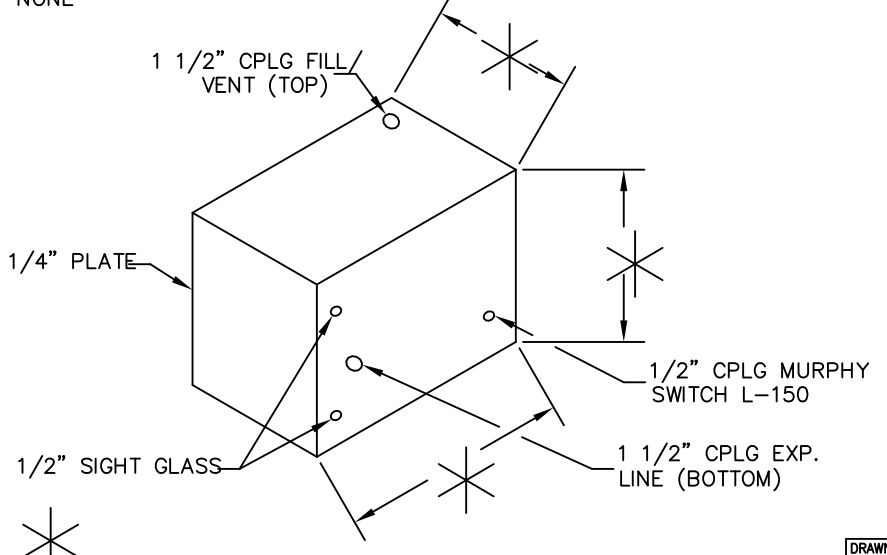
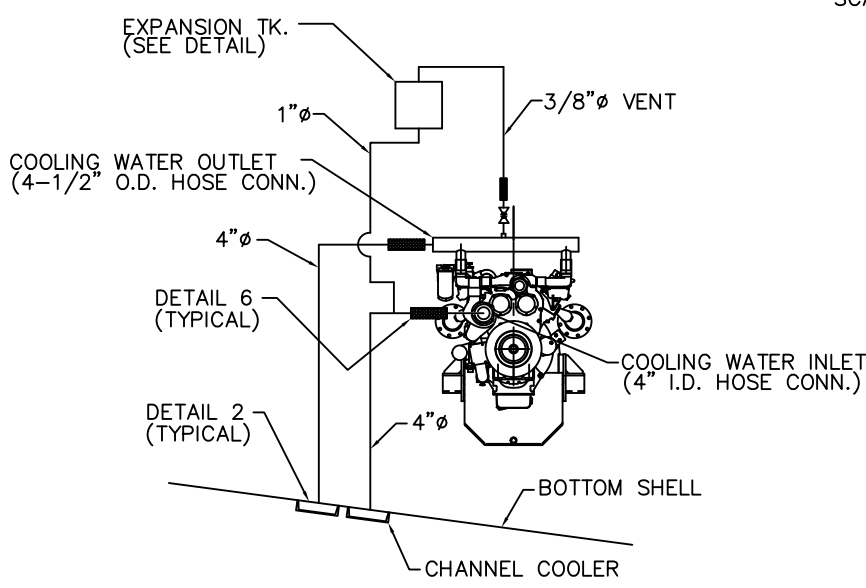
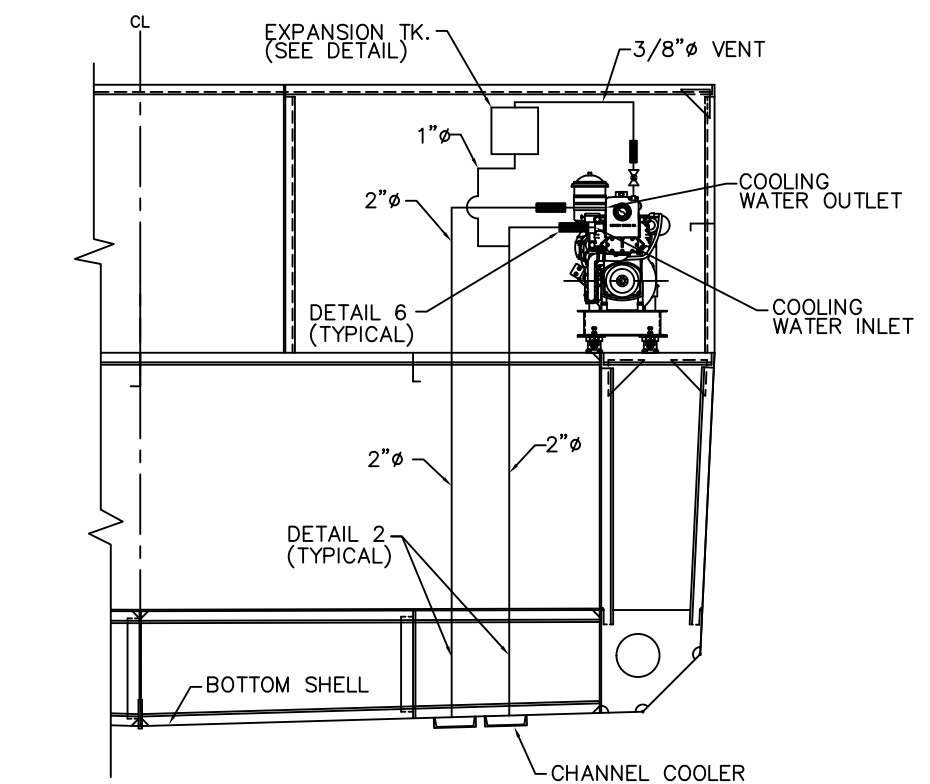
