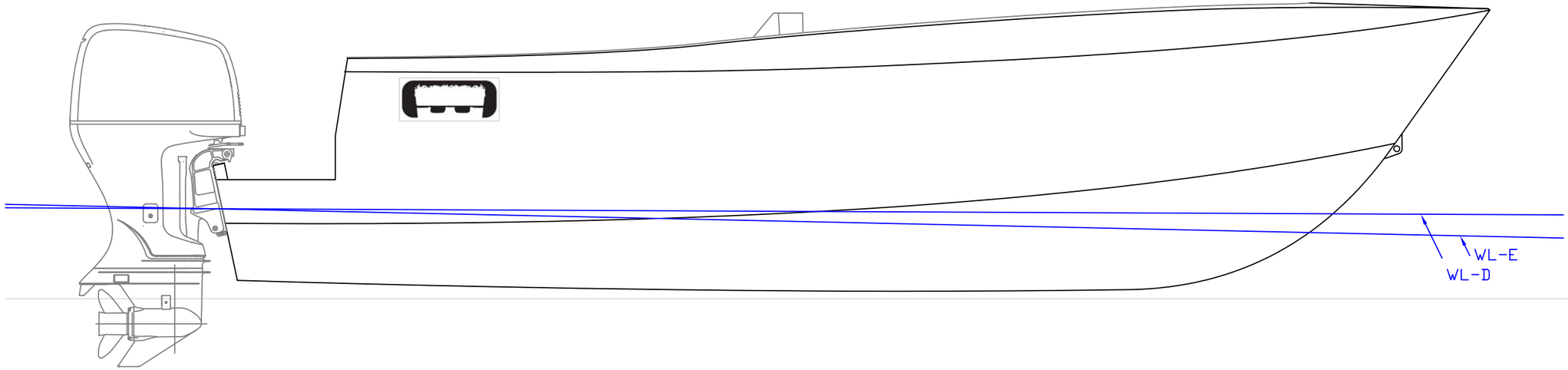
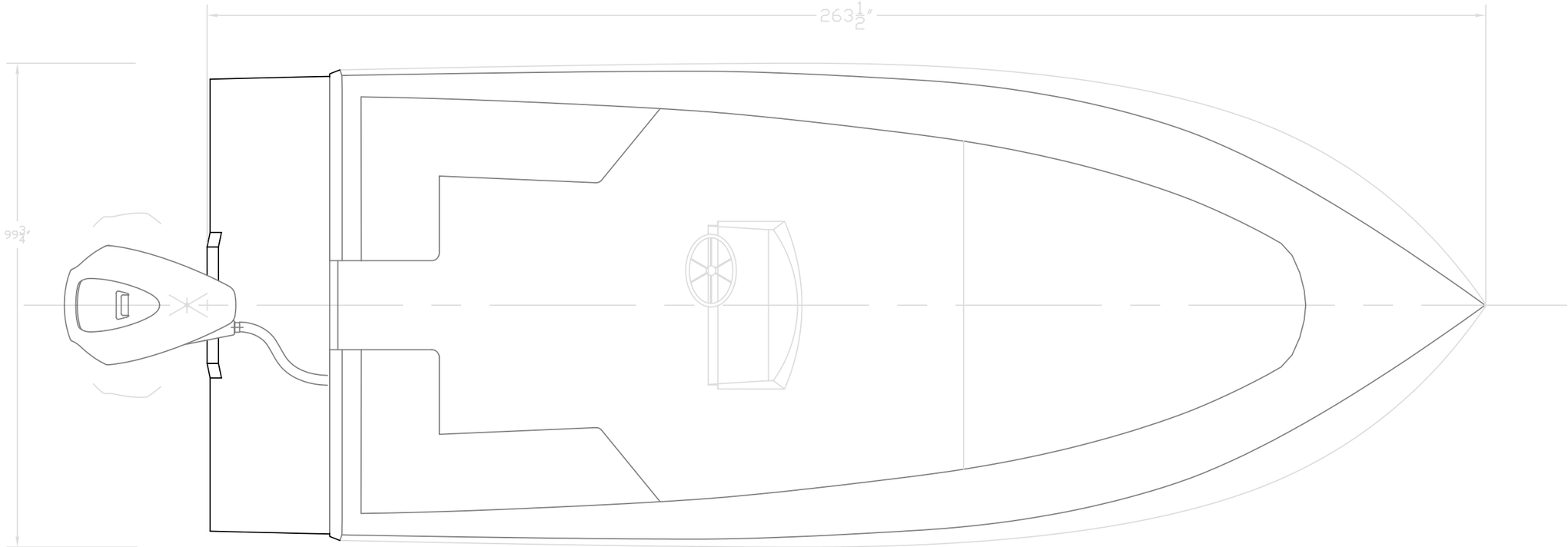
DRAWING LIST

Delivered	Design	Dwg		Description	Date	REV
Edwards, Davey	Duck Boat- 22',	Bones Boat Co				
	328-	1		Outboard Profile & Plan	6/16/09	
		2		Inboard Profile	6/16/09	3/11/10
		2-1		Keel Layout	6/5/09	
		2-2		Girder Layout	6/5/09	
		2-3		Bottom & Side Structure	6/16/09	3/11/10
		2-4		Bottom Plate Layout	6/16/09	
		2-5		Side Plate Layout	6/16/09	3/11/10
		2-6		Bulwark & Side Deck Layout	6/16/09	
		2-7		Transom & False Transom	6/16/09	
		2-8		Shelf/Bench Layout	6/14/09	3/11/10
		2-9		Cockpit Deck Layout	6/5/09	3/11/10
		2-10		Fwd Cockpit Deck Layout	6/5/09	3/11/10
		2-11		Engine Deck Layout	6/5/09	
		2-12		Deck Beams	6/16/09	
		3-1		Fuel Tank, 100 Gal	6/14/09	3/11/10
		4-1		Console Layout	6/14/09	
		B-1		Flange Bending	6/5/09	
		F-R		Frame Dimensions	6/14/09	
		F-1		Frame 1	6/14/09	
		F-2		Frame 2	6/14/09	
		F-3		Frame 3	6/14/09	3/11/10
		F-31		Intermediate Frames	6/14/09	
		F-4		Frame 4	6/14/09	
		F-5		Frame 5	6/14/09	
			Sheet-	Frame Locations & Keel Points	6/16/09	
			Sheet-	Plaz Parts List w/ Bend notes	6/16/09	





WL–D; 250 Suzuki, 100 gal fuel, 1000# crew, 490# gear
WL–E; 250 Suzuki, 50 gal fuel, 730# crew, 50# gear

BONES BOAT company

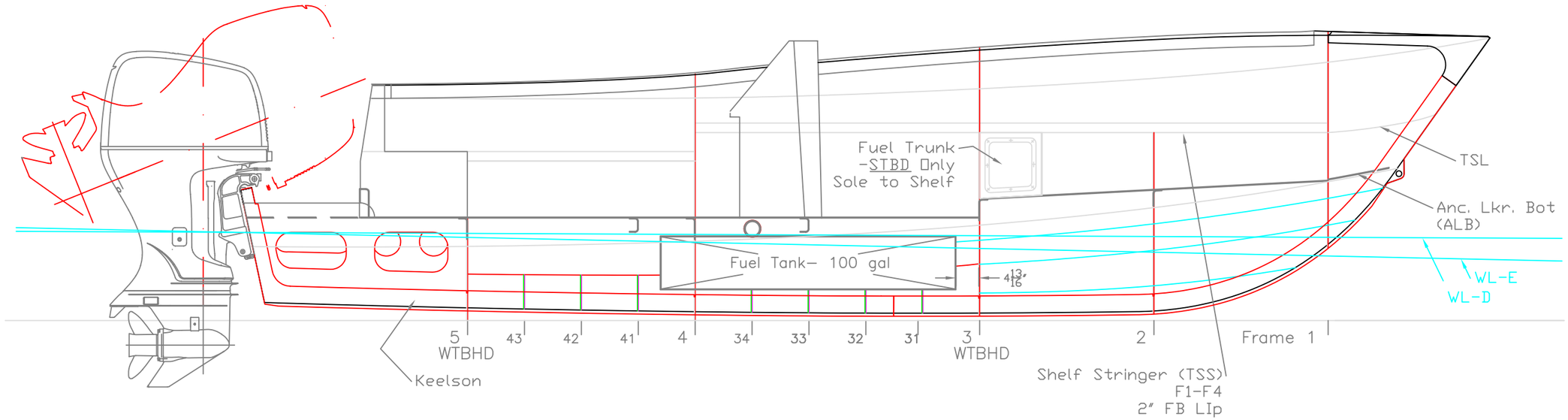
OUTB'D PROFILE & PLAN
BONES BOAT CO. 22'

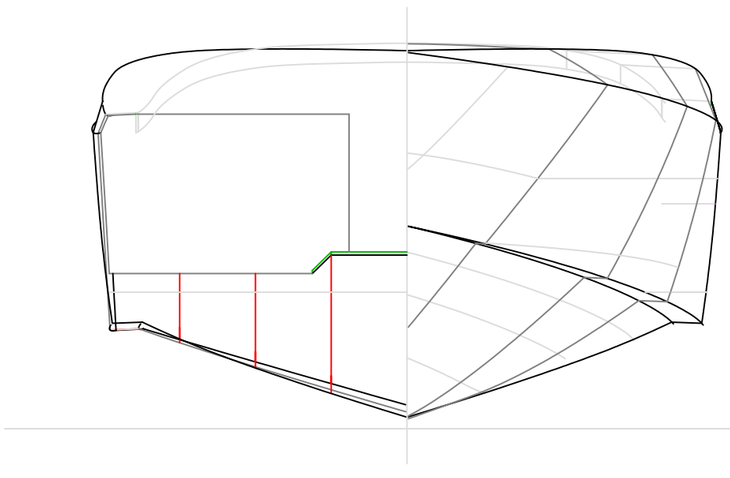
SCALE	DES/DWN	DATE
1/2" = 1'	WAL	6/16/09

SHEET

DWG NO. 328–01

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com





Body Plan— Frames

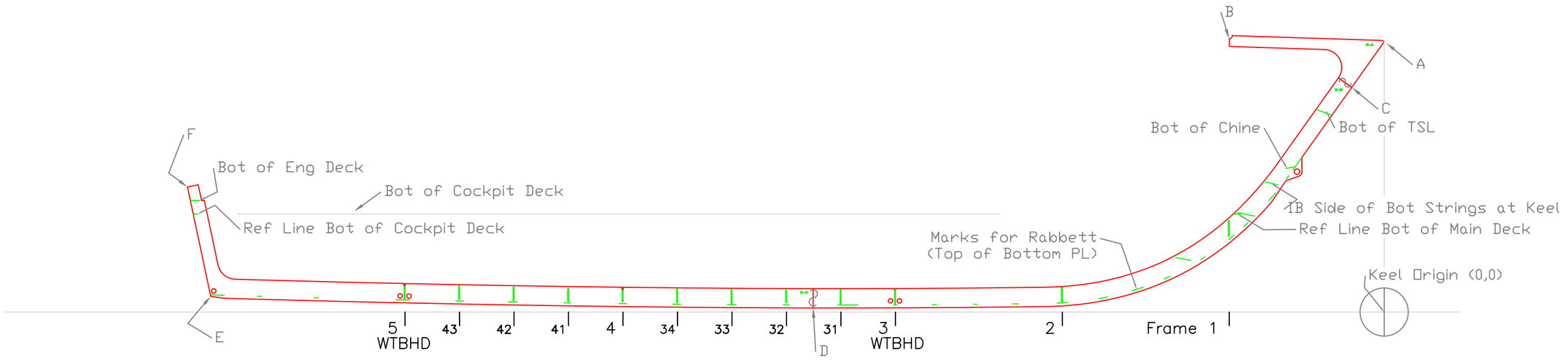
BONES BOAT company

INB'D PROFILE

BONES BOAT CO. 22'

