

MATERIAL SCHEDULE

Table with columns: SERVICE, SIZE, PIPE, COMPONENTS (TAKEDOWN JOINTS, FITTINGS, FLEX CONNECT, GASKETS), VALVES (BODY, TRIM), BOLTING (BOLTS/STUDS, NUTS/WASHERS), REMARKS. Rows include Generator Exhaust Piping (Inlet/Outlet Side of Muffler) and Main Engine Exhaust Piping.

17-1372-4076 Main Engine and Generator Exhaust B.O.M.

Table with columns: ITEM, QTY, SYMBOL, DESCRIPTION, MATERIAL SPEC, REMARKS. Lists items such as Main Engine Dry Exhaust Silencer, Generator Engine Dry Exhaust Silencer, and various expansion bellows.

EQUIPMENT LIST

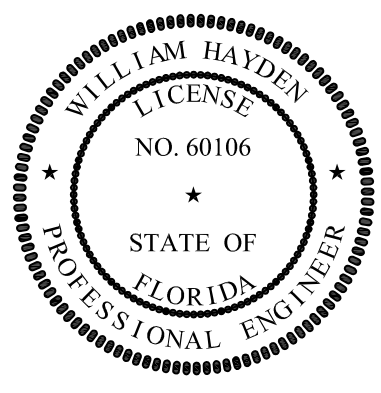
Table with columns: QTY, SERVICE, TYPE, MAKE/MODEL, REMARKS. Lists equipment items like SSG Silencer and Main Engine Silencer.

SPECIFIC NOTES

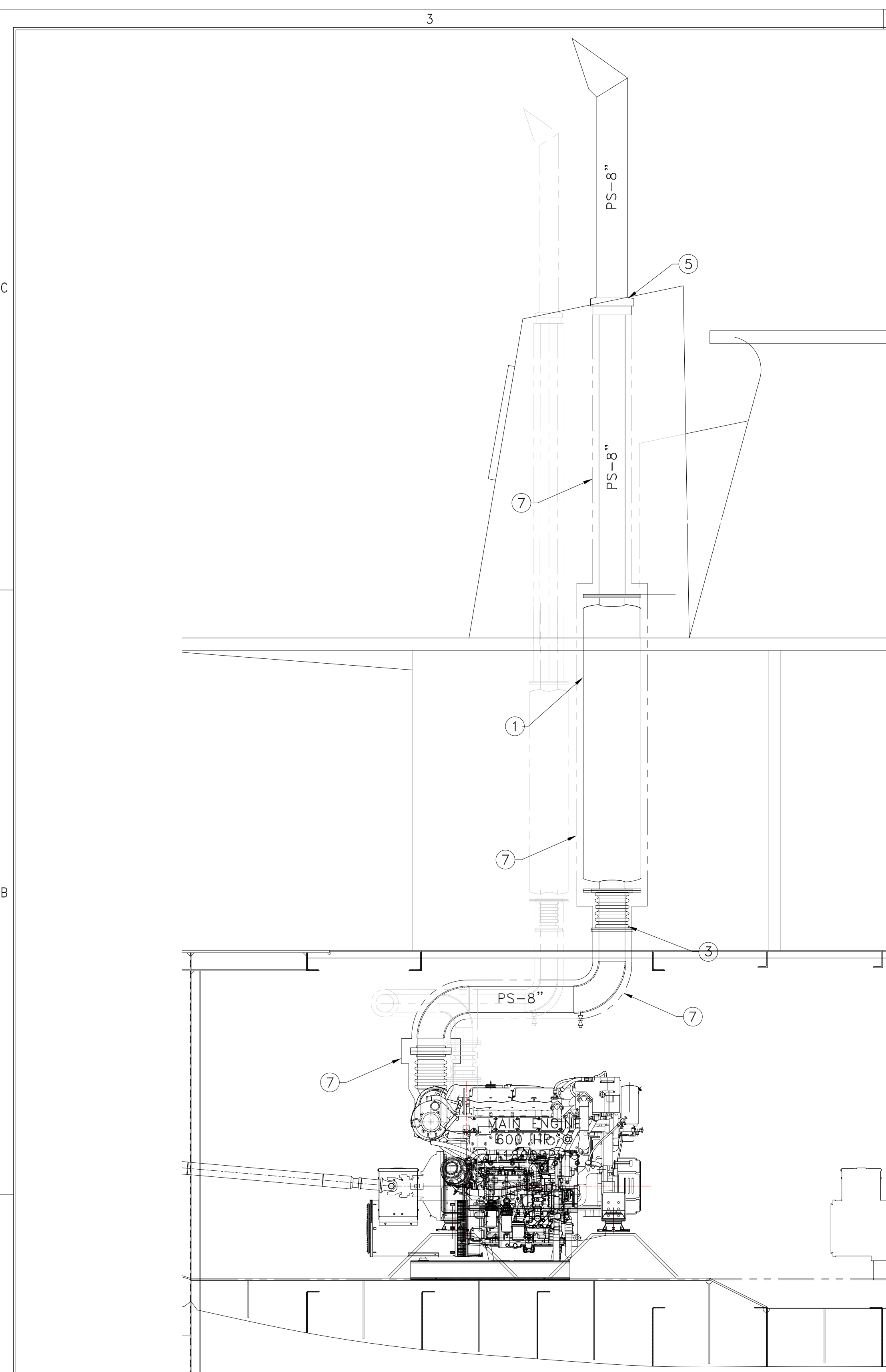
SYSTEM DETAILS: EX: EXHAUST PIPING ANCHOR, RAINCAP, AND GUIDE DETAILS SHOW PRELIMINARY CONFIGURATION AND LOCATIONS FOR PIPING SUPPORT SYSTEM. PRELIMINARY DESIGN NOTES: EX: EXHAUST PIPING ROUTING SHOWS PRELIMINARY CONFIGURATION AND LOCATIONS FOR PIPING SUPPORT SYSTEM. PARTS EXPOSED TO WEATHER: EX: TAIL PIPE, RAIN HAT, HEAT SHIELD, FASTENERS & HANGERS EXPOSED TO WEATHER AT THE NAV/BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.

