

CHAPTER 16
Guardrail Items

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**DOCUMENTATION REQUIREMENT
SECTION A
GUARDRAIL ITEMS**

All types of guardrail and related items (terminal ends, connections, etc.) shall be documented in the GUARDRAIL book. Each area placed in a book shall have two sections - Stakeout Data and Construction Record.

Documentation for only a few selected items is illustrated in this chapter. Documentation for practically any guardrail item can be provided by setting up the books in the same manner according to the UOM, except 201 and 202 removal items, as illustrated in Chapter 4, (Removal Items). Some minor modifications may be required to show the unusual circumstances that may occur with different items, but the general format must be followed. If there are items that cannot be documented according to the following illustrations, please call Headquarters Construction for assistance.

The Standards Compliance Section shall review the guardrail once it is staked and prior to the Contractor ordering the material and starting the installation. This will allow changes to be made to the guardrail if the plans are incorrect for the actual field conditions. On current and future contracts, please contact Standard Compliance at (775) 888-7598 and schedule a review. See the last paragraph in subsection 618.04.01 of the Standard Specifications for Road and Bridge Construction (Silver book) and the memo dated 5/13/05, Guardrail Reviews.

A GUARDRAIL INVENTORY DATA sheet is required per Construction Division Procedure memo #99-003. At the completion of every contract the Resident Engineer shall contact the Headquarters Safety Division to see if a GUARDRAIL INVENTORY DATA sheet is required. If the data sheet is required it will be completed by the **Resident Engineer** and sent to the Safety Division, with a copy sent to Headquarters Construction. If there are any questions, contact Headquarters Safety Division for assistance.

Any items requiring measurements, percentages, or final quantity calculations must be shown in the field book or on a CALCULATION sheet (Form No. 040-034) and filed in the CALCULATION book as illustrated in Chapter 2 (Setting up a Contract, Book Format, etc.). Make sure to cross reference the quantity in the field book(s) to the CALCULATION sheet and the CALCULATION sheet to the field book(s) and page(s).

It is important that all records be kept in a neat and legible manner. All **notes in the remarks column must be initialed** by the person or persons responsible for the entry. **All calculations must be checked and initialed by the checker.**

Each book shall be setup as illustrated in Chapter 2 (Setting up a Contract, Book Format, etc.) and recapped as illustrated in Chapter 24 ("Finaling Out" a Contract).

**DOCUMENTATION REQUIREMENT
SECTION C
GUARDRAIL ITEMS
(INDEX AND INITIAL KEY)**

Below are illustrations of an index and an initial key. When setting up a field book at the beginning of a contract make sure each item in the book is listed on the index. During the contract if anything is added to the book make sure it is placed on the index. At job closeout make sure the index has the ending page for each item listed on more than one page. Make sure to list the book recap page(s) on the index. If room permits skip a line between entries on the index. Check the initial key each progress payment to assure that everyone who has made entries in the book has initialed and signed the initial key. If the signature is not legible, have the person print his/her name under the signature. Make sure the initials used throughout the book match the way the initials show on the initial key. If the initials change, add the new initials to the initial key next to the original initials.

Use when multiple areas are placed in a book.



Index		Initial Key		
Page	Description	Initials	Signature	Title
4-12	"BD" 45+29.66 To "BD" 61+79.66 LT	SB	<i>Sheri Brown</i>	Tech II
14-22	"BD" 70+00 to "BD" 79+50 RT	TC	<i>Terra Carson</i>	Tech I
24-30	"BD" 80+10 to "BD" 85+25 RT			
32-40	"LW" 205+20 to "LW" 220+30 LT			
75	Book Recap			

Use when only one area is placed in a book.



Index		Initial Key		
Page	Description	Initials	Signature	Title
	"BD" 45+29.66 To "BD" 61+79.66 LT	SB	<i>Sheri Brown</i>	Tech II
4	Stakeout Data	TC	<i>Terra Carson</i>	Tech I
8	Galvanized Guardrail			
12	Trailing End Anchor			
75	Book Recap			

**DOCUMENTATION REQUIREMENT
SECTION D
GUARDRAIL ITEMS
(STAKEOUT DATA)**

The Stakeout Data page in a GUARDRAIL book serves two purposes; it is used as a stakeout page if needed and to separate the areas if more than one area is placed in a field book.

The **Officeperson** will complete the headings on the Stakeout Data page as illustrated below.

