



MEMORANDUM

DATE: December 15, 2020

TO: Jaclyn Daly (NOAA), Barb Mahoney (NOAA), Greg Balogh (NOAA), and Anne Logwood (USACE)

FROM: Paul McLarnon and Leslie Curran (PCT Project Management Office)

CC: Kevin Doyle, Shelle Cover, Anna Kohl, Suzann Speckman, Sim Brubaker, and Steve Lee (PCT Project Management Office)

Subject: Monthly Field Report for October 2020, Petroleum and Cement Terminal Construction Project, Port of Alaska.

THIS REPORT CONTAINS PRELIMINARY DATA – INFORMATION MAY CHANGE AFTER A MORE DETAILED QA/QC IS COMPLETED.



SUBMITTAL COVER SHEET

Project PCT 2020 Date Submitted: 12/11/2020
Contractor Pacific Pile & Marine Contract No. C-2019003209
Subcontractor /Supplier / Manufacturer: 61 North
Submittal No.: PCT2020-261E Revision: 01

Submittal Type: ☐ Action ☒ Informational

Submittal Title: PCT 2020 - Marine Mammal Monitoring Monthly Report – October 2020 - Rev 01

Drawing Reference(s):

Specification Reference(s): 01 41 00 / 01.03.A.04

Standards Reference(s):

Submittal Description (inclusive of model number, style number, serial number and intended use:

Marine Mammal Monitoring Monthly Report – October 2020 - Rev 01

Is this a deviation from Contract Documents (Yes/No)?

No

CQCSM Verification:

- ☐ Review by CQCSM not performed/required
- ☒ (a) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown (no exceptions), and the submittal is required by the Contract Documents.
- ☐ (b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (list deviations; attach a separate sheet as necessary), and the submittal is required by the Contract Documents

CQCSM Signature: Jim Page - CQCSM

Owner's Representative Review:

- ☐ No Exceptions Taken
- ☐ Exceptions Noted
- ☐ Revise and Resubmit
- ☐ Rejected
- ☐ Review Not Required

Notes (additional notes/comments may be attached):

Owner's Representative Signature: _____

Corrections or Comments made relative to submittals during this review do not relieve the Contractor from compliance with the requirements of the Drawings and Specifications. This submittal is only for review of general conformance with the design concept of the Project and general compliance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of other trades; and performing his work in a safe and satisfactory manner.

Port of Alaska Modernization Program Petroleum and Cement Terminal - 2020 Construction

Monthly Marine Mammal Monitoring Report

1 October to 31 October 2020

Prepared for

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and

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Appendix A – In-Water Activity Detail

Acronyms and Abbreviations

61N	61 North Environmental
ESA	Endangered Species Act
HDR	HDR, Inc.
IHA	Incidental Harassment Authorization
ITS	Incidental Take Statement
MMO	marine mammal observer
MOA	Municipality of Anchorage
NEX	North Expansion
NMFS	National Marine Fisheries Service
PAMP	Port of Alaska Modernization Program
PCT	Petroleum and Cement Terminal
POA	Port of Alaska
PPM	Pacific Pile and Marine
PW	Point Woronzof
SC	Ship Creek

1 Introduction

The National Marine Fisheries Service (NMFS) issued the Port of Alaska (POA) an Incidental Harassment Authorization (IHA) under the Marine Mammal Protection Act on 31 March 2020, effective 1 April 2020 for construction of the Petroleum and Cement Terminal (PCT) (NOAA 2020a) as described in the Federal Register, Volume 85, Number 66, page 19294 (NMFS 2020; 85 FR 19294). NMFS also completed a consultation under Section 7 of the Endangered Species Act (ESA) and issued a biological opinion of the effect the project may have to threatened and endangered species. NMFS issued an incidental take statement (ITS) under the ESA that mirrors and complements the IHA for ESA-listed species.

The PCT is a component of the Port of Alaska (POA) Modernization Program (PAMP). The Municipality of Anchorage (MOA) owns the POA and is the PCT project owner. Pacific Pile and Marine (PPM) is the prime contractor for PCT construction work in 2020 and 61 North Environmental (61N) is a subcontractor to PPM. The MOA contracted with CH2M Hill, Inc. (now a subsidiary of Jacobs Engineering Group) and HDR, Inc. (HDR) to provide permitting and compliance services for the PCT project.

