9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
A. OPERATIONS COSTS								
Maintain dock/ramp clean during summer months and free of ice in winter months	12	MOS						By Others
Utilities fees	12	MOS						By Others
TOTAL A. OPERATIONS COSTS:								**By Others**
B. IMMEDIATE REPAIRS (2011)								With Item 6
C. REGULAR MAINTENANCE COSTS								
Safe dock operations, verification by State of Alaska (average every 2-years)	1	LOT			10000.00	10,000	10000.00	10,000
Inspect dock/ramp surfaces, piling, framing and fendering system, 1 time/year (local professional)	1	TIME	500.00	500	3500.00	3,500	4000.00	4,000
Inspect dolphins (local professional)	3	EA	150.00	450	550.00	1,650	700.00	2,100
Inspect ballast tanks, piping and pumps (local professional)	10	EA	100.00	1,000	500.00	5,000	600.00	6,000
Inspect mooring arms, dock winches, crane, capstans, etc. (local professional)	1	LOT	500.00	500	4500.00	4,500	5000.00	5,000

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
C. REGULAR MAINTENANCE COSTS (Continued)								
Inspect dock utilities and shore power (local professional)	1	LOT	300.00	300	1500.00	1,500	1800.00	1,800
Inspect communication and bridge control equipment (local professional)	1	LOT	300.00	300	1500.00	1,500	1800.00	1,800
Develop written maintenance program	1	LOT	500.00	500	6000.00	6,000	6500.00	6,500
TOTAL C. REGULAR MAINTENANCE COSTS:				**$ 3,550**		**$ 33,650**		**$ 37,200**
D. PERIODIC RENEWAL/REPLACEMENT COSTS								
D1. COSTS BASED ON 5 YEARS CYCLE (5 TIMES TOTAL)								
Repair hinged pin ramp connections (2)	20	LF	20.00	400	35.00	700	55.00	1,100
Repair roller feet connection	20	LF	27.00	540	45.00	900	72.00	1,440
Repair dock and ramp guardrails (5.00%)	40	LF	10.00	400	20.00	800	30.00	1,200
Remove marine growth from under side dock and ramps	23,674	SF	0.75	17,756	2.25	53,267	3.00	71,023
Remove marine growth from ballast tank, bulkheads and walls	5,150	SF	0.75	3,863	2.25	11,588	3.00	15,451

Note: Dock deck and bottom not painted.

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D1. COSTS BASED ON 5 YEARS CYCLE (5 TIMES TOTAL) (Continued)								
Service flood valves and dewatering pumps	1	LOT	300.00	300	1500.00	1,500	1800.00	1,800
Service 60 HP fire pumps	2	EA	150.00	300	800.00	1,600	950.00	1,900
Service 15 HP fueling pump	1	EA	100.00	100	800.00	800	900.00	900
Service fire hydrants	14	EA	50.00	700	250.00	3,500	300.00	4,200
Recharge 20# fire extinguishers	4	EA	75.00	300	55.00	220	130.00	520
Repair toilet plumbing fixtures	6	EA	50.00	300	150.00	900	200.00	1,200
Service sewage piping and 6,000 gallon holding tank as necessary	1	EA	500.00	500	2500.00	2,500	3000.00	3,000
Service oily water piping and 6,000 gallon holding tank	1	EA	500.00	500	2500.00	2,500	3000.00	3,000
Repair mooring arms	3	EA	700.00	2,100	2000.00	6,000	2700.00	8,100
Repair power operated capstans	6	EA	300.00	1,800	1000.00	6,000	1300.00	7,800
Repair ground tackles	1	LOT	300.00	300	800.00	800	1100.00	1,100
Repair vertical and horizontal wood fendering system (10%)	40	LF	150.00	6,000	175.00	7,000	325.00	13,000

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $

D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)

D1. COSTS BASED ON 5 YEARS CYCLE (5 TIMES TOTAL) (Continued)

Minor repairs to 10 ton crane and railings	1	LOT	1000.00	1,000	2500.00	2,500	3500.00	3,500
Service equipment motor control center	1	EA	200.00	200	900.00	900	1100.00	1,100
Minor repair to 300 KW generator and switchgear	1	LOT	1000.00	1,000	2500.00	2,500	3500.00	3,500
Minor repairs to controls and communication systems	1	LOT	1000.00	1,000	3000.00	3,000	4000.00	4,000
Repair mechanical and electrical equipment of companion way	2	LOTS	350.00	700	550.00	1,100	900.00	1,800
Relamp dock flood lights (50%)	6	EA	130.00	780	155.00	930	285.00	1,710
Relamp standard safety lights (20%)	4	EA	100.00	400	120.00	480	220.00	880
SUBTOTAL:				$ 41,239		$ 111,985		$ 153,224
General Conditions, Overhead and Profit	30.00%			12,372		33,596		45,968
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			9,114		24,749		33,863
TOTAL D1. PERIODIC RENEWAL/REPLACEMENT COSTS (5 YEARS):				**$ 62,725**		**$ 170,330**		**$ 233,055**

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D2. COSTS THAT OCCUR RIGHT AWAY AFTER 15 YEARS (2 TIMES TOTAL)								
Sand blast bulkhead, wing walls and railings, etc.	14,500	SF	1.00	14,500	5.00	72,500	6.00	87,000
Sand blast dolphin piles	5,650	SF	1.00	5,650	5.50	31,075	6.50	36,725
Apply 160 mil (3) part polyurethane coating to bulkheads and walls	5,150	SF	2.75	14,163	9.50	48,925	12.25	63,088
Apply 160 mil (3) part polyurethane coating to dolphin piles	5,652	SF	2.75	15,543	12.20	68,954	14.95	84,497
SUBTOTAL:				$ 49,856		$ 221,454		$ 271,310
General Conditions, Overhead and Profit	30.00%			14,957		66,436		81,393
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			11,018		48,941		59,959
TOTAL D2. PERIODIC RENEWAL/REPLACEMENT COSTS (15 YEARS):				**$ 75,831**		**$ 336,831**		**$ 412,662**
D3. ONE TIME COST FOR 20 YEARS DESIGN LIFE								
Apply impressed current cathodic protection system to dock surfaces	22,000	SF	2.85	62,700	8.50	187,000	11.35	249,700

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D3. ONE TIME COST FOR 20 YEARS DESIGN LIFE (Continued)								
Apply impressed current cathodic protection system to dolphin piles	10	EA	1250.00	12,500	1725.00	17,250	2975.00	29,750
Note: Dock deck and bottom not painted.								
SUBTOTAL:				$ 75,200		$ 204,250		$ 279,450
General Conditions, Overhead and Profit	30.00%			22,560		61,275		83,835
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			16,619		45,139		61,758
TOTAL D3. PERIODIC RENEWAL/REPLACEMENT COSTS (20 YEARS):				**$ 114,379**		**$ 310,664**		**$ 425,043**
E. TOTAL REPLACEMENT COSTS								
DEMOLITION								
Demolish ramps and rails and salvage materials	1,500	SF			6.00	9,000	6.00	9,000
Demolish dry dock completely and salvage materials	22,000	SF			10.25	225,500	10.25	225,500
Demolish dry dock mechanical and electrical systems	1	LOT			25000.00	25,000	25000.00	25,000

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
Demolish dry dock mooring arms, capstans, crane, etc.	1	LOT			50000.00	50,000	50000.00	50,000
Mobilization-demobilization pile extracting barge mounted rig	1	LOT	2500.00	2,500	7500.00	7,500	10000.00	10,000
Extract 48" diameter x 45'0" long dolphin piles	10	EA			2200.00	22,000	2200.00	22,000
Dispose unsalvageable debris	100	TONS	70.00	7,000	20.00	2,000	90.00	9,000
NEW WORK								
Piling								
Mobilization-demobilization barge mounted pile driving rig	1	LOT	2000.00	2,000	6000.00	6,000	8000.00	8,000
Drive 48" diameter x 45'0" long hot dipped galvanized steel dolphin piles	10	EA	6500.00	65,000	2700.00	27,000	9200.00	92,000
Pile cap plates and driving shoes	10	EA	450.00	4,500	575.00	5,750	1025.00	10,250
Dolphin timber fendering system	130	LF	248.00	32,240	110.00	14,300	358.00	46,540
Dry Dock Construction								
Galvanized steel floor framing	680	TONS	2500.00	1,700,000	2000.00	1,360,000	4500.00	3,060,000

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Dry Dock Construction (Continued)								
Galvanized steel wing walls and bulkheads framing	298	TONS	2500.00	745,000	1800.00	536,400	4300.00	1,281,400
7/16" galvanized steel bottom plates (198 tons)	22,000	SF	28.00	616,000	12.00	264,000	40.00	880,000
5/8" deck plates (282 tons)	22,000	SF	28.00	616,000	10.00	220,000	38.00	836,000
3/8" wing wall plates (75 tons)	9,950	SF	17.00	169,150	8.00	79,600	25.00	248,750
7/16" bulkhead plating (48 tons)	5,500	SF	21.00	115,500	9.50	52,250	30.50	167,750
Water ballasts tanks including sea chests	10	EA	23500.00	235,000	6000.00	60,000	29500.00	295,000
4'0"x4'0" access hatches	10	EA	1800.00	18,000	700.00	7,000	2500.00	25,000
Guard railings	990	LF	49.00	48,510	15.20	15,048	64.20	63,558
Steel ladders and steps	1	LOT	10000.00	10,000	5000.00	5,000	15000.00	15,000
Ramps								
Steel truss ramp and decking including integral handrails, hinged pin and roller feet connections	2,500	SF	52.50	131,250	27.00	67,500	79.50	198,750

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Dock Fendering								
Wooden timber fendering system	480	LF	165.00	79,200	145.00	69,600	310.00	148,800
Mooring Arms & Winches								
Mooring arms comprising support bracket, linkage arm and gripper	3	EA	12000.00	36,000	5000.00	15,000	17000.00	51,000
Power operated capstans	4	EA	22500.00	90,000	7000.00	28,000	29500.00	118,000
12"x24" steel anchor bollards	20	EA	590.00	11,800	235.00	4,700	825.00	16,500
Double bitts and roller fairleads	1	LOT	20000.00	20,000	7000.00	7,000	27000.00	27,000
Concrete keel blocks with wood caps set at 6'0" o/c	56	EA	245.00	13,720	155.00	8,680	400.00	22,400
Concrete bilge blocks set at 16'0" o/c	30	EA	210.00	6,300	150.00	4,500	360.00	10,800
Dock Flood and Lift System								
12" electric operated OSY inlet valve	10	EA	6500.00	65,000	1350.00	13,500	7850.00	78,500
12" flap valves	10	EA	3200.00	32,000	800.00	8,000	4000.00	40,000

