

# **DRAINAGE AND WALL ITEMS**

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## OVERVIEW

Drainage and Wall Items have different documentation requirements for each unit of measure (UOM). All Drainage and Wall Items must be counted, measured, calculated and/or based on plan. Documentation examples for a few selected Drainage and Wall 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 – DRAINAGE AND WALL 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 14-1):
  - IDR Date
  - Weather
  - Inspector
  - Low and high temperature
  - Comments – Overview of survey activities for the day

General	Contractors	Site Times	Postings	Attachments	View
Date/Time Entered: 02/01/2017		Revised By:			
Entered By: Brett Favre		Revision Date:			
Sequence Number: 1		Revision Number:			
Generated: No		Origin: FieldManager			
IDR Date:	02/01/2017				
Inspector:	BLF Brett L Favre				
Weather:	Cool and clear				
Low Temperature:	35 ° F 2° C				
High Temperature:	50 ° F 10° C				
Comments:	BD* 19+21.80 Construct Type 3 D.I. 59.5' Lt., H =3.45' Install 18" x 76" RCP w/safety slope end section Lt. Install Class 150 Rip Rap apron Lt. Connect to earthen Ditch. For stakeout data see e-mail: stakeout data 2017-02-01 BLF				

Figure 14-1: Survey Crew Chief IDR General Tab

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

## INSPECTOR'S RESPONSIBILITIES – DRAINAGE AND WALL 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 - Drainage Sheet (Figure 14-2), located in the Contract plans, and the Standard Plans, to help identify items, quantities, descriptions and locations.

STRUCTURE LIST-DRAINAGE												
											STATION TO STATION	
DESCRIPTION												
NOTE: ALL LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BY THE ENGINEER												
2.00	2.00	377	1	72	61	1.00	6	14	7	CONSTRUCT TYPE 3 DI, 59.50' LT, H=3.45' INSTALL 18" X 72.30' RCP W/SAFETY SLOPE END SECTION LT. INSTALL CLASS 150 RIRRAP APRON LT CONNECT TO EARTHEN DITCH (SEE SHEET SD-19)		'BD' 19+21.80
		377	30	80	0.90	7	11			CONSTRUCT TYPE 3 DI, 59.50' LT, H=3.20' INSTALL 18" X 30.00' RCP CONNECT TO STRUCTURE 2.1 (SEE SHEET SD-19)		'BD' 19+54.30
		377	30	59	0.98	7	10			CONSTRUCT TYPE 3 DI, 59.50' LT, H=3.20' INSTALL 18" X 30.00' RCP CONNECT TO STRUCTURE 2.2 (SEE SHEET SD-19)		'BD' 19+88.37
		367	63	178	2.28	12	21			CONSTRUCT TYPE 11 DI, 59.50' LT, H=3.20', L=12' INSTALL 18" X 69.03' RCP CONNECT TO STRUCTURE 2.3 (SEE SHEET SD-19)		'BD' 20+58.36

**Figure 14-2: Example of a Structure List – Drainage**

- 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 Drainage and Wall Item Calculation Sheets to the Office Engineer.

## INSPECTOR DAILY REPORT (IDR) – MOBILE INSPECTOR

1. Create an IDR in Mobile Inspector daily to document the activity being monitored. Refer to the [Mobile Inspector User Guide](#) for details on using this application.
  - Report Details – daily activities
  - Item Postings – item and quantity
  - Equipment – type and hours
  - Personnel – title and hours
2. Record the following required information in the Report Details window (Figure 14-3):
  - 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.

**Figure 14-3: IDR Report Detail Window**

- 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 Drainage and Wall 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.
- When installing slotted corrugated metal pipe drains and pipes with end sections, care should be taken when measuring for payment. Do not include the length of the end section in the measurement (refer to the Standard Plans).
- Prior to excavation operations ensure survey of surfaces are complete in the event of re-measurement and/or re-calculation requests made by the Contractor or Resident Engineer.
- Quantities for structure excavation, granular backfill, concrete, reinforcing steel, and structural steel may be based on planned quantity, unless the length of pipe or RCB placed differs three feet (3') or more from plan quantity. All quantities effected by the difference must be recalculated or prorated based on the original quantities, with an explanation and cross-reference to the IDR Posting of where the item was either lengthened or shortened three feet (3') or more. See Appendix B, Calculation Formulas, for examples of calculations and prorations. Example of a structure excavation proration:

Pipe plan = 40 LFT  
 Pipe field measure = 45 LFT  
 Structure Excavation plan = 120 CUYD  
 $45 \div 40 = 1.125 \times 120 = 135$  CUYD new quantity for structure excavation

- Refer to Figure 14-4 through Figure 14-10 for examples of Drainage and Wall Item postings with different UOM.

