

RESTRICTED

CONFIDENTIAL

SERIAL NUMBER 37

GENERAL INFORMATION

DESTROYERS DD380 AND DD382
U.S.S. GRIDLEY AND CRAVEN

Information relative to construction and equipment, and a description of electrical and other auxiliaries under the cognizance of the Bureau of Construction and Repair, Navy Department, Washington, D.C.

Office Of

Superintending Constructor, U.S.N.

Bethlehem Shipbuilding Corporation, Ltd.

River Plant Quincy Mass.
Fore River Plant Quincy, Mass.

BUREAU OF SHIPS
NATIONAL ARCHIVES FILES

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SECTION A-1

GENERAL

DESIGNED DRAFT 10'9 1/4 INCHES IS THE NORMAL WATERLINE, NAMELY, THAT WHICH CORRESPONDS TO DESIGNED DISPLACEMENT.

The forward perpendicular (F.P.) is located at the extreme forward end of the waterline as defined above.

The after perpendicular (A.P.) is located at the extreme after end of the waterline as defined above.

The middle perpendicular (M.P.) is located midway between the forward and after perpendiculars which is nine inches aft of frame 95.

The molded base line (B.L.) is located 3/4 inch above the bottom of the keel amidship.

Drafts are measured from the bottom of the keel amidship extended forward and aft.

PROJECTIONS BELOW BOTTOM OF KEEL

Description	Pro- jection Below Bottom Keel	Frame	From C.L.	Side
Propeller	3'11 3/16"	180-182	8'6"	Port
Propeller	3'11 3/16"	180-182	8'6"	Stbd.
Rotating Super- sonic Transceiver	(See Note Below)	26 1/2- 28	18"	P&S

Note: The bottom of the Projector for the Supersonic Transceiver, when in operating position, is 24 9/16" below bottom of keel.

SECTION A-1

GENERAL (Cont'd.)

PRINCIPAL DIMENSIONS OF HULL

	<u>U.S.S.GRIDLEY</u>	<u>U.S.S.CRAVEN</u>
Length overall	340'10 7/16"	341'1 9/16"
Length between perpendiculars	333'10 1/2"	333'9 1/2"
Extension of vessel beyond forward perpendicular (F.P.)	4'10 3/16"	5'0 5/16"
Extension of vessel beyond after perpendicular (A.P.)	2'1 3/4"	2'3 3/4"
Breadth, molded, maximum at 10'9 1/4" waterline, between frames 107-110	35'0 1/4"	35'0 1/4"
Breadth, outside of plating, maximum between frames 107-110	35'6 1/4"	35'5 13/16"
Depth, molded, at center to main deck at middle perpendicular, designed	20'7 7/8"	20'7 7/8"
Midship section (at M.P.), designed	9" Aft Fr.95	9" Aft Fr.95
Freeboard at bow	21'4"	21'3 3/16"
Freeboard at stern	10'6 5/8"	10'6 7/16"
Displacement, standard designed	1500 tons	1500 tons
Displacement, (designed normal condition)	1725 tons	1725 tons
Displacement, trial (contract)		

Note: Above dimensions are surveyed, except as noted.

FRAME SPACING

Frames are numbered from the forward perpendicular (F.P.) it being frame "0" which is 4'10 3/16" for DD380, and 5'5/16" for DD382, aft of the extreme extension of the vessel forward; to the after perpendicular, which is 18" aft of frame 190 and is also 2'1 3/4" for DD380, and 2'3 3/4" for DD382, forward of the extreme extension of the vessel aft.

Complete transverse frames do not exist at all of the intermediate numbered locations as the principal framing of this vessel is longitudinal.

SECTION A-1

GENERAL (Cont'd.)

FRAME SPACING (Cont'd.)

Two part frames in the forward overhang are designated as "A" and "B" and are respectively 21" and 3'6" (designed) forward of the forward perpendicular.

Frame spacing is twenty-one inches throughout.

