

Memorandum

To	CPRA and Weeks Marine	Page	1
CC			
Subject	Grand Liard - Measurement for Payment - Sheet Pile Closure Sand Volumes and Sheet Pile Areas		
From	AECOM		
Date	November 11, 2014	Project Number	60315916

1. Introduction

This memorandum details the calculation of sand fill volume and sheet pile area installed in all sheet pile closures (SC). The SCs include 11, 12, 13, 14, 15, 16, 17, and 18. Sand volumes and sheet pile areas were calculated for the purposes of payment (i.e., within design template).

Sand volume calculations were performed using the average end area method. Sheet pile area was calculated using the plan view sheet pile width and the length of sheet installed. Cross-sectional surveys of the sand berm and plan view sections of sheet pile for each SC were provided by Weeks Marine in an AutoCAD format. These calculations only used the post-construction surveys that were also used for final CPRA approval of sand placement and sheet pile installation.

2. Sand Volume

Sand volume for payment calculated the area of sand placed within the design template. Template assumptions include:

- Placement to a crest elevation of +2 feet NAVD88.
- Payable over placement tolerance of 0.5 feet above crest elevation (i.e., an elevation of +2.5 feet NAVD88).
- Crest width of 8 feet (i.e., 4 feet on each side of the SC centerline).
- Side slopes of 5:1 (horizontal: vertical) extending from the crest at an elevation of +2 feet NAVD88 to the sediment surface.

Sand volumes for each SC were calculated using the post-construction sand placement surveys. These surveys were also used by CPRA to approve each SC for sheet pile installation. Table 1 shows the sand volumes by SC in cubic yards (CY).

3. Sheet Pile Area

Sheet pile areas were calculated using the width and length of sheet pile installed in each SC. The width was measured from the post-construction sheet pile surveys accepted by CPRA. The width of each sheet pile was specified in design documents and visually verified by AECOM observers. Installed sheet pile widths, lengths, and areas for payment by SC are show in Table 2.

Table 1: Sheet Pile Closure Sand Fill Volumes

Sheet Pile Closure	Volume for Payment (CY)
SC 11	0
SC 12	189
SC 13	1,442
SC 14	317
SC 15	4,946
SC 16	715
SC 17	4,487
SC 18	359
Total	12,455

Table 2: Sheet Pile Closure Sheet Pile Areas

Sheet Pile Closure	Sheet Pile Closure Width (Feet)	Sheet Pile Length (Feet)	Sheet Pile Area for Payment (Square Feet)
SC 11	98.2	20	1,964
SC 12	124	20	2,480
SC 13	175	25	4,375
SC 14	137.1	20	2,742
SC 15	437	35	15,295
SC 16	199.7	21	4,194
SC 17	456	25	11,400
SC 18	135.1	20	2,702
Total	1,762	-	45,152