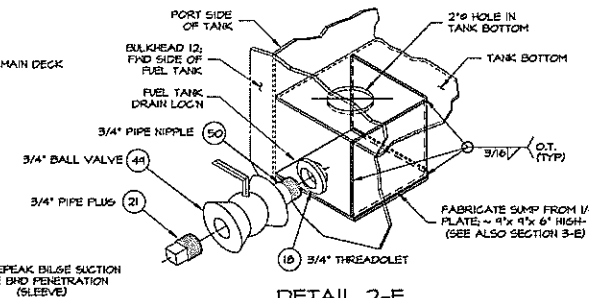
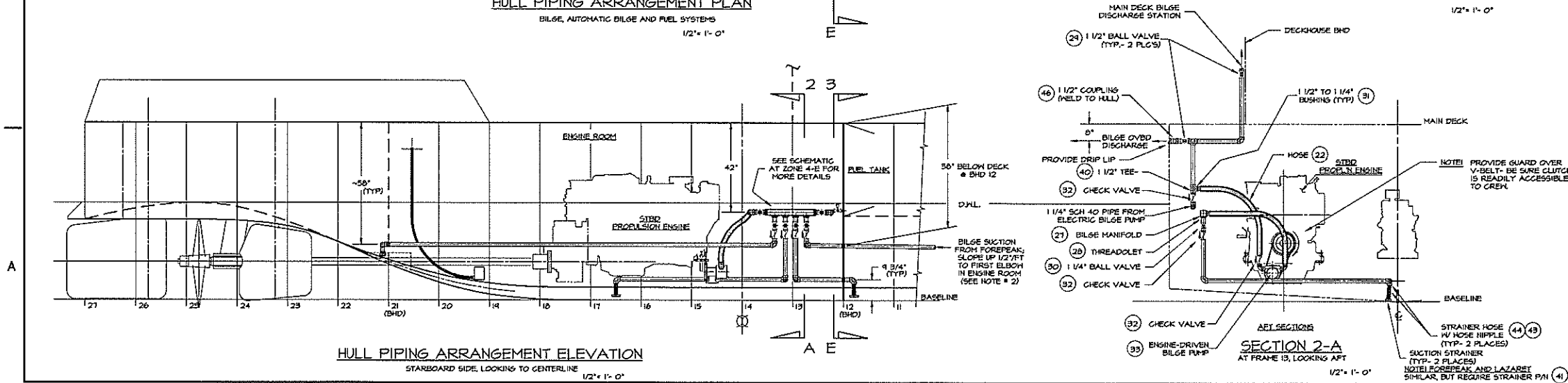
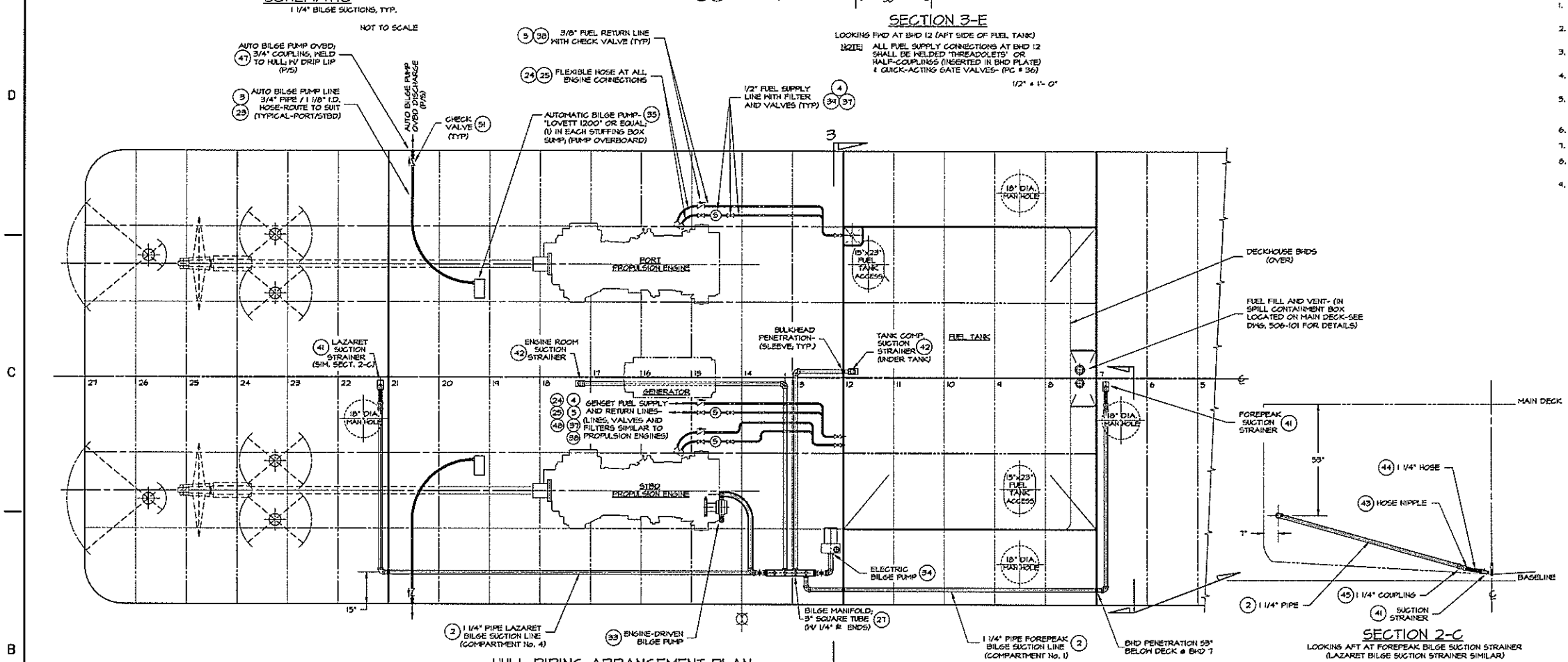
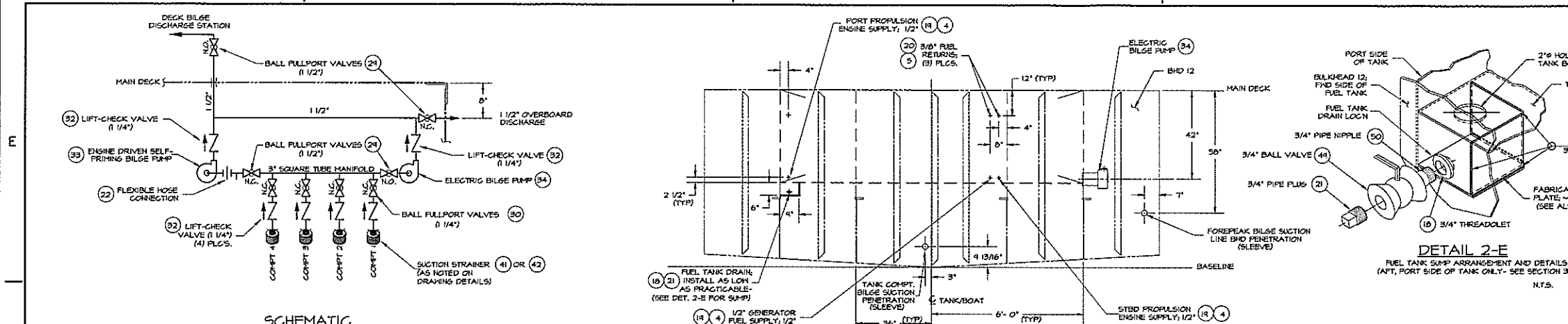


REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED
1	FIRST ISSUE	04/20/99	



- GENERAL NOTES**
- BILGE SUCTION AND DISCHARGE LINES SHALL BE GALVANIZED, SCH 40 STEEL PIPE, 1/4" FITTINGS SHALL BE THREADED, GALVANIZED STEEL. VALVES SHOULD BE BRONZE, FULL-PORT BALL TYPE.
  - BILGE SUCTION LINES SHALL BE ROUTED TO AVOID AIR POCKETS, AND TO ALLOW FOR PROPER DRAINAGE AND VENTING.
  - PROVIDE VENT/DRAIN PLUGS AT HIGH POINTS NEAR MANIFOLD, AND AT LOW POINTS OF THE SYSTEM FOR PROPER DRAINAGE AND VENTING.
  - UNIONS SHOULD BE PROVIDED THROUGHOUT THE SYSTEM TO ALLOW DISASSEMBLY FOR MAINTENANCE AND REPAIR.
  - COLLARS ARE TO BE PROVIDED AT ALL WATERTIGHT BULKHEAD OR DECK PENETRATIONS AND SHALL BE FULLY WELDED AFTER TESTING. PIPING SHALL BE PRESSURE TESTED TO 35 PSI AFTER INSTALLATION IS COMPLETE.
  - ALL FUEL OIL PIPING SHALL BE BLACK IRON (ASTM A-106) WITH THREADED FITTINGS.
  - UNIONS SHOULD BE PROVIDED IN THE FUEL SYSTEM TO FACILITATE DISASSEMBLY.
  - FLEXIBLE HOSE SECTIONS AT ENGINES SHALL BE WIRE BRAID REINFORCED, FIRE RESISTANT, IN ACCORDANCE WITH SAE J-1942.
  - VALVES IN THE FUEL SYSTEM SHALL BE ISO 10 MOG, THREADED, WITH IRON, STEEL, OR BRONZE BODIES.

NO.	QTY.	DESCRIPTION	MATERIAL/SPECIFICATION/REMARKS
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**BILL OF MATERIALS**

DWN. J.C. Birmingham  
APPD. **TGMD, Inc. / Timothy Graul marine design**  
naval architects  
Sturgeon Bay, WI 54235  
marine engineers

DATE 20 SEPT 1999

PROJECT 55'-0" x 18'-0" x 7'-0" BRUSSELS FERRY PUSHBOAT  
IDOT JOB D-48-078-99  
ILLINOIS DEPARTMENT OF TRANSPORTATION

Project No. 99005  
Scale: 1/2" = 1'-0"  
REV. - Date: 9/20/99  
Drawing No. 541-101

TITLE **HULL PIPING SYSTEMS BILGE AND FUEL**

PROJ. 99005, DWG. 541-101, TITLE: HULL PIPING SYSTEMS, BILGE AND FUEL