This chapter contains the following sections:

Overview	
Survey Crew Chief's Responsibilities – Guardrail Items	
Inspector's Responsibilities – Guardrail Items	
Office Engineer's Responsibilities – Guardrail Items	



OVERVIEW

Guardrail Items have different documentation requirements for each unit of measure (UOM). All Guardrail Items must be counted or measured and calculated. Documentation examples for a few selected Guardrail Items are illustrated in this chapter. Some minor modifications may be required to show the unusual circumstances that may occur with different items, but the general format should be followed. If there are items which cannot be documented according to the following examples, contact the Construction Admin Services Section for assistance.

SURVEY CREW CHIEF'S RESPONSIBILITIES – GUARDRAIL ITEMS

- When survey data is used as support for payment, any survey data output/reports from Trimble Business Center (TBC) should be formatted to accurately represent the points (data) collected and a description of what the data represents.
- Email ALL TBC survey data output/reports to the Office Engineer. Use the naming convention: Stakeout Data YYYY-MM-DD Inspectors Initials, (e.g. Stakeout Data 2017-03-19 BLF) in the email subject line.

INSPECTOR DAILY REPORT (IDR) - FIELDMANAGER

- 1. Create an IDR in FieldManager daily to document the survey activity. Refer to Chapter 7, Inspector Daily Report, in the FieldManager User Guide for details.
- 2. Record the following required information in the General tab (Figure 17-1).
 - IDR Date
 - Inspector
 - Weather
 - Low and high temperature
 - Comments Overview of survey activities for the day

General	Contractors	Site Times	Postings	Attachments	View
Date/Time Er	ntered: 02/01/2	017	Re	evised By:	
Enter	red By: Brett	Favre	Revis	sion Date:	
Sequence Nu	umber: 1		Revision	n Number:	
Gene	erated: No			Origin: Field	Manager
IDF	R Date: 01/18/2	017 💌			
Insp	pector: BLF B	rett L Favre	•		
We	eather: cold / w	vindy			•
Low Tempe	rature: 38 °	F 3°C			
High Tempe	rature: 42 °	F 6°C			
Com	ments: "BD" 45 Install 0 For Stal	+29.66 to "BD" Salvanized Guai keout data see	61+79.66 rdrail with Traili e-mail: stakeou	ng End Anchor (it data 2017-01-	(Lt.) 18 BLF

Figure 17-1: Survey Crew Chief IDR General Tab

3. Complete a final review of the IDR and Generate it.

17

INSPECTOR'S RESPONSIBILITIES – GUARDRAIL ITEMS

- Use the Agreement Estimate report as a reference to ensure that items and quantities are paid in the correct category (AEB).
- Use the Structure List (Figure 17-2), located in the Contract plans and the Standard Plans, to help identity items, quantities, descriptions and locations.

