

CITY AND BOROUGH OF WRANGELL

WRANGELL HARBOR ANODES
HERITAGE HARBOR, MARINE SERVICE CENTER BOAT HAULOUT,
MARINE SERVICE CENTER CONCRETE TEE DOCK

PLANS

Volume 2 of 2



AUGUST 2023

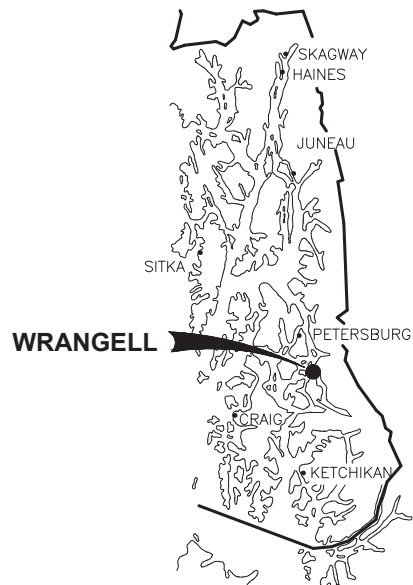
CITY & BOROUGH OF WRANGELL

WRANGELL HARBOR ANODES

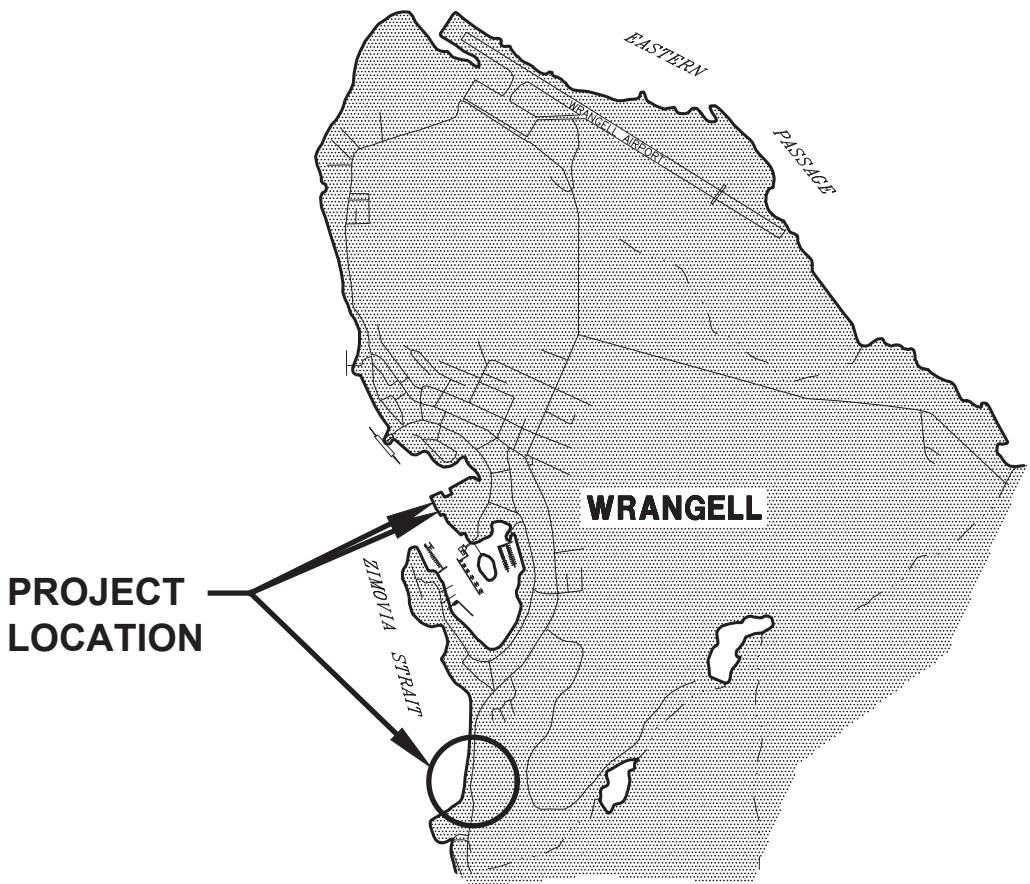
HERITAGE HARBOR,
MARINE SERVICE CENTER BOAT HAULOUT FACILITY,
MARINE SERVICE CENTER CONCRETE TEE DOCK



LOCATION MAP



SOUTHEAST ALASKA



VICINITY MAP

DRAWING INDEX	
SHEET NO.	TITLE
GENERAL	
1.01	COVER SHEET, VICINITY MAP AND DRAWING INDEX
1.02	AERIAL SITE PLAN
1.03	TYPICAL DETAILS
BASE BID – HERITAGE HARBOR	
2.01	OVERALL FLOAT PLAN AND PILE PLAN
2.02	PILE SCHEDULE AND DETAILS
ADDITIVE ALT. A – MARINE SERVICE CENTER BOAT HAULOUT FACILITY	
3.01	DOCK PLAN
3.02	PILE SCHEDULE AND DETAILS
3.03	TYPICAL DETAILS
ADDITIVE ALT. B – MARINE SERVICE CENTER CONCRETE TEE DOCK	
4.01	CONCRETE TEE DOCK PLAN
4.02	PILE SCHEDULE AND DETAILS
4.03	DOCK SECTION

TIDAL DATA
DESIGN HIGH WATER = +22.0 FEET
MHHW (MEAN HIGHER HIGH WATER) = 16.0 FEET
MHW (MEAN HIGH WATER) = 15.1 FEET
MTL (MEAN TIDE LEVEL) = 8.3 FEET
MLW (MEAN LOW WATER) = +1.5 FEET
MLLW (MEAN LOWER LOW WATER) = 0 FEET
DESIGN LOW WATER = -6.0 FEET

FROM: NOAA NOS/CO-OPS STATION ID: 9451204
WRANGELL, AK, AND USC&GS TIDAL DATA

DESIGN HIGH AND DESIGN LOW WATER LEVELS
BASED ON EXTREME TIDE LEVEL OBSERVATIONS.