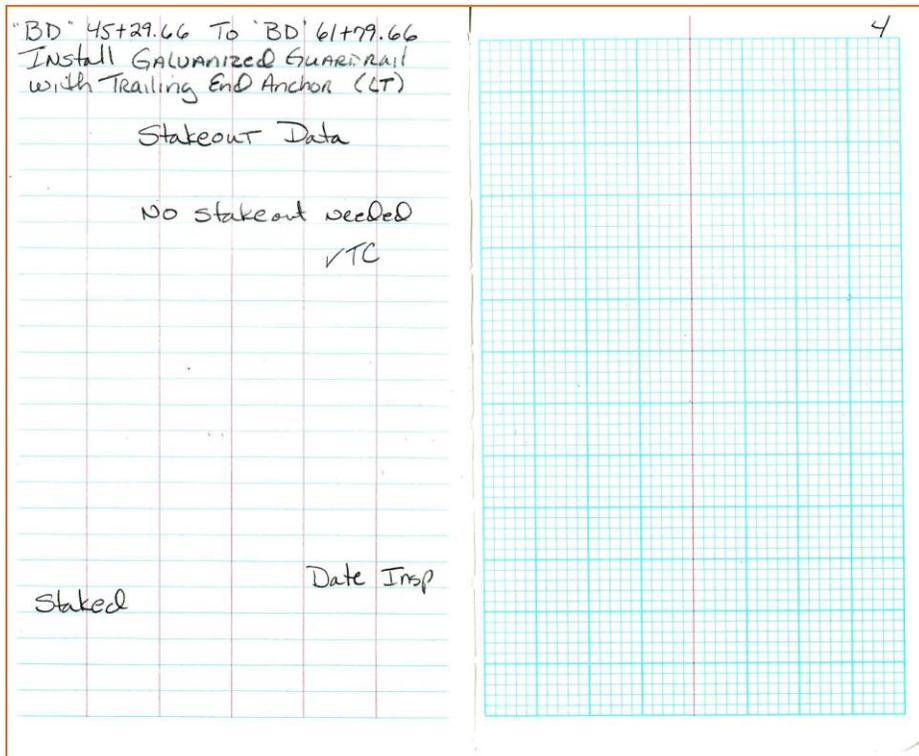
Be sure to allow adequate space in the book before setting up the next section (Construction Record). As shown in the structure list of the plans, the full description shall be placed at the top of the Stakeout Data page as illustrated below.

If the guardrail is to be staked by NDOT then the Stakeout Data section must contain all the stakeout data for the guardrail, cross-sections, and all grade elevations pertinent to the guardrail, etc. Skip at least one page before setting up section two (Construction Record). The person entering the stakeout data must date and initial the page(s) and initial and sign the initial key.

When stakeout information is located elsewhere, the Stakeout Data section must make reference to the page and book number of the stakeout information and the stakeout information must be referenced to the page of the book as illustrated in Chapter 13 (Pipe, RCB, Misc Str. or Retaining, Sound, and MSE Wall).

If the guardrail is not staked, it must be noted on the Stakeout Data page and initialed as illustrated below.

Per subsection 200.01.01 of the contract documents, if the guardrail is to be engineered by the Contractor, it must be noted in the Stakeout Data section, as illustrated in Chapter 12 (Major Structures). **The Contractor's stakeout information must be given to the Resident Engineer before the final pickup, which will become part of the contract documents forwarded to the Engineering Files.**



**DOCUMENTATION REQUIREMENT
SECTION E
GUARDRAIL ITEMS
(CONSTRUCTION RECORD)**

The Construction Record section of the GUARDRAIL books shall be used to document the various items of work performed at each installation except 201 and 202 removal items, as illustrated in Chapter 4 (Removal Items).

The Construction Record section shall **have a separate page for each bid item listed on a structure list per installation. Make sure to leave enough pages between installations for any added or missed items.**

Any items requiring measurements, percentages, or final quantity calculations must be shown in the field book or on a CALCULATION sheet (Form No. 040-034) and filed in the Calculation book as illustrated in Chapter 2 (Setting up a Contract, Book Format, etc.). Make sure to cross reference the quantity in the field book(s) to the CALCULATION sheet and the CALCULATION sheet to the field book(s) and page(s).

It is important that all records be kept in a neat and legible manner. All **notes in the remarks column must be initialed** by the person or persons responsible for the entry. **All calculations must be checked and initialed by the checker.**

Significant figures in the structure list may be used for guardrail documentation during construction of a contract. When recapping the GUARDRAIL book, final totals shall be rounded to match significant figures as shown in Chapter 2 (Setting up a Contract, Book Format, etc.).

Any changes in the guardrail installation shall be noted in the book. Agreed price items created by change orders shall be documented similar to bid items.

Each book shall be setup as illustrated in Chapter 2 (Setting up a Contract, Book Format, etc.) and recapped as illustrated in Chapter 24 ("Finaling Out" a Contract).

**GUARDRAIL ITEMS
(CONSTRUCTION RECORD)
(WHEN PAID BY LINEAR FOOT)**

All types of guardrail and related items (terminal ends, connections, etc.) shall be documented in the GUARDRAIL book.

The following is an illustration for an item with a UOM of Linft.

The illustration below is located on a structure list from the contract plans as shown on page 16-2.