The IHA and ITS require implementation of mitigation measures such as shutdowns and delays of pile installation or removal during construction of the PCT to reduce the impacts to protected marine mammal species. Beginning on 27 April 2020, 61N deployed eleven marine mammal observers (MMO) to four observation locations near the POA to monitor the waters of lower Knik Arm in Upper Cook Inlet. During the month of October 2020, the MMOs monitored for 3 days. The MMOs assist PPM in implementation of the mitigation measures by alerting the construction crew when marine mammals are within or approaching harassment zones. Typically, the MMOs communicate with PPM superintendents and foreman by radio and mobile phone. The MMOs document in-water construction activities including pile installation and removal, vessel traffic, anchor handling, and other relevant activity; sightings of marine mammals, group composition, behaviors, and location; and environmental and visibility conditions. All observation stations are equipped with laptops and high-speed data connections. All data is entered into Microsoft Access forms, and saved instantaneously to a cloud-hosted SQL server.

This report contains descriptions and summaries of the preliminary data collected including monitoring effort and environmental conditions, in-water operations and pile work completed, mitigation measures implemented, marine mammal species present and behavioral observations, and potential exposures or takes of marine mammals.

2 Monitoring Effort and Environmental Conditions

The waters of lower Knik Arm in upper Cook Inlet, Alaska near the PCT are monitored from four observation stations: near Point Woronzof (PW), at Ship Creek (SC), at the PCT, and at the North Expansion (NEX) of the POA (Figure 1).



Figure 1 - Observation Stations and the In-bound (white line) and Out-bound (green line) Pre-Pile Driving Clearance Demarcation Lines

The PCT station is staffed by two MMOs including the field lead. The PCT station monitors marine mammal activity near the PCT, pile driving and removal, other in-water activity, and the harassment and shutdown zones near the PCT. The NEX, SC, and PW stations are staffed by three MMOs each, rotating between duties including: scanning with 7X50 binoculars or unaided eye, scanning with the 25X150 “big eye” tripod mounted binoculars (NEX and PW) or 20X/40X tripod mounted binoculars (SC), and a data collection/rest shift in a data shack.

Each morning, pre-clearance monitoring begins when all three of the large binoculars are set up and active scanning has begun at all four stations. The monitoring ends approximately 10 hours after the start time unless additional time is required by construction activities. MMOs are afforded a 15-minute break (or combination of smaller breaks) in the morning and again in the afternoon. They also take an unpaid half-hour lunch break. The lunch breaks typically occur between 11:30 and 13:00 but may be taken earlier or later if there is an active sighting or planned in-water activity, or both.

Monitoring Effort

Observation hours are summarized on a project level, a per-station level, and a per-MMO level. The project-level observation hours are calculated as the duration between the beginning of pre-clearance and the end of observations each day. Observations in generally end at a scheduled time (17:15), unless in-water activity occurs late in the day, and the 30-minute post pile driving monitoring period extends past the scheduled shift. The station-level hours are calculated based on the project hours multiplied by four stations. Actual station start times may be a few minutes earlier because pre-clearance does not begin until the last station reports the start of monitoring. The MMO observation duration is calculated by multiplying the project-level hours by seven “on watch” MMOs, subtracting break periods (30-minute lunch, and a 15-minute break each morning and afternoon). In practice, breaks are typically taken during the data collection rotation, and the actual total “on watch” hours may be greater than estimated.

No in-water pile driving or removal or in-water construction with heavy equipment (e.g. excavator) was conducted between 13 September to 28 October, and no marine mammal monitoring occurred during this time. Observations were conducted 29 October through 31 October, however, relative to earlier in the season, the daily duration of observation was shorter due to fewer daylight hours and construction activities that did not require monitoring. The monthly observation hours are presented in Table 1.