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Dock Flood and Lift System (Continued)								
12" rising stem gate valves	10	EA	3750.00	37,500	880.00	8,800	4630.00	46,300
Dewatering pumps	10	EA	5500.00	55,000	1200.00	12,000	6700.00	67,000
Ballast tanks flooding/dewatering piping	10	LOTS	1800.00	18,000	3500.00	35,000	5300.00	53,000
Flood outlet scuppers at wing walls	10	EA	225.00	2,250	170.00	1,700	395.00	3,950
Crane								
10 ton fully revolving roller mounted crane and rails	1	EA	165000.00	165,000	48000.00	48,000	213000.00	213,000
Control House and Deck Access								
24'0"x8'0" prefabricated control house and ladders atop wing wall	1	EA	115000.00	115,000	25000.00	25,000	140000.00	140,000
15'0"x6'0" companion way with skylight and stairs	2	EA	49000.00	98,000	10000.00	20,000	59000.00	118,000
Safety deck water tight access doors	4	EA	3500.00	14,000	900.00	3,600	4400.00	17,600

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Control House and Deck Access (Continued)								
Electric heat and light at control house, companion ways and safety deck access space	3,012	SF	18.00	54,216	13.00	39,156	31.00	93,372
Mechanical ventilation at control house, companion ways and safety deck access space	3,012	SF	10.00	30,120	8.00	24,096	18.00	54,216
Fire Fighting Service								
369 GPM and 60 HP diesel engine fire pumps	2	EA	68500.00	137,000	8500.00	17,000	77000.00	154,000
60 GPM, 15 HP electric jockey pump	1	EA	12500.00	12,500	2300.00	2,300	14800.00	14,800
Fire hydrants	14	EA	2950.00	41,300	1500.00	21,000	4450.00	62,300
5" fire mains and fittings	1,650	LF	45.00	74,250	53.00	87,450	98.00	161,700
5" Stortz fitting for fire truck connection	1	EA	650.00	650	210.00	210	860.00	860
20# fire extinguishers	4	EA	385.00	1,540	80.00	320	465.00	1,860
9 liter Halon 1211 container	1	EA	1250.00	1,250	250.00	250	1500.00	1,500

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Fire Fighting Service (Continued)								
45 liter dry powder container	1	EA	750.00	750	100.00	100	850.00	850
100% spare charges for fire extinguishers	1	LOT	250.00	250	25.00	25	275.00	275
Potable Water and Plumbing								
Plumbing fixtures	6	EA	650.00	3,900	250.00	1,500	900.00	5,400
Service stations	4	EA	485.00	1,940	250.00	1,000	735.00	2,940
Plumbing rough-in	10	EA	500.00	5,000	900.00	9,000	1400.00	14,000
2 1/2" insulated water main	480	LF	15.50	7,440	22.50	10,800	38.00	18,240
2" insulated water main	130	LF	13.20	1,716	19.00	2,470	32.20	4,186
6,000 gallon sewage tank and level switch	1	EA	18500.00	18,500	3500.00	3,500	22000.00	22,000
Displacement pump	1	EA	2500.00	2,500	300.00	300	2800.00	2,800
Sewage pump out connections	4	EA	150.00	600	120.00	480	270.00	1,080
3" sewer line	500	LF	12.00	6,000	15.50	7,750	27.50	13,750

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Potable Water and Plumbing (Continued)								
Connection to sewer main	1	EA	225.00	225	450.00	450	675.00	675
Oily Waste Connection								
5,000 gallon water oil tank	1	EA	17500.00	17,500	3000.00	3,000	20500.00	20,500
Displacement pump	1	EA	2800.00	2,800	350.00	350	3150.00	3,150
Oily waste pump out connections	4	EA	200.00	800	150.00	600	350.00	1,400
3" waste line	650	LF	12.00	7,800	15.50	10,075	27.50	17,875
Connection to OWS building	1	EA	120.00	120	170.00	170	290.00	290
Compressed Air								
Auxiliary controls compressor	1	EA	1800.00	1,800	500.00	500	2300.00	2,300
4" shore and dock lines	400	LF	28.75	11,500	41.00	16,400	69.75	27,900
2" branch lines	1,500	LF	13.80	20,700	23.00	34,500	36.80	55,200
Air station and coupling	14	EA	240.00	3,360	155.00	2,170	395.00	5,530

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Controls								
Dock equipment controls systems	1	LOT	135000.00	135,000	65000.00	65,000	200000.00	200,000
Electrical								
12.5 KV, 60 Hz transformer and pad	1	EA	27000.00	27,000	6700.00	6,700	33700.00	33,700
Switchboard	1	EA	32000.00	32,000	12500.00	12,500	44500.00	44,500
Motor control center	1	EA	12500.00	12,500	2500.00	2,500	15000.00	15,000
12.5 KV power to dock	450	LF	18.50	8,325	23.75	10,688	42.25	19,013
Dock power cables and conduit	1,400	LF	13.00	18,200	20.00	28,000	33.00	46,200
Dock weatherproof service points	4	EA	250.00	1,000	150.00	600	400.00	1,600
300 KW emergency generator package	1	EA	80000.00	80,000	9000.00	9,000	89000.00	89,000
Switchgear and automatic transfer switch	1	LOT	22000.00	22,000	7000.00	7,000	29000.00	29,000
Conduit, wiring and equipment connections	1	LOT	2500.00	2,500	6500.00	6,500	9000.00	9,000
Safety deck lighting and poles	20	EA	2450.00	49,000	1100.00	22,000	3550.00	71,000

9. FLOATING DRY DOCK AND RAMPS #2	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
NEW WORK (Continued)								
Electrical (Continued)								
Flood lighting and poles	14	EA	2900.00	40,600	1300.00	18,200	4200.00	58,800
Beacons	3	EA	1250.00	3,750	500.00	1,500	1750.00	5,250
Weatherproof devices, conduit and wiring	1	LOT	5500.00	5,500	12500.00	12,500	18000.00	18,000
Public address and communication systems	1	LOT	30000.00	30,000	12000.00	12,000	42000.00	42,000
SUBTOTAL:				$ 6,311,822		$ 3,885,538		$ 10,197,360
General Conditions, Overhead and Profit	30.00%			1,893,547		1,165,661		3,059,208
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			1,394,913		858,704		2,253,617
TOTAL E. TOTAL REPLACEMENT COST:				**$ 9,600,282**		**$ 5,909,903**		**$ 15,510,185**

ALTERNATE 1 - AMHS FLOATING DOCK AND RAMP

HMS Project No.: 10104

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
A. OPERATIONS COSTS								
Maintain dock, ramps and sidewalks. Clean during summer months and keep free of ice in winter months	12	MOS						By Others
TOTAL A. OPERATIONS COSTS:								**By Others**
B. IMMEDIATE REPAIRS (2011)								With Item 6
C. REGULAR MAINTENANCE COSTS								
Following inspections performed by local professionals once a year.								
Inspect floating and concrete dock foundations, platforms and ramps (outside person)	1	TIME	800.00	800	2500.00	2,500	3300.00	3,300
Inspect sheet piling (local professional)	1	TIME	100.00	100	850.00	850	950.00	950
Inspect (11) area light fixtures (local professional)	1	TIME	50.00	50	500.00	500	550.00	550
TOTAL C. REGULAR MAINTENANCE COSTS:				**$ 950**		**$ 3,850**		**$ 4,800**

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS								
D1. COSTS BASED ON 5 YEARS CYCLE (5 TIMES TOTAL)								
A. Site Development and Ramps								
Repair damaged concrete sidewalks (5%)	234	SF	4.20	983	3.90	913	8.10	1,896
Repair damaged curbs (5%)	29	LF	14.00	406	12.00	348	26.00	754
Repair hinged pin ramp connections (5)	62	LF	17.00	1,054	28.00	1,736	45.00	2,790
Repair rolling feet (1)	22	LF	22.00	484	37.00	814	59.00	1,298
Repair ramp and dock handrails (5%)	47	LF	10.00	470	20.00	940	30.00	1,410
Remove marine growth from underside ramps	5,450	SF	0.75	4,088	2.25	12,263	3.00	16,351
Relamp light pole fixtures (20%)	2	EA	45.00	90	65.00	130	110.00	220
Relamp ramp fixtures (20%)	6	EA	75.00	450	150.00	900	225.00	1,350
SUBTOTAL:				$ 8,025		$ 18,044		$ 26,069
General Conditions, Overhead and Profit	30.00%			2,408		5,413		7,821
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			1,774		3,988		5,762
Total D1A. Site Development and Ramps:				$ 12,207		$ 27,445		$ 39,652

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D1. COSTS BASED ON 5 YEARS CYCLE (5 TIMES TOTAL) (Continued)								
B. Concrete Stationary Dock								
Remove marine growth from steel piles, pile caps and dock bottom	2,900	SF	0.75	2,175	2.25	6,525	3.00	8,700
Relamp dock fixtures	4	EA	75.00	300	150.00	600	225.00	900
SUBTOTAL:				$ 2,475		$ 7,125		$ 9,600
General Conditions, Overhead and Profit	30.00%			743		2,138		2,881
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			547		1,575		2,122
Total D1B. Concrete Stationary Dock:				$ 3,765		$ 10,838		$ 14,603
C. Concrete Floating Dock								
Raise and support dock above water line and remove marine growth from underside dock and float barrels every 5 years	13,748	SF	1.50	20,622	4.50	61,866	6.00	82,488
Relamp light fixtures	6	EA	148.00	888	170.00	1,020	318.00	1,908
SUBTOTAL:				$ 21,510		$ 62,886		$ 84,396

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D1. COSTS BASED ON 5 YEARS CYCLE (5 TIMES TOTAL) (Continued)								
C. Concrete Floating Dock (Continued)								
General Conditions, Overhead and Profit	30.00%			6,453		18,866		25,319
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			4,754		13,898		18,652
Total C1c. Concrete Floating Dock:				$ 32,717		$ 95,650		$ 128,367
TOTAL D1. PERIODIC RENEWAL/REPLACEMENT COSTS (5 YEARS):				**$ 48,689**		**$ 133,933**		**$ 182,622**
D2. COSTS THAT OCCUR RIGHT AWAY AFTER 15 YEARS (2 TIMES TOTAL)								
B. Concrete Stationary Dock								
Sandblast 24" diameter steel piles	3,014	SF	1.00	3,014	5.00	15,070	6.00	18,084
Apply 160 mil (3 part) polyurethane coating	3,014	SF	2.75	8,289	9.50	28,633	12.25	36,922
SUBTOTAL:				$ 11,303		$ 43,703		$ 55,006
General Conditions, Overhead and Profit	30.00%			3,391		13,111		16,502

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D2. COSTS THAT OCCUR RIGHT AWAY AFTER 15 YEARS (2 TIMES TOTAL) (Continued)								
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			2,498		9,658		12,156
Total D2B. Concrete Stationary Dock:				$ 17,192		$ 66,472		$ 83,664
C. Concrete Floating Dock								
Sandblast 36" diameter x 60" long float barrels	7,418	SF	1.00	7,418	5.00	37,090	6.00	44,508
Sandblast 24" diameter guide piles during low tides	5,652	SF	1.00	5,652	5.50	31,086	6.50	36,738
Apply 160 mil (3 part) polyurethane coating to barrels and piles	13,070	SF	2.75	35,943	9.50	124,165	12.25	160,108
SUBTOTAL:				$ 49,013		$ 192,341		$ 241,354
General Conditions, Overhead and Profit	30.00%			14,704		57,702		72,406
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			10,832		42,507		53,339
Total D2C. Concrete Floating Dock:				$ 74,549		$ 292,550		$ 367,099
TOTAL D2. PERIODIC RENEWAL/REPLACEMENT COSTS (15 YEARS):				**$ 91,741**		**$ 359,022**		**$ 450,763**