APPROXIMATE CAPACITIES

	<u>DD380 & DD382</u>
Oil fuel - normal load	194 tons
Oil fuel - full load (95%)	524.93 tons
Fresh water, normal	18.7 tons
Reserve feed water	55.94 tons
Surge tank	9.77 tons
Diesel oil tanks (95%)	37.91 tons

MISCELLANEOUS DATA

Inclination of propeller shafts	<u>DD380</u>	<u>DD382</u>
Port Shaft Vertical Rake	.752 per ft.	.752 per ft.
Port Shaft Horizontal Rake	None	None
Stbd. Shaft Vertical Rake	.637 per ft.	.637 per ft.
Stbd. Shaft Horizontal Rake	None	None
Area of rudder (projected)	83.1 sq. ft.	83.1 sq. ft.
Center of forward mast from F.P. at main deck	133'3"	133'3"
Length of signal yard (be- tween speed cone eyes)	21'0"	21'0"
Axis of Gun #1 from F.P.	52'6"	52'6"
Axis of Gun #2 from F.P.	71'9"	71'9"
Axis of Gun #3 from A.P.	71'7 1/2"	71'7 1/2"
Axis of Gun #4 from A.P.	43'7 1/2"	43'7 1/2"
Distance between #1 & #2 Guns	19'3"	19'3"
Distance between #2 & #3 Guns	190'7 1/2"	190'7 1/2"
Distance between #3 & #4 Guns	28'0"	28'0"

(Above are designed dimensions)

SECTION A-1

GENERAL (Cont'd.)

HEIGHTS ABOVE WATERLINE AT 10'9 1/4" DRAFT

Main Battery	<u>DD380</u>	<u>DD382</u>
Axis of 5" Gun #1	25'11 5/8"	26'0"
Axis of 5" Gun #2	33' 11/16"	33'1 7/16"
Axis of 5" Gun #3	23'4 15/16"	23'4 15/16"
Axis of 5" Gun #4	16' 5/8"	16'1 11/16"
Secondary Battery		
Axis of .50 Cal.Mach.Gun, Frame #53 Port	30'8 3/8"	30'9 1/8"
Axis of .50 Cal.Mach.Gun, Frame #53 Stbd.	30'7 7/8"	30'9"
Axis of .50 Cal.Mach.Gun, Frame #140 Port	29'7 1/8"	29'7"
Axis of .50 Cal.Mach.Gun, Frame #140 Stbd.	29'7"	29'7"
Torpedo Tubes		
Quadruple Mount #1	12'4"	12'4 9/16"
Quadruple Mount #2	12'4 3/16"	12'4 9/16"
Quadruple Mount #3	12'4 1/8"	12'4 3/4"
Quadruple Mount #4	12'4"	12'4 3/4"
Battery Control and Observation Features		
Centerline, range finder, port	46'5 7/8"	46'7 3/8"
Centerline, range finder, stbd.	46'6 3/8"	46'7 1/2"
Centerline, 5" gun director	54'1 5/8"	54'2 1/16"
Centerline, torpedo director (C.L. of eye piece), port	41'3 1/2"	40'4 7/8"
Centerline, torpedo director (C.L. of eye piece), stbd.	41'3 3/4"	40'5 1/4"
Centerline, 36" searchlight on searchlight platform, aft	38'9 1/8"	38'8"
Centerline, 24" searchlight on top of pilot house, forward port	46'10 1/2"	46'11"

Above dimensions are surveyed.

SECTION A-1

GENERAL (Cont'd.)

HEIGHTS ABOVE WATERLINE AT 10'9 1/4" DRAFT (Cont'd.)