GENERAL NOTES

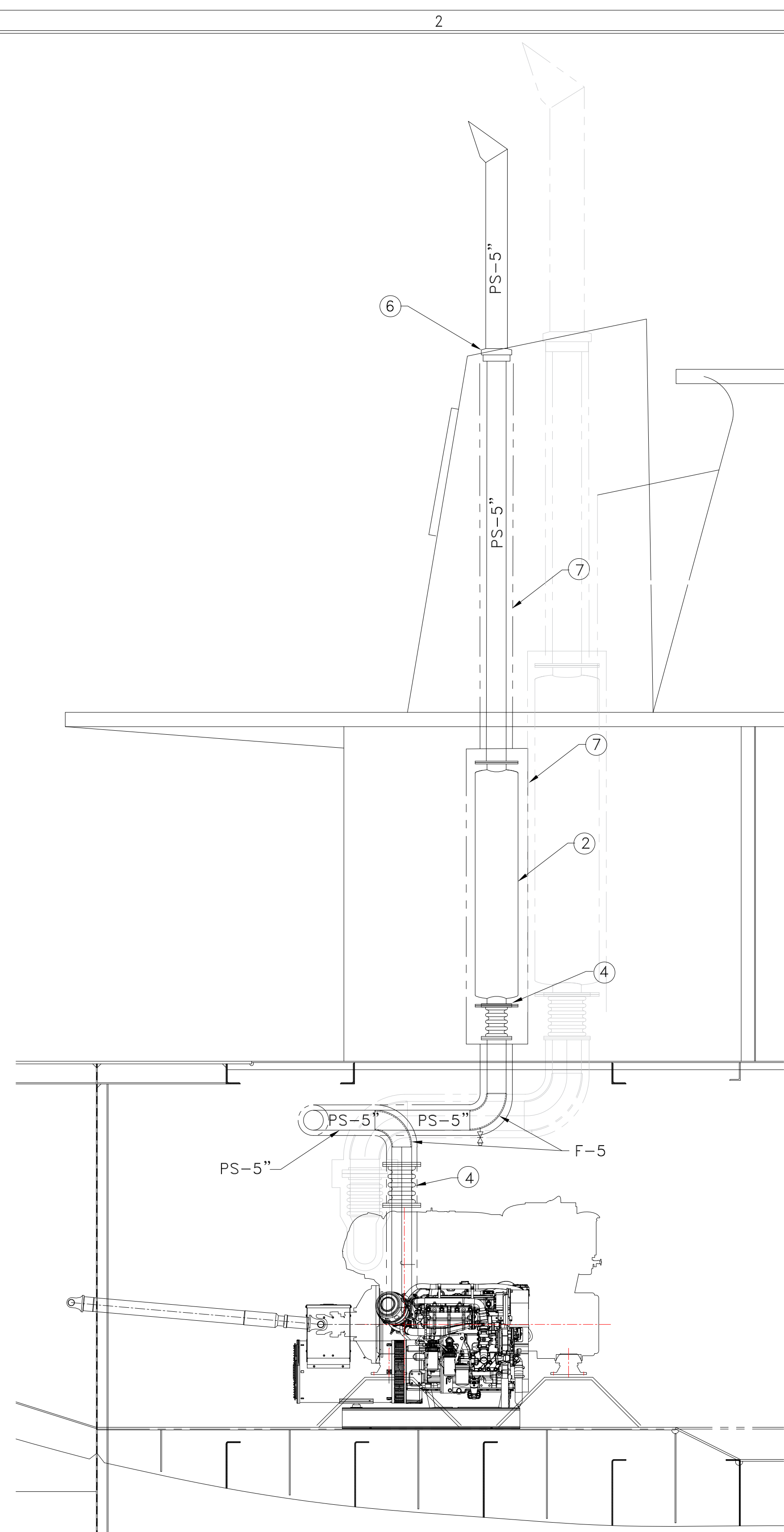
- 1 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER 2. PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. 2 PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. 3 PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. 4 ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN. 5 PIPE HANGERS SHALL MEET THE REQUIREMENTS OF ASTM F708. THE CONTRACTOR SHALL DESIGN AND INSTALL PIPE HANGERS AS NECESSARY TO ADEQUATELY SUPPORT EXHAUST SYSTEMS UNDER STATIC AND DYNAMIC LOADS IMPOSED BY VESSEL MOTIONS, VIBRATION AND THERMAL EXPANSION. 6 PROVIDE EXPANSION JOINTS WHERE REQUIRED TO ACCOMMODATE THERMAL GROWTH OF EXHAUST PIPES. EXPANSION JOINTS ARE TO BE STAINLESS STEEL MULTI-PLY LAMINATE TYPE MANUFACTURED TO EJMA STANDARDS. 7 EXHAUST ELBOW AND EXPANSION JOINT AT ENGINE TURBO OUTLET SHALL BE SUPPLIED BY THE ENGINE MANUFACTURER. ALL OTHERS SHALL BE DME, AMERICAN BDA, OR EQUAL. 8 WEIGHT TRANSMITTED TO EACH ENGINE EXHAUST OUTLET CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN ANY CONDITION. 