RECOMMENDED**

**PERSONNEL**                      Highway Signal Crew Leader                      (1)  
    Highway Signal Installer/Repairer                      (2)  
    Light Equipment Operator                      (2)

**RECOMMENDED**

**EQUIPMENT**                      Pole truck                      (1)  
    Bucket truck                      (1)  
    Flashing arrow                      (1)

**RECOMMENDED**

**MATERIALS**                      Luminaries  
    Poles  
    Hardware

**ENVIRONMENTAL**

**IMPACTS**                      None

**PERFORMANCE**

**VALUES**

- Hours Per Unit                      N/A
- Daily Expectation                      N/A
- Accomplishment Unit                      Hour

**FUNCTION**                      FE04

**RECOMMENDED  
PROCEDURE**

1. Load necessary material and equipment for repairs.
2. Place traffic-control devices as necessary.
3. Clean refractor inside and out.
4. Clean reflector and replace lamp.

**Frequency of Relamping:**

- Incandescent—Every year
  - Fluorescent—Every 2 years
  - High-pressure sodium—Every 4 years
  - Low sodium—Every 4 years
5. Replace damaged parts needed to return to service.
  6. If pole is damaged, remove damaged pole.
  7. Set pole, align, and tighten bolts, align luminary, hook up wire and service.
  8. Load damaged material and tools.
  9. Clean up area.
  10. Remove traffic-control devices.

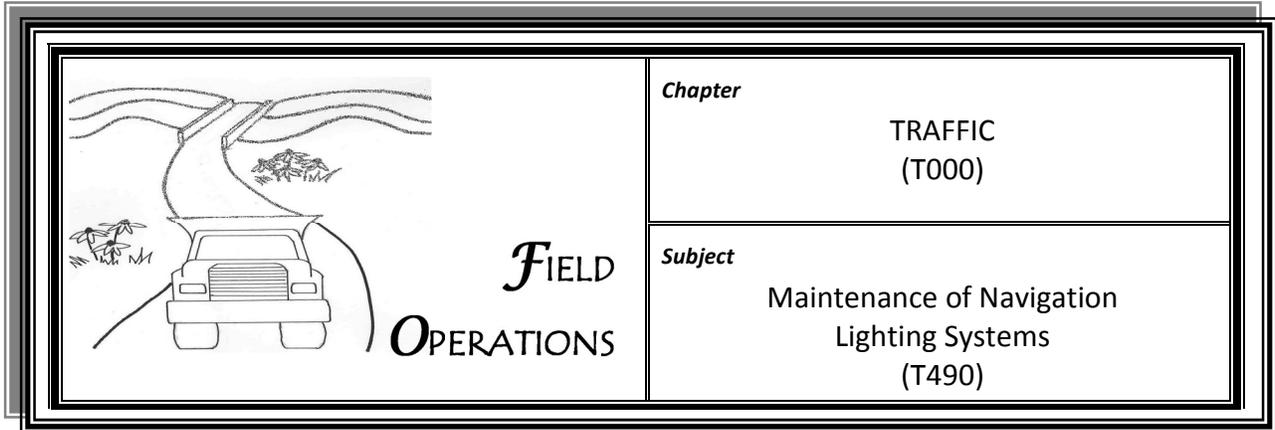




**RECOMMENDED  
PROCEDURE**

1. Load proper equipment and materials.
2. Place traffic-control devices as necessary.
3. Make necessary corrections to return signs to service, make temporary correction to operations, if necessary, for immediate need.
4. Remove traffic-control devices, and clean work area.