Table 1 - Observation Effort

Date	Begin Time	End Time	Project Observation Hours	Station Observation Hours ¹	MMO Observation Hours ²
10/1/2020	n/a	n/a	n/a	n/a	n/a
10/2/2020	n/a	n/a	n/a	n/a	n/a
10/3/2020	n/a	n/a	n/a	n/a	n/a
10/4/2020	n/a	n/a	n/a	n/a	n/a
10/5/2020	n/a	n/a	n/a	n/a	n/a
10/6/2020	n/a	n/a	n/a	n/a	n/a
10/7/2020	n/a	n/a	n/a	n/a	n/a
10/8/2020	n/a	n/a	n/a	n/a	n/a
10/9/2020	n/a	n/a	n/a	n/a	n/a
10/10/2020	n/a	n/a	n/a	n/a	n/a
10/11/2020	n/a	n/a	n/a	n/a	n/a

Date	Begin Time	End Time	Project Observation Hours	Station Observation Hours ¹	MMO Observation Hours ²
10/12/2020	n/a	n/a	n/a	n/a	n/a
10/13/2020	n/a	n/a	n/a	n/a	n/a
10/14/2020	n/a	n/a	n/a	n/a	n/a
10/15/2020	n/a	n/a	n/a	n/a	n/a
10/16/2020	n/a	n/a	n/a	n/a	n/a
10/17/2020	n/a	n/a	n/a	n/a	n/a
10/18/2020	n/a	n/a	n/a	n/a	n/a
10/19/2020	n/a	n/a	n/a	n/a	n/a
10/20/2020	n/a	n/a	n/a	n/a	n/a
10/21/2020	n/a	n/a	n/a	n/a	n/a
10/22/2020	n/a	n/a	n/a	n/a	n/a
10/23/2020	n/a	n/a	n/a	n/a	n/a
10/24/2020	n/a	n/a	n/a	n/a	n/a
10/25/2020	n/a	n/a	n/a	n/a	n/a
10/26/2020	n/a	n/a	n/a	n/a	n/a
10/27/2020	n/a	n/a	n/a	n/a	n/a
10/28/2020	n/a	n/a	n/a	n/a	n/a
10/29/2020	8:45	17:41	8.93	35.7	55.5
10/30/2020	8:43	15:10	6.45	25.8	38.2
10/31/2020	8:45	11:00	2.25	9.0	14.0
Total Hrs Observation:			15.38	61.53	93.68
Notes: ¹ equals project hours X 4 Stations ² equals project hours X 7 MMOs “on watch” minus breaks n/a = No in-water pile installation or removal was conducted, and no marine mammal monitoring occurred.					

Environmental Conditions

MMOs at each station typically record the environmental conditions upon station setup and every half hour throughout the day. MMOs also make additional entries for major changes in weather and to record other relevant activity that is not related to PCT construction (i.e. dredge vessel, private

vessel, etc.). All observations are conducted during daylight hours. The environmental attributes recorded include general observation conditions (a scale of 1 to 10; 1 = poor, 5 = moderate, 10 = excellent), weather condition (cloudy, sunny, raining, etc.), light conditions (light, dark, twilight), cloud cover (percent), ice cover (percent), sea state (Beaufort scale), glare (percent), and visibility (distance at which a white beluga could be sighted with optics). During the 3 days of observation in October 2020, MMOs recorded 155 observations of environmental conditions.

The overall observation conditions were good for the three observation days in October, but were worse than previous months. The average observation condition was 7.1 on a scale of 1 to 10 and was 7 or greater for 76 percent of the records entered. The average visibility was about 5,600 meters, the median was 6,500 meters, and was greater than or equal to 5,000 meters for 74 percent of the observations. Thermal distortion was mentioned 5 times as affecting visibility at long distances. Cloud cover averaged 65 percent and exceeded 50 percent about 62 percent of the time. Twice on the morning of 29 October, fog reduced visibility inside the Level B zone and caused delays of work. On the morning of 30 October, fog reduced visibility to less than 750 meters at all stations for more than two hours causing a delay in work. Glare was recorded as 0 percent for 96 percent of observations and less than or equal to 10 percent for 100 percent of observations.

Wind and sea state conditions were similar to September during the three days of observation in October. A summary of the weather conditions observed is presented in Table 2 and a summary of the Beaufort sea state observed is presented in Table 3.

Table 2. Summary of Weather Conditions

Weather Condition	Percent Occurrence ¹
Sun	23.9%
Partly Sunny	3.9%
Partly Cloudy	16.1%
Cloudy	31%
Fog	25.2%
Mist	0%
Light Rain	0%
Rain	0%
Note: ¹ percentages total to 100.1% due to rounding	

Table 3. Summary of Beaufort Sea State Observations

Beaufort Sea State	Percent of Observations
0	0%
1	9%
2	87%
3	4%
4	0%
>=5	0%

The tidal stages were pre-loaded into the database and are auto-populated based on the time stamp of the observation. The definitions for the tidal stages used are presented in Table 4 and a summary of tidal stages recorded is presented in Table 5.