9 INSULATION FOR ENGINE EXHAUST PIPING AND SILENCERS SHALL BE REMOVABLE INSULATION BLANKETS HAVING A 2" MINIMUM THICKNESS. BLANKETS SHALL BE FASTENED WITH STAINLESS STEEL HOOKS AND INSULATION MATERIALS AND INSTALLATION DETAILS SHALL BE IN ACCORDANCE WITH ASTM F685. 10 1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING TO FACILITATE BACK PRESSURE MEASUREMENTS. 11 TAIL PIPE, TOP HAT, AND HANGERS EXPOSED TO WEATHER AT THE BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL. 12 VERTICAL EXHAUST PIPING RUNS SHALL BE FITTED WITH VALVED DRAINS LOCATED AT THE LOWEST POINT. EACH DRAIN SHALL CONSIST OF A THREADED STEEL WELDOLET OR HALF COUPLING WELDED TO THE PIPE, FITTED WITH A SCHEDULE 40 PIPE, AND CAPPED WITH A 1" INCH GATE VALVE. 13 PRIOR TO BEING PLACED INTO SERVICE THE EXHAUST PIPING SHALL BE CLEANED AND CHECKED FOR LEAKS. 14 WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS. 15 CONTRACTOR SHALL VERIFY ENGINE EXHAUST BACK PRESSURE REQUIREMENTS AND CONNECTION DETAILS PRIOR TO ORDERING MATERIALS.