**New Item Posting**

Item: STRUCTURE EXCAVATION

Proj/Catg: Select

Contractor: LAS VEGAS PAVING CORP...

Qty: 1058.37 CUYD

Location: "BD" 19 + 21.80 LT

Station From: [ ] + [ ]

Station To: [ ] + [ ]

Attention Flag: [ ]

Remarks:  
 $76 \times 6 \times 20 / 27 = 337.78$   
 $[1/2 (16 \times 16) \times 2] \times 76 / 27 = 720.59$  (1:1 Safety Slope)  
 $337.78 + 720.59 = 1058.37$

139 remaining

Figure 14-4: IDR Item Posting - Drainage and Wall CUYD

NOTES for Drainage and Wall CUYD/CUFT (Figure 14-4):

- Payment for CUYD items will be based on plan quantity or field measurements and calculations if different than plan. Payment for CUFT items will be based on field measurements and calculations.
- Calculations for CUYD =  $L \times W \times D \div 27$
- Calculations for CUFT =  $L \times W \times D$
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. = .01
- In no case will the payment for any area exceed the net amount without authorized changes and/or final measurement.

**New Item Posting**

Item: RIPRAP (CLASS 300)

Proj/Catg: 60638C3C, 09, CCRFCD Bo...

Contractor: LAS VEGAS PAVING CORP...

Qty: 52.72 CUYD

Location: "BD" 19 + 21.80 LT

Station From: [ ] + [ ]

Station To: [ ] + [ ]

Attention Flag: [ ]

Remarks:  
 $260 \times 7.3 \times .75 / 27 = 52.72$

226 remaining

Figure 14-5: IDR Item Posting - Drainage and Wall CUYD

NOTES for Drainage and Wall CUYD/CUFT (Figure 14-5):

- Riprap items must be field measured with calculations.
- Calculation for CUYD =  $L \times W \times D \div 27$
- Calculation for CUFT =  $L \times W \times D$
- In Location, enter the Line Designation and LT, RT, to CL.
- Sig. Fig. = .01

**New Item Posting**

**Item:** 18-INCH METAL END SE... ▼

**Proj/Catg:** 60638C2C, 07, Construct Ret...

**Contractor:** LAS VEGAS PAVING CORP...

**Qty:**  EACH

**Location:** "BD" 19 + 21.80 LT

**Station From:**  +

**Station To:**  +

**Attention Flag:**

**Remarks:**

Item complete for this installation.  
 See plan sheet SD-18

196 remaining

**Figure 14-6: IDR Item Posting - Drainage and Wall EACH**

NOTES for Drainage and Wall EACH (Figure 14-6):

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

**New Item Posting**

**Item:** 18-INCH REINFORCED C... ▼

**Proj/Catg:** 60638C2C, 10, Construct Hy...

**Contractor:** LAS VEGAS PAVING CORP...

**Qty:**  LFT

**Location:** "BD" 19 + 21.80 LT

**Station From:**  +

**Station To:**  +

**Materials:**

**Attention Flag:**

**Remarks:**

Pipe extended due to an obstruction found in the field.  
 Item complete for this installation.  
 See plan sheet SD-18

138 remaining

**Figure 14-7: IDR Item Posting - Drainage and Wall LFT**

NOTES for Drainage and Wall LFT (Figure 14-7):

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

**New Item Posting**

Item: REINFORCING STEEL

Proj/Catg: 60638C3C, 09, CCRFCD ...

Contractor: LAS VEGAS PAVING CORP...

Qty: 61 LB

Location: "BD" 19 + 21.80 LT

Station From: [ ] + [ ]

Station To: [ ] + [ ]

Materials:

Attention Flag:

Remarks:

Paid plan.  
Item complete for this installation. See plan sheet SD-18  
The extended length of the pipe did not affect this item.  
See email: IDR 2017-1-5 KMM

95 remaining

Figure 14-8: IDR Item Posting – Drainage and Wall LB

NOTES for Drainage and Wall LB (Figure 14-8):

- Payment for POUND (LB) items will be based on plan quantity or field measurements and calculations (per Subsection 505.04.01, (*Reinforcing Steel*) Measurement, of the Standard Specifications or the Standard Plans) if different than plan.
- If a pound item comes in a container or bag, you must take a picture of the label on the delivered container and email it to your Office Engineer for backup to confirm the quantity of the container.
- Check the Attention Flag to notify the Office Engineer there's email that belong with this Item Posting.
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. 1

**New Item Posting**

Item: REINFORCING STEEL

Proj/Catg: 60950C1C, 01, Re-align US-...