SCALE	DES/DWN	DATE
1/2" = 1'	WAL	6/16/09
		REV 3/11/10
		DWG NO. 328-2

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com



Response Marine, Inc.
Bones 22 6/5/09
Keel Points

	Inches- sixteenths				Feet	
	Horizontal	Vertical			Horizontal	Vertical
A to Origin						
B to Origin						
C to Origin						
D to Origin						
E to Origin						
F to Origin						

	Millimeters	
	Horizontal	Vertical
A to Origin		
B to Origin		
C to Origin		
D to Origin		
E to Origin		
F to Origin		

ALIGNED (INCHES)

	A	B	C	D	E	F
A to						
B to						
C to						
D to						
E to						
F to						

ALIGNED (mm)

	A	B	C	D	E	F
A to		866	313	3524	6716	6743
B to						
C to						
D to						
E to						
F to						

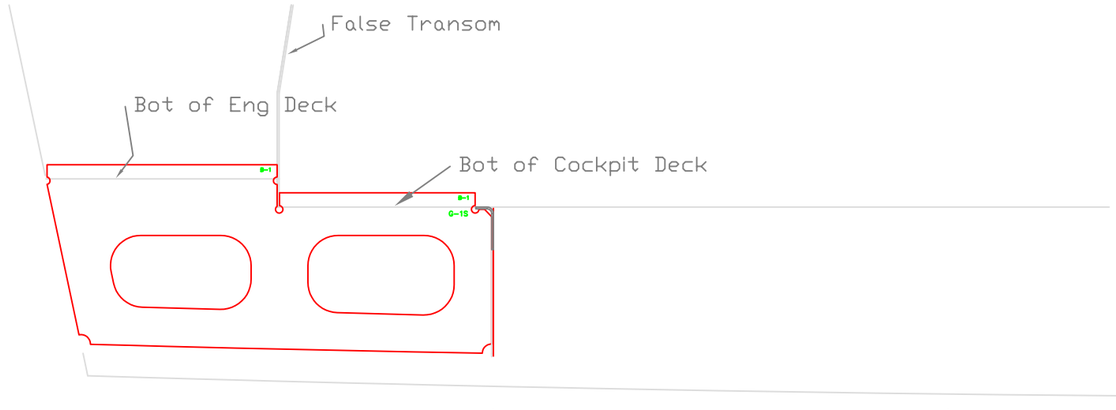
KEEL LAYOUT
BONES 22'

SCALE	DES/DWN	DATE
1/2" = 1'	WAL	6/5/09

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

SHEET
DWG NO. 328-2-1

Girder #1
Tran to F5

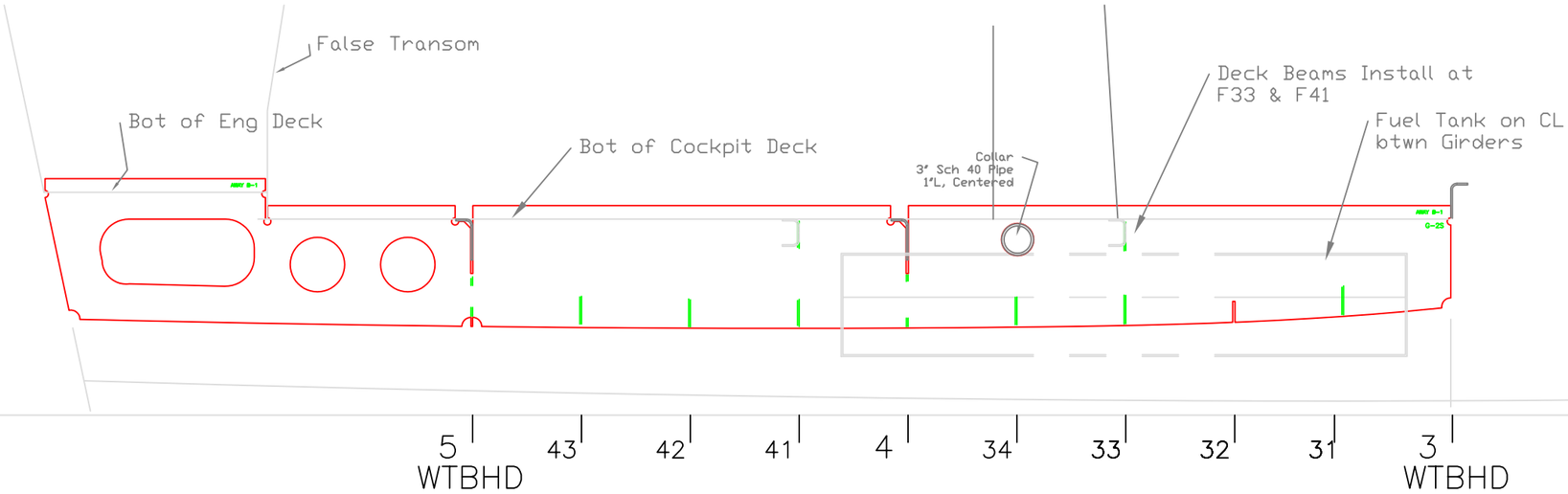


Notes all Girders:
1) Parts are shown before bending.
2) Bend Flange, B-1. Install Flanges Outboard
3) Top of Flanges mate w/ Bot of Cockpit & Engine Decks

5 WTBHD

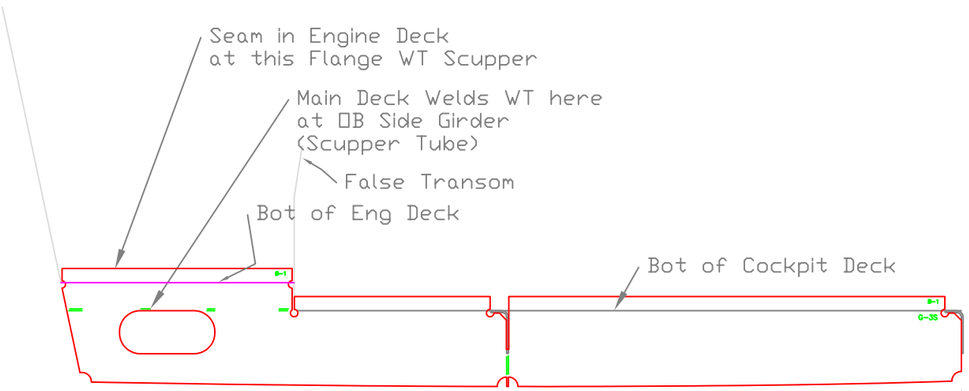
4

Girder #2
Tran to F3
(Marks Inbd)



5 WTBHD | 43 | 42 | 41 | 4 | 34 | 33 | 32 | 31 | 3 WTBHD

Girder #3
Tran to F4
(Marks Outbd)



5 | 43 | 42 | 41 | 4

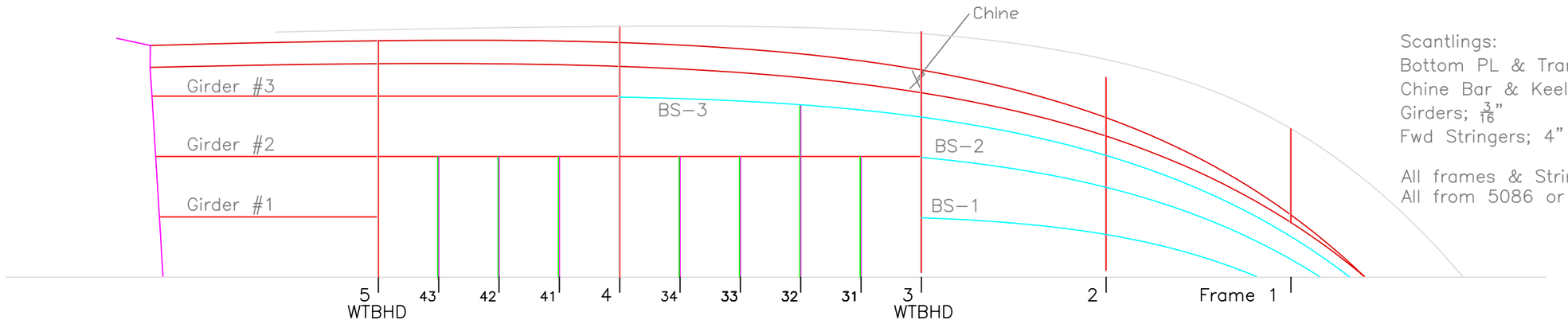
GIRDER LAYOUT
BONES 22'

SCALE	DES/DWN	DATE
3/4" = 1'	WAL	6/5/09

SHEET

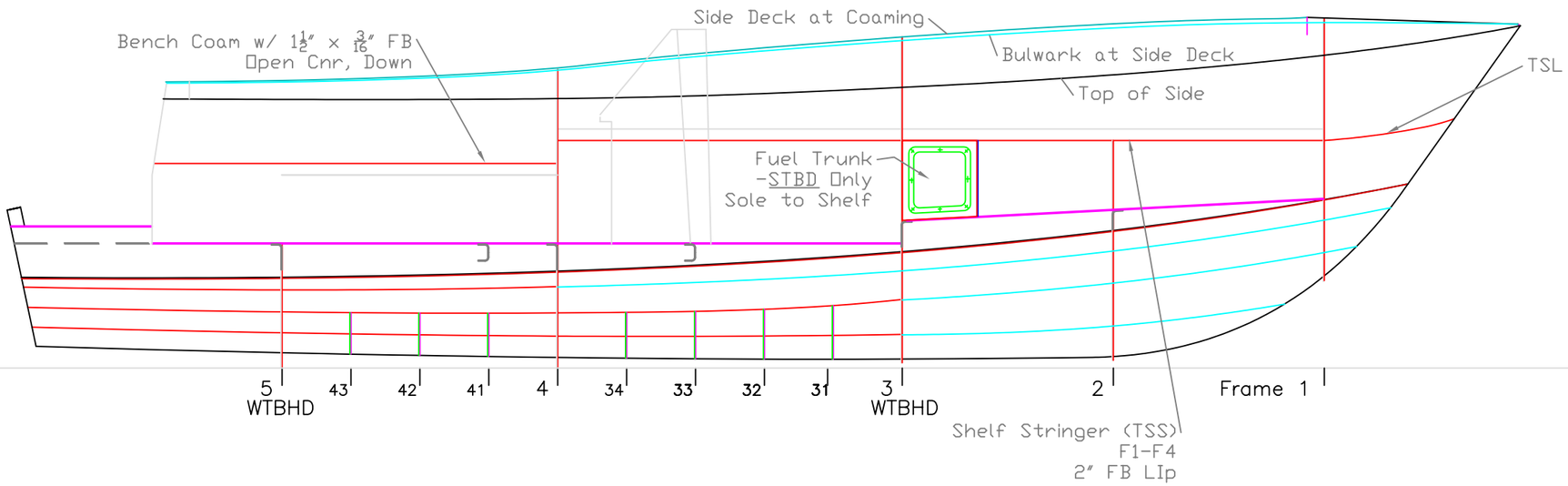
Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

DWG NO. 328-2-2



Scantlings:
Bottom PL & Transom; $\frac{1}{4}$"
Chine Bar & Keelson; $\frac{3}{8}$"
Girders; $\frac{3}{16}$"
Fwd Stringers; 4" x $\frac{1}{4}$" NC Cut

All frames & Stringers interlock.
All from 5086 or 5083 marine alloy.

