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SYMBOL LIST

STIFFENER	←-----→
GIRDER	←-----→
N.T. BHD	=====
WTBHD	=====
STANCHION	● ABOVE ○ BELOW ● ABOVE & BELOW

PRINCIPAL CHARACTERISTICS

RULE LENGTH	L	177.60 FT
MAX BEAM	B	41.00 FT
HULL DEPTH	D	19.00 FT
DRAFT, DWL	T	12.50 FT
MAX SCANTLING DRAFT	d	14.00 FT
NOMINAL FRAME SPACING		24.0 IN
DISPLACEMENT		1850 LT

GENERAL NOTES

- ALL MATERIALS, SCANTLINGS, WELDING AND WELD PROCEDURES SHALL COMPLY WITH ABS RULES FOR BUILDING AND CLASSING STEEL VESSELS UNDER 90 METERS IN LENGTH, 2017.
- VESSEL IS TO BE CLASSED ABS ICE CLASS CO MINIMUM DESIGN TEMPERATURE IS -4 F.
- ALL STEEL SHALL BE ABS GRADE A, UNLESS NOTED OTHERWISE. SHEAR STRAKE (MAIN DECK TO MIN 42 INCHES BELOW MAIN DECK) AND MAIN DECK STRINGER PLATE (SIDE SHELL TO MIN 42 INCHES INBOARD OF SIDE SHELL) SHALL BE ABS GRADE D.
- FRAME & BHD STIFFENER SPACING 24" THROUGHOUT, UNLESS NOTED OTHERWISE.
- MOLD CONVENTION TO BE IN ACCORDANCE WITH GENERAL ARRANGEMENT.
- ALL TRANSVERSE BULKHEADS ARE TO BE THROWN TOWARDS MIDSHIP PER MOLD CONVENTION, WITH THE EXCEPTION OF CERTAIN EQUIPMENT ARRANGEMENTS, (I.E., SLIDING WATERTIGHT DOORS, INNER BOTTOM TANK FRAMING, ETC.). NOTE, CENTERBOARD TRUNK ASSEMBLY, THE MOLDED LINE IS TO THE INSIDE OF THE TRUNK ASSEMBLY, WITH THE TRUNK FRAMING LOCATED ON THE OUTBOARD SIDE, PER THE TRUNK MANUFACTURER.
- TRIPPING BRACKETS OR STIFFENERS ARE TO BE FITTED ON INTERVALS NOT EXCEEDING 10 FEET ON ALL GIRDERS AND WEB FRAMES.
- BRACKETS OR EFFECTIVE END CONNECTIONS ARE TO BE PROVIDED AT THE ENDS OF ALL STIFFENERS ON WATERTIGHT AND OIL-TIGHT BULKHEADS AND SIZED IN ACCORDANCE WITH ABS RULES.
- AFT EXTERIOR MAIN DECK DESIGNED FOR A DISTRIBUTED UNIFORM LOAD OF 1500 PSF.
- AFT EXTERIOR 01 LEVEL DESIGNED FOR A DISTRIBUTED UNIFORM LOAD OF 540 PSF.
- INSERTS ON THE AFT WORKING DECK SHALL BE FLUSH WITH TOPSIDE OF THE DECK.
- ALL DECK AND SHELL SOCKETS TO BE TYPE 316 STAINLESS STEEL, WITH 1"-8UNC THREADS, WELDED FLUSH TO THE DECK, DESIGNED FOR MINIMUM WORKING LOAD OF 6,000 LBS WHEN APPLIED VERTICALLY, AND AT A 45° OFF VERTICAL. DECK SOCKETS SHALL BE TESTED TO 125% OF THE WORKING LOAD.
- ALL DECK AND SHELL SOCKETS TO BE EQUIPPED WITH REMOVABLE UHMW, ALLEN HEAD, FLUSH FITTING, THREADED PLUGS.
- RESERVE ALL FLUSH MOUNTED, AND RAISED MULTI-BOLT MANHOLES.
- ALL NON-OIL-CONTAINING TANKS, AND VOIDS TO BE EQUIPPED WITH SHIP BOTTOM DRAIN PLUG (DEWATERING PLUG), WAGER 2" DWG# 2-133-DW, FORGED STEEL ASTM A-105, WITH STAINLESS STEEL PLUG, AND NEOPRENE SEAL.
- RESCUE BOAT FDN DESIGNED IN ACCORDANCE WITH 6.1.1.6 OF THE LSA CODE.
- ALL SHARP EDGES IN BALLAST TANKS, SHALL BE ROUNDED OFF IN ACCORDANCE WITH IMO PSPC COATING STANDARD TO (2mm) RADIUS.

REVISIONS

REV	SH	ZONE	ITEM	DESCRIPTION	DATE	APPVL SIG & ORG
P1	ALL	-	-	INITIAL ISSUE	02/01/18	MEH/CF
	ALL	-	-	THIS DOCUMENT UPDATES THE CONTRACT DRAWING STRUCTURAL ARRANGEMENT WITH THE SHIPYARD'S TITLE BLOCK, DRAWING NUMBER AND REVISION CONVENTION. ADDITIONALLY, THIS DOCUMENT REMOVED ALL STRUCTURE ABOVE THE 01 LEVEL. CHANGED DRAWING TITLE TO "STEEL HULL STRUCTURAL ARRANGEMENT".		
	1	-	1	GENERAL NOTES 1,2,3,4,6,7,8,9,10,11,12 FROM REFERENCE DRAWING 4, ARE NOW GENERAL NOTES NO. 1 THRU 4 & 6 THRU 12 RESPECTIVELY ON THIS DOCUMENT. GENERAL NOTE NO. 4 WAS MODIFIED TO INCLUDE BHD STIFFENER SPACING. GENERAL NOTE NO. 5 ADDED. GENERAL NOTE NO. 7 WAS MODIFIED TO INCLUDE "SEE DETAIL 17-7A. GENERAL NOTE NO. 10 WAS MODIFIED TO ONLY INCLUDE THE 01 LEVEL LOADING. MODIFIED SYMBOL LIST AND REVISED REFERENCE DRAWING LIST.		

REVISIONS CONTINUED ON SHEET 1A, 1B, 1C, 1D, 1E & 1F

34	PORT TRANSDUCER POLE	M015736
33	EQUIPMENT REMOVAL	6096-500-002
32	CENTERBOARD SYSTEM GENERAL ARRANGEMENT	6096-770-001
31	BILGE AND OILY WATER SYSTEM	6096-529-002
30	OVERBOARD HANDLING SYSTEMS	6096-710-001
29	CASING, TOPAS	6096-720-019
28	CASING, SIMRAD	6096-720-014
27	CASING, ONE DEGREE RX	6096-720-011
26	CASING, HALF DEGREE TX2	6096-720-007
25	CASING, 1/2" WALL, 19" SPARE	6096-720-024
24	FREELING PORT ARRANGEMENT	6096-190-001
23	LADDERS, HANDRAILS, AND HANDGRABS	6096-623-001
22	SONAR FLAT ARRANGEMENT	6096-720-038
21	HPU FOUNDATION	6096-180-009
20	MAIN ENGINE FOUNDATIONS	6096-182-001
19	RAISED FLOORS & GRATINGS ARRANGEMENT	6096-622-001
18	HULL FITTINGS & PADEYES	6096-180-005
17	OHS CRANE FOUNDATION	6096-180-012
16	LARS FOUNDATION (CTD DAVIT)	6096-180-004
15	OCEANOGRAPHIC & HYDROGRAPHIC WINCH FOUNDATION	6096-180-007
14	STERN A-FRAME FOUNDATION	6096-180-002
13	VAN VESTIBULE CONNECTION DETAILS AND ARRANGEMENTS	6069-737-001
12	FOUNDATIONS - 250LBS AND OVER	6069-180-003
11	MANHOLE ARRANGEMENT & SCHEDULE	6069-167-002
10	Z-DRIVE & BOW THRUSTER FOUNDATIONS	6096-180-013
9	SEA CHEST ARRANGEMENTS	6096-163-001
8	MOORING ARRANGEMENT	6096-580-001
7	ANCHOR HANDLING AND MOORING FOUNDATIONS	6096-581-001
6	WELDING SCHEDULE	6096-102-001
5	ALUMINUM SUPERSTRUCTURE ARRANGEMENT	6096-150-001
4	SCHEDULE OF WINDOWS, DOORS AND HATCHES	6096-167-001
3	LINES PLAN	6096-070-002
2	GENERAL ARRANGEMENT	6096-070-001
1	SHIP SPECIFICATION	12100-000

NO.	TITLE	DRAWING NUMBER
REFERENCE PLANS		
RESERVATIONS		

DRAWING CONFIDENTIALITY STATEMENT

THIS DRAWING IS TO BE USED FOR CONSTRUCTION OF THE REGIONAL CLASS RESEARCH VESSELS. USE AND/OR REPRODUCTION OF THIS DRAWING AND FURTHER DISSEMINATION IS AUTHORIZED ONLY AS DIRECTED BY GULF ISLAND SHIPYARDS OR OREGON STATE UNIVERSITY.



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CONTRACT/PO NO.
184162

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
COVER SHEET

DRAWN:	G. MCCANN	1/30/18
CHECKED:	C. FLY	1/30/18
APPROVED:	C. FLY	1/30/18



SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	NONE	HULL #: 6096 6097 6098	SHEET 1 OF 46

PROFESSIONAL ENGINEER STAMP



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REVISIONS (CONT.)

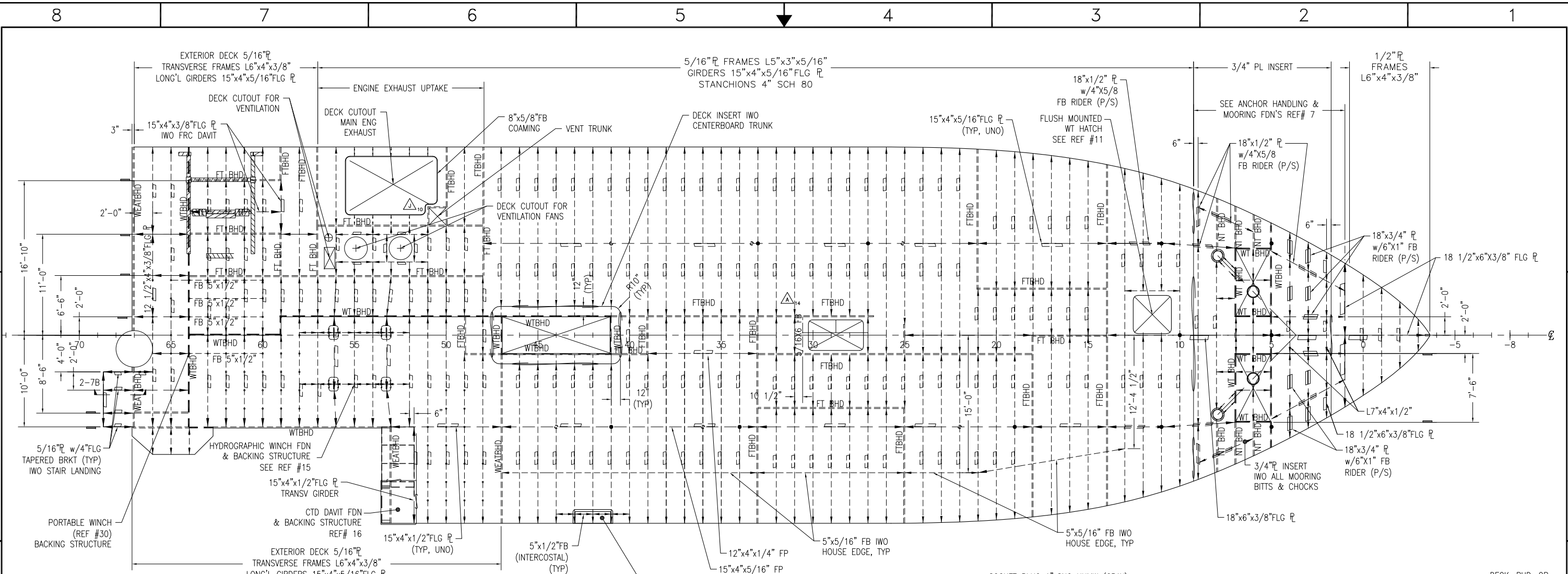
REVISIONS (CONT.)

REVISIONS (CONT.)

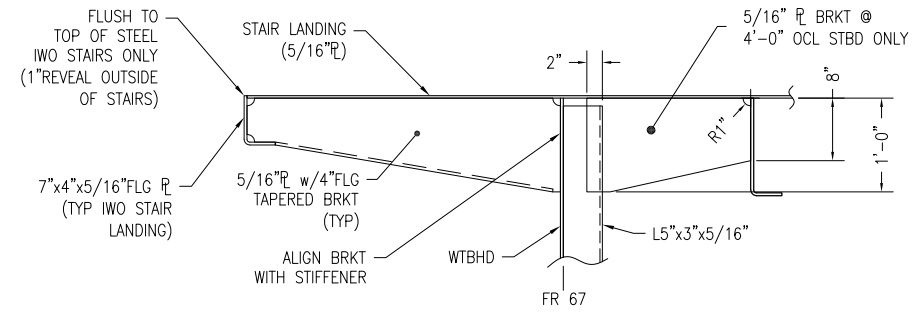
REVISIONS (CONT.)

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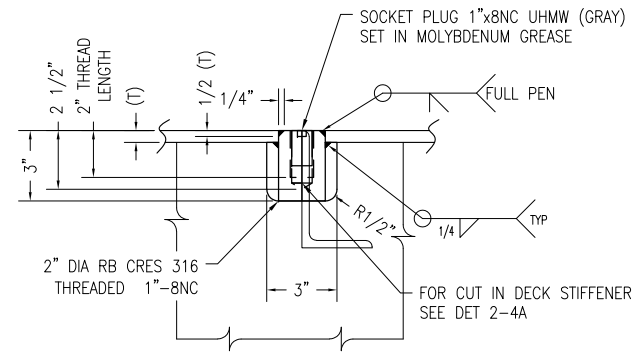
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331
199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL STRUCTURAL ARRANGEMENT
REVISIONS (CONTINUED)
PROFESSIONAL ENGINEER STAMP
SIZE: D FSCM CAGE NO. 7UTH5 DRAWING NO. 6096-100-001 REV K
SCALE: AS SHOWN HULL #: 6096 6097 6098 SHEET 1F OF 46



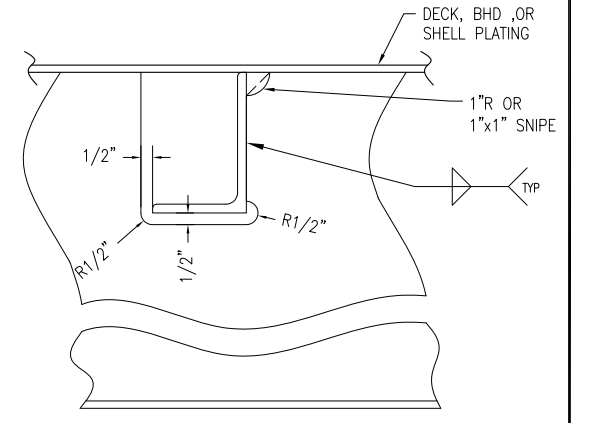
PLAN VIEW 2-5D
 01 LEVEL DECK
 28'-0" ABOVE BASELINE
 3/16" = 1'-0"



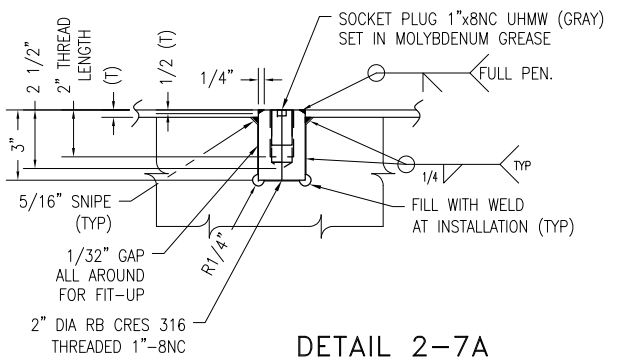
SECTION 2-7B
 TYPICAL TAPERED BRACKET IWO STAIR LANDING
 1" = 1'-0"



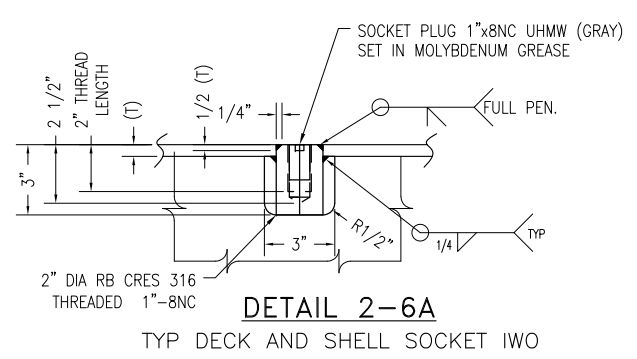
DETAIL 2-4B
 TYP DECK AND SHELL SOCKETS
 IWO INTERSECTIONS
 3" = 1'-0"



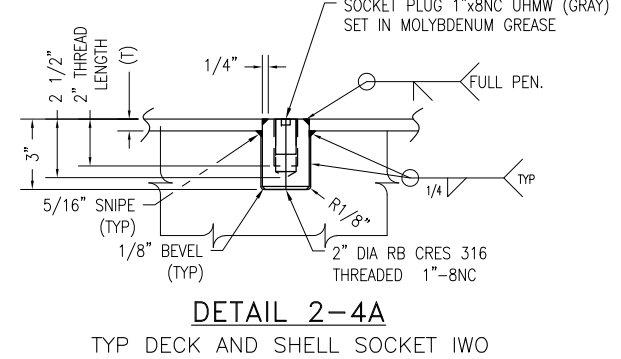
DETAIL 2-1B
 TYP CUT-OUT
 3" = 1'-0"



DETAIL 2-7A
 TYP DECK AND SHELL SOCKET IWO BHDS
 3" = 1'-0"



DETAIL 2-6A
 TYP DECK AND SHELL SOCKET IWO
 DEEP MEMBERS & NTBHDs
 3" = 1'-0"



DETAIL 2-4A
 TYP DECK AND SHELL SOCKET IWO
 ORDINARY STIFFENERS
 3" = 1'-0"

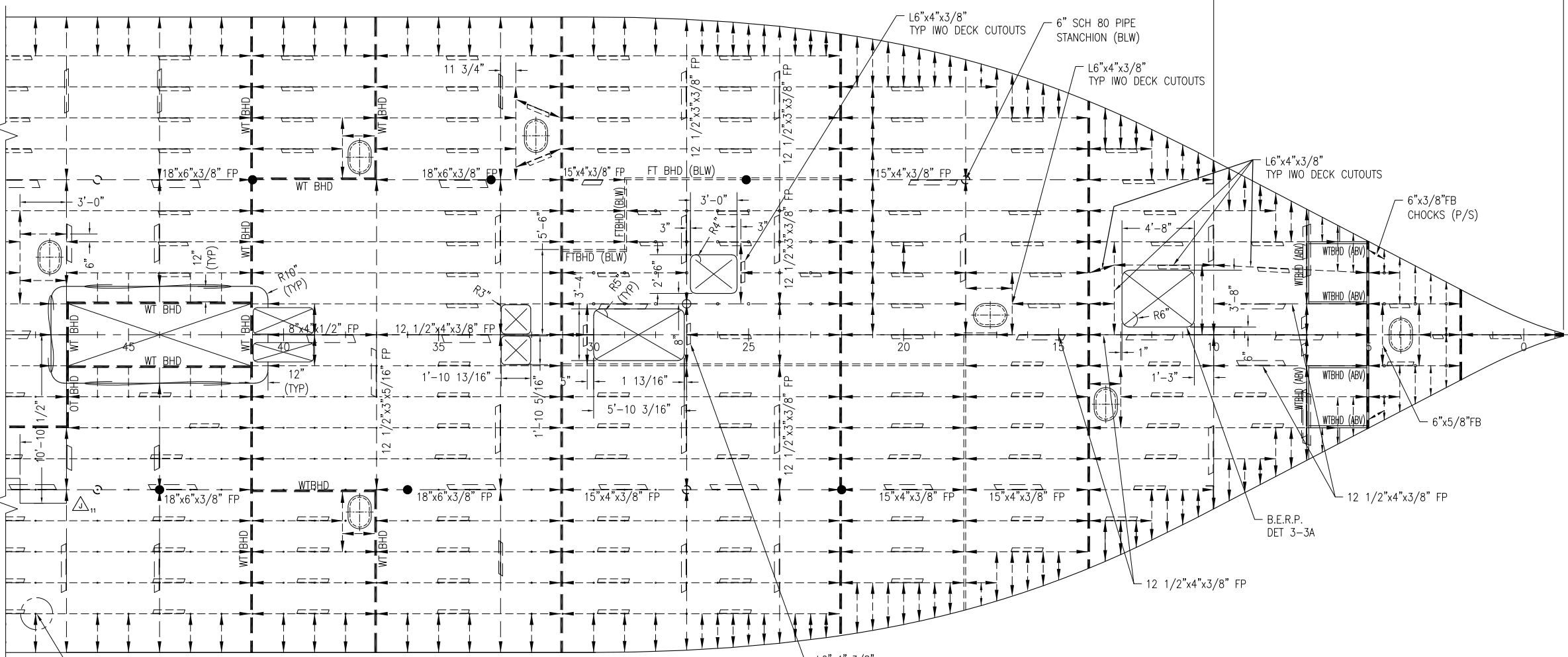
OREGON STATE UNIVERSITY
 CORVALLIS, OR 97331
 199'-6" REGIONAL CLASS RESEARCH VESSEL
 STEEL HULL
 STRUCTURAL ARRANGEMENT
 01 LVL & MAIN DECK KEY PLAN

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 2 OF 46

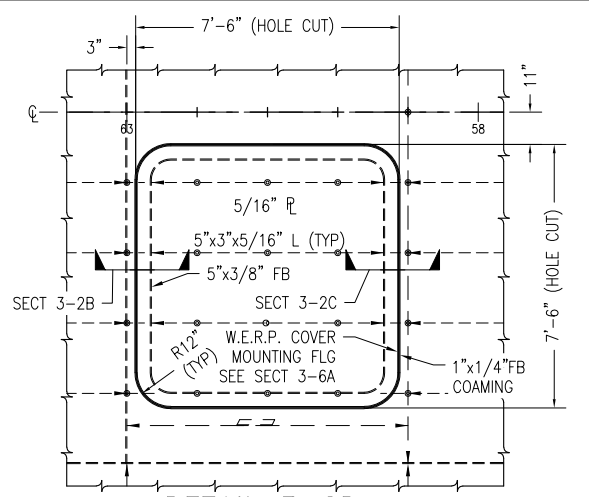
PROFESSIONAL ENGINEER STAMP

INTERIOR DECK 5/16" PL w/STIFFENERS L5"x3"x5/16" (UNO)
 (NOTE: INTERIOR DECK STIFFENERS L6"x4"x3/8" FWD OF FR 10)
 LONGITUDINAL & TRANSVERSE GIRDERS 12 1/2"x3"x3/8" FLG PL (UNO)
 TRANSVERSE WEB FRAMES 10'-0" OCL TO
 SIDE SHELL 1/2" PL w/3"x1/2" FB RIDER
 STANCHIONS 6" SCH 80

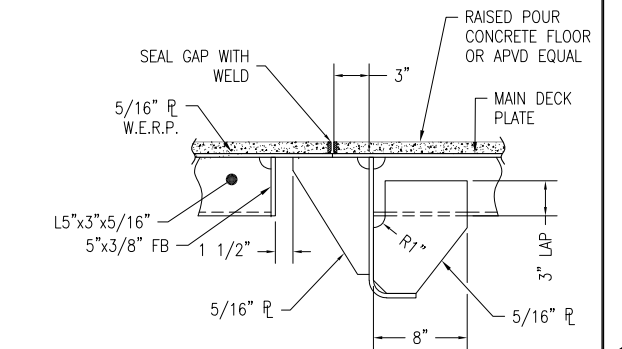
SEE SHEET #4-5B
 FOR CONTINUATION
 OF MAIN DECK
 STRUCTURE



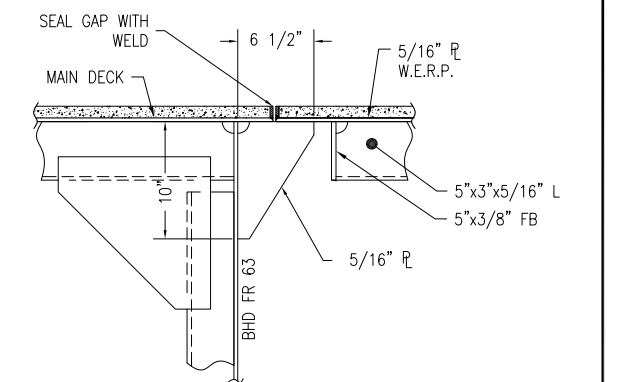
PLAN VIEW 3-5B
 MAIN DECK
 19'-0" ABOVE BASELINE
 1/4" = 1'-0"



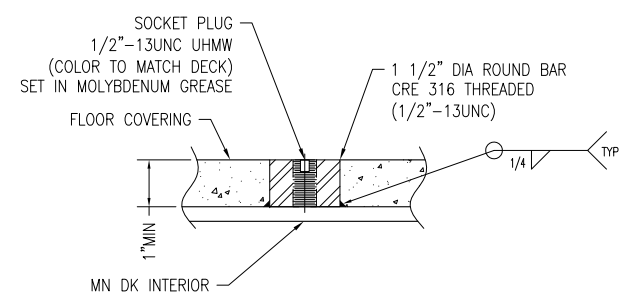
DETAIL 3-2D
 MAIN ENGINE REMOVAL HATCH
 W.E.R.P. FR 59-63 STBD
 3/8" = 1'-0"



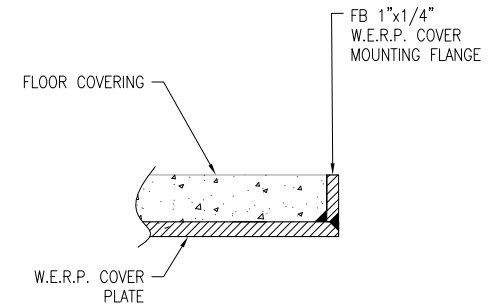
SECTION 3-2C
 W.E.R.P. ATTACHMENT
 1 1/2" = 1'-0"



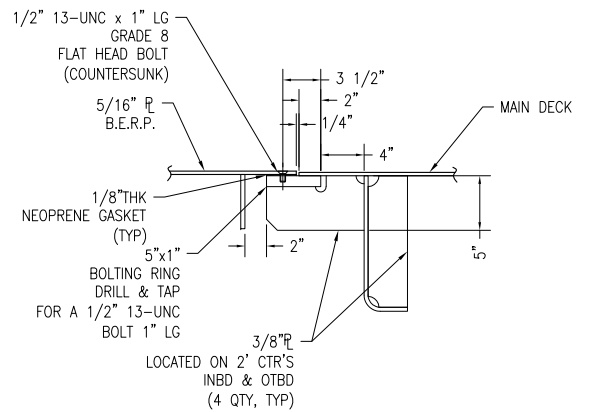
SECTION 3-2B
 W.E.R.P. ATTACHMENT
 FOR INFO NOT SHOWN SEE SECT 3-2C
 1 1/2" = 1'-0"



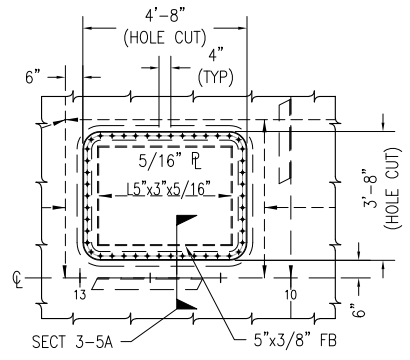
DETAIL 3-7A
 INTERIOR MAIN DECK SOCKET
 6" = 1'-0"



SECTION 3-6A
 W.E.R.P. COVER MOUNTING FLANGE
 FOR INFO NOT SHOWN SEE SECT 3-2C
 6" = 1'-0"



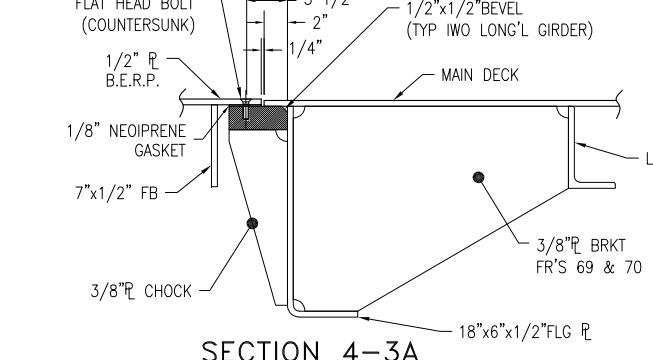
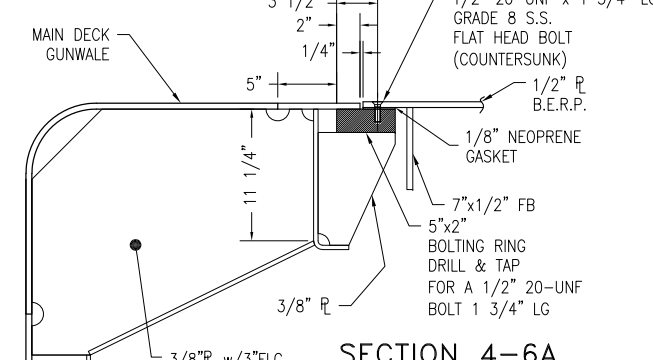
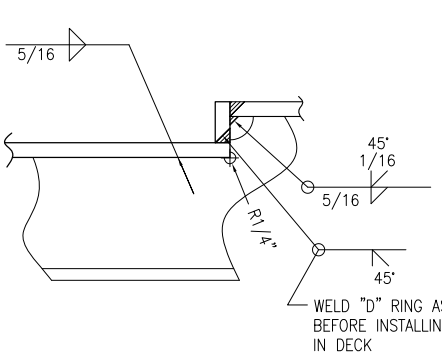
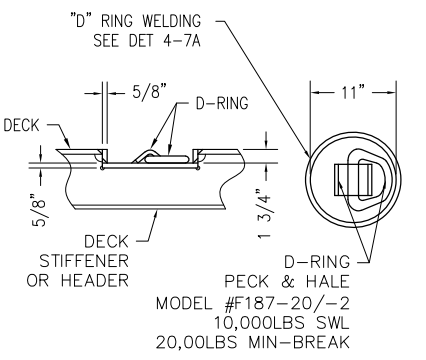
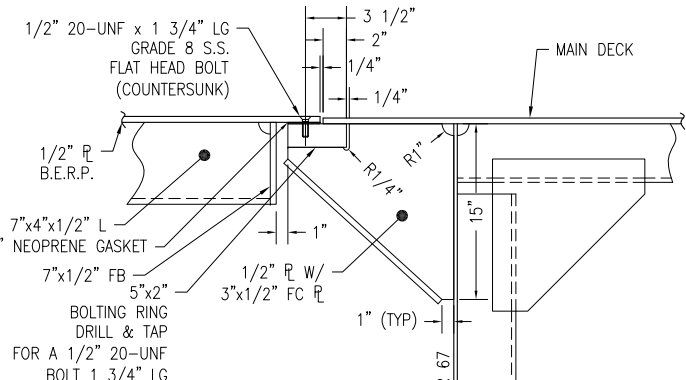
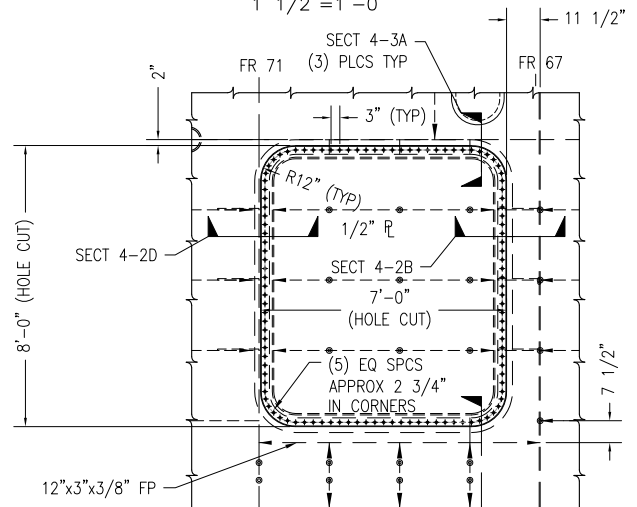
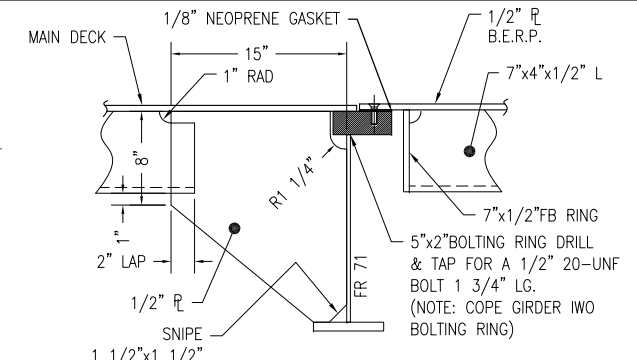
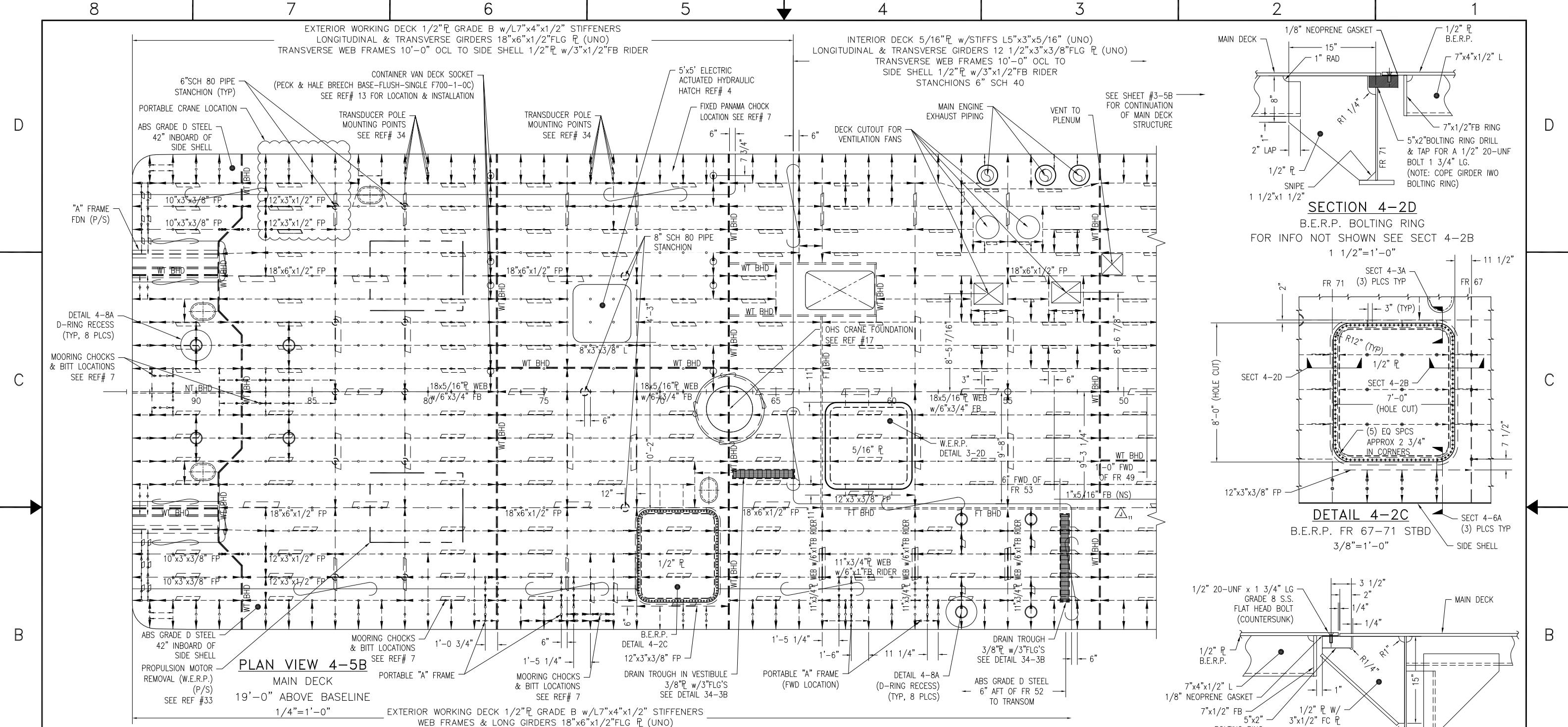
SECTION 3-5A
 B.E.R.P. BOLTING RING
 1 1/2" = 1'-0"