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D3. ONE TIME COST FOR 20 YEARS DESIGN LIFE								
B. Concrete Stationary Dock								
Apply impressed current cathodic protection system to 24" diameter steel piles (20 year design)	24	EA	835.00	20,040	1150.00	27,600	1985.00	47,640
SUBTOTAL:				$ 20,040		$ 27,600		$ 47,640
General Conditions, Overhead and Profit	30.00%			6,012		8,280		14,292
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			4,429		6,100		10,529
Total D3B. Concrete Stationary Dock:				$ 30,481		$ 41,980		$ 72,461
C. Concrete Floating Dock								
Apply impressed current cathodic protection system to guide piles	30	EA	750.00	22,500	1075.00	32,250	1825.00	54,750
Apply impressed current cathodic protection system to float barrels	168	EA	250.00	42,000	415.00	69,720	665.00	111,720
SUBTOTAL:				$ 64,500		$ 101,970		$ 166,470
General Conditions, Overhead and Profit	30.00%			19,350		30,591		49,941

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
D. PERIODIC RENEWAL/REPLACEMENT COSTS (Continued)								
D3. ONE TIME COST FOR 20 YEARS DESIGN LIFE (Continued)								
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			14,255		22,535		36,790
Total D1C. Concrete Floating Dock:				$ 98,105		$ 155,096		$ 253,201
TOTAL D3. PERIODIC RENEWAL/REPLACEMENT COSTS (20 YEARS):				**$ 128,586**		**$ 197,076**		**$ 325,662**
E. TOTAL REPLACEMENT COSTS								
1. SITE DEVELOPMENT AND RAMPS								
Demolition								
Remove concrete walks	4,680	SF			1.50	7,020	1.50	7,020
Remove curbs	585	LF			5.20	3,042	5.20	3,042
Remove steel framed ramps and railings and salvage materials	5,450	SF			5.50	29,975	5.50	29,975
Remove light poles, fixtures, bases and wiring	11	EA			550.00	6,050	550.00	6,050
Remove ramp lights	32	EA			150.00	4,800	150.00	4,800
Dispose debris	75	TONS	70.00	5,250	20.00	1,500	90.00	6,750

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
1. SITE DEVELOPMENT AND RAMPS (Continued)								
New Work								
4" concrete sidewalks over subbase	4,680	SF	4.15	19,422	3.10	14,508	7.25	33,930
Concrete curbs	585	LF	13.00	7,605	15.00	8,775	28.00	16,380
Site grading	325	CY	12.00	3,900	7.50	2,438	19.50	6,338
10'0" wide hinged pin galvanized steel pedestrian ramps and framing (2)	2,260	SF	42.50	96,050	23.00	51,980	65.50	148,030
22'0" wide hinged pin galvanized steel vehicle ramp with hinged pin top and roller feet dock connection (1)	3,190	SF	44.00	140,360	25.00	79,750	69.00	220,110
Ramp guardrails	644	LF	49.00	31,556	23.00	14,812	72.00	46,368
30'0" light poles, fixtures and bases, conduit and wiring	11	EA	2150.00	23,650	1400.00	15,400	3550.00	39,050
10'0" light poles, fixtures and bases, conduit and wiring at ramps	32	EA	1035.00	33,120	800.00	25,600	1835.00	58,720
SUBTOTAL:				$ 360,913		$ 265,650		$ 626,563

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
1. SITE DEVELOPMENT AND RAMPS (Continued)								
General Conditions, Overhead and Profit	30.00%			108,274		79,695		187,969
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			79,762		58,709		138,471
TOTAL 1. SITE DEVELOPMENTS:				$ 548,949		$ 404,054		$ 953,003
2. CONCRETE STATIONARY DOCK								
Demolition								
Mobilization-demobilization pile extracting rig	1	LOT	2000.00	2,000	5000.00	5,000	7000.00	7,000
Demolish concrete dock (barge operation)	2,900	SF			10.20	29,580	10.20	29,580
Demolish concrete pile caps	6	EA			950.00	5,700	950.00	5,700
Extract 24" diameter x 45'0" long piles and salvage materials	24	EA	125.00	3,000	750.00	18,000	875.00	21,000
Remove light poles, fixtures and wiring	3	EA			700.00	2,100	700.00	2,100
Dispose debris	125	TONS	70.00	8,750	20.00	2,500	90.00	11,250

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
2. CONCRETE STATIONARY DOCK (Continued)								
New Work								
Mobilization-demobilization pile driving rig	1	LOT	2000.00	2,000	5000.00	5,000	7000.00	7,000
Drive 24" diameter x 45'0" long hot dipped galvanized steel piles	24	EA	5250.00	126,000	2100.00	50,400	7350.00	176,400
Pile cap plates and shoes	24	EA	225.00	5,400	300.00	7,200	525.00	12,600
Cut piles to elevation	24	EA	25.00	600	135.00	3,240	160.00	3,840
Apply impressed current cathodic protection system to 24" diameter steel piles	24	EA	750.00	18,000	900.00	21,600	1650.00	39,600
2'6"x1'6" deep reinforced concrete pile caps (12)	34	CY	625.00	21,250	350.00	11,900	975.00	33,150
8" thick precast concrete slab with 6"x24" deep double tee stem dock girders	2,900	SF	15.50	44,950	6.25	18,125	21.75	63,075
Shot rock rip-rap behind embankments	1,660	CY	18.20	30,212	8.50	14,110	26.70	44,322
36" diameter x 9" thick rubber fender	125	LF	248.00	31,000	110.00	13,750	358.00	44,750
W14x90# galvanized steel wale with 8" diameter rail	125	LF	185.00	23,125	105.00	13,125	290.00	36,250

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
2. CONCRETE STATIONARY DOCK (Continued)								
New Work (Continued)								
Drive 18" diameter x 45'0" long treated lumber fender pile and connect to wale	12	EA	1225.00	14,700	950.00	11,400	2175.00	26,100
12" diameter x 24" solid steel ship anchor bollards	8	EA	875.00	7,000	450.00	3,600	1325.00	10,600
25'0" light pole fixture and base mounted to dock slab including conduit and wiring	4	EA	1870.00	7,480	1050.00	4,200	2920.00	11,680
SUBTOTAL:				$ 345,467		$ 240,530		$ 585,997
General Conditions, Overhead and Profit	30.00%			103,640		72,159		175,799
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			76,348		53,157		129,505
TOTAL 2. CONCRETE STATIONARY DOCK:				$ 525,455		$ 365,846		$ 891,301
3. CONCRETE FLOATING DOCK								
Demolition								
Mobilization-demobilization pile extracting rig	1	LOT	2000.00	2,000	3000.00	3,000	5000.00	5,000

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
3. CONCRETE FLOATING DOCK (Continued)								
Demolition (Continued)								
Demolish concrete dock and float barrels (barge operation)	8,470	SF	1.50	12,705	10.00	84,700	11.50	97,405
Demolish 2'6"x1'6"x20'0" long concrete pile caps	12	EA	50.00	600	950.00	11,400	1000.00	12,000
Extract 24" diameter x 55'0" long guide piles and salvage materials	30	EA	75.00	2,250	800.00	24,000	875.00	26,250
Remove light poles, fixtures and wiring	6	EA			700.00	4,200	700.00	4,200
Dispose debris	250	TONS	70.00	17,500	20.00	5,000	90.00	22,500
New Work								
Mobilization-demobilization pile driving rig	1	LOT	2000.00	2,000	5000.00	5,000	7000.00	7,000
Drive 24" diameter x 55'0" long hot dipped galvanized steel pipe piles	30	EA	5850.00	175,500	2200.00	66,000	8050.00	241,500
Apply impressed current cathodic protection system to piles	30	EA	825.00	24,750	950.00	28,500	1775.00	53,250

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
3. CONCRETE FLOATING DOCK (Continued)								
New Work (Continued)								
8" thick precast concrete slab with 6"x24" deep double tee stem dock girders	8,470	SF	15.50	131,285	6.25	52,938	21.75	184,223
30" diameter x 60" long reinforced fiberglass float drums tied to each other and dock bottom	168	EA	525.00	88,200	350.00	58,800	875.00	147,000
36" diameter x 9" thick rubber fender	320	LF	275.00	88,000	135.00	43,200	410.00	131,200
W14x90# galvanized steel wale with 8" diameter rail	320	LF	185.00	59,200	105.00	33,600	290.00	92,800
Drive 18" diameter x 45'0" long treated timber fender rail and connect to wall	15	EA	950.00	14,250	730.00	10,950	1680.00	25,200
12" diameter x 24" solid steel ship anchor bollards	10	EA	875.00	8,750	450.00	4,500	1325.00	13,250
25'0" light pole, fixture and base mounted to dock slab including conduit and wiring	6	EA	1870.00	11,220	1050.00	6,300	2920.00	17,520
SUBTOTAL:				$ 638,210		$ 442,088		$ 1,080,298

ALTERNATE 1. AMHS FLOATING DOCKS AND RAMPS	QUANTITY	UNIT	MATERIAL RATE $	MATERIAL TOTAL $	LABOR RATE $	LABOR TOTAL $	TOTAL UNIT RATE $	TOTAL MATERIAL/LABOR $
E. TOTAL REPLACEMENT COSTS (Continued)								
3. CONCRETE FLOATING DOCK (Continued)								
General Conditions, Overhead and Profit	30.00%			191,463		132,626		324,089
Contingencies and Escalation to 2011 at 5.00% per Annum	17.00%			141,044		97,701		238,745
TOTAL 3. CONCRETE FLOATING DOCK:				$ 970,717		$ 672,415		$ 1,643,132
TOTAL E. TOTAL REPLACEMENT COST:				**$ 2,045,121**		**$ 1,442,315**		**$ 3,487,436**