**DESCRIPTION**                      Repairing wiring or replacing navigation lights or other necessary electrical hardware to return lights to service

This activity also includes utilities for navigation lights. (Section Required)

**SCHEDULING**                      Schedule promptly as needs for repairs are identified.

**RECOMMENDED PERSONNEL**

Highway Signal Installer/Repairer	(1)
Light Equipment Operator	(1)

**RECOMMENDED EQUIPMENT**

Pickup truck	(1)
--------------	-----

**RECOMMENDED MATERIALS**

Bulbs and tubes  
Necessary hardware

**ENVIRONMENTAL IMPACTS**                      None

**PERFORMANCE VALUES**

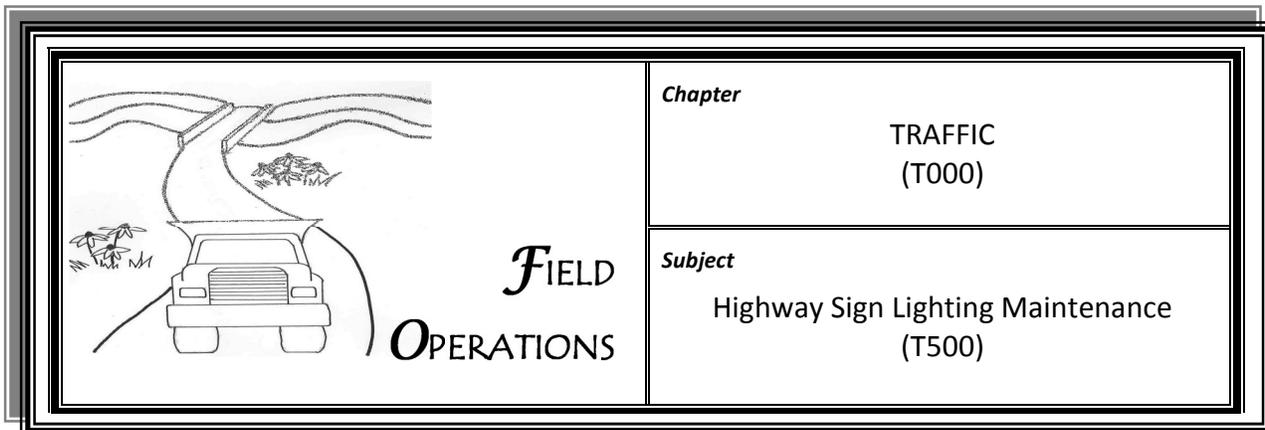
➤ Hours Per Unit	N/A
➤ Daily Expectation	NA
➤ Accomplishment Unit	Hour

**FUNCTION**                      FE04

**RECOMMENDED  
PROCEDURE**

1. Obtain proper material and equipment to make repair.
2. Place traffic-control devices as necessary.
3. Make necessary repairs to wiring, or relamp to return to service.
4. Clean up work area.
5. Remove traffic-control devices.





**DESCRIPTION** Relamping or cleaning highway sign lighting fixtures (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

**PERFORMANCE VALUES**

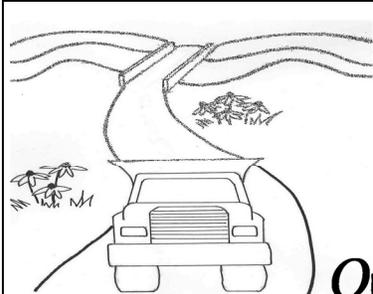
➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Fixture

**FUNCTION** FE04

**RECOMMENDED PROCEDURE** As required

**Special Note:** Determine accomplishment before leaving job site.



 <p style="text-align: center;"><b>FIELD OPERATIONS</b></p>	<p><i>Chapter</i></p> <p style="text-align: center;">TRAFFIC (T000)</p>
	<p><i>Subject</i></p> <p style="text-align: center;">Traffic Contract Expenditure &amp; Engineering Expenses for Traffic Signal &amp; Lighting or Other Electrical Contracts (T590)</p>

**DESCRIPTION**                      Inspecting traffic signals, lighting, or other electrical contract projects to ensure observance of Cabinet standards

This activity may include Department of Highways personnel other than the traffic personnel for consultants or contract inspection and supervision. (Section Required)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