Table 4. Tidal Stage Definitions

Tide Stage	Definition
Low Slack	Plus or minus one hour from low tide
Low Flood	Begins at the end of low slack, ends half-way between ¹ the end of low slack and the start of high slack
High Flood	Begins half-way between ¹ the end of low slack and the start of high slack, ends at the start of high slack
High Slack	Plus or minus one hour from high tide
High Ebb	Begins at the end of high slack, ends half-way between ¹ the end of high slack and the start of low slack
Low Ebb	Begins half-way between ¹ the end of high slack and the start of low slack, ends at the start of low slack

Note: ¹ “half-way between” is time-based, and may not represent the actual, physical half-way point between high and low tide on the sinusoidal tidal graph. The time-based half-way point was used to simplify the calculation of tidal stage for over 300,000 tide prediction records.

Table 5. Summary of Tide Stages Recorded

Tide Stage	Percent of Observations ¹
Low Slack	20%
Low Flood	15%
High Flood	10%
High Slack	2%
High Ebb	31%
Low Ebb	22%

Wind speed, direction, and air temperature are not recorded by the MMOs as these meteorological data are available from the National Oceanic and Atmospheric Administration (NOAA) tide station 9455920 located at the POA, a few hundred meters from the PCT (NOAA 2020b). The wind speed and direction for the times on the three days worked in October were downloaded in six-minute intervals from the NOAA meteorological observations page for the Anchorage, Alaska tide station 9455920 (2020b). The data was limited to times when observation was occurring on each day. These data are summarized and presented in Figure 2.

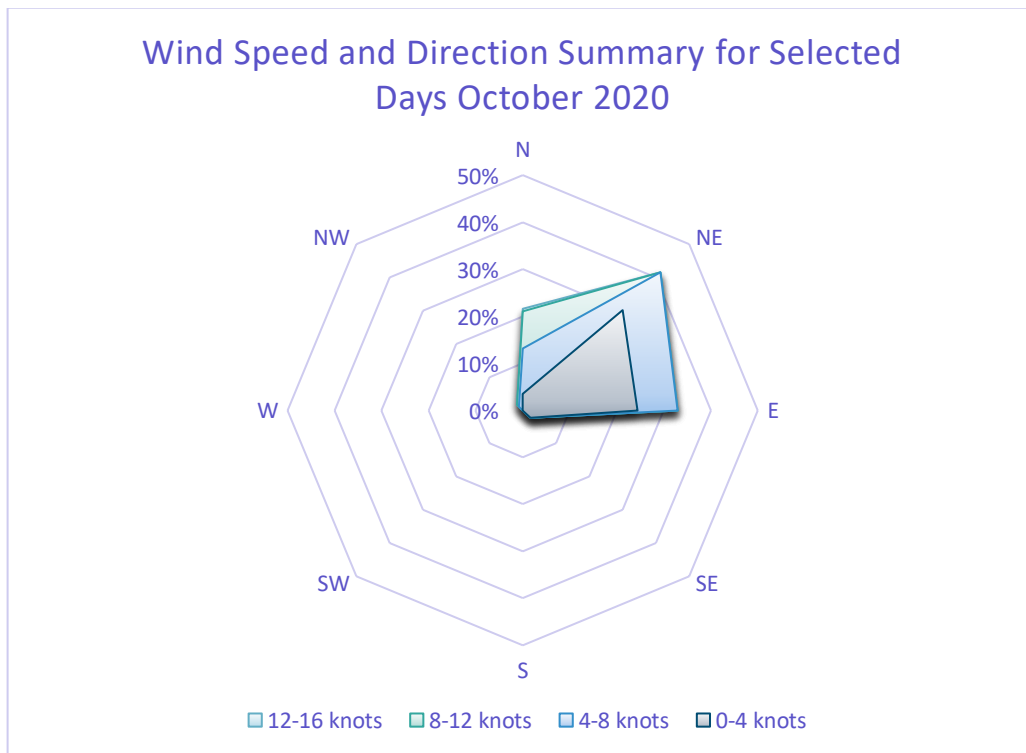


Figure 2. Wind Speed Rose, NOAA Tide Station 9455920, Anchorage Alaska, October 29 (-4, and 8-12 (07:00 to 18:00 daily)

The wind rose presented in Figure 2 shows that wind was typically out of the northeast, east, and north. Wind gusts exceeded 15 knots at times on 31 October.