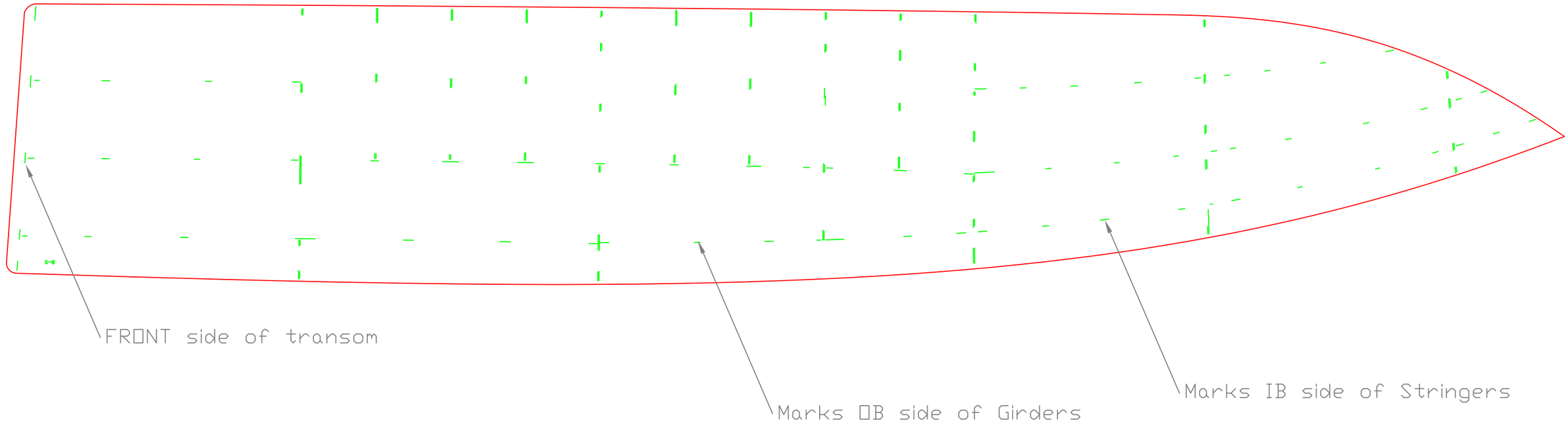


BOT. & SIDE STRUCTURE
BONES 22'

SCALE	DES/DWN	DATE
1/2" = 1'	WAL	6/16/09
		REV 3/11/10

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

DWG NO. 328-2-3



BOTTOM PLATE LAYOUT

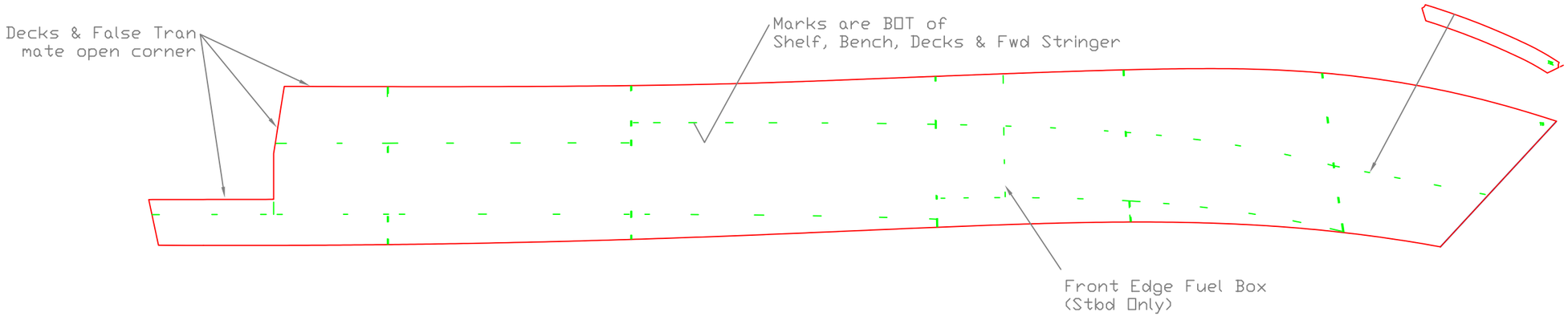
BONES 22'

SCALE	DES/DWN	DATE
3/4" = 1'	WAL	6/16/09

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

SHEET

DWG NO. 328-2-4

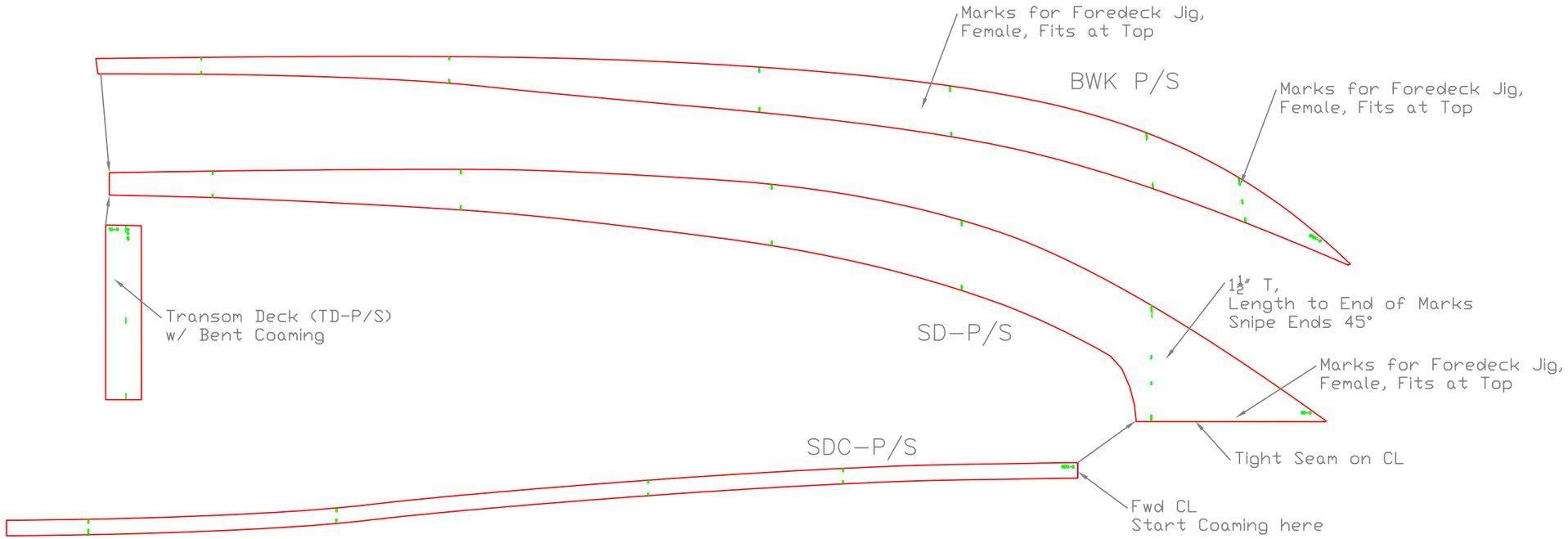


SIDE PLATE LAYOUT
BONES 22'

SCALE	DES/DWN	DATE
1/2"=1'	WAL	6/16/09
		REV 3/11/10

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

DWG NO. 328-2-5



BWK & SIDE DECK L.O.

BONES 22'

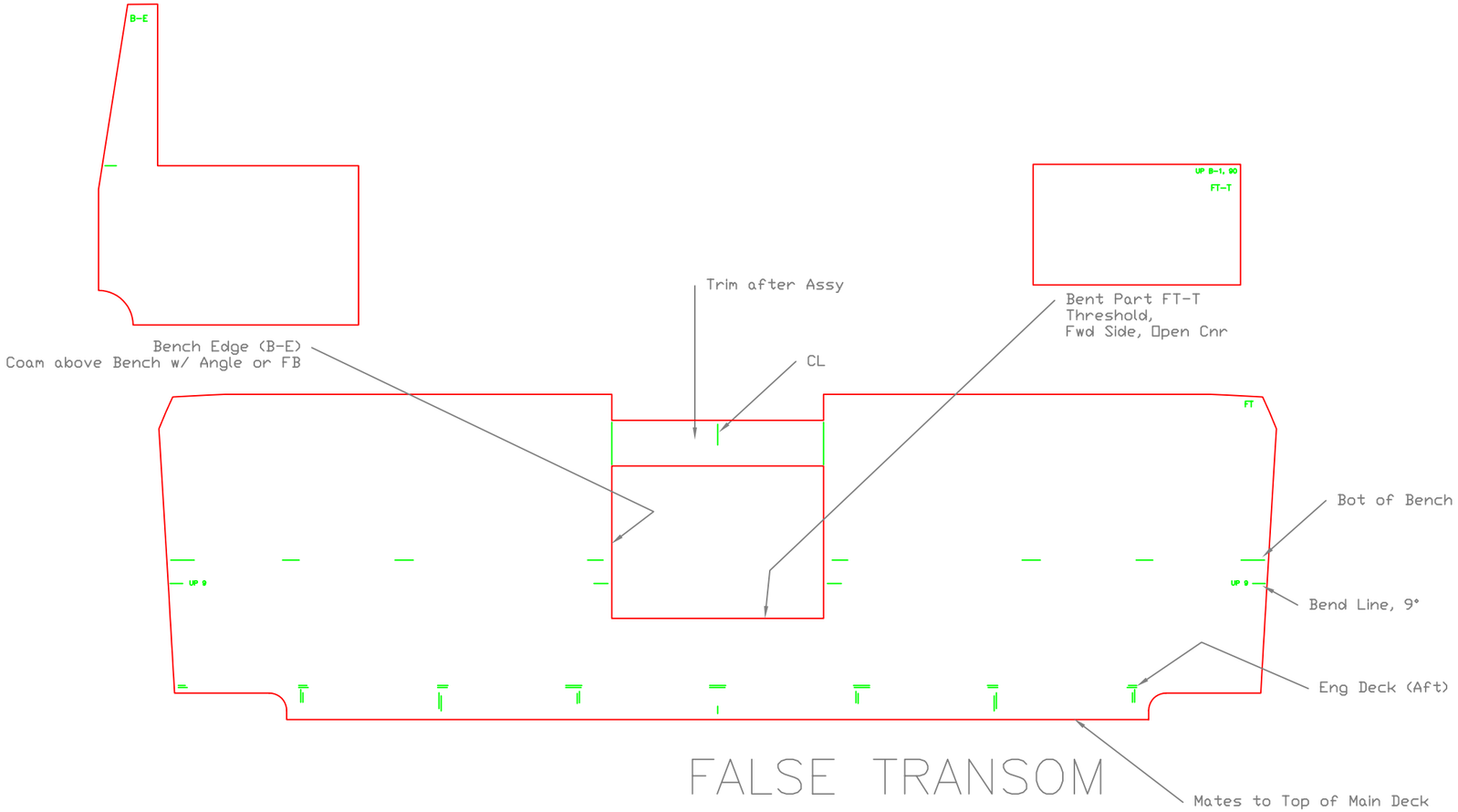
SCALE	DES/DWN	DATE
1/2"=1'	WAL	6/16/09

Response Marine, Inc.

