NOTES

THE DETAILS ON THIS DRAWING ARE FOR GUIDANCE AND MAY BE MODIFIED AS NECESSARY TO MEET SPECIFIC CONDITIONS, HOWEVER, MATERIAL COMPOSITION (UNLESS OTHERWISE NOTED) AND ITEMS MARKED WITH AN ASTERISK (*) ARE MANDATORY.

* 1. STANDARD SPACING FOR TREADS SHALL BE AS FOLLOWS:

LADDER INCLINE FROM VERTICAL	TREAD RISE, IN.
20° - 25°	10½ - 9½
25° - 30°	10 - 9
30° - 35°	9½ - 8½
35° - 40°	9 - 8

* 2. TOP TREAD OF INCLINED LADDERS SHALL BE 9" WIDE. THE DISTANCE FROM THE EDGE OF THE TOP TREAD TO THE BULKHEAD OR HATCH COAMING SHALL NOT EXCEED 2". ALL OTHER TREADS SHALL BE AS FOLLOWS:

LADDER INCLINE FROM VERTICAL	TREAD WIDTH, IN.	STRINGER DEPTH, IN.
LESS THAN 30°	4	4
GREATER THAN 30°	6	5

3. LADDER SHIELDS SHALL BE FURNISHED WHEN SPECIFIED.

* 4. WHERE VERTICAL HEADROOM IS LESS THAN 6'-3 BETWEEN LADDER TREADS AND OVERHEAD OBSTRUCTIONS A HEAD GUARD SHALL BE PROVIDED PER DET 14-D.

* 5. FOR NEW CONSTRUCTION, ALL LADDER TREADS SHALL BE 24 INCHES WIDE WITH HOLE SPACINGS OF 2" FOR 4" TREADS, 3½" FOR 6" TREADS AND 6½" FOR 9" TREADS UNLESS OTHERWISE SPECIFIED.

* 6. TREADS SHALL BE IN ACCORDANCE WITH REF 1.

* 7. MINIMUM CLEARANCE BETWEEN BULKHEAD OR HOUSE AND HANDRAILS SHALL BE 2".

* 8. WHEN CONNECTING LUGS PC 6, 7 OR 45 ARE MOUNTED ON ALUMINUM COAMING THEY SHALL BE AL 5086-H117 PER ASTM B209.

WHERE LADDERS ARE INSTALLED IN THE WEATHER OR IN AREAS SUBJECT TO EXCESSIVE CORROSION DUE TO WET DECKS OR SPRAY, THE MOUNTING LUGS AND LUG PLATES, PC 6, 7, 32, 33, 34 AND 45 SHALL CRES 304.

* 9. WHERE ALUMINUM PARTS ARE REQUIRED TO BE PAINTED THEY SHALL BE PAINTED THE SAME AS OTHER SIMILAR SHIP FITTINGS. IN NO CASE SHALL TREADS BE PAINTED.

* 10. HANDRAIL TYPES W, X, Y AND Z SHALL BE USED AS FOLLOWS:
TYPE X (PIPE) HANDRAILS FOR LANDING PLATFORMS, WEATHER DECK AREAS AND OPEN HATCHWAYS.
TYPE Y (PIPE & CHAIN) HANDRAILS FOR HATCHES TO WEATHER DECKS OR TO LIVING AND WORKING SPACES WHERE TRAFFIC IS HEAVY.
TYPE Z (CHAIN) FOR HATCHES BELOW DECKS WHERE TRAFFIC IS LIGHT.
TYPE W (WIREROPE) MANROPES LEADING TO AND IN OFFICER'S COUNTRY ONLY.