DETAIL 3-3A
 B.E.R.P. FR 10-13 PORT
 3/8" = 1'-0"

PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT MAIN DECK (FORWARD) KEY PLAN			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 3 OF 46	



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CORVALLIS, OR 97331

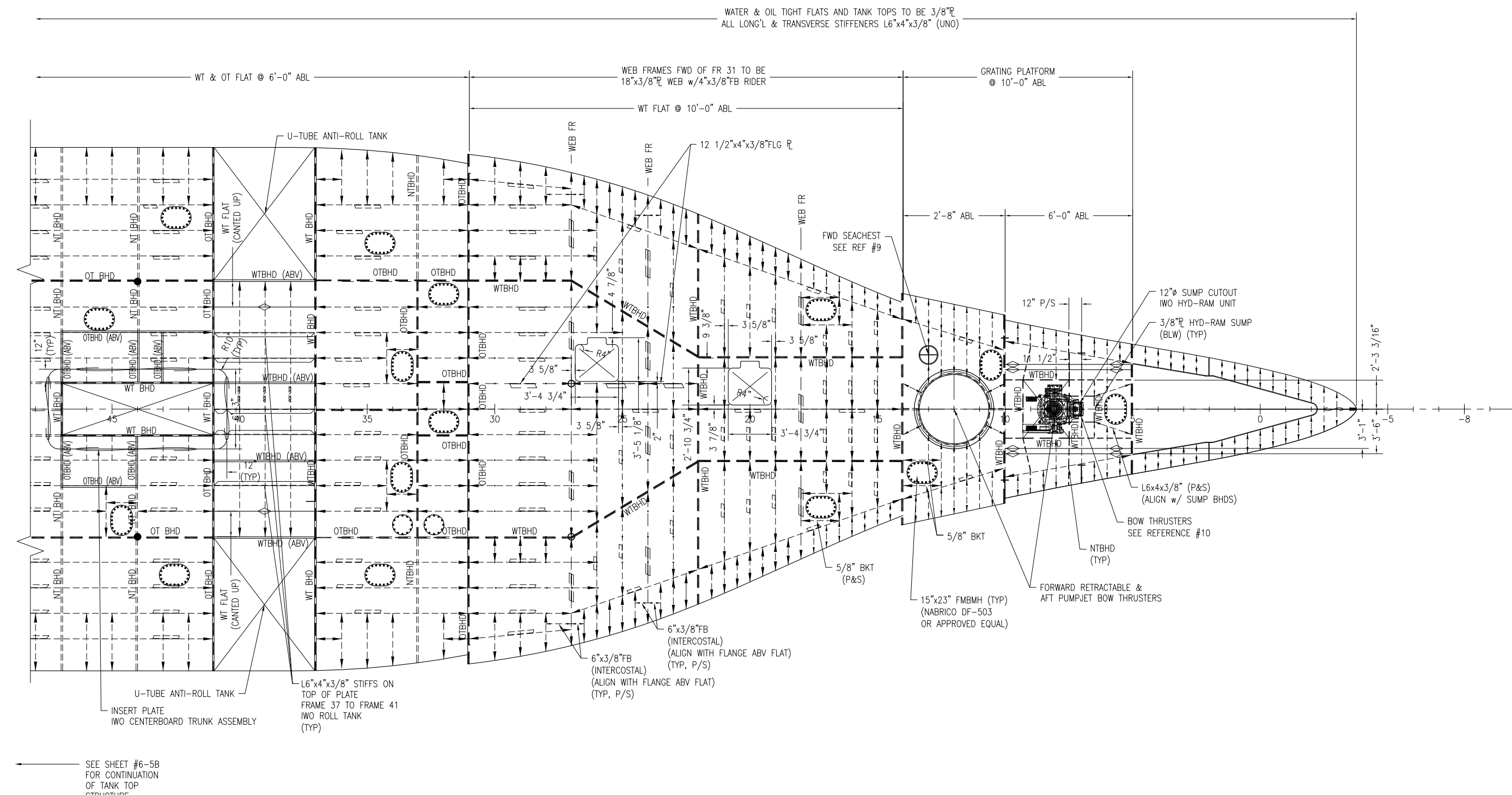
199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
MAIN DECK (AFT) KEY PLAN

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 4 OF 46

8 7 6 5 4 3 2 1

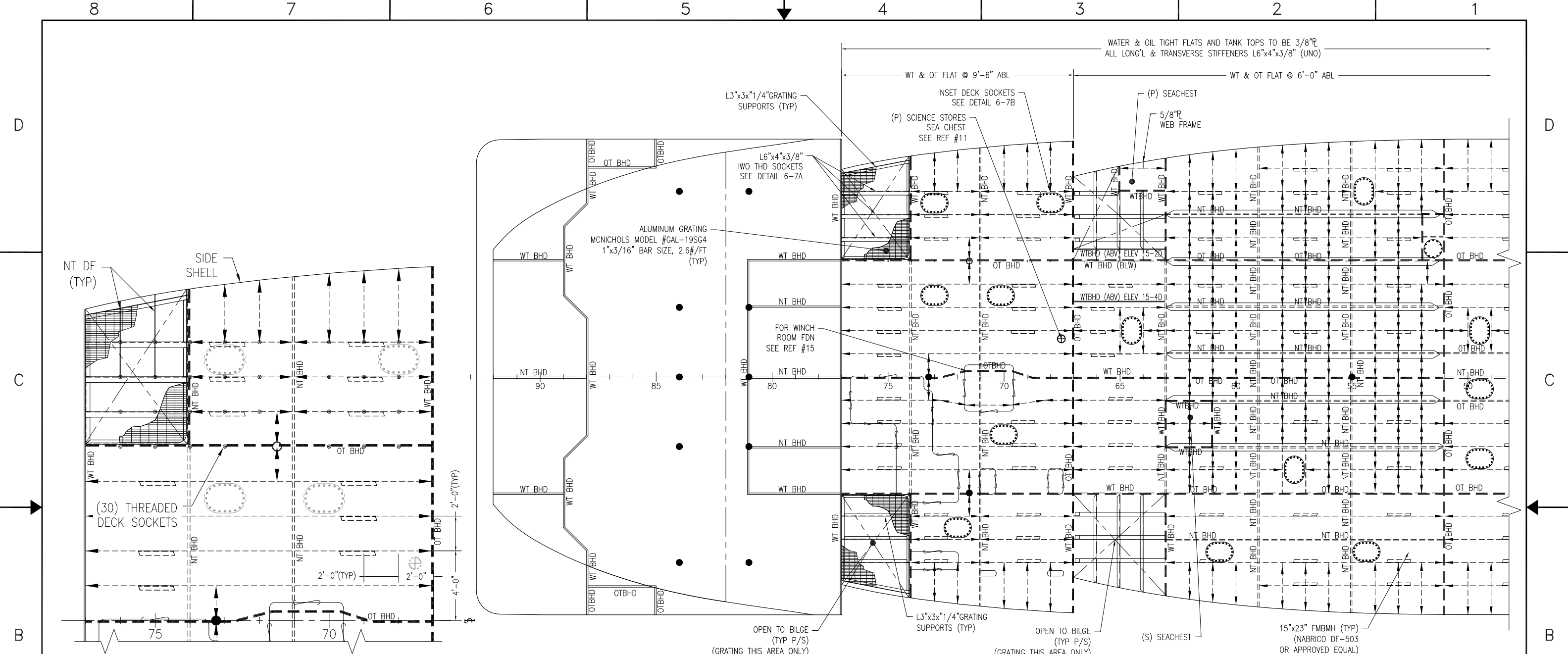
D
C
B
A



PLAN VIEW 5-5C
FORWARD TANK TOP
1/4" = 1'-0"

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL STEEL HULL STRUCTURAL ARRANGEMENT TANK TOP FRAMING (FORWARD) KEY PLAN			
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 5 OF 46

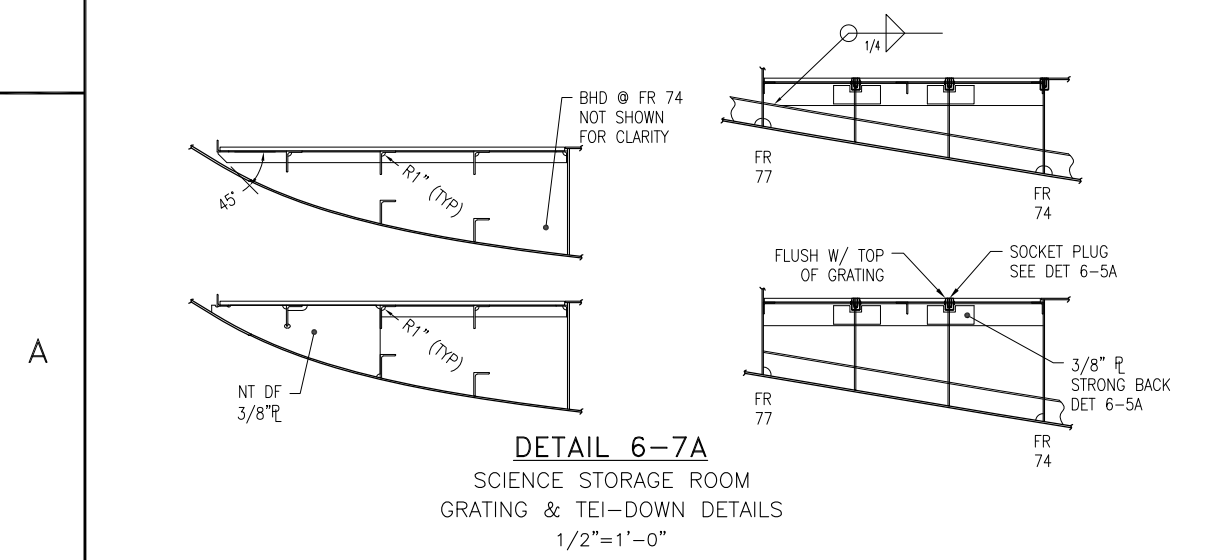
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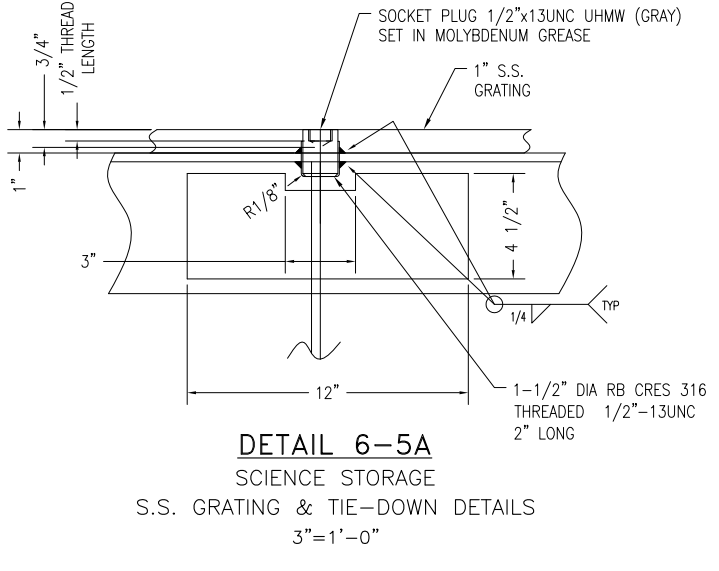
DETAIL 6-7B
SCIENCE STORAGE ROOM
GRATING & TEI-DOWN LOCATIONS
3/8"=1'-0"

PLAN VIEW 6-3C
AFT TANK TOP
1/4"=1'-0"

SEE SHEET #5-5B
FOR CONTINUATION
OF TANK TOP
STRUCTURE



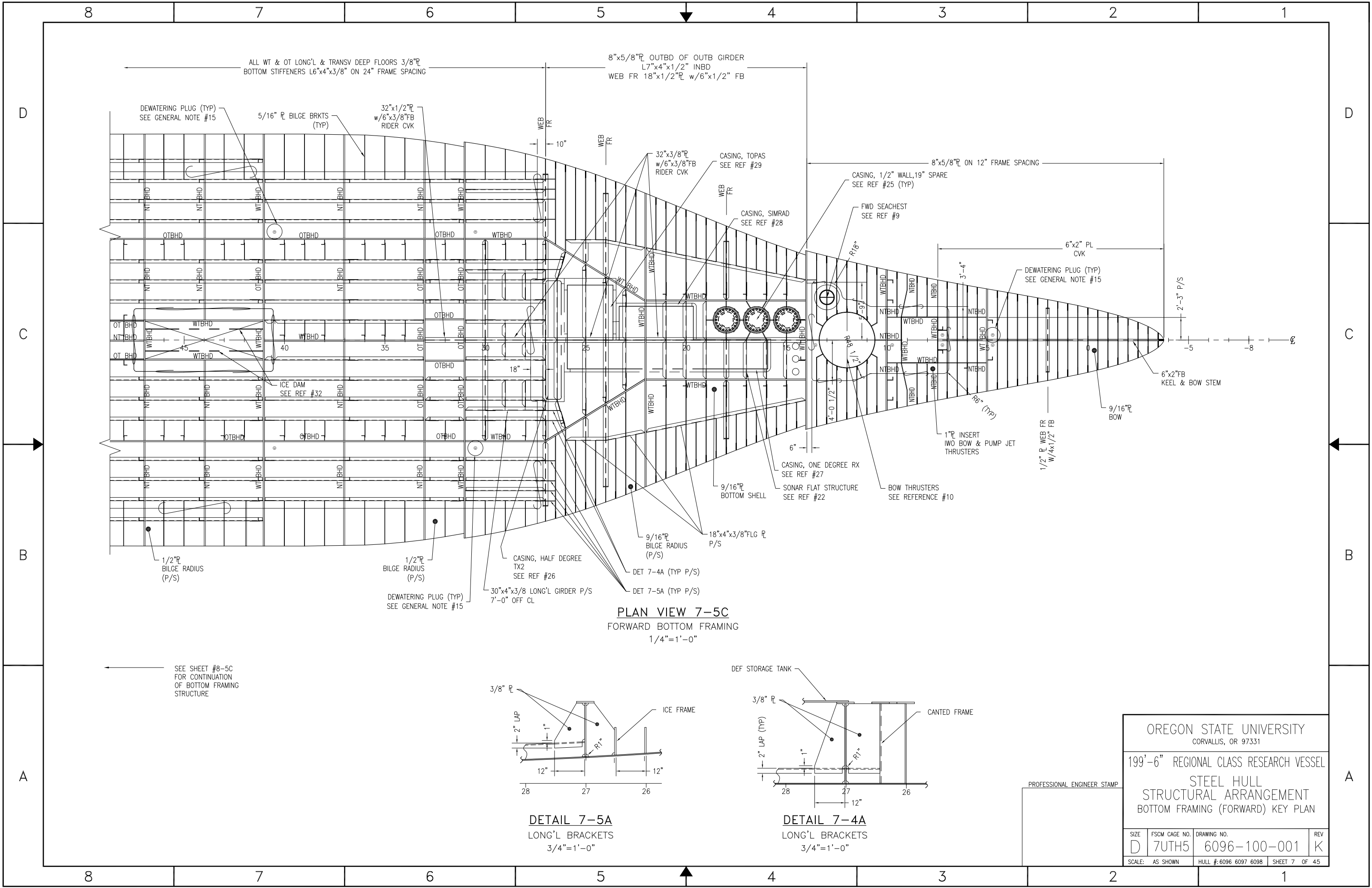
DETAIL 6-7A
SCIENCE STORAGE ROOM
GRATING & TEI-DOWN DETAILS
1/2"=1'-0"



DETAIL 6-5A
SCIENCE STORAGE
S.S. GRATING & TIE-DOWN DETAILS
3"=1'-0"

PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TANK TOP FRAMING (AFT) KEY PLAN			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 6 OF 46



ALL WT & OT LONG'L & TRANSV DEEP FLOORS 3/8"R
 BOTTOM STIFFENERS L6"x4"x3/8" ON 24" FRAME SPACING

8"x5/8"R OUTBD OF OUTB GIRDER
 L7"x4"x1/2" INBD
 WEB FR 18"x1/2"R w/6"x1/2" FB

DEWATERING PLUG (TYP)
 SEE GENERAL NOTE #15

5/16" R BILGE BRKTS
 (TYP)

32"x1/2"R
 w/6"x3/8"FB
 RIDER CVK

32"x3/8"R
 w/6"x3/8"FB
 RIDER CVK

CASING, TOPAS
 SEE REF #29

8"x5/8"R ON 12" FRAME SPACING

CASING, 1/2" WALL, 19" SPARE
 SEE REF #25 (TYP)

FWD SEACHEST
 SEE REF #9

DEWATERING PLUG (TYP)
 SEE GENERAL NOTE #15

ICE DAM
 SEE REF #32

9/16"R
 BOTTOM SHELL

CASING, ONE DEGREE RX
 SEE REF #27

BOW THRUSTERS
 SEE REFERENCE #10

1/2"R
 BILGE RADIUS
 (P/S)

1/2"R
 BILGE RADIUS
 (P/S)

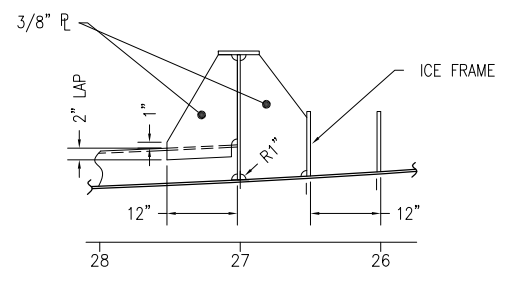
CASING, HALF DEGREE
 TX2
 SEE REF #26

9/16"R
 BILGE RADIUS
 (P/S)

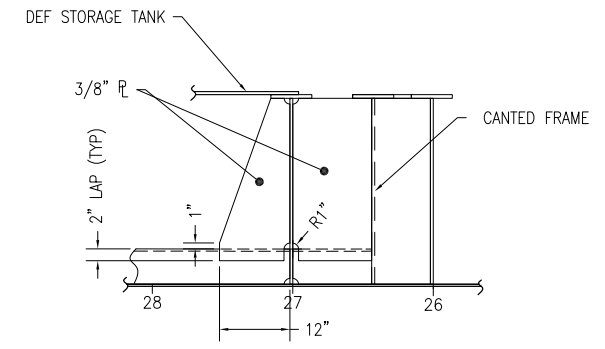
18"x4"x3/8"FLG R
 P/S

PLAN VIEW 7-5C
 FORWARD BOTTOM FRAMING
 1/4"=1'-0"

SEE SHEET #8-5C
 FOR CONTINUATION
 OF BOTTOM FRAMING
 STRUCTURE



DETAIL 7-5A
 LONG'L BRACKETS
 3/4"=1'-0"



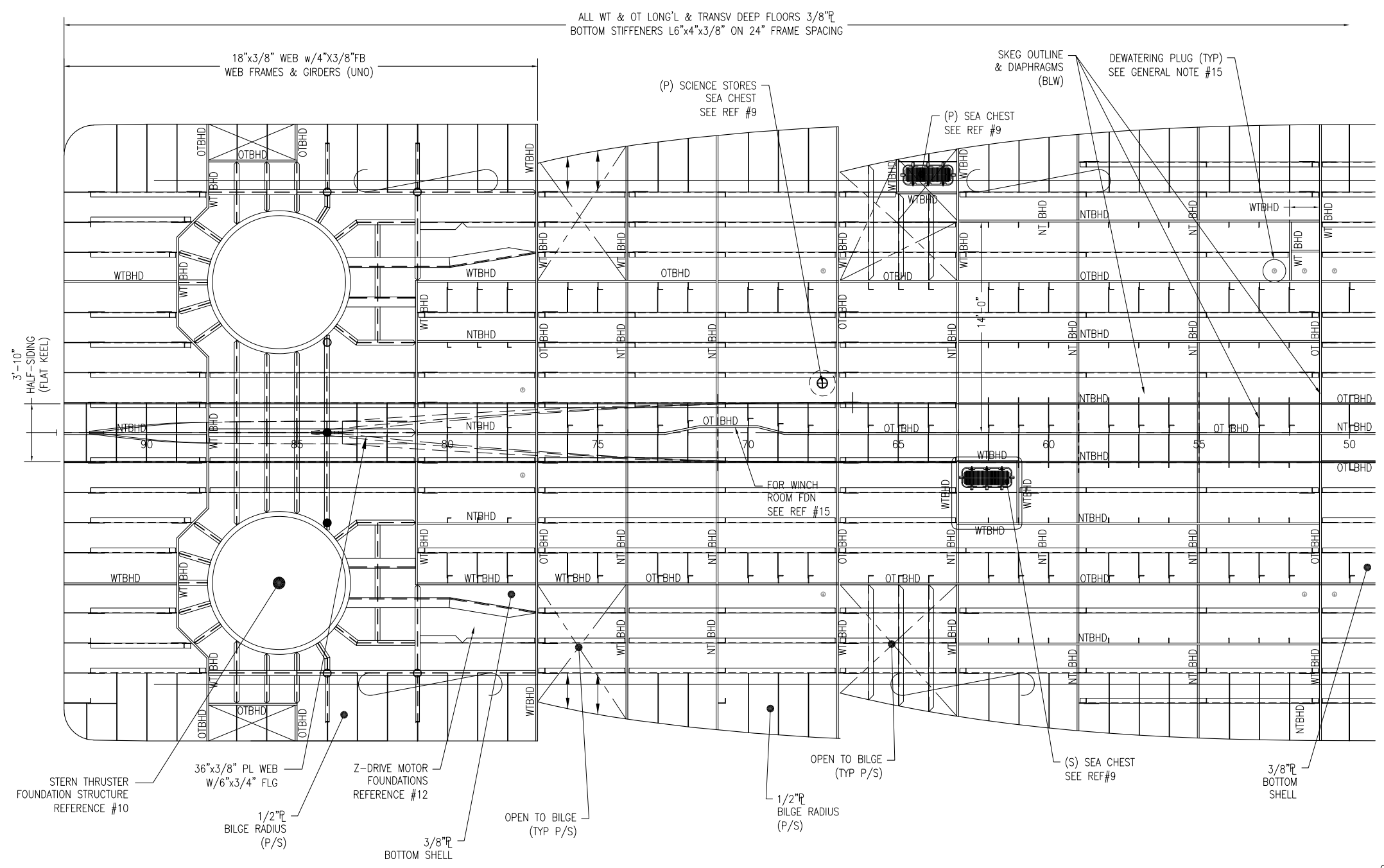
DETAIL 7-4A
 LONG'L BRACKETS
 3/4"=1'-0"

PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT BOTTOM FRAMING (FORWARD) KEY PLAN			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 7 OF 45

8 7 6 5 4 3 2 1

D
C
B
A



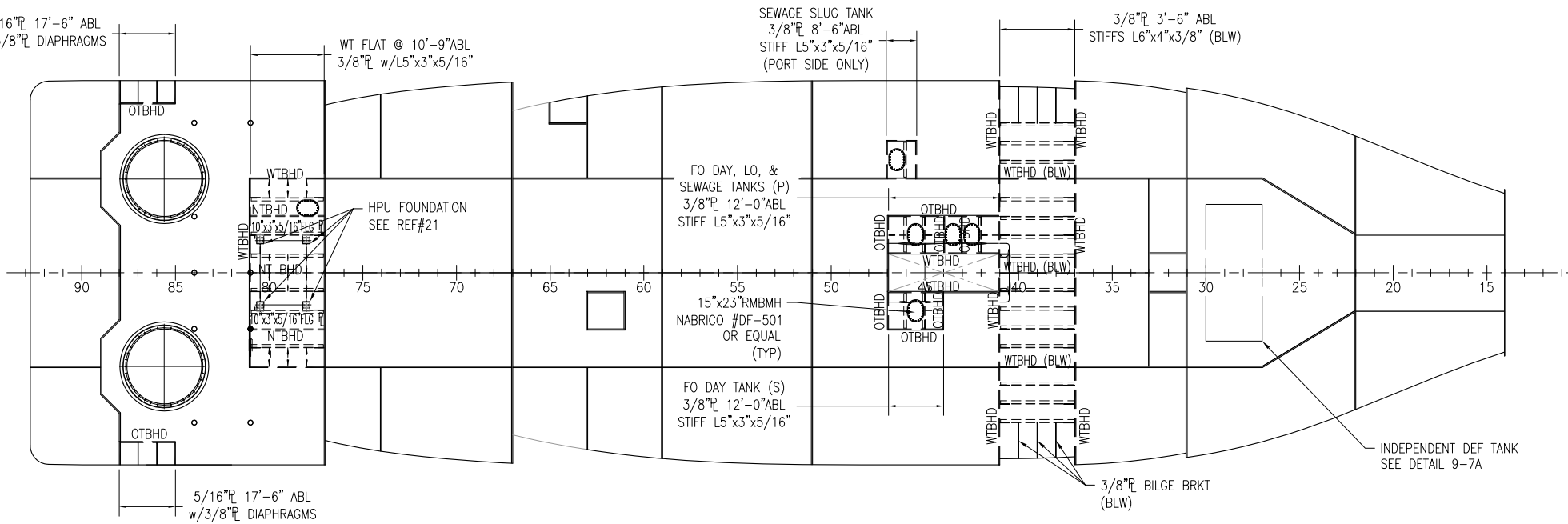
PLAN VIEW 8-5C
AFT BOTTOM FRAMING
1/4" = 1'-0"

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CORVALLIS, OR 97331

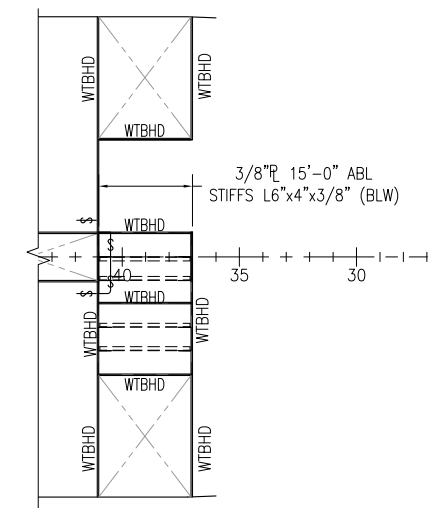
199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
BOTTOM FRAMING (AFT) KEY PLAN

PROFESSIONAL ENGINEER STAMP

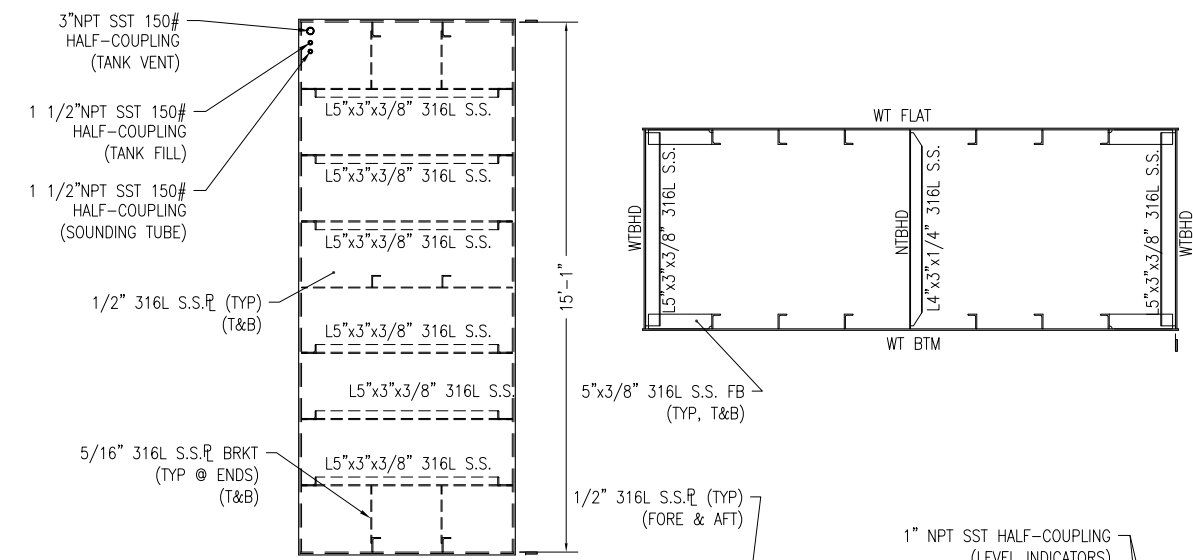
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 8 OF 46



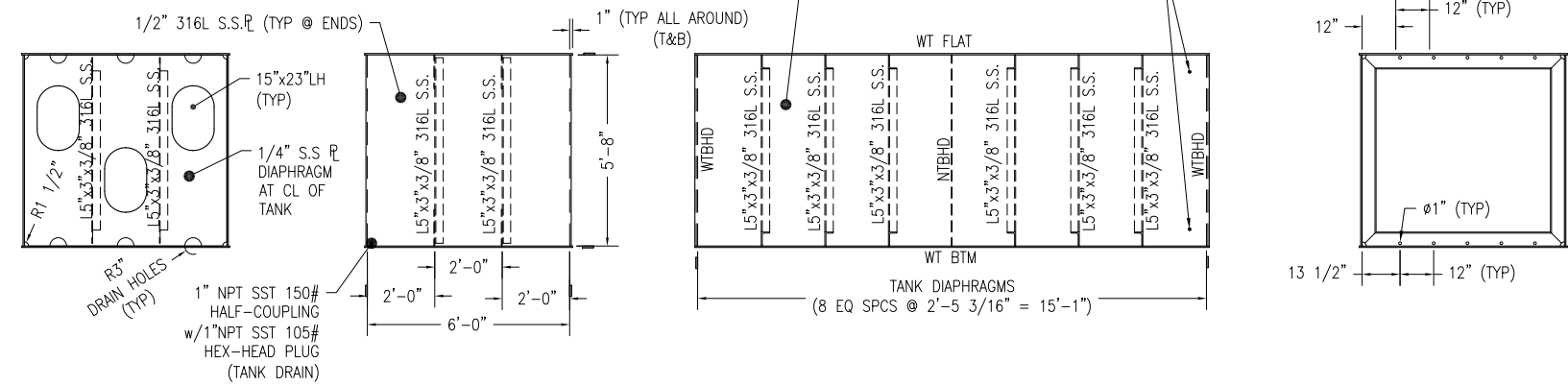
PLAN VIEW 9-5D
MISCELLANEOUS FLATS
1/8"=1'-0"