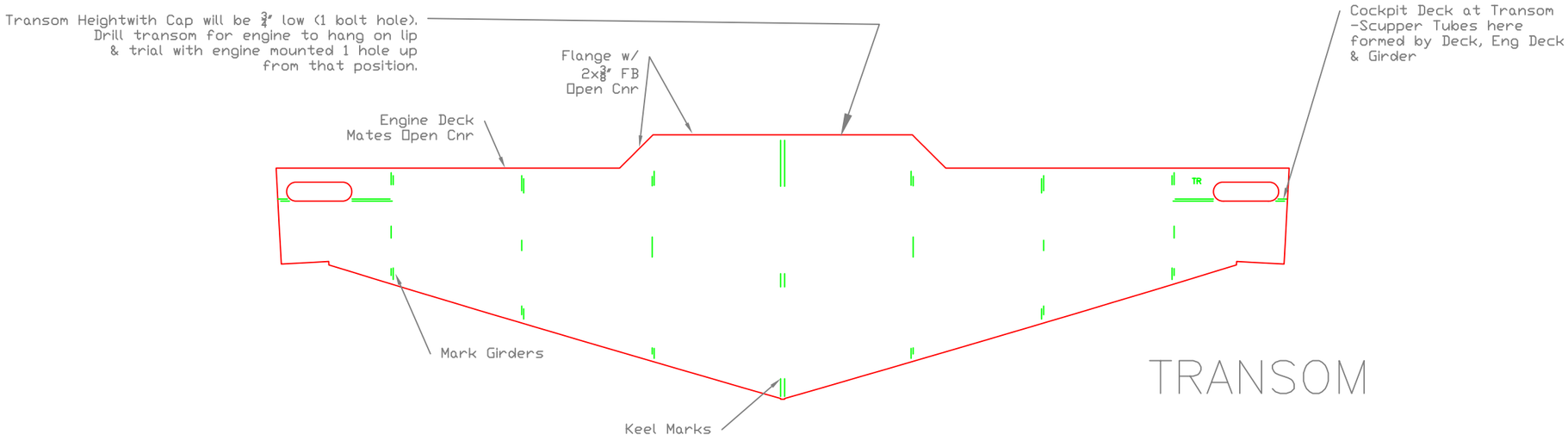
Newburyport, MA, www.responsemarine.com

SHEET

DWG NO. 328-2-6

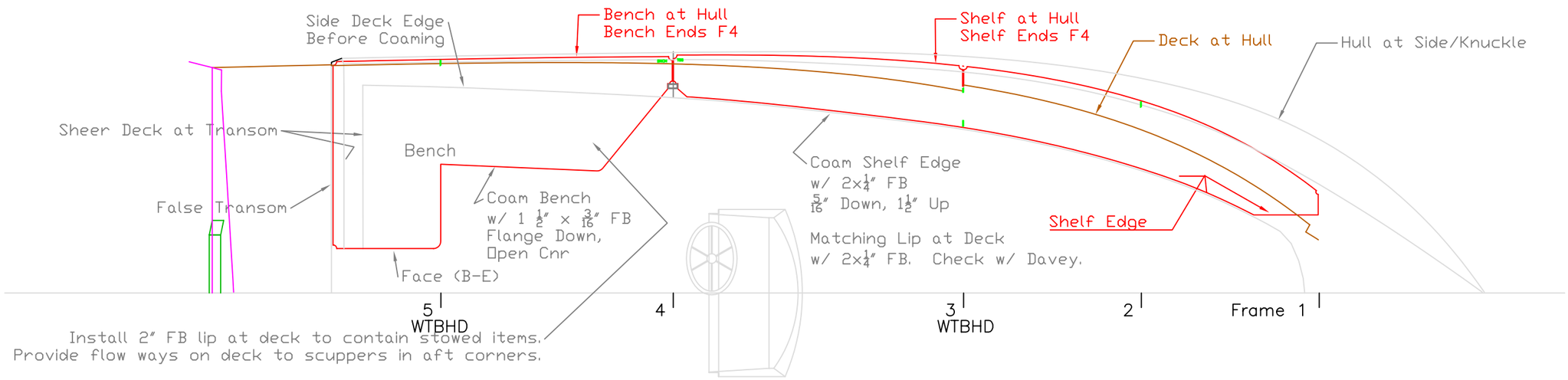


FALSE TRANSOM

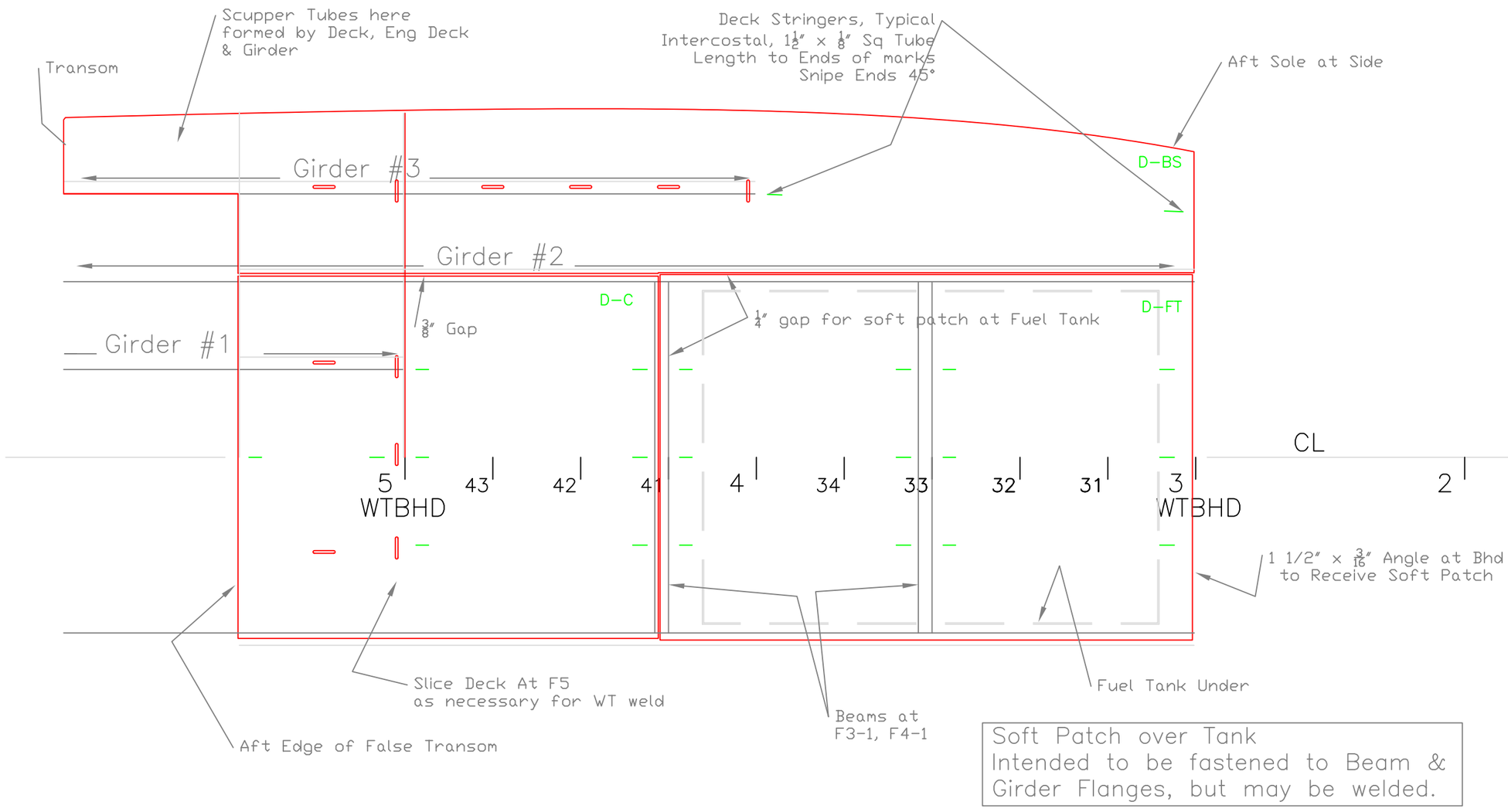


TRANSOM

TRANSOM & FALSE TRAN. BONES 22'		
SCALE 1"=1'	DES/DWN WAL	DATE 6/16/09
Response Marine, Inc. Newburyport, MA, www.responsemarine.com		SHEET
		DWG NO. 328-2-7



SHELF/BENCH LAYOUT		
BONES 22'		
SCALE 1/2" = 1'	DES/DWN WAL	DATE 6/14/09
Response Marine, Inc.		REV 3/11/10
Newburyport, MA, www.responsemarine.com		DWG NO. 328-2-8



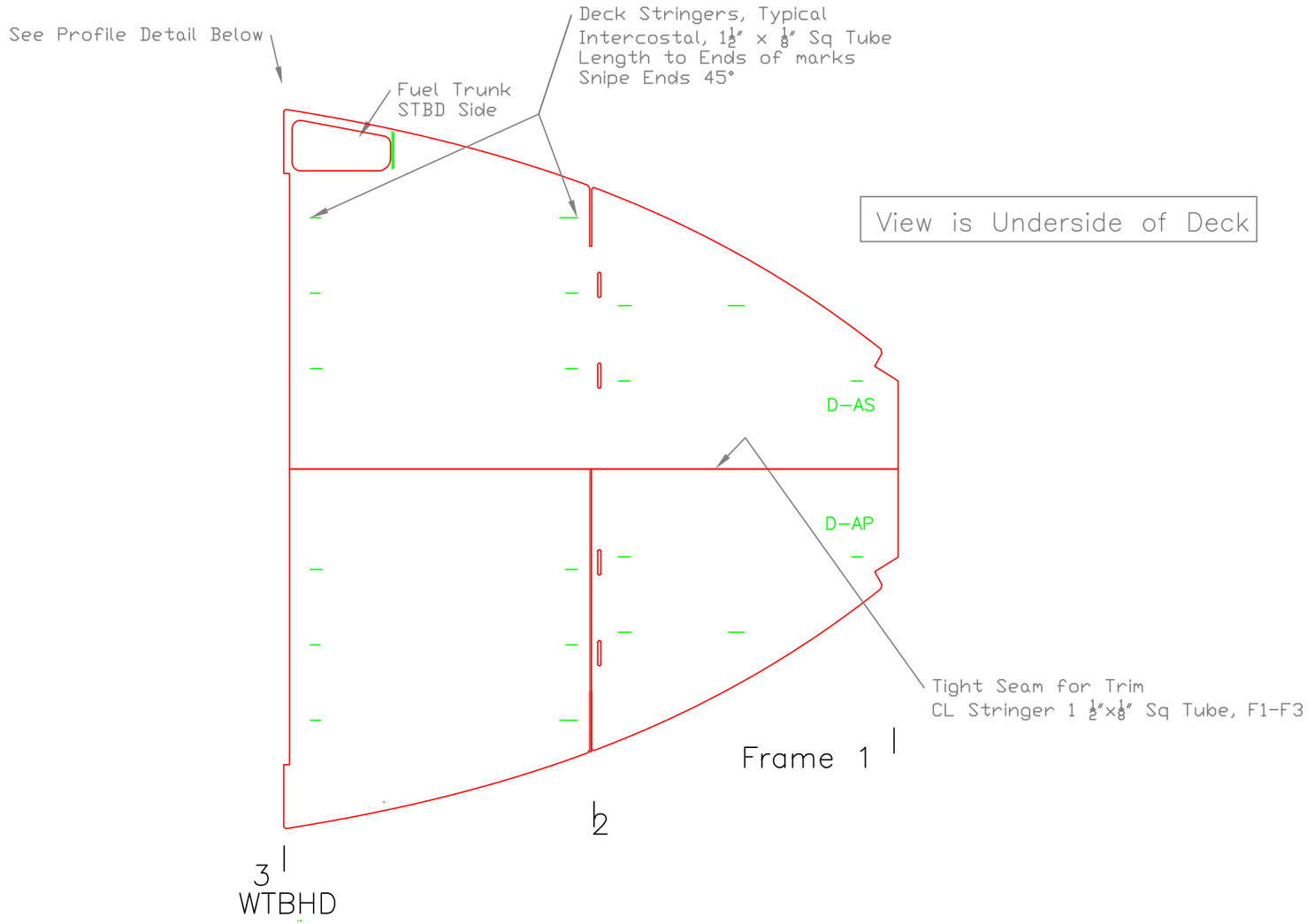
Soft Patch over Tank
Intended to be fastened to Beam & Girder Flanges, but may be welded.