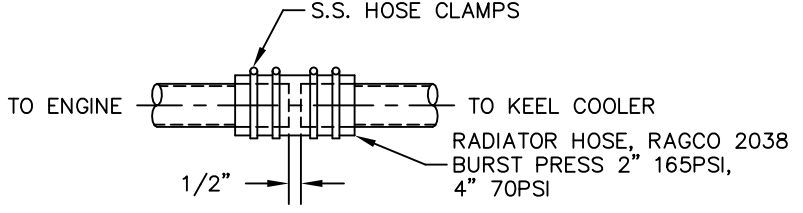
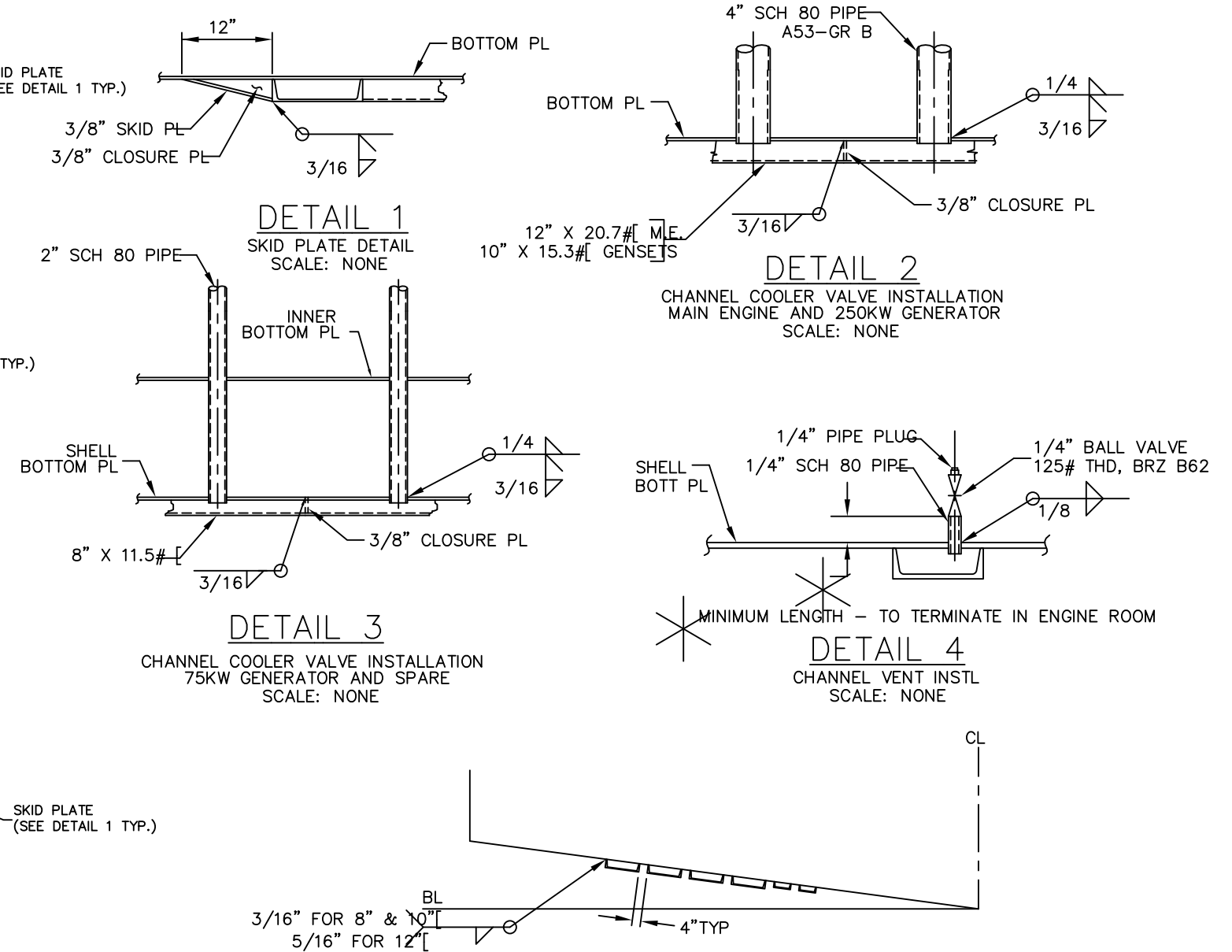