7.0 Schedule

ITEM	Frequency
ST9007, Fire/Lifesaving, #100-100	
Fire Alarm Safety Check & Inspection	YR
Fire System Inspection	Monthly
Fire Alarm Sensor	Bi-Mo
Inspect fire hose & rings	bi-mo
Test hydrants & sensors	bi-mo.
Inspect fire extinguishers	mo.
Cycle fire valves	mo.
Service dry chem	6 mo.
ST9007, Dewatering Pumps, #100-200	
Check Vibration	mo.
Test & Run De-Watering Pumps	wk
Lube pump & motor	mo
Check tube tension brg clearance	6 mo.
Oily Waste Pump & Sewage Pump	Yr
MEGOR Dewatering Pumps & **RECORD**	Annual
Maintenance of Dewatering Pumps, Addt'l Labor	As Req
ST9007, Inlet Valve, #100-300	
Check free bd. & cycle	daily
Inlet valve maint. per manual	yr
ST9007, Outlet Valve, #100-301	
Cycle stop valve	mo.
Inspect flapper	mo.
ST9007, Cross Connect Valves, #100-302	
Cycle cross connect valve	yr
ST9007, Inspect Ballast Piping #100-303	
Inspect Ballast Piping	
ST9007, Capstains #100-400	
Inspect for oil leaks & rotate	wk
Run each direction for 1min	bi-wkly
Yearly lube & inspect per manual	yr
ST9007, Control House 100-#500	
Unit Heaters	Weekly
HVAC System	Weekly
Control Panel Maintenance	Weekly
Inspect Gauge Air Dirt	Monthly
Check Connections/Clean Alarm Panel	Monthly
Check Ballast Tank Level Gauges	Monthly
Caliber Tank Level Indicators	Monthly
ST9007, Winterization #100-600	
Check Wingwall Heaters	Weekly
Confirm Wingwall Vents Are CLOSED	Monthly
Confirm Crane Heater Seat At 60Degrees	Daily
Insert Heat Tape	As Req
Check Bleeder Valves	4 Hour
Confirm Heat Tape is Working	Weekly
ST9007, Emergency Generator, #100-700	
Perform Monthly Maintenance	Mo
Emergency lighting	mo
Battery fluid & connections	mo

ITEM	Frequency
Check oil level, coolant, & fuel	
Maintain log of activity	mo
Test & run gen set 30min	mo
Cat mechanic inspect, with rep	yr
Check/clean vacuum reg, exciter, & stator wiring	yr
Megometer windings & record	yr
Operate space heaters	yr
Grease generator bearings	4000hr
ST9007, HVAC, #100-800	
Run heaters & supply fans	mo
Inspect belts	yr
Lube & inspect each unit & damper	yr
Vent cap repair	As Req
ST9007, Electrical, #100-900	
Check All Breaker For Tripping	wk
Check 208v & 220v tranforners	wk
Megger all motors & record	wk
Vac and blow down all transformers	mo.
Crane Navigational Lights	Weekly
ST9007, Main Pier Maintenance #901	
Inspect Pier Planking, Chains, & Grating	Weekly
Inspect Pier Ladders For Damage	Monthly
Inspect Cell Walls & Piles using skiff	Monthly
Inpsect Life Rings & Jackets	Weekly
Inspect Ballards & Cleats	Monthly
Confirm All Operational Fire Stations in working cond	Monthly
Tighten Breaker Lugs	6 Months
Pier Plumbing Repairs	As Req
Flush Pier Plumbing	As Req
ST9007, Pier Electrical #902	
Check Pier Electrical	Weekly
ST9007, Switch Gear Transformer #1000	
Check Main power cable to D.D.	
ST9007, Dry Dock Interior Lights #101001	
Check Safety Deck Int Lights & "E" Lights	Weekly
ST9007, DryDock Exterior Lights #101-002	
Check Dry Dock Exterior Lights	Weekly
ST9007, Repair Transformer #101-005	
Repair Transformer	
ST9007, Capac System, #101-100	
Record I.C.C.P. volts/amps PS	mo
Calibrate capac system	yr
Clean rectifier of dust / dirt	yr
DO NOT USE FLUIDS	note
Inspect transformer / vac	3 mo.
Record Hull Potential dock and cell walls	mo.
ST9007, TLI Guage Air Compressor, #101-200	
Make system checks	wk
TLI Monitoring	Daily

ITEM	Frequency
Cycling TLI Draft Valves	Monthly
Calibrate Tank Level Indicator	Annual
TLI Sounding Tanks	Daily
ST9007, Manitex Crane #101-500	
8 Hour Maintenance	Daily
40 Hour Maintenance	Monthly
170 Hour Maintenance	3, Mo.
Run Crane All Directions	Montly
Semi-Annual Maintenance	6 Months
Annual Maintenance & Tests	Yearly
Check Hook For Cracks	18 Month
Assure cab heater is set at 60 degrees	Monthly
ST9007, Block Pulling System, #101-600	
Maintenance of Block Pulling System	Monthly
Lower shive grease	quarterly
Grease pulleys & check winch oil	6 mo.
Straighten Hull Chains	
Change winch oil	5yr
ST9007, Hull & Structural, #101-800	
Inspect, UT, & Survey Per ABS	Yearly
Clean/Inspect Sewage Tank	Yearly
Clean/Inspect Oily Waste Tank	Yearly
Obtain drydock certification	Yearly
R&R Ballast Tank Hatches	As Req
ST9007, Block Repair, #101-900	
Repair Blocks	
ST9007, D.D. Routine Insp & Maint. #102-000	
lube mooring guides	Monthly
Check Door Gaskets	Monthly
Inspect ladders, stairs, & handrails	Monthly
Inspect paint system	Monthly
Inspect bridge/ramp pins, lube	Montly
Clean regular per regulations	6 mo
Repair safety chains & guard posts at end of D.D.	mo
Clean safety Deck	As Req
Check DD freeboard	daily
ST9007, Air/Water Services #102-100	
Air & Water Manifold Repairs	
UT Water lines in wing walls, do repair	
Check Flex hoses to drydock	
Drydock Kevels & Bits	As Req
Port Comm Bridge	As Req
Drydock Ends	As Req
ST9007, Damaged Hand Rail #103-000	
Fixed damaged handrail	
ST9007, Line Inspection #104-000	
Inspect lines: Measure Length, note condition and line number.	

ITEM	Frequency
ST9007, Fire & Life Saving DD#2 #200-100	
Fire/Lifesaving	Monthly
Fire/Lifesaving	Yearly
Fire Alarm Safety Check & Inspection	YR
Fire System Inspection	Monthly
Fire Alarm Sensor	Bi-Mo
Inspect fire hose & rings	bi-mo
Test hydrants & sensors	bi-mo.
Inspect fire extinguishers	mo.
Cycle fire valves	mo.
Service dry chem, DO ESTIMATE	6 mo.
ST9007, Dewatering Pump #200-200	
Check Vibration	mo.
Test & Run De-Watering Pumps	wk
Lube pump & motor	mo
Check tube tension brg clearance	6 mo.
Oily Waste Pump & Sewage Pump	Yr
MEGOR Dewatering Pumps & **RECORD**	Annual
Maintenance of Dewatering Pumps, Addt'l Labor	As Req
ST9007, Inlet Valve, #200-300	
Check free bd. & cycle	daily
Inlet valve maint. per manual	yr
ST9007, Outlet Valve, #200-301	
Cycle stop valve	mo.
Inspect flapper	mo.
ST9007, Cross Valve, #200-302	
Cycle cross connect valve	yr
ST9007, Capstain, #200-400	
Inspect for oil leaks & rotate	wk
Run each direction for 1min	bi-wkly
Yearly lube & inspect per manual	yr
ST9007, Control House, #200-500	
Unit Heaters	Weekly
HVAC System	Weekly
Control Panel Maintenance	Weekly
Inspect Gauge Air Dirt	Monthly
Check Connections/Clean Alarm Panel	Monthly
Check Ballast Tank Level Gauges	Monthly
Caliber Tank Level Indicators	Monthly
ST9007, Winterization, #200-600	
Check Wingwall Heaters	Weekly
Confirm Wingwall Vents Are CLOSED	Monthly
Confirm Crane Heater Seat At 60Degrees	Daily
Insert Heat Tape	As Req
Check Bleeder Valves	4 Hour
Confirm Heat Tape is Working	Weekly
ST9007, Emergency Generators, #200-700	
Perform Monthly Maintenance	Mo
Emergency lighting	mo
Battery fluid & connections	mo
Check oil level, coolant, & fuel	

ITEM	Frequency
Maintain log of activity	mo
Test & run gen set 30min	mo
Cat mechanic inspect, with rep	yr
Check/clean vacuum reg, exciter, & stator wiring	yr
Megometer windings & record	yr
Operate space heaters	yr
Grease generator bearings	4000hr
ST9007, Heat/Ventilation, #200-800	
Run heaters & supply fans	mo
Inspect belts	yr
Lube & inspect each unit & damper	yr
ST9007, Wingwalls, #200-900	
Service Wingwalls	
Mop Wingwalls after drydock/undock	
ST9007, Drydock Interior Lights #201-001	
Check Safety Deck Int Lights & "E" Lights	Weekly
ST9007, Drydock Exterior Lights #201-002	
Check Dry Dock Exterior Lights	Weekly
ST9007, Repair Transformer, #201-005	
Repair Transformer	
ST9007, Capac System, #201-100	
Record I.C.C.P. volts/amps PS	mo
Calibrate capac system	yr
Clean rectifier of dust / dirt	yr
DO NOT USE FLUIDS	note
Inspect transformer / vac	3 mo.
Record Hull Potential dock and cell walls	mo.
ST9007, TLI System, #201-200	
Make system checks	wk
TLI Monitoring	Daily
Cycling TLI Draft Valves	Monthly
Calibrate Tank Level Indicator	Annual
TLI Sounding Tanks	Daily
ST9007, Maintenance on Crane, #201-500	
8 Hour Maintenance	Daily
40 Hour Maintenance	Monthly
170 Hour Maintenance	3, Mo.
Run Crane All Directions	Montly
Semi-Annual Maintenance	6 Months
Annual Maintenance & Tests	Yearly
Check Hook For Cracks	18 Month
ST9007, Block Pulley System, #201-600	
Maintenance of Block Pulling System	Monthly
Lower shive grease	quarterly
Grease pulleys & check winch oil	6 mo.
Straighten Hull Chains	
Change winch oil	5yr
ST9007, Hull & Structure, #201-800	
Inspect, UT, & Survey Per ABS	Yearly
Clean/Inspect Sewage Tank	Yearly
Clean/Inspect Oily Waste Tank	Yearly

ITEM	Frequency
Obtain drydock certification	Yearly
R&R Ballast Tank Hatches	As Req
St9007, Block Repair, #201-900	
Repair Blocks as needed	
ST9007,DD#2 Routine Maint & Inspect, #202-000	
lube mooring guides	Monthly
Check Door Gaskets	Monthly
Inspect ladders, stairs, & handrails	Monthly
Inspect paint system	Monthly
Inspect bridge/ramp pins, lube	Montly
Clean regular per regulations	6 mo
Repair safety chains & guard posts at end of D.D.	mo
Clean safety Deck	As Req
Check DD freeboard	daily
ST9007, Air/Water Services, #202-100	
Air & Water Manifold Repairs	
UT Water lines in wing walls, do repair	
Check Flex hoses to drydock	
Drydock Kevels & Bits	As Req
Port Comm Bridge	As Req
Drydock Ends	As Req
ST9007, Inhaul Winch Maintenance, #202-200	
General Maintenance of Winches	
ST9007, Damaged Handrails, #203-000	
ST9007, Line Inspections #204-000	
Inspect all dock lines: measure length and note condition & number	6 Months
*************BEGINNING OF SF8001 Numbers*********	
SF8001, Draft Board Restoration #900	
Draft board restoration	Yearly
Radiator Fan Housing-Paint	Yearly
Control House-Paint	As Req
SF8001 DryDock Maintenance TANKS #901	
#3 STBD Tank Touch UP	
#4 STBD Tank Touch UP	
SF8001 Manitex Hydro Oil Change #1501	
Change Hydro Oil In Manitex Crane	
SF8001 WingWall Coatings #2000	
Port Side Wingwall	Yearly
Sbd Side Wingwall	Yearly
SF8001, Circulation Pump #2500	
Rebuild Circulation Pump	Yearly
**********START OF ST9002 NUMBERS**************	
ST9002, Oily water seperator #300	
Record guage readings each operation	ea.use
Adjust back flush pressure as required	ea.use
Disamble cavity pump & inspect per spec	yr
Remove seperatar top examine inner surface	yr
Replace coaleser box gaskets per spec	yr
Coalescer beads inspect/clean if needed	yr