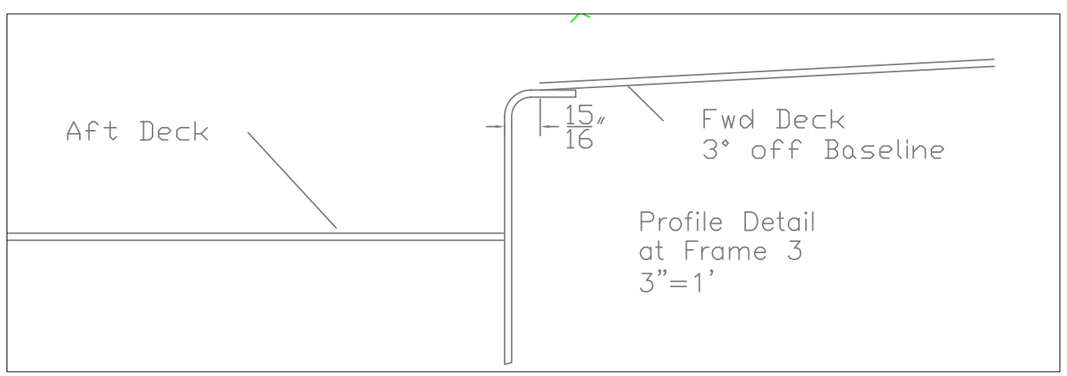
COCKPIT DECK LAYOUT
BONES 22'

SCALE	DES/DWN	DATE
3/4" = 1'	WAL	6/5/09
		REV 3/11/10

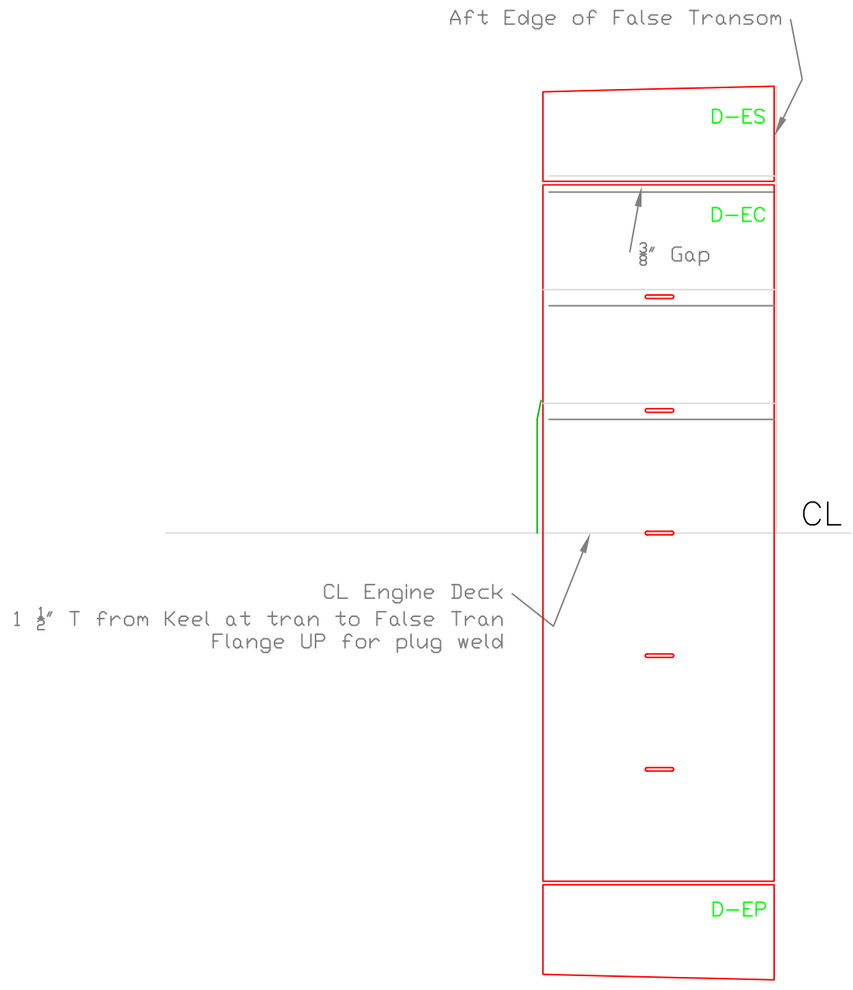
Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

DWG NO. 328-2-9





FWD CPIT DECK LAYOUT		
BONES 22'		
SCALE 3/4" = 1'	DES/DWN WAL	DATE 6/5/09
Response Marine, Inc.		REV 3/11/10
Newburyport, MA, www.responsemarine.com		DWG NO. 328-2-10



ENGINE DECK LAYOUT

BONES 22'

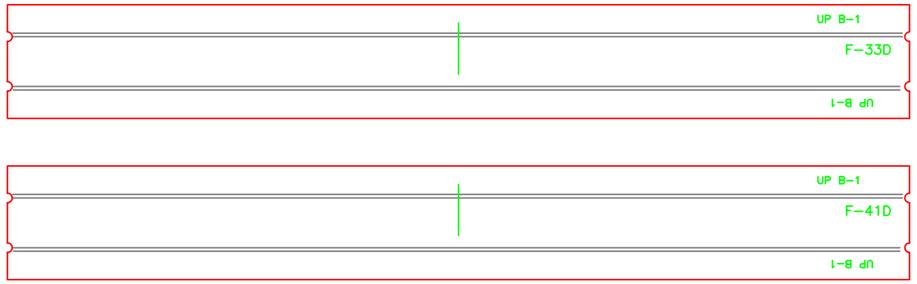
SCALE	DES/DWN	DATE
3/4" = 1'	WAL	6/5/09

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

SHEET

DWG NO. 328-2-11

Frames install at Intermediate Frames F-33 & F-41
Install between Girders



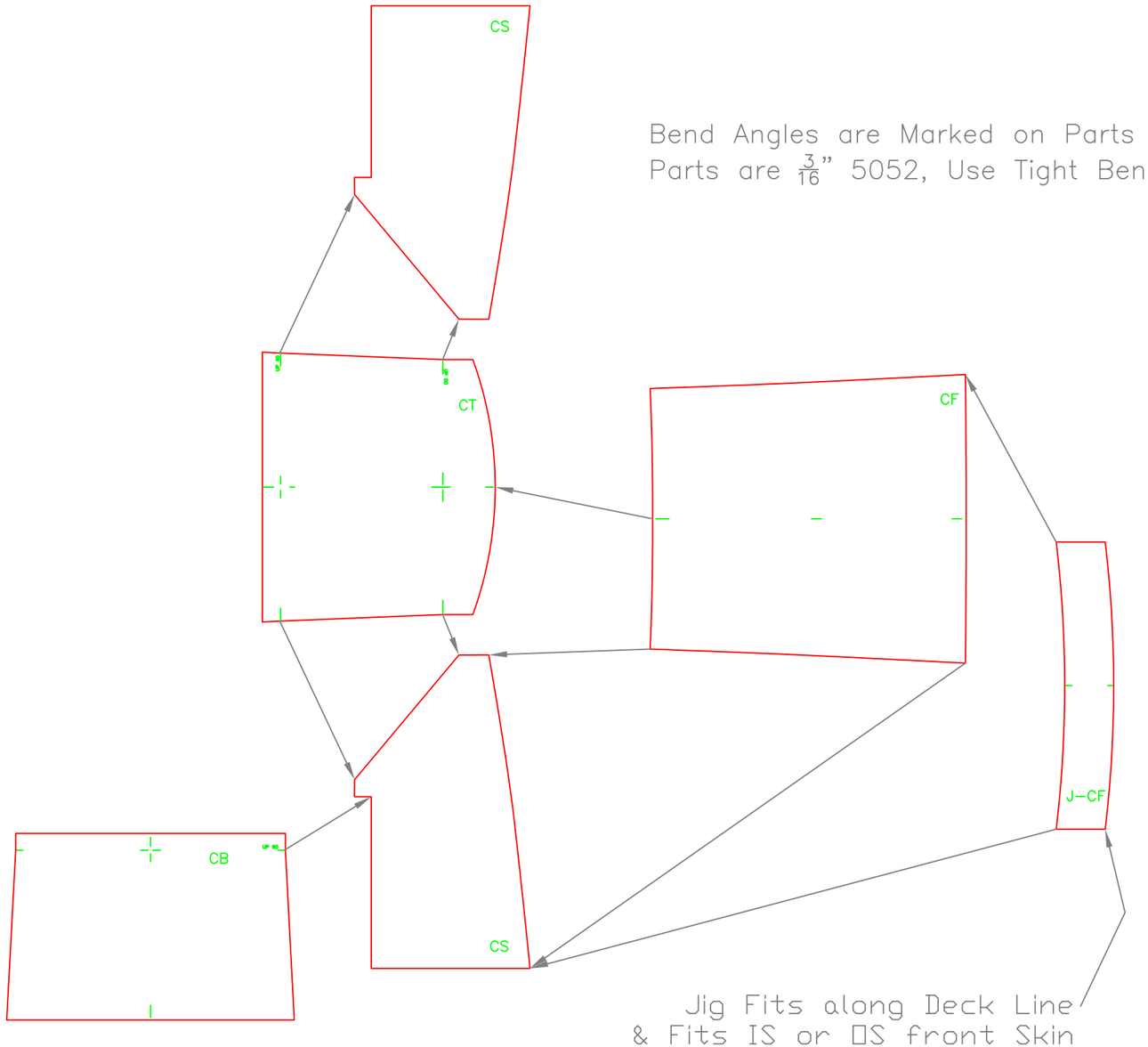
DECK BEAMS
BONES 22'

SCALE	DES/DWN	DATE
1 1/2" = 1'	WAL	6/16/09

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

SHEET

DWG NO. 328-2-12



Bend Angles are Marked on Parts
Parts are $\frac{3}{16}$" 5052, Use Tight Bend Radius

Jig Fits along Deck Line
& Fits IS or OS front Skin

CONSOLE LAYOUT
BONES 22'