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SCALE:



CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES

SHEET TITLE:
COVER SHEET, VICINITY
MAP AND DRAWING INDEX

PND PROJECT NO.: 232051
C.A.N. NO.: AECC250

1.01



AERIAL SITE PLAN



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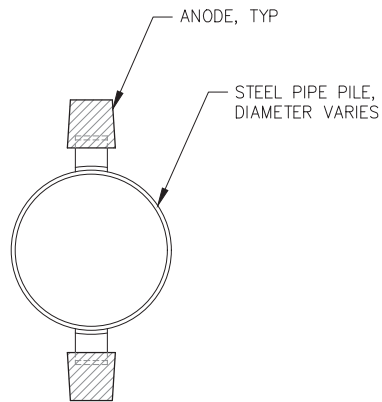


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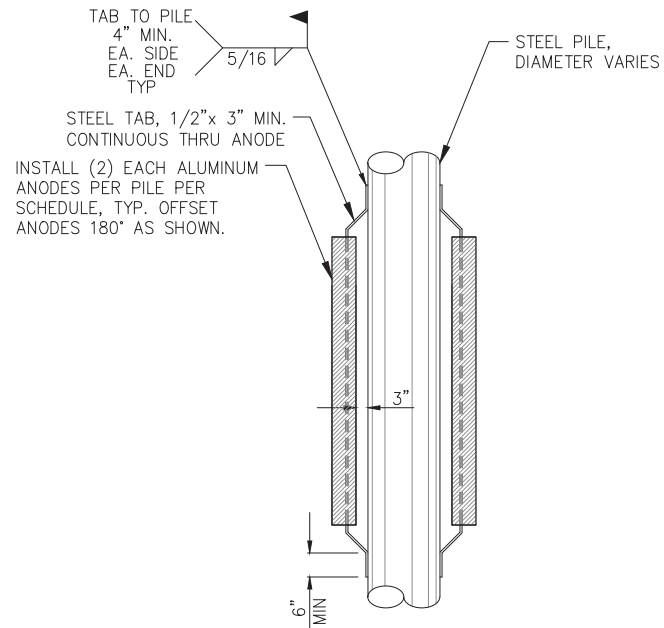
SHEET TITLE:
AERIAL SITE PLAN

PND PROJECT NO.: 232051
C.A.N. NO.: AECC250

1.02



A TYPICAL ANODE INSTALLATION SECTION



B TYPICAL ANODE INSTALLATION DETAIL



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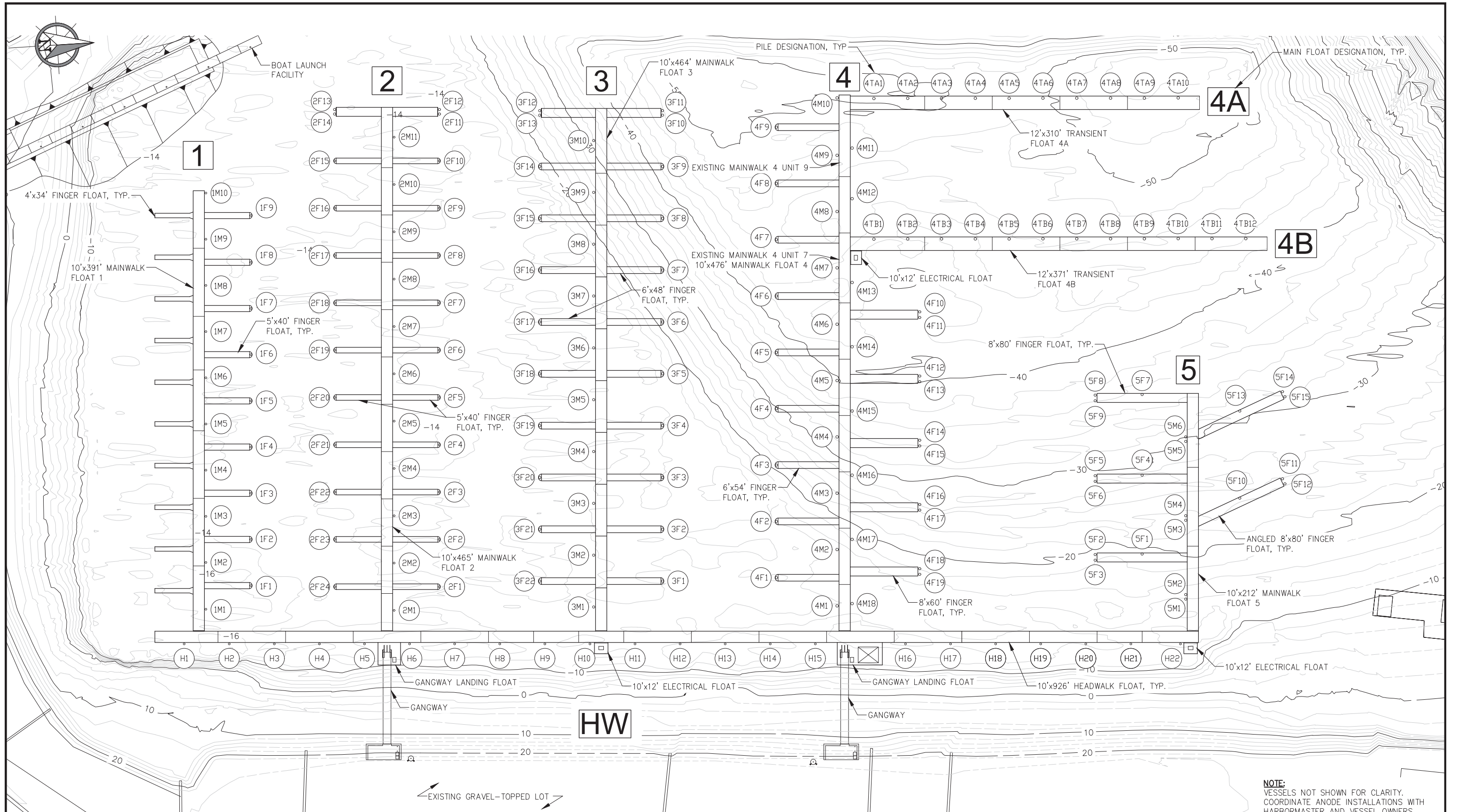
CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES

SHEET TITLE:
TYPICAL DETAILS

1.03

PND PROJECT NO.: 232051

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OVERALL FLOAT AND PILE PLAN



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SCALE: SCALE IN FEET
0 40 80 FT.



CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
HERITAGE HARBOR

SHEET TITLE:
OVERALL FLOAT PLAN
AND PILE PLAN

PND PROJECT NO.: 232051 C.A.N. NO.: AECC250

2.01

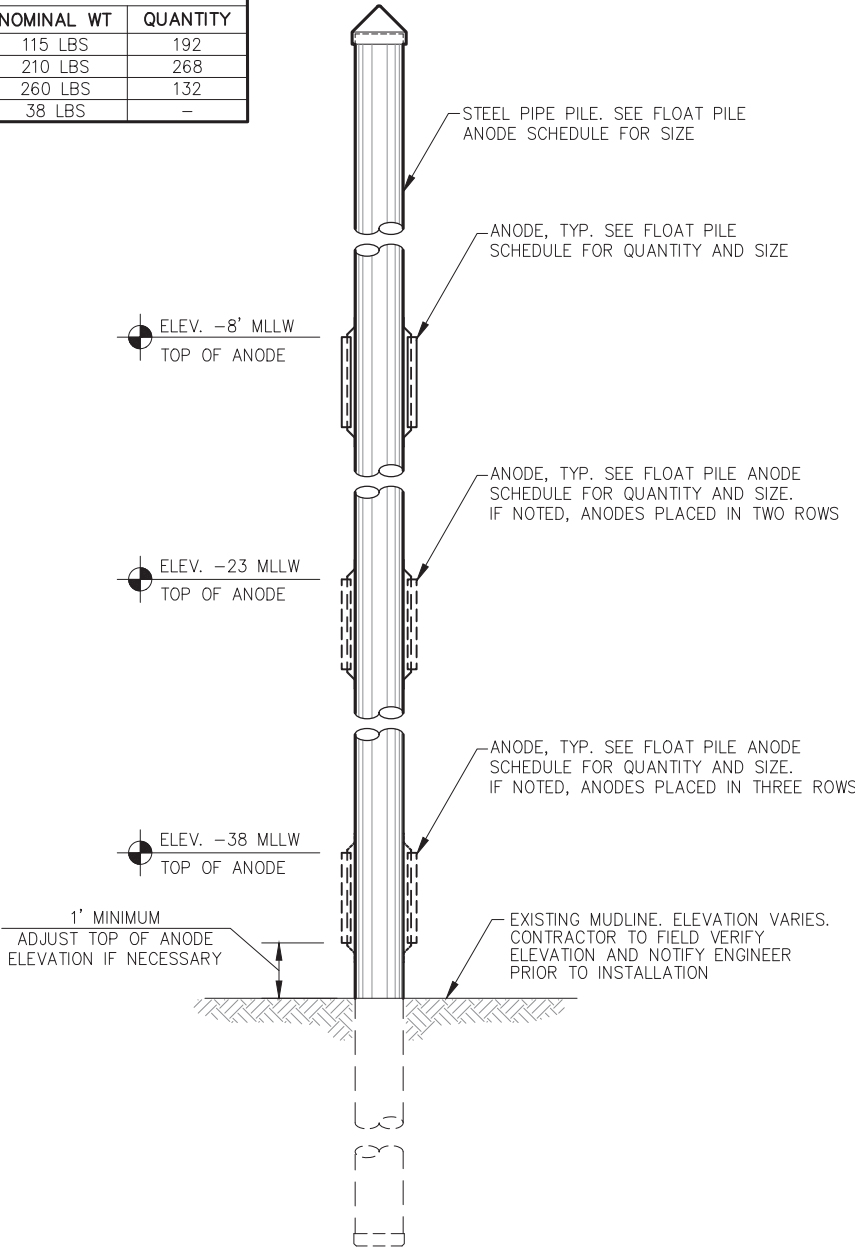
FLOAT PILE ANODE SCHEDULE				
PILE NO.	PILE DESIGN.	PILE DIAMETER	ANODE QUANTITY	ANODE TYPE
1	H1	12.75"	2	1
2	H2	12.75"	2	1
3	H3	12.75"	2	1
4	H4	12.75"	2	1
5	H5	12.75"	2	1
6	H6	12.75"	2	1
7	H7	12.75"	2	1
8	H8	12.75"	2	1
9	H9	12.75"	2	1
10	H10	12.75"	2	1
11	H11	12.75"	2	1
12	H12	12.75"	2	1
13	H13	12.75"	2	1
14	H14	12.75"	2	1
15	H15	12.75"	2	1
16	H16	12.75"	2	1
17	H17	12.75"	2	1
18	H18	12.75"	2	1
19	H19	12.75"	2	1
20	H20	12.75"	2	1
21	H21	12.75"	2	1
22	H22	12.75"	2	1
23	1M1	12.75"	2	1
24	1M2	12.75"	2	1
25	1M3	12.75"	2	1
26	1M4	12.75"	2	1
27	1M5	12.75"	2	1
28	1M6	12.75"	2	1
29	1M7	12.75"	2	1
30	1M8	12.75"	2	1
31	1M9	12.75"	2	1
32	1M10	12.75"	2	1
33	1F1	12.75"	2	1
34	1F2	12.75"	2	1
35	1F3	12.75"	2	1
36	1F4	12.75"	2	1
37	1F5	12.75"	2	1
38	1F6	12.75"	2	1
39	1F7	12.75"	2	1
40	1F8	12.75"	2	1
41	1F9	12.75"	2	1
42	2M1	12.75"	2	1
43	2M2	12.75"	2	1
44	2M3	12.75"	2	1
45	2M4	12.75"	2	1
46	2M5	12.75"	2	1
47	2M6	12.75"	2	1
48	2M7	12.75"	2	1
49	2M8	12.75"	2	1
50	2M9	12.75"	2	1
51	2M10	12.75"	2	1
52	2M11	12.75"	2	1
53	2F1	12.75"	2	1
54	2F2	12.75"	2	1
55	2F3	12.75"	2	1
56	2F4	12.75"	2	1
57	2F5	12.75"	2	1
58	2F6	12.75"	2	1
59	2F7	12.75"	2	1
60	2F8	12.75"	2	1
61	2F9	12.75"	2	1
62	2F10	12.75"	2	1
63	2F11	12.75"	2	1
64	2F12	12.75"	2	1
65	2F13	12.75"	2	1

FLOAT PILE ANODE SCHEDULE				
PILE NO.	PILE DESIGN.	PILE DIAMETER	ANODE QUANTITY	ANODE TYPE
66	2F14	12.75"	2	1
67	2F15	12.75"	2	1
68	2F16	12.75"	2	1
69	2F17	12.75"	2	1
70	2F18	12.75"	2	1
71	2F19	12.75"	2	1
72	2F20	12.75"	2	1
73	2F21	12.75"	2	1
74	2F22	12.75"	2	1
75	2F23	12.75"	2	1
76	2F24	12.75"	2	1
77	3M1	16"	2	2
78	3M2	16"	2	2
79	3M3	16"	2	2
80	3M4	16"	2	2
81	3M5	16"	2	2
82	3M6	16"	2	2
83	3M7	16"	2	2
84	3M8	16"	2	2
85	3M9	16"	2	2
86	3M10	16"	6**	2
87	3F1	16"	2	2
88	3F2	16"	2	2
89	3F3	16"	2	2
90	3F4	16"	4*	2
91	3F5	16"	4*	2
92	3F6	16"	2	2
93	3F7	16"	2	2
94	3F8	16"	4*	2
95	3F9	16"	6**	2
96	3F10	16"	6**	2
97	3F11	16"	6**	2
98	3F12	16"	2	2
99	3F13	16"	2	2
100	3F14	16"	2	2
101	3F15	16"	2	2
102	3F16	16"	2	2
103	3F17	16"	2	2
104	3F18	16"	2	2
105	3F19	16"	2	2
106	3F20	16"	2	2
107	3F21	16"	2	2
108	3F22	16"	2	2
109	4M1	16"	2	2
110	4M2	16"	2	2
111	4M3	16"	2	2
112	4M4	16"	4*	2
113	4M5	16"	6**	2
114	4M6	16"	6**	2
115	4M7	16"	6**	2
116	4M8	16"	6**	2
117	4M9	16"	6**	2
118	4M10	16"	6**	2
119	4M11	16"	6**	2
120	4M12	16"	6**	2
121	4M13	16"	6**	2
122	4M14	16"	6**	2
123	4M15	16"	4*	2
124	4M16	16"	2	2
125	4M17	16"	2	2
126	4M18	16"	2	2
127	4F1	16"	4*	2
128	4F2	16"	4*	2
129	4F3	16"	4*	2
130	4F4	16"	4*	2