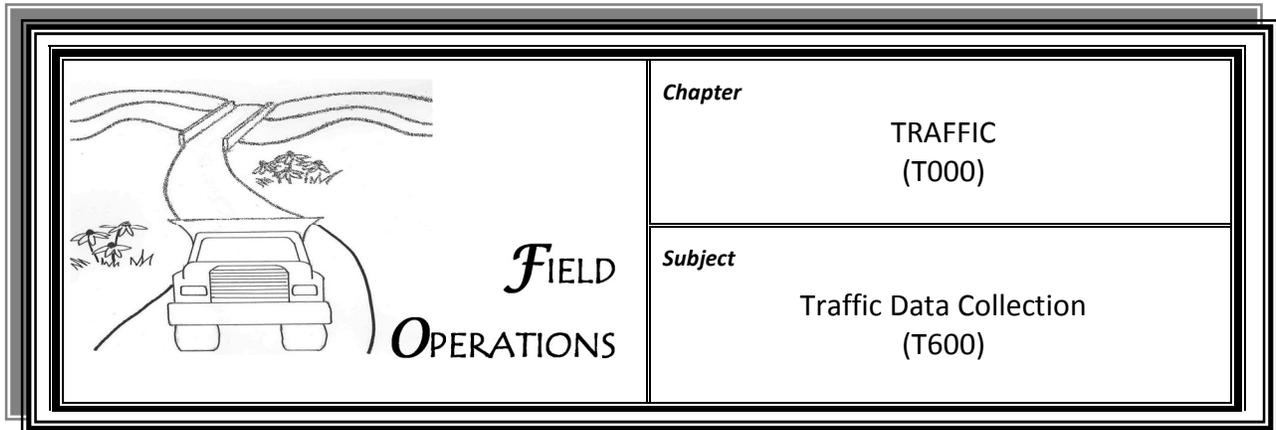
**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	NA
➤ Accomplishment Unit	Hour

**FUNCTION**                      FE04

**RECOMMENDED PROCEDURE**                      As required





**DESCRIPTION** Manually collecting traffic counts to determine volume and turning movements at intersection, speed zone studies, delay studies, or parking areas (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

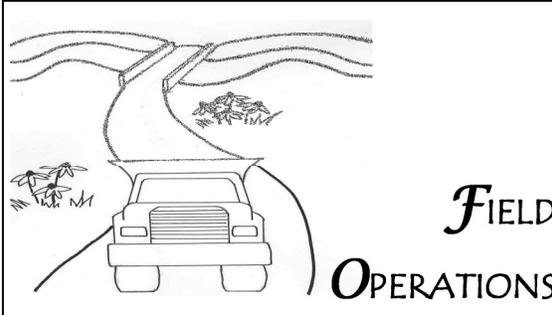
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE04

**RECOMMENDED PROCEDURE** As required



	<i>Chapter</i> TRAFFIC (T000)
	<i>Subject</i> Roadway Sign Inventory (T640)

**DESCRIPTION** Identifying by location the presence and condition of roadway signs and recording the data by roadway segment (General)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

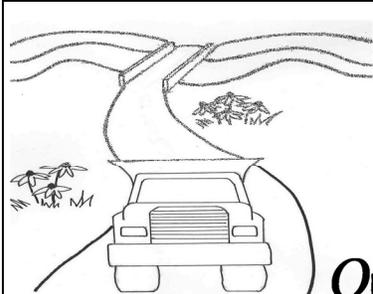
**PERFORMANCE VALUES**

- Hours Per Unit 1.067
- Daily Expectation 15
- Accomplishment Unit Miles

**FUNCTION** FE04

**RECOMMENDED PROCEDURE** As required



 <p style="font-size: 2em; font-weight: bold; margin: 0;">FIELD OPERATIONS</p>	<p><i>Chapter</i></p> <p style="text-align: center;">TRAFFIC (T000)</p> <hr/> <p><i>Subject</i></p> <p style="text-align: center;">Traffic Control Devices Inspection (T650)</p>
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**DESCRIPTION**                      Inspecting various types of traffic-control devices, such as signs, pavement markings, and signals, to properly evaluate their effectiveness or the need for additional devices (General)