PLAN VIEW 9-2D
POTABLE WATER TANK FLATS
1/8"=1'-0"



DETAIL 9-7A
DEF TANK CONSTRUCTION
3/8"=1'-0"



OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

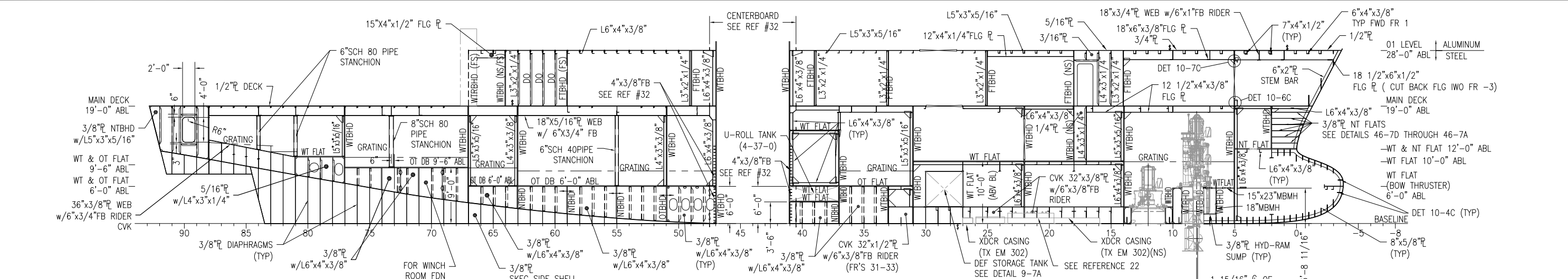
STEEL HULL
STRUCTURAL ARRANGEMENT
MISCELLANEOUS FLATS KEY PLAN

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 9 OF 46

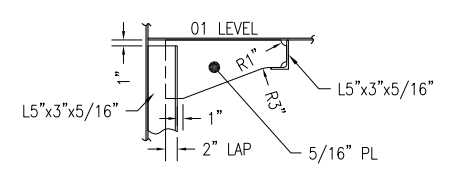
8 7 6 5 4 3 2 1

D

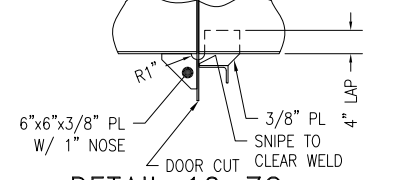
D



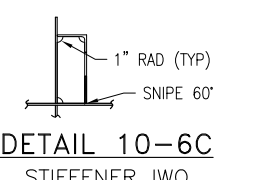
ELEVATION 10-5D
CENTERLINE SECTION
LOOKING TO PORT
1/8"=1'-0"



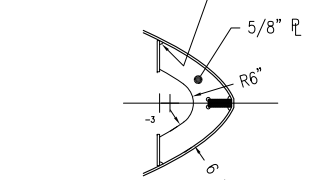
DETAIL 10-8C
TYP BRACKET
3/4"=1'-0"



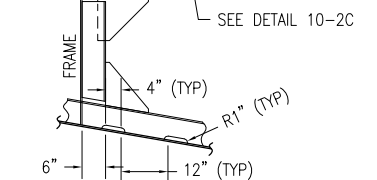
DETAIL 10-7C
CLIP IWO DOOR HEADER
3/4"=1'-0"



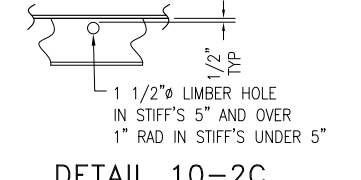
DETAIL 10-6C
STIFFENER IWO
DOOR HEADER
3/4"=1'-0"



DETAIL 10-4C
BREAST HOOK
1/2"=1'-0"



DETAIL 10-3C
TYP LIMBER & AIR HOLES
1/2"=1'-0"



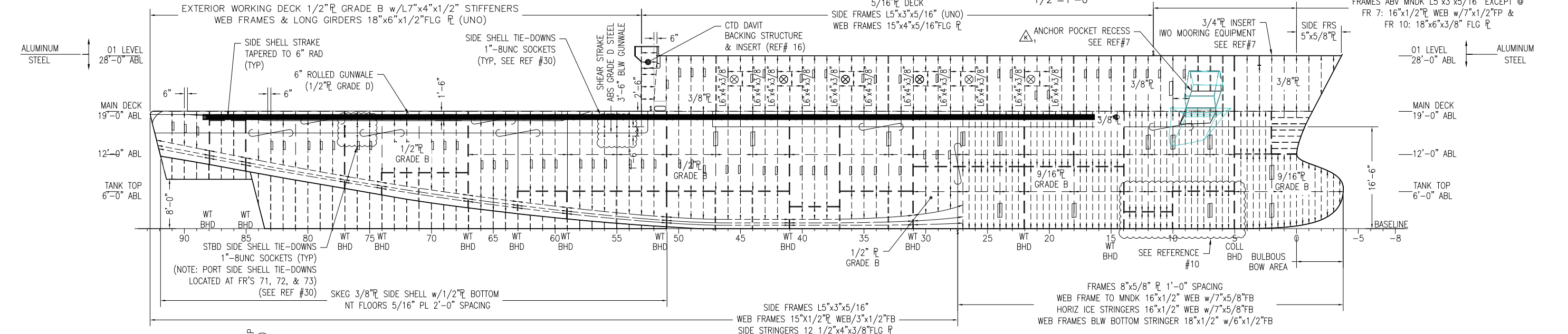
DETAIL 10-2C
TYP LIMBER & AIR HOLES
1"=1'-0"

C

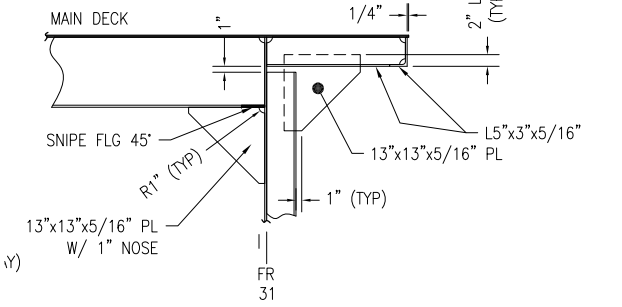
C

B

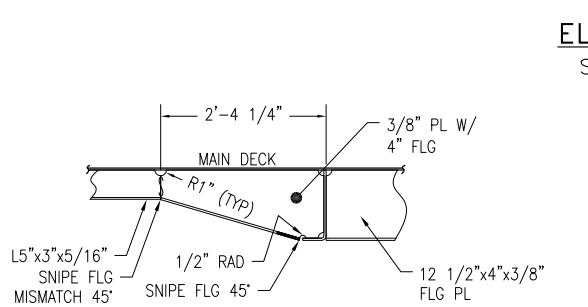
B



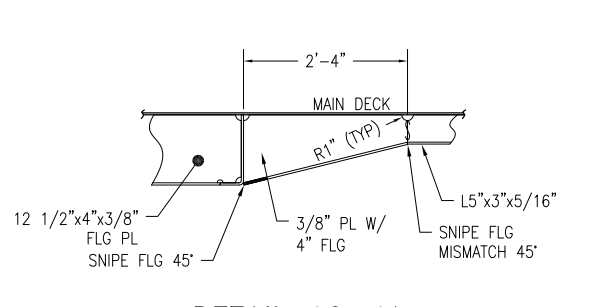
ELEVATION 10-5B
SIDE SHELL PLATING
STARBOARD SIDE
LOOKING INBOARD
1/8"=1'-0"



DETAIL 10-8A
STRUCTURE IWO MAIN DK HATCH
FRW FR 31 @ CL
3/4"=1'-0"



DETAIL 10-6A
TYP TRANSITION BRACKET TOE SIDE FOR
12 1/2" x 4" x 3/8" FLG PL
3/4"=1'-0"



DETAIL 10-4A
TYP TRANSITION BRACKET HEEL SIDE FOR
12 1/2" x 4" x 3/8" FLG PL
3/4"=1'-0"

A

A

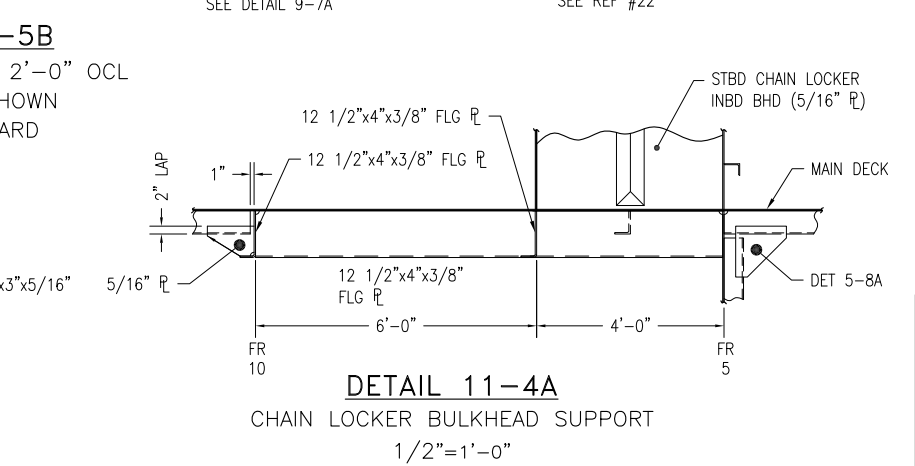
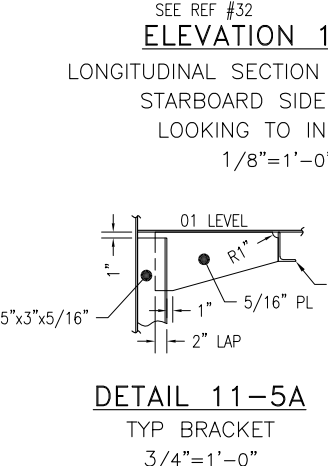
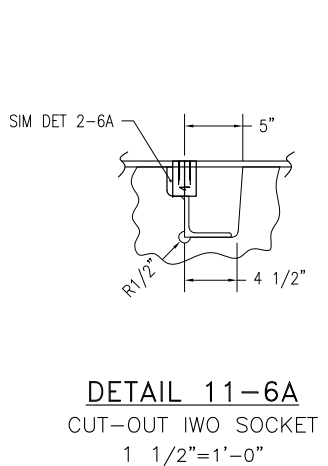
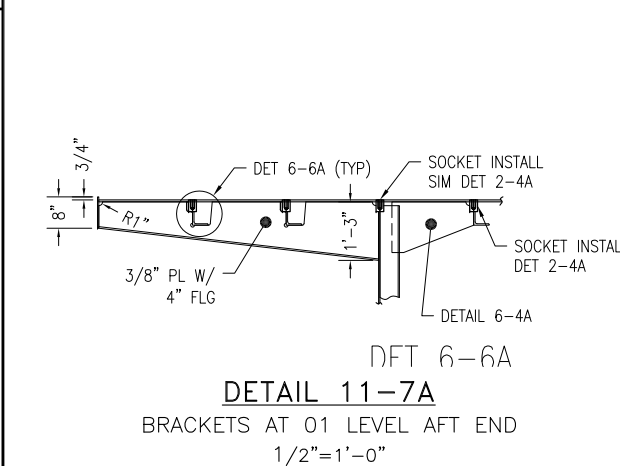
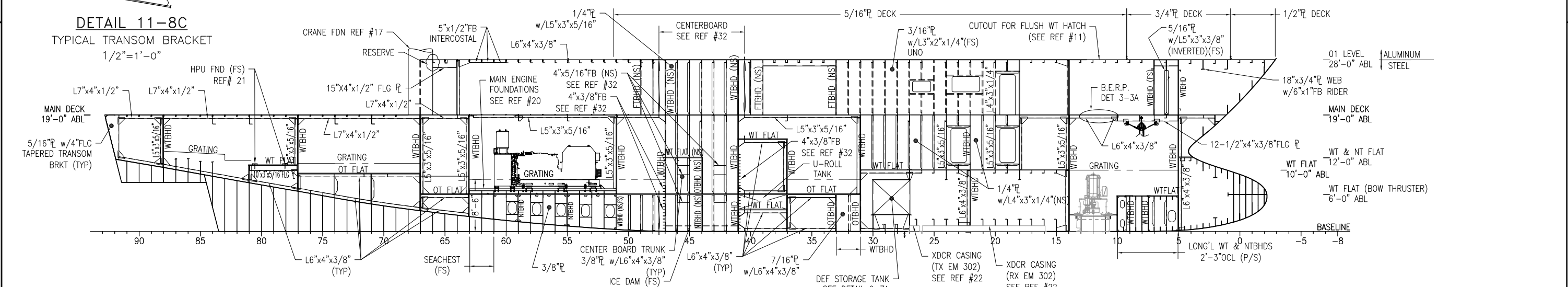
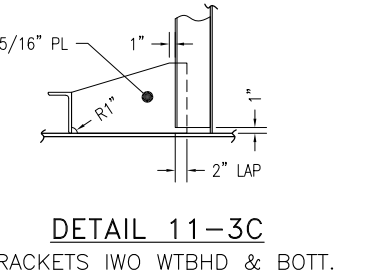
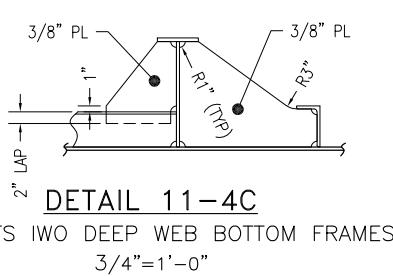
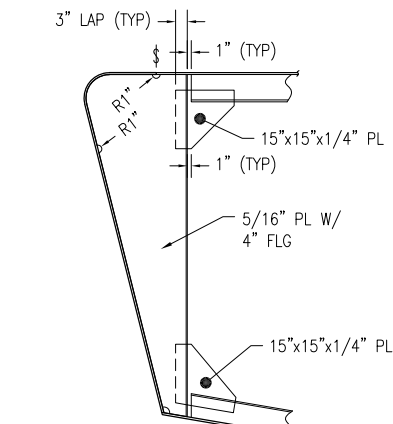
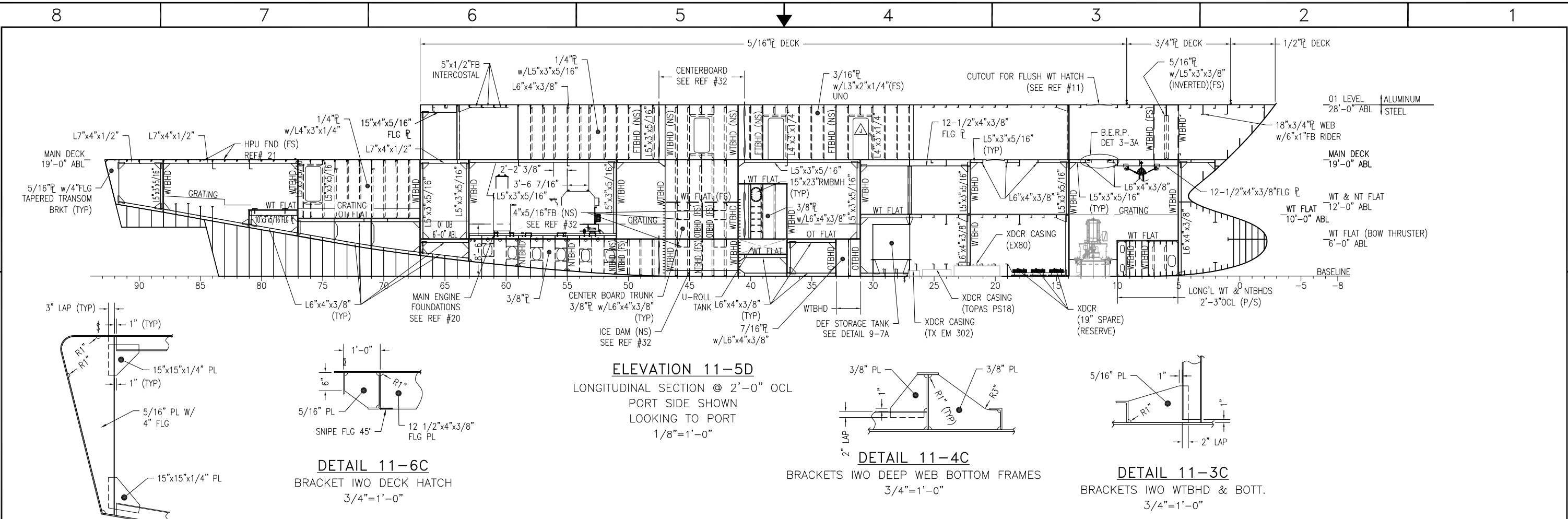
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
CENTERLINE PROFILE & SIDE SHELL PLATING
KEY PLAN

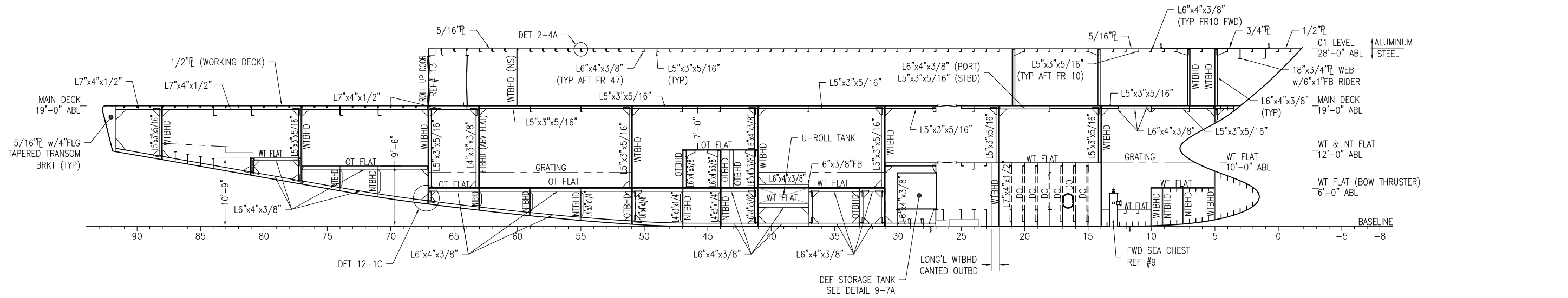
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 10 OF 46

8 7 6 5 4 3 2 1

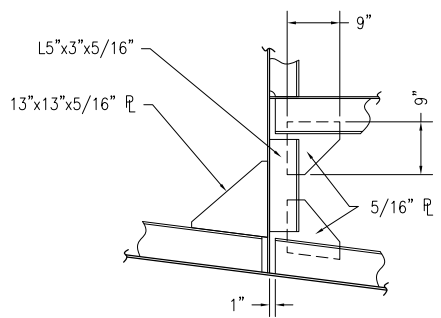


OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMING PROFILE 2'-0" OCL (PORT & STARBOARD)			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 11 OF 46

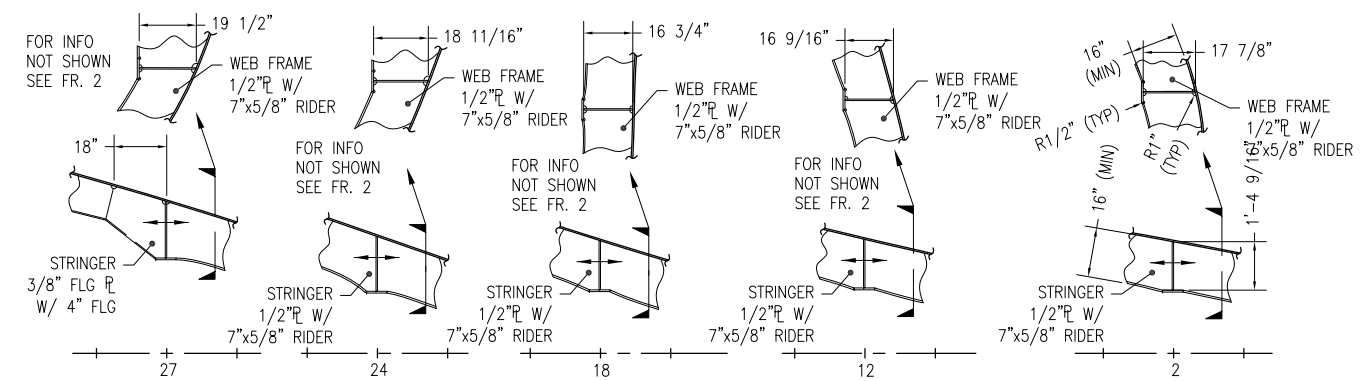
8 7 6 5 4 3 2 1



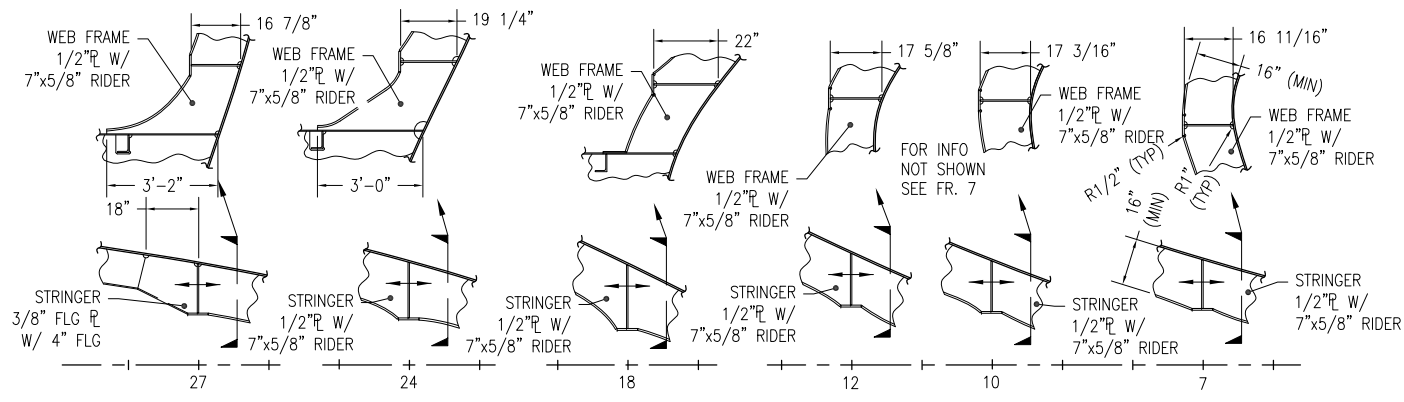
ELEVATION 12-5D
 LONGITUDINAL SECTION @ 4'-0" OCL
 PORT SIDE SHOWN
 LOOKING TO PORT
 (STARBOARD SIDE SIM, BUT OPP HAND)
 1/8" = 1'-0"



DETAIL 12-1C
 BRACKETS IWO WT BHD & FLAT
 3/4" = 1'-0"



PLAN 12-7B
 SIDE STRINGER AT 6'-0" ABL
 SHOWN LOOKING DOWN
 3/8" = 1'-0"

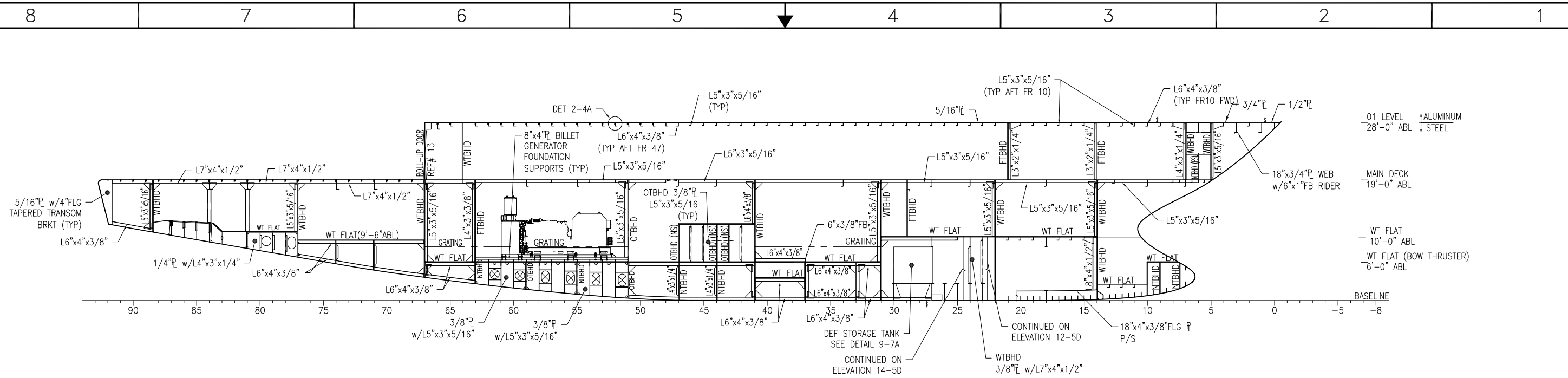


PLAN 12-7A
 SIDE STRINGER AT 12'-0" ABL
 SHOWN LOOKING DOWN
 3/8" = 1'-0"

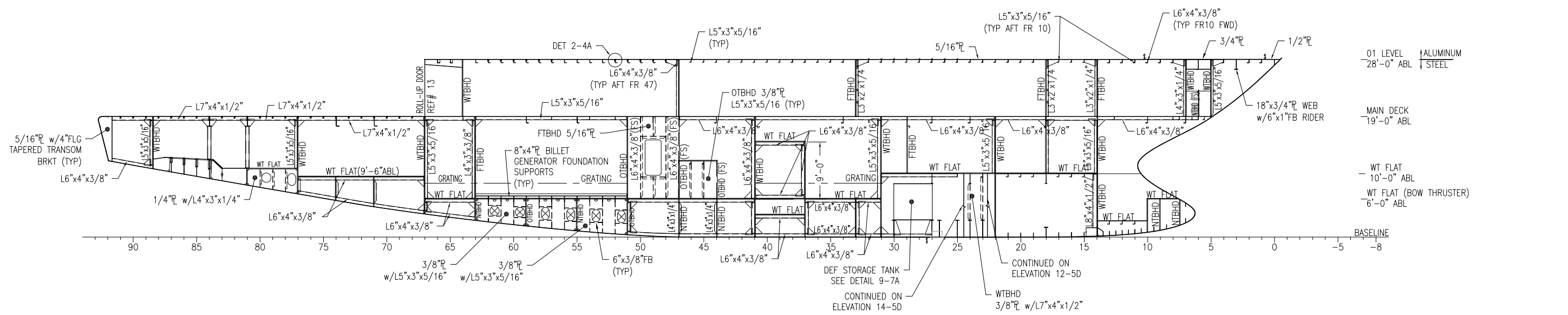
PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMING PROFILE 4'-0" OCL (PORT & STARBOARD)			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 12 OF 46	

8 7 6 5 4 3 2 1



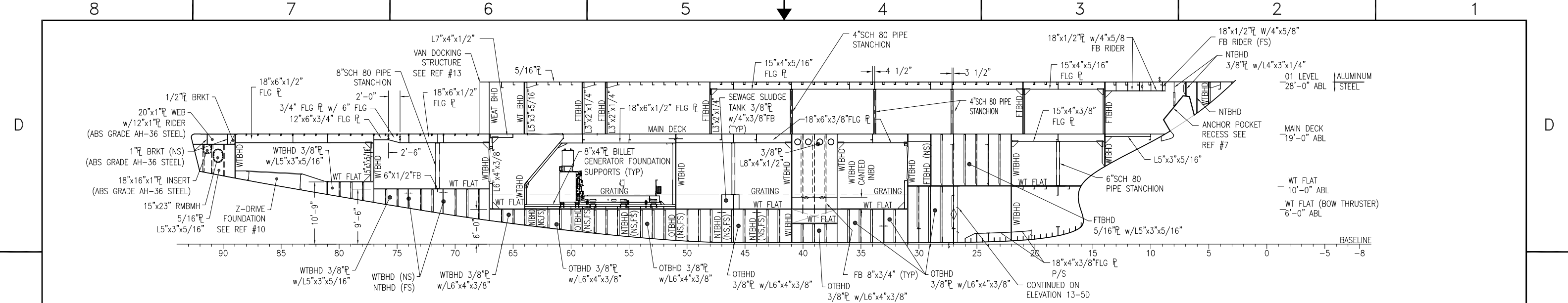
ELEVATION 13-5D
 LONGITUDINAL SECTION @ 6'-0" OCL
 PORT SIDE SHOWN
 LOOKING TO PORT
 1/8"=1'-0"



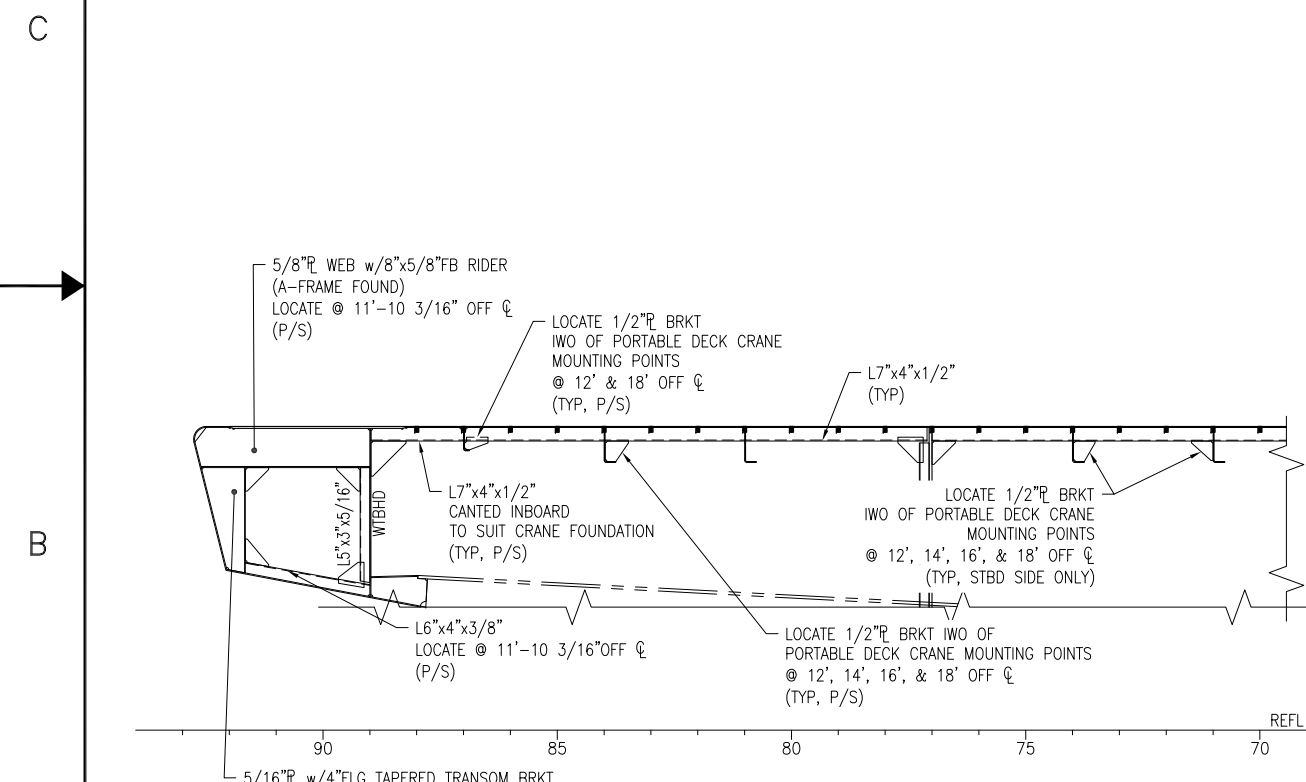
ELEVATION 13-5B
 LONGITUDINAL SECTION @ 6'-0" OCL
 STARBOARD SIDE SHOWN
 LOOKING TO INBOARD
 1/8"=1'-0"