FLOAT PILE ANODE SCHEDULE				
PILE NO.	PILE DESIGN.	PILE DIAMETER	ANODE QUANTITY	ANODE TYPE
131	4F5	16"	4*	2
132	4F6	16"	6**	2
133	4F7	16"	6**	2
134	4F8	16"	6**	2
135	4F9	16"	6**	2
136	4F10	12.75"	6**	1
137	4F11	12.75"	6**	1
138	4F12	12.75"	6**	1
139	4F13	12.75"	6**	1
140	4F14	12.75"	4*	1
141	4F15	12.75"	4*	1
142	4F16	12.75"	2	1
143	4F17	12.75"	2	1
144	4F18	12.75"	2	1
145	4F19	12.75"	2	1
146	4TA1	24"	6**	3
147	4TA2	24"	6**	3
148	4TA3	24"	6**	3
149	4TA4	24"	6**	3
150	4TA5	24"	6**	3
151	4TA6	24"	6**	3
152	4TA7	24"	6**	3
153	4TA8	24"	6**	3
154	4TA9	24"	6**	3
155	4TA10	24"	6**	3
156	4TB1	24"	6**	3
157	4TB2	24"	6**	3
158	4TB3	24"	6**	3
159	4TB4	24"	6**	3
160	4TB5	24"	6**	3
161	4TB6	24"	6**	3
162	4TB7	24"	6**	3
163	4TB8	24"	6**	3
164	4TB9	24"	6**	3
165	4TB10	24"	6**	3
166	4TB11	24"	6**	3
167	4TB12	24"	6**	3
168	5M1	16"	2	2
169	5M2	16"	2	2
170	5M3	16"	2	2
171	5M4	16"	2	2
172	5M5	16"	4*	2
173	5M6	16"	4*	2
174	5F1	16"	2	2
1775	5F2	16"	2	2
176	5F3	16"	2	2
177	5F4	16"	2	2
178	5F5	16"	2	2
179	5F6	16"	2	2
180	5F7	16"	4*	2
181	5F8	16"	4*	2
182	5F9	16"	4*	2
183	5F10	16"	2	2
184	5F11	16"	2	2
185	5F12	16"	2	2
186	5F13	16"	4*	2
187	5F14	16"	4*	2
188	5F15	16"	4*	2

* DENOTES ANODES PLACED IN TWO ROWS
** DENOTES ANODES PLACED IN THREE ROWS

ANODE SCHEDULE			
TYPE	DIMENSION	NOMINAL WT	QUANTITY
1	4x4x72	115 LBS	192
2	6x6x60	210 LBS	268
3	6x6x72	260 LBS	132
4	6x6x24	38 LBS	—



TYPICAL STEEL FLOAT MOORING PILE



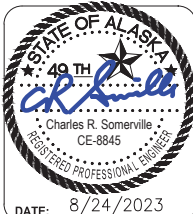
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REV.	DATE	DESCRIPTION	DWN.	CKD.



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SCALE: NTS



CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
HERITAGE HARBOR

SHEET TITLE:

PILE SCHEDULE AND DETAILS

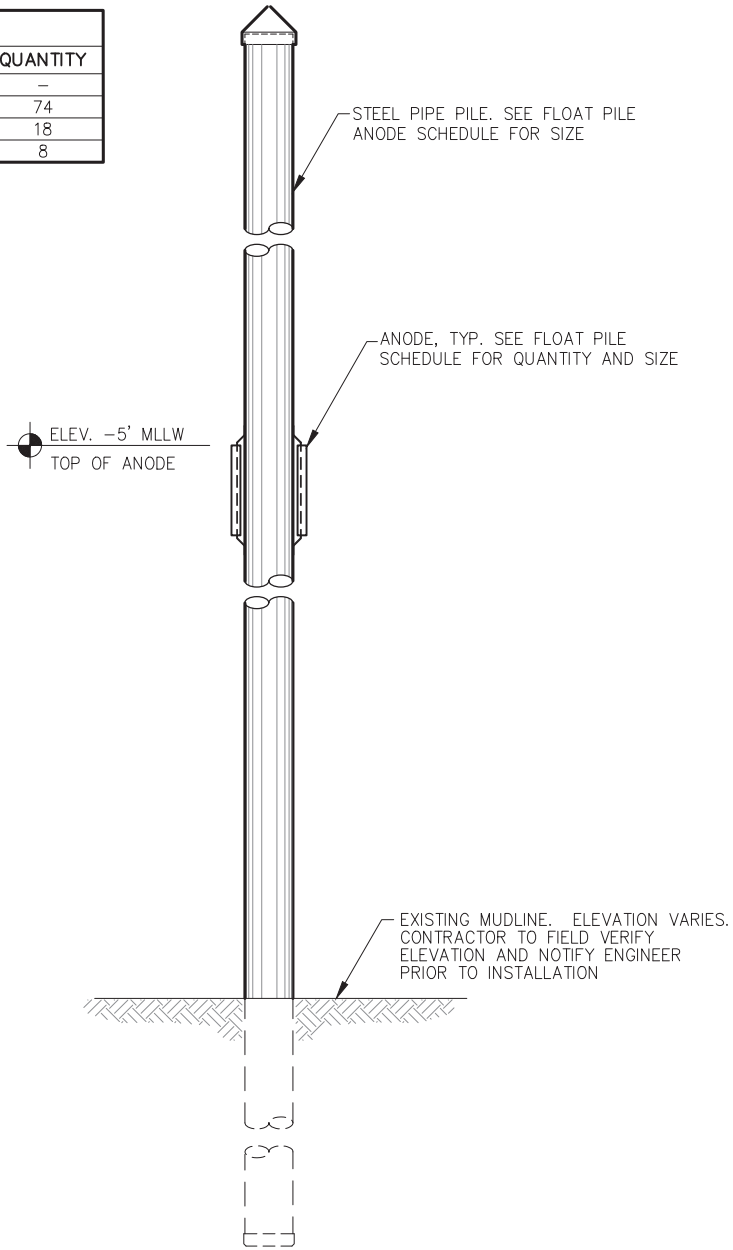
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PND PROJECT NO.: 232051

