US EPA ARCHIVE DOCUMENT

Application to: US Coast Guard & American Bureau of Shipping

Submitted to US EPA by: Lake Michigan Carferry Service
Dated: February 25, 2014

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ALL CONFIDENTIAL BUSINESS INFORMATION
REDACTED BY LAKE MICHIGAN CARFERRY SERVICE

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CONTAINS CONFIDENTIAL BUSINESS INFORMATION

From: Marine Shop [engineering@ssbadger.com]
Sent: Thursday, February 20, 2014 9:14 AM
To: Bklages@eagle.org
Cc: cleonard@pmship.com
Subject: Badger
Attachments: 2013-12-20_Stoker_Front_PDF.zip; Stee, boiler fronts.tif; DSCo_Feeder_Mounting.pdf; Over_Fire_Air_PDF.zip

Good morning Brian,

We are now positioned for replacement of the boiler fronts and feeders aboard *Badger,* one part of the combustion control renewal program as agreed to in the consent decree between Lake Michigan Carferry and the DOJ.

I have attached PDF files of the drawings for the new boiler fronts, also attached is a file with mill certificates for the 0.750" ABS Grade A/A-36 steel plate we will use to fabricate the new fronts. We will fabricate the four new boiler fronts in our shop here in Ludington and are currently laying them out in preparation for drilling and cutting.

While we have the old boiler fronts removed we are taking the opportunity to repair any wasted material we may find in the grate support structure.

We have the final drawings of the new feeders, which have been manufactured by [redacted]ny. We chose [redacted] because Hoffman Combustion Engineering, the original stoker manufacturer, is out of business and the Detroit feeders are an improved design of our original feeders. I have attached information regarding them as well.

The new [redacted] feeders will be controlled via Variable Frequency Drive units by the combustion control automation being designed for us by G.R. Bowler company. The automation portion of the package will be submitted by them under a separate cover. You may recognize [redacted] the company that designed the propulsion controls for the S.S. Cason J. Calloway and other improvements for her fleet mates.

While we have the boiler fronts off we have also removed the refractory brick from the 'knee wall' between the lower drum and the furnace and intend to replace the existing wasted over-fire air manifold and nozzles. We have changed the spacing of the nozzles along this header to improve the delivery of combustion air above the fuel bed. In this pursuit we have also designed a second manifold to be installed in the 'filler wall' that was added along the back of the furnace in the early 1960's. These new and additional over-fire air nozzles will be positioned to introduce oxygen and turbulence above the fuel bed to enhance combustion. The existing over-fire air fan will be replaced with a new fan of larger capacity manufactured by the [redacted]. The output of these fans will also be monitored and controlled by the combustion control automation, an improvement over the former system that ran at a fixed volume.

The combustion control system will require more ships service air volume than we can currently supply with our existing air compressor so we propose to upgrade to a larger machine and relocate it. We have contacted [redacted] in Sturgeon Bay to provide drawings for this sub-system and will include them in the scope of our work as soon as we have them.

As none of these are a significant change from original equipment we would like to consider them as a replacement in kind, I have requested thru our USCG Inspector, Richard Baker, to have American Bureau of Shipping review everything as allowed in in NVIC 10-82.

If I can answer any questions or provide further information, please do contact me at any time.

Best regards,

Chuck

Charles Cart
Senior Chief Engineer

701 Maritime Drive
Ludington, MI 49431
[redacted]

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Chuck Leonard

From: Marine Shop [engineering@ssbadger.com]
Sent: Wednesday, February 19, 2014 6:54 PM
To: Baker, Richard (Richard.A.Baker@uscg.mil)
Cc: cleonard@pmship.com
Subject: Badger
Attachments: 2013-12-20_Stoker_Front_PDF.zip; AB-2793-D1-1L_REV_0_(FUEL SUPPLY EQUIPMENT ARR AUXILIARY VIEWS).pdf; Over_Fire_Air_PDF.zip; Stee, boiler fronts.tif; Charles Cart.vcf

Good afternoon Rich,

We are now positioned for replacement of the boiler fronts and feeders aboard *Badger,* one part of the combustion control renewal program as agreed to in the consent decree between Lake Michigan Carferry and the DOJ.

I have attached PDF files of the drawings for the new boiler fronts, also attached is a file with mill certificates for the 0.750" ABS Grade A/A-36 steel plate we will use to fabricate the new fronts. We will fabricate the four new boiler fronts in our shop here in Ludington and are currently laying them out in preparation for drilling and cutting.

While we have the old boiler fronts removed we are taking the opportunity to repair any wasted material we may find in the grate support structure.

We have the final drawings of the new feeders, which have been manufactured by [redacted]. We chose [redacted] because Hoffman Combustion Engineering, the original stoker manufacturer, is out of business and the [redacted] feeders are an improved design of our original feeders. I have attached information regarding them as well.

The new [redacted] feeders will be controlled via Variable Frequency Drive units by the combustion control automation being designed for us by [redacted] company. The automation portion of the package will be submitted by them under a separate cover. You may recognize [redacted] as the company that designed the propulsion controls for the S.S. Cason J. Calloway and other improvements for her fleet mates.

While we have the boiler fronts off we have also removed the refractory brick from the 'knee wall' between the lower drum and the furnace and intend to replace the existing wasted over-fire air manifold and nozzles. We have changed the spacing of the nozzles along this header to improve the delivery of combustion air above the fuel bed. In this pursuit we have also designed a second manifold to be installed in the 'filler wall' that was added along the back of the furnace in the early 1960's. These new and additional over-fire air nozzles will be positioned to introduce oxygen and turbulence above the fuel bed to enhance combustion. The existing over-fire air fan will be replaced with a new fan of larger capacity manufactured by the [redacted] The output of these fans will also be monitored and controlled by the combustion control automation, an improvement over the former system that ran at a fixed volume.

The combustion control system will require more ships service air volume than we can currently supply with our existing air compressor so we propose to upgrade to a larger machine and relocate it. We have contacted [redacted] in Sturgeon to provide drawings for this sub-system and will include them in the scope of our work as soon as we have them.

As none of these are a significant change from our existing equipment we would like to consider them as a replacement in kind, and while we would be happy to have MSC review our drawings I do feel it would be expeditious to have American Bureau of Shipping review everything as allowed in in NVIC 10-82, and I would like to formally request that here if I may.

If I can answer any questions or provide further information, please do contact me at any time.

Best regards,

Chuck

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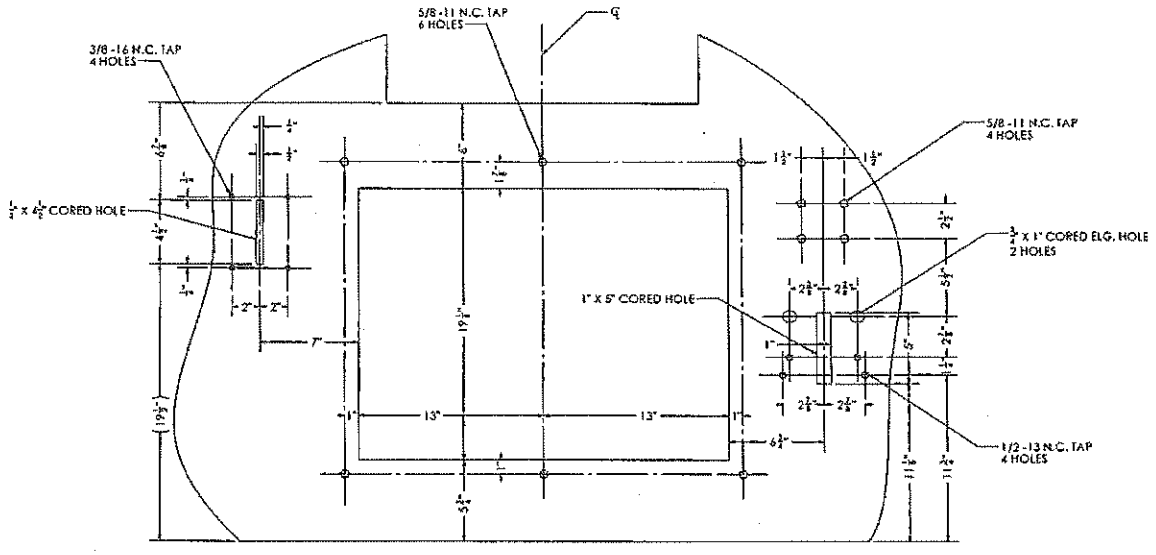

DETAIL "A"

AS SHOWN
PANEL 1 AND PANEL 3
MIRROR FOR
PANEL 2 AND PANEL 4

DRAWN BY: CJB 12/19/2013	LAKE MICHIGAN CARFERRY SERVICE LUDINGTON, MI
CHECKED BY	TITLE: STOKER FRONT PANEL DETAIL "A"
APPROVED BY	SIZE: B; DWG. NO.: Stoker_Front-Detail_A; REV: DRAFT
PROPRIETARY AND CONFIDENTIAL	SCALE: 1:6; WEIGHT: N/A; SHEET 1 OF 1