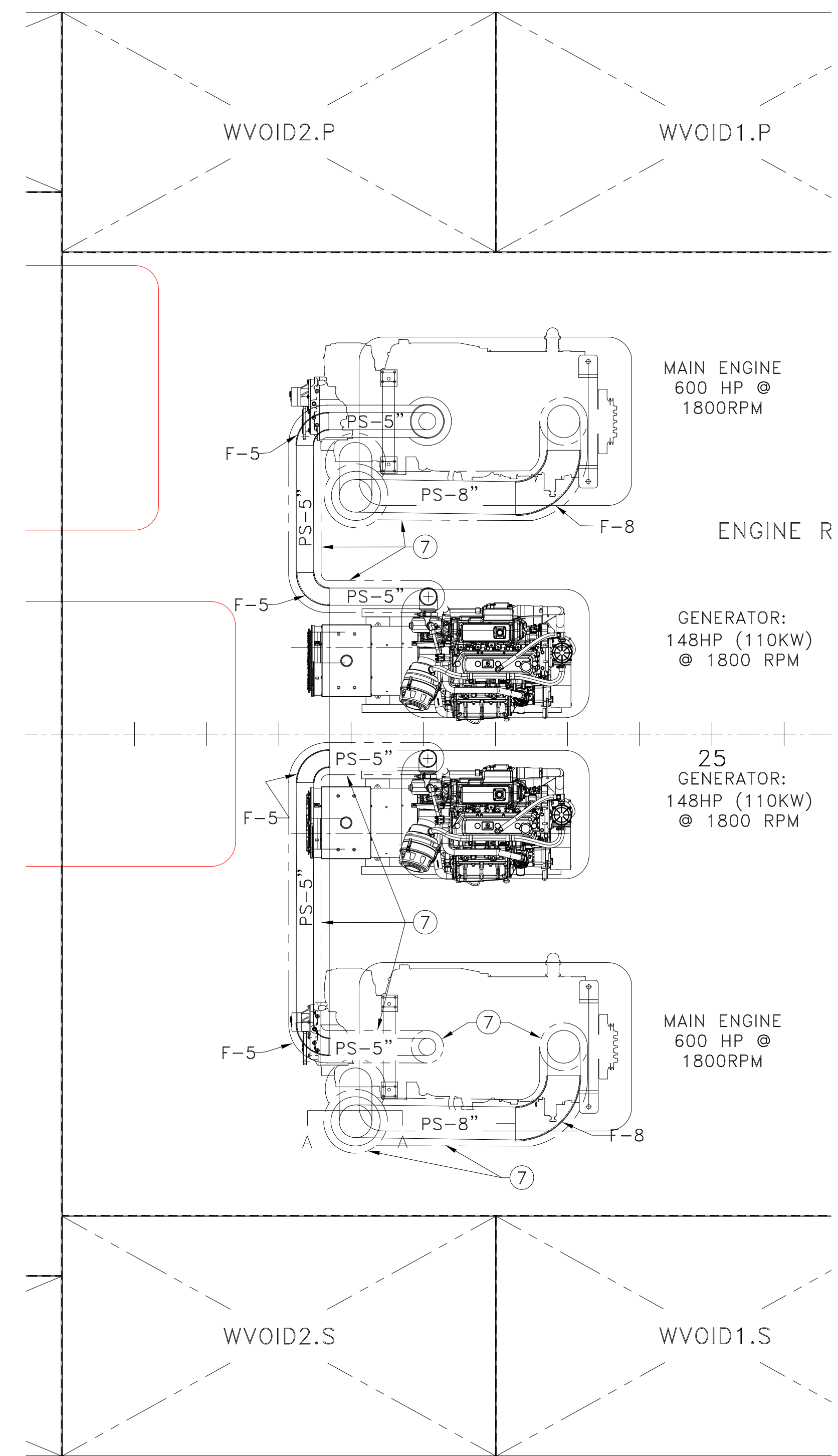
DeJong & Lebet, Inc. logo and contact information. Title: 70.5'x30'x11' NCDOT TOWBOAT ENGINE AND GENERATOR EXHAUST DETAILS. Dwg. No. 17-1372-259, Alt. No. 0, Sh. 1 of 3. Date: JULY 16, 2018. Scale: 1/2" = 1'-0".