PROFESSIONAL ENGINEER STAMP

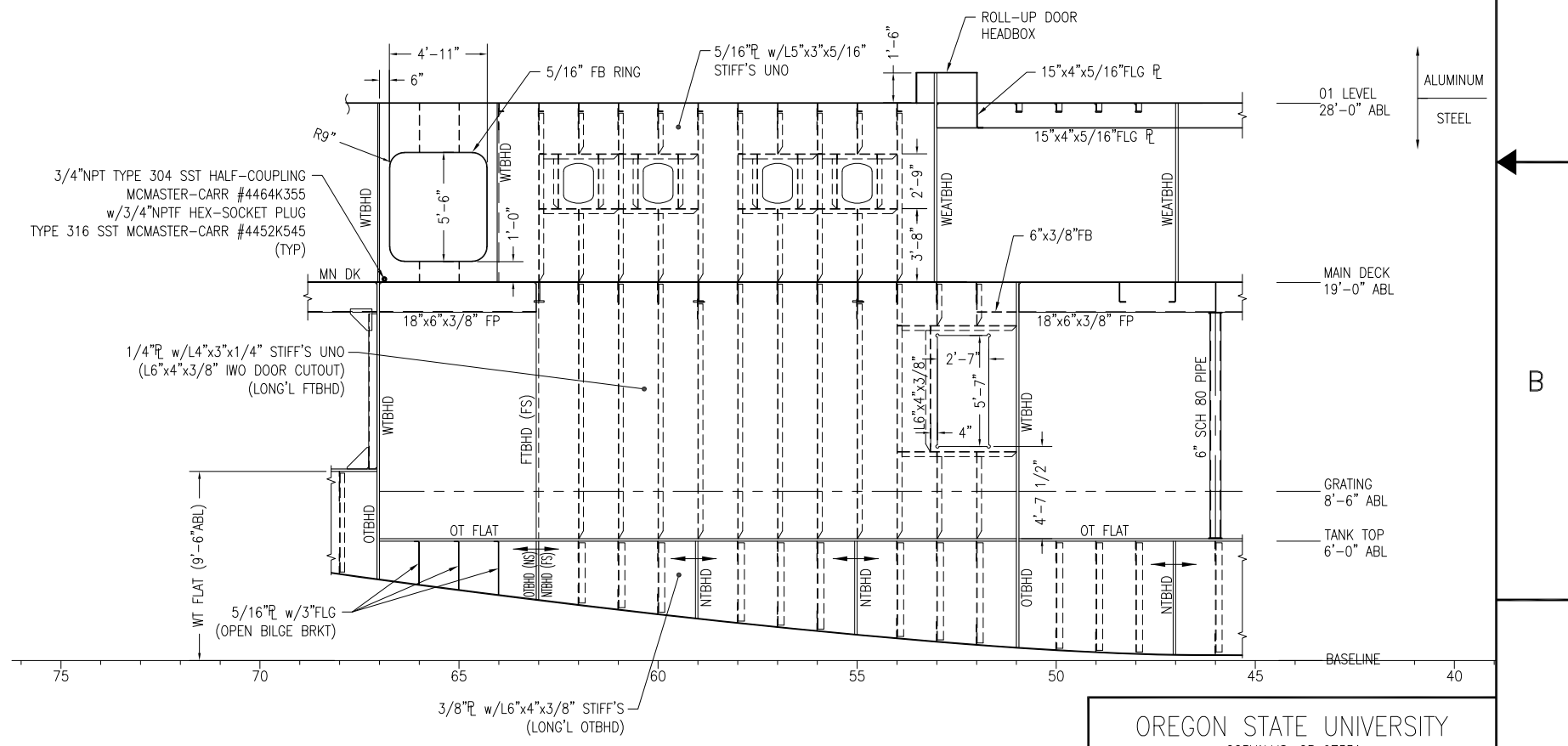
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMING PROFILE 6'-0" OCL (PORT & STARBOARD)			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 13 OF 46



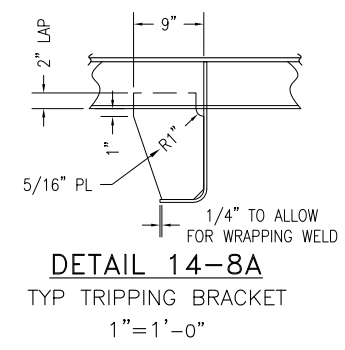
ELEVATION 14-5D
 LONGITUDINAL SECTION @ 10'-0" OCL
 PORT SIDE SHOWN
 LOOKING TO PORT
 1/8"=1'-0"



ELEVATION 14-6B
 LONGITUDINAL SECTION @ 12'-0" OCL
 LONG'L SECTIONS @ 14', 16', & 18' OFF Q SIM (UNO)
 STARBOARD SIDE SHOWN
 LOOKING TO INBOARD
 1/4"=1'-0"



ELEVATION 14-3B
 LONGITUDINAL SECTION @ 10'-0" OCL
 STARBOARD SIDE SHOWN
 LOOKING TO INBOARD
 1/4"=1'-0"



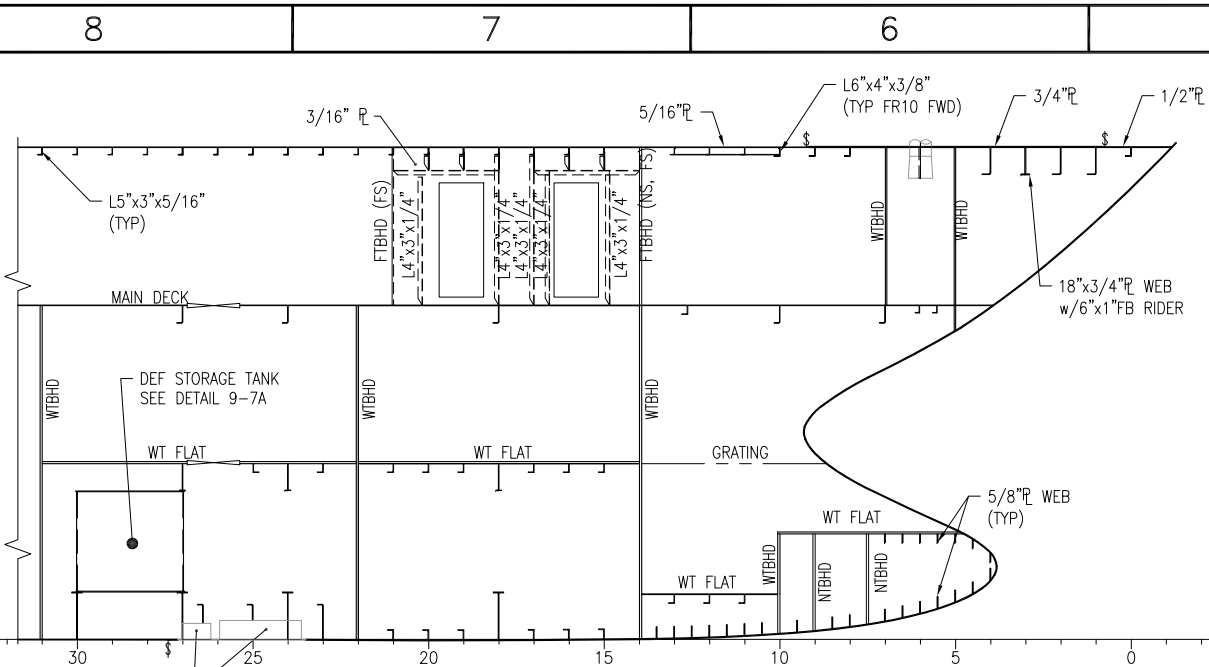
DETAIL 14-8A
 TYP. TRIPPING BRACKET
 1"=1'-0"

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 CORVALLIS, OR 97331

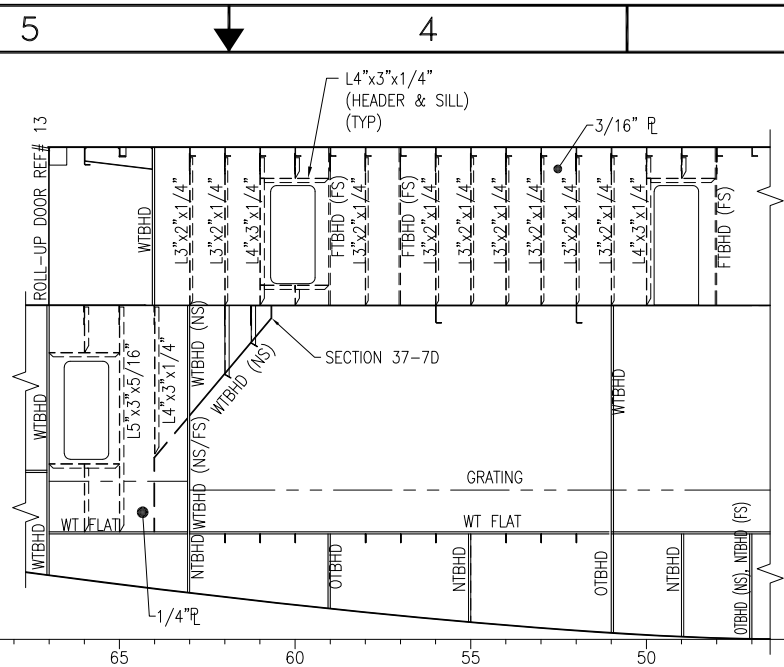
199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
 STRUCTURAL ARRANGEMENT
 FRAMING PROFILE 10'-0" OCL
 (PORT & STARBOARD)

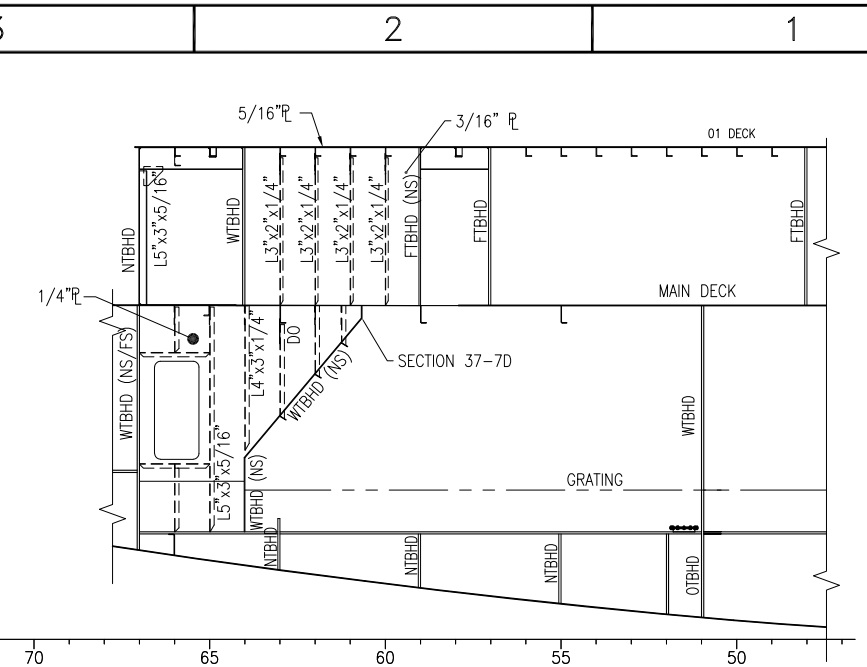
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 14 OF 46	



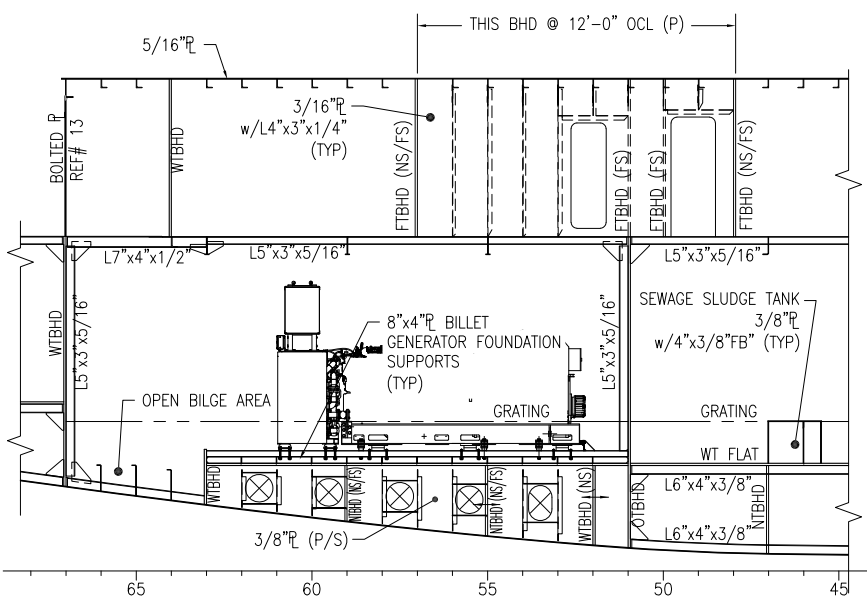
ELEVATION 15-7D
 LONGITUDINAL SECTION @ 5'-0" OCL
 PORT SIDE SHOWN
 LOOKING TO PORT
 3/16"=1'-0"



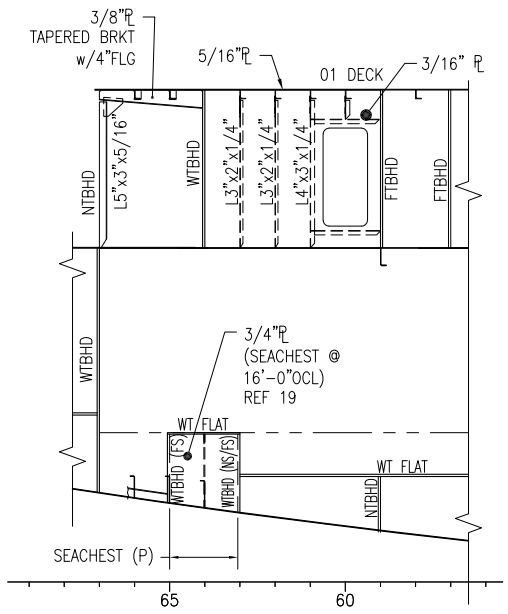
ELEVATION 15-4D
 LONGITUDINAL SECTION @ 6'-6" OCL
 PORT SIDE SHOWN
 LOOKING TO PORT
 3/16"=1'-0"



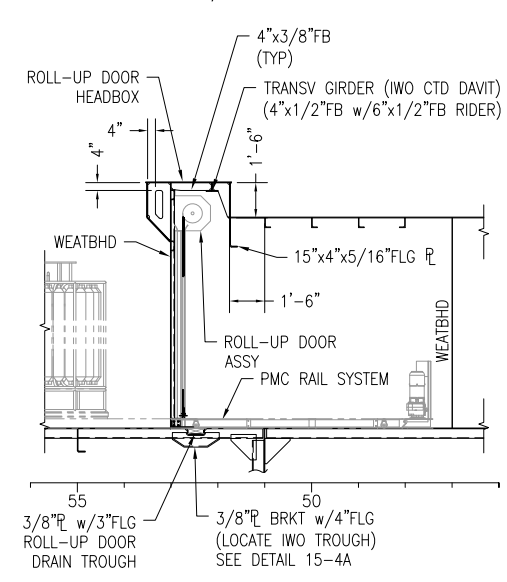
ELEVATION 15-2D
 LONGITUDINAL SECTION @ 11'-0" OCL
 PORT SIDE SHOWN
 LOOKING TO PORT
 3/16"=1'-0"



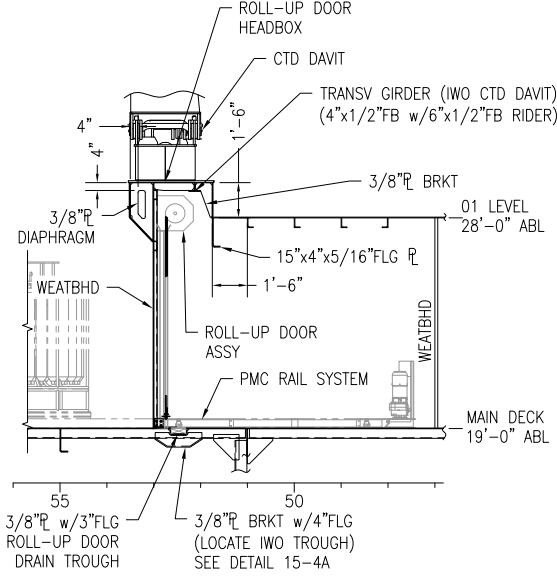
ELEVATION 15-7B
 LONGITUDINAL SECTION @ 12'-0" AND 14'-0" OCL
 PORT SIDE
 SHOWN LOOKING TO PORT
 3/16"=1'-0"



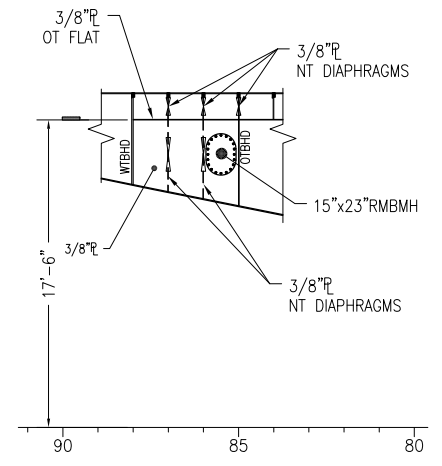
ELEVATION 15-6B
 LONGITUDINAL SECTION @ 16'-10" OCL
 PORT SIDE ONLY
 SHOWN LOOKING TO PORT
 3/16"=1'-0"



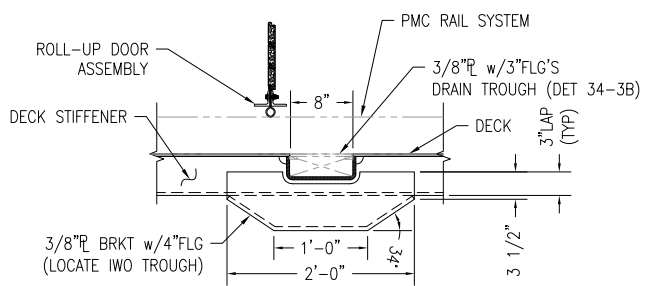
ELEVATION 15-4B
 LONGITUDINAL SECTION @ 12'-0" OCL
 SHOWN LOOKING DOWN
 THROUGH ROLL-UP DOOR
 1/4"=1'-0"



ELEVATION 15-3B
 LONGITUDINAL SECTION @ 18'-0" OCL
 SHOWN LOOKING DOWN
 THROUGH ROLL-UP DOOR
 1/4"=1'-0"



ELEVATION 15-1B
 LONGITUDINAL SECTION @ 18'-0" OCL
 PORT SIDE SHOWN LOOKING TO PORT
 STARBOARD SIDE SIM BUT OPP HAND
 3/16"=1'-0"



DETAIL 15-4A
 DECK STIFFENER BRACKET DETAIL
 1"=1'-0"

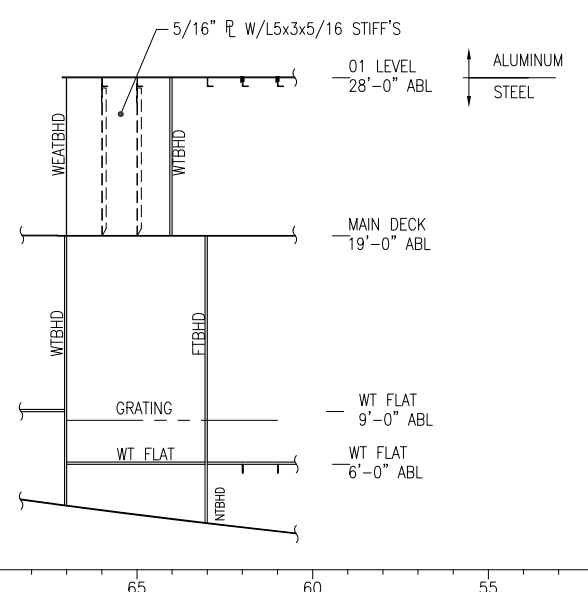
PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY
 CORVALLIS, OR 97331

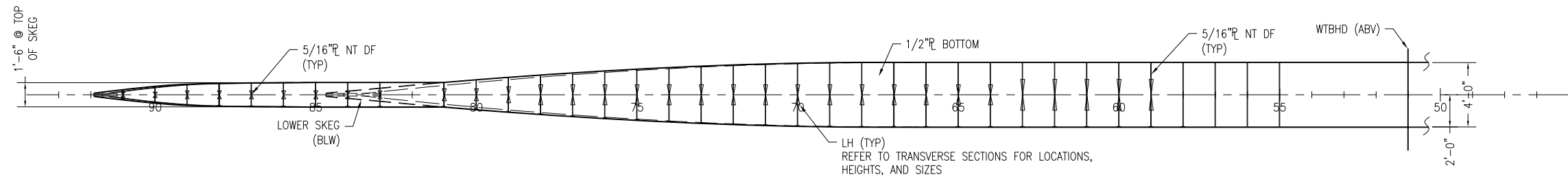
199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
 STRUCTURAL ARRANGEMENT
 MISCELLANEOUS LONGITUDINAL SECTIONS
 5'-0" OCL TO 18'-0" OCL (PORT SIDE)

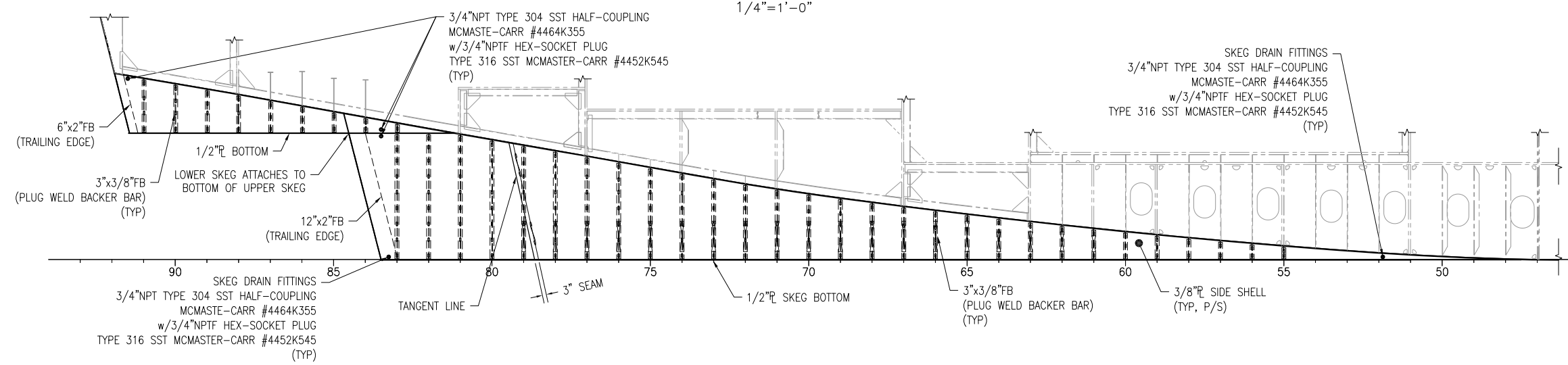
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 15 OF 46



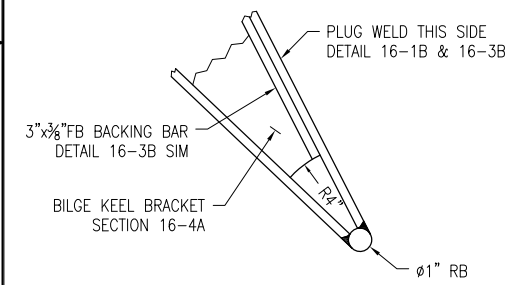
ELEVATION 16-7D
LONGITUDINAL SECTION @ 8'-6" OCL
STARBOARD SIDE SHOWN
LOOKING TO INBOARD
3/16"=1'-0"



PLAN VIEW 16-4D
SKEG DETAIL
SHOWN LOOKING DOWN
1/4"=1'-0"

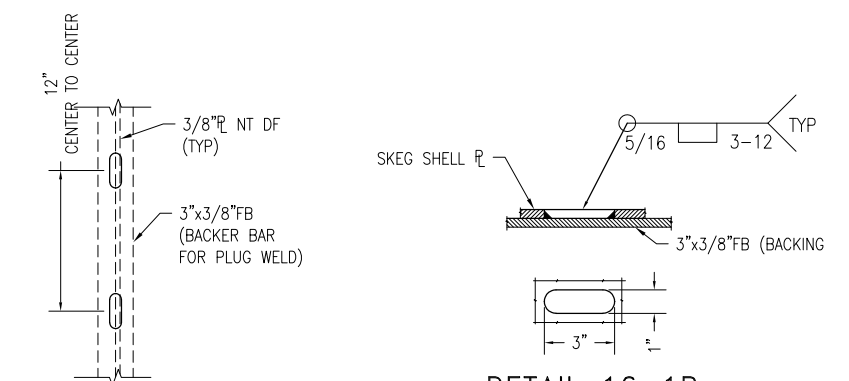


ELEVATION 16-4C
SKEG DETAIL
STARBOARD SIDE SHOWN
LOOKING TO PORT
1/4"=1'-0"



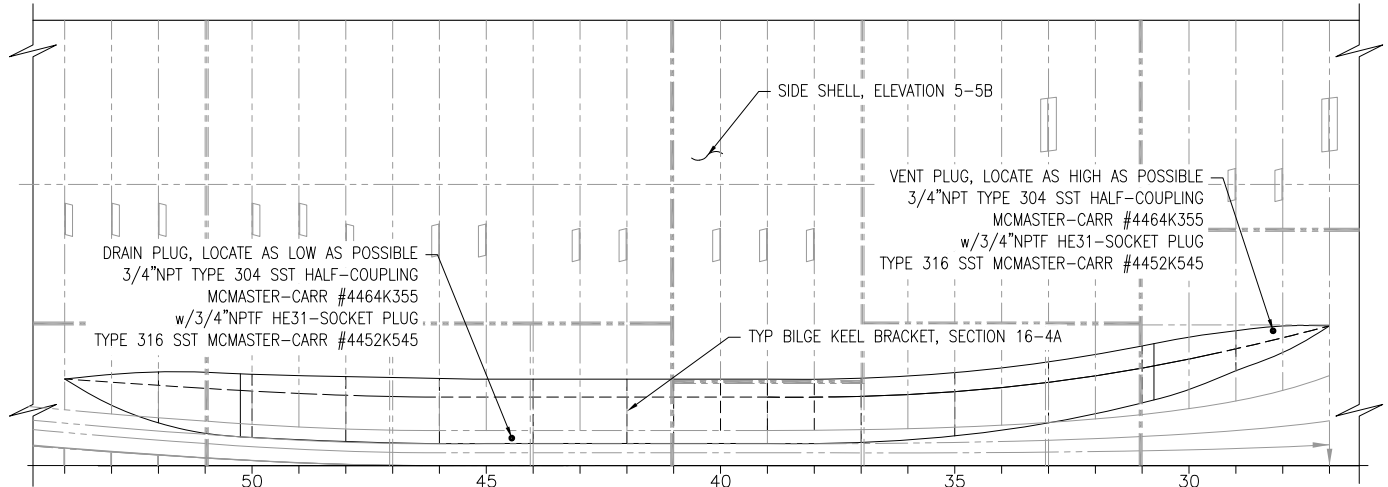
DETAIL 16-8B
BILGE KEEL DETAILS
3"=1'-0"

TABLE 11-6B BILGE KEEL DIMENSIONS		
FRAME	DEPTH (D)	WIDTH (W)
27 & 51	0	0
28 & 50	1'-2 11/16"	0'-5 1/8"
29 & 49	2'-0"	0'-8 5/8"
30 & 48	2'-4 15/16"	0'-10 9/16"
31-47	2'-6"	0'-11"

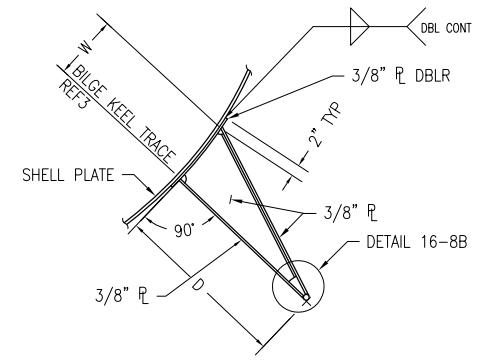


DETAIL 16-3B
SKEG PLUG WELD SPACING
3"=1'-0"

DETAIL 16-1B
SKEG PLUG WELD DETAIL
3"=1'-0"



ELEVATION 16-6A
BILGE KEEL, STBD SIDE SHOWN, PORT SIDE OPP
1/4"=1'-0"



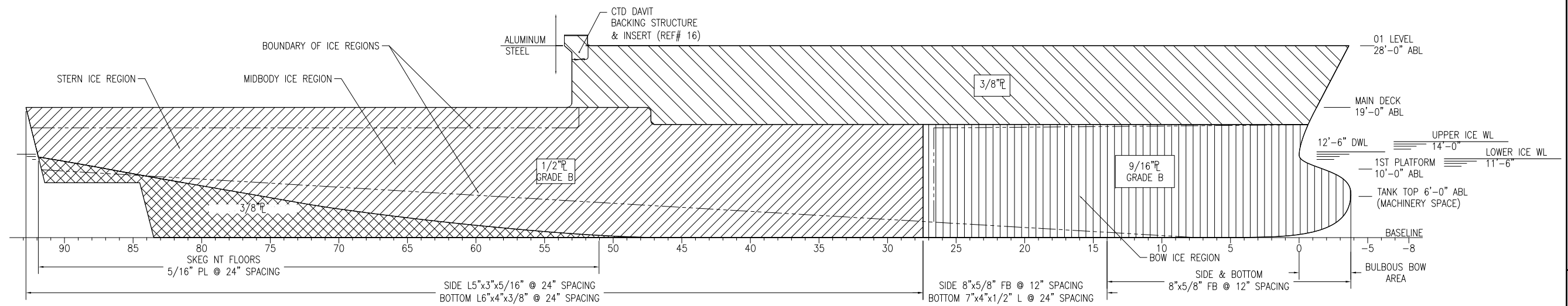
SECTION 16-4A
BILGE KEEL BRACKET, LOCATE ON ODD NUMBERED FRAMES
SEE TABLE 11-6B FOR DIMENSIONS
3/4"=1'-0"

PROFESSIONAL ENGINEER STAMP

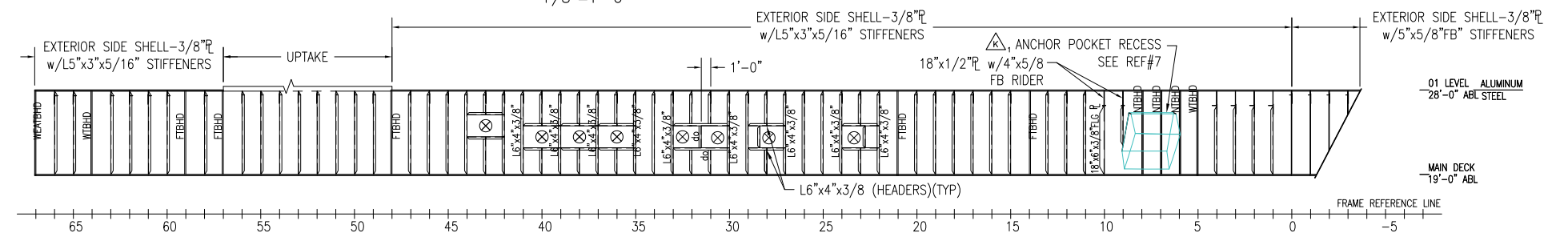
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
MISCELLANEOUS LONGITUDINAL SECTIONS
8'-6" OCL (STARBOARD SIDE)

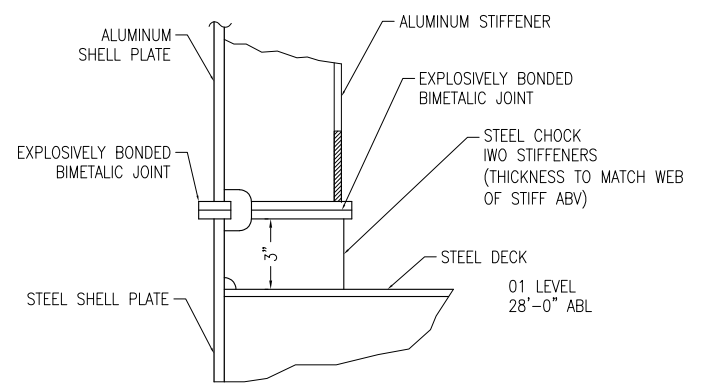
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 16 OF 46



ELEVATION 17-4D
SHELL PLATING
1/8"=1'-0"



ELEVATION 17-4C
PORT SIDE MAIN DECK SIDE SHELL FRAMING
1/8"=1'-0"

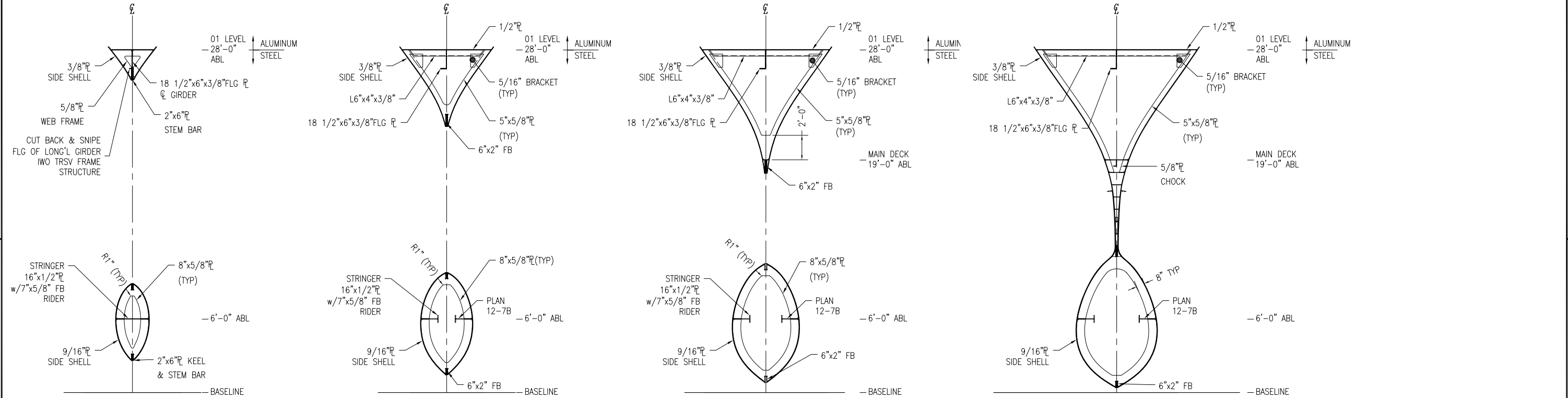


DETAIL 17-7A
STEEL TO ALUMINUM TRANSITION
3"=1'-0"

PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT SHELL PLATING & ICE REGIONS			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 17 OF 46