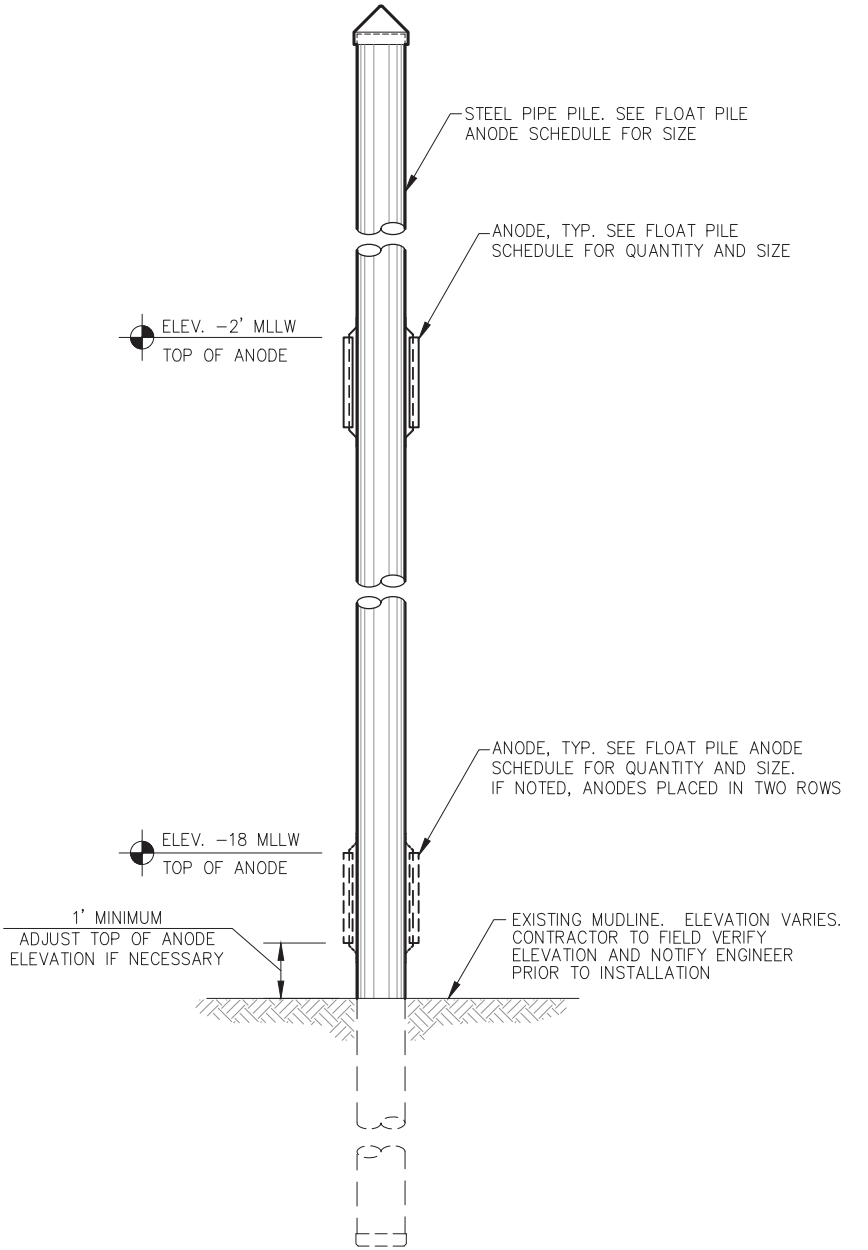
C.A.N. NO.: AECC250

MSC BOAT HAULOUT DOCK PILE ANODE SCHEDULE					
PILE NO.	LOCATION	ORIENTATION	PILE DIAMETER	ANODE QUANTITY	ANODE TYPE
1	1B	VERTICAL	20"Ø	—	—
2	1D	VERTICAL	20"Ø	—	—
3	1F	VERTICAL	20"Ø	—	—
4	2B	VERTICAL	20"Ø	—	—
5	2D	VERTICAL	20"Ø	—	—
6	2F	VERTICAL	20"Ø	—	—
7	3B	VERTICAL	20"Ø	—	—
8	3D	VERTICAL	20"Ø	—	—
9	3D	BATTER	20"Ø	—	—
10	3F	VERTICAL	20"Ø	—	—
11	4B	VERTICAL	20"Ø	2	3
12	4D	VERTICAL	20"Ø	2	3
13	4F	VERTICAL	20"Ø	2	3
14	5B	VERTICAL	20"Ø	2	3
15	5D	VERTICAL	20"Ø	2	3
16	5D	BATTER	20"Ø	2	3
17	5F	VERTICAL	20"Ø	2	3
18	6B	VERTICAL	20"Ø	2	3
19	6D	VERTICAL	20"Ø	2	3
20	6F	VERTICAL	16"Ø	2	2
21	7A	VERTICAL	16"Ø	2	2
22	7C	VERTICAL	16"Ø	2	2
23	7E	VERTICAL	16"Ø	2	2
24	7G	VERTICAL	16"Ø	2	2
25	8A	VERTICAL	16"Ø	2	2
26	8C	VERTICAL	16"Ø	2	2
27	8E	VERTICAL	16"Ø	2	2
28	8G	VERTICAL	16"Ø	2	2
29	9A	VERTICAL	16"Ø	2	2
30	9C	VERTICAL	16"Ø	2	2
31	9E	VERTICAL	16"Ø	2	2
32	9G	VERTICAL	16"Ø	2	2
33	10A	VERTICAL	16"Ø	2	2
34	10C	VERTICAL	16"Ø	2	2
35	10E	VERTICAL	16"Ø	2	2
36	10G	VERTICAL	16"Ø	2	2
37	11A	VERTICAL	16"Ø	2	2
38	11A	BATTER	16"Ø	2	2
39	11C	VERTICAL	16"Ø	2	2
40	11E	VERTICAL	16"Ø	2	2
41	11G	VERTICAL	16"Ø	2	2
42	11G	BATTER	16"Ø	2	2
43	12A	VERTICAL	16"Ø	2	2
44	12C	VERTICAL	16"Ø	2	2
45	12E	VERTICAL	16"Ø	2	2
46	12G	VERTICAL	16"Ø	2	2
47	C6.5	VERTICAL	16"Ø	2	4
48	E6.5	VERTICAL	16"Ø	2	4
49	C7.5	VERTICAL	16"Ø	2	4
50	E7.5	VERTICAL	16"Ø	2	4
51	C8.5	VERTICAL	16"Ø	2	2
52	E8.5	VERTICAL	16"Ø	2	2
53	C9.5	VERTICAL	16"Ø	2	2
54	E9.5	VERTICAL	16"Ø	2	2
55	C10.5	VERTICAL	16"Ø	2	2
56	E10.5	VERTICAL	16"Ø	2	2
57	C11.5	VERTICAL	16"Ø	2	2
58	E11.5	VERTICAL	16"Ø	2	2
59	C12.25	VERTICAL	16"Ø	2	2
60	E12.55	VERTICAL	16"Ø	2	2