3 In-Water Operations

During the month three days of observation in October 2020 there were 7 in-water activity events, totaling 159.1 minutes of activity, all of which were pile removal events. Obstructions prevented installation of the bubble curtain and the piles were removed in water greater than 3 meters without attenuation. A summary of the in-water activity is presented in Table 6. Details of the in-water activity is provided in Appendix A.

Other nearby vessel activity, dredging, and personal watercraft operations are documented in the observation effort notes or sighting notes if interactions with marine mammals occur, but the duration of these other activities is not documented if not related to PCT construction.

Table 6 Monthly Summary of In-Water Activity

Activity	Number of Instances	Total Minutes	In-Water Activity Group Totals					
			#	Mins	#	Mins	#	Mins
Impact Hammer – Attenuated	0	0	7	159.1	7	159.1	7	159.1
Impact Hammer – Unattenuated	0	0						
Vibratory Hammer – Attenuated	0	0						
Vibratory Hammer – Unattenuated	7	159.1						
Vibratory Installation of Bubble Curtain	0	0						
Other In-Water Activity	0	0						

Other Non-PCT Activity

The MMOs typically document other vessel activity not related to the PCT in lower Knik Arm, but no other activity occurred during the three days of observation in October.

4 Pile Driving Shutdowns, Delays, and Other Mitigation Measures

The IHA requires a delay of pile installation or removal if:

- Belugas are present within the pre-clearance zone and on a trajectory towards a Level B zone or are sighted within a Level B zone
- Any marine mammal is sighted within the 100-meter shutdown zone
- A marine mammal for which no takes have been authorized approaches or enters any harassment zone.

If pile installation or removal is already underway, then a shutdown is required if:

- Belugas are sighted within or about to enter a Level B zone
- Any marine mammal is sighted within the 100-meter shutdown zone
- A marine mammal for which no takes have been authorized approaches or enters any harassment zone.

If visibility of the applicable harassment zone is lost, then installation or removal of the next pile (or segment) must be delayed until conditions improve such that the zone can be effectively monitored. If the Level B harassment zone cannot be monitored for more than 15 minutes, the entire Level B harassment zone must be cleared again for 30 minutes prior to pile driving.

During the three days of observation in October 2020, pile removal was delayed three times due to loss of visibility because of fog. The delays and shutdowns are summarized in Table 7.

Table 7 - Monthly Summary of Delay and Shutdown Mitigation Measures

Delay/Shutdown Type	Start Time	End Time	Marine Mammal Group ID	Mitigation Duration (minutes)
Delay, weather	10/29/2020 9:40	10/29/2020 10:16	n/a	36
Delay, weather	10/29/2020 11:33	10/29/2020 11:51	n/a	18
Delay, weather	10/30/2020 9:13	10/30/2020 11:26	n/a	133
Total Monthly Mitigation Duration:				187

The marine mammal delays and shutdowns were described as follows:

10/29 – 9:40: Fog inside zone at NEX. Radioed Ross to initiate delay when hammer was lowered to temp pile 1C24. Delay start time 9:40 as per Chris. Radioed to Ross all clear at 1016 after NEX obtained full visibility of zone¹. Pile driving did not resume until 10:25.

10/29 – 11:33: Radioed Ross at 1133 to let him know that fog has come inside the zone to the north and since the hammer is attached to the pile but off while undergoing some welding a delay was initiated. All clear given to Ross at 1151².

10/30 – 9:13: Visibility was less than 500 meters at most stations at the start of pre-clearance at 0843. After the 30 minutes of pre-clearance, started the weather delay at 913. Radioed to Ross and informed Chris of delay at the end of the 30-minute pre-clearance.