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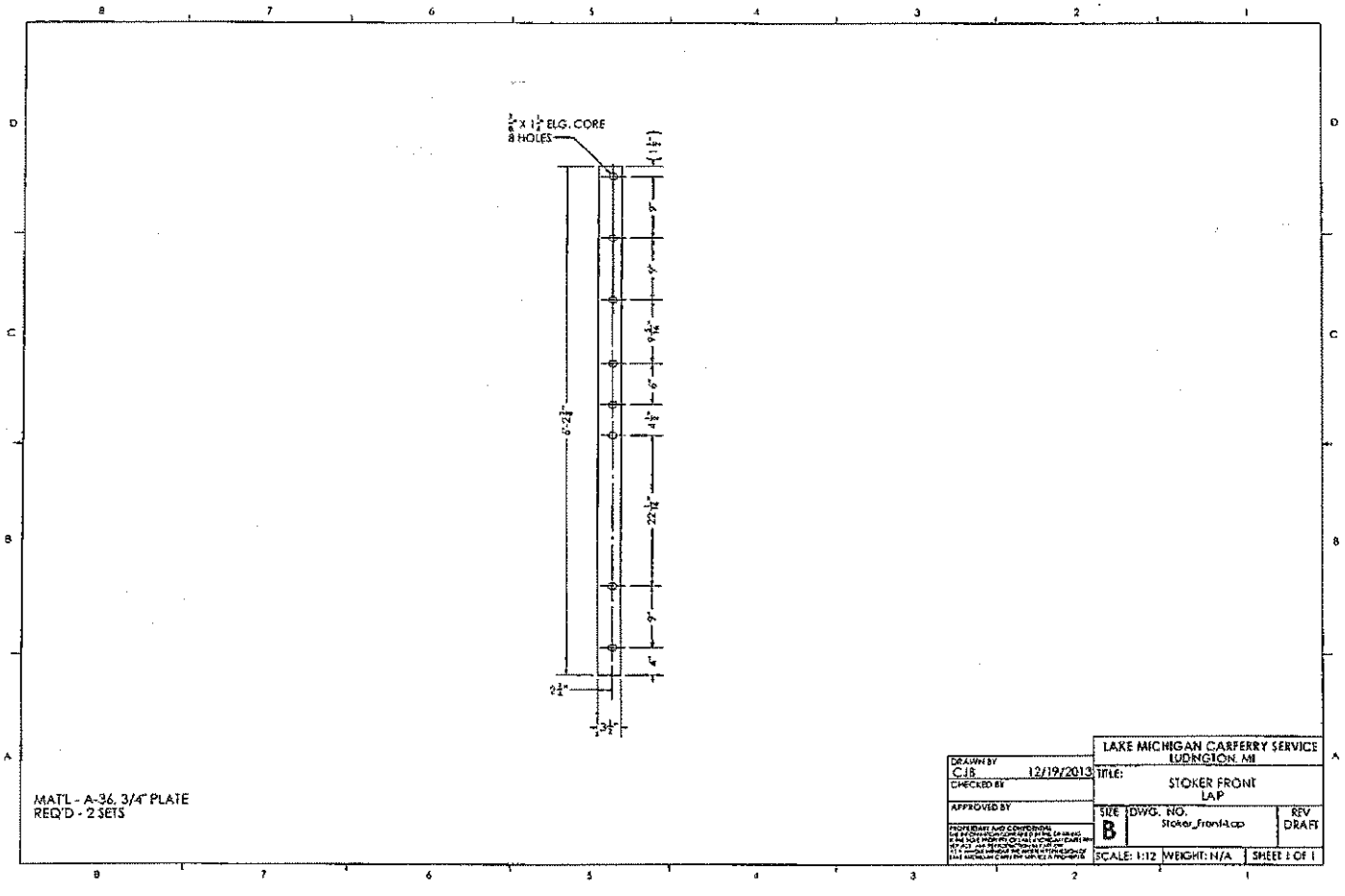

MATL - A-36, 3/4" PLATE
REQ'D - 2 SETS

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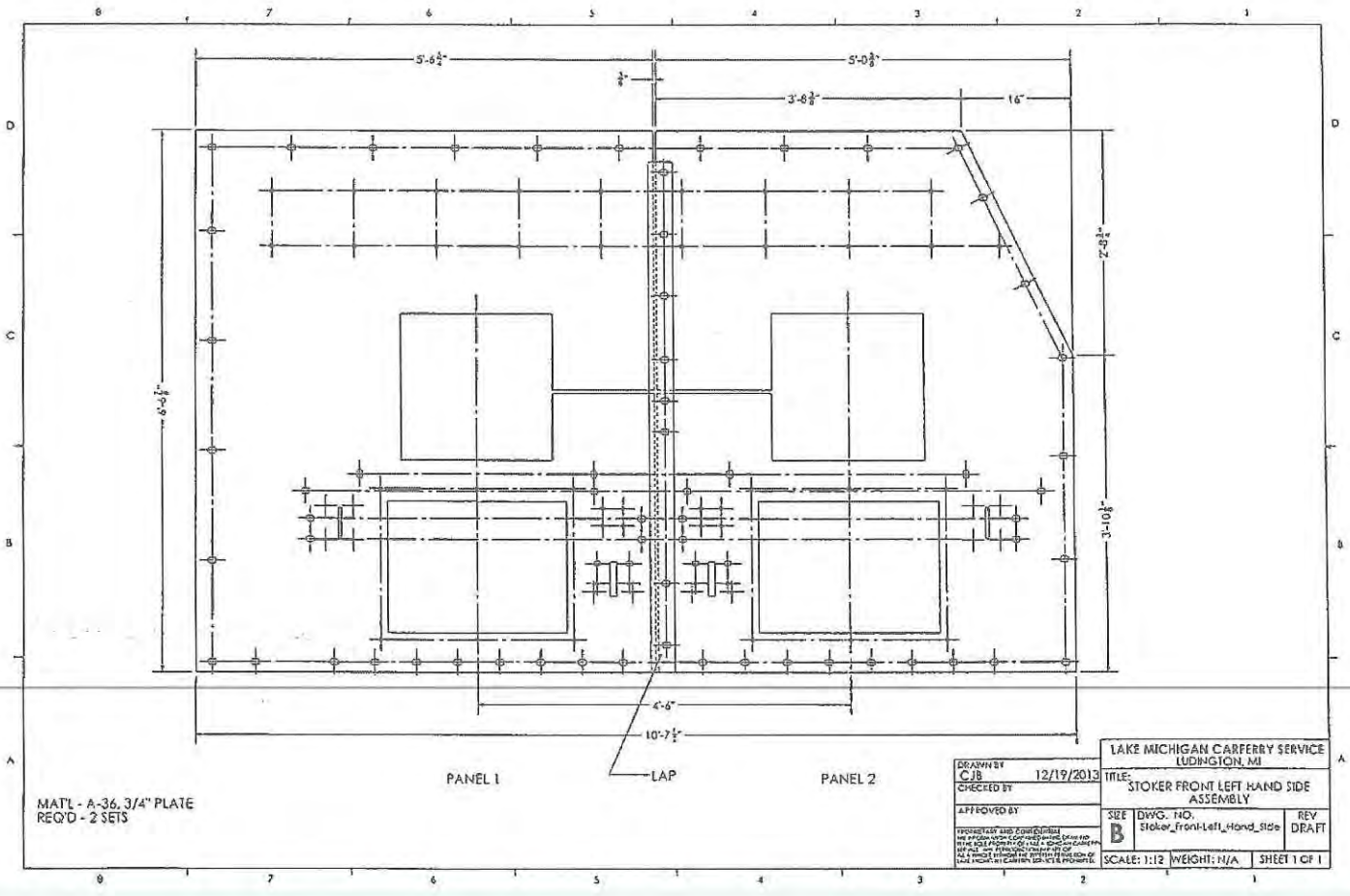
APPROVED BY	SIZE B	DWG. NO. Stoker_frontLap
	REV DRAFT	
	SCALE: 1:12	WEIGHT: N/A
	SHEET 1 OF 1	

US EPA ARCHIVE DOCUMENT



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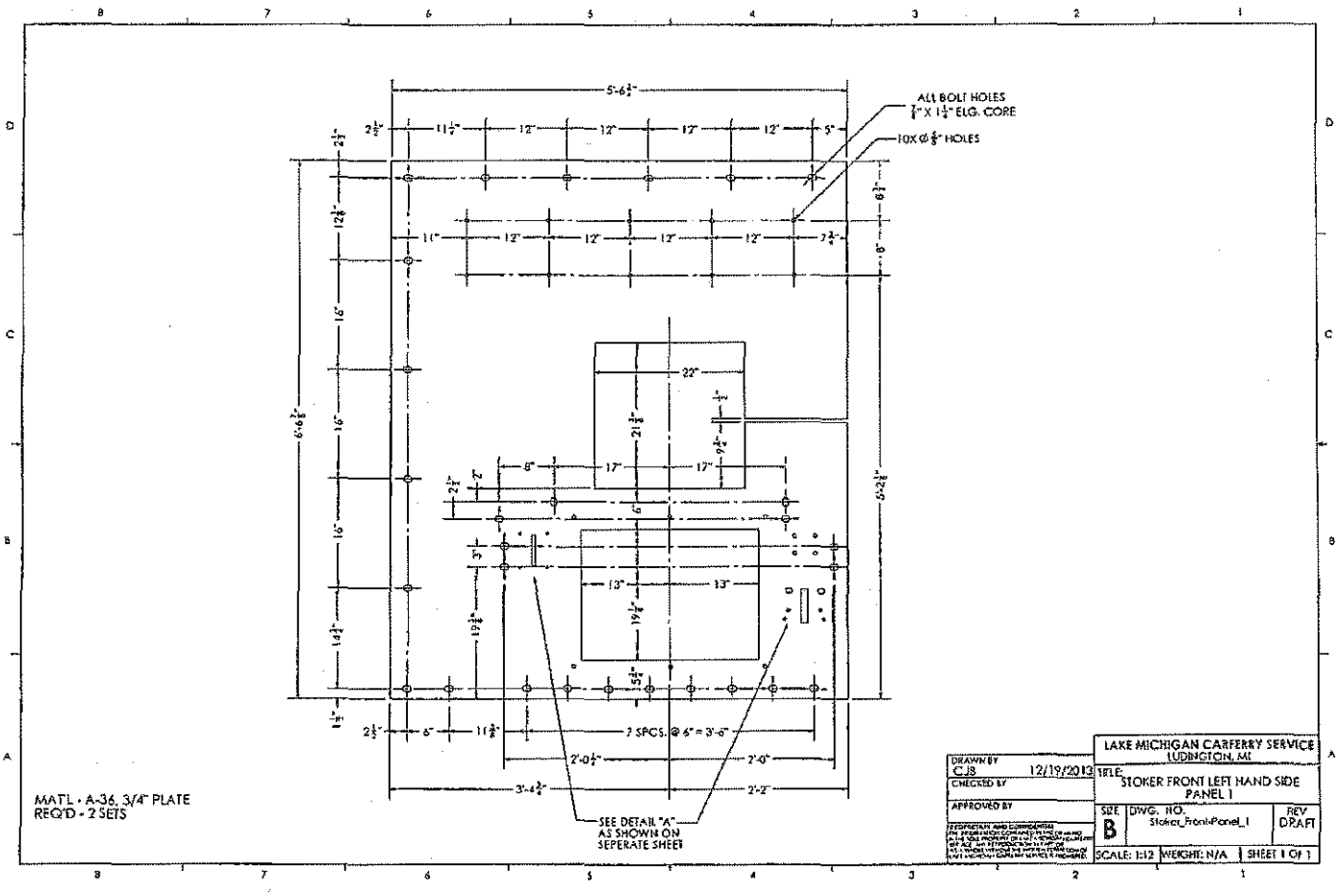