**SCHEDULING**                      As required

**RECOMMENDED PERSONNEL**                      As required

**RECOMMENDED EQUIPMENT**                      As required

**RECOMMENDED MATERIALS**                      As required

**ENVIRONMENTAL IMPACTS**                      None

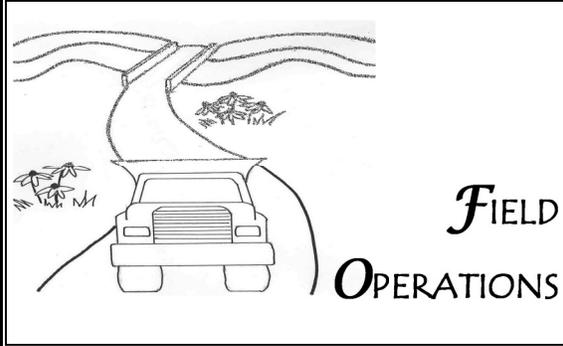
**PERFORMANCE VALUES**

➤ Hours Per Unit	N/A
➤ Daily Expectation	N/A
➤ Accomplishment Unit	Hour

**FUNCTION**                      FE01 (Signs, Pavement Markings)  
FE04 (Signals)

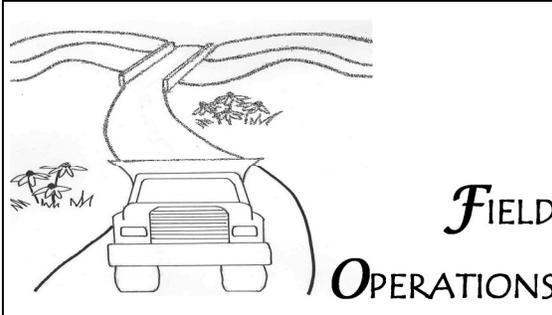
**RECOMMENDED PROCEDURE**                      As required



	<b>Chapter</b> TRAFFIC (T000)
	<b>Subject</b> Hazardous Material Removal (T700)

<b>DESCRIPTION</b>	Removing and disposing of hazardous materials (General)	
<b>SCHEDULING</b>	As required	
<b>RECOMMENDED PERSONNEL</b>	As required	
<b>RECOMMENDED EQUIPMENT</b>	As required	
<b>RECOMMENDED MATERIALS</b>	As required	
<b>ENVIRONMENTAL IMPACTS</b>	Refer to the <a href="#">Environmental Handbook</a> for guidance regarding hazardous materials.	
<b>PERFORMANCE VALUES</b>	<ul style="list-style-type: none"> <li>➤ Hours Per Unit</li> <li>➤ Daily Expectation</li> <li>➤ Accomplishment Unit</li> </ul>	N/A N/A Hour
<b>FUNCTION</b>	FE04 or FE01	
<b>RECOMMENDED PROCEDURE</b>	As required	



	<b>Chapter</b> TRAFFIC (T000)
	<b>Subject</b> Traffic Stock Account Central Office (T800)

**DESCRIPTION** Purchase of traffic signs, pavement marking, and traffic-signal related materials (General)

**Note:** This activity shall not be used to charge personnel costs related to the use of these materials for installation, replacement, and maintenance.

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

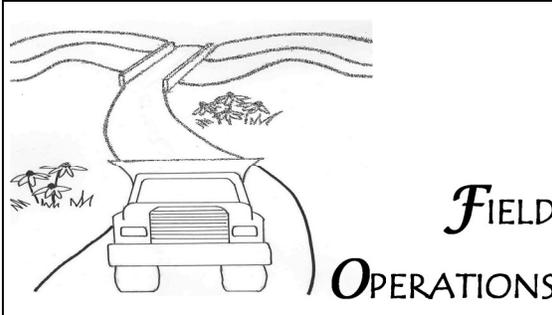
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE01 (Signs, Pavement Markings)  
 FE04 (Signals)

**RECOMMENDED PROCEDURE** As required



	<b>Chapter</b> TRAFFIC (T000)
	<b>Subject</b> Miscellaneous Traffic (T990)

**DESCRIPTION** All traffic activities not specified by activities T010 through T920, including preparation of signs, signals, lighting, or other engineering plans (Section Required)