ITEM	Frequency
Solenoid valves, disassemble & clean	yr
Check all fittings, pipes & valves for leaks	ea.use
ST9002 Sullair Compressor #500	
Check Fluids, Meter readings, & Filters	Daily
1000 Hour Maintenance	Daily
Submit oil sample analyses	1.5 month
Change filters [8000hr]	Yearly
Change lube oil [8000hr]	Yearly
	Weekly
ST9002, Roads & Grounds #700	
Check storm drains & filters in place	wk
Confirm storm drain outfalls run clean	wk
Clean storm drain sumps (15)	mo
Inspect fire extinguishers & hydrants	quarterly
ASD BUILDINGS & GROUNDS	
Confirm Ground lighting in YARD working properly	Weekly
Confirm yard lighting in SHOPS working properly	Weekly
ST9002, Yard Fire/Life Saving #1800	
Inspect & Document Eye Wash Stations.	weekly
Inspect Yard Fire Extinquishers	Monthly
ST9002, Back Flow Preventer #2800	
Back flow preventer certification	yr
Sprinkler System Certification	yr
Dry Sprinkler System Drum Drip Drainage	Monthly
Confirm Backflow Preventer is operating properly	Yr
DO REPAIR ESTIMATE IN DETAIL ON ALL	
REPAIRS REQUIRED, PRIORITIZE	
(Does Not Include Shop Below)	
Main Shop Equipment Maintenance	
Building Elevator Yrly Certification	
ST9002, Shop Ventilation #200	
Filter change	3 mo.
Belts	3 mo.
Bearings	3 mo.
Louver lubrication	3 mo.
Complete clean-up of dust & grit	Weekly
Annual Ventilation Inspection	Yr
Annual Controls Inspection	Yr
HVAC service, air filters, condensate pan,	mo
Bag House Clean- Empty bag in carpt shop	Weekly
ST9002, Shop Boiler Service #2500	
Boiler/burner service every 4 mo.	4mo
Annual boiler inspection	yrly
HVAC service, check fans/belts see specs.	6mo
HVAC service inspect & clean	yr
HVAC 2yr 4yr service, inspect/lubricate	2yr
ST9004, Main Shop Machinery #300	
Overhead Crane 10 Ton	
Annual Maintenance & tests, including Elect.	
Annual Maintenance & Certification	

ITEM	Frequency
1.Buffalo punch, oil every day of use	daily
2.LeBlond lathe, apron control rod, cross feed	
nut, tailstock oiler	daily
Oil head stock, gear box, apron	wk
Change oil yearly, head stock,& carriage,	yrly
15.5 qts oil required	
3.DoAll saw, index table clean & oil	daily
Band tension screw oil	mo
Transmition gear oil & hyd. oil filters	6mo
4.Cincinnate Bickford drill press, grease per	daily
spec book	
Change oil yearly,	yrly
5.G&L milling machine, end support block, anti	yrly
friction brgs, misc bearings to grease.	
Electric motor grease & pack	yrly
Head stock oil change yearly	yrly
Bed base oil change yearly	yrly
Table & saddle way as needed, oil end	yrly
support	
6.Cincinnati milling machine, Quil bearing	daily
Gear bearings, spindle bearing, shaft	wk
bearing, & drive gear bearing	
Drive gear box & bearing oil change	yrly
7.Cincinnati shaper, oil daily sliding surface,	quarterly
feed screw bearing, feed screw, clapper	
pin	
Weekly fill oil hole rear of ram, oil ram adj	Each use
screw through open in ram, oil speed	
changer lever bearing & iol crank clutch	
8.Victor lathe, oil tail stock	daily
Change oil head stock & gear box	3mo
9. Vec trax milling machine, oil daily	daily
10.Lemann lathe, daily oil quadrant studs, oil	daily
control rod support bearing.	
Monthly check oil in tank	mo
11.Tensmith, grease gibb plates, support	wk
bearing, all moving parts	
12.Axelson lathe, oil tumble gears, lead screen,	mo
feed rod, clutch control, rod bearings &	
change gears.	
Change oil: head stock,apron, include	yrly
new filter.	
13.Sidney lathe, oil tailstock & cross feed stock	wk
Each 6mo change oil head stock, gear	6mo
box & apron	
ST9004 Assured Grounding #700	
Quarterly check of all plug-in tools	
REPAIR ESTIMATES REQUIRED	quarterly

ITEM	Frequency
ST9002, Oily water seperator #300	
Record guage readings each operation	ea.use
Adjust back flush pressure as required	ea.use
Disamble cavity pump & inspect per spec	yr
Remove seperatar top examine inner surface	yr
Replace coaleser box gaskets per spec	yr
Coalescer beads inspect/clean if needed	yr
Solenoid valves, disassemble & clean	yr
Check all fittings, pipes & valves for leaks	ea.use
ST9002 Sullair Compressor #500	
Check Fluids, Meter readings, & Filters	Daily
1000 Hour Maintenance	Daily
Submit oil sample analyses	1.5 month
Change filters [8000hr]	Yearly
Change lube oil [8000hr]	Yearly
ST9002, Roads & Grounds #700	
Check storm drains & filters in place	wk
Confirm storm drain outfalls run clean	wk
Clean storm drain sumps (15)	mo
Inspect fire extinguishers & hydrants	quarterly
ASD BUILDINGS & GROUNDS	
Confirm Ground lighting in YARD working properly	Weekly
Confirm yard lighting in SHOPS working properly	Weekly
ST9002, Yard Fire/Life Saving #1800	
Inspect & Document Eye Wash Stations.	weekly
Inspect Yard Fire Extinquishers	Monthly
ST9002, Back Flow Preventer #2800	
Back flow preventer certification	yr
Sprinkler System Certification	yr
Dry Sprinkler System Drum Drip Drainage	Monthly
Confirm Backflow Preventer is operating properly	Yr
DO REPAIR ESTIMATE IN DETAIL ON ALL	
REPAIRS REQUIRED, PRIORITIZE	
(Does Not Include Shop Below)	
Main Shop Equipment Maintenance	
Building Elevator Yrly Certification	yr
ST9002, Shop Ventilation #200	
Filter change	3 mo.
Belts	3 mo.
Bearings	3 mo.
Louver lubrication	3 mo.
Complete clean-up of dust & grit	Weekly
Annual Ventilation Inspection	Yr
Annual Controls Inspection	Yr
HVAC service, air filters, condensate pan,	mo
Bag House Clean- Empty bag in carpt shop	Weekly
ST9002, Shop Boiler Service #2500	
Boiler/burner service every 4 mo.	4mo
Annual boiler inspection	yrly
HVAC service, check fans/belts see specs.	6mo

ITEM	Frequency
HVAC service inspect & clean	yr
HVAC 2yr 4yr service, inspect/lubricate	2yr
ST9004, Main Shop Machinery #300	
Overhead Crane 10 Ton	
Annual Maintenance & tests, including Elect.	
Annual Maintenance & Certification	
1.Buffalo punch, oil every day of use	daily
2.LeBlond lathe, apron control rod, cross feed	
nut, tailstock oiler	daily
Oil head stock, gear box, apron	wk
Change oil yearly, head stock,& carriage,	yrly
15.5 qts oil required	
3.DoAll saw, index table clean & oil	daily
Band tension screw oil	mo
Transmition gear oil & hyd. oil filters	6mo
4.Cincinnate Bickford drill press, grease per	daily
spec book	
Change oil yearly,	yrly
5.G&L milling machine, end support block, anti	yrly
friction brgs, misc bearings to grease.	
Electric motor grease & pack	yrly
Head stock oil change yearly	yrly
Bed base oil change yearly	yrly
Table & saddle way as needed, oil end	yrly
support	
6.Cincinnati milling machine, Quil bearing	daily
Gear bearings, spindle bearing, shaft	wk
bearing, & drive gear bearing	
Drive gear box & bearing oil change	yrly
7.Cincinnati shaper, oil daily sliding surface,	quarterly
feed screw bearing, feed screw, clapper	
pin	
Weekly fill oil hole rear of ram, oil ram adj	Each use
screw through open in ram, oil speed	
changer lever bearing & iol crank clutch	
8.Victor lathe, oil tail stock	daily
Change oil head stock & gear box	3mo
9. Vec trax milling machine, oil daily	daily
10.Lemann lathe, daily oil quadrant studs, oil	daily
control rod support bearing.	
Monthly check oil in tank	mo
11.Tensmith, grease gibb plates, support	wk
bearing, all moving parts	
12.Axelson lathe, oil tumble gears, lead screen,	mo
feed rod, clutch control, rod bearings &	
change gears.	
Change oil: head stock,apron, include	yrly
new filter.	
13.Sidney lathe, oil tailstock & cross feed stock	wk
Each 6mo change oil head stock, gear	6mo

ITEM	Frequency
box & apron	
ST9004 Assured Grounding #700	
Quarterly check of all plug-in tools	
Site Lighting	
Clean Lenses, replace burned out lamps as they fail	As Reqr'd
Electrical Power Stations along Dock	
The equipment needs and infra-red scan, load test of the circuit breakers, and all cable terminations need to be re-torqued to manufacturer's specifications	Annual
Analyze oil in the pad mount transformer	Annual
Site Mantenance	
Check/Replace storm drain inlet filters	weekly
Remove sediment from storm drain catch basin sumps	monthly
Check storm drain outfalls run clean	weekly
Service storm water oil-water separators and electro pulse system	As Reqr'd
Inspect and Certify sewer backflow preventer	Annual
REPAIR ESTIMATES REQUIRED	quarterly