8 7 6 5 4 3 2 1



SECTION 18-8D

FR -3
LOOKING AFT
1/4"=1'-0"

SECTION 18-6D

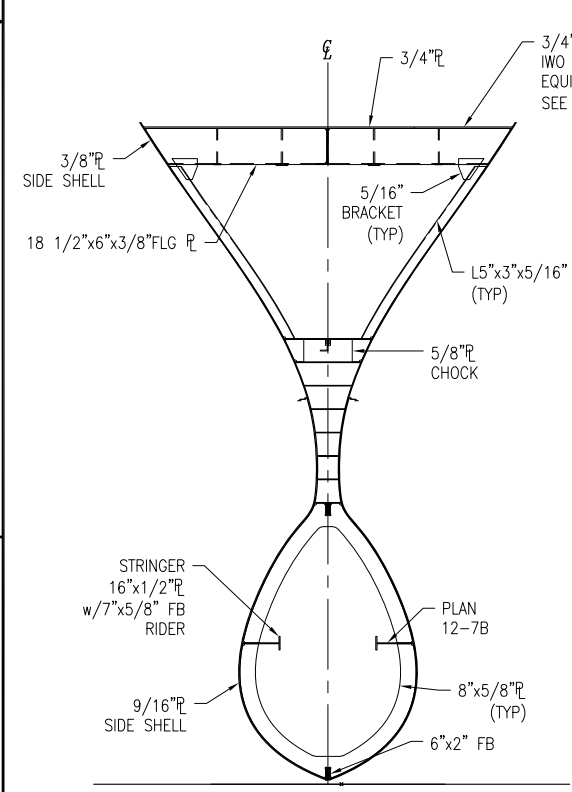
FR -2
LOOKING AFT
1/4"=1'-0"

SECTION 18-5D

FR -1
LOOKING AFT
1/4"=1'-0"

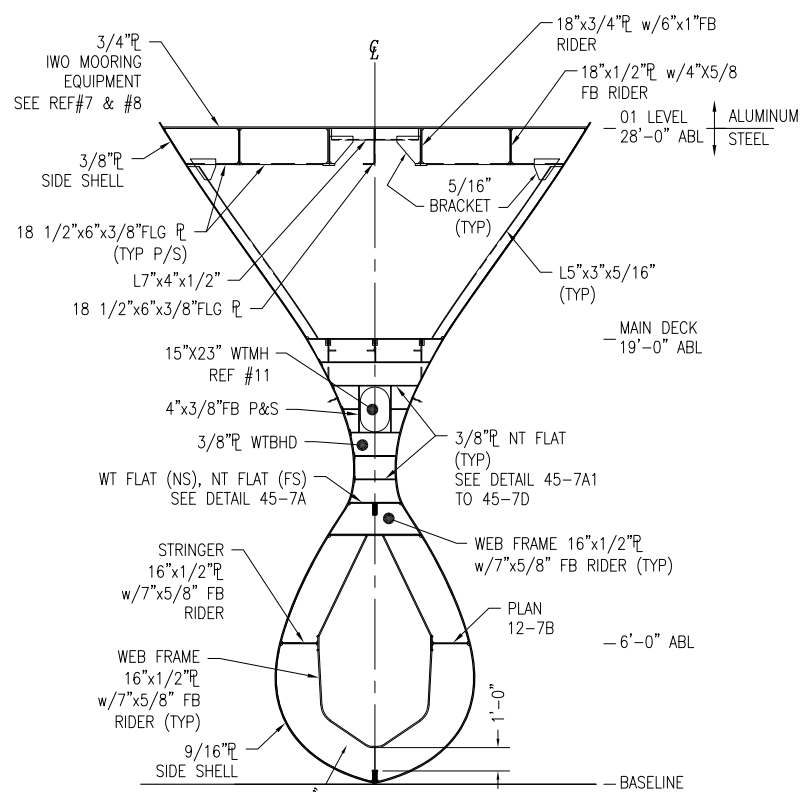
SECTION 18-3D

FR 0
LOOKING AFT
1/4"=1'-0"



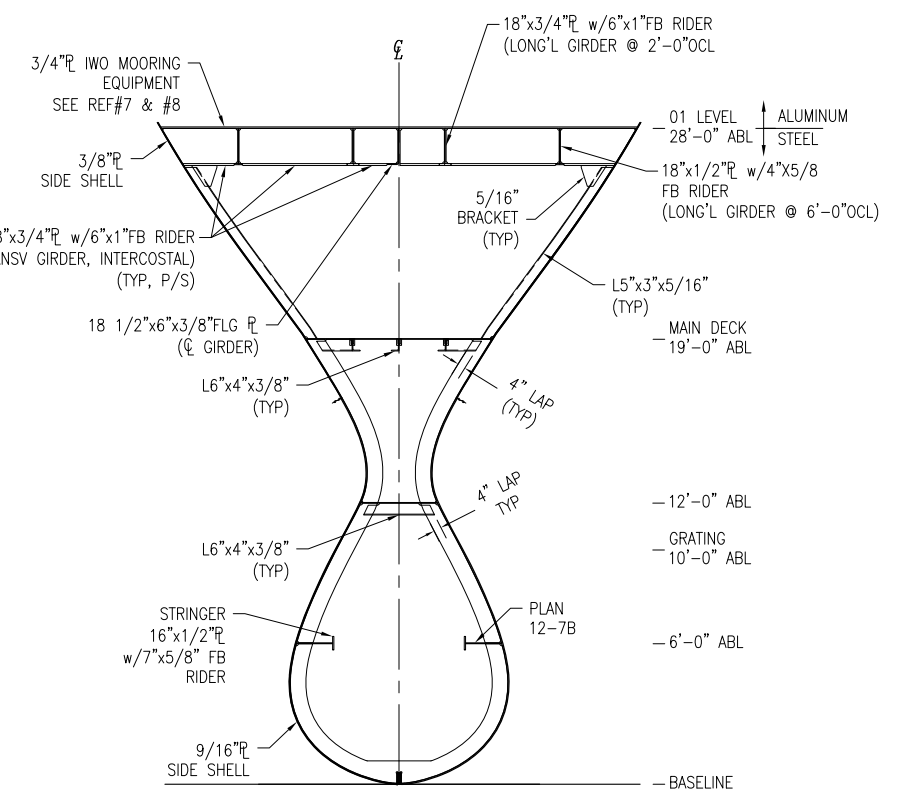
SECTION 18-8B

FR 1
LOOKING AFT
1/4"=1'-0"



SECTION 18-6B

FR 2
LOOKING AFT
1/4"=1'-0"



SECTION 18-4B

FR 3
FR 4 SIM
LOOKING AFT
1/4"=1'-0"

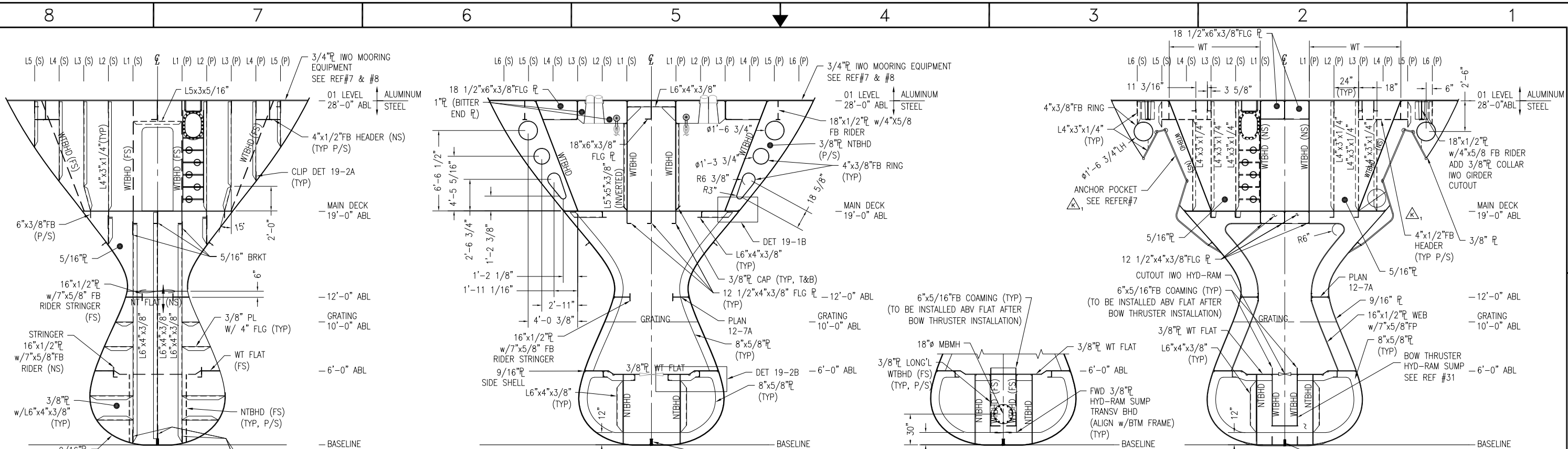
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES -3, -2, -1, 0, 1, 2, & 3

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 18 OF 46

8 7 6 5 4 3 2 1

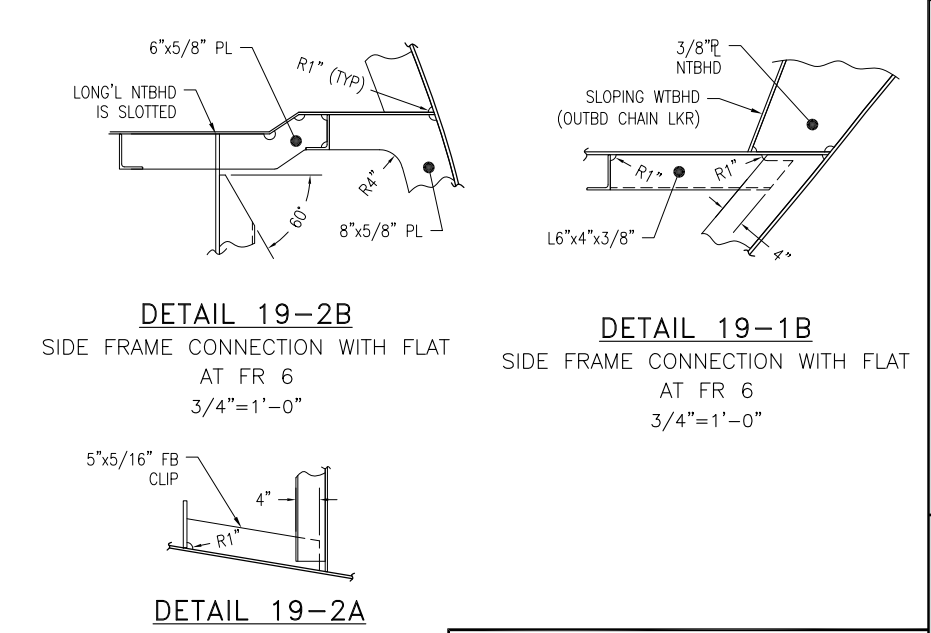
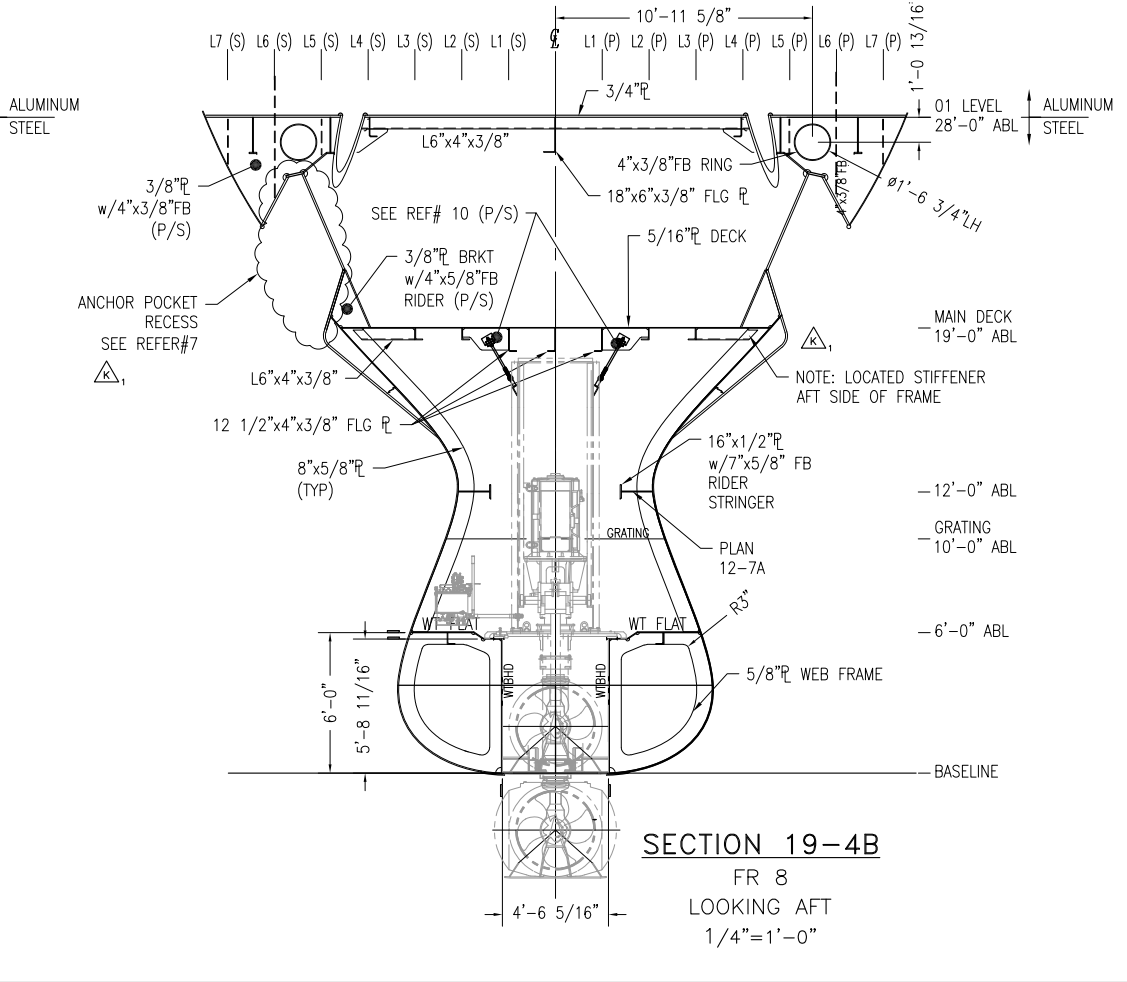
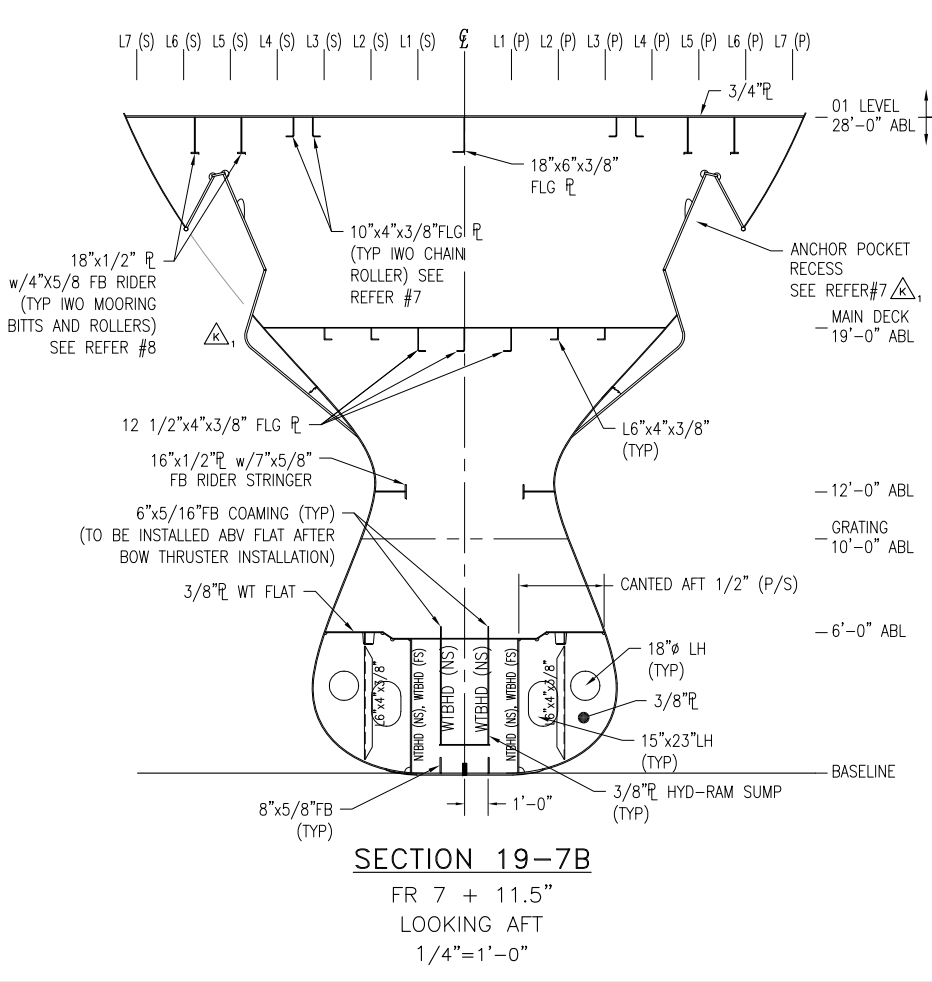


SECTION 19-7D FR 5 LOOKING AFT 1/4"=1'-0"

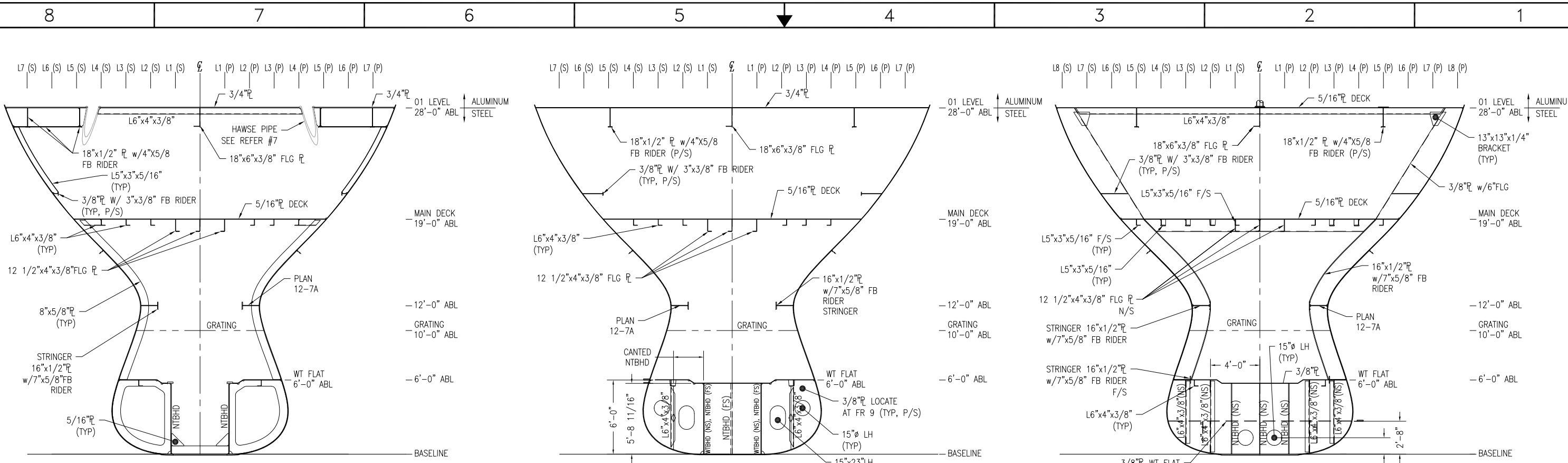
SECTION 19-5D FR 6 LOOKING AFT 1/4"=1'-0"

SECTION 19-3D FR 6.5 LOOKING AFT 1/4"=1'-0"

SECTION 19-2D FR 7 LOOKING AFT 1/4"=1'-0"



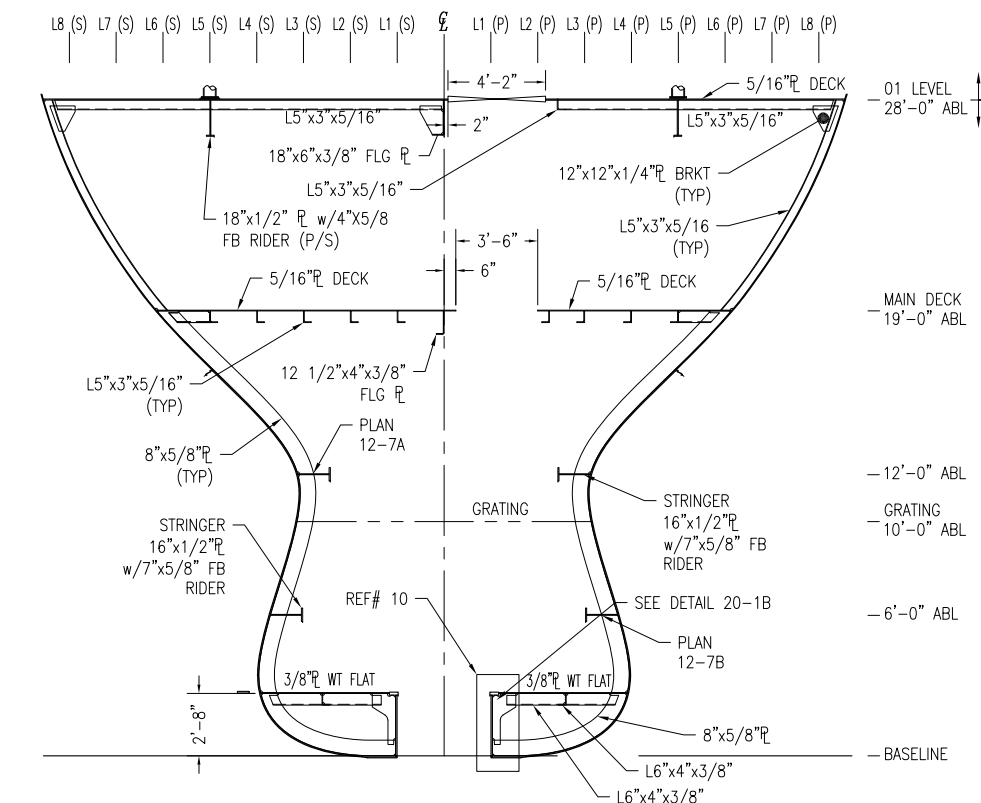
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 5, 6, 7, 7+11.5, & 8			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 19 OF 46	



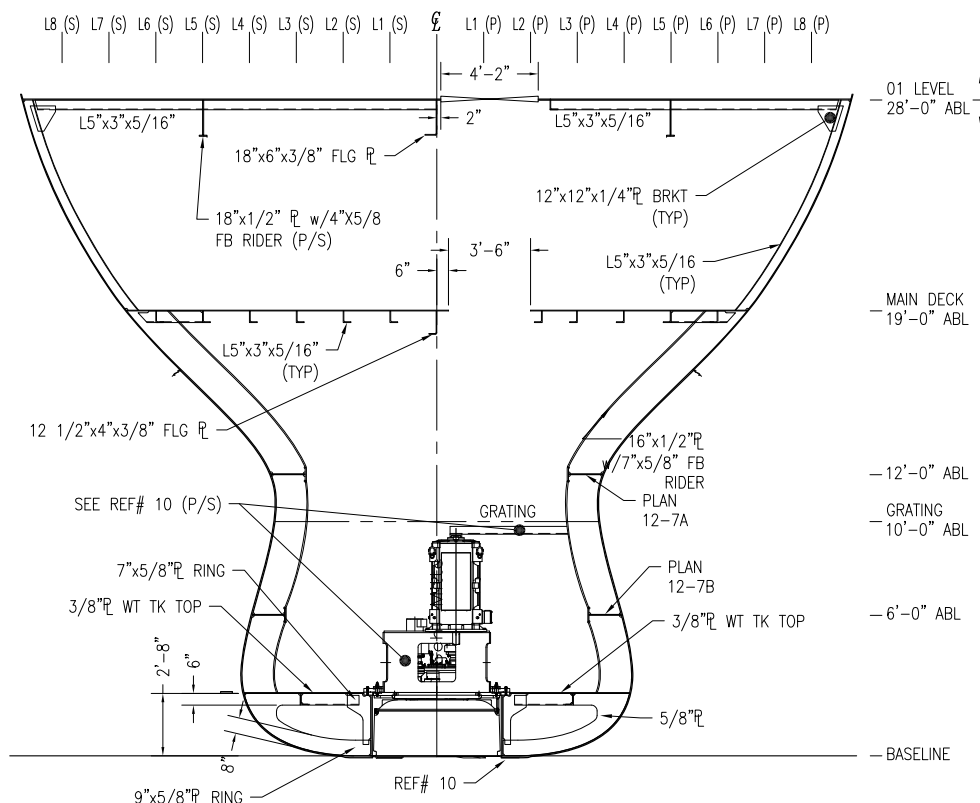
SECTION 20-7D
FR 9
LOOKING AFT
1/4"=1'-0"

SECTION 20-5D
5.1875" AFT OF FR 9
LOOKING AFT
1/4"=1'-0"

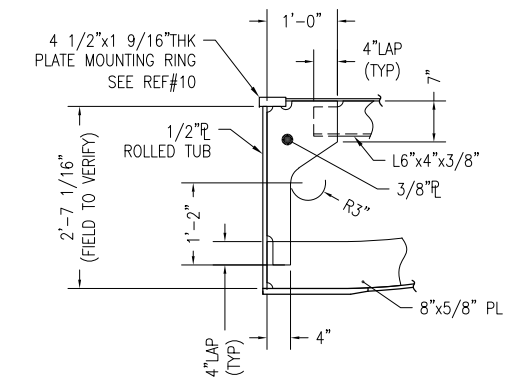
SECTION 20-2D
FR 10
LOOKING AFT
1/4"=1'-0"



SECTION 20-7B
FR 11
LOOKING AFT
1/4"=1'-0"



SECTION 20-4A
FR 12
LOOKING AFT
1/4"=1'-0"



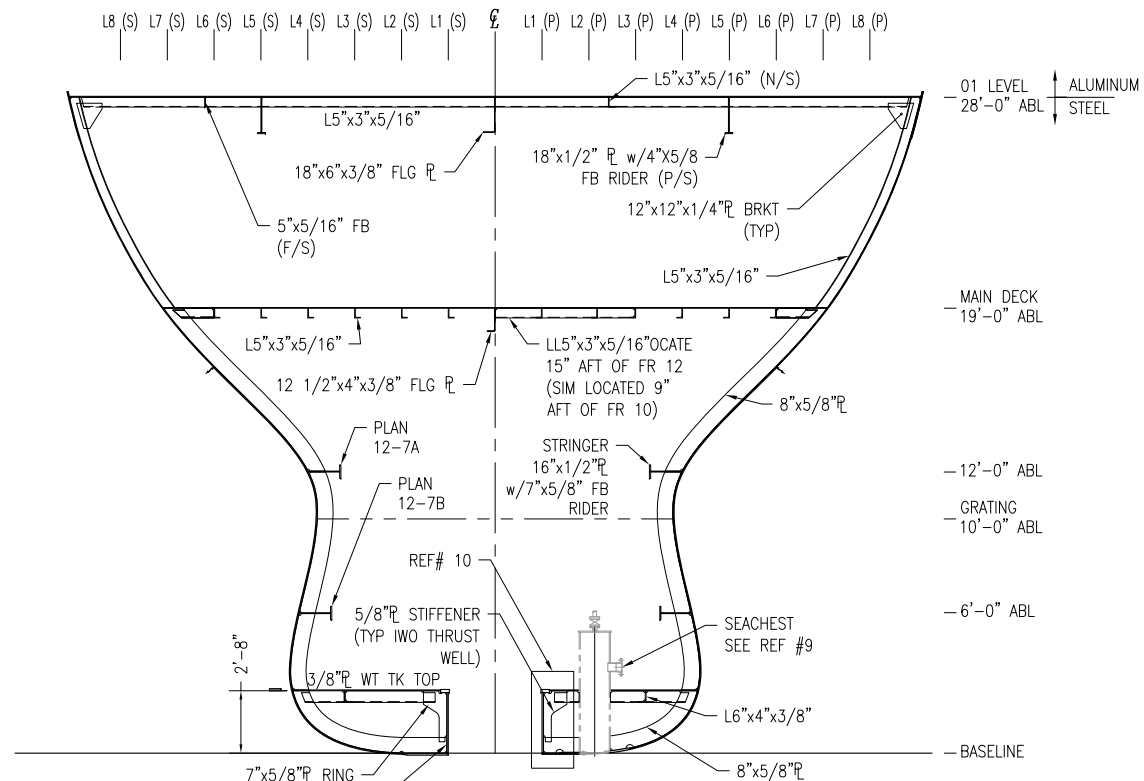
DETAIL 20-1B
FR 11 BOTTOM CONNECTION
3/4"=1'-0"

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 9, 9+5.1875, 10, 11, & 12

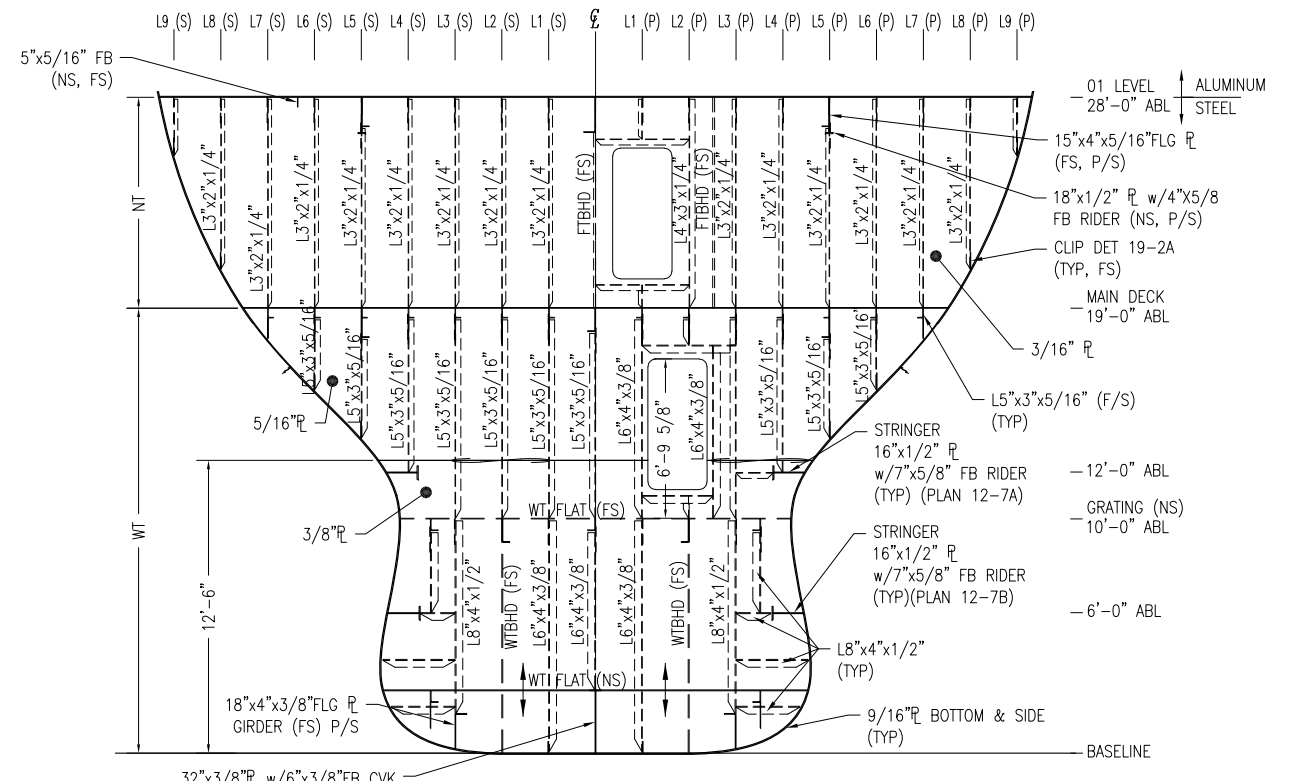
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 20 OF 45