MATL - A-36, 3/4" PLATE
REQ'D - 2 SETS

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CHECKED BY	TITLE: STOKER FRONT LEFT HAND SIDE PANEL 1	
APPROVED BY	SIZE B	DWG. NO. Stoker_Front-Panel_1
	REV DRAFT	
	SCALE: 1:12	WEIGHT: N/A
	SHEET 1 OF 1	

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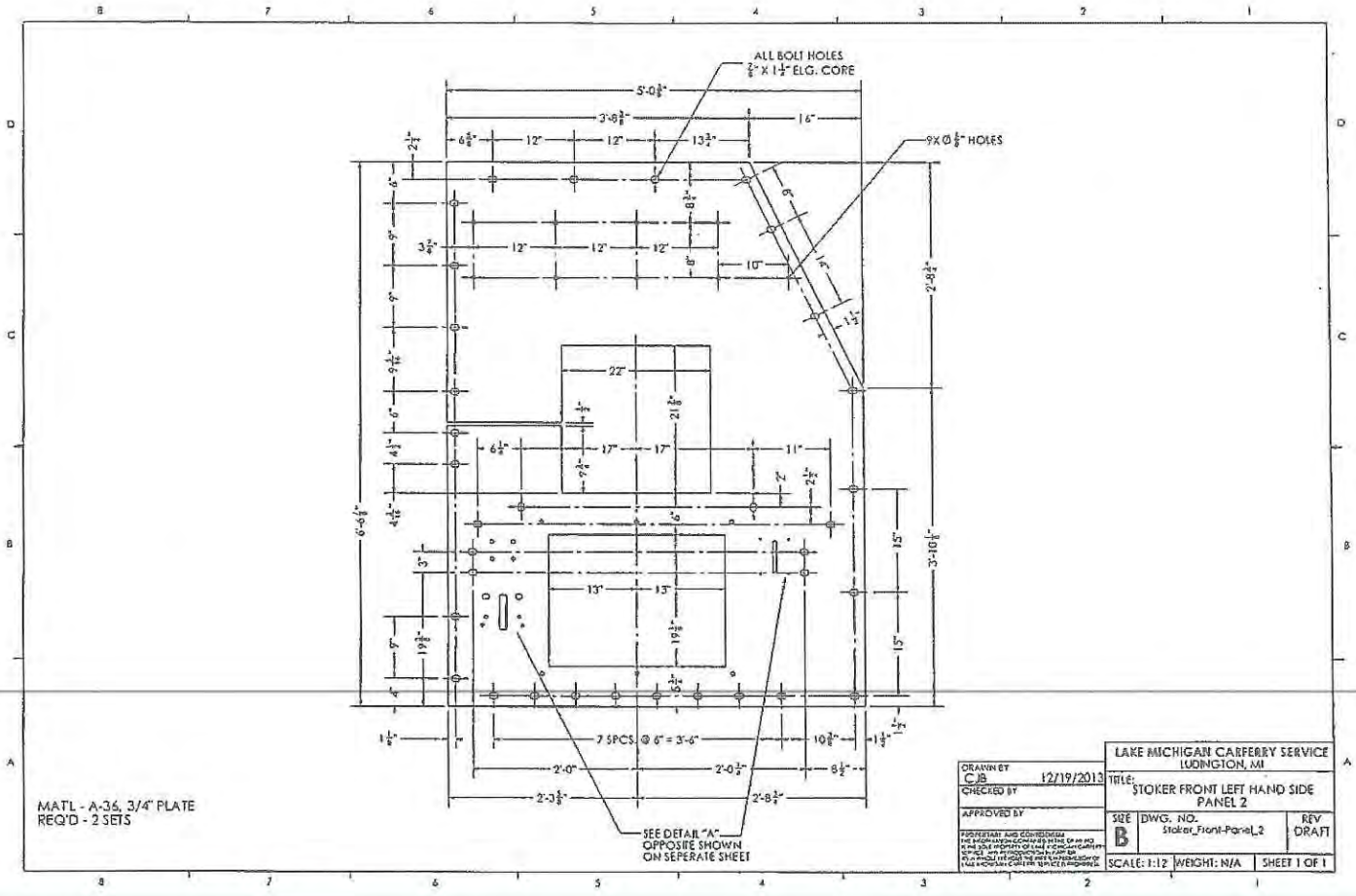

MATL - A-36, 3/4" PLATE
REQ'D - 2 SETS

DRAWN BY: CB 12/19/2013	LAKE MICHIGAN CARFERRY SERVICE LUDINGTON, MI	
CHECKED BY:	TITLE: STOKER FRONT LEFT HAND SIDE PANEL 2	
APPROVED BY:	SIZE: B	DWG. NO.: Stoker_Front-Panel_2
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LAKE MICHIGAN CARFERRY SERVICE. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF LAKE MICHIGAN CARFERRY SERVICE IS PROHIBITED.	SCALE: 1:12	WEIGHT: N/A
	REV: DRAFT	SHEET 1 OF 1

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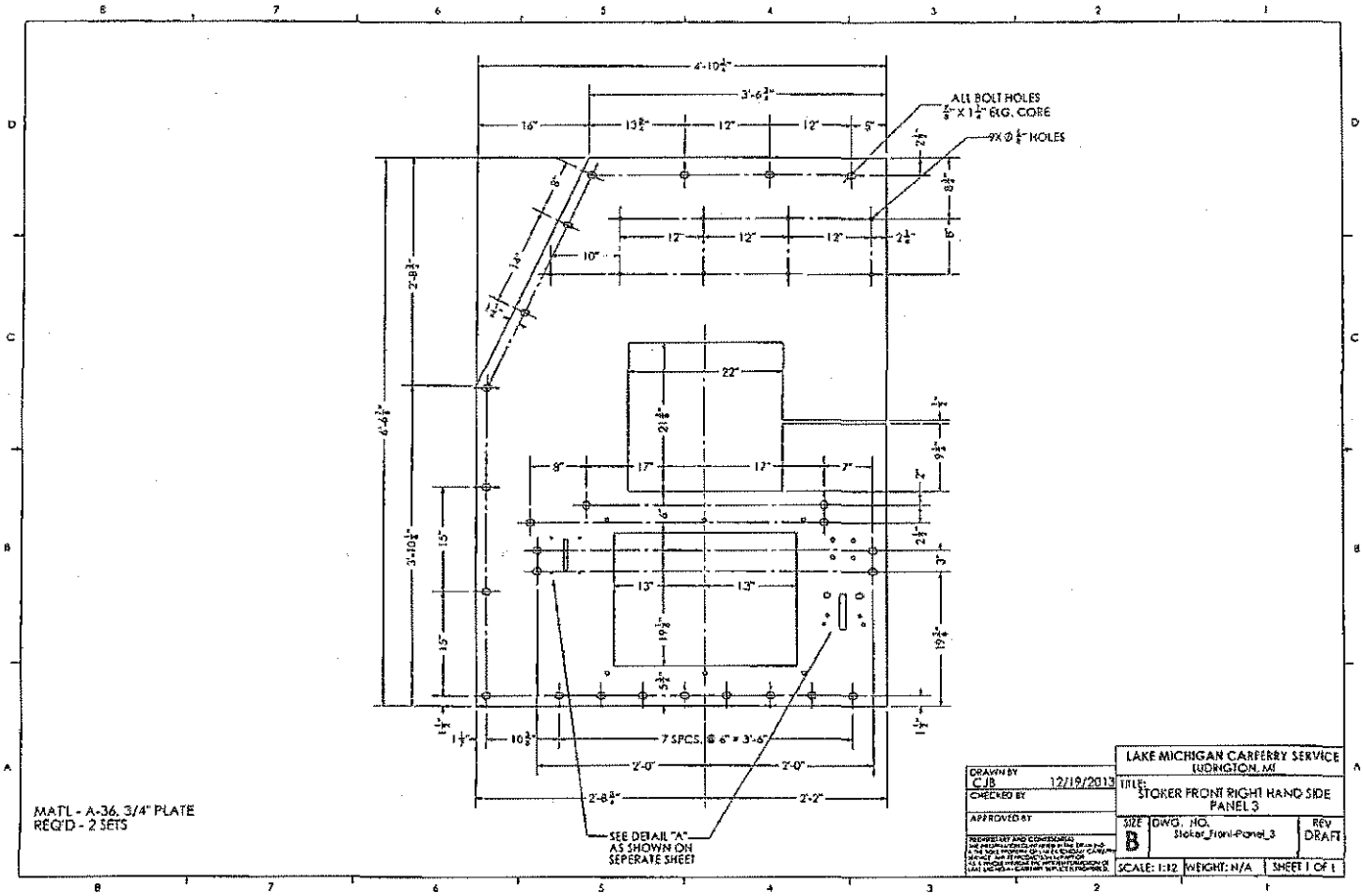