ITEM	Frequency
Building Elevator Yrly Certification	yr
ST9002, Shop Ventilation #200	
Filter change	3 mo.
Belts	3 mo.
Bearings	3 mo.
Louver lubrication	3 mo.
Complete clean-up of dust & grit	Weekly
Annual Ventilation Inspection	Yr
Annual Controls Inspection	Yr
HVAC service, air filters, condensate pan,	mo
Bag House Clean- Empty bag in carpt shop	Weekly
ST9002, Shop Boiler Service #2500	
Boiler/burner service every 4 mo.	4mo
Annual boiler inspection	yrly
HVAC service, check fans/belts see specs.	6mo
HVAC service inspect & clean	yr
HVAC 2yr 4yr service, inspect/lubricate	2yr
ST9004, Main Shop Machinery #300	
Overhead Crane 10 Ton	
Annual Maintenance & tests, including Elect.	
Annual Maintenance & Certification	
Check drive belts visually for excessive wear and cracking. Check belt tension and correct if deflection exceeds manufacturer's requirements	
Adjsut gibs to ensure proper contant with slide ways.	
Check proper fuction of wipers and chip guards	
Practice good general housekeeping, keeping floors swept and chips/shaving removed.	daily
Add lubridation with lube gun or oil can to oiling cups, check oil level sight glass, and check oil flow sight glasses.	daily
Lubricate ways	2x daily
Check that all guards are in place and secure	
1.Buffalo punch, oil every day of use	daily
2.LeBlond lathe, apron control rod, cross feed	
nut, tailstock oiler	daily
Oil head stock, gear box, apron	wk
Change oil yearly, head stock,& carriage,	yrly
15.5 qts oil required	
3.DoAll saw, index table clean & oil	daily
Band tension screw oil	mo
Transmition gear oil & hyd. oil filters	6mo
4.Cincinnate Bickford drill press, grease per	daily
spec book	
Change oil yearly,	yrly
5.G&L milling machine, end support block, anti	yrly
friction brgs, misc bearings to grease.	
Electric motor grease & pack	yrly
Head stock oil change yearly	yrly
Bed base oil change yearly	yrly

ITEM	Frequency
Table & saddle way as needed, oil end	yrly
support	
6.Cincinnati milling machine, Quil bearing	daily
Gear bearings, spindle bearing, shaft	wk
bearing, & drive gear bearing	
Drive gear box & bearing oil change	yrly
7.Cincinnati shaper, oil daily sliding surface,	quarterly
feed screw bearing, feed screw, clapper	
pin	
Weekly fill oil hole rear of ram, oil ram adj	Each use
screw through open in ram, oil speed	
changer lever bearing & iol crank clutch	
8.Victor lathe, oil tail stock	daily
Change oil head stock & gear box	3mo
9. Vec trax milling machine, oil daily	daily
10.Lemann lathe, daily oil quadrant studs, oil	daily
control rod support bearing.	
Monthly check oil in tank	mo
11.Tensmith, grease gibb plates, support	wk
bearing, all moving parts	
12.Axelson lathe, oil tumble gears, lead screen,	mo
feed rod, clutch control, rod bearings &	
change gears.	
Change oil: head stock,apron, include	yrly
new filter.	
13.Sidney lathe, oil tailstock & cross feed stock	wk
Each 6mo change oil head stock, gear	6mo
box & apron	
ST9004 Assured Grounding #700	
Quarterly check of all plug-in tools	
Electrical	
Fire Alarm system test per NFPA	yrly
Test emergency ballasts in lights, test exit sign batteries	
Infra-red scan of switchboard, torque test terminations, circuit breakers load tested, motors tested	
Clean lenses, replace burned out lamps as they fail	As Req'red
Mechanical	
Inspection of heating plant, burners, pumps, controls, hydronic air vents	daily/wk
Inspection of plumbing fixtures for operation and/or damage	daily/wk
Rotate lead lag on main circulating pumps	monthly
Change AHU-1 filter	2-4 months
Change AHU-2 filter	2-4 months
Burner compustion adjustment for both burners	yrly
Direct digital controls inspection and calibration	yrly
Clean louvers and vents and check for operation	yrly
Clean exhaust fans, & interior of air handling units	2-5 years
Inspect & clean interior of boilers & chimney	2-5 years
Verify AHU-2 is operating & scheduled correctly & is enabled whenever building is to be occupied	

ITEM	Frequency
Sprinklers	
System Inspection and Certification	yrly
Drain dry sprinkler system low points (fall & winter)	2 weeks
Equipment	
Crane Inspection (OSHA 1910.179(j)	
All functional operating mechanisms for maladjustment interfering with proper operations	daily
Deterioration or leakage in lines, tanks, valves, drain pumps and other parts of air or hydraulic systems	daily
hooks with deformation or cracks	daily
hoist chains, including end connections for excessive wear, twist, distororted links, or tretch beyond manufacturer's recommendation	daily
Allfunctional operating mechanisms for excessive wear of componenets; rope reeving for noncompliance with manufactuer's recommendations	monthly
REPAIR ESTIMATES REQUIRED	quarterly

ITEM	Frequency
Electrical	
Treat rust on exterior panels and transformer and repaint panels	annual
Clean lenses, replace burned out lamps as they fail	As Reqr'd
Mechanical	
Clean exhaust fan	annual
Change sacrificial anode rods in hot water tank	5 years
REPAIR ESTIMATES REQUIRED	

ITEM	Frequency
Electrical	
Infra-red scan of switchboard, torque test terminations,	Annual
circuit breakers load tested, motors tested	As Reqr'd
Clean lenses, replace burned out lamps as they fail	
REPAIR ESTIMATES REQUIRED	

ITEM	Frequency
Electrical	
Infra-red scan of switchboard, torque test terminations, circuit breakers load tested, motors tested	Annual
Clean lenses, replace burned out lamps as they fail	As Reqr'd
REPAIR ESTIMATES REQUIRED	

ITEM	Frequency
Berth Slab	
Infra-red scan of switchboard, torque test terminations, circuit breakers load tested, motors tested	
Ship Yard	
Infra-red scan of switchboard, torque test terminations, circuit breakers load tested, and analyze oil in transformers.	
Treat rust on exterior transformers and equioment and repaint	
REPAIR ESTIMATES REQUIRED	

ITEM	Frequency
Piers	
Inspect pier planking, chains, and grating	weekly
Inspect pier ladders for damage	monthly
Sheet Pile	
Inspect cell walls and piles	monthly
Inspect bollards and cleats	monthly
Safety	
Inspect life rings and jackets	weekly
Check all fire stations	monthly
Wharf	
Check all hardware connections along the wharf	weekly
Grease drydock connection arms and slipes	monthly
REPAIR ESTIMATES REQUIRED	

APPENDIX A
DRY DOCK INSPECTION REPORTS

Alaska Ship & Dry Dock 2009 Survey
Ketchikan, AK – Manitex Crane

Prepared By *Crane Consultants, Inc.*

Table of Contents

Section 1 – Executive Summary of Findings

Section 1.1 – Crane Overview

The crane is in overall excellent condition for its age. The relatively mild maritime climate has contributed to the longevity of the crane. There are one (1) or two (2) items that should be more readily addressed including hydraulic fluid leaks. The more pressing issues of the report include, but are not necessarily limited to:

- Missing Slew (Swing) Bolt
- Slew (Swing) Gearbox Leaking Oil
- Extremely Corroded Bolts
- Poor Travel Truck Tracking

The crane has little or no rare characteristics and indeed, should be easy to maintain for maintenance professionals. There are no parts that were unique to this crane so parts can easily be found or easily made. The combined maintenance / parts manual for the crane is available and in good condition.

Manitex, LLC the original crane manufacturer has merged with Manitex International, Inc., (and they were previously known as Veri-Tek International, Corp.) but, in the end, the emergent company appears available to provide assistance as necessary.

The painting system on the crane is in excellent shape although the boom is weathered. The main structural bolts though are corroded and should be replaced as time and weather allows. Touch up painting is recommended. It is recommended that the old paint system not be removed because it may contain an additive that has helped increase its longevity. That additive is no longer available for commercial use.

The poor travel truck tracking is an unresolved mystery that may just require the replacement of the truck nylon spacers. The manufacturer should be consulted to comment on this issue.

A View of Alaska Ship & Dry Dock

Section 1.2 – Specific Crane Findings

Missing Slew (Swing) Bolt

Slew (Swing) Gearbox Leaking Oil

Extremely Corroded Bolts

Poor Travel Truck Tracking

Section 2 – Introduction and Background

The Alaska Ship and Dry Dock is strategically located on the sheltered inside passage of the Tongass Narrows at the southern end of the southeastern panhandle of Alaska. Situated barely north of Ketchikan, the area enjoys a relatively mild maritime climate. Ketchikan is located on Revillagigedo Island, 235 miles (378 km) south of Juneau, Alaska and 680 miles (1094 km) north of Seattle, Washington.

Ketchikan is the fourth largest city in Alaska and remains the industrial and transportation hub of southeast Alaska. Ketchikan is named after Ketchikan Creek, which flows through the town. Alaska Airlines provides multiple daily turbofan flights to and from Seattle keeping Ketchikan easily accessible year round.

Ketchikan has the world's largest collection of standing totem poles, located at three major locations – Saxman Village, Totem Bight and the Totem Heritage Center.

Specifically, Heger Dry Dock, Inc. (Heger) of Holliston, Massachusetts retained Crane Consultants, Inc. (CCI) of Seattle, Washington State to perform a condition survey of the Manitex crane located on the wingwall of the dry dock and reach conclusions from a third party perspective that would be submitted for review and consideration.

The Manitex Crane Overshadowing the Dry Dock

This comprehensive report, available in both print and electronic formats, including photographs, details the findings of each crane surveyed. Comments regarding the crane have been included where deemed necessary, however, this report is primarily arranged to describe problems found. If no finding is offered, any questionable items were determined to be in satisfactory condition.