FOR HANDRAIL TYPES Y, Z AND W: WHEN PASSING THRU HATCHES WITH COVERS HINGED ON A SHORT SIDE RUN CHAIN, PC 19, OR WIRE ROPE, PC 50, TO STAPLES WELDED TO THE HATCH COVER BRACES. WHEN PASSING THRU HATCHES HINGED ON A LONG SIDE LEAD CHAIN OR WIRE ROPE ON SIDE OF LADDER NEAREST TO THE OPENED HATCH COVER TO A STAPLE ON THE UNDERSIDE OF THE COVER AND ON THE OTHER SIDE OF THE LADDER TO A STAPLE AT THE TOP OF THE LADDER STRINGER. SEE DET 10-D AND 13-A.

* 11. CLEVIS AND SOCKET TURNBUCKLE, PC 58, SHALL HAVE A MINIMUM BREAKING STRENGTH OF 1200 LB.

12. HANDRAIL STANCHIONS MAY BE ATTACHED TO LADDER STRINGER BY EITHER THE SOCKET ARRANGEMENT, DET 21-D, OR THE WEB AND CLIP ARRANGEMENT, DET 21-B.

* 13. SNAP HOOK, PC 9, SHALL BE EQUIVALENT TO U.S. FORGECRAFT PART NO. 3027, PROOF-LOAD 5000 LB, HOT DIPPED GALVANIZED.

14. WHEN REQUIRED ALL STEEL PARTS SHALL BE CHANGED TO NON-MAGNETIC MATERIALS.

15. APPROXIMATE WEIGHTS OF INCLINED LADDERS COMPLETE WITH HANDRAILS AND TYPE F TREADS IS AS FOLLOWS: (WEIGHT WILL VARY WITH TYPE OF TREAD AND HANDRAIL SELECTED)

	18" WIDE	24" WIDE
WITH 5" STRINGER	12.8 LB/FT	14.6 LB/FT
WITH 4" STRINGER	10.6 LB/FT	12.4 LB/FT

* 16. INCLINED LADDERS FITTED TO DECKS OR PLATFORMS WITH CAMBER SHALL BE SHIMMED LEVEL.

17. LADDER TYPES 1, 2, 3 AND 4 INDICATE VARIATIONS OF THE TOP CONNECTION.

* 18. ALL THREADED FASTENERS SHALL BE GIVEN A LIBERAL COATING OF ANTI-SEIZE COMPOUND MIL-T-22361 BEFORE ASSEMBLY. REMOVE ALL SQUEEZE-OUT.

* 19. LADDER SHIELDS, DET 15-A, SHALL HAVE A MINIMUM MATERIAL THICKNESS OF .032" AND SHALL BE CREASED OR STIFFENED IN A MANNER TO PRECLUDE DRUMMING.

* 20. CEMENT FOAM, PC 24, TO STRUCTURE AND COVER, PC 23, WITH A SUITABLE COMMERCIAL ADHESIVE.

* 21. MANROPE CHAIN, PC 19, SHALL BE SIZE 4/0 STRAIGHT LINK MACHINE CHAIN, HOT-DIP GALVANIZED, WITH A MINIMUM WORKING LOAD OF 650 LB.

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
ALL	D	THIS DRAWING AND DWG 804-1749114 COMBINED [illegible] DESIGN [illegible] AND MATERIAL SPECIFICATIONS AS FOLLOWS: 1. COML SPEC DESIGNATIONS ADDED IN LIST OF MATL. 2. LOCKWASHERS DELETED AND REPLACED WITH SELF-LOCKING NUTS 3. CHANGED CHAIN AND SNAP HOOK TYPES AND ADDED CONNECTING LINK 4. ADDED 3RD SHEET 5. CHANGED SIZE OF PC 11 FROM [illegible] 6. ADDED MANDATORY REQT NOTE 7. CORRECTED MANROPE COLLAR NOTE 8. ADDED ANTI-SEIZE COMPOUND NOTE 9. CHANGE MATL OF MNT LUGS		