Other Mitigation Measures

In accordance with the IHA, the MMOs monitored for 30 minutes post-completion of every in-water pile installation or removal. Generally, the post-completion period is within the normally scheduled day. On days when pile driving extends beyond the normal schedule, the MMOs stay on watch for at least another 30 minutes after completion of in-water pile installation or removal.

The PPM operators have used “soft start” techniques when initiating impact pile driving for in-water installation or removal of piles.

5 Marine Mammal Observations

All marine mammal sightings are documented in the database. A parent record is entered for each marine mammal group with group-level attributes such as species, age/color class, primary and secondary behavior, distribution, formation, and pace. Once a group is identified, one or more group position “fixes” are measured and calculated.

¹ The duration of the loss of visibility was not documented precisely, but the weather observation records suggest it was brief. For example, visibility at NEX was documented as follows: 9:30, 1,400 meters; 10:00 2,500 meters; 10:21 5,000 meters. At PCT visibility was as follows: 9:44, 6,000 meters, 10:18 6,500 meters. At SC it was: 9:33 4,000 meters; 10:00 4,500 meters. From this data it appears that full, or nearly full visibility of the 5,406-meter zone with a combination of all three stations was achieved between 9:44 and 10:00 am, with pile driving resuming at 10:25.

² At NEX, visibility was 6,000 meters at 11:00, 2,500 meters at 11:26, and 3,500 meters at 11:50. At PCT visibility was 6,000 meters at 11:00 and 6,500 m at 11:29. At SC visibility was 6,500 meters at 11:29 and 12:00. The duration of visibility loss is not known precisely, but it appears it was brief and that only a small portion of the 5,406-meter zone was obscured.

Marine Mammal Sighting Summary

During the three days of observation in the month of October, no marine mammals were sighted.

Marine Mammal Exposures

During the month of October, no marine mammals were observed within or near the Level B zones. The cumulative potential Level A and Level B exposures remains unchanged from September, as presented in Table 8.

Table 8. Monthly and Cumulative Level B and Level A Exposures

Species:	Beluga	Harbor Seal	Harbor Porpoise	Steller Sea Lion	Killer Whale	Humpback Whale	Pinniped Unidentified
# Level B Takes Authorized	55	711	43	13	12	6	N/A
Monthly Potential Level B Exposures	0	0	0	0	0	0	0
Cumulative Potential Level B Exposures	15	39	1	0	0	0	1
# Level A Takes Authorized	0	305	21	0	0	2	N/A
Monthly Potential Level A Exposures	0	0	0	0	0	0	0
Cumulative Potential Level A Exposures	0	2	0	0	0	0	1

6 References

NMFS (National Marine Fisheries Service). 2020 (March 31). *Incidental Harassment Authorization*. Issued to the Port of Alaska for the Construction of the Petroleum and Cement Terminal, by Donna S. Wieting, Director, Office of Protected Resources, National Marine Fisheries Service. Federal Register, Vol. 85, No. 66, page 19294 (85 FR 19294).

NOAA (National Oceanic and Atmospheric Administration). 2020a (April 6). *Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Construction of the Port of Alaska's Petroleum and Cement Terminal, Anchorage, Alaska*. Federal Register, Vol. 85, No. 66, page 19294 (85 FR 19294).

NOAA. 2020b (September 3). *Tides and Currents, Meteorological Obs., NOAA/NOS/CO-OPS, Winds at 9455920, Anchorage, AK*. Accessed 5 October 2020 at:
<https://tidesandcurrents.noaa.gov/met.html?id=9455920>

Appendix A – In-Water Activity Detail

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
906	10/29/2020 10:16:25 AM	Vibratory hammer, no bubble curtain	24
Comments			Water Depth
Vibbing out 1C24 without a bubble curtain. 1057 Hammer removed			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1612	10/29/2020 10:25:05 AM	10/29/2020 10:36:27 AM	11.4
1613	10/29/2020 10:51:58 AM	10/29/2020 10:54:51 AM	2.9
1614	10/29/2020 10:55:30 AM	10/29/2020 10:56:13 AM	0.7
Total Duration			15

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
908	10/29/2020 11:19:58 AM	Vibratory hammer, no bubble curtain	24
Comments			Water Depth
1124 Hammer attached.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1616	10/29/2020 11:23:53 AM	10/29/2020 11:23:53 AM	0
1617	10/29/2020 11:23:55 AM	10/29/2020 11:23:58 AM	0.1
1619	10/29/2020 11:53:51 AM	10/29/2020 12:02:52 PM	9
1620	10/29/2020 12:07:53 PM	10/29/2020 12:11:33 PM	3.7
Total Duration			12.8