PROFESSIONAL ENGINEER STAMP



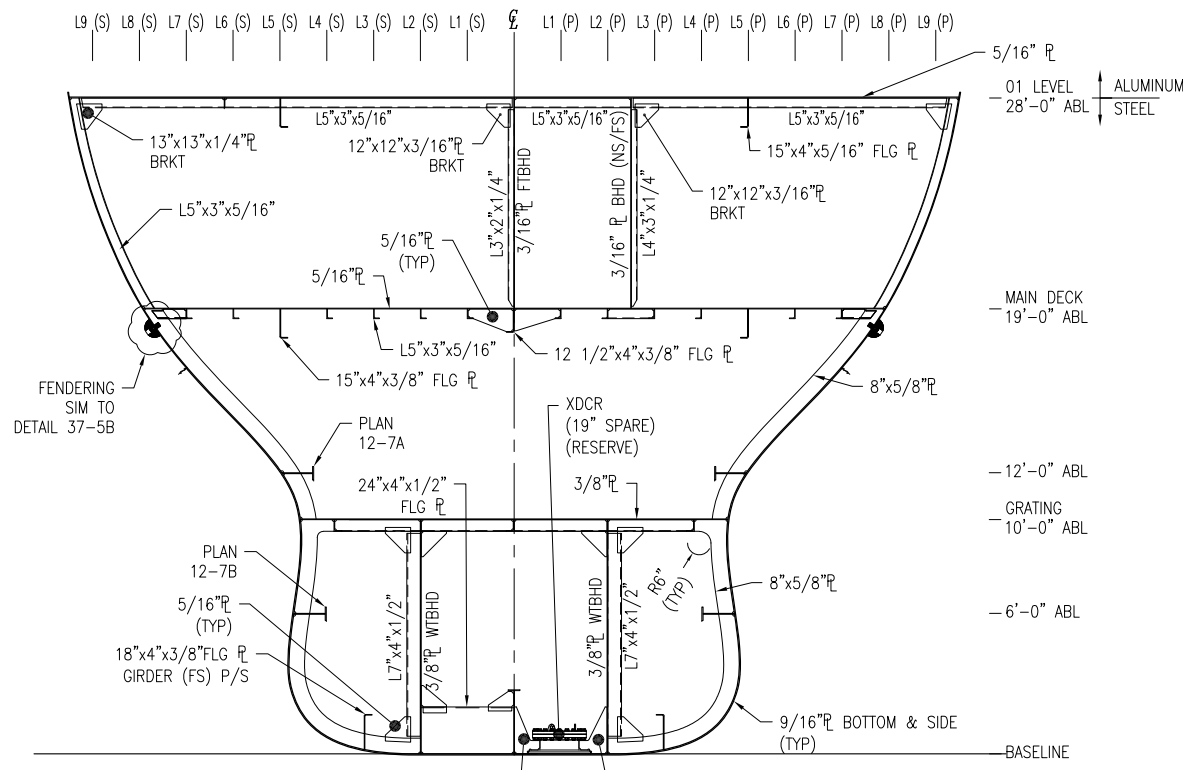
SECTION 21-7D

FR 13
LOOKING AFT
1/4"=1'-0"



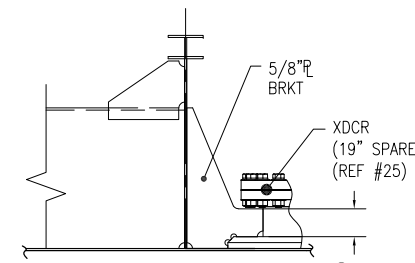
SECTION 21-3D

FR 14
LOOKING AFT
1/4"=1'-0"

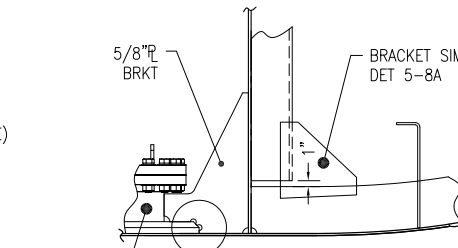


SECTION 21-7B

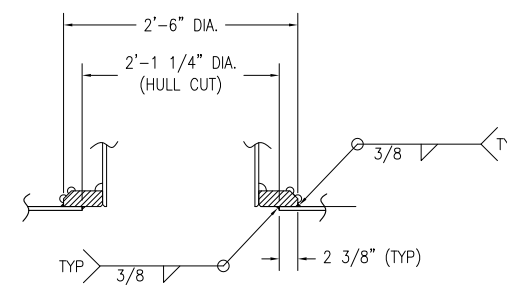
FR 15
LOOKING AFT
1/4"=1'-0"



DETAIL 21-4B
STRUCTURE IWO XDCR
3/4"=1'-0"



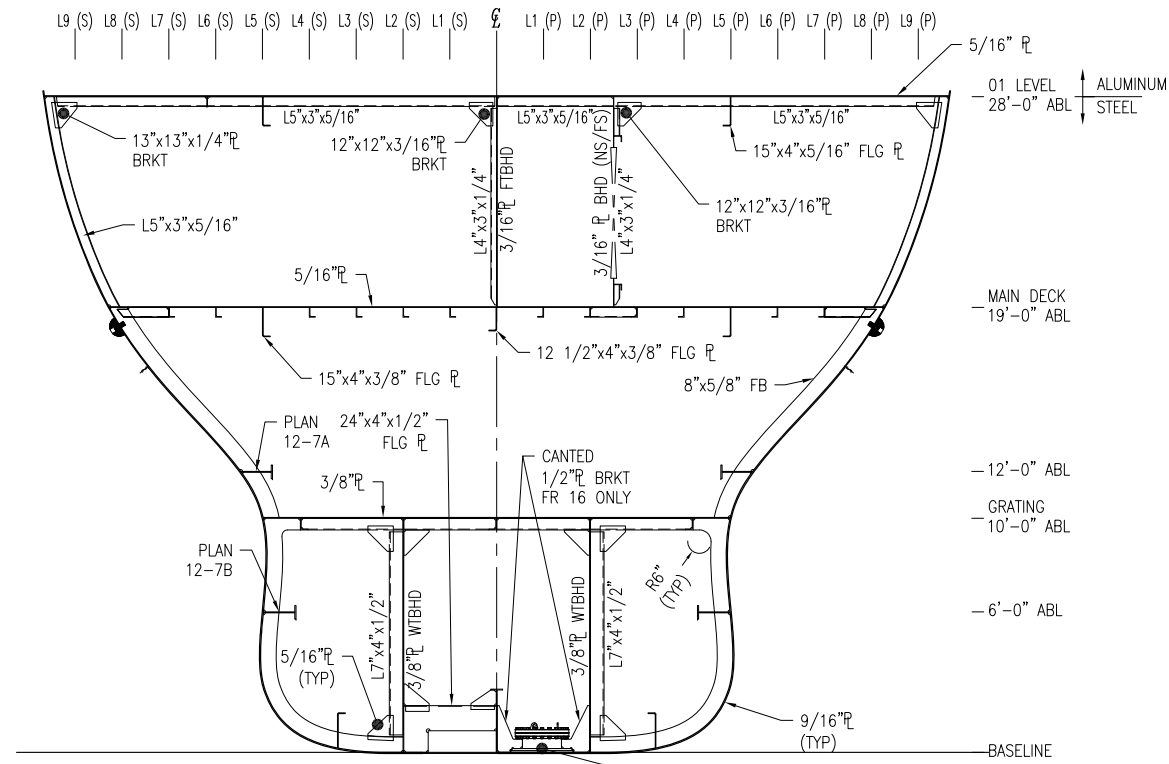
DETAIL 21-3B
STRUCTURE IWO XDCR
FOR INFO NOT SHOWN SEE SECT 21-5A
3/4"=1'-0"



DETAIL 21-4A
XDCR 19" SPARE
HULL CONNECTION
6"=1'-0"

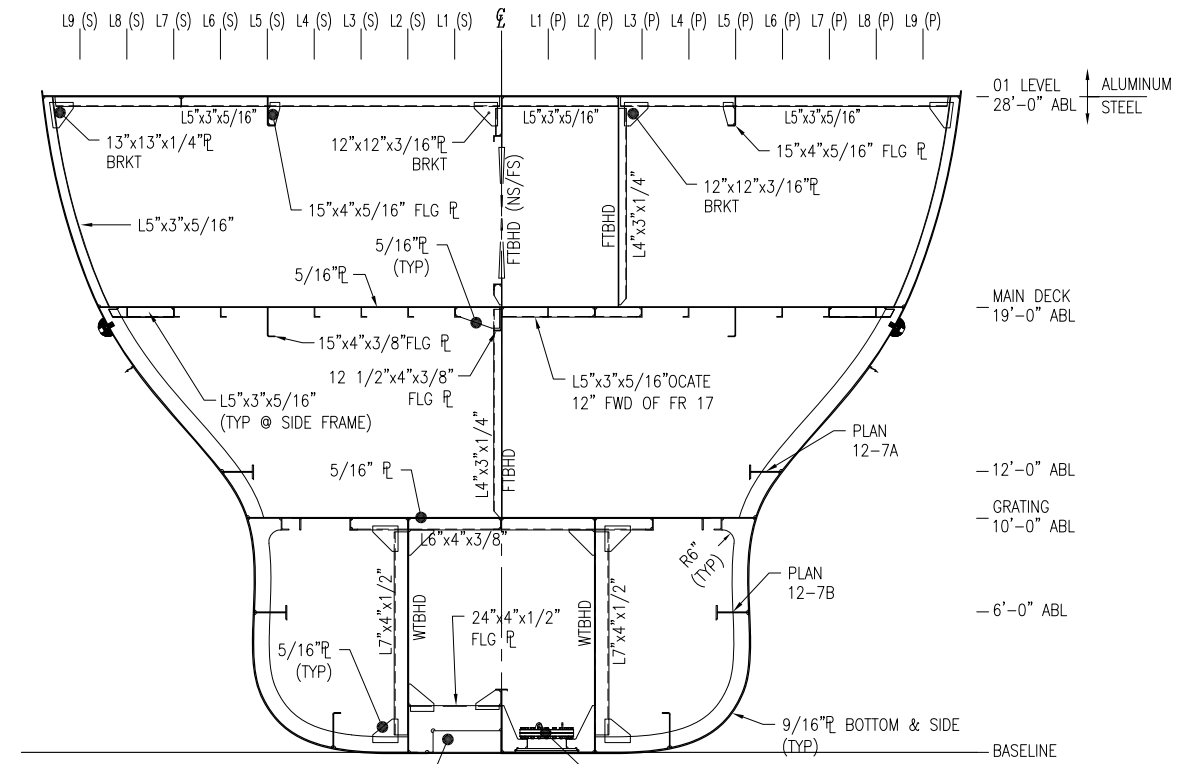
PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMES 13, 14, & 15			
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 21 OF 46



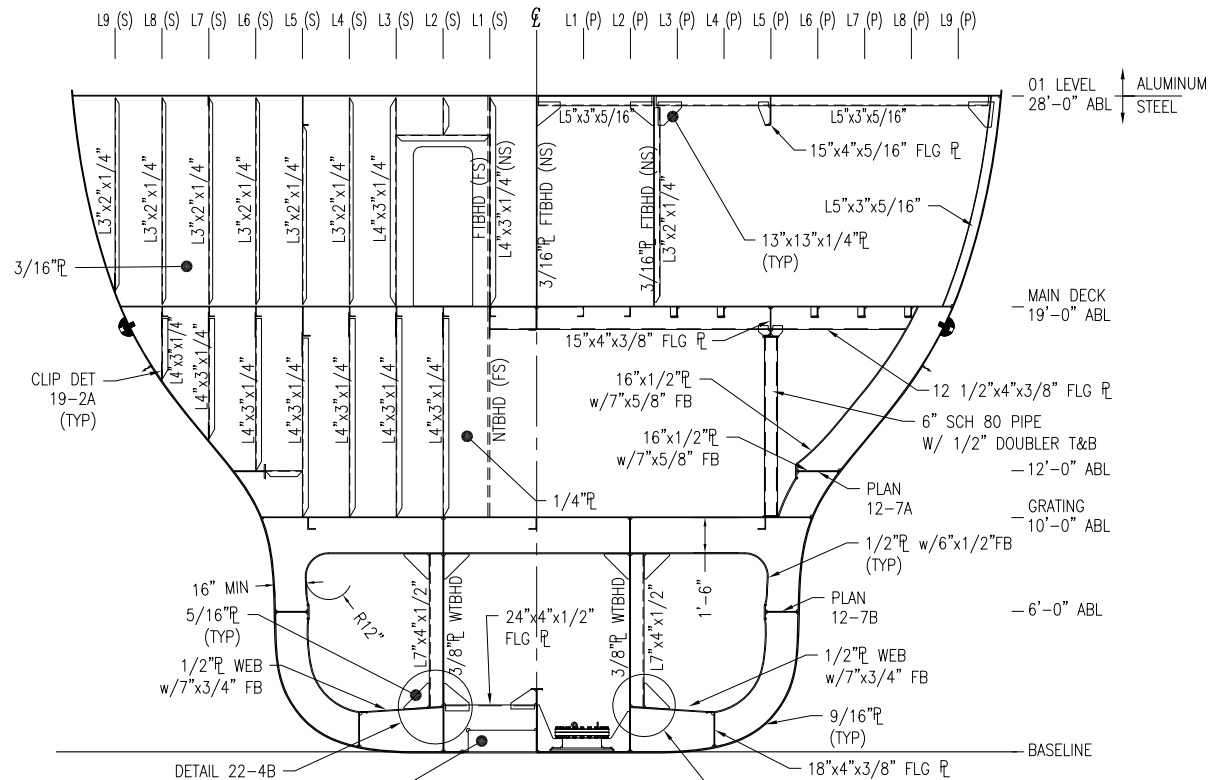
SECTION 22-7D

FR 16
LOOKING AFT
1/4" = 1'-0"



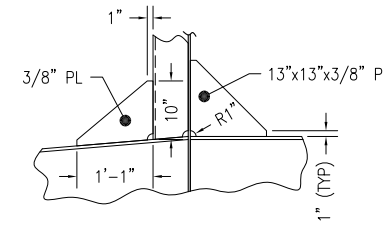
SECTION 22-3D

FR 17
LOOKING AFT
1/4" = 1'-0"

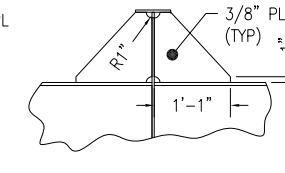


SECTION 22-7B

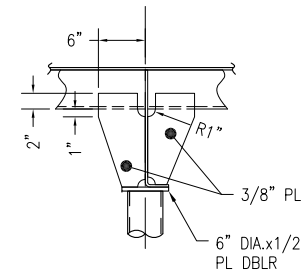
FR 18
LOOKING AFT
1/4" = 1'-0"



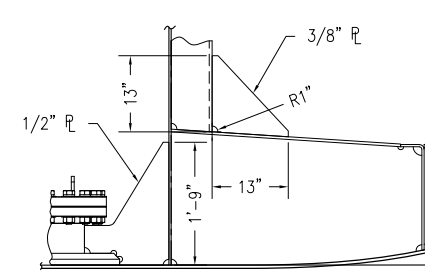
DETAIL 22-4B
STRUCTURE IWO XDCR
3/4" = 1'-0"



DETAIL 22-3B
STRUCTURE IWO XDCR
3/4" = 1'-0"



DETAIL 22-4A
STANCHION CLIP
1" = 1'-0"



DETAIL 22-3A
STRUCTURE IWO 19" SPARE
3/4" = 1'-0"

PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 16, 17, & 18

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL # 6096 6097 6098	SHEET 22 OF 45

8 7 6 5 4 3 2 1

D

C

B

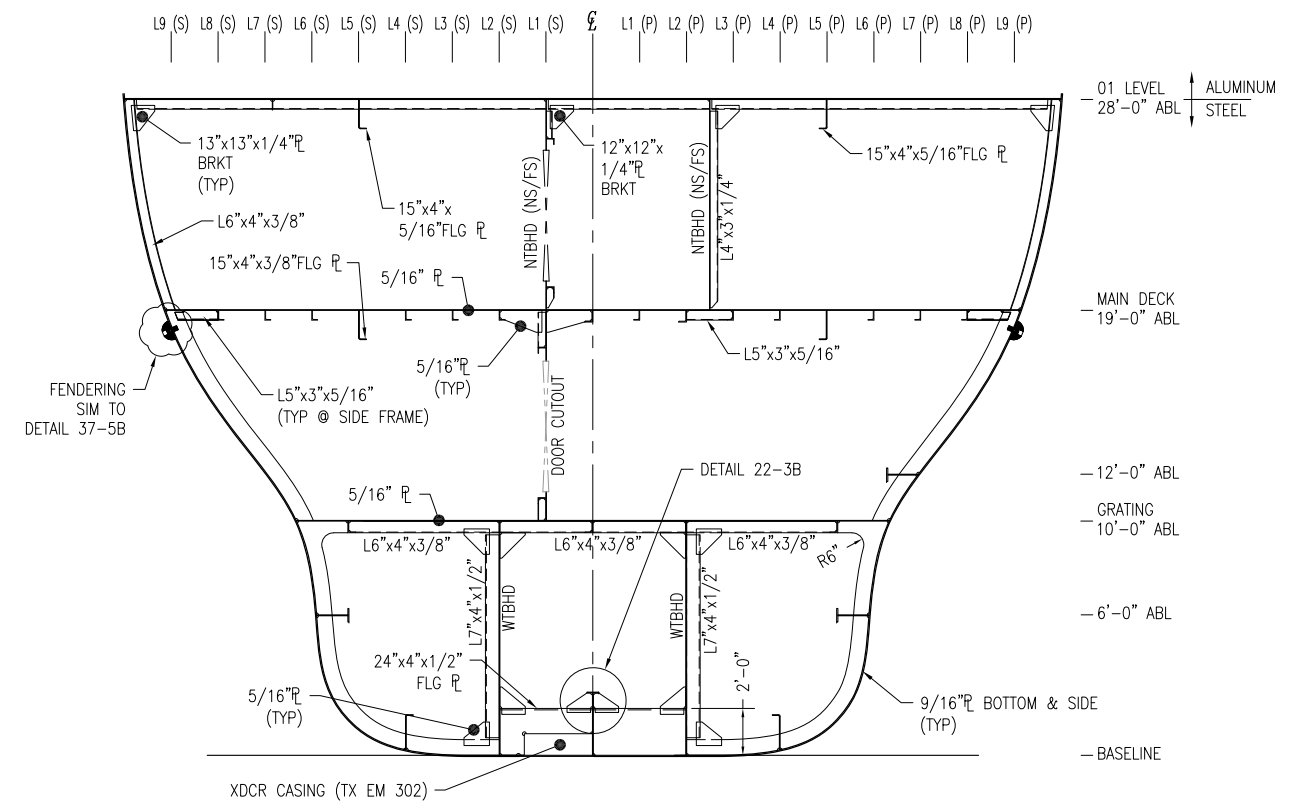
A

D

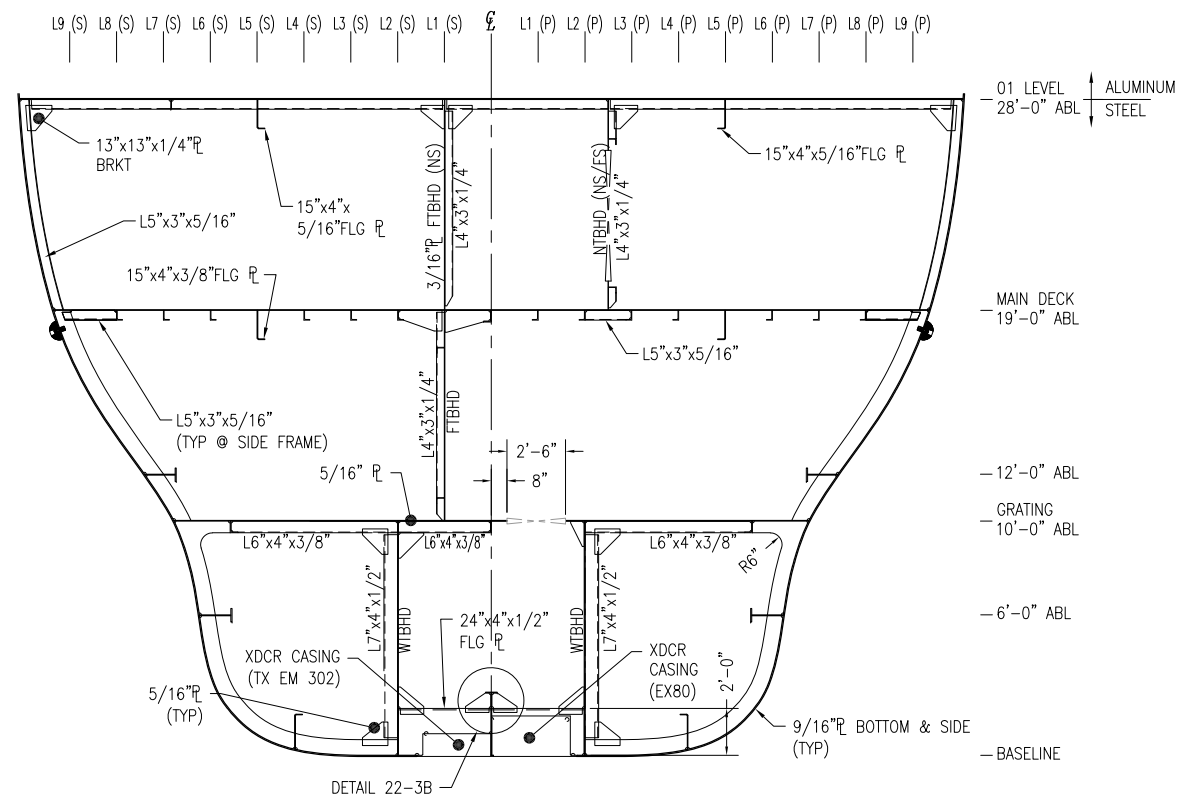
C

B

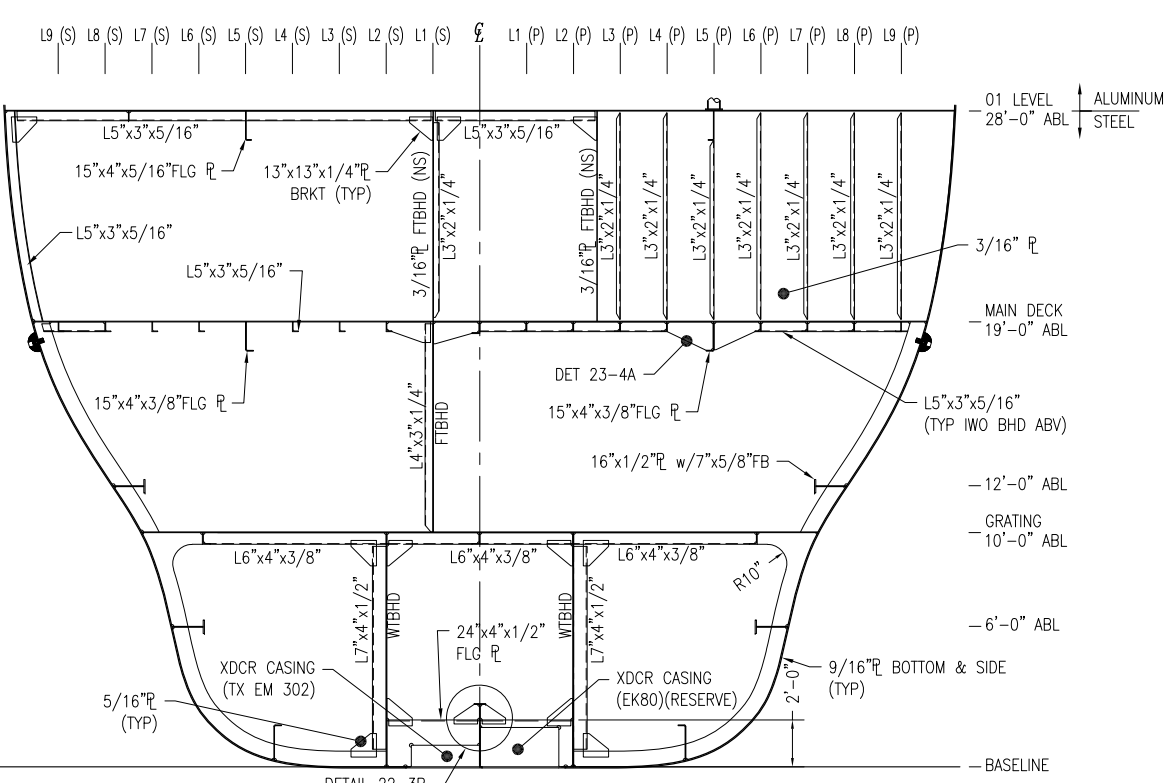
A



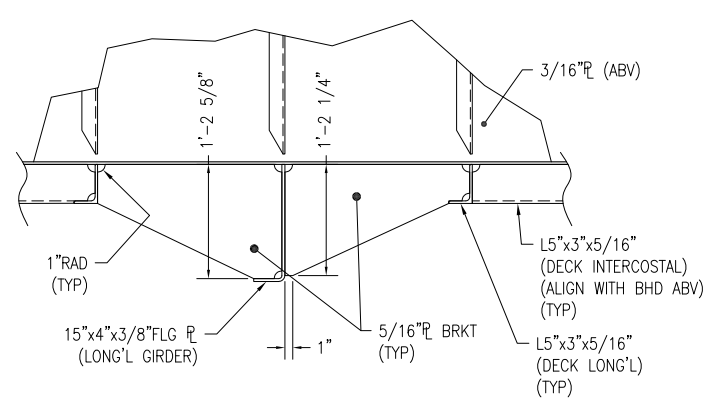
SECTION 23-7D
FR 19
LOOKING AFT
1/4"=1'-0"



SECTION 23-3D
FR 20
LOOKING AFT
1/4"=1'-0"



SECTION 23-7A
FR 21
LOOKING AFT
1/4"=1'-0"



DETAIL 23-4A
TYPICAL BRACKET DETAIL
IWO BULKHEAD ABOVE DECK
1"=1'-0"

PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 19, 20, & 21			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 23 OF 46

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

D

C

B

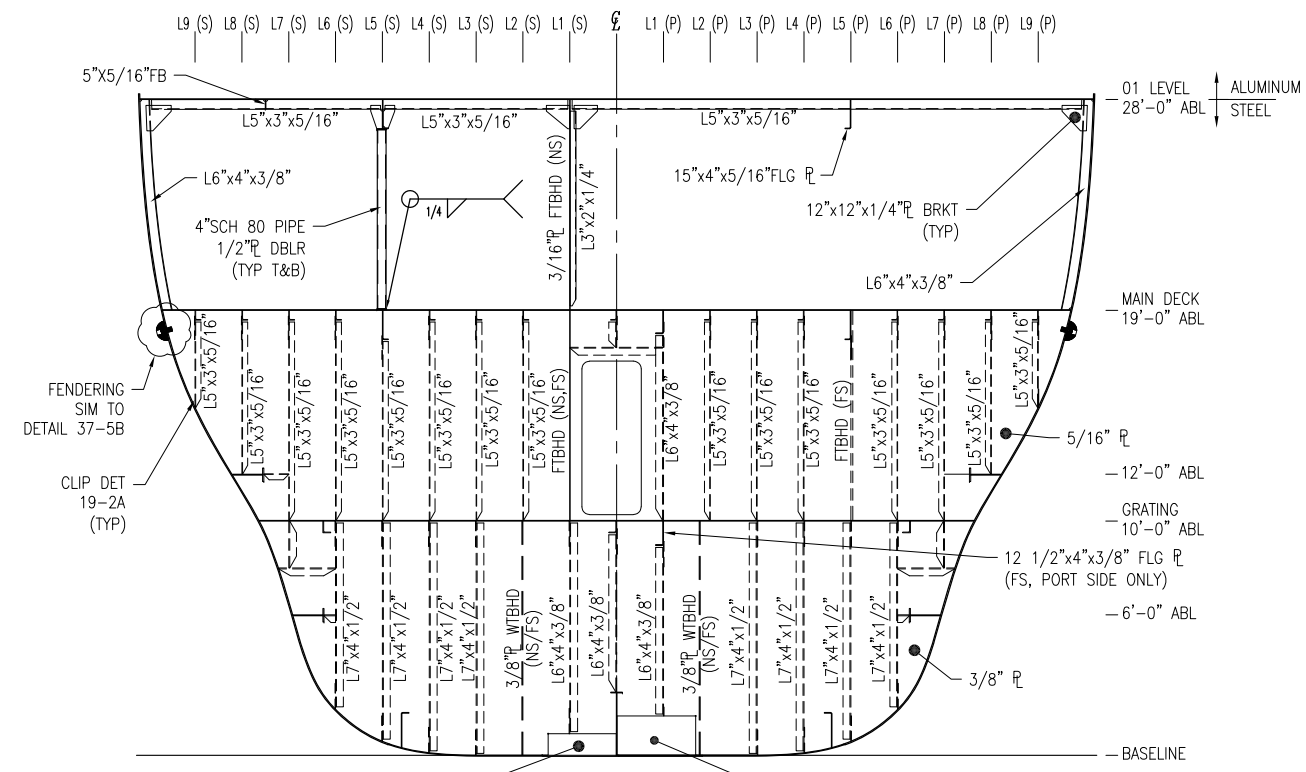
A

D

C

B

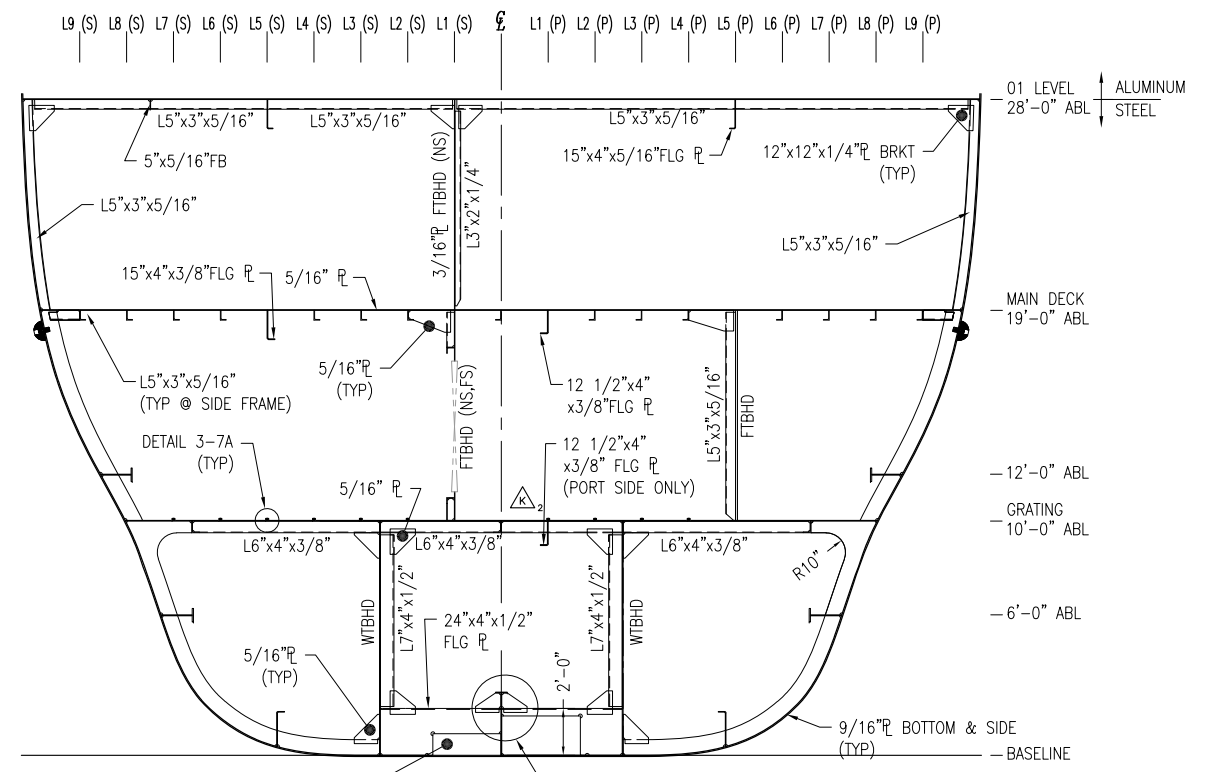
A



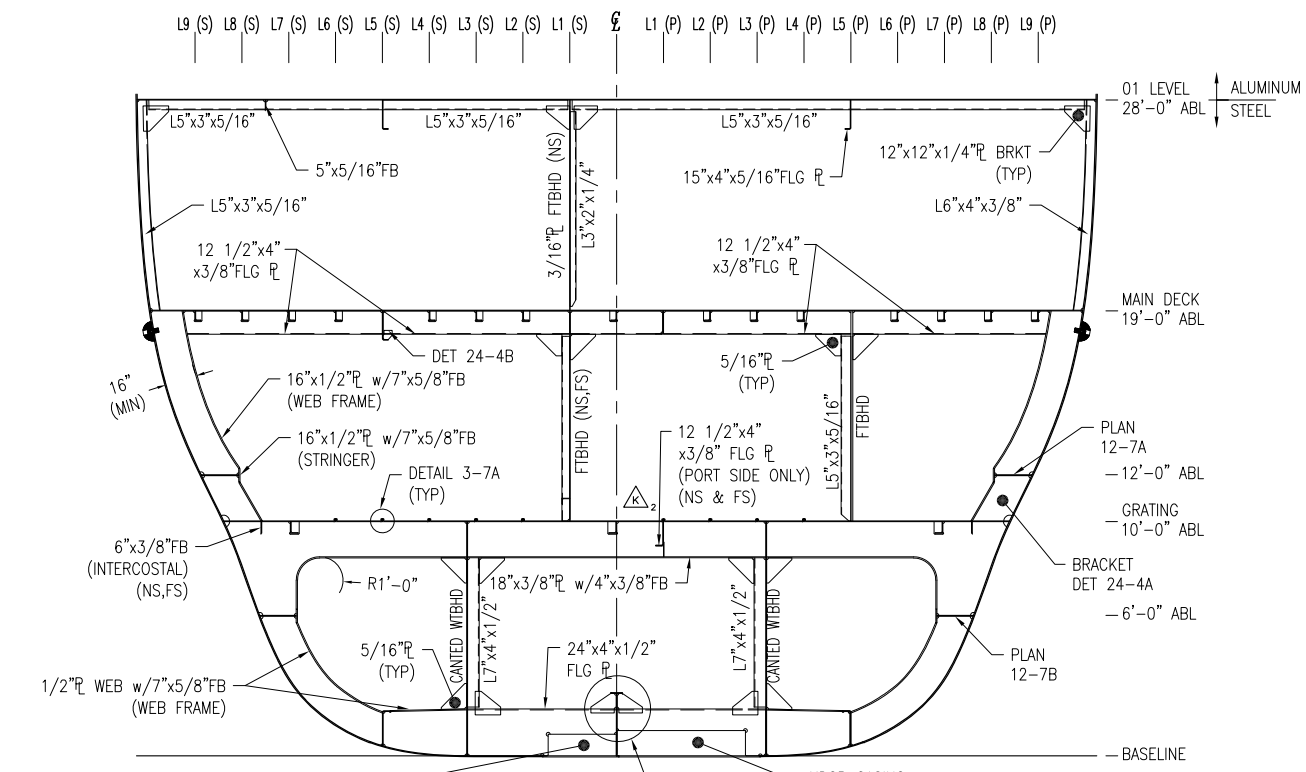
SECTION 24-7D
FR 22
LOOKING AFT
1/4"=1'-0"