Image: Normal State Image: Normal State<		PERPETUATE SURVEY MONUMENTS	GALVANIZED GUARDRAIL	TRAILING END ANCHOR	12-FOOT SWING GATE (DOUBLE)	72-INCH CHAIN-LINK FENCE	CLASS A CONCRETE SIDEWALK (4-INCH)	CLASS A CONCRETE CURB & GUTTER (TYPE 5)	CLASS A CONCRETE GLUE DOWN CURB (TYPE A)	CLASS A CONCRETE APRONS	CASTINGS	ADJUSTING COVERS (METHOD C)	ADJUSTING COVERS (METHOD B)	ADJUSTING COVERS (METHOD A)	CONCRETE BARRIER RAIL (TYPE A)	PORTABLE PRECAST CONCRETE BARRIER RAIL	CLASS A CONCRETE (ISLAND PAVING)	PLANTMIX MISCELLANEOUS AREAS	TYPE 1 CLASS A AGGREGATE	V-TYPE DITCHES		8-657 100 100 100 100 100 100 100 100 100 10
Image: Construct of the co		621 0006	618 0524	618 0038	616 0916	616 0712	613 0864	613 0732	613 0604	611 0508	609 0500	609 0120	609 0116	609 0112	502 0628	502 0616	502 0508	402 0660	302 0592	203 0556	DESCRIPTION	STATION TO STATION
1 1 1520 1		EACH	LINFT	EACH	EACH	4000	SQYE	LINFT	LINFT	CUYD	MUNCO	EACH	EACH	EACH	LINFT	LINFT	CUYD	SQYD	CUYD	STA	INSTALL 72-INCH CHAIN-LINK FENCE (LT.)	"BD" 42+50 "BD" 72+50
1 1000 2 1 1000 2 10000 1000 1000 1000 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1520</td> <td></td> <td>_</td> <td></td> <td></td> <td>_</td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td>CONSTRUCT CLASS A CONCRETE APRONS (LT.)</td> <td>"BD" 43+75.00</td>										1520		_			_		_				CONSTRUCT CLASS A CONCRETE APRONS (LT.)	"BD" 43+75.00
200 270 NSTALL CASTINGS (LT) *BD* 50+03.98 200 962 CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (LT) *Po* 0+78 100 100 CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (RT) *Po* 0+00 100 100 CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (RT) *Po* 0+00 100 100 CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (RT) *Po* 0+00 100 100 CONSTRUCT V-TYPE DITCH (LT.) *Po* 1+06 100 100 52.6 PLANTMIX MISCELLANEOUS AREA *Low* 20+33 100 100 52.6 PLANTMIX MISCELLANEOUS AREA *Low* 20+33 100 100 100 100 100 100			1050	2																	INSTALL GALVANIZED GUARDRAIL WITH TRAILING END ANCHOR (LT.)	"BD" 45+29.66 "BD" 61+79.66
302 302 CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (LT) "Pe" 4-40 "Pe" 4-40 "Pe" 4-40 "Pe" 4								-	-		270										INSTALL CASTINGS (LT.)	"BD" 50+03.98
100 100 CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (R) "Pe" 1496 100 100 "Pe" 1496 "Pe" 1496 100 2 2 CONSTRUCT V-TYPE DITCH (LT.) "Pe" 1496 100 52.6 PLANTMIX MISCELLANEOUS AREA "Lee" 204-33 100 24.3 PLANTMIX MISCELLANEOUS AREA "Lee" 221-00 100 24.3 PLANTMIX MISCELLANEOUS AREA "Lee" 221-00																362					CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (LT.)	"Pe" 0+78 "Pe" 4+40
2 CONSTRUCT V-TYPE DITCH (LT.) "Pe" 12-00 "Pe" 14-00 "Pe" 14-00 2 PLANTMIX MISCELLANEOUS AREA "Lne" 204-33 (LT.) (LT.) "Le" 201-33 2 PLANTMIX MISCELLANEOUS AREA "Lne" 204-33 243 PLANTMIX MISCELLANEOUS AREA "Lne" 221-00 (RT.) (RT.) "Le" 201-00																198					CONSTRUCT PORTABLE PRECAST CONCRETE BARRIER RAIL (RT.)	"Pe" 0+00 "Pe" 1+98
Image: Constraint of the second sec																				2	CONSTRUCT V-TYPE DITCH (LT.)	"Pe" 12+00
Image: Constraint of the sector of																						"Pe" 14+00
							-	-	-									52.5		-	PLANTMIX MISCELLANEOUS AREA	"Lne" 204+33
24.3 PLANTMIX MISCELLANEOUS AREA "Lne" 221+00 (RT.) (ISLAND SPANDREL)		 -				-	-		-											-	(LT.) (ISLAND SPANDREL)	
(RT.) (ISLAND SPANDREL)						1												24.3			PLANTMIX MISCELLANEOUS AREA	"Lne" 221+00
																					(RT.) (ISLAND SPANDREL)	

Figure 17-2: Example of a Structure List – Guardrail

- Review the following for accuracy:
 - Special Provisions
 - Supplemental Notices
 - Contract Modifications

Note: When any changes are made to an item, reference the Contract Modification number in the IDR item posting remarks.

• Turn in ALL Guardrail Item calculation sheets to the Office Engineer.

INSPECTOR DAILY REPORT (IDR) - MOBILE INSPECTOR

- Create an IDR in Mobile Inspector daily to document the activity being monitored. Refer to the <u>Mobile Inspector User Guide</u> for details on using this application.
 - Report Details daily activities
 - Item Postings item(s) and quantity(s)
 - Equipment type and hours
 - Personnel title and hours

- 2. Record the following required information in the Report Details window (Figure 17-3):
 - Date
 - Weather
 - Low and high temperature
 - Attachments (N/A) Send ALL photos via email.
 - Remarks Verify with the Resident Engineer on what information is required.