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
911	10/29/2020 1:31:28 PM	Vibratory hammer, no bubble curtain	36
Comments			Water Depth
Hammer removed at 1537.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1622	10/29/2020 1:53:55 PM	10/29/2020 1:53:58 PM	0.1
1623	10/29/2020 1:55:28 PM	10/29/2020 1:55:30 PM	0
1624	10/29/2020 1:55:35 PM	10/29/2020 1:56:16 PM	0.7
1625	10/29/2020 1:56:40 PM	10/29/2020 1:57:59 PM	1.3
1626	10/29/2020 1:58:28 PM	10/29/2020 2:44:10 PM	45.7
1627	10/29/2020 2:50:59 PM	10/29/2020 3:01:40 PM	10.7
Total Duration			58.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
913	10/29/2020 3:59:26 PM	Vibratory hammer, no bubble curtain	36
Comments			Water Depth
Vibing out the lower half of 1A36. Hammer removed at 1622.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1629	10/29/2020 4:07:46 PM	10/29/2020 4:07:48 PM	0
1630	10/29/2020 4:09:06 PM	10/29/2020 4:10:35 PM	1.5
1631	10/29/2020 4:10:42 PM	10/29/2020 4:15:30 PM	4.8
Total Duration			6.3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
915	10/29/2020 5:00:12 PM	Vibratory hammer, no bubble curtain	36

Comments	Water Depth
	>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1633	10/29/2020 5:00:37 PM	10/29/2020 5:00:38 PM	0
1634	10/29/2020 5:01:30 PM	10/29/2020 5:01:39 PM	0.2
1635	10/29/2020 5:01:40 PM	10/29/2020 5:10:43 PM	9.1
Total Duration			9.3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
920	10/30/2020 12:07:35 PM	Vibratory hammer, no bubble curtain	36

Comments	Water Depth
1307 hammer removed from pile	>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1640	10/30/2020 12:07:40 PM	10/30/2020 12:49:09 PM	41.5
1641	10/30/2020 12:56:07 PM	10/30/2020 1:05:32 PM	9.4
Total Duration			50.9

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
922	10/30/2020 1:49:55 PM	Vibratory hammer, no bubble curtain	36

Comments	Water Depth
Vibbing out lower half of 1D36 without a bubble curtain.	>3 Meters

In-Water Duration

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1643	10/30/2020 2:21:13 PM	10/30/2020 2:27:42 PM	6.5
Total Duration			6.5

Pile Driving Activity

Drive Date	Pile Type	Pile Location Name	Pile Diameter (inches)	Hammer Type	Total time (minutes)
1-Oct	No In-Water Work				
2-Oct	No In-Water Work				
3-Oct	No In-Water Work				
4-Oct	No In-Water Work				
5-Oct	No In-Water Work				
6-Oct	No In-Water Work				
7-Oct	No In-Water Work				
8-Oct	No In-Water Work				
9-Oct	No In-Water Work				
10-Oct	No In-Water Work				
11-Oct	No In-Water Work				
12-Oct	No In-Water Work				
13-Oct	No In-Water Work				
14-Oct	No In-Water Work				
15-Oct	No In-Water Work				
16-Oct	No In-Water Work				
17-Oct	No In-Water Work				
18-Oct	No In-Water Work				
19-Oct	No In-Water Work				
20-Oct	No In-Water Work				
21-Oct	No In-Water Work				
22-Oct	No In-Water Work				
23-Oct	No In-Water Work				
24-Oct	No In-Water Work				
25-Oct	No In-Water Work				
26-Oct	No In-Water Work				
27-Oct	No In-Water Work				
28-Oct	No In-Water Work				
29-Oct	Removal- Temporary Trestle	1-S3	24	Vibratory	17
29-Oct	Removal- Temporary Trestle	1-S4	24	Vibratory	13
29-Oct	Removal- Temporary Trestle	1-S5	36	Vibratory	73
30-Oct	Removal- Temporary Trestle	1-S2	36	Vibratory	62
31-Oct	No In-Water Work				