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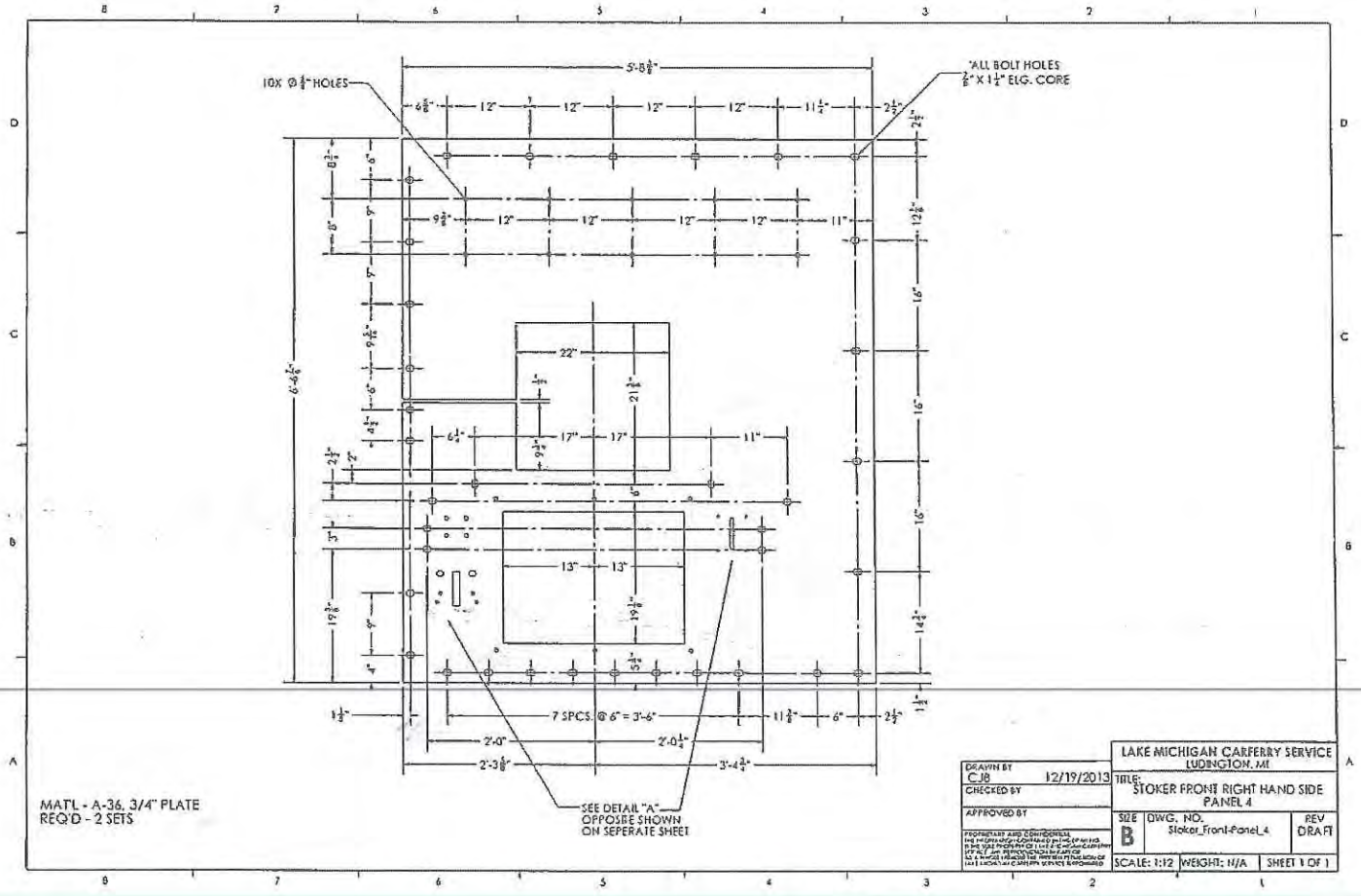

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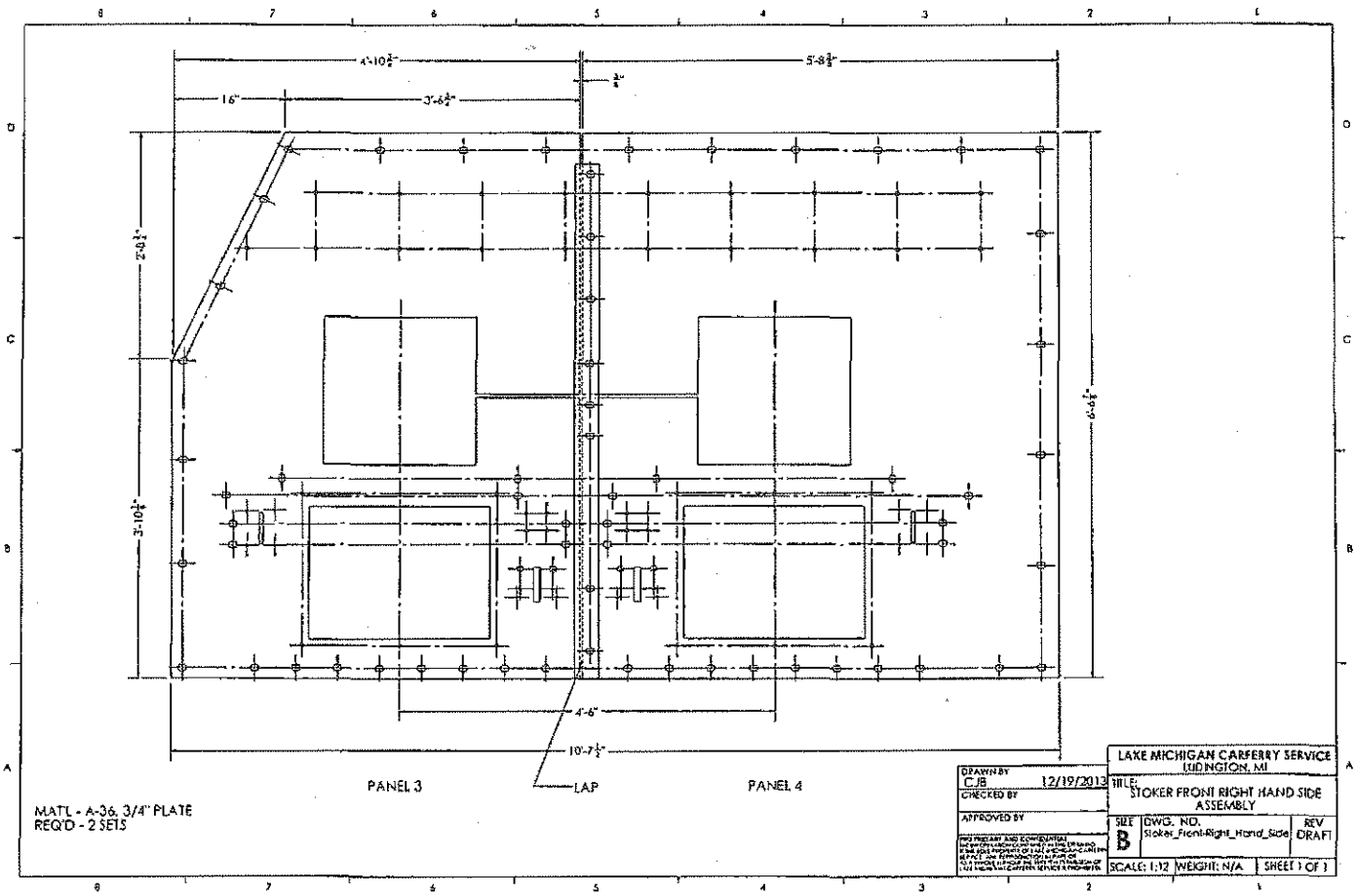

MATL - A-36, 3/4" PLATE
REQ'D - 2 SETS

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CHECKED BY:	TITLE: STOKER FRONT RIGHT HAND SIDE ASSEMBLY	
APPROVED BY:	SIZE: B	DWG. NO. Stoker_Front-Right_Hand_Side
	REV: DRAFT	
	SCALE: 1:12	WEIGHT: N/A
	SHEET 1 OF 1	

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NUCOR STEEL TUSCALOOSA, INC.