	Report Details
b	
Date:	Thu, 01/12/2017 👻
Weather:	Cold & Cloudy
Low Temp:	31 °F
High Temp:	40 °F
Attachments:	0
Remarks:	
"BD" 45 + 29.66 to "BD" Guardrail with Trailing Er work an hour earlier (6:0 done before the rain com contractor was able to co Galvanized Guardrail.	61 + 79.66 LT. Install Galvanized nd Anchor. Contractor wanted to start 0am) to try to get as much as possible nes in. By the end of the work day the pomplete installing the posts only of the
	31663 remaining

Figure 17-3: IDR Report Detail Window

- 3. Record the following required information in the New Item Postings window:
 - Item
 - Proj/Catg Refer to the AEB report.
 - Contractor ALWAYS the Prime Contractor (Subs are not allowed)
 - Qty-Based on measurements, calculations, counts and/or plan
 - Location Must show line designation, LT, RT or CL and offset if known.
 - Station From/To Refer to Contract plans.
 - Attention Flag Use to bring attention to Resident Engineer and Office Engineer for overruns and plan errors.
 - Remarks Must show calculations when appropriate, refer to Calculation Sheet when appropriate (Refer to Appendix B, Calculation Formulas, in this Manual for a Calculation Sheet example), other information relevant to item posting, and explanations when Attention Flag is checked.

NOTES for Guardrail Item postings:

- If there are questions on whether an EACH item can be listed separately or combined, contact the Construction Admin Services Section for assistance.
- The Design Division's Standards and 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 Contract plans are incorrect for the actual field conditions. On current and future contracts, contact the Standards and Compliance Section to schedule a review.
- The Resident Engineer will contact the Maintenance and Asset Division at the completion of every contract 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 the Construction Admin Services Section. If there are any questions, contact Maintenance and Asset Division for assistance.

- Per subsection 109.06, (Measurement and Payment) Partial Payment, 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 installed, 50% of the guardrail quantity shall be allowed for payment. The remaining 50% will be paid when the guardrail is complete.
- After each section of guardrail has been completed the final in-place measurement will be documented.
- Refer to Figure 17-4 through Figure 17-8 for examples of guardrail item postings with different UOM.

Item:	TRAILING END ANCHOR
Proj/Catg:	60638C2C, 07, Construct Ret
Contractor:	LAS VEGAS PAVING CORP
Qty:	2 EACH
Location:	"BD" LT
Station From:	45 + 29.66
Station To:	61 + 79.66
Attention Flag:	
Remarks:	
Item complete for this in	stallation

NOTES for Guardrail EACH (Figure 17-4):

- Payment for EACH items will be based on field count.
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. = 1



Item:	GALVANIZED GUARDRAIL
Proj/Catg:	60638C2C, 07, Construct Ret
Contractor:	LAS VEGAS PAVING CORP
Qty:	525 LFT
Location:	"BD" LT
Station From:	45 + 29.66
Station To:	61 + 79.66
Attention Flag:	
Remarks:	
Measurement = 1050 LFT Paid 50% for Posts only = 525	

Figure 17-5: IDR Item Posting - Guardrail LFT

NOTES for Guardrail LFT (Figure 17-5):

- Payment for LFT items will be based on field measurements.
- Pay 50% of the measured length (section) when the Posts are complete.
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. = 1

Item:	GALVANIZED GUARDRAIL
Proj/Catg:	60638C2C, 07, Construct Ret
Contractor:	LAS VEGAS PAVING CORP
Qty:	525 LF
Location:	"BD" LT
Station From:	45 + 29.66
Station To:	61 + 79.66
Attention Flag:	
Remarks:	
Final in place Measurer Paid 50% for Rail only =	nent = 1050 LFT = 525

Figure 17-6: IDR Item Posting - Guardrail LFT

New I	tem Posting
Item:	REMOVE AND RESET G
Proj/Catg:	60638C2C, 05, Install New Li
Contractor:	LAS VEGAS PAVING CORP
Qty:	300 LF
Location:	"W" LT
Station From:	370 + 50
Station To:	376 + 50
Attention Flag:	
Remarks:	
Measurement = 600 LFT Paid 50% for removal only.	
	205 remain

Figure 17-7: IDR Item Posting – Guardrail Remove and Reset LFT

NOTES for Guardrail LFT (Figure 17-6):

- Payment for LFT items will be based on field
 measurements
- Pay 50% of the measured length (section) when the Rail are complete
- After each length (section) of guardrail has been completed, the final in-place measurement shall be documented
- In Location, enter the Line Designation and LT, RT or CL.
- Sig. Fig. = 1

NOTES for Guardrail Remove and Reset LFT (Figure 17-7):

- Payment for LFT items will be based on field measurements.
- Guardrail must be Measured before removed
- Pay 50% for removal of the measured length (section) when completed.
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. = 1