ANODE SCHEDULE			
TYPE	DIMENSION	NOMINAL WT	QUANTITY
1	4x4x72	115 LBS	—
2	6x6x60	210 LBS	74
3	6x6x72	260 LBS	18
4	6x6x24	38 LBS	8



TYPICAL STEEL DOCK PILE
GRIDS 4 TO 7.5



TYPICAL STEEL DOCK PILE
GRIDS 8 TO 12



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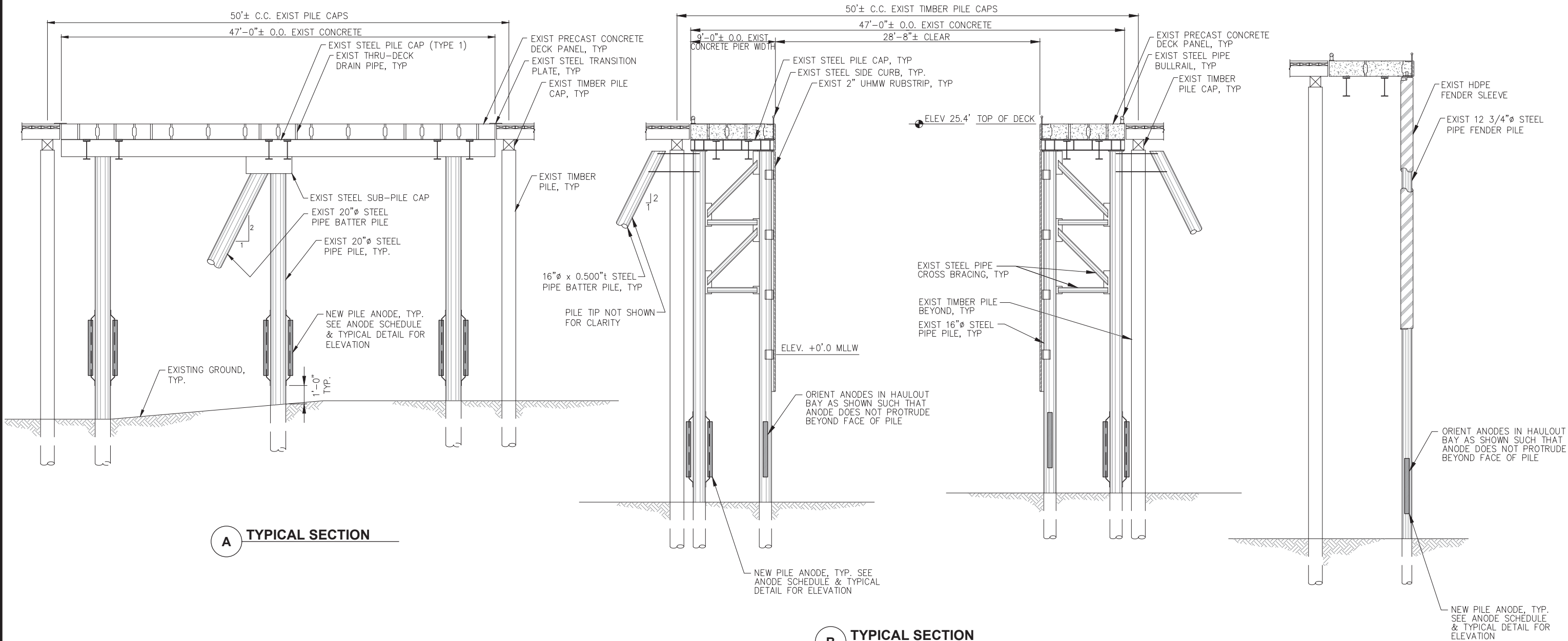
DATE: 8/24/2023

CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
MSC BOAT HAULOUT FACILITY

SHEET TITLE:
**ADDITIVE ALT. A
PILE SCHEDULE AND DETAILS**

PND PROJECT NO.: 232051 C.A.N. NO.: AECC250

3.02



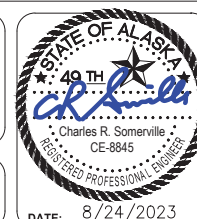
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SCALE: SCALE IN FEET
0 4 8ft.