SCALE	DES/DWN	DATE
3/4" = 1'	WAL	6/14/09

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

SHEET

DWG NO. 328–4–1

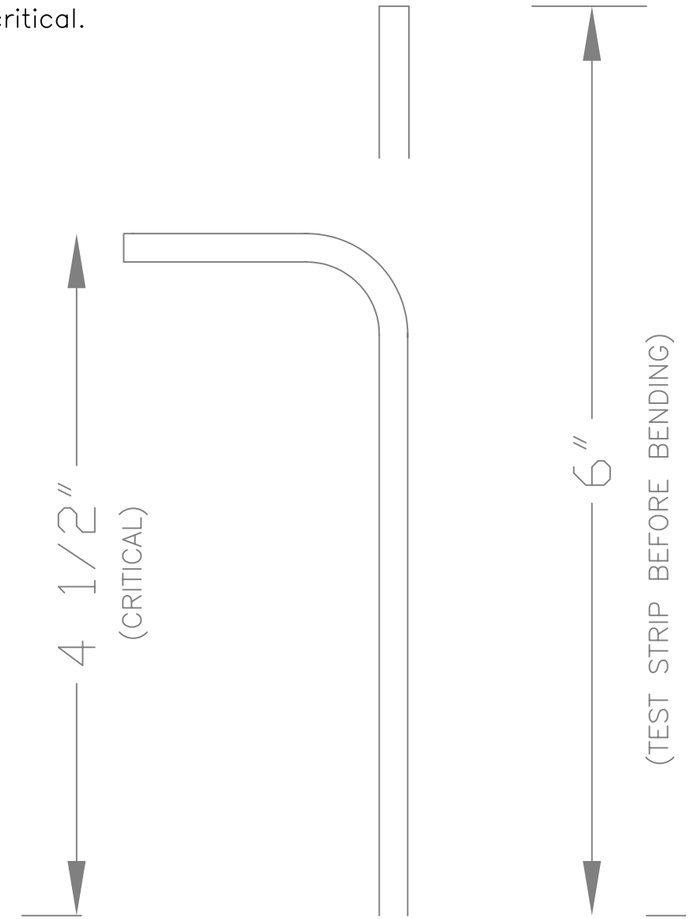
STANDARD FLANGE BENDING: $\frac{3}{16}$" 5086/83 H116 Stock

1) Confirm results for dimensions and cracking with test strips before bending frames.
2) Expected Die Radius is $\frac{1}{2}$"
3) Flanges are designed for outside major flange length of $1\frac{1}{2}$" less than flat stock length as shown. Minor flange length is not critical.
4) Expected Back Gauge setting is 1.74", but confirm and adjust, based on test strip.

Parts to be flanged per this same set–up are listed below.

Bend all Flanges UP unless noted on part as "AWAY".

Notepart F2 is less than 90°.



FT	1	False Transom	1 bend, on Marks
T-1	1	Fuel Tank, Body	4 bends, on Marks
F3	1	Frame 3 (bottom)	B-1, 90 deg
F3-1	2	Frame 3-1, P & S	B-1, 90 deg
F3-2	2	Frame 3-2. P & S	B-1, 90 deg
F3-3	2	Frame 3-3. P & S	B-1, 90 deg
F3-4	2	Frame 3-4. P & S	B-1, 90 deg
F4	1	Frame 4 (bottom)	B-1, 90 deg
F4-1	2	Frame 4-1. P & S	B-1, 90 deg
F4-2	2	Frame 4-2. P & S	B-1, 90 deg
F4-3	2	Frame 4-3. P & S	B-1, 90 deg
F5	1	Frame 5 (bottom)	B-1, 90 deg
FT-T	1	False Transom Threshold	B-1, 90 deg
T-2	1	Fuel Tank, Transverse Baffle	B-1, 90 deg
T-3	2	Fuel Tank, Long'l Baffle	B-1, 90 deg
TD-P	1	Transom Deck, Port	B-1, 90 deg
TD-S	1	Transom Deck, Stbd	B-1, 90 deg
F-33D	1	Deck Frame at 3-3, btwn girders	B-1, 90 deg, 2 places
F-41D	1	Deck Frame at 4-1, btwn girders	B-1, 90 deg, 2 places
G1-P	1	Bottom Girder #1, F5 to Tran, Port	B-1, 90 deg, 2 places
G1-S	1	Bottom Girder #1, F5 to Tran, Stbd	B-1, 90 deg, 2 places
G2-P	1	Bottom Girder #2, F3 to Tran, Port	B-1, 90 deg, 2 places
G2-S	1	Bottom Girder #2, F3 to Tran, Stbd	B-1, 90 deg, 2 places
G3-P	1	Bottom Girder #3, F4 to Tran, Port	B-1, 90 deg, 2 places
G3-S	1	Bottom Girder #2, F4 to Tran, Stbd	B-1, 90 deg, 2 places
F2	1	Frame 2 (bottom)	B-1, **87 DEG**

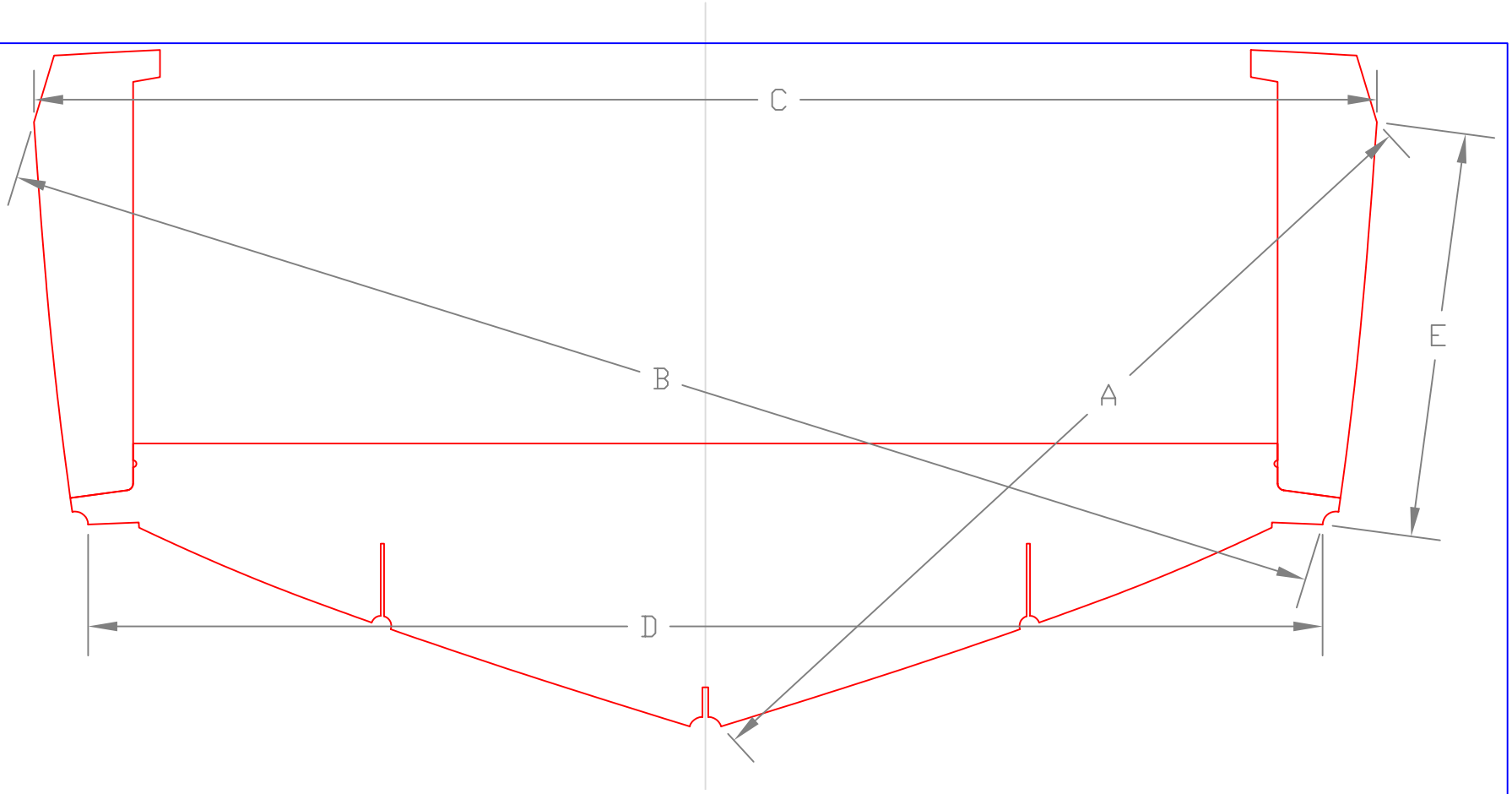
FLANGE BENDING– "B–1"
BONES 22'