XDCR CASING (RX EM 302) (PASSES THROUGH WTBD, CASING TO SEAL WELDED ALL-AROUND)

XDCR CASING (SIMRAD EK 80) (PASSES THROUGH WTBD, CASING TO SEAL WELD ALL-AROUND)



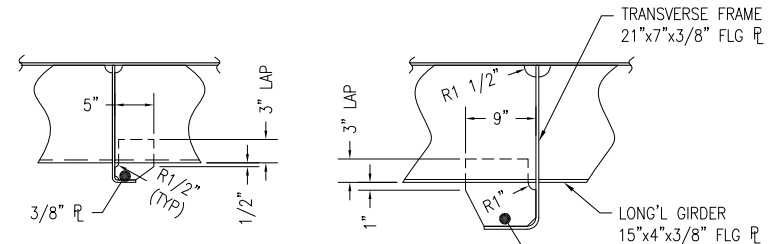
SECTION 24-3D
FR 23
LOOKING AFT
1/4"=1'-0"



SECTION 24-7A
FR 24
LOOKING AFT
1/4"=1'-0"

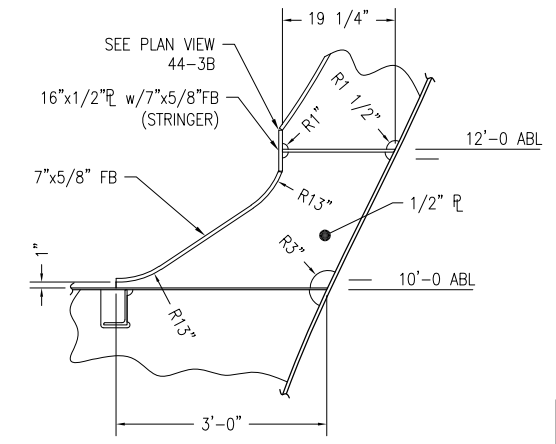
XDCR CASING (TX EM 302)

XDCR CASING (TOPAS PS18)



DETAIL 24-4B
1"=1'-0"

DETAIL 24-3B
1"=1'-0"



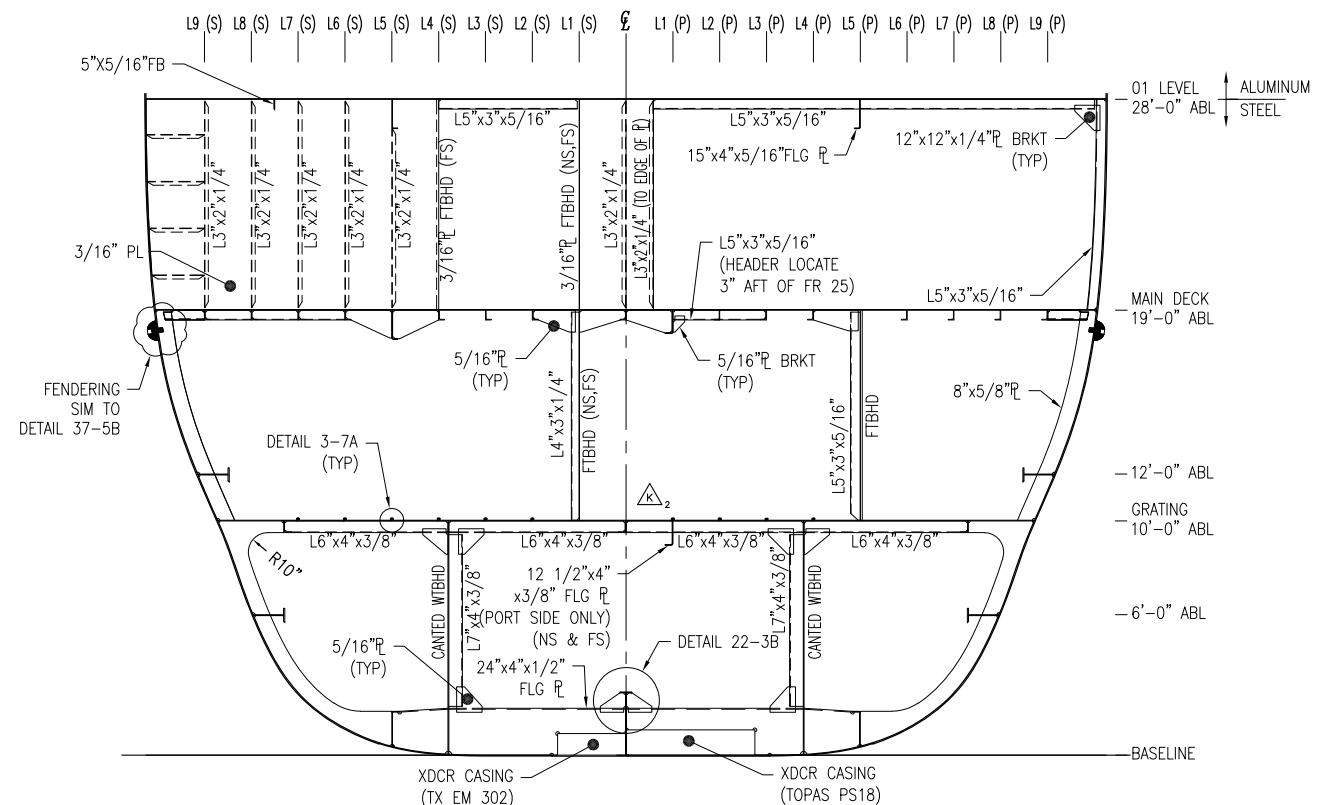
DETAIL 24-4A
3/4"=1'-0"

PROFESSIONAL ENGINEER STAMP

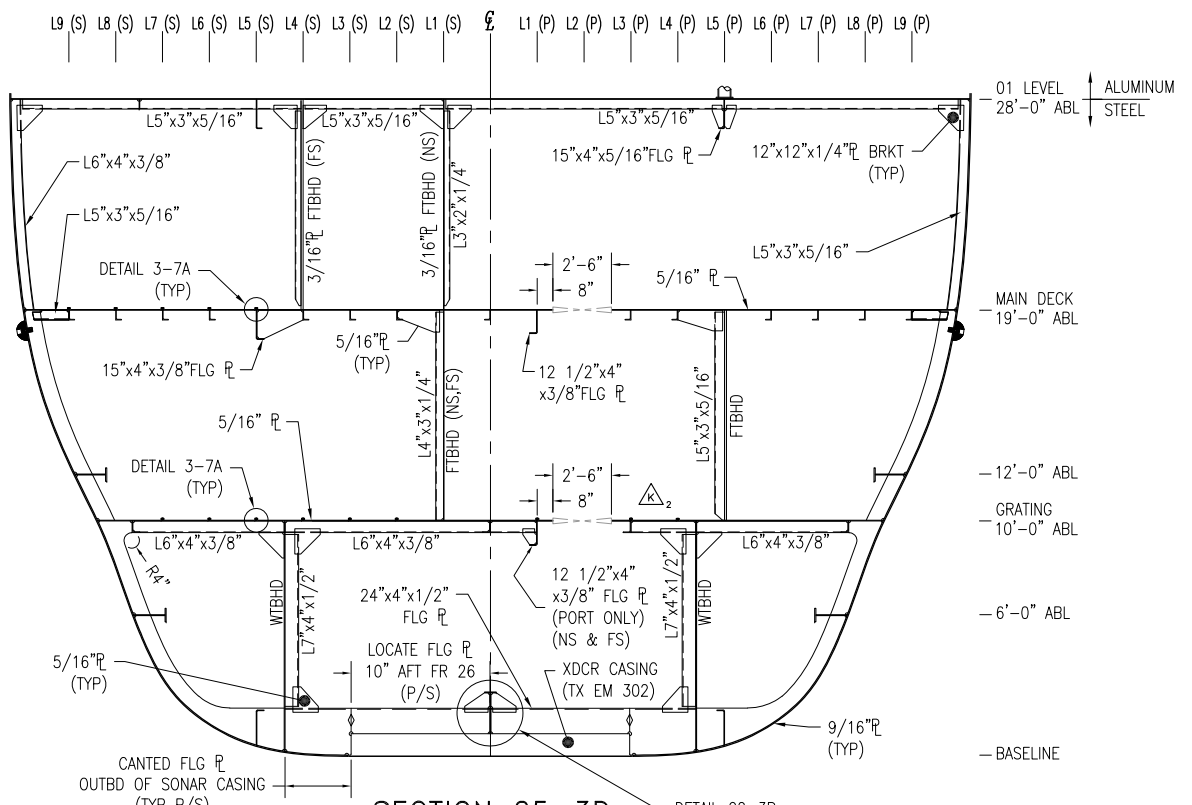
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMES 22, 23, & 24			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 24 OF 46	

8 7 6 5 4 3 2 1

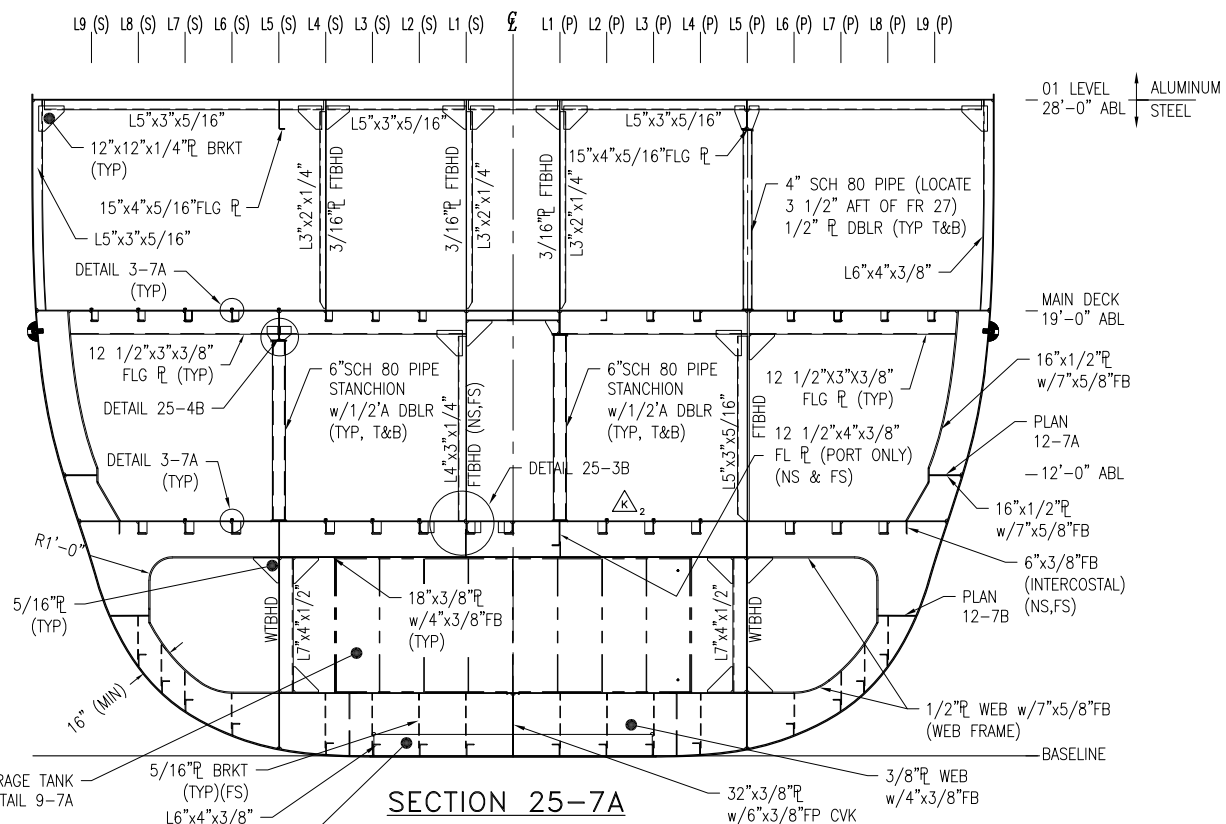
8 7 6 5 4 3 2 1



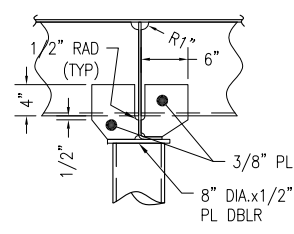
SECTION 25-7D
FR 25
LOOKING AFT
1/4" = 1'-0"



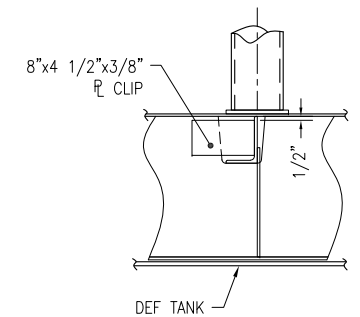
SECTION 25-3D
FR 26
LOOKING AFT
1/4" = 1'-0"



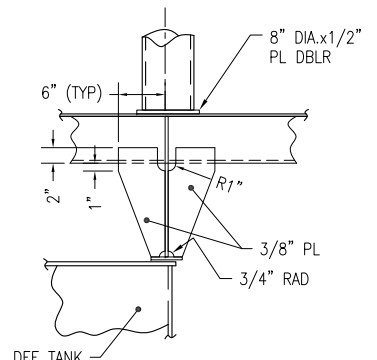
SECTION 25-7A
FR 27
LOOKING AFT
1/4" = 1'-0"



DETAIL 25-4B
LONGITUDINAL GIRDER
CHOCK IWO STANCHION
1" = 1'-0"



DETAIL 25-3B
STIFFENER CUTOUT FLATBAR
CLIP IWO STANCHION
1" = 1'-0"



SECTION 25-1B
LONGITUDINAL SECTION IWO
STANCHION & TRANSVERSE GIRDER
1" = 1'-0"

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

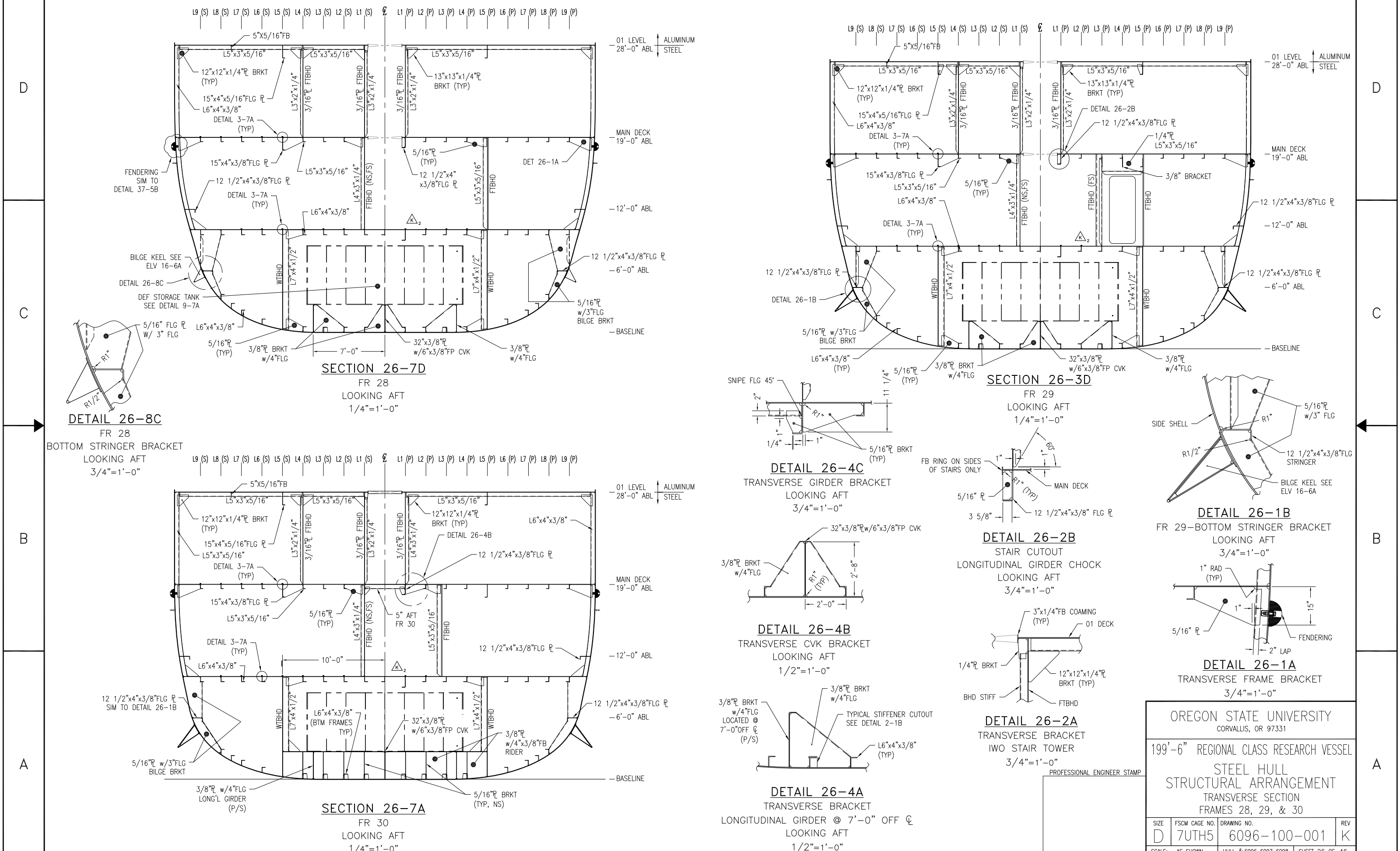
199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 25, 26, & 27

SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL # 6096 6097 6098	SHEET 25 OF 46	

PROFESSIONAL ENGINEER STAMP

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1



OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTION
FRAMES 28, 29, & 30

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 26 OF 46

PROFESSIONAL ENGINEER STAMP

8 7 6 5 4 3 2 1

D

C

B

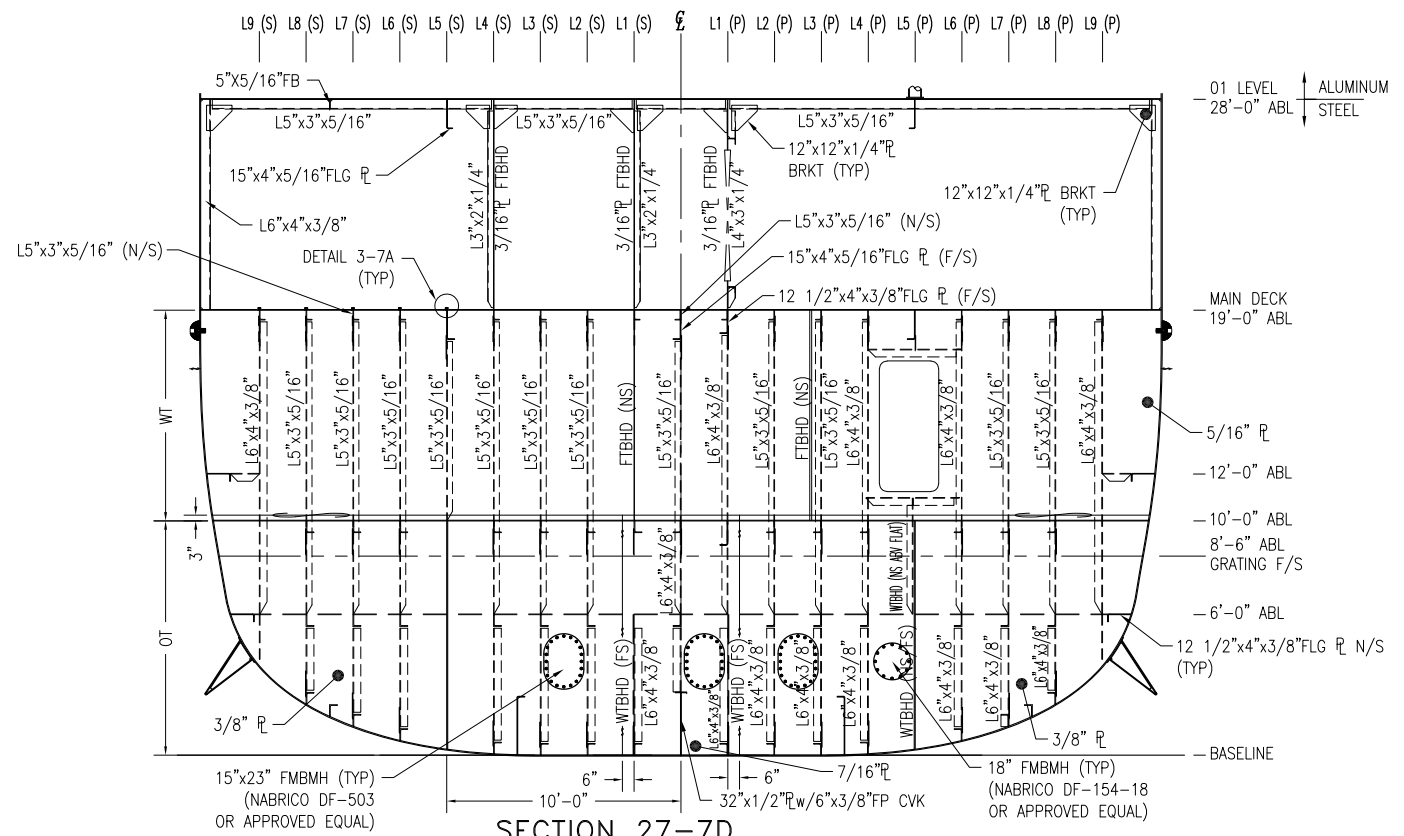
A

D

C

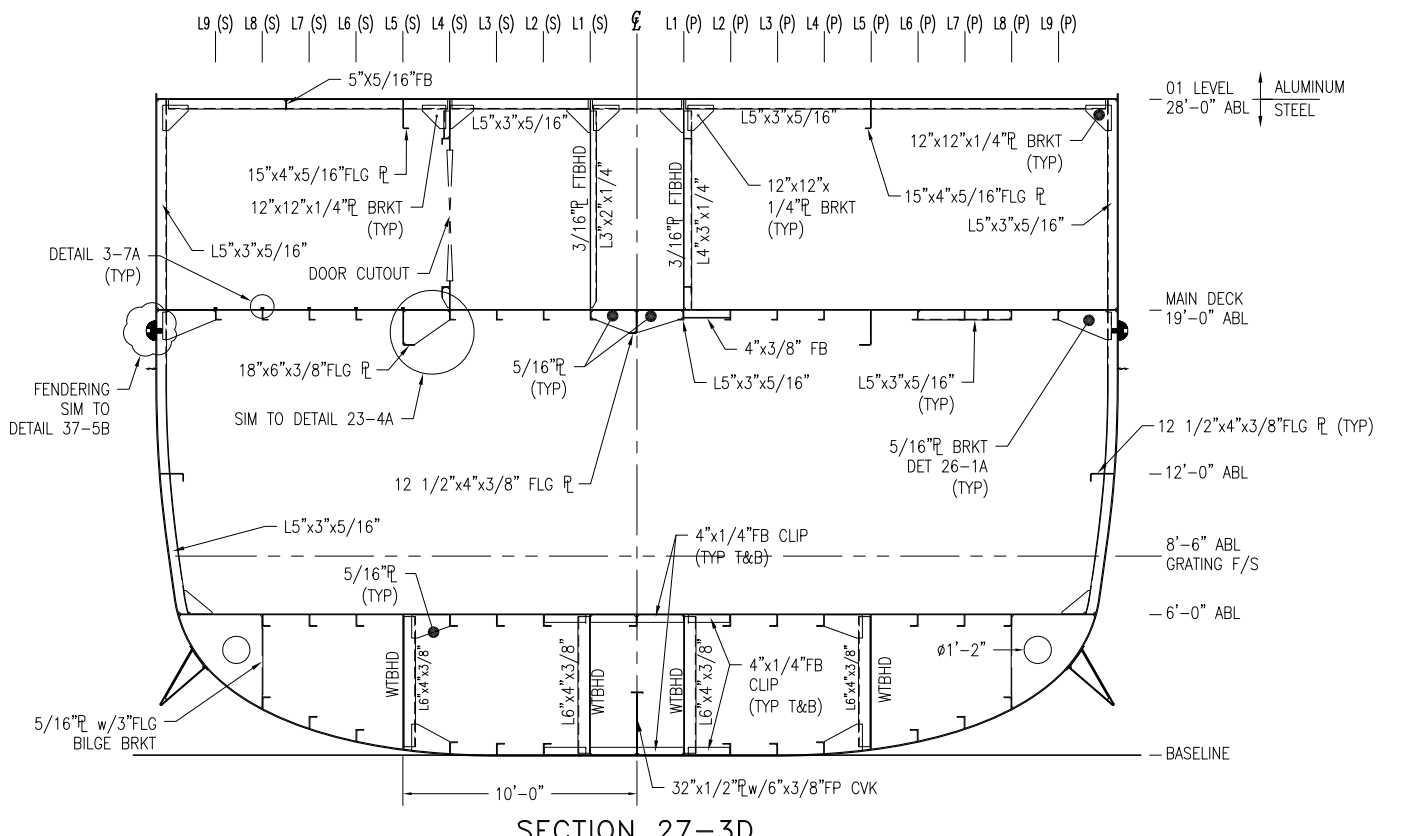
B

A



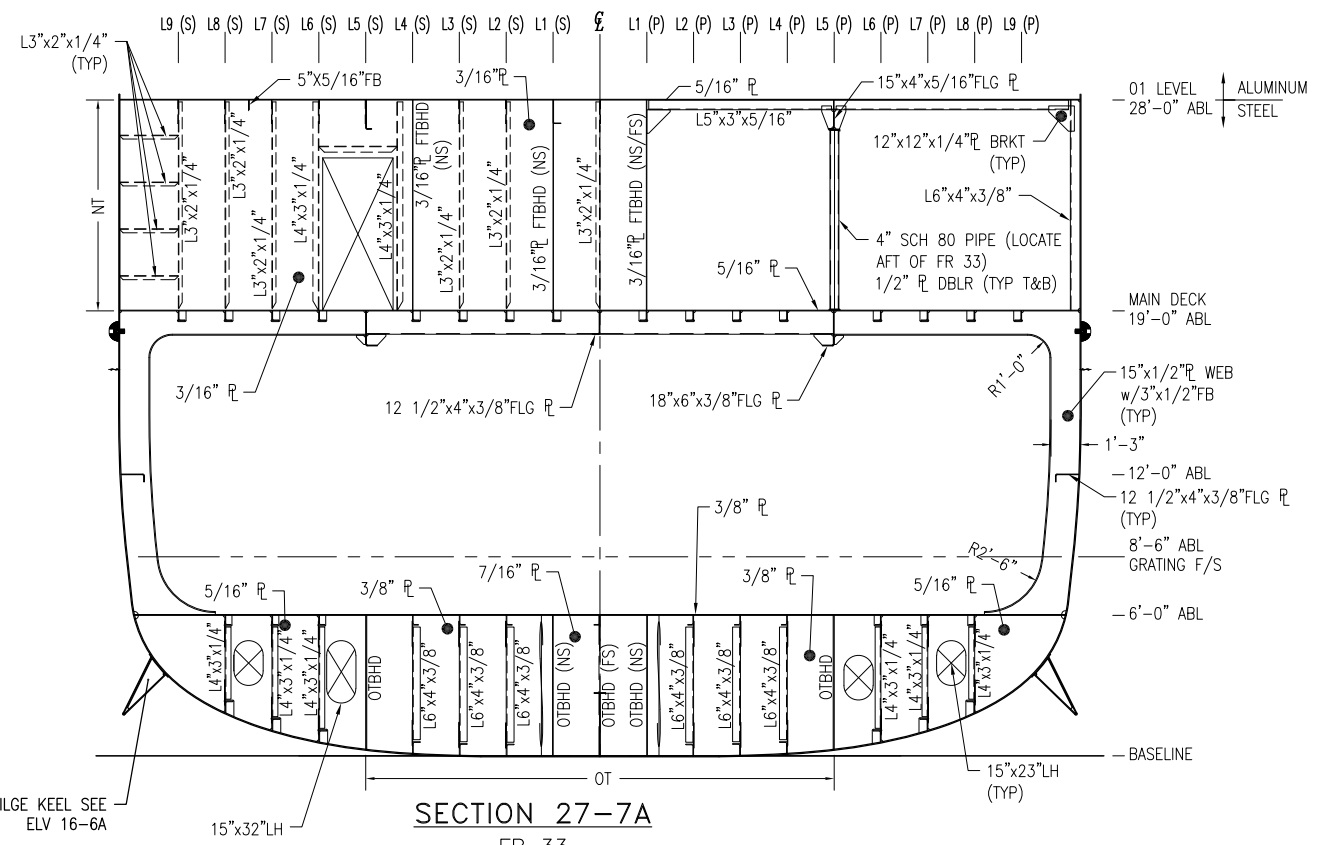
SECTION 27-7D

FR 31
LOOKING AFT
1/4" = 1'-0"



SECTION 27-3D

FR 32
LOOKING AFT
1/4" = 1'-0"



SECTION 27-7A

FR 33
LOOKING AFT
1/4" = 1'-0"

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 31, 32, & 33

PROFESSIONAL ENGINEER STAMP

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 27 OF 45

8 7 6 5 4 3 2 1

8

7

6

5

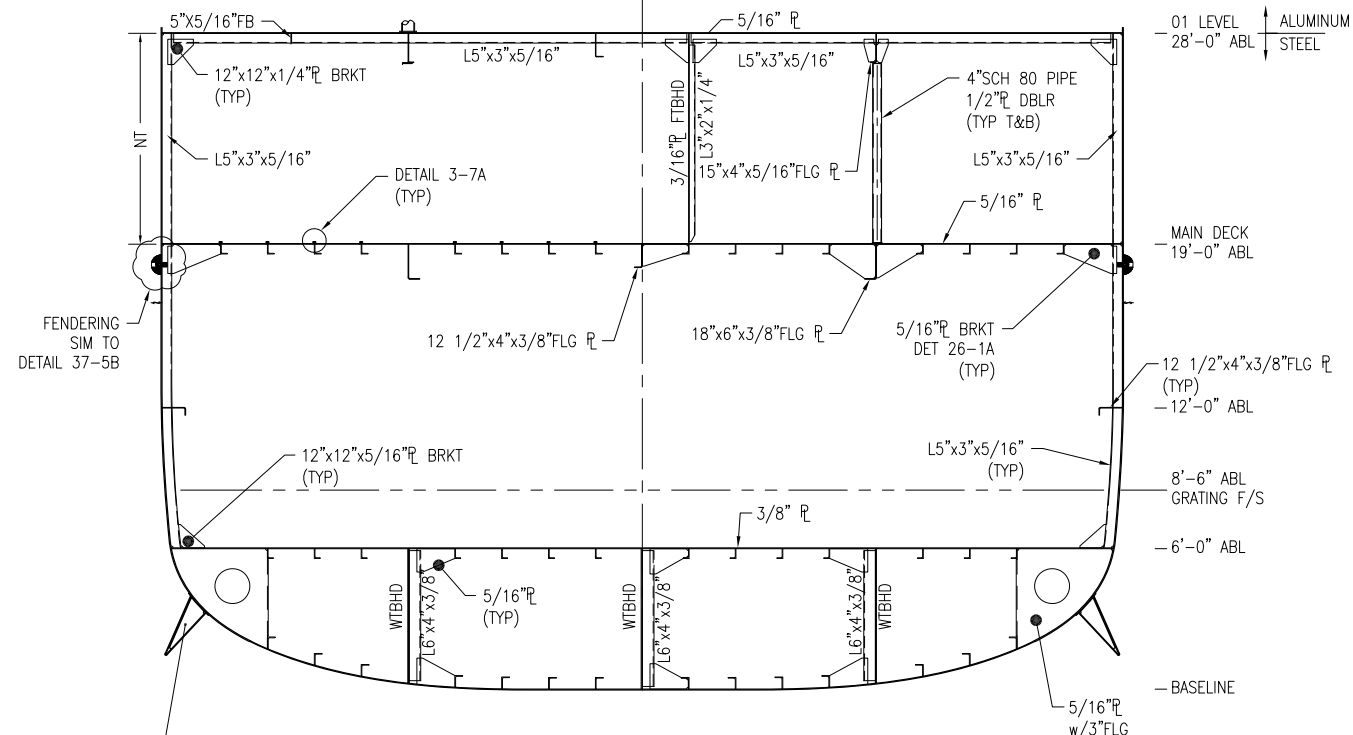
4

3

2

1

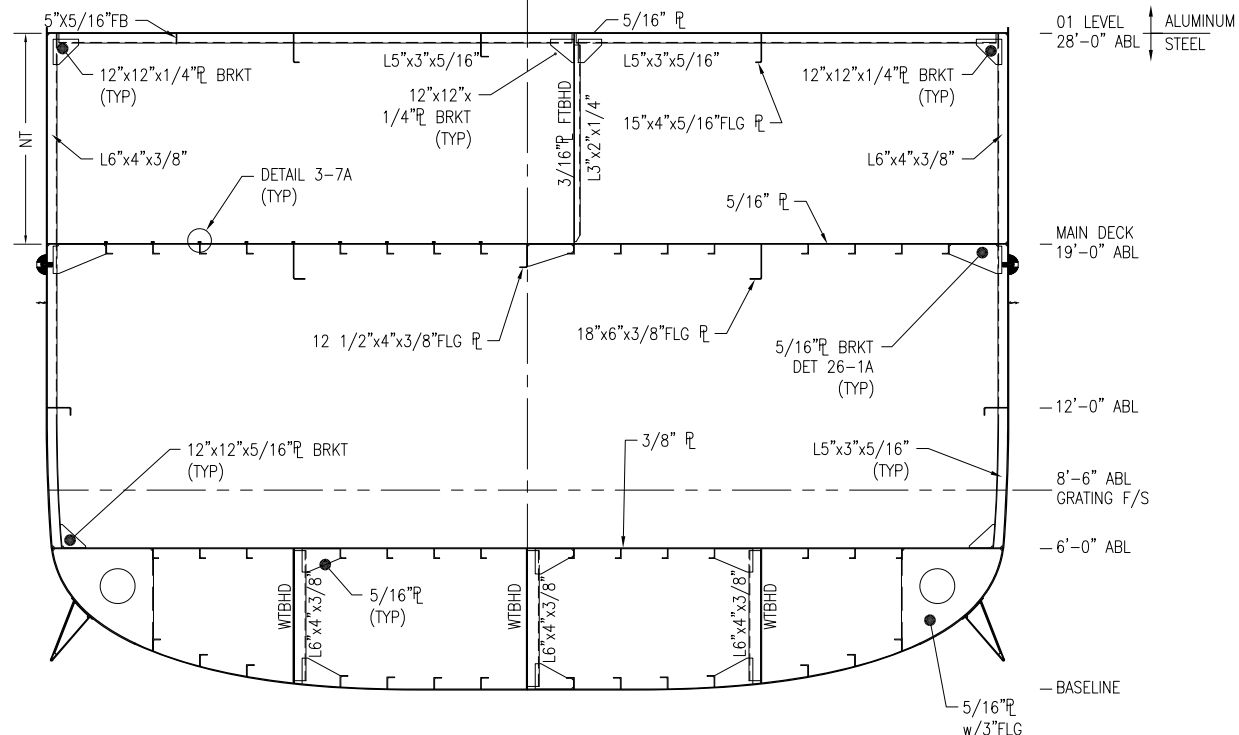
L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)