	<u>DD380</u>	<u>DD382</u>
Centerline, 24" searchlight on top of pilot house, forward stbd.	46'8 3/4"	46'9 1/4"
 Navigation and Signaling Features		
Top of flag and pennant staff cap	99'3 1/8"	99'1 3/4"
Highest point of mast (top of truck light)	95'5 1/16"	95'3 11/16"
Centerline of truck light on mast, red	95'2 1/4"	95'2 1/8"
Centerline of truck light on mast, white	94'9 1/2"	94'9 3/8"
Centerline of signal yard on mast	86'8 1/8"	86'10 1/8"
Centerline of towing light on mast	47'7 1/2"	47'8"
Centerline of mast head light on mast	53'7 1/2"	53'8"
Centerline of range light on forward end of crow's nest	68'9 1/2"	68'10 1/2"
Centerline of speed light	28'8 3/8"	28'7 1/4"
Centerline of 12 inch signal searchlight, port	46'10 3/4"	46'11 1/8"
Centerline of 12 inch signal searchlight, stbd.	46'10 7/8"	46'11 7/8"
 Miscellaneous		
Top of smoke pipe - forward end of pipe	50'4 1/8"	50'5 1/4"
Top of smoke pipe - over hood	50'10 1/8"	50'11 1/2"

Above dimensions are surveyed.

SECTION A-1

GENERAL (Cont'd.)

HEIGHTS ABOVE WATERLINE AT 10'9 1/4" DRAFT (Cont'd.)

Decks, Platforms and Bridges	<u>DD380</u>	<u>DD382</u>
2nd platform at F.P.	1'6 1/2" (Below 10'9 1/4" W.L.)	1'6 1/4" (Below 10'9 1/4" W.L.)
2nd platform at Fr.#48	3'0" (Below 10'9 1/4" W.L.)	3'0 3/4" (Below 10'9 1/4" W.L.)
1st platform at F.P.	4'5 1/2"	4'5 7/8"
1st platform at Fr.#68	2'11 1/4"	2'6 1/4"
1st platform at Fr.#135 (designed)	1'7 5/8"	1'7 5/8"
1st platform at A.P.	3'2"	3'1 1/2"
Main deck at F.P.	12'6"	12'6 1/2"
Main deck at M.P.	9'11 3/4"	9'11 3/8"
Main deck at A.P.	10'7 1/2"	10'6 3/4"
Foc'le. deck at F.P.	21'0 1/4"	21'0 1/8"
Foc'le. deck at Fr.#68	17'10 1/4"	17'11"
Superstructure deck at Fr.#68	25'11 1/8"	25'11 5/8"
Top of after deckhouse at Fr. #143	17'2 1/4"	17'2 1/8"
Top of gun crew shelter at Fr.#143	24'7 7/8"	24'7 3/4"
Top of searchlight platform at Fr.#136	34'2 1/4"	34'2"
Top of torpedo workshop	17'2 1/2"	17'2 3/4"
Top of general workshop	17'3 1/2"	17'3 5/8"
Navigating bridge at Fr.#68	35'5 1/4"	35'6 1/4"
Pilot house top at Fr.#68	43'0 1/4"	43'1 5/16"

Above dimensions are surveyed except as noted.

SECTION A-1

GENERAL (Cont'd.)

CALCULATED DATA AT 10'9 1/4" DRAFT

DD380 & DD382

Tons per inch immersion	20.64 tons
Area of water plane	8668 sq. ft.
C.G. of water plane aft of Sect. 10 (M.P.)	18.49 ft.
Moment to change trim one inch (approx.)	389 ft. tons
C.B. above bottom of keel	6.60 ft.
C.B. aft of Sect. 10 (M.P.)	4.37 ft.
Transverse metacenter above bottom of keel	17.56 ft.
Longitudinal metacenter above C.B.	900 ft.
Area of midship section	298 sq. ft.
Wetted surface	13500 sq. ft.
Ratio of length between perpendiculars to beam (molded)	9.55
Prismatic coefficient	.6071
Water plane coefficient	.7479
Block coefficient	.4880
Midship section coefficient	.8038

Note: The above data applies only at a specified draft 10'9 1/4". For data on stability, see the Booklet of Inclining Experiment Data and the Damage Control Book.