SCALE	DES/DWN	DATE
1/2" = 1'	WAL	6/5/09

SHEET

Response Marine, Inc.
Newburyport, MA, www.responsemarine.com

DWG NO. 328–B–1



6/14/09

Inches- sixteenths

	A	B	C	D	E
F1					
F2					
F3					
F4					
F5					

Millimeters

	A	B	C	D	E
F1					
F2					
F3					
F4					
F5					

FRAME DIMENSIONS

BONES 22

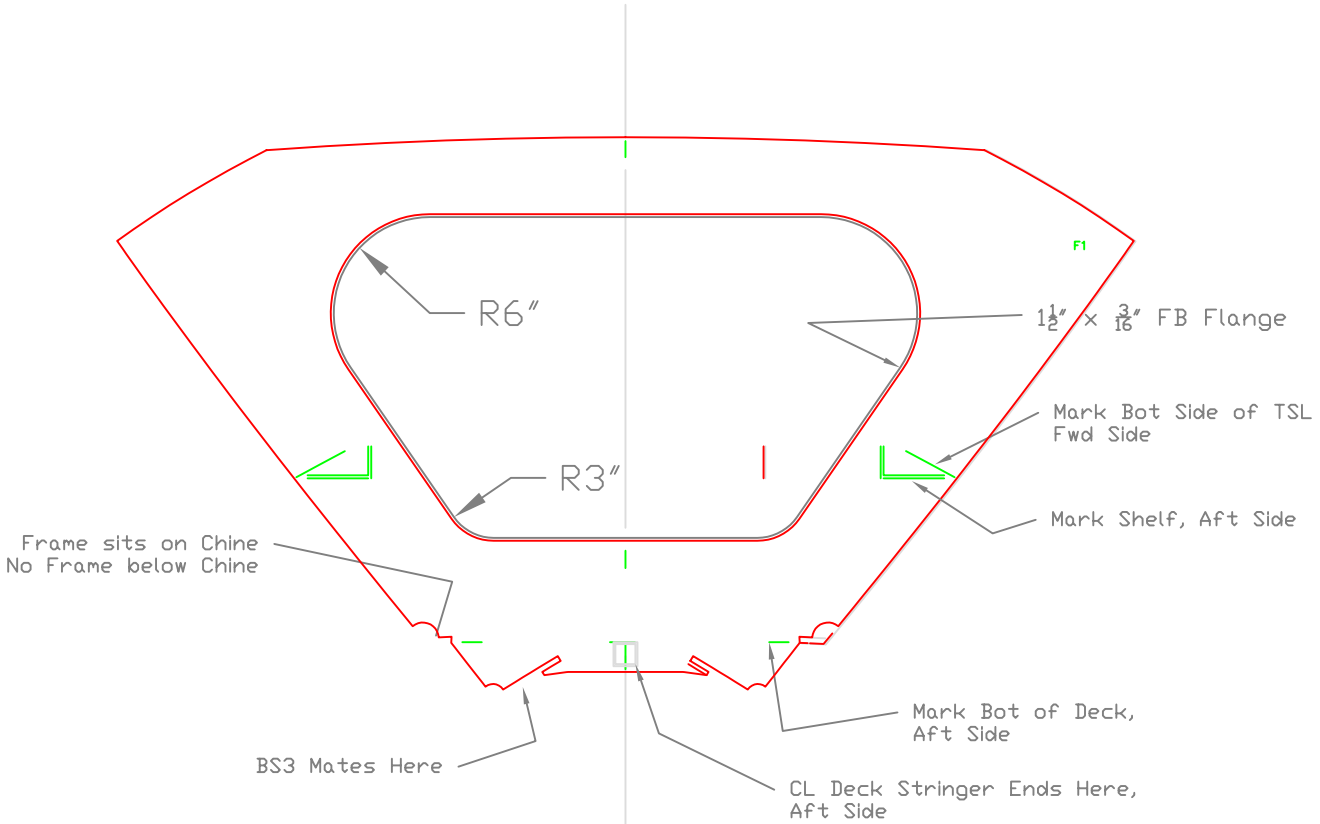
SCALE	DES/DWN	DATE
1" = 1'	WAL	6/14/09

SHEET

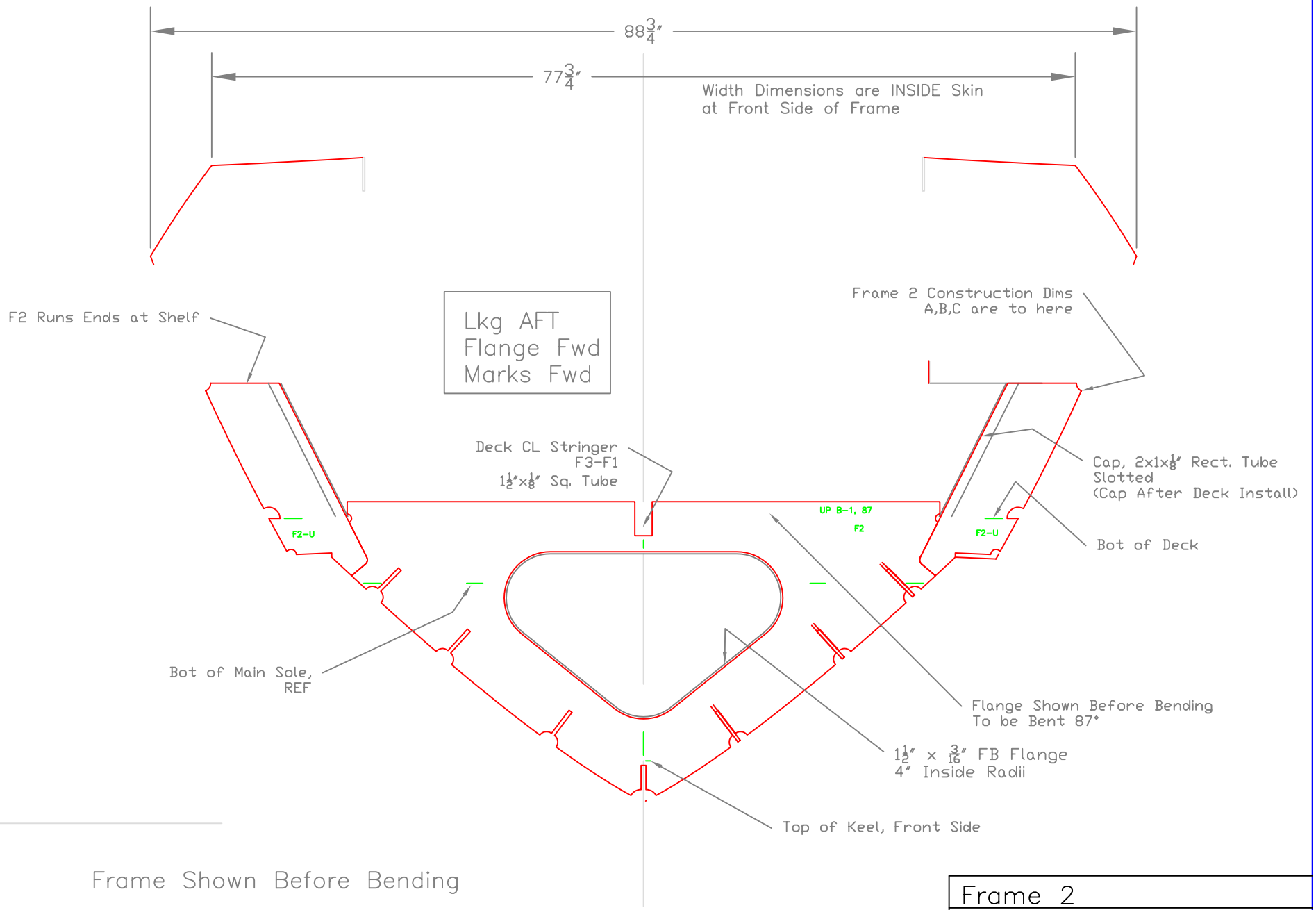
Response Marine, Inc.

Newburyport, MA, www.responsemarine.com

DWG NO. 328-F-R



Frame 1		
BONES 22		
SCALE 1" = 1'	DES/DWN WAL	DATE 5/14/09
Response Marine, Inc. Newburyport, MA, www.responsemarine.com		SHEET
		DWG NO. 328–F1



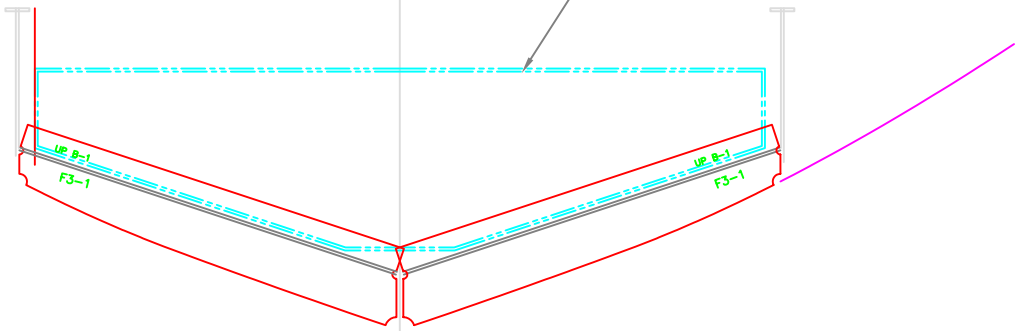
Frame Shown Before Bending

Frame 2		
BONES 22		
SCALE 1" = 1'	DES/DWN WAL	DATE 6/14/09
Response Marine, Inc. Newburyport, MA, www.responsemarine.com		SHEET
		DWG NO. 328-F2

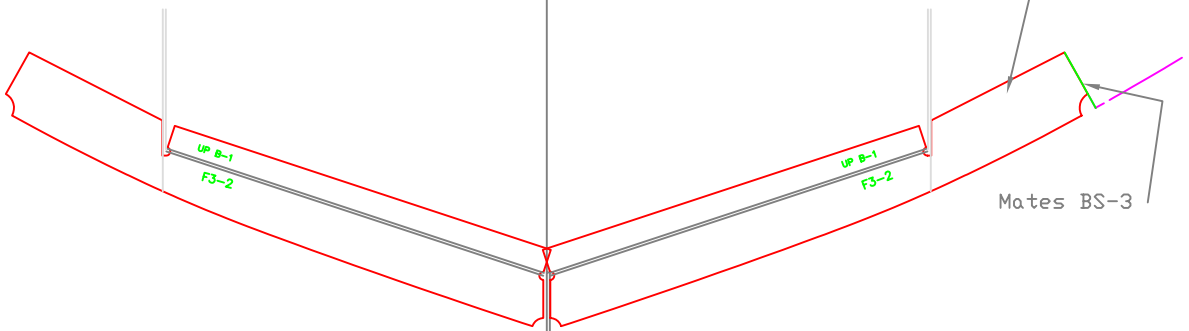
Typical of Frames 3–1 to 3–3 & 4–1 to 4–3 Frames are Split at Keel Install Flanges Aft

Fuel Tank REF Only

Land on ¼" UHMW at F31,F33, &F4 Bolt UHMW to Frame Flanges w/ Counersunk heads & Caulking over