Section 3 – Crane Review

Builder: **Manitex International, Inc. (Manitex) – (Formerly Manitex, LLC)**

Year: **1987**

SWL: **22,000 lbs**

Serial Number: **86064**

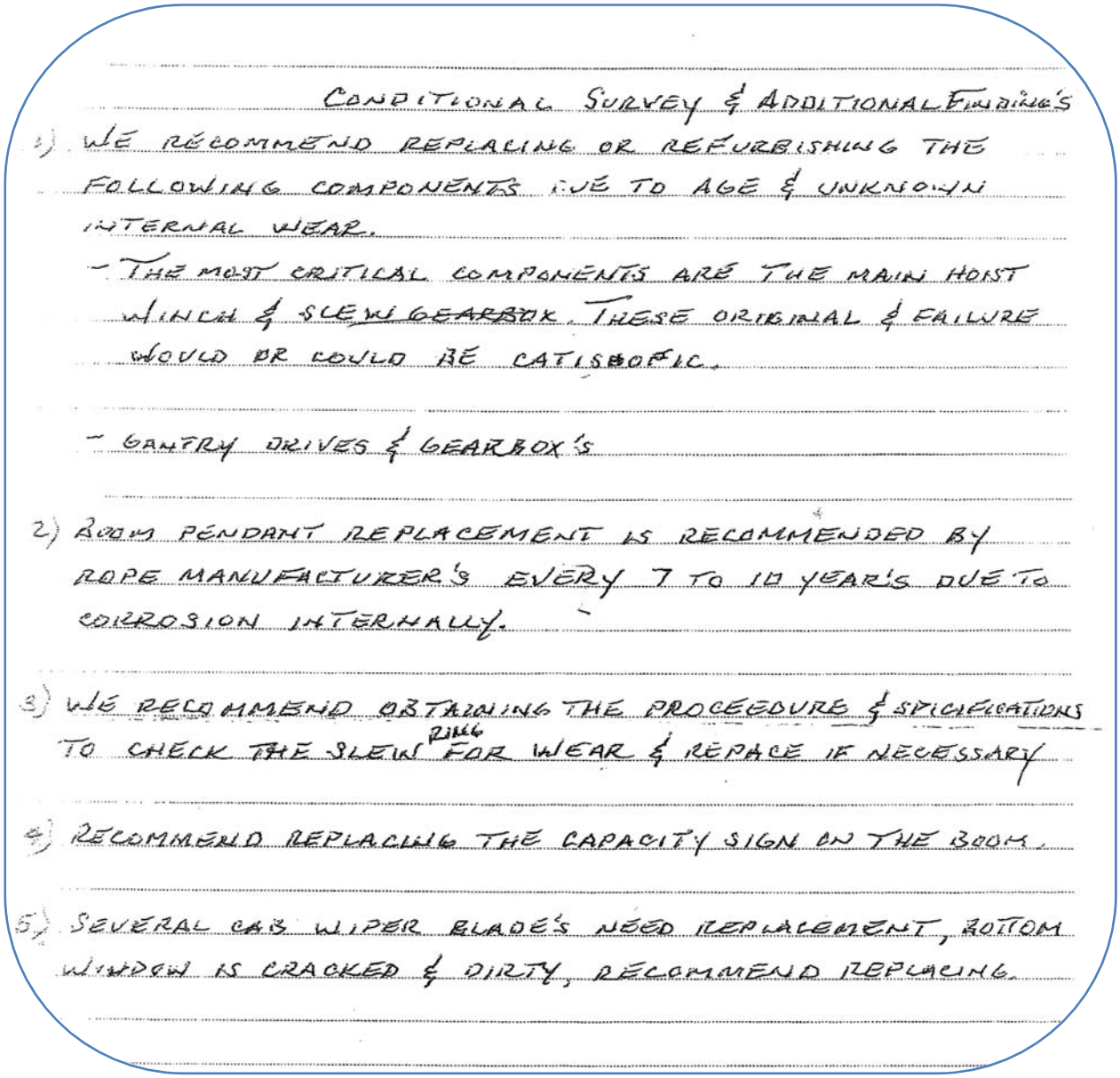
Boom Length: **86 feet – 6 inches**

Weight: **313,000 lbs (± 13,000 lbs)**

OSHA Certificate Number: **2009-71-0043-2201**

Section 4 – Previous Inspection Report

Although maintaining a current OSHA 71 certificate, a previous condition survey had left some unanswered questions.



CONDITIONAL SURVEY & ADDITIONAL FINDING'S

1) WE RECOMMEND REPLACING OR REFURBISHING THE FOLLOWING COMPONENTS DUE TO AGE & UNKNOWN INTERNAL WEAR.

- THE MOST CRITICAL COMPONENTS ARE THE MAIN HOIST WINCH & SLEW GEARBOX. THESE ORIGINAL & FAILURE WOULD OR COULD BE CATISTROFIC.

- GANTRY DRIVES & GEARBOX'S

2) BOOM PENDANT REPLACEMENT IS RECOMMENDED BY ROPE MANUFACTURER'S EVERY 7 TO 10 YEAR'S DUE TO CORROSION INTERNALLY.

3) WE RECOMMEND OBTAINING THE PROCEEDURE & SPECIFICATIONS TO CHECK THE SLEW RING FOR WEAR & REPACE IF NECESSARY

4) RECOMMEND REPLACING THE CAPACITY SIGN ON THE BOOM.

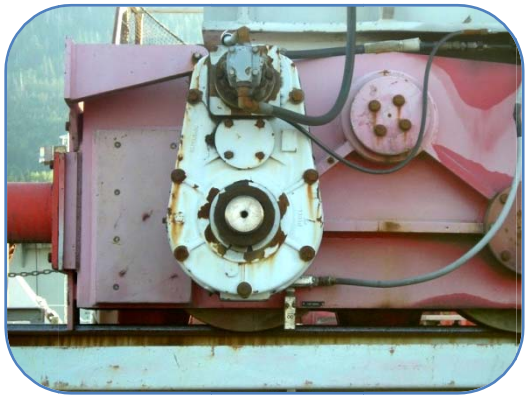
5) SEVERAL CAB WIPER BLADE'S NEED REPLACEMENT, BOTTOM WINDOW IS CRACKED & DIRTY, RECOMMEND REPLACING.

The main hoist winch appears to be in good condition but the status of internal wear is unknown. The slew gearbox is leaking oil, possibly a worn seal; but other damage may be internally present.

Slew Gearbox

Main Hoist (Load) Winch

The travel (gantry) motors, although weathered, appear to function normally.



The boom pendant rope replacement criteria stated by the Inspector appears very strict given some cranes have been running with their original pendants since the Second World War. The following criteria should be used in assessing whether the pendant ropes need replaced.

- Evidence of more than one (1) broken wire in one (1) rope lay.
- Abrasion, scrubbing or peening causing loss of more than 1/3 the original diameter of the individual wires.
- Evidence of rope deterioration from corrosion.
- Severe kinking, severe crushing, or other damage resulting in distortion of the rope structure.
- Evidence of any heat damage resulting from a torch or arc caused by contact with electrical wires.
- Reduction from nominal diameter of more than 1/32" for diameters up to and including 3/4". Marked reduction in diameter indicates deterioration of the core resulting in lack of proper support for the load carrying strands. Excessive rope stretch or elongation may also be an indication of internal deterioration.
- Evidence of 'bird caging' or other distortion resulting in some members of the rope structure carrying more than others.
- Noticeable rusting or development of broken wires in the vicinity of attachments.

The slew ring inspection procedure is noted in the maintenance manual as:

- Check and lube swing circle bearing, pinion and swing gears.
- Check mounting bolts for damage and corrosion.
- Check swing circle bearing for abnormal play.

This would appear to be sufficient but gearing experts can provide a more in-depth survey including mesh alignment, mesh contact, teeth hardness integrity, etc. It does not appear to be a requirement at this time.

The capacity sign on the boom needs to be replaced. CFR 1919.71 (d) (11) states in part that, 'It shall be ascertained that there is a durable rating chart visible to the operator, covering the complete range of the manufacturer's capacity ratings at all operating radii, for all permissible boom lengths and jib lengths, with alternate ratings for optional equipment affecting such ratings.' Although there is a load chart in the operator's cabin, it makes sense to make a highly visible sign visible.

The cab wiper blades and window replacement is a short order maintenance item that should be addressed when time and weather allows.

Section 5 – Crane Introduction

Manitex International, Inc. (Manitex) manufactured the crane in 1987. The crane is a rail mounted wingwall type whirley crane unique to the dock and the surrounding area.

A 4160V (commercial three phase power) supply feeds the main power to the crane. The crane has a current certificate of unit test / examination, commonly referred to as an OSHA 71 that expires, both for its' annual inspection and quadrennial load test, on 04/20/2010.

Noted during the inspection for referencing purposes:

- The main hoist system regulator coupler gearbox was replaced four (4) years ago.
- The boom hoist rope winch was replaced 3 ½ years ago.
- The main hoist (load) winch was estimated to have been replaced approximately twelve (12) years ago.
- The main hoist rope was replaced four (4) years ago.
- A winch encasement (i.e. the bare unit per Manitex drawings) costs $20,000.00.
- A winch unit assembled (per Manitex drawings) with no motor costs $34,000.00.
- A winch unit fully assembled (per Manitex drawings) costs $59,000.00.
- The cost for a winch motor therefore estimated to be $25,000.00.

Section 5.1 – Crane Survey Findings

5.1.1 It was noted during conversations that the all the slew (swing) bolts had previously been replaced.

Slew Gear New Bolts

However, on inspection, one (1) bolt was noted to be missing.

5.1.2 The oil leaking from the slew (swing) gearbox is contaminating the floor but more importantly, the brake disc.

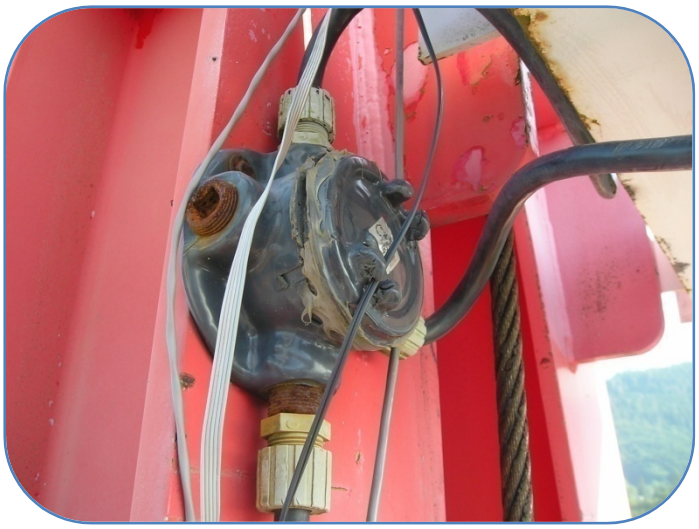
5.1.3 The slew (swing) gear teeth appear to be in excellent condition.

5.1.4 At the sill beam to leg bolted connection, the bolts are extremely corroded.

5.1.5 One (1) emergency stop pushbutton mounted on the travel trucks is broken and does not function.

5.1.6 At the north waterside corner of the sill beam to leg connection, corrosion was noted.

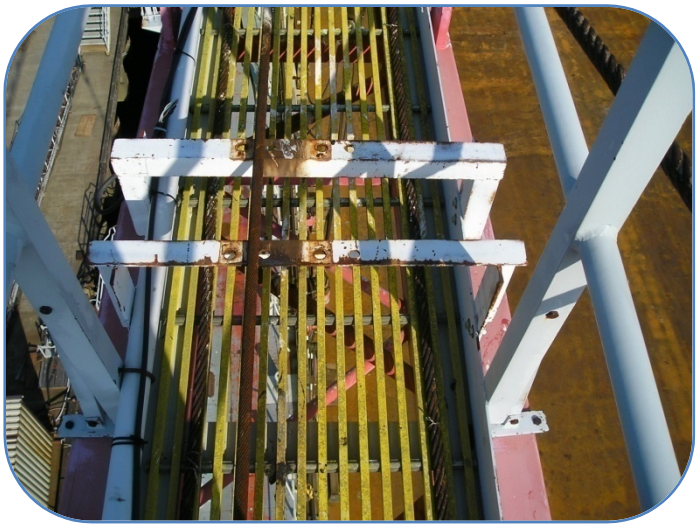
5.1.7 At the gantry apex, there is a non-sealed pull box and in general, the wiring surrounding the anemometer is somewhat confusing.



5.1.8 The cab condition is average for the age of the equipment. The bottom piece of glass is cracked. There was not an opportunity available to test the wiper blades.