**SCHEDULING** As required

**RECOMMENDED PERSONNEL** As required

**RECOMMENDED EQUIPMENT** As required

**RECOMMENDED MATERIALS** As required

**ENVIRONMENTAL IMPACTS** None

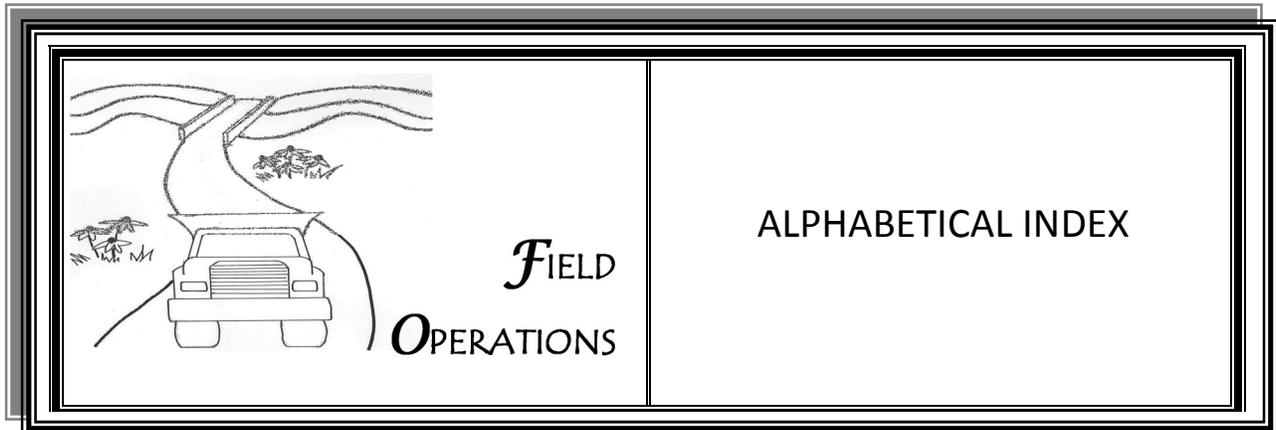
**PERFORMANCE VALUES**

- Hours Per Unit N/A
- Daily Expectation N/A
- Accomplishment Unit Hour

**FUNCTION** FE04

**RECOMMENDED PROCEDURE** As required





**A**

Accomplishment Reporting  
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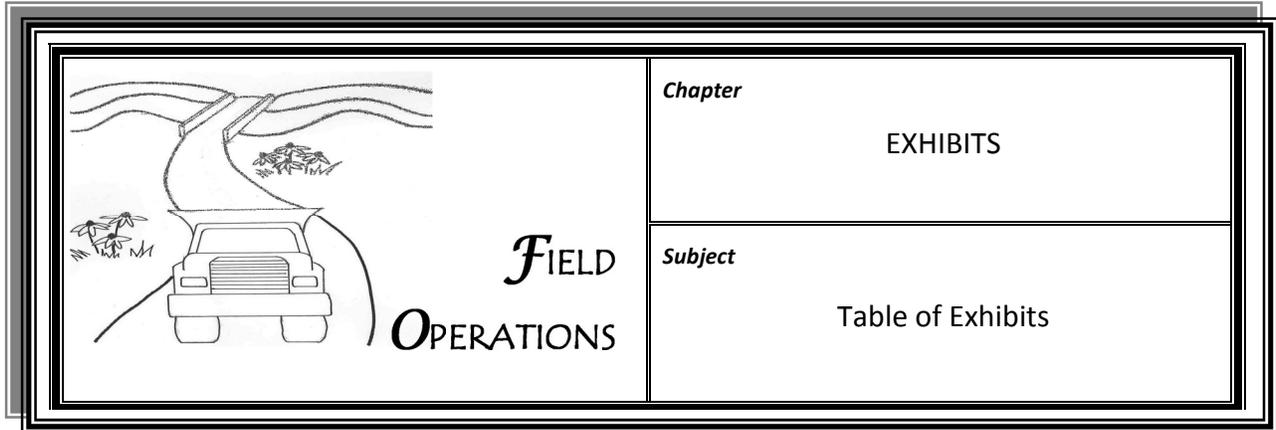
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FOG-9002 .....Acreage—Interchange