Contractor: ROAD AND HIGHWAY BUIL...

Qty: 155 LB

Location: "REW" 721 + 99.18

Station From: [ ] + [ ]

Station To: [ ] + [ ]

Attention Flag:

Remarks:

Plan Qty. for Ty. 2 DI = 115lbs. (Str. List Sheet S2).  
DI walls had to be raised addition 4ft. to match roadway elevation change.  
Per 2017 Standard Plans pg. R-43 for rate (lbs./ft.).  
10lbs. X 4ft. = 40lbs  
115lbs. + 40lbs. = 155lbs.

15 remaining

Figure 14-9: IDR Item Posting – Drainage and Wall LB

NOTES for Drainage and Wall LB (Figure 14-9):

- Payment for POUND (LB) items will be based on plan quantity or field measurements and calculations (per Subsection 505.04.01, (*Reinforcing Steel*) Measurement, of the Standard Specifications or the Standard Plans) if different than plan.
- In Location, enter the Line Designation and LT, RT, or CL.
- Give a detailed explanation when payment differs from plan.
- Sig. Fig. = 1

**New Item Posting**

**Item:** GEOTEXTILE (CLASS 2) ▼

**Proj/Catg:** 60638C3C, 09, CCRFCD ... ▼

**Contractor:** LAS VEGAS PAVING CORP... ▼

**Qty:** 7.0 SQYD

**Location:** "BD" 19 + 21.80 LT

**Station From:**   +  

**Station To:**   +  

**Materials:**

**Attention Flag:**

**Remarks:**

7 x 9 / 9 = 7.0  
 Completed for this installation  
 See plan sheet SD-18

184 remaining

NOTES for Drainage and Wall SQYD/SQFT (Figure 14-10):

- Payment for SQYD and SQFT items will be based on field measurements and calculations.
- Items related to sound and MSE walls (walls, concrete stain, etc.) that have a UOM of SQYD may be paid to plan. If different than plan, calculations are required.
- Calculation for SQYD =  $L \times W \div 9$
- Calculation for SQFT =  $L \times W$
- In Location, enter the Line Designation and LT, RT, or CL.
- Sig. Fig. = .1

**Figure 14-10: IDR Item Posting – Drainage and Wall SQYD/SQFT**

4. Record the following required information in the New Equipment window (Figure 14-11 and Figure 14-12):
  - 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.

**New Equipment**

**Contractor:** LAS VEGAS PAVI... ▼

**Type:** Bobcat 256C Skid ... ▼

**Number:** 1

**Hours:** 8

**Figure 14-11: IDR Equipment Entry**

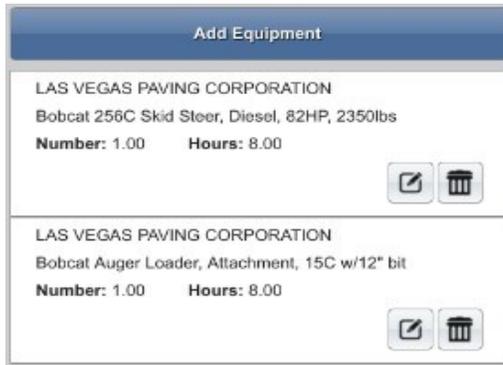


Figure 14-12: IDR Equipment List

5. Record the following required information in the New Personnel window (Figure 14-13 and Figure 14-14):
  - 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



Figure 14-13: IDR Personnel Entry



Figure 14-14: 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 – DRAINAGE AND WALL 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.
- Complete a final review of the IDR and lock it.
- Save emails containing TBC survey stakeout report/data in the appropriate EDOC Contract Files\Contract Files\Division No 12 - Miscellaneous\12.# Stakeout Data directory.
- Save drainage and wall item photos in the appropriate EDOC Contract Files\Contract Files\ Division No. 3 - Multimedia Records\3.# Photographs with Descriptions directory.
- Review Drainage and Wall 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 2016-03-19 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.