The **Officeperson** shall complete for each page the item number, item description, plan quantity this installation, the significant figure on the top right-hand side of the page, all column headings, and page total in the bottom left-hand corner of the page. **A separate page shall be provided for each bid item. Make sure to leave enough pages between installations for any added or missed items.**

Daily, the **Inspector** shall document the station to station, meas linft, pay qty, date, initials, AEB# if not already entered, and any remarks that are needed. No payment in excess of plan quantity may be made unless supported by change order or final measurements. **All guardrail must be measured at the time of installation.**

Per subsection 109.06 of the Standard Specifications, partial payment may be made for guardrail when only the posts have been put in. Therefore when the guardrail posts are complete in place, 50% of the guardrail quantity shall be allowed. The remaining 50% shall be paid when the guardrail is complete.

Note: After each section of guardrail has been completed, the final in-place measurement, date, and initials of the person responsible for the measurements shall be documented. All entries must be entered as called out in the plans and document left, right, or centerline, where applicable.

Payment for Linft items will be based on field measure.

Station to Station	Meas Linft	Pay Qty	Final in-place meas	Date Insp	AEB*	Pmt*	Remarks
BD 45+29.66 to	1050	525		10/2/08	TC	2	Posts
BD 61+79.66 LT		525		10/3/08	TC	2	Rail
			1050	10/6/08	TC	2	Complete
			V50				

Item No: 618 0524
Item: Galvanized Guardrail
Plan Qty this Installation: 1050 Linft

Sign = 1
50% Posts
50% Rail

8

Page Total:

This illustration shows posts and rail paid separately at 50%. The pay qty is based on the measured linft of guardrail.

When making out the field books if a required item of work is not illustrated in this chapter, use an illustration that has the same UOM.

All types of guardrail and related items (terminal ends, connections, etc.) shall be documented in the GUARDRAIL book.

The following is an illustration for an item with a UOM of Linft.

The illustration below is located on a structure list from the contract plans as shown on page 16-2.

The **Officeperson** shall complete for each page the item number, item description, plan quantity this installation, the significant figure on the top right-hand side of the page, all column headings, and page total in the bottom left-hand corner of the page. **A separate page shall be provided for each bid item. Make sure to leave enough pages between installations for any added or missed items.**

Daily, the **Inspector** shall document the station to station, meas linft, pay qty, date, initials, and AEB# if not already entered and any remarks that are needed. No payment in excess of plan quantity may be made unless supported by change order or final measurements. **All guardrail must be measured at the time of installation.**

Per subsection 109.06 of the Standard Specifications, partial payment may be made for guardrail when only the posts have been put in. Therefore when the guardrail posts are complete in place, 50% of the guardrail quantity shall be allowed. The remaining 50% shall be paid when the guardrail is complete.

Note: After each section of guardrail has been completed, the final in-place measurement and initials of the person responsible for the measurement shall be documented. All entries must be entered as called out in the plans and document left, right, or centerline, where applicable.

Payment for Linft items will be based on field measure.

Station to Station	meas Linft	Pay Qty	Final in-Place meas.	Date	Insp	AEB*	PMT*	Remarks
BD' 45+29.66 to	200	200		10/9/08	TC		2	Posts + Rail
BD' 61+79.66 Lt.	225	225		10/9/08	TC		2	Posts + Rail
	150	150		10/6/08	TC		2	Posts + Rail
	250	250		10/7/08	TC		2	Posts + Rail
	225	225		10/8/08	TC		2	Posts + Rail
			1050	10/10/08	TC		2	Complete
			✓58					

Item No. 618 0524
 Item: Galvanized Guardrail
 Plan Qty this installation: 1050 Linft

Sig fig = 1
 50% Post
 50% Rail

8

Page total:

This illustration shows post and rail completed in the same day. The pay qty will be the length of completed fence. The final in-place meas. will be entered, dated, and initialed.

When making out the field books if a required item of work is not illustrated in this chapter, use an illustration that has the same UOM.

**GUARDRAIL ITEMS
(CONSTRUCTION RECORD)
(WHEN PAID BY EACH)**

All types of guardrail and related items (terminal ends, connections, etc.) shall be documented in the GUARDRAIL book.

The following is an illustration for an item with a UOM of Each.

The illustration below is located on a structure list from the contract plans as shown on page 16-2 and is combined. If there are questions on whether an Each item can be listed separately or combined, please call Headquarters Construction for assistance.

The **Officeperson** shall complete for each page the item number, item description, plan quantity this installation, the significant figure on the top right-hand side of the page, all column headings, and page total in the bottom left-hand corner of the page. **A separate page shall be provided for each bid item. Make sure to leave enough pages between installations for any added or missed items.**

Daily, the **Inspector** shall document the station to station, qty, date, initials, AEB#, if not already entered, and any remarks that are needed.

Note: All entries must be entered as called out in the plans and document left, right, or centerline, where applicable.

Payment for Each items will be based on field count.

Item No: 618 0038				Sig fig = 1		12
Item: Trailing End Anchor						
Plan Qty this Installation: 2 EACH						
Station to Station	Qty	Date	Insp	AEB#	Pmt#	Remarks
BD 45+29.66 TO BD 61+99.66 LT	2	10-12-08	TC	2		Complete
Page total:						

When making out the field books if a required item of work is not illustrated in this chapter, use an illustration that has the same UOM.