30 MAIN ENGINE
600 HP @
1800RPM 25



35 30 GENERATOR:
148HP (110KW)
@ 1800 RPM 25



NO.	DESCRIPTION
1	ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER
2	PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE A SUFFICIENT NUMBER OF TAKEDOWN JOINTS TO ALLOW FOR REMOVAL & INSPECTION
3	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4	ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN.
5	PIPE HANGERS SHALL MEET THE REQUIREMENTS OF ASTM F708. THE CONTRACTOR SHALL DESIGN AND INSTALL PIPE HANGERS AS NECESSARY TO ADEQUATELY SUPPORT EXHAUST SYSTEMS UNDER STATIC AND DYNAMIC LOADS IMPOSED BY VESSEL MOTIONS, VIBRATION AND THERMAL EXPANSION. THERMAL INSULATION GASKETS SHALL BE INSTALLED BETWEEN THE EXHAUST PIPE AND THE HANGER ATTACHMENT TO THE SHIP.
6	PROVIDE EXPANSION JOINTS WHERE REQUIRED TO ACCOMMODATE THERMAL GROWTH OF EXHAUST PIPES. EXPANSION JOINTS ARE TO BE STAINLESS STEEL MULTI-PLY LAMINATE TYPE MANUFACTURED TO EJMA STANDARDS. EACH EXPANSION JOINT SHALL HAVE ONE END FIXED FLANGE AND THE OTHER END WITH A FLOATING FLANGE. A FLOW DIRECTION ARROW SHALL BE PERMANENTLY MARKED ON EACH EXPANSION JOINT.
7	EXHAUST ELBOW AND EXPANSION JOINT AT ENGINE TURBO OUTLET SHALL BE SUPPLIED BY THE ENGINE MANUFACTURER. ALL OTHERS SHALL BE DME, AMERICAN BDA, OR EQUAL.
8	WEIGHT TRANSMITTED TO EACH ENGINE EXHAUST OUTLET CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN ANY CONDITION.
9	INSULATION FOR ENGINE EXHAUST PIPING AND SILENCERS SHALL BE REMOVABLE INSULATION BLANKETS HAVING A 2" MINIMUM THICKNESS. BLANKETS SHALL BE FASTENED WITH STAINLESS STEEL HOOKS AND INSULATION MATERIALS AND INSTALLATION DETAILS SHALL BE IN ACCORDANCE WITH ASTM F685.
10	1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING TO FACILITATE BACK PRESSURE MEASUREMENTS.
11	TAIL PIPE, TOP HAT, AND HANGERS EXPOSED TO WEATHER AT THE BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.
12	VERTICAL EXHAUST PIPING RUNS SHALL BE FITTED WITH VALVED DRAINS LOCATED AT THE LOWEST POINT. EACH DRAIN SHALL CONSIST OF A THREADED STEEL WELDOLET OR HALF COUPLING WELDED TO THE PIPE, FITTED WITH A SCHEDULE 40 PIPE, AND CAPPED WITH A 1" INCH GATE VALVE.
13	PRIOR TO BEING PLACED INTO SERVICE THE EXHAUST PIPING SHALL BE CLEANED AND CHECKED FOR LEAKS.
14	WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS.
15	CONTRACTOR SHALL VERIFY ENGINE EXHAUST BACK PRESSURE REQUIREMENTS AND CONNECTION DETAILS PRIOR TO ORDERING MATERIALS.

PROPRIETARY RIGHTS
This document discloses neither in which DeJong & Lebet, Incorporated has proprietary rights. Neither neither
nor permission thereof on these or any other drawings, or in any manner this document in
whole or in part or any information contained herein, used by other persons, or without agreement with
DeJong & Lebet, Incorporated.