QTY REQD	PC NO	DESCRIPTION	MATERIAL	MATL SPEC	REMARKS	
2	59	HAIR PIN COTTER	CRES	AISI 302	.148 DIA WIRE FOR 5/8 DIA PIN DET 23-D	
2	58	PIN	CRES	AISI 304	DET 13-D	
2	57	CONNECTION CLIP	AL 5086-H117	ASTM B209	.375 PL (FOR 4 C)	
2	56	CONNECTION CLIP	AL 5086-H117	ASTM B209	.375 PL (FOR 4 C)	
2	55	CONNECTION CLIP	AL 5086-H117	ASTM B209	.5 PL (FOR 5 C)	
2	54	CLEVIS & SOCKET TURNBUCKLE ASSY	CRES	AISI 304	TO SUIT PC 50 NOTE 11	
4	53	FIL HD SCREW	CRES	AISI 304	10-24UNC-2A x 7/8	
2	52	COLLAR	AL 5086-H111	ASTM B211	DET 22-D	
AR	51	CLEVIS SOCKET ASSY	CRES	AISI 304	FOR 1/4 DIA WR	
AR	50	WIREROPE, MANROPE	CRES/VINYL	MIL-W-83420	1/4 DIA PLASTIC COATED WIRE ROPE	
2	49	CONNECTION CLIP	AL 5086-H117	ASTM B209	.375 PL (FOR 4 C)	
2	48	CONNECTION CLIP	AL 5086-H117	ASTM B209	.5 PL (FOR 5 C)	
AR	47	CONNECTING LINK	STEEL, GALV	RR-C-271	TY II SIZE 5/16	
2	46	CONNECTION CLIP	AL 5086-H117	ASTM B209	.5 PL (FOR 5 C)	
2	45	CONNECTION LUG	STEEL	ASTM A36	2 x 1/2 FB SEE NOTE 8 & 14	
1	44	TREAD 9 WIDE	REF 1	REF 1	NOTE 6	1
AR	43	TREAD 6 WIDE	REF 1	REF 1	NOTE 6	1
AR	42	TREAD 4 WIDE	REF 1	REF 1	NOTE 6	1
AR	41	STANCHION CLIP	AL 5086-H117	ASTM B209	.25 PL (FOR 4 C)	
AR	40	STRINGER CLIP	AL 5086-H117	ASTM B209	.25 PL (FOR 4 C)	
2	39	TREAD CLIP	AL 5086-H117	ASTM B209	.5 PL (FOR 5 C)	
AR	38	STAPLE	AL 5086-H111	ASTM B211	.31 DIA ROD	
2	37	TREAD CLIP	AL 5086-H117	ASTM B209	.375 PL (FOR 4 C)	
AR	36	STRINGER CLIP	AL 5086-H117	ASTM B209	.25 PL (FOR 5 C)	
AR	35	STANCHION CLIP	AL 5086-H117	ASTM B209	.25 PL (FOR 5 C)	
AR	34	LOWER LUG PLATE	STEEL	ASTM A36	2½ x ½ FB NOTE 8 & 14	
2	33	LOWER LUG	AL 5086-H117	ASTM B209	2 x .31 RECT NOTE 8	
2	32	LOWER LUG	STEEL	ASTM A36	2 x ½ FB NOTE 8 & 14	
2	31	LADDER FOOT	AL 5086-H117	ASTM B209	.375 PL (FOR 4 C)	