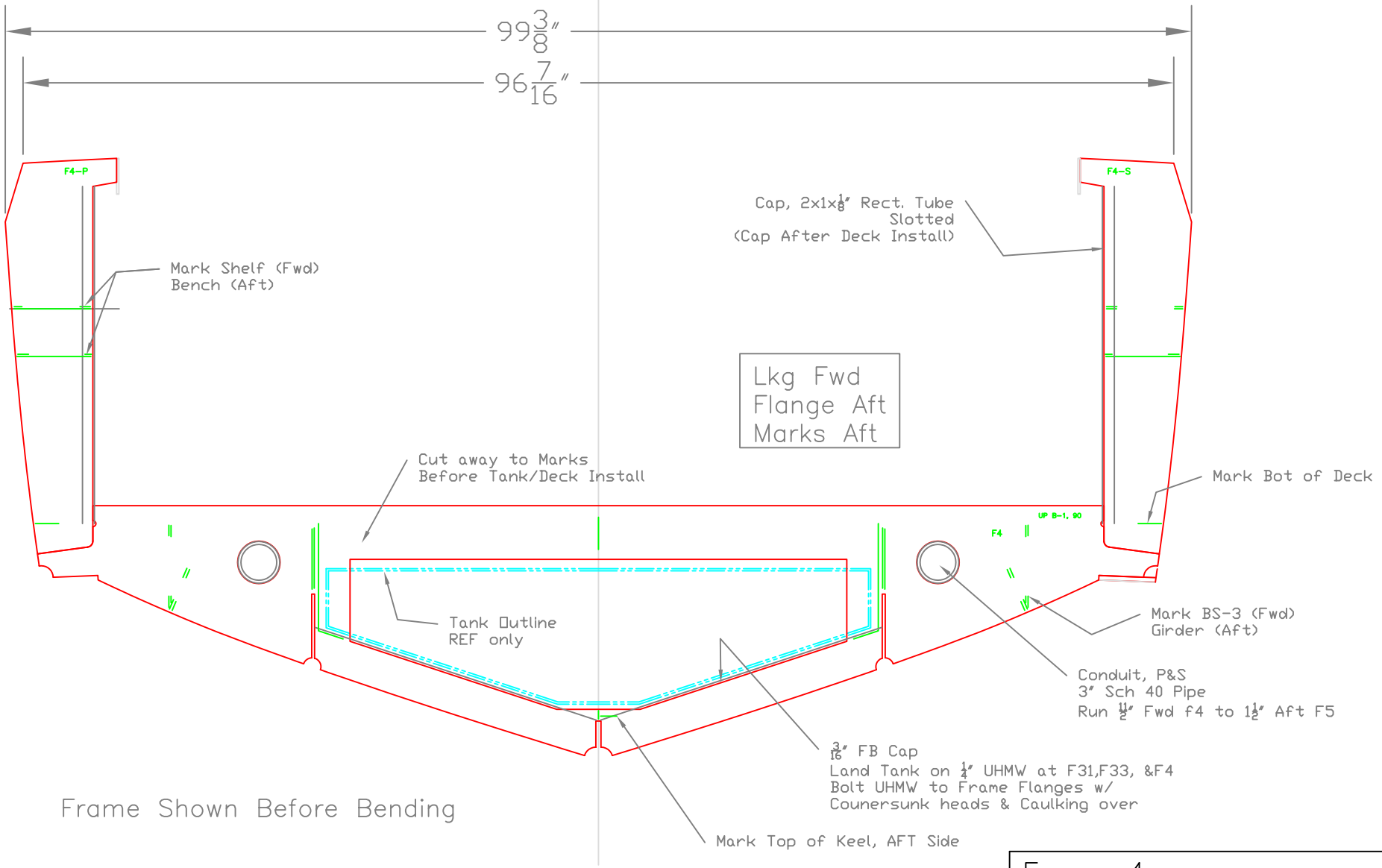
NO Bend Here



Mates BS-3

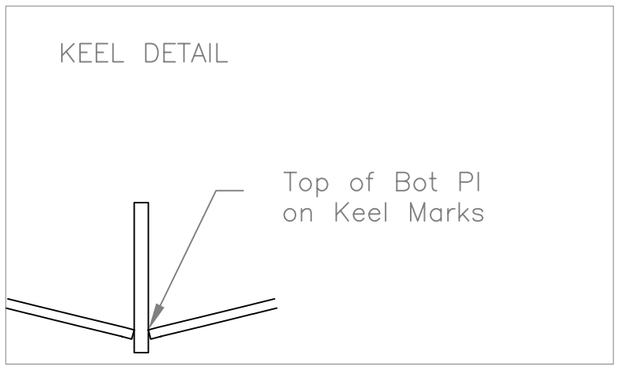
Frames Shown Before Bending

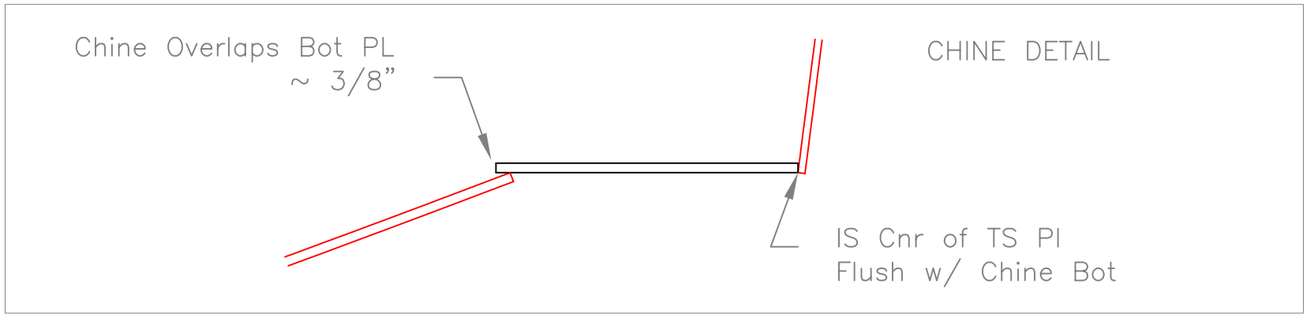
INTERMEDIATE FRAMES		
BONES 22		
SCALE 1" = 1'	DES/DWN WAL	DATE 6/14/09
Response Marine, Inc. Newburyport, MA, www.responsemarine.com		SHEET
		DWG NO. 328–F–31



Frame 4			
BONES 22			
SCALE 1" = 1'	DES/DWN WAL	DATE 6/14/09	
Response Marine, Inc. Newburyport, MA, www.responsemarine.com		SHEET	
		DWG NO. 328-F4	

KEEL DETAIL





Notes:

1) The following Skin Joints are Open Corner:

- TS/Side Decks
- TS/Bow & Chine/Bow
- TS/Transom & Chine/Transom
- Side Decks/Coamings

Also Bulwark/Side Deck, Bulwark Topside for Bones

REV.	DESCRIPTION

HULL SKIN JOINTS

~~25.9’X10’ JET LANDING CRAFT~~

SCALE	DES/DWN	DATE
3/4” = 1’	WAL	3/19/08

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SHEET

DWG NO. 302–2–7

Response Marine, Inc. Plaz Parts for Edwards 22', #328
File: RMIeng\Edwards 22
revised: 3/11/10

Print Date: 3/11/2010

3/16" Parts- 5052 Marine

Part #	Pieces	Description	Bend	Bend Info
CB	1	Console Back	Y	Tight Radius, 90 as Marked
CF	1	Console Front		
CS	2	Console Sides		
CT	1	Console Top	Y	Tight Radius, 2 as Marked
J-CF	1	Jig, Console Front		
J-FD	1	Foredeck Jig, Installs fwd of F1, Top of Deck		
	7	Sub Total 3/16" 5052		

3/16" Parts- 5086 Marine

Part #	Pieces	Description	Bend	Bend Info
ALB	1	Anchor Locker Bottom		
B-E	2	Bench Ends, Inboard/Aft		
BNCH	2	Bench, F4- False Tran		
BWK-P	1	Bulwark, Port		
BWK-S	1	Bulwark, Stbd		
D-AP	1	Deck, F1-F3, Port		
D-AS	1	Deck, F1-F3, Stbd		
D-BP	1	Deck, F3-Tran, margin, Port		
D-BS	1	Deck, F3-Tran, margin, Stbd		
D-C	1	Deck, Center Aft, F41 to False Tran		
D-EC	1	Engine Deck, Center		
D-EP	1	Engine Deck, Port		
D-ES	1	Engine Deck, Stbd		
D-FT	1	Deck, Soft Patch at Fuel Tank, F3-F41		
F1	1	Frame 1		
F2	1	Frame 2 (bottom)	Y	B-1, **87 DEG**
F2-P	1	Frame 2 Upper, Port, (to Shelf)		
F2-S	1	Frame 2 Upper, Stbd, (to Shelf)		
F3	1	Frame 3 (bottom)	Y	B-1, 90 deg
F3-1	2	Frame 3-1, P & S	Y	B-1, 90 deg
F3-2	2	Frame 3-2. P & S	Y	B-1, 90 deg
F3-3	2	Frame 3-3. P & S	Y	B-1, 90 deg
F-33D	1	Deck Frame at 3-3, btwn girders	Y	B-1, 90 deg, 2 places
F3-4	2	Frame 3-4. P & S	Y	B-1, 90 deg
F3-B1	1	Frame 3 fuel box fwd, STBD, fwd of F3		
F3-B2	1	Frame 3 fuel box, Face		
F3-B3	1	Frame 3 fuel box, Cover		
F3-P	1	Frame 3, Upper, Port		
F3-S	1	Frame 3, Upper, Stbd		
F4	1	Frame 4 (bottom)	Y	B-1, 90 deg
F4-1	2	Frame 4-1. P & S	Y	B-1, 90 deg
F-41D	1	Deck Frame at 4-1, btwn girders	Y	B-1, 90 deg, 2 places
F4-2	2	Frame 4-2. P & S	Y	B-1, 90 deg
F4-3	2	Frame 4-3. P & S	Y	B-1, 90 deg
F4-P	1	Frame 4, Upper, Port		

F4-S	1	Frame 4, Upper, Stbd		
F5	1	Frame 5 (bottom)	Y	B-1, 90 deg
FT	1	False Transom	Y	1 bend, on Marks
FT-T	1	False Transom Threshold	Y	B-1, 90 deg
G1-P	1	Bottom Girder #1, F5 to Tran, Port	Y	B-1, 90 deg, 2 places
G1-S	1	Bottom Girder #1, F5 to Tran, Stbd	Y	B-1, 90 deg, 2 places
G2-P	1	Bottom Girder #2, F3 to Tran, Port	Y	B-1, 90 deg, 2 places
G2-S	1	Bottom Girder #2, F3 to Tran, Stbd	Y	B-1, 90 deg, 2 places
G3-P	1	Bottom Girder #3, F4 to Tran, Port	Y	B-1, 90 deg, 2 places
G3-S	1	Bottom Girder #2, F4 to Tran, Stbd	Y	B-1, 90 deg, 2 places
SDC-P	1	Side Deck Coaming, Port		
SDC-S	1	Side Deck Coaming, Stbd		
SD-P	1	Side Decks, Port		
SD-S	1	Side Decks, Stbd		
T-1	1	Fuel Tank, Body	Y	4 bends, on Marks
T-2	1	Fuel Tank, Transverse Baffle	Y	B-1, 90 deg
T-3	2	Fuel Tank, Long'l Baffle	Y	B-1, 90 deg
T-4	2	Fuel Tank, Ends		
T-5	1	Fuel Tank, Top		
TD-P	1	Transom Deck, Port	Y	B-1, 90 deg
TD-S	1	Transom Deck, Stbd	Y	B-1, 90 deg
TS-P	1	Topsides, Port		
TSS	2	Topside Shelf, F1-F4		
TS-S	1	Topsides, Stbd		
	71	Sub Total 3/16" 5086		

1/4" Parts, 5086 Marine

Part #	Pieces	Description
B-P	1	Bottom Plat, Port
B-S	1	Bottom Plate, Stbd
BS-1	2	Bottom Longitudinal 1 (fwd)
BS-2	2	Bottom Longitudinal 2 (fwd)
BS-3	2	Bottom Longitudinal 3 (fwd)
TSL	2	Topside Longitudinal (fwd)
TR	1	Transom
	11	Sub Total 1/4" 5086

3/8" Parts, 5086 Marine

Part #	Pieces	Description
C-A	2	Chine, fwd
C-B	2	Chine, aft
K-A	1	Keel, Tip & Return
K-B	1	Keel Mid
K-C	1	Keel, Aft
	7	Sub Total 3/8" 5086
	96	Total Cut Parts

Response Marine, Inc.

Stock List
Bones Boat 22', #328
3/11/2010

EXTRUSION

Rev	USE	QTY	Alloy	Item	Lgth (ft)	lbs/ft	lbs
3/11/10	Frame Flanges & Bench Lips	5	6061 T6	.190x1.50" Flat Bar	12	.332	20
3/11/10	Shelf Lips & Deck Lips	6	6061 T6	2 x .250" FB	12	.59	42
	Misc. Stiffs	1	6061 T6	1.50 x 1.50 x .250" Tee	25	.87	22
	Frame Caps, very little	1	6061 T6	1 x 2 x .125" Rect. Tubing	24	.81	19
	Deck Stiffs & Misc.	4	6061 T6	1.50 x 1.50 x .125" Sq. Tubing	24	.81	78
	Conduit & Collars	1	6061 T6	3" Sch 40 Pipe	20	2.62	52
2/8/10	Fuel Tank Fill	1	6061 T6	1.50 x .125" Round Tubing	12	.635	8
2/8/10	Outboard Conduit Collar	1	6061 T6	2" x .125" Round Tubing	12	.866	10
						Sub Total	252

SHEET/PLATE

QTY	Alloy	Thick	Width	Lngth	approx. lbs/ft^2	lbs
1	5052 H32	0.190	60	120	2.7	135
4	5086 Marine	0.190	96	288	2.7	2,074
1	5086 Marine	0.250	96	288	3.6	691
1	5086 Marine	0.250	26	96	3.6	62
1	5086 Marine	0.375	60	144	5.4	324
					Sub Total	3,286
					TOTAL	3,538