In the event of a portion of this document the purchaser is authorized to contract no more than one dollar in
accord therewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

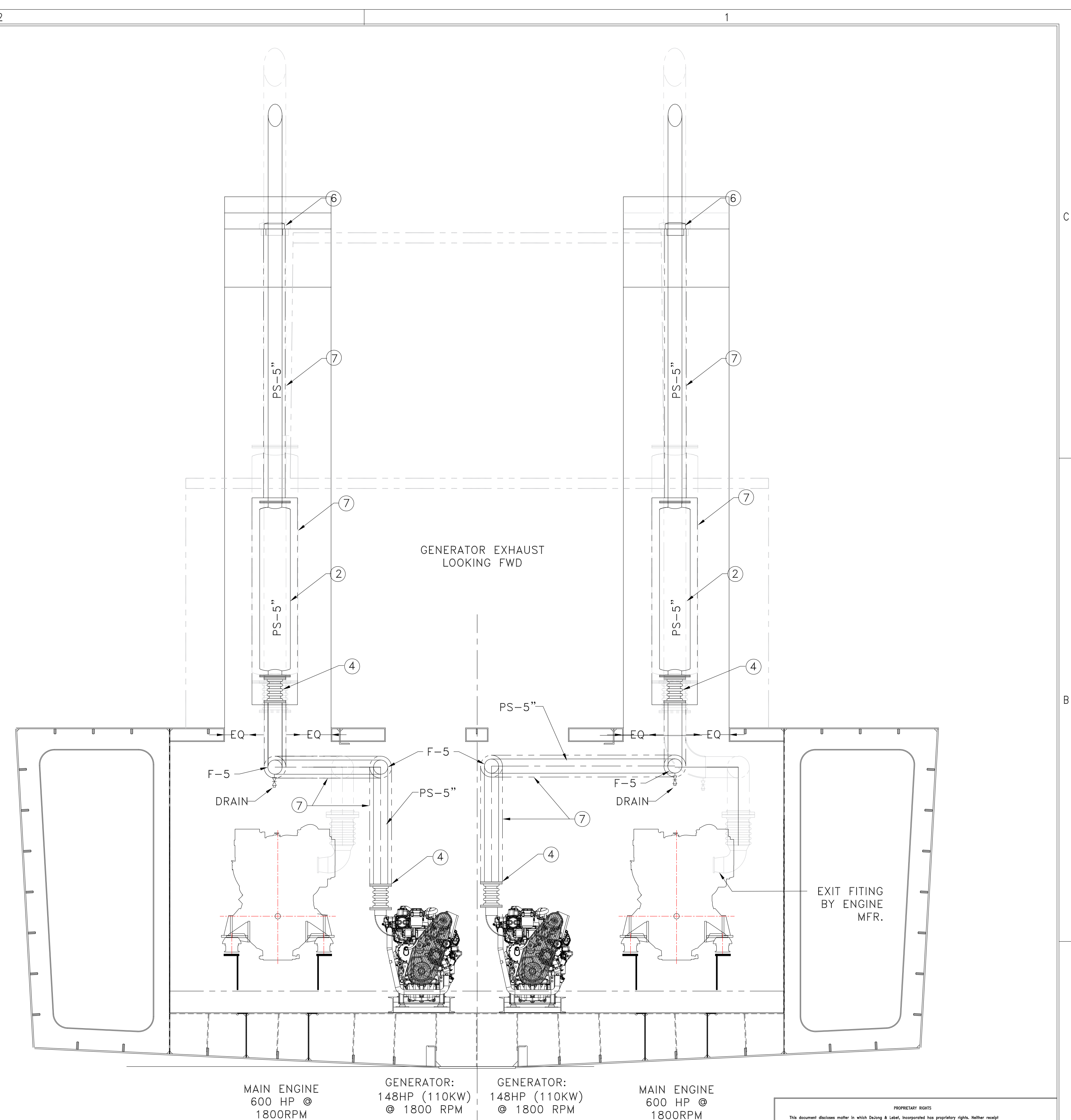