FOG-9004 .....Circles, Lineal & Area Measurements

FOG-9015 .....Conversion Factors, Area Measurements

FOG-9014 .....Conversion Factors, Length Measurements

FOG-9016 .....Conversion Factors, Volume Measurements

FOG-9017 .....Conversion Factors, Weights & Other Measurements

FOG-9012 .....Cubic Yards of Material Required per Foot for a Typical Culvert Installation

FOG-9011 .....Cubic Yards of Material Required per 100 Linear Feet for Various Loose Depths

FOG-9006 .....Gallons of Asphalt Required for Various Rates of Application

FOG-9005 .....Lineal Feet Covered by 1000-Gallon Tank

FOG-9009 .....Loose & Compacted Weights of Various Materials

FOG-9013 .....Number of Board Feet per Lineal Foot for Various Sizes of Lumber

FOG-9008 .....Number of Gallons in Horizontal Tanks of Various Sizes

FOG-9010 .....Pounds of Aggregate per Square Yard for Various Cubic Yard Weights

FOG-9003 .....Square Yards of Road Surface for Various Road Widths

FOG-9007 .....Tons of Aggregate Required per Mile for Various Rates of Application



TABLE 1 ACREAGE- RIGHT-OF-WAY																			
LENGTH IN MILES																			
WIDTH IN FEET	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	2	3	4	5	6	7	8	9	10
1'	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2
2'	0.0	0.1	0.1	0.1	0.1	0.7	0.2	0.2	0.7	0.2	0.5	0.7	1.0	1.2	1.5	1.7	1.9	2.2	2.4
3'	0.0	0.1	0.1	0.2	0.7	0.2	0.3	0.3	0.3	0.4	0.7	1.1	1.5	1.8	2.2	2.6	2.9	3.3	3.6
4'	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.9	4.4	4.9
5'	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.3	1.2	1.8	2.4	3.0	3.6	4.2	4.9	5.5	6.1
6'	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	1.5	2.2	2.9	3.6	4.4	5.1	5.8	6.5	7.3
7'	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.7	2.6	2.9	4.2	5.1	5.9	6.8	7.6	8.6
8'	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.7	9.7
9'	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.1	2.2	3.3	4.4	5.5	6.5	7.6	8.7	9.8	10.9
10'	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	2.4	3.6	4.9	6.1	7.3	8.5	9.7	10.9	12.1
20'	0.2	0.6	0.7	1.0	1.2	1.5	1.7	1.9	2.2	2.4	4.9	7.3	9.7	12.1	14.6	17.0	19.4	21.8	24.2
30'	0.4	0.7	1.1	1.5	1.6	2.2	2.6	2.9	3.3	3.6	7.3	10.9	14.6	16.2	21.8	25.5	29.1	32.7	36.4
40'	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.9	4.4	4.9	9.7	14.6	19.4	24.2	29.1	33.9	38.8	43.6	48.5
50'	0.8	1.2	1.8	2.4	3.0	3.6	4.2	4.9	5.5	6.1	12.1	18.2	24.2	30.3	36.4	42.4	48.5	54.6	60.6
60'	0.7	1.5	2.2	2.9	3.6	4.4	5.1	5.8	6.6	7.3	14.6	21.8	29.1	36.4	43.6	50.9	58.2	65.5	72.7
70'	0.9	1.7	2.5	3.4	4.2	5.1	5.9	6.6	7.6	8.5	17.0	25.5	33.9	42.4	50.9	59.4	67.9	76.4	84.9
80'	1.0	1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.7	9.7	19.4	29.1	38.8	48.5	58.2	67.9	77.6	87.3	97.0
90'	1.1	2.2	3.3	4.4	5.5	6.6	7.2	8.7	9.8	10.9	21.8	32.7	43.6	54.6	65.5	76.4	87.3	98.2	109.1
100'	1.2	2.4	3.4	4.9	6.1	7.3	8.5	9.7	10.9	12.1	24.2	36.4	48.5	60.6	72.7	84.9	97.0	109.1	121.2

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Table 5. Lineal Feet Covered by 1000-Gallon Tank