MILL TEST CERTIFICATE

1700 HOLT RD N.E.
Tuscaloosa, AL 35404-1000
800-827-8872

Load Number	Tally	Mill Order Number	PO NO | Line NO	Part Number	Certificate Number	Prepared
R045384	00000000525341	N-125271-001	CHI-8591 1		S198466-2	11/15/2013 12:19

Grade

Customer:

Order Description:
A36, 0.7500 IN x 96.000 IN x 240.000 IN
Quality Plan Description:
ABS A / A36: ASTM A36-08/ABS GR A 13/A709-36-11/ASME SA36-03

Sold TO:
CHAPEL STEEL Bourbonnais IL
Ship TO:
CHAPEL STEEL CO. INDIAN OAKS IL

Shipped Item	Heat/Slab Number	Certified By	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Cb	V	Al	Ti	N2	B	Ca	Sn	CEV
3J0992F	B3W8586-02 ***	B3W8586	0.18	0.84	0.007	0.009	0.04	0.16	0.05	0.05	0.018	0.000	0.001	0.032	0.001	0.009	0.0000	0.0034	0.006	0.34
3J0993D	B3W8586-03 ***	B3W8586	0.18	0.84	0.007	0.009	0.04	0.16	0.05	0.05	0.018	0.000	0.001	0.032	0.001	0.009	0.0000	0.0034	0.006	0.34

Shipped Item	Certified By	Heat Number	Yield ksi	Tensile ksi	Y/T %	ELONGATION % 2"	ELONGATION % 8"	Bend OK?	Hard HB	Charpy Impacts (ft-lbs) Size mm	1	2	3	Avg	Shear % 1	2	3	Avg	Test Temp
3J0992F	S3J0992FTT	B3W8586 ***	51.5	69.0	74.6	36.7													
3J0992F	S3J0992MTT	B3W8586 ***	48.5	64.5	75.2	33.3													
3J0993D	S3J0993FTT	B3W8586 ***	47.8	68.8	69.5	37.0													
3J0993D	S3J0993MTT	B3W8586 ***	49.9	65.3	76.4	34.6													

Items: 2 PCS: 8 Weight: 39205 LBS

Mercury has not come in contact with this product during the manufacturing process nor has any mercury been used by the manufacturing process. Certified in accordance with EN 10204 3.1. No weld repair has been performed on this material. Manufactured under the ABS Quality Assurance Program, Certificate number 10-MMPQA-634 We hereby certify that the information herein has been made to the applicable specifications by the EAF process and tested in accordance with the requirements of the ABS rules with satisfactory results. Manufactured to a fully killed fine grain practice. NUTEMPER TEMPER PASSED plate from coil
ISO 9001:2008 Registered, PED Certified

"***" indicates Heats melted and Manufactured in the U.S.A.

We hereby certify that the product described above passed all of the tests required by the specifications.

Dr. Quilin Yu - Metallurgist

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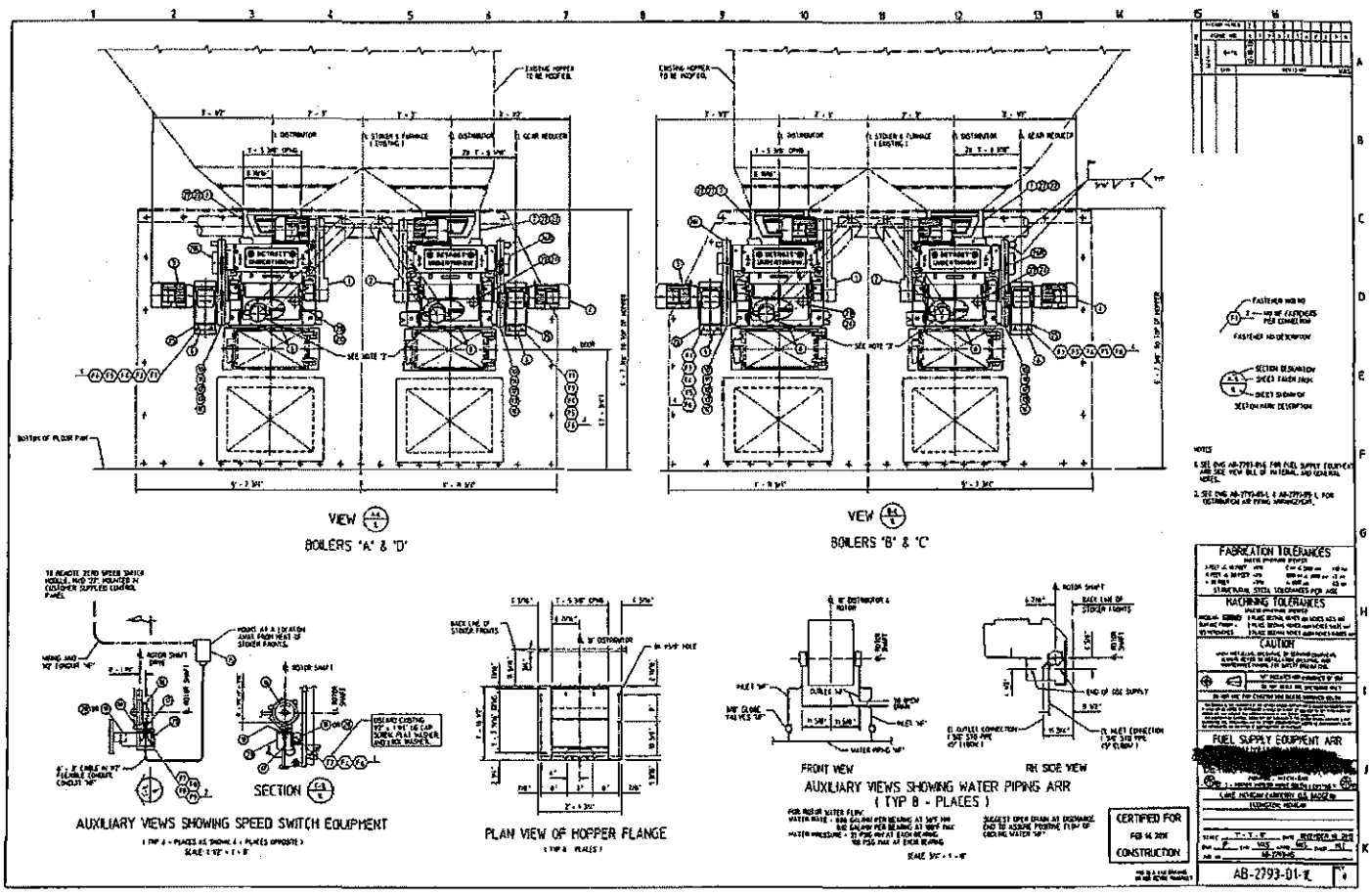
Contains Confidential Business Information



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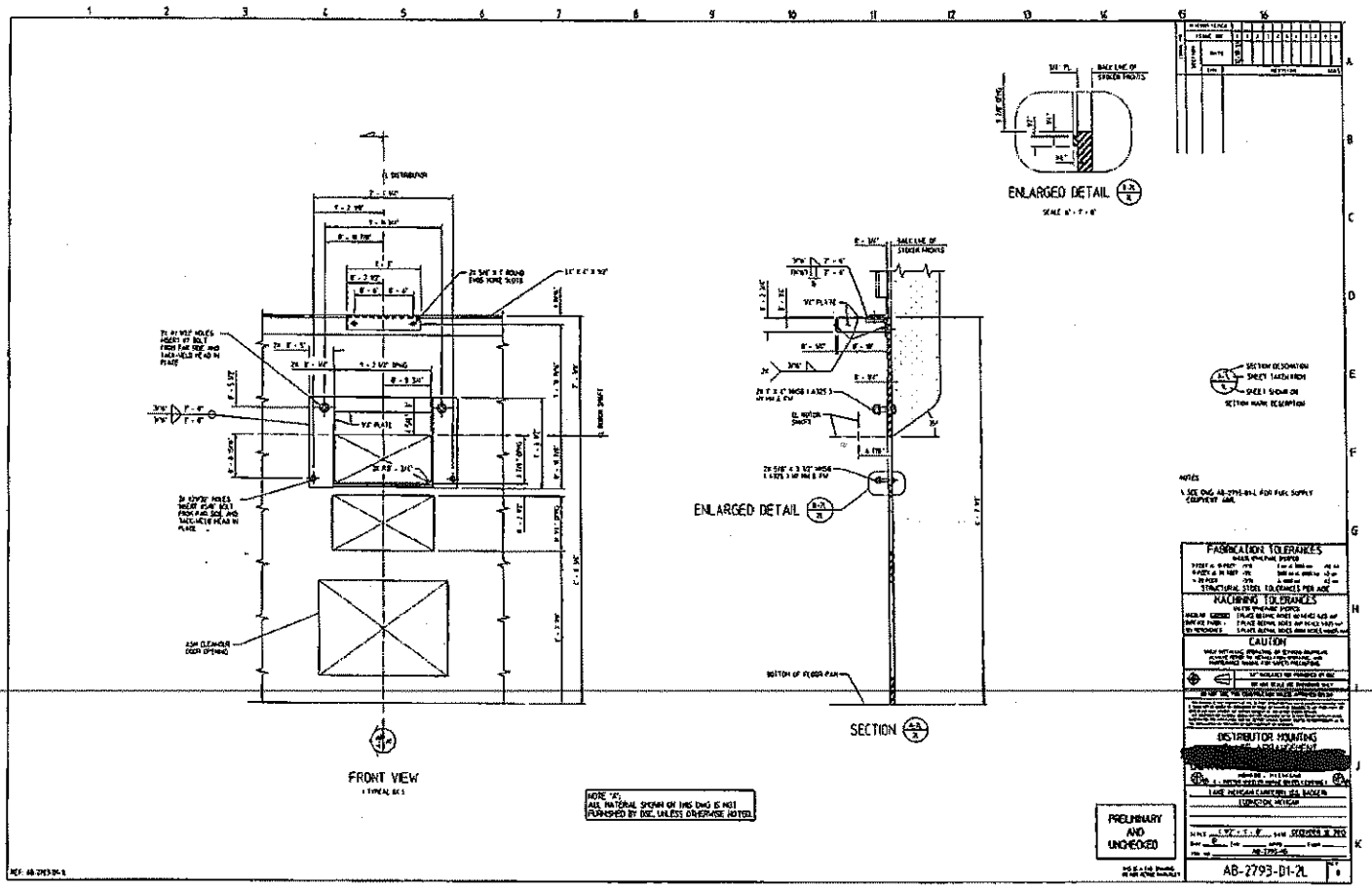
CONTAINS CONFIDENTIAL BUSINESS INFORMATION