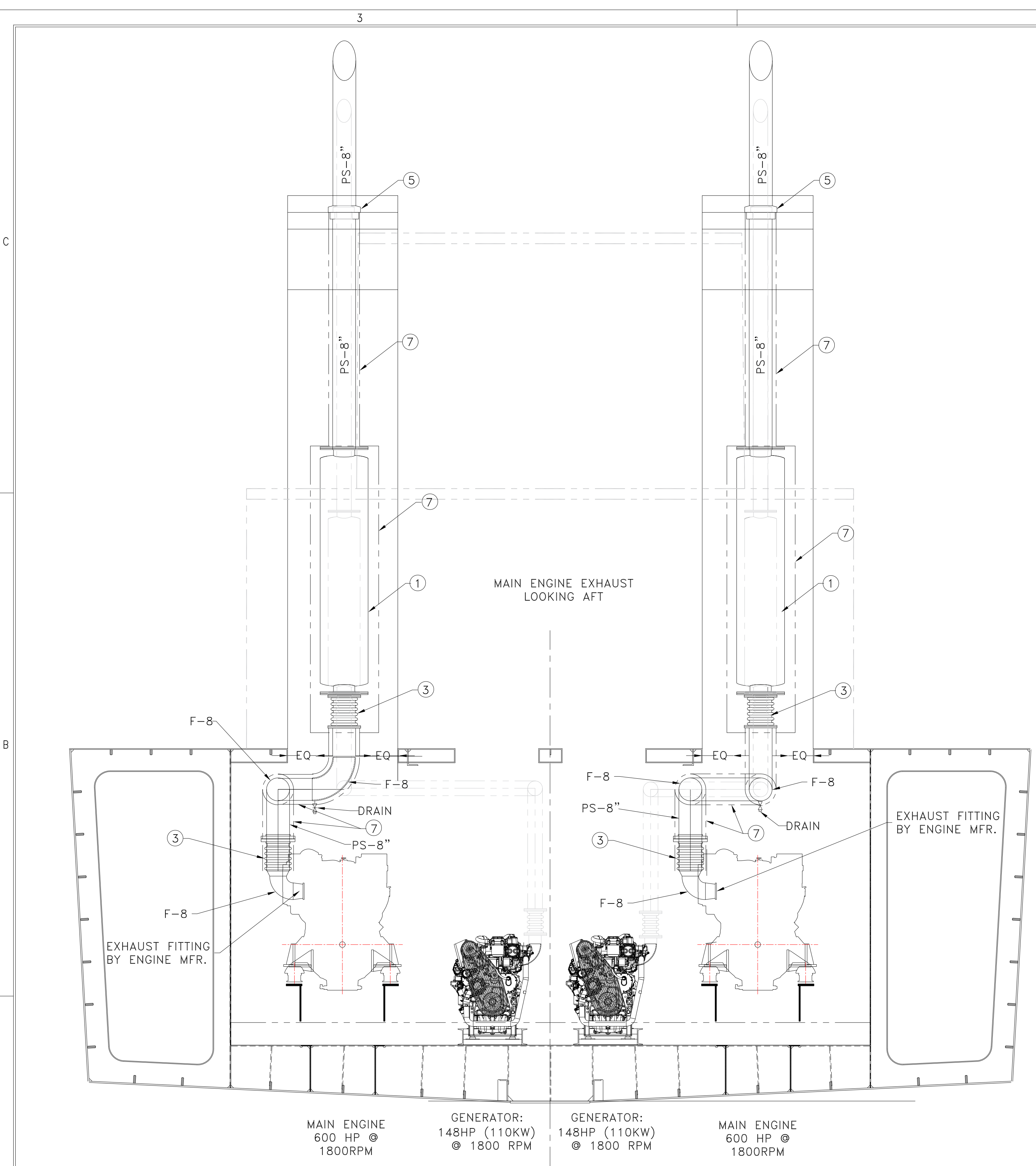
DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com Phone: (904) 399-3473
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT
**ENGINE AND GENERATOR
EXHAUST & DETAILS**