LIST OF MATERIAL *

QTY REQD	PC NO	DESCRIPTION	MATERIAL	MATL SPEC	REMARKS	
AR	30	NUT, SELF LOCKING	CRES/NYLON	AISI 303	5/8-11UNC-2B	
1	29	STRINGER LH	AL 5086-H111	ASTM B308	4 x 1.56 x 1.85 C NOTE 2	
1	28	STRINGER RH	AL 5086-H111	ASTM B308	4 x 1.56 x 1.85 C NOTE 2	
AR	27	CLAMP BASE	STEEL	ASTM A36	¼ x 1½ FB x 16 L	
AR	26	CLAMP COVER	STEEL	ASTM A36	¼ x 1½ FB x 16 L	
AR	25	RDH MACH SCREW	CRES	AISI 304	¼-20UNC-2A x 5/8	
AR	24	HEADGUARD PAD	NPRN FOAM	MIL-R-6130	TY II - CL S	
AR	23	HEADGUARD COVER	ARTIFICIAL LEATHER	CCC-A-680		
2	22	GRAB ROD BRACKET	CRES	AISI 304	¼ PL	
1	21	GRAB ROD	CRES	AISI 304	1 PIPE SCHED 40 x 18 L	
AR	20	STAPLE	STEEL	ASTM A36	5/16 DIA ROD	
AR	19	CHAIN, MANROPE	STEEL, GALV	COML	SEE NOTE 21	
AR	18	HEX HD MACH SCR	CRES	AISI 304	3/8-16UNC-2A x 1	
AR	17	NUT, SELF LOCKING	CRES/NYLON	AISI 303	¼-20UNC-2B	
AR	16	HANDRAIL EYE	AL 356-T6	ASTM B26	CASTING	
AR	15	HEX HD MACH SCR	CRES	AISI 304	5/16-18UNC-2A x 2½	
AR	14	HANDRAIL SOCKET	AL 5086-H32	ASTM B210	1¼ PIPE SCHED 40	
AR	13	HANDRAIL	AL 5086-H32	ASTM B210	1 PIPE SCHED 80	
AR	12	RDH MACH SCREW	CRES	AISI 304	¼-20UNC-2A x ½	
AR	11	SHIELD STIF	AL 5086-H111	ASTM B308	1 x 1 x 1/8 L	
AR	10	SHIELD	AL 5052 H32	ASTM B209	.032 THK	
2	9	SNAP HOOK	STEEL, GALV	COML	SEE NOTE 13	
2	8	TOGGLE PIN/RET WIRE	CRES	AISI 304	½ DIA x 1¼ EFF LG	2
2	7	CONNECTION LUG	STEEL	ASTM A36	2 x ½ FB NOTE 8 & 14	
2	6	CONNECTION LUG	STEEL	ASTM A36	2 x ½ FB NOTE 8 & 14	
AR	5	RIVET, BLIND	AL ALY	COML	3/16 DIA LG TO SUIT	
AR	4	TOGGLE PIN/RET WIRE	CRES	AISI 304	3/8 DIA x 1½ EFF LG	2
2	3	LADDER FOOT	AL 5086 H117	ASTM B209	.5 PL (FOR 5 C)	
1	2	STRINGER LH	AL 5086 H111	ASTM B308	5 x 1.75 x 2.32 C NOTE 2	
1	1	STRINGER RH	AL 5086 H111	ASTM B308	5 x 1.75 x 2.32 C NOTE 2	

LIST OF MATERIAL *

REFERENCE DRAWINGS

REF NO	DRAWING TITLE	DRAWING NO
1	INCLINED LADDERS, TREAD DETAILS	S1604-860041
2	TOGGLE PINS	804-2258314

D	D	D	REV
3	2	1	SHEET

REVISION STATUS OF SHEETS

THIS DRAWING COMBINES AND SUPERSEDES NAVSEA DWG 804-1749113 REV C AND 804-1749114 REV G

TYPE DRAWING

DEPARTMENT OF THE NAVY
NAVAL SHIPS SYSTEMS COMMAND
WASHINGTON, D.C. 20360

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES.
TOLERANCES SHALL BE IN ACCORD WITH COMMERCIAL PRACTICE UNLESS OTHERWISE INDICATED ON DRAWING

INCLINED LADDERS, ALUMINUM ASSEMBLIES & DETAILS

SIZE F | CODE IDENT NO 80064 | 801 | DRAWING NO 1749113 | REV D
SHEET 1 OF 3

804-1749113

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