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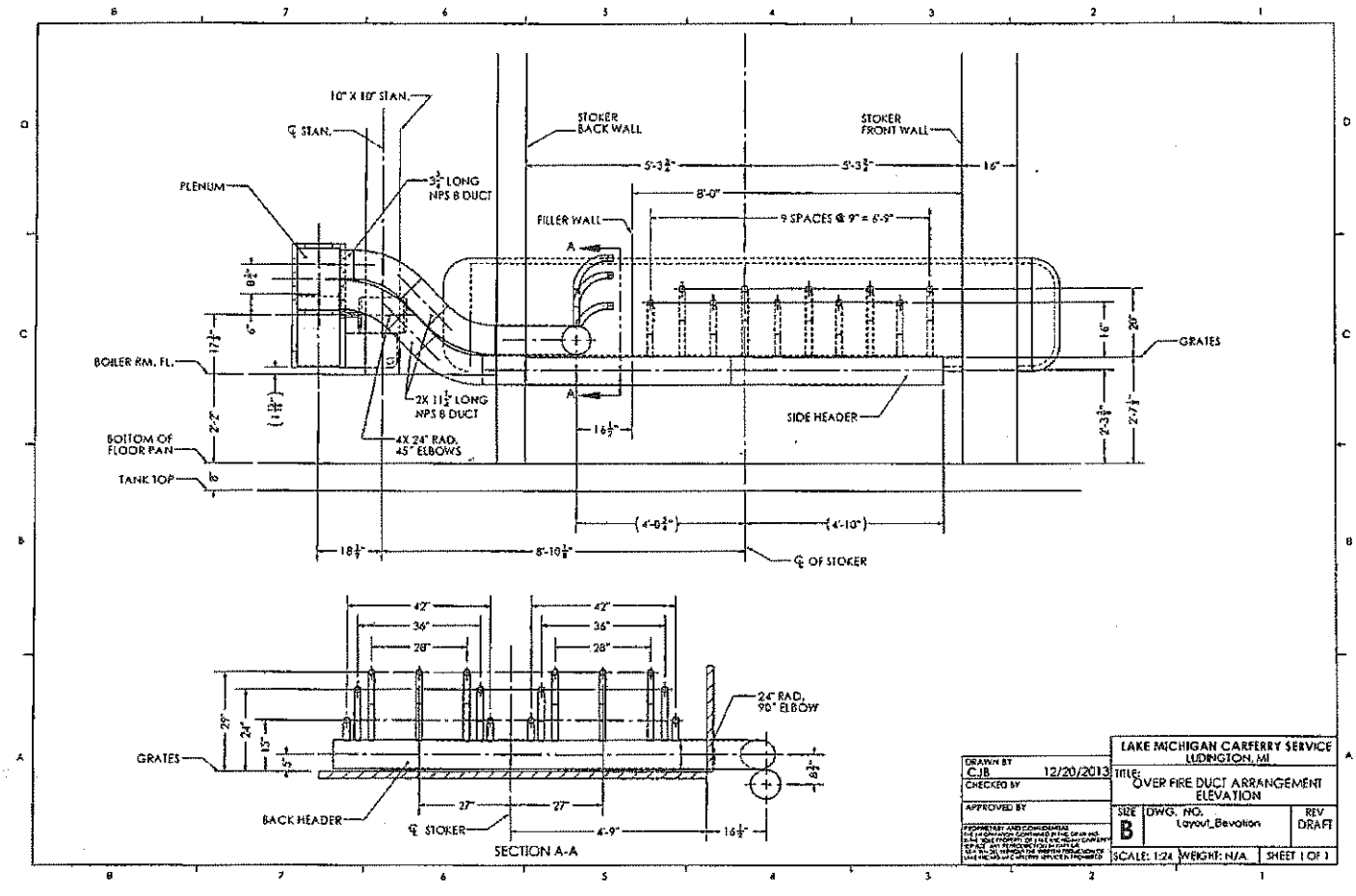

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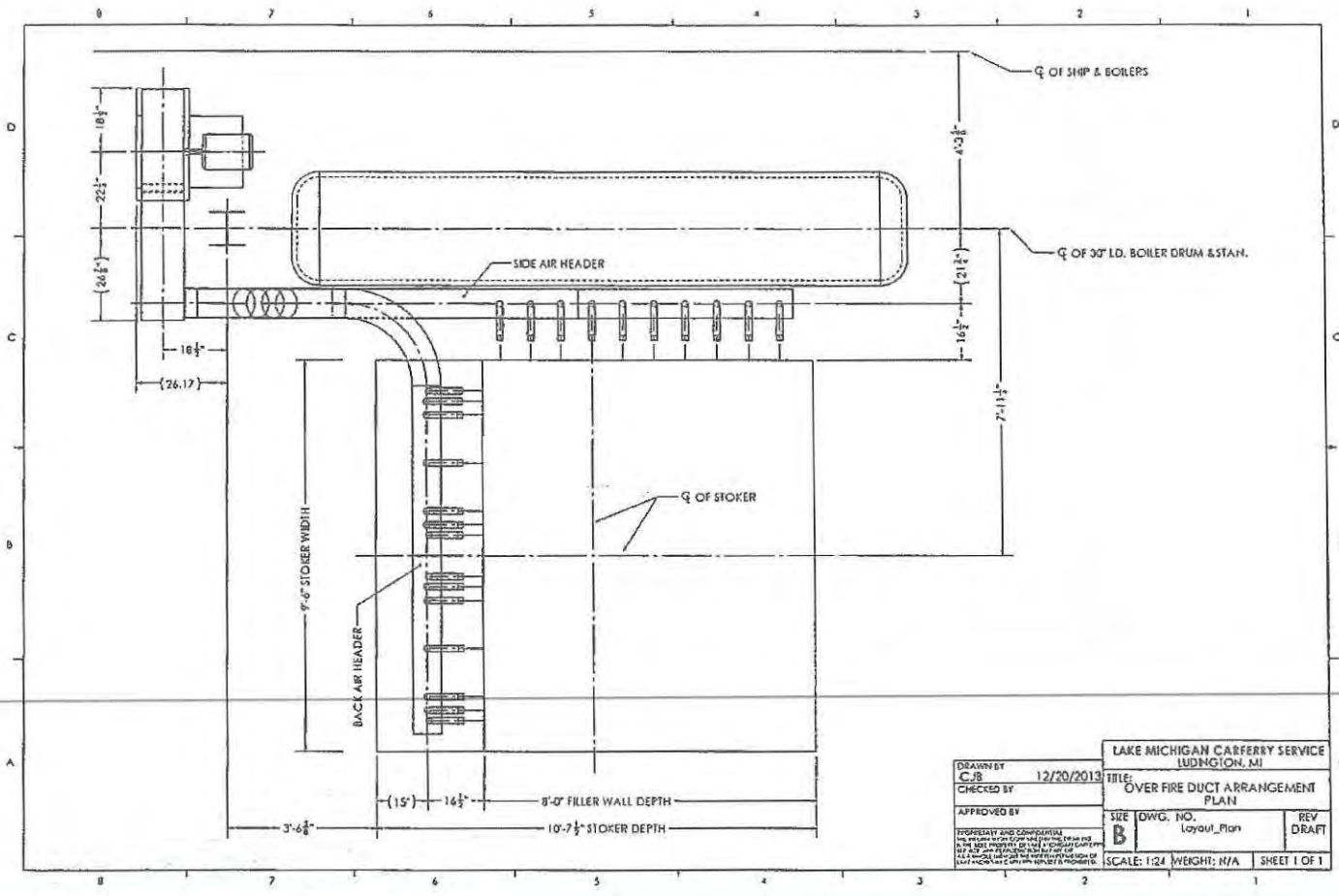