Dwg. No. 17-1372-259 Alt. No. 0
Sht. 2 of 3

Drawn By: CHRISTOPHER DUNCAN Date: JULY 16, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 1/2" = 1'-0"
ABS App'l: _____ USCG App'l: _____



NO.	DESCRIPTION
1	ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER
2	PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE A SUFFICIENT NUMBER OF TAKEDOWN JOINTS TO ALLOW FOR REMOVAL & INSPECTION
3	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4	ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN.
5	PIPE HANGERS SHALL MEET THE REQUIREMENTS OF ASTM F708. THE CONTRACTOR SHALL DESIGN AND INSTALL PIPE HANGERS AS NECESSARY TO ADEQUATELY SUPPORT EXHAUST SYSTEMS UNDER STATIC AND DYNAMIC LOADS IMPOSED BY VESSEL MOTIONS, VIBRATION AND THERMAL EXPANSION. THERMAL INSULATION GASKETS SHALL BE INSTALLED BETWEEN THE EXHAUST PIPE AND THE HANGER ATTACHMENT TO THE SHIP.
6	PROVIDE EXPANSION JOINTS WHERE REQUIRED TO ACCOMMODATE THERMAL GROWTH OF EXHAUST PIPES. EXPANSION JOINTS ARE TO BE STAINLESS STEEL MULTI-PLY LAMINATE TYPE MANUFACTURED TO EJMA STANDARDS. EACH EXPANSION JOINT SHALL HAVE ONE END FIXED FLANGE AND THE OTHER END WITH A FLOATING FLANGE. A FLOW DIRECTION ARROW SHALL BE PERMANENTLY MARKED ON EACH EXPANSION JOINT.
7	EXHAUST ELBOW AND EXPANSION JOINT AT ENGINE TURBO OUTLET SHALL BE SUPPLIED BY THE ENGINE MANUFACTURER. ALL OTHERS SHALL BE DME, AMERICAN BOA, OR EQUAL.
8	WEIGHT TRANSMITTED TO EACH ENGINE EXHAUST OUTLET CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN ANY CONDITION.
9	INSULATION FOR ENGINE EXHAUST PIPING AND SILENCERS SHALL BE REMOVABLE INSULATION BLANKETS HAVING A 2" MINIMUM THICKNESS. BLANKETS SHALL BE FASTENED WITH STAINLESS STEEL HOOKS AND INSULATION MATERIALS AND INSTALLATION DETAILS SHALL BE IN ACCORDANCE WITH ASTM F683.
10	1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING TO FACILITATE BACK PRESSURE MEASUREMENTS.
11	TAIL PIPE, TOP HAT, AND HANGERS EXPOSED TO WEATHER AT THE BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.
12	VERTICAL EXHAUST PIPING RUNS SHALL BE FITTED WITH VALVED DRAINS LOCATED AT THE LOWEST POINT. EACH DRAIN SHALL CONSIST OF A THREADED STEEL WELDOLET OR HALF COUPLING WELDED TO THE PIPE, FITTED WITH A SCHEDULE 40 PIPE, AND CAPPED WITH A 1" INCH GATE VALVE.
13	PRIOR TO BEING PLACED INTO SERVICE THE EXHAUST PIPING SHALL BE CLEANED AND CHECKED FOR LEAKS.
14	WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS.
15	CONTRACTOR SHALL VERIFY ENGINE EXHAUST BACK PRESSURE REQUIREMENTS AND CONNECTION DETAILS PRIOR TO ORDERING MATERIALS.

PROPRIETARY DOCUMENT

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers on the holder any right to reproduce, disclose or use in any manner this document in whole or in part or any professional confidential service, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to consult no more than one device in order to benefit, unless otherwise agreed in writing to DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1724 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

**ENGINE AND GENERATOR
EXHAUST DETAILS**

Dwg. No. **17-1372-259** Alt. No. **0**
Sht. 3 of 3

Drawn By: **CHRISTOPHER DUNCAN** Date: **JULY 16, 2018**

Checked By: _____ Date: _____

App'd By: _____ Scale: **1/2" = 1'-0"**

ABS App'l: _____ USCG App'l: _____