TABLE 5 LINEAL FEET COVERED BY 1000-GALLON TANK																
ROAD WIDTH IN FEET	GALLONS PER SQUARE YARD															
	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.25	1.50	2.00
6'	11,250	7,500	5,625	4,500	3,750	3,214	2,818	2,250	1,875	1,607	1,408	1,250	1,125	900	750	500
8'	10,000	6,667	5,000	4,000	3,333	2,857	2,500	2,000	1,667	1,429	1,250	1,111	1,000	800	667	500
10'	9,000	6,000	4,500	3,600	3,000	2,571	2,250	1,800	1,500	1,286	1,125	1,000	900	720	600	450
11'	8,182	5,455	4,091	3,273	2,727	2,338	2,045	1,636	1,364	1,168	1,023	909	818	655	545	409
12'	7,500	5,000	3,750	3,000	2,500	2,143	1,875	1,500	1,250	1,071	938	833	750	600	500	375
14'	6,429	4,286	3,214	2,571	2,143	1,837	1,607	1,286	1,071	918	804	714	643	514	429	321
15'	6,000	4,000	3,000	2,400	2,000	1,714	1,500	1,200	1,000	857	750	667	600	480	400	300
16'	5,625	3,750	2,813	2,250	1,875	1,607	1,408	1,125	938	804	708	625	560	450	375	281
18'	5,000	3,333	2,500	2,000	1,667	1,429	1,250	1,000	833	714	625	556	500	400	333	250
20'	4,500	3,000	2,250	1,800	1,500	1,286	1,125	900	750	643	563	500	450	360	300	225
22'	4,091	2,727	2,045	1,636	1,344	1,168	1,023	818	692	594	511	456	409	327	273	205
24'	3,750	2,500	1,875	1,500	1,250	1,071	938	750	625	538	469	417	375	300	250	188
25'	3,600	2,400	1,800	1,440	1,200	1,029	900	720	600	514	450	400	360	288	240	180
26'	3,462	2,308	1,731	1,385	1,154	989	866	692	577	495	433	385	346	277	231	173
27'	3,214	2,143	1,607	1,286	1,071	918	804	643	538	458	402	357	321	257	214	161
30'	3,000	2,000	1,500	1,200	1,000	857	750	600	500	429	375	333	300	240	200	150

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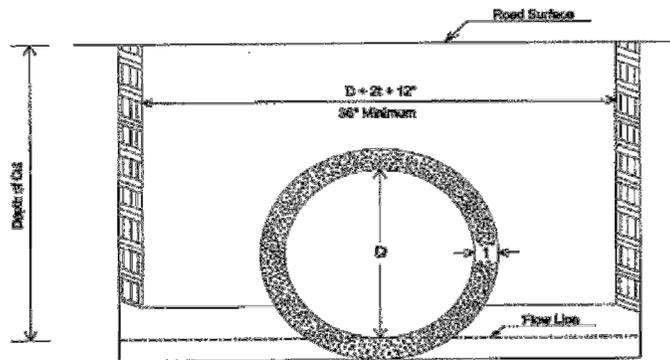






TABLE 12 CUBIC YARDS OF MATERIAL REQUIRED PER FOOT FOR A TYPICAL CULVERT INSTALLATION								
DEPTH OF CUT TO FLOW LINE (IN FEET)	D: L:	12" 2"	15" 2 1/2"	18" 2 1/2"	24" 3"	30" 3 1/2"	36" 4"	42" 4 1/2"
2'		0.19	0.16	0.12				
3'		0.32	0.29	0.25	0.23	0.18		
4'		0.45	0.42	0.38	0.38	0.36	0.32	0.26
5'		0.59	0.56	0.52	0.54	0.54	0.53	0.49
6'		0.62	0.69	0.65	0.69	0.72	0.74	0.73
7'		0.85	0.82	0.78	0.85	0.9	0.95	0.96
8'		0.98	0.96	0.92	1	1.09	1.16	1.19
9'		1.12	1.09	1.05	1.16	1.27	1.36	1.43
10'		1.25	1.22	1.18	1.31	1.45	1.57	1.66
11'		1.39	1.36	1.32	1.47	1.63	1.78	1.9
12'		1.52	1.49	1.45	1.62	1.81	1.98	2.13

D= Diameter of Pipe  
 t= thickness of Pipe



NOTES