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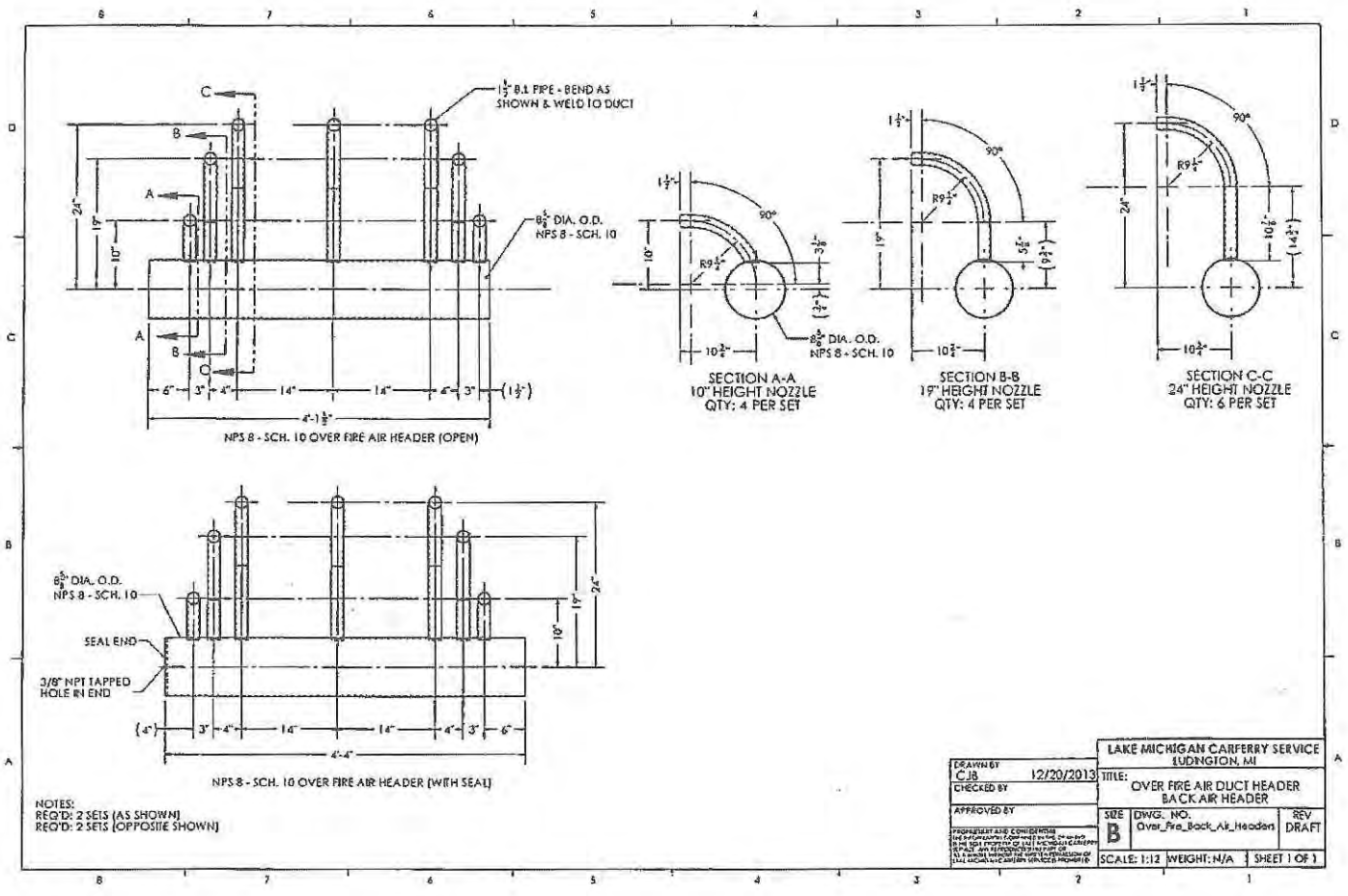

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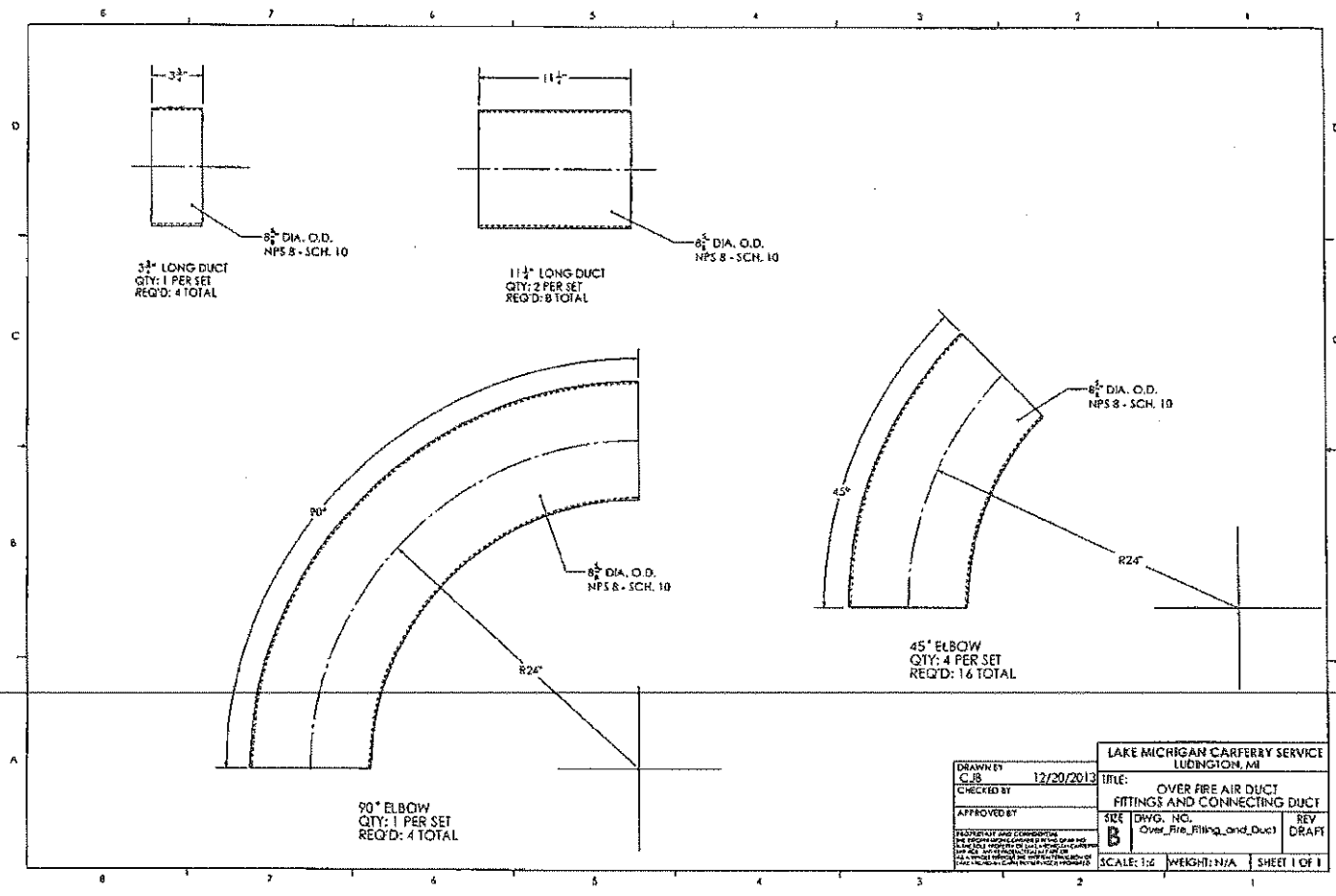

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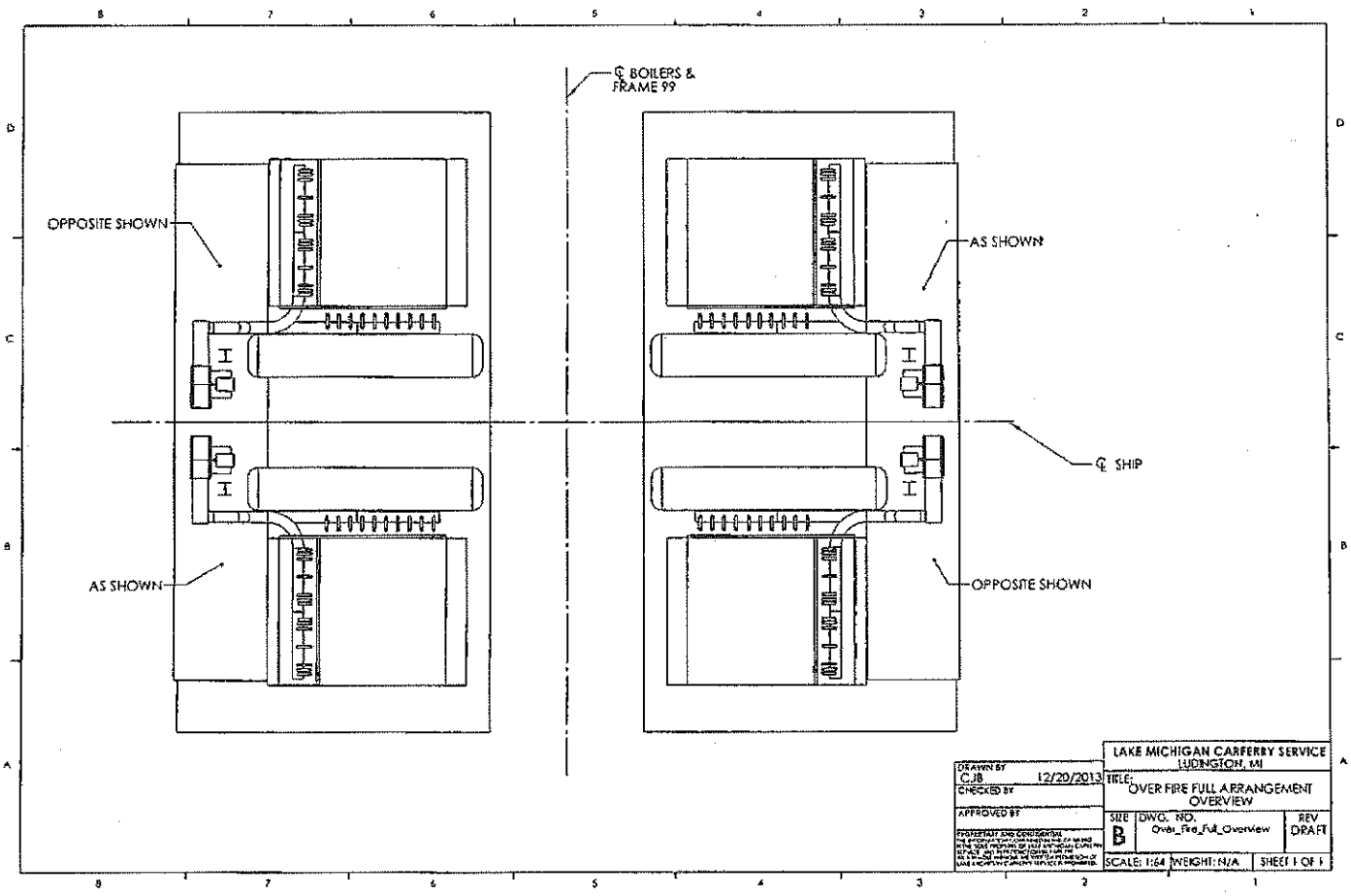