New	Item Posting
Item:	REMOVE AND RESET G
Proj/Catg:	60638C2C, 05, Install New Li
Contractor:	LAS VEGAS PAVING CORP
Qty:	300 LFT
Location:	"W" LT
Station From:	370 + 50
Station To:	376 + 50
Attention Flag:	
Remarks:	
Measurement = 600 LFT Paid 50% for reset only.	
	207 remaining

NOTES for Guardrail Remove and Reset LFT (Figure 17-8):

- Payment for LFT items will be based on field measurements.
- Pay 50% for reset of the measured length (section) when completed.
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. = 1

Figure 17-8: Item Posting – Guardrail Remove and Reset LFT

- 4. Record the following required information in the New Equipment window (Figure 17-9 and Figure 17-10):
 - Contractor Actual contractor performing the work (include subs).
 - Type Detailed description of the equipment (e.g., diesel, HP, model, make).
 - Number How many of each type.
 - Hours Total hours in use.

Note: An attachment to an equipment's base configuration must have its own record.

LAS VECAS DAVI
LAS VEGAS FAVI *
Bobcat 256C Skid 🔻
1
8

Figure 17-9: IDR Equipment Entry

Add Equipment	
LAS VEGAS PAVING CORPORATION	
Bobcat 256C Skid Steer, Diesel, 82HP, 2	2350lbs
Number: 1.00 Hours: 8.00	
LAS VEGAS PAVING CORPORATION	
Bobcat Auger Loader, Attachment, 15C	w/12" bit
Number: 1.00 Hours: 8.00	

Figure 17-10: IDR Equipment List

- 5. Record the following required information in the New Personnel window (Figure 17-11 and Figure 17-12):
 - Contractor Actual contractor performing the work (include subs).
 - Type Details of personnel type (e.g., foreman, laborer, truck driver).
 - Number How many of each title.
 - Hours Total hours worked.

Contractor:	LAS VEGAS PAVING CO 🔻
Туре:	Foreman - Donald Driver
Number:	1
Hours:	8

Figure 17-11: IDR Personnel Entry

Add Personnel		
Number: 1.00	Hours: 8.00	
LAS VEGAS PAVING	G CORPORATION	
Laborer		
Number: 3.00	Hours: 8.00	
LAS VEGAS PAVING	G CORPORATION	
Operator		
Number: 2.00	Hours: 8.00	

Figure 17-12: IDR Personnel List

6. Complete a final review of the IDR and lock it.

Note: When a Mobile Inspector IDR is completed and locked the information is uploaded into a FieldManager IDR, where it is reviewed and generated for processing progress payments.

OFFICE ENGINEER'S RESPONSIBILITIES – GUARDRAIL ITEMS

- Collect all Material Certifications. Scan and save them to the appropriate EDOC Contract Files\Material and Testing Files\Division No. 4 Materials Division Certs and Test Reports\4.# directory. Send original certifications to the Materials Division for approval.
- Save emails containing survey stakeout data in the EDOC Contract Files\Contract Files\Division No 12 Miscellaneous\12.8 Stakeout Data directory.
- Save Guardrail Items photos in the appropriate EDOC Contract Files\Contract Files\Division No. 3 Multimedia Records\3.# Photographs with Descriptions directory.
- Review guardrail item calculation sheets for accuracy and save electronically in the appropriate EDOC Contract Files\Contract Files\Division No. 7 Construction Pay Estimate and Related Data\7.# IDR Calculation Sheets directory using this naming convention: IDR YYYY-MM-DD Inspectors Initials, (e.g. IDR 2017-03-19 KMM).
- Approve materials in FieldManager when the approved material certifications are received from the Materials Division. Refer

to Chapter 6, Working with Materials, in the FieldManager User Guide, for details.

Distribute executed copies of Contract Modifications to Inspectors.

INSPECTOR DAILY REPORT (IDR) - FIELDMANAGER

When a Mobile Inspector IDR is locked by an Inspector, the information is uploaded into a FieldManager IDR. Refer to Chapter 7, Inspector Daily Report, in the FieldManager User Guide for details.

- 1. Verify the following:
 - Information in Comments and Remarks
 - Information in the Contractor tab (Personnel and Equipment)
 - Items are paid correctly according to the contract documents (e.g., plans, supplemental notices, Contract Modifications).
 - Item quantities
 - Quantities in postings are documented to the correct Significant Figure.
 - Stations and Line Designations in the Locations
 - Calculations are correct.
 - Remarks reference calculation sheets, if applicable.

Note: Length does not always equal the difference between the beginning and ending station. Sometimes there is a curve or an obstacle that will affect the distance. Always check with the Inspector before assuming the calculations are incorrect.

2. Generate the IDR.