**CHANNEL LAYOUT & SYSTEM ARRANGEMENT**



- GENERAL NOTES**
- ALL EXPANSION TANKS TO BE EQUIPPED WITH AUTOMATIC SIGHT GAUGE, VENT, FILL AND LOW LEVEL ALARM.
  - VENT ALL HIGH SPOTS IN KEEL COOLERS INTO ENGINE ROOM WITH 1/4" BALL VALVE & PLUG. (CRANE NO. 1 125# ASTM B62 BRZ).
  - SUPPLY SURGE & VENT LINES ON ALL SYSTEMS.
  - ALL SHELL PENETRATIONS SHALL BE WELDED FULL PENETRATION.
  - SEE ENGINE MANUFACTURE DRAWINGS FOR ADDITIONAL INFORMATION.
  - LOCATE ALL EXPANSION TANKS AS HIGH AS POSSIBLE IN ENGINE ROOM.
  - ALL PIPE TO BE SCH 40 ASTM A-53, GRADE B BLK.
  - ALL WELD FITTINGS TO BE SCH 40 ASTM A-234 WPB.
  - ALL THREADED FITTINGS TO BE IRON ASTM A-197, 300#.
  - 1/4" PIPE COUPLINGS FOR VENTS TO BE STEEL 2000# ASTM A-105.
  - ALL BLANKING PLATES TO BE 3/8" THK.
  - HIGH SPOT OF COOLERS TO BE PIPED TO ENGINE ROOM W/1/4" SCH 80 PIPE ASTM A53, GRADE B BLK.
  - ALLOW PROPER CLEARANCES AT FRONT OF MAIN ENGINES AND 250KW GENERATORS FOR WATER PUMP REMOVAL. (SEE ENGINE DRAWINGS)

3	ADDED SHIPYARD COMMENTS.	RLP	6/30/99
2	REVISED CHANNEL LOCATIONS & DETAILS.	RLP	6/21/99
1	ISSUED FOR CONSTRUCTION	RLP	5/21/99
NO.	ALTERATIONS	BY/DATE	

DRAWN BY:	RLP	DATE:	5/18/99
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
APPROVED BY:		DATE:	
SCALE:	NONE	CONTRACT NO.:	S-185-32
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DWG. NO.:	S-185-P3		

TITLE: 160'-0"x40'-0"x13'-0" RESEARCH VESSEL

**ENGINE COOLING WATER SYSTEM DIAGRAM**

PREPARED FOR: CAMERON OFFSHORE BOATS, INC. CAMERON, LOUISIANA

**MARINE MANAGEMENT INC.**  
 MARINE DESIGNERS and SURVEYORS

P.O. Box: 1803 Ocean Springs, MS 39566-1803  
 Ph: 601-872-2846 Fax: 601-872-3666 Online: rpayne@datatrac.com

SH: 1  
 OF: 1  
 ALT NO: 3