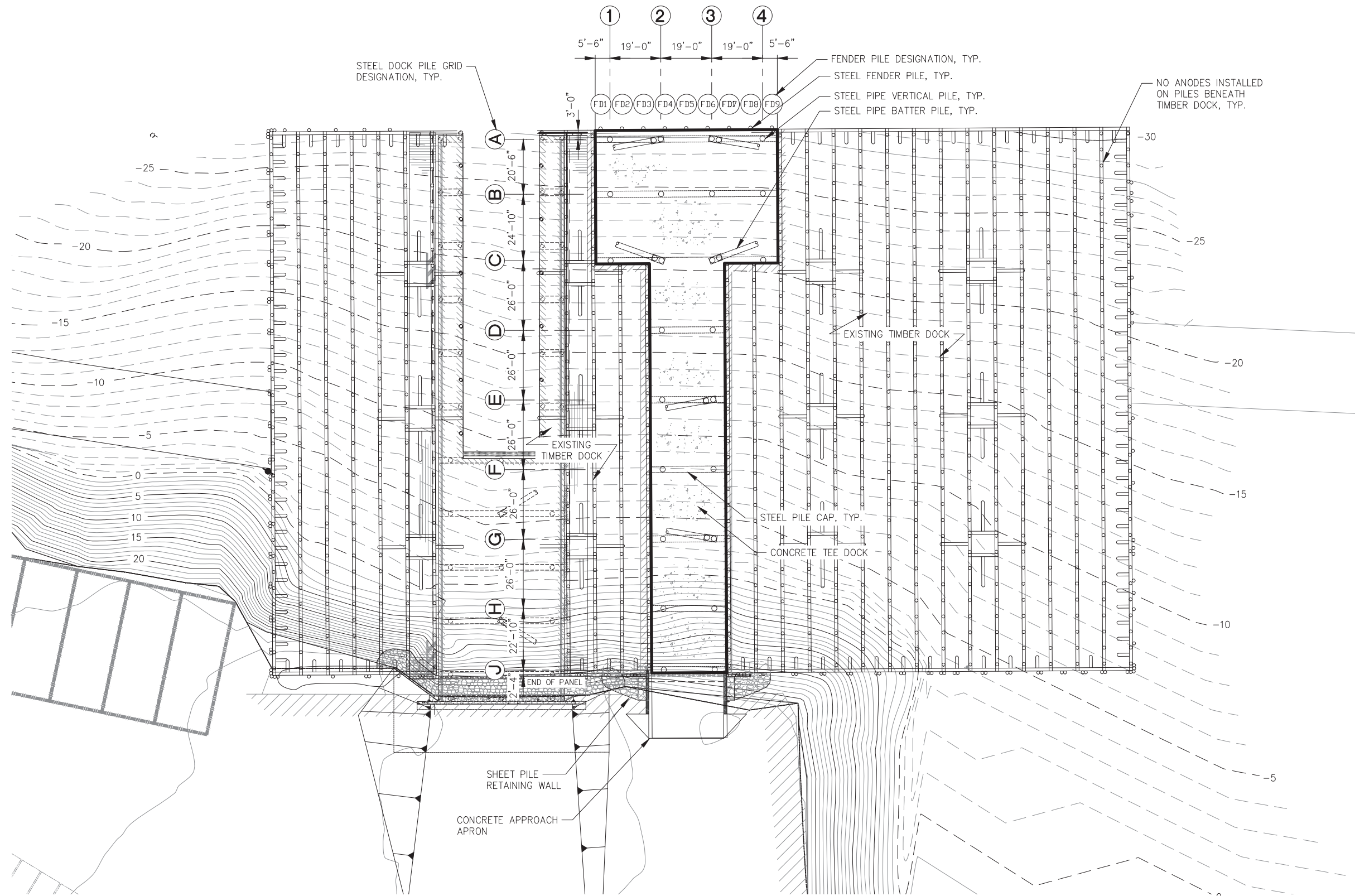
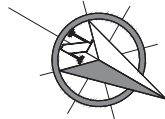


CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
MSC BOAT HAULOUT FACILITY

SHEET TITLE: **ADDITIVE ALT. A**
TYPICAL DETAILS

PND PROJECT NO.: 232051 C.A.N. NO.: AECC250

3.03



SITE PLAN

NOTE: NOT ALL DOCK PANELS, BULLRAILS, HANDRAILS, LIGHTS, BELOW DECK UTILITIES OR OTHER APPURTENANCES ARE SHOWN FOR CLARITY.



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SCALE: SCALE IN FEET
0 20 40 FT.



CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
WMSC CONCRETE TEE DOCK

SHEET TITLE:
ADDITIVE ALT. B
CONCRETE TEE DOCK PLAN

PND PROJECT NO.: 232051 C.A.N. NO.: AECC250

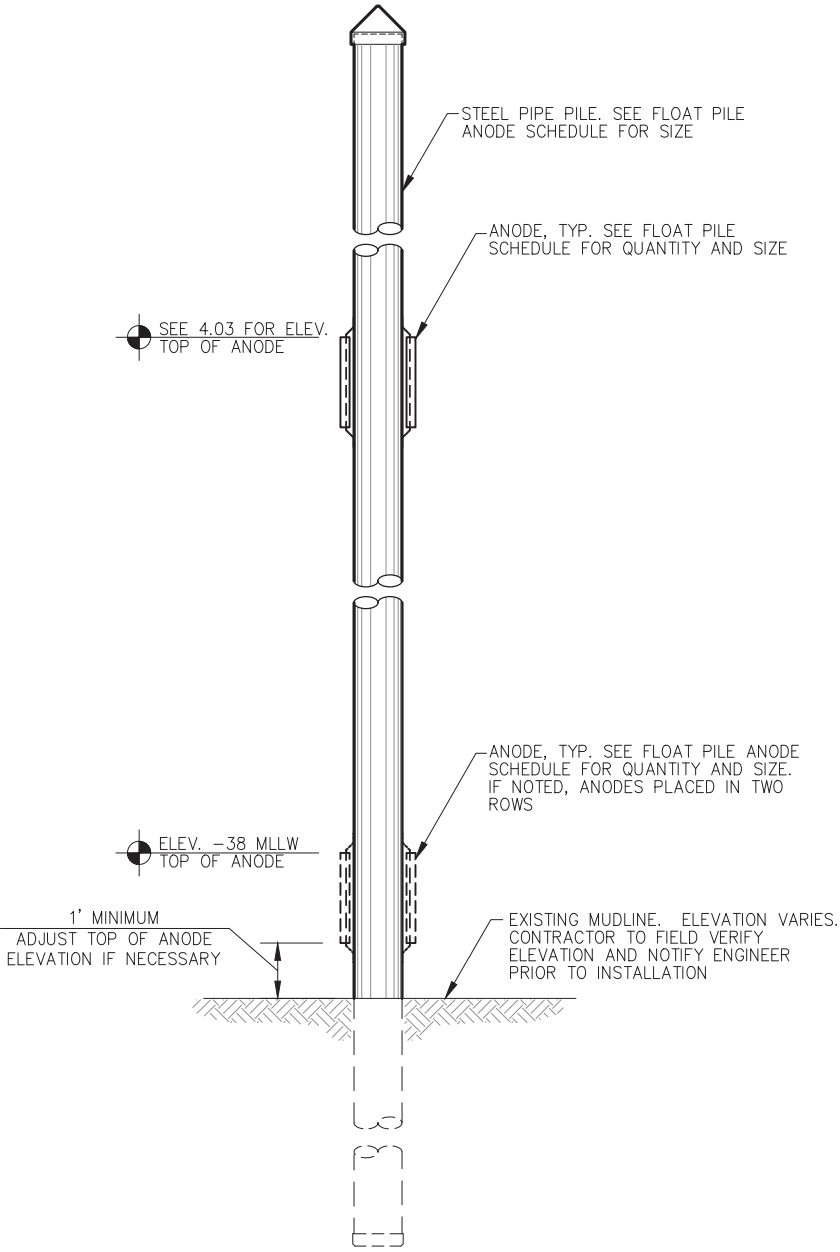
4.01

DATE: 8/24/2023

CONCRETE TEE DOCK PILE ANODE SCHEDULE					
PILE NO.	LOCATION	TYPE	SIZE	ANODE QUANTITY	ANODE SIZE
1	A1	VERTICAL	24"Ø	4*	3
2	A2	VERTICAL	24"Ø	4*	3
3	A2	BATTER	24"Ø	4*	3
4	A3	VERTICAL	24"Ø	4*	3
5	A3	BATTER	24"Ø	4*	3
6	A4	VERTICAL	24"Ø	4*	3
7	B1	VERTICAL	24"Ø	4*	3
8	B2	VERTICAL	24"Ø	4*	3
9	B3	VERTICAL	24"Ø	4*	3
10	B4	VERTICAL	24"Ø	4*	3
11	C1	VERTICAL	24"Ø	4*	3
12	C2	VERTICAL	24"Ø	4*	3
13	C2	BATTER	24"Ø	4*	3
14	C3	VERTICAL	24"Ø	4*	3
15	C3	BATTER	24"Ø	4*	3
16	C4	VERTICAL	24"Ø	4*	3
17	D2	VERTICAL	20"Ø	2	3
18	D3	VERTICAL	20"Ø	2	3
19	E2	VERTICAL	20"Ø	2	3
20	E3	VERTICAL	20"Ø	2	3
21	E3	BATTER	20"Ø	2	3
22	F2	VERTICAL	20"Ø	2	3
23	F3	VERTICAL	20"Ø	2	3
24	G2	VERTICAL	20"Ø	2	3
25	G3	VERTICAL	20"Ø	2	3
26	G3	BATTER	20"Ø	2	3
27	H2	VERTICAL	20"Ø	—	—
28	H3	VERTICAL	20"Ø	—	—
29	J2	VERTICAL	20"Ø	—	—
30	J3	VERTICAL	20"Ø	—	—
31	FD1	VERTICAL	16"Ø	2	4
32	FD2	VERTICAL	16"Ø	2	4
33	FD3	VERTICAL	16"Ø	2	4
34	FD4	VERTICAL	16"Ø	2	4
35	FD5	VERTICAL	16"Ø	2	4
36	FD6	VERTICAL	16"Ø	2	4
37	FD7	VERTICAL	16"Ø	2	4
38	FD8	VERTICAL	16"Ø	2	4
39	FD9	VERTICAL	16"Ø	2	4

* DENOTES ANODES PLACED IN TWO ROWS

ANODE SCHEDULE			
TYPE	DIMENSION	NOMINAL WT	QUANTITY
1	4x4x72	115 LBS	—
2	6x6x60	210 LBS	—
3	6x6x72	260 LBS	84
4	6x6x24	38 LBS	18



TYPICAL STEEL FLOAT MOORING PILE



REVISIONS					
REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.



9360 Glacier Highway Ste 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

DESIGN: MBH CHECKED: BMI
DRAWN: DRD APPROVED: CRS

SCALE:

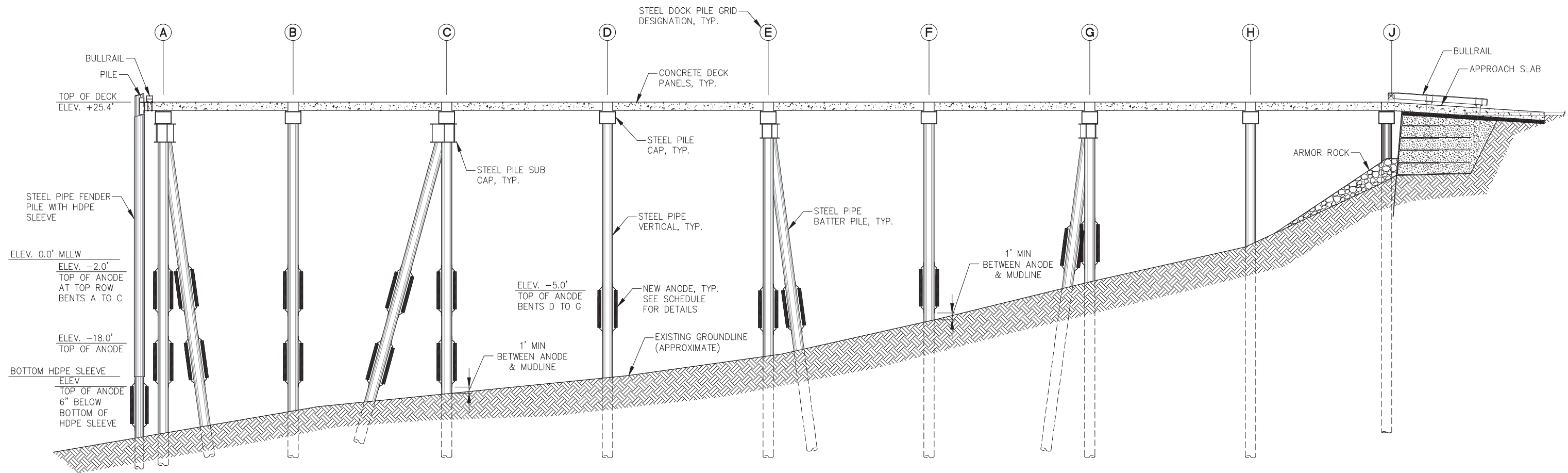


CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
WMSC CONCRETE TEE DOCK

SHEET TITLE:
**ADDITIVE ALT. B
PILE SCHEDULE AND DETAILS**

PND PROJECT NO.: 232051 C.A.N. NO.: AECC250

4.02



NOTE: INSTALL TOP OF ANODE AT -5' MLLW FOR BENTS D TO G AS SHOWN UNLESS MUDLINE AT ANODE LOCATION IS ABOVE -12' MLLW, INSTALL BOTTOM ANODE 1' ABOVE MUDLINE AS SHOWN

NOTE: INSTALL TOP OF ANODE FOR BOTTOM ROW AT -18' MLLW FOR BENTS A TO C AS SHOWN UNLESS MUDLINE AT ANODE LOCATION IS ABOVE -24' MLLW, INSTALL BOTTOM ANODE 1' ABOVE MUDLINE AS SHOWN

DOCK SECTION



REVISIONS					
REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND

ENGINEERS, INC.

9360 Glacier Highway Ste 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

DESIGN: MBH
DRAWN: DRD

CHECKED: BMI
APPROVED: CRS

SCALE: SCALE IN FEET
0 8 16 FT.



CITY & BOROUGH OF WRANGELL, ALASKA
WRANGELL HARBOR ANODES
WMSC CONCRETE TEE DOCK

SHEET TITLE:
**ADDITIVE ALT. B
DOCK SECTION**

PND PROJECT NO.: 232051
C.A.N. NO.: AECC250

4.03