Coefficients of fineness are figured on a basis of W.L. beam over shell at midship section.

SECTION A-1

STABILITY AND BALLASTING

FOR INFORMATION AS TO STABILITY AND BALLASTING UNDER VARIOUS CONDITIONS, SEE THE "BOOKLET OF INCLINING EXPERIMENT DATA" AND THE "DAMAGE CONTROL BOOK".

sdod 48.02
.51-.pa 8888
.51 48.81
sdod .51 888
.51 88.8
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.51 66.71
.51 008
.51 .pa 888
.51 .pa 00821

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SECTION A-1

GENERAL (Cont'd.)

PROPELLING MACHINERY

BOILERS

Number	Manufacturer	Type	Designed Working Pressure
4	Bethlehem Shipbuilding Corporation, Ltd.	3-Drum Yarrow Boiler	618#

TURBINES

Number	Manufacturer	Type	Number of Stages or Expansions	Designed R.P.M.
2 High Pressure	Bethlehem Shipbuilding Corporation, Ltd.	Impulse Reaction	1 Stage 8 Ex-pansions	3425
2 Low Pressure	Bethlehem Shipbuilding Corporation, Ltd.	Reac-tion	15 Ex-pansions	2840
2 Astern	Bethlehem Shipbuilding Corporation, Ltd.	Impulse	1 Stage	

PROPELLERS

No.	Type	Mfg'r.	No. of Blades	Shaft Dia.	Pitch Dia.	Des. R.P.M.	Des. S.H.P.
2	Solid	Bethlehem Shipbuilding Corp., Ltd.	3	11'0"	Vari- able	15 1/4"	415 50,000 2 - Shafts

Complete information and instructions concerning the propelling machinery may be ascertained from the "General Operating Instructions covering Special Features of Machinery Installation", which is furnished the vessel by the contractor, in accordance with the requirements of the General Specifications for Machinery.

SECTION A-5

ORDNANCE AND ORDNANCE OUTFIT

MAIN BATTERY

Gun Num- ber	Bore	Cal.	Location			Elev.	De- press	Train	Remarks
			Deck	Frame	Side				
1	5"	38	Focle.	30	L	85	15	300	Enclosed Mount
2	5"	38	Super- struc- ture	41	L	85	15	300	Enclosed Mount
3	5"	38	Top of Aft Dk. House	150	L	85	15	300	
4	5"	38	Main	166	L	85	15	300	

A 5" loading machine mark, is located on the main deck between frames 77 and 82 port side.

SECONDARY BATTERY

Gun Num- ber	Bore	Cal.	Location			From L of Ship	Elev.	De- press	Train
			Deck	Frame	Side				
1	.50"	63.8	Super- struc- ture	53	S	6'6"	80°	15°	360°
2	.50"	63.8	Super- struc- ture	53	P	6'6"	80°	15°	360°
3	.50"	63.8	Top of Gun Crew Shelter	140	S	3'0"	80°	15°	360°
4	.50"	63.8	Top of Gun Crew Shelter	140	P	3'0"	80°	15°	360°

SECTION A-5

ORDNANCE AND ORDNANCE OUTFIT

SECONDARY BATTERY (Cont'd.)

TORPEDO TUBES (QUADRUPLE)

Torpedo Tube No.	Diameter Torpedo	Length of Torp. With- out Head	Location			Train	
			Deck	Frame	Side	Forward	Aft
1	21"		Main	110	S	60°	60°
2	21"		Main	110	P	60°	60°
3	21"		Main	128	S	60°	60°
4	21"		Main	128	P	60°	60°

Quantity	Cal.	Name	Stowage Location			Remarks
			Deck	Frame	Side	
1	1 Pdr.	Sub-Caliber Gun	Focle.	43	S	
1	1 Pdr.	Sub-Caliber Gun	Main	28-29	P	