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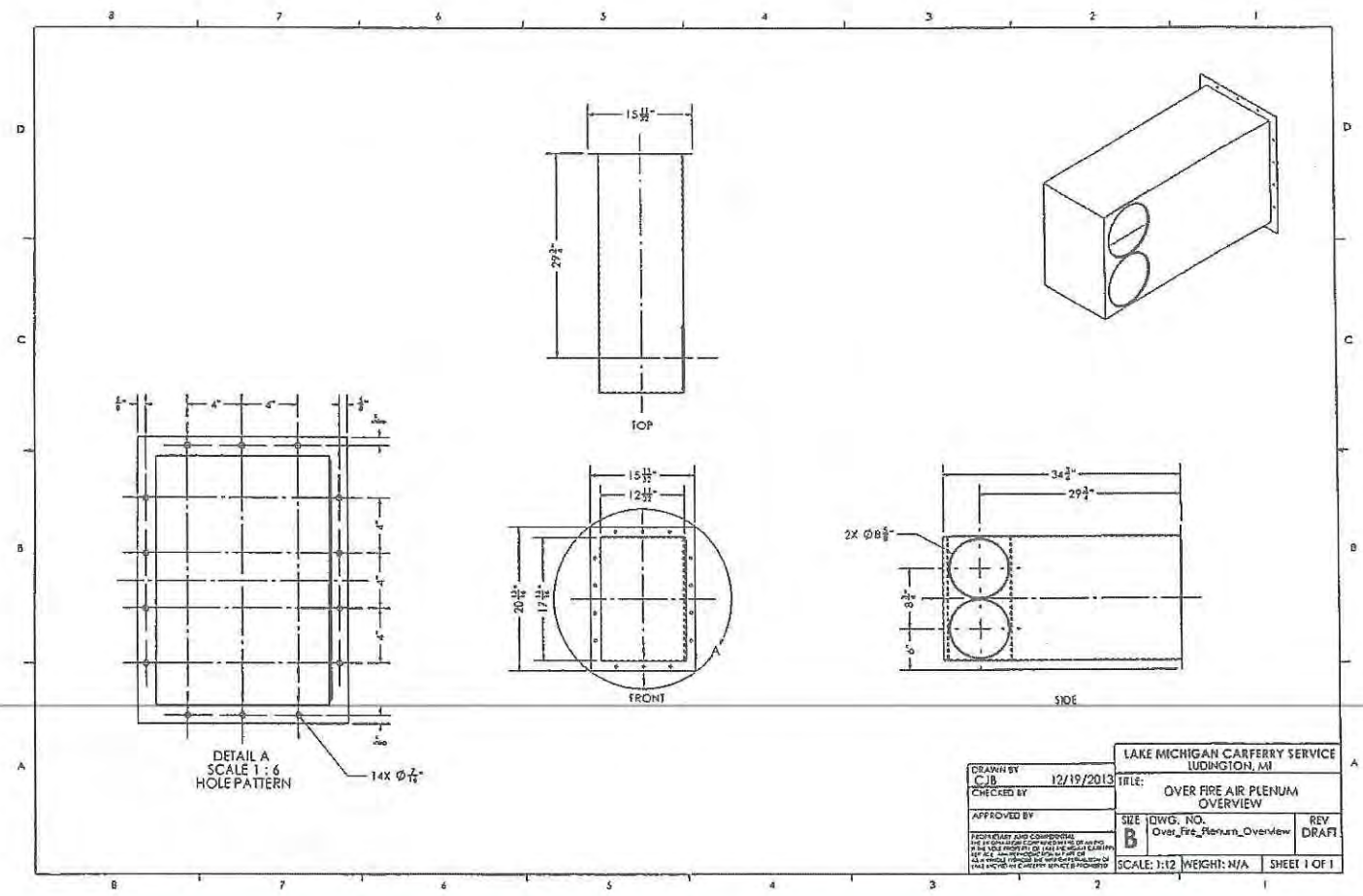

DRAWN BY: CJB 12/19/2013	LAKE MICHIGAN CARFERRY SERVICE, LUDINGTON, MI
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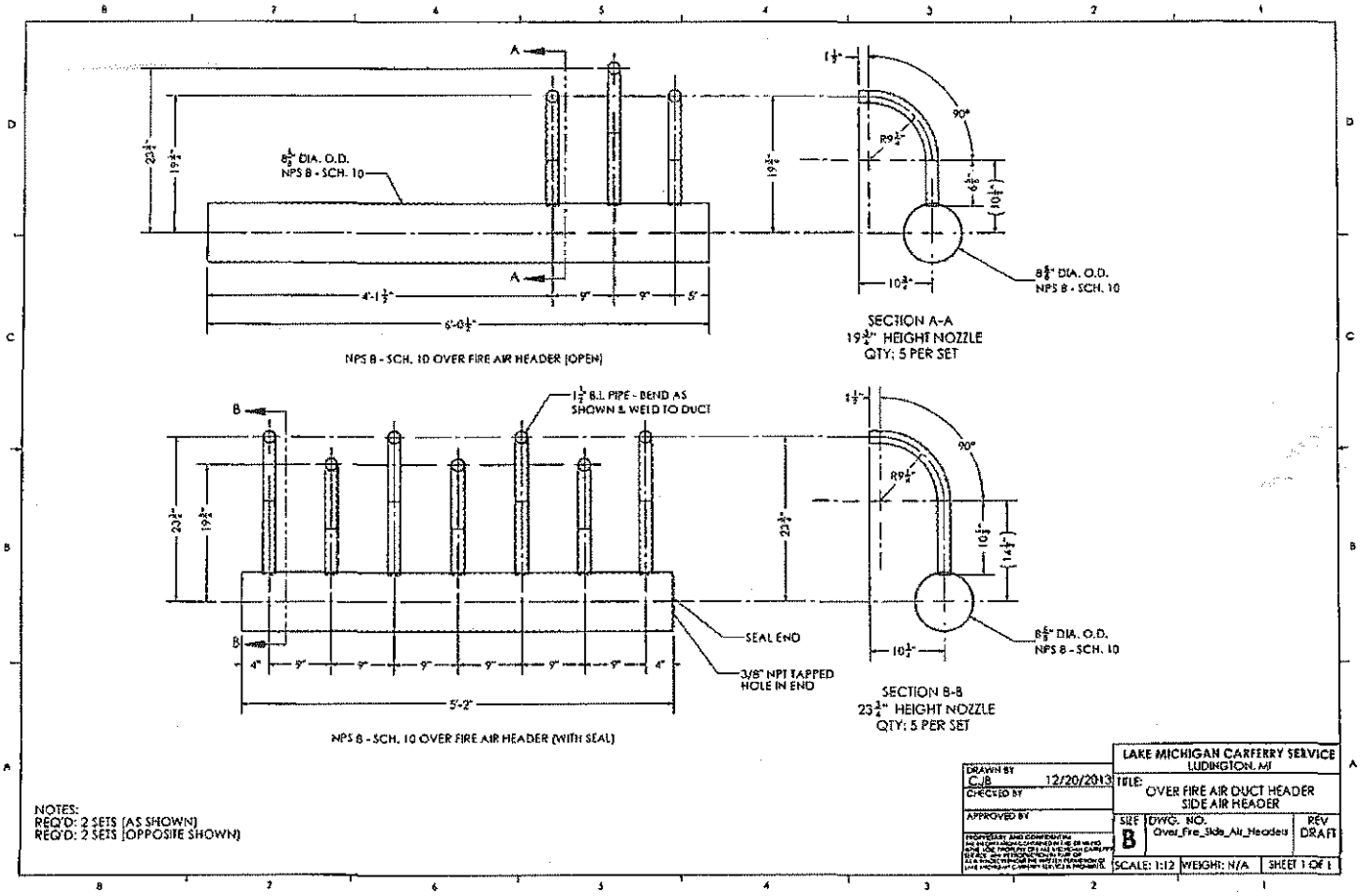
APPROVED BY	SIZE: B; DWG. NO.: Over_Fire_Plenum_Overview; REV: DRAFT
PROPRIETARY AND CONFIDENTIAL	SCALE: 1:12; WEIGHT: N/A; SHEET 1 OF 1

US EPA ARCHIVE DOCUMENT



NOTES:
REQ'D: 2 SETS (AS SHOWN)
REQ'D: 2 SETS (OPPOSITE SHOWN)

DRAWN BY: CJB 12/20/2013	LAKE MICHIGAN CARFERRY SERVICE LUDINGTON, MI
CHECKED BY:	TITLE: OVER FIRE AIR DUCT HEADER SIDE AIR HEADER
APPROVED BY:	SIZE: B; DWG. NO.: Over_Fire_Side_Air_Headers; REV: DRAFT
PROPRIETARY AND CONFIDENTIAL	SCALE: 1:12; WEIGHT: N/A; SHEET 1 OF 1