5.1.9 The crane SWL sign on the boom has deteriorated to a non-readable condition.

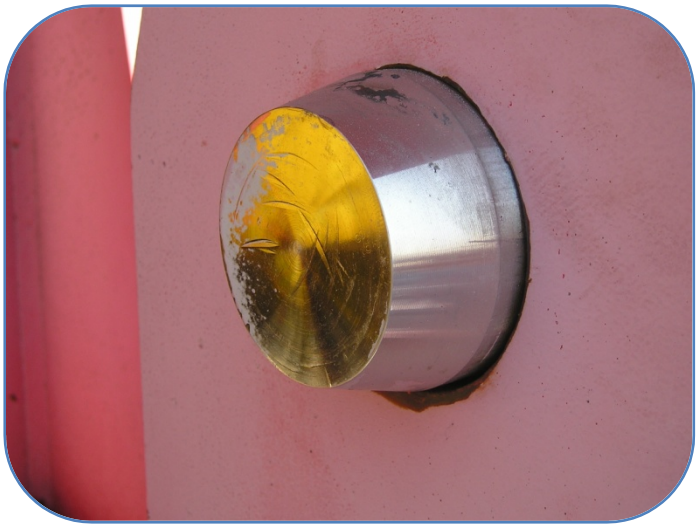
5.1.10 The LID and A-2-B were being replaced / repaired at the time of inspection. Where the LID used to be are now two (2) steel brackets creating a rubbing hazard for the wire rope.



5.1.11 There is a loose and damaged walkway clip on the boom.

5.1.12 There are random hydraulic leaks around the crane but this is not uncommon for a hydraulically operated crane.

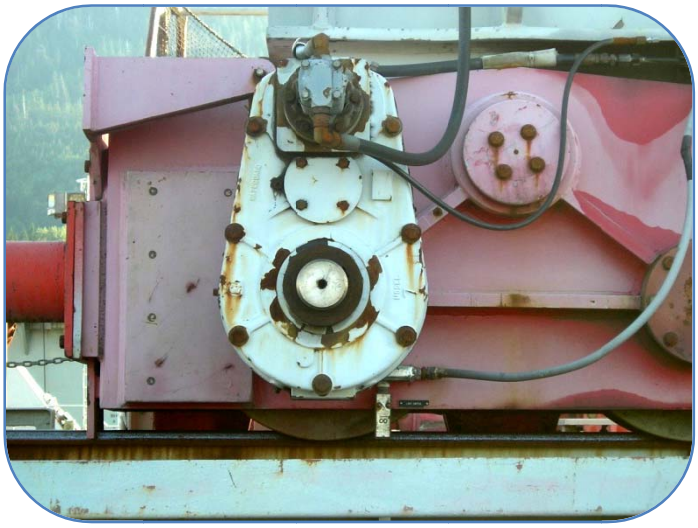
5.1.13 The gantry apex pins have only one (1) keeper for retention. Usually the pin has a plate on one (1) end with a radius bigger than the hole and held with a keeper on the other end.

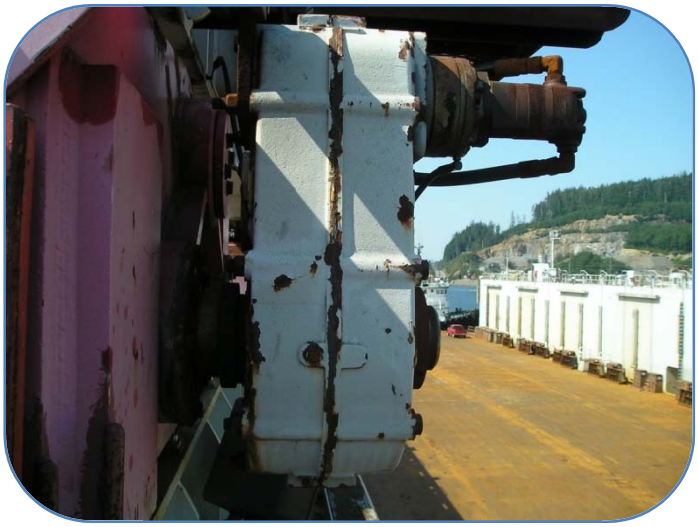


5.1.14 There was damage noted under the HV power cable directional reels.

5.1.15 Although not clearly visible, the sill beam has a ‘wave’ in it at all four (4) corners.

5.1.16 The travel motors appear to be weathered but all are functioning.





5.1.17 The painting condition in general appears to be excellent. The boom is weathered and the aesthetic point is the corrosion on the structural bolts around the crane.

5.1.18 The travel trucks appears to be attempting to travel in opposing circles (figures 1 and 2) such that the landside wheels are trying to turn left and the waterside wheels are trying to turn right. The travel rail concludes the tracking to be consistent (figure 3.) The wear on the wheels also concludes this (figure 4.) There are various indicators that the rail may have moved over time but this would not explain the poor tracking (figure 5.) The nylon spacers in the truck assemblies are also worn and extremely loose on the driven wheels (figures 6 and 7.) This may explain the poor tracking.

Figure 1 – Looking Down the Landside Rail

Figure 2 – Looking Down the Waterside Rail

Figure 3 – Travel Rail

Figure 4

Figure 5

Figure 6

Figure 7

Section 6 – OSHA 71 Documentation

Certificate of Unit Test and/or Examination of Crane, Derrick, or Other Material Handling Device

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Paperwork Reduction Act Notice

Public reporting for this collection of information is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data source, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. If you have any comments regarding this estimate or any other aspect of this information collection, including suggestions for reducing this burden, please send them to OSHA's Office of Maritime Enforcement, Room N-3610, 200 Constitution Avenue, NW, Washington, D.C. 20210.
DO NOT SEND THE COMPLETED FORM OR COMMENTS TO OMB

Form Approved
OMB No. 1218-0003

This certificate may be issued only by persons acting under current accreditation by the Occupational Safety and Health Administration under the provision of 29 CFR Part 1919, or otherwise specifically authorized to do so by the Occupational Safety and Health Administration. Use of this certificate by unauthorized persons is prohibited. Violators may subject themselves to the penalties provided in 33 U.S.C. 941 (P.L. 85-742) and/or 29 U.S.C. 655 (P.L. 91-596).

OSHA Certificate No.: **2009-71-0043-2201**

Agency Certificate No.: **0830-09**

1. Owner:
Alaska Ship & Drydock
PO Box 9470 Ketchikan, AK, 99901

2. Description:
- ☒ Crane (truck,rail, etc) **Rail Mounted Wingwall Whirley**
- ☐ Derrick
- ☐ Other

If spout or other device describe:

Location:
- ☒ (a) Remains at worksite
- ☐ (b) Changes worksite
- ☐ (c) Aboard vessel

If (a) or (c), describe:
Dry Dock Wingwall

Manufacturer	Model	Serial No.	Owner's identification, if any
Manitex	**MG-2400**	**86064**	**N/A**

Certificate Type:
☐ Initial ☒ Annual ☐ Quad ☐ Repair

Date of Last Annual	Date of Last Quad
17-APR-08	**15-APR-06**

3. Service status at time of survey (check):
- ☒ Lifting
- ☐ Magnet
- ☐ Clamshell
- ☐ Other (describe):

4. Boom at time of survey (except bridge cranes):

Length(ft)	(in)	Type
86	**6**	**Tubular Chords & Lattice**

5. Test loads applied (N/A if only examination conducted):

Radius(ft)	Radius(in)	Proof Loads(lbs)	Rated Loads(lbs)

Means of application of proof load:

Basis for assigned load ratings:
Manufacturer

6. Remarks and/or limitations imposed:
Quad Date: 4/20/2010 Expiration Date: 4/20/2010 CCI Job No. 9046-15

7. Load indicating or limiting device (check): ☒ Fitted ☐ Not fitted ☒ Accuracy **N/A** %

I certify that on the 17 day of APR, 2009 the above described device was (tested and examined) (examined) by the undersigned or his/her authorized representative, that said (test and examination) (examination) met in all respects with the requirements of 29 CFR Part 1919 or with requirements declared compatible under the provisions of 29 CFR 1917.50(b)(2), any deficiencies considered to constitute unsatisfactory conditions have been corrected; and that the device has been found to be in compliance in all applicable respects with the governing requirements.

Name and address of accredited or otherwise authorized organization making the test and/or examination:

Crane Consultants, 15303 First Avenue South Seattle, WA, 98148

Name and address of authorized person carrying out the test and/or examination:	Position of signatory in the organization making the test and/or examination:
Bill Rumburg **15303 First Avenue South Seattle, WA, 98148**	**Bill Rumburg, President**
Signature of Signatory Authority:	Date: **06/16/2009**

OSHA 71 Rev Feb. 2003

Section 7 – Recommendations

It is the recommendation of CCI that the reader of this report review the information provided and take action as the reader deems necessary.

Section 8 – Limit of Liability

CCI's inspection and review is advisory only, and is limited exclusively to the matters stated herein. CCI has not been requested to and does not warrant the merchantability or fitness of the equipment for its intended use and CCI makes no representations with regard thereto. CCI has not analyzed the materials used in or construction of the equipment other than as stated above, and expresses no opinion thereon. CCI does not accept responsibility for any direct or consequential damages, whether by personal injury, property damage or otherwise, arising from the ownership, possession or use of the equipment.

APPENDIX A

CRANE CONSULTANTS, INC.
SEATTLE, WA

MANITEX CRANE SURVEY

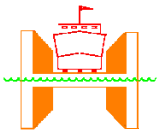
ASSESSMENT REPORT

FLOATING DRYDOCK #1

9,600 LT CAPACITY

ALASKA SHIP AND DRYDOCK

Ketchikan, Alaska



Prepared by

Heger Dry Dock, Inc.
Holliston, Massachusetts

August 2009

1. INTRODUCTION

HEGER DRY DOCK, INC. has inspected Floating Dry Dock No. 1 at Alaska Ship and Dry Dock in Ketchikan, Alaska. The purpose of this inspection was to ascertain the overall material condition of the dry dock. The results of the survey will be used to develop an assessment report and maintenance plan. The survey was conducted 23-26 June 2009, AND 29-31 July 2009 by Robert E. Heger, P.E, Chief Engineer and Waleed Sayed, Engineer of HEGER DRY DOCK, INC.

2. GENERAL DESCRIPTION

The dry dock is a continuous, one-piece facility of structural grade steel and all welded construction.

The dock is divided into 12 watertight ballast compartments, 6 port and 6 starboard.

A traveling crane, with a lifting capacity of ten (10) tons at 70 ft radius, is installed on top of the starboard wing deck. Each of the four crane wheel trains is fitted with uplift preventers. In addition two of the wheel trains are designed for the installation of securing pins in the parked position to prevent crane movement during dock operations.

Each of the twelve (12) ballast tanks is de-watered by one 50 HP pump and flooded with one 12" gate valve. Each ballast tank is cross-connected to one adjacent ballast tank with a 12" gate valve in case of loss of a single pump or valve. The de-watering pumps and flood valves are remotely controlled from the control house, which is located on top of the port wing wall.