SECTION 28-7D

FR 34
LOOKING AFT
1/4"=1'-0"

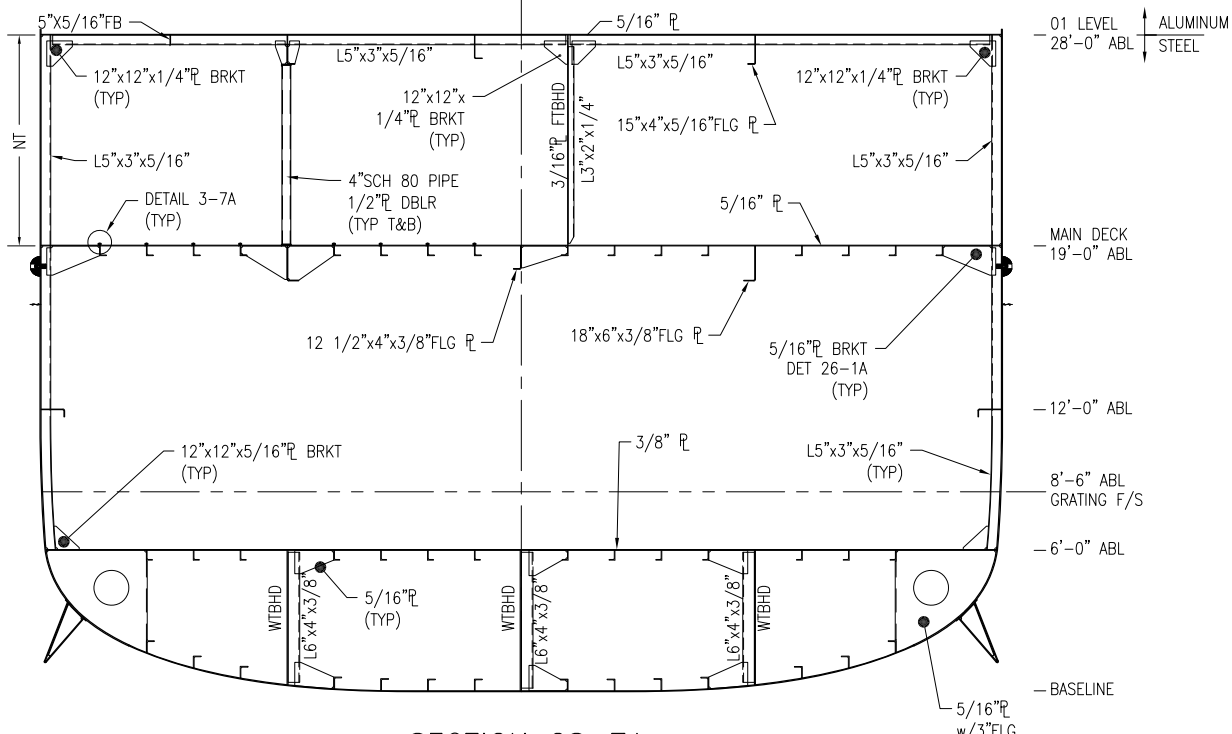
L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)



SECTION 28-3D

FR 35
LOOKING AFT
1/4"=1'-0"

L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)



SECTION 28-7A

FR 36
LOOKING AFT
1/4"=1'-0"

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 34, 35, & 36

PROFESSIONAL ENGINEER STAMP

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 28 OF 46

8

7

6

5

4

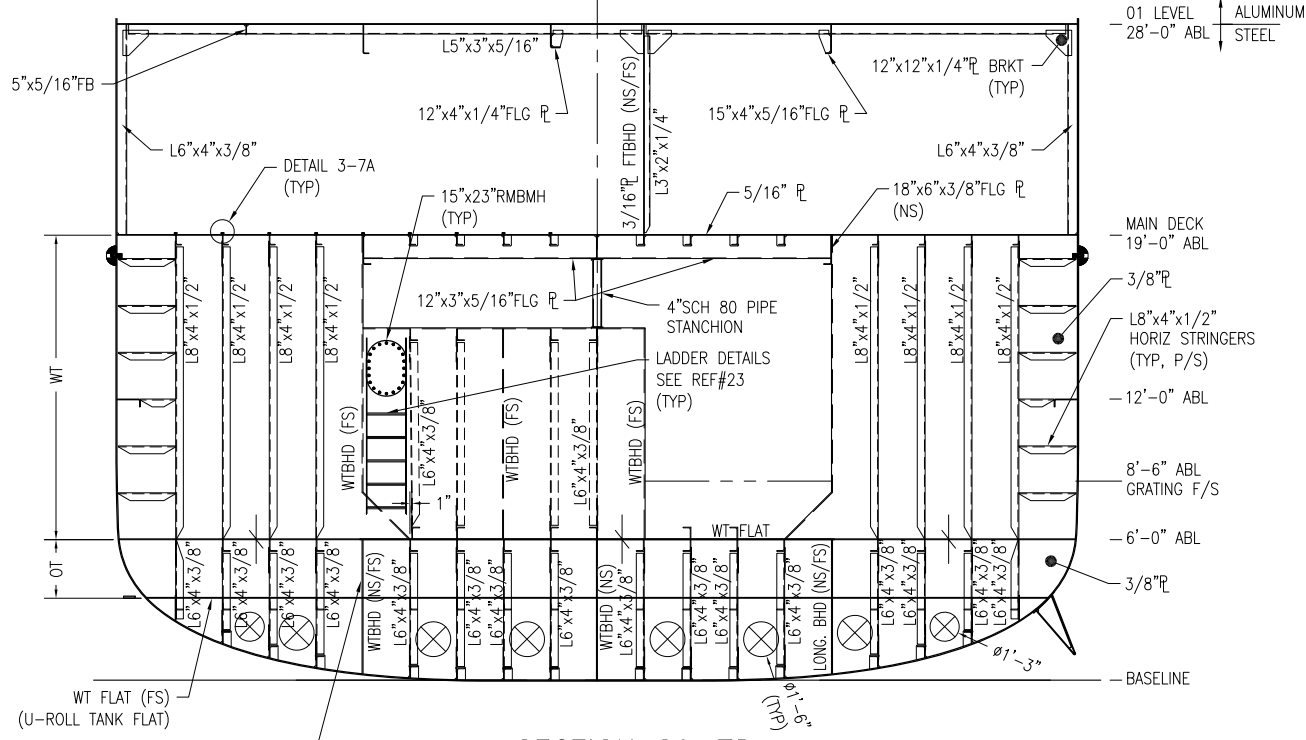
3

2

1

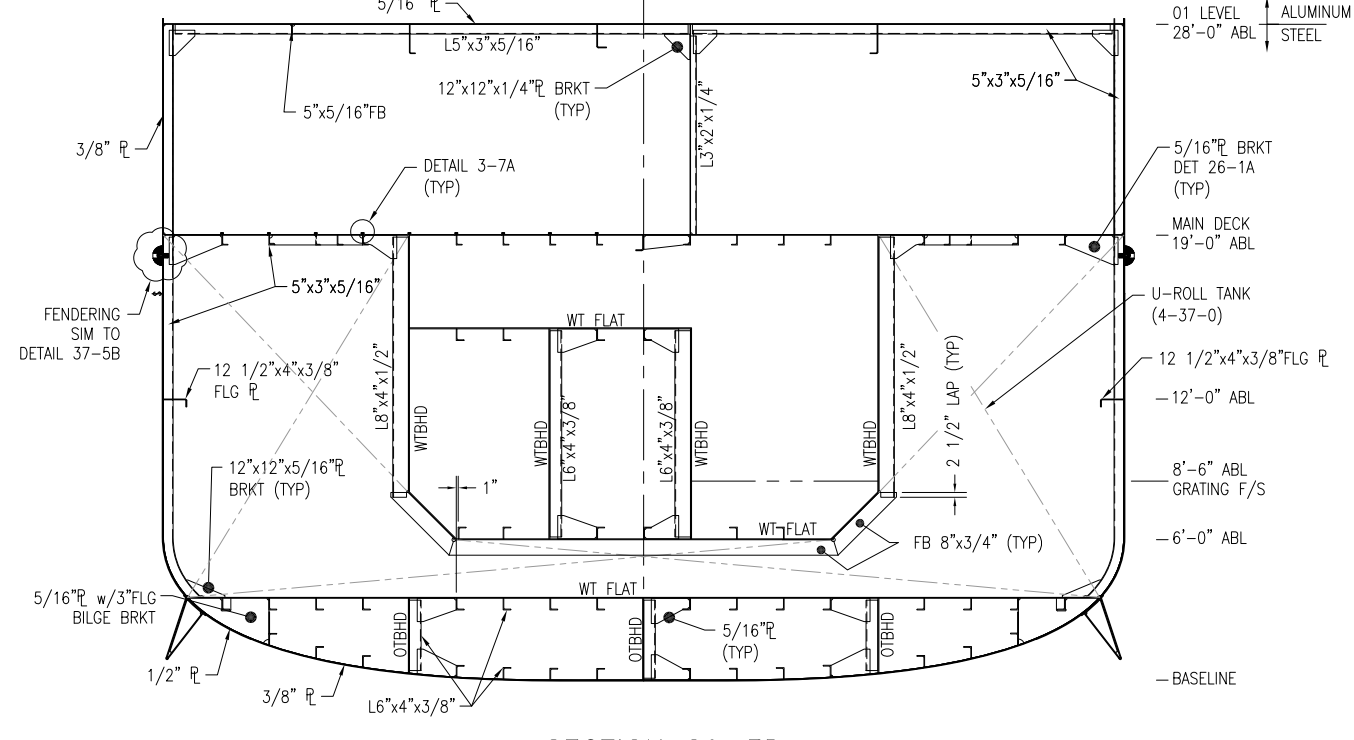
8 7 6 5 4 3 2 1

L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)



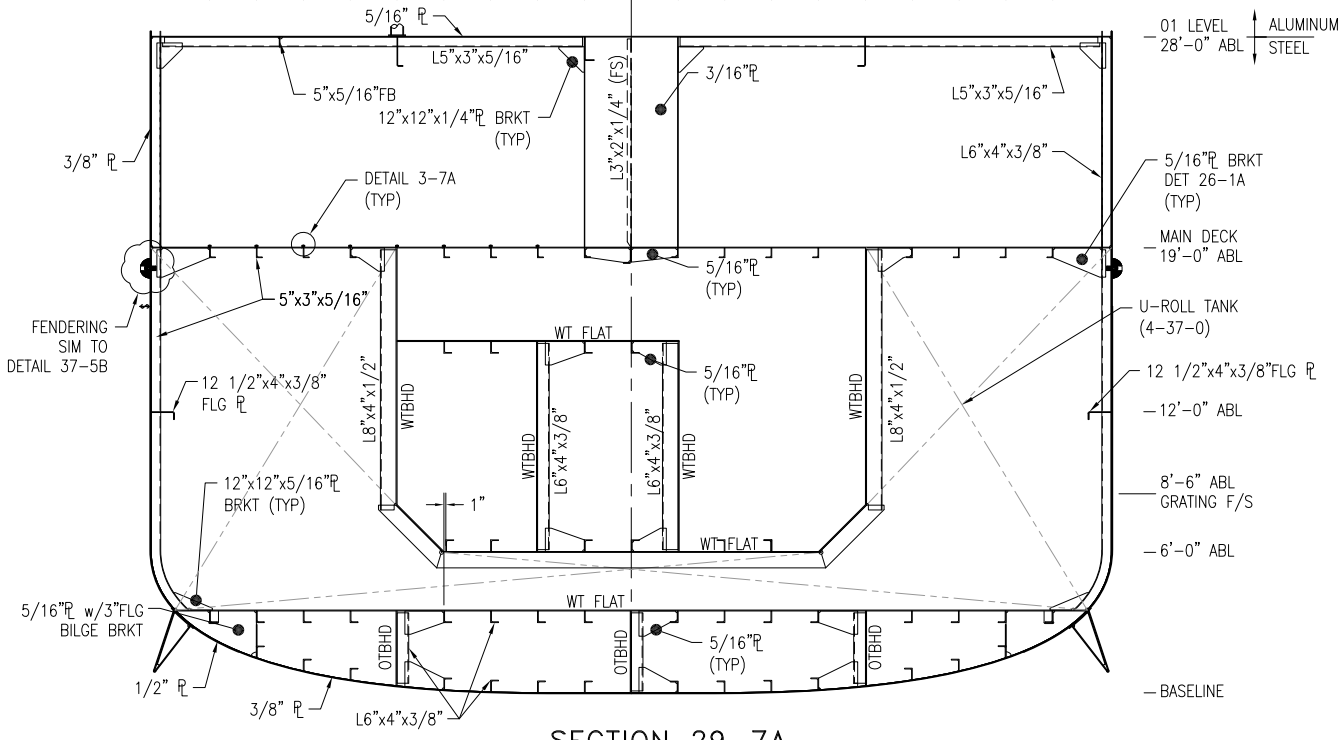
SECTION 29-7D
FR 37
LOOKING AFT
1/4"=1'-0"

L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)



SECTION 29-3D
FR 38
LOOKING AFT
1/4"=1'-0"

L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)

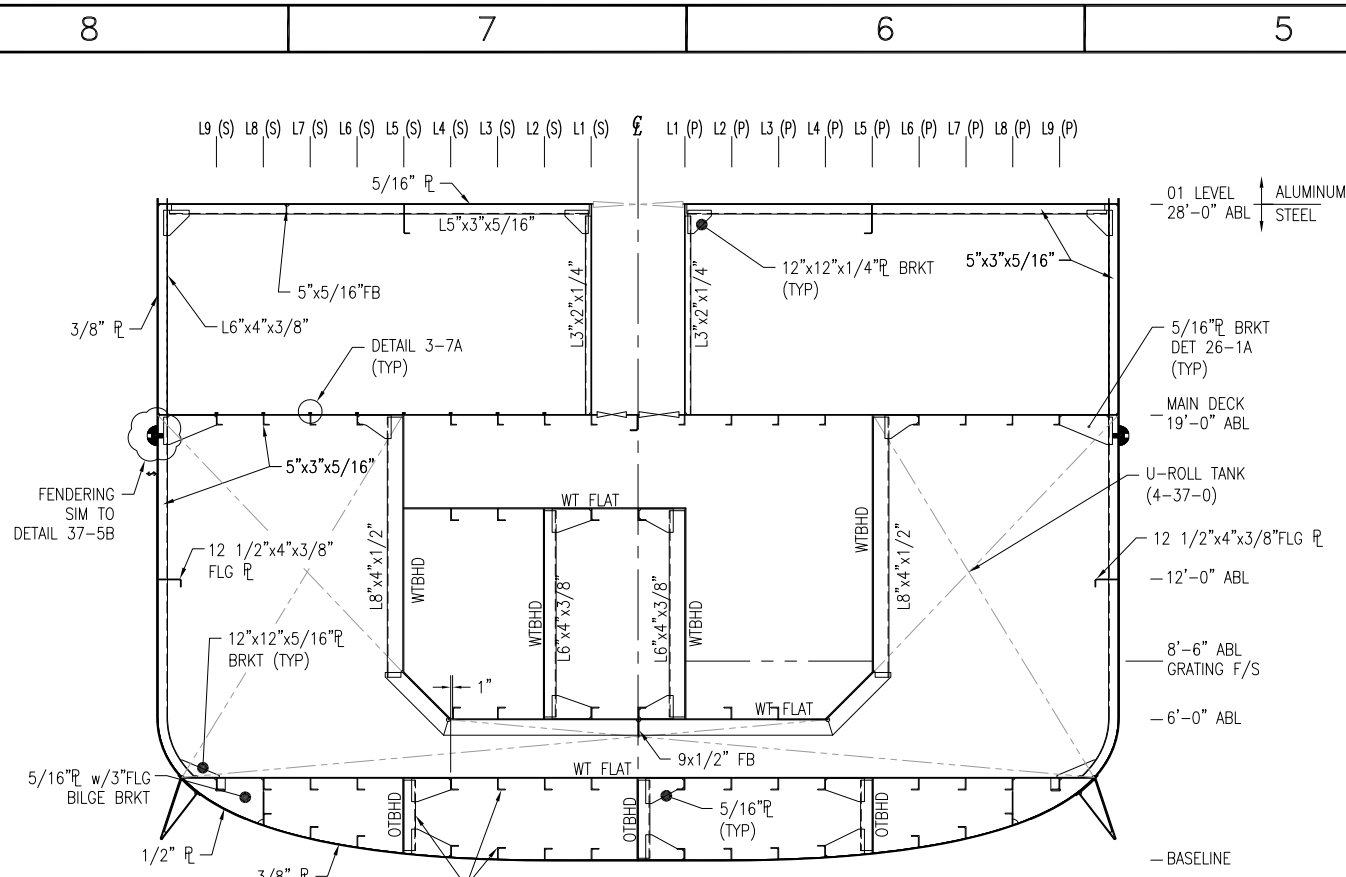


SECTION 29-7A
FR 39
LOOKING AFT
1/4"=1'-0"

8 7 6 5 4 3 2 1

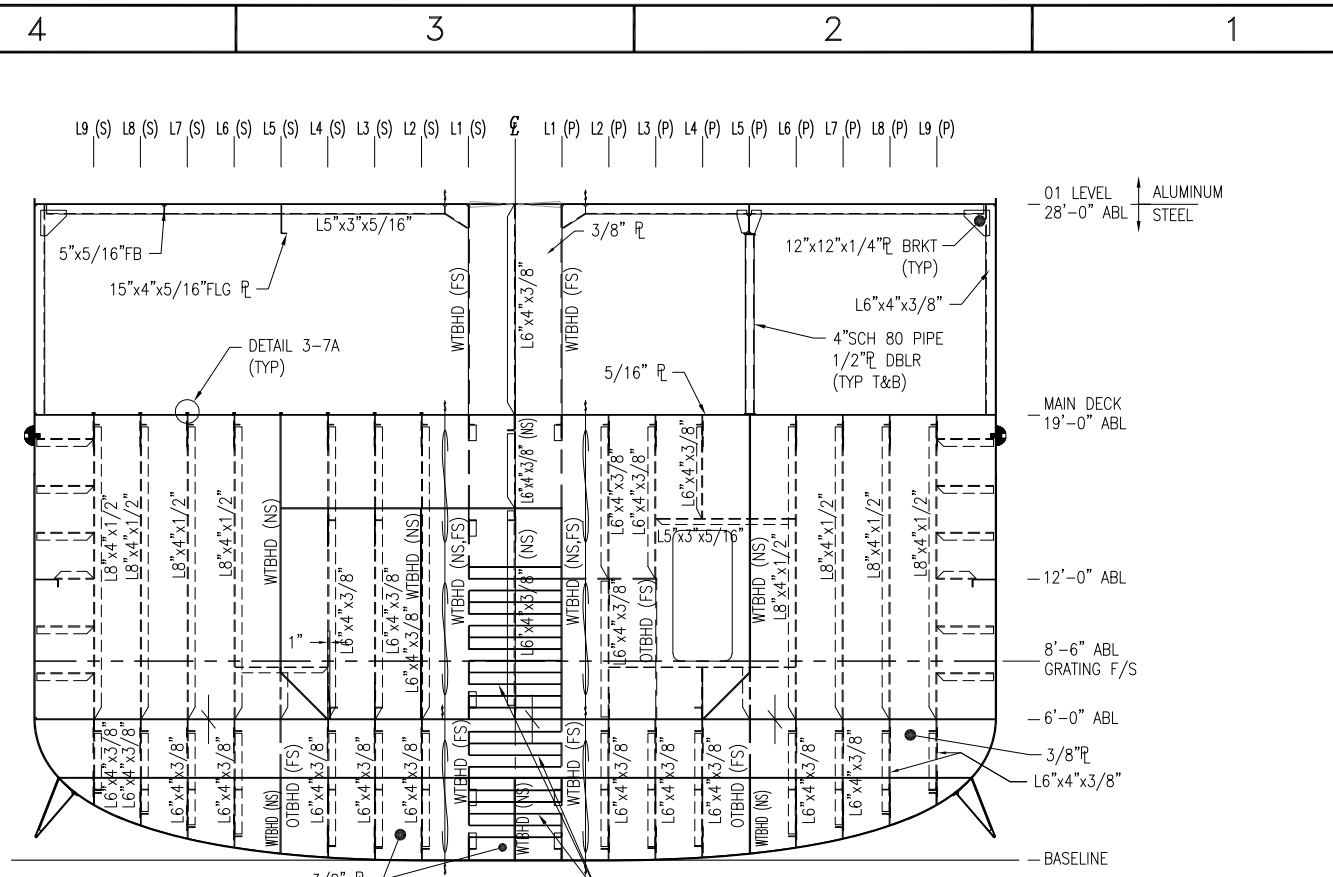
PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 37, 38, & 39			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 29 OF 46



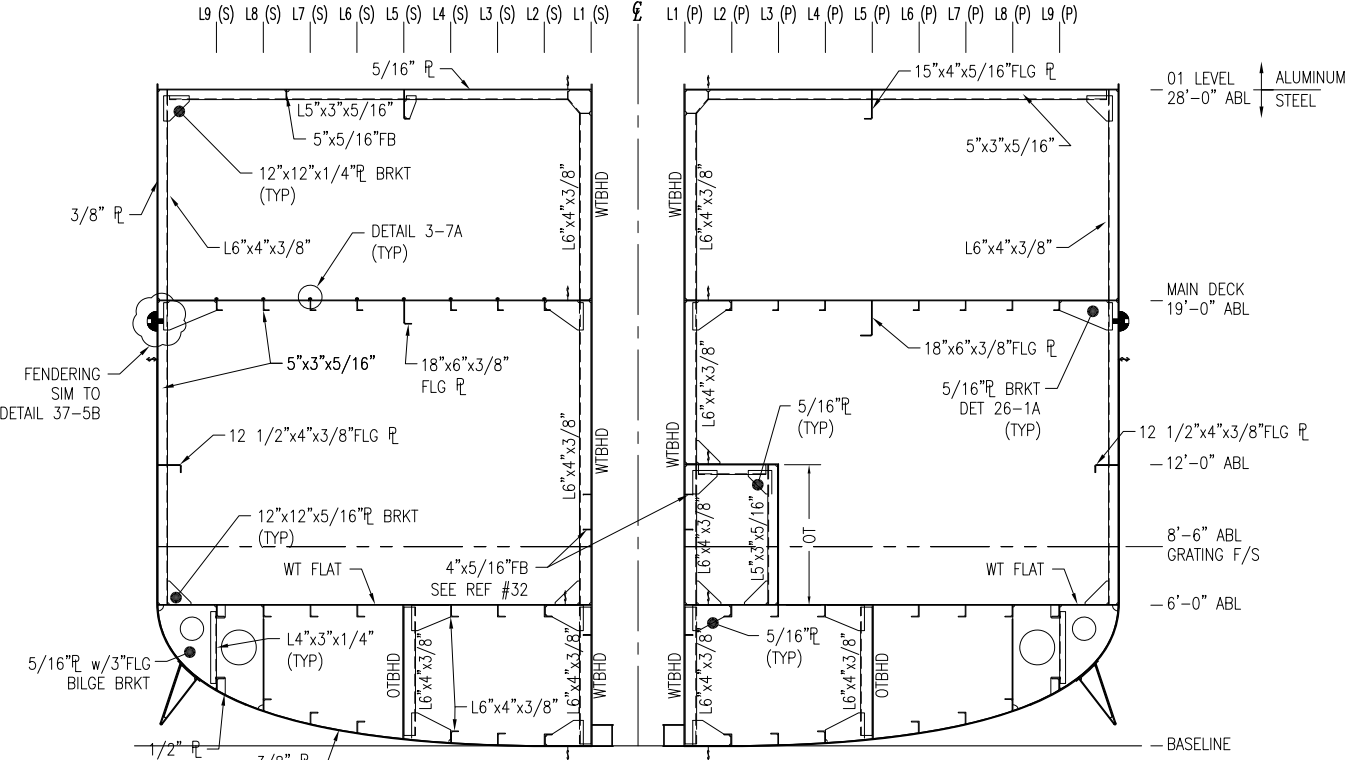
SECTION 30-7D

FR 40
LOOKING AFT
1/4"=1'-0"



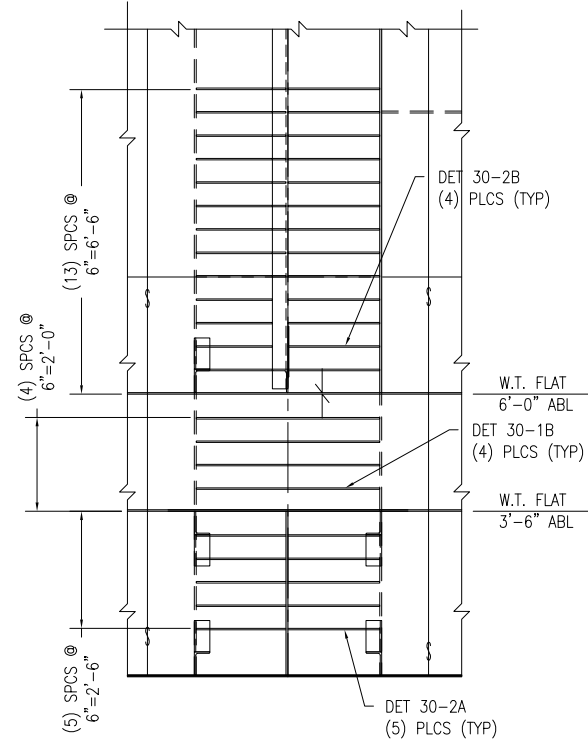
SECTION 30-3D

FR 41
LOOKING AFT
1/4"=1'-0"



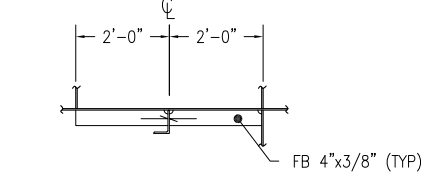
SECTION 30-7A

FR 42
LOOKING AFT
1/4"=1'-0"



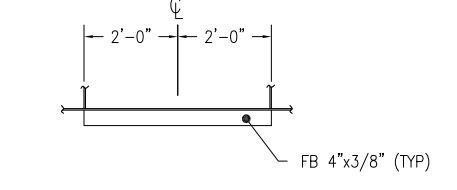
DETAIL 30-4A

FLAT BAR STIFFENERS @ FR 41
LOOKING AFT
1/4"=1'-0"



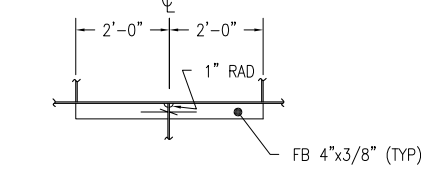
DETAIL 30-2B

FLAT BAR STIFFENERS @ FR 41
1/2"=1'-0"



DETAIL 30-1B

FLAT BAR STIFFENERS @ FR 41
1/2"=1'-0"



DETAIL 30-2A

FLAT BAR STIFFENERS @ FR 41
1/2"=1'-0"

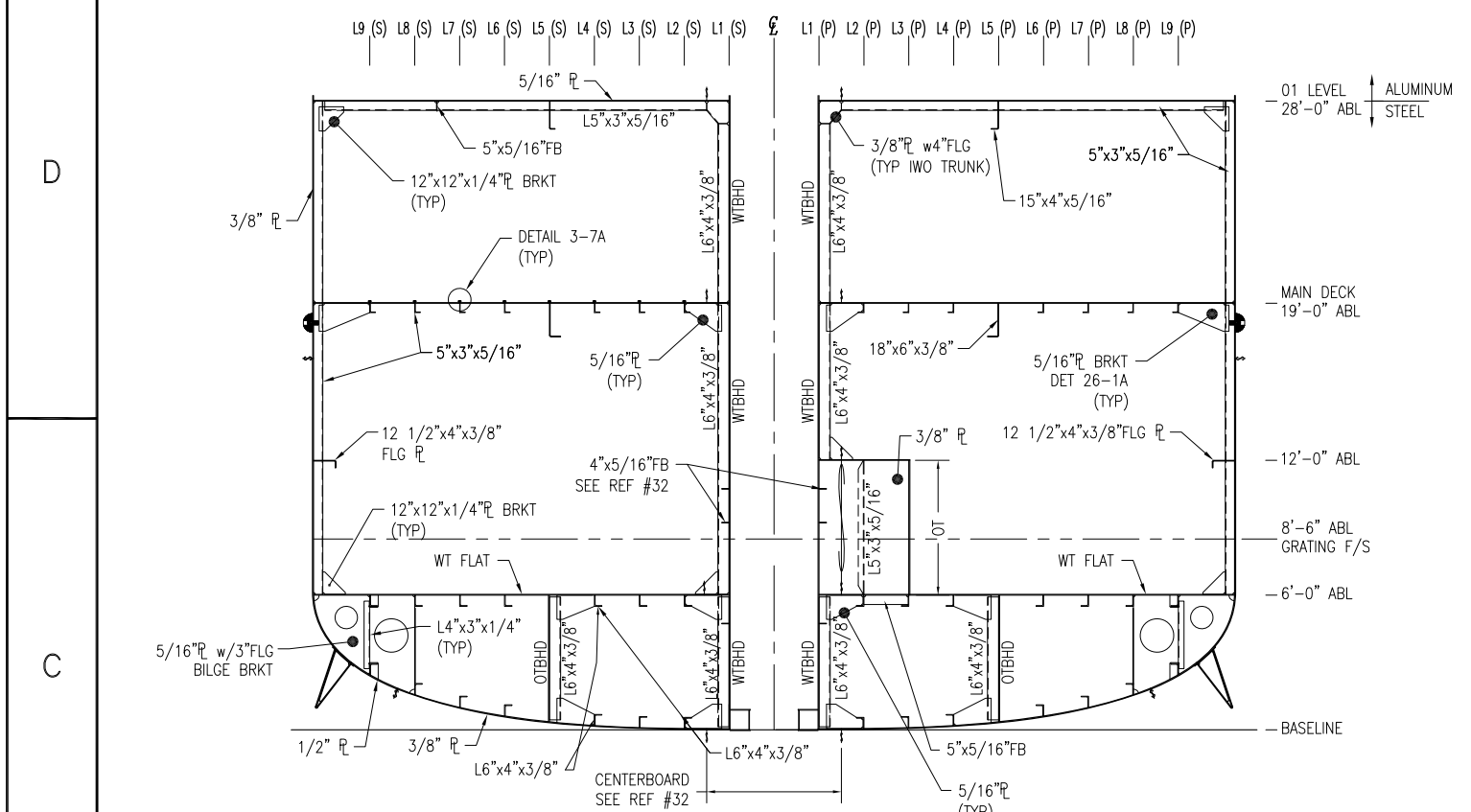
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 40, 41, & 42

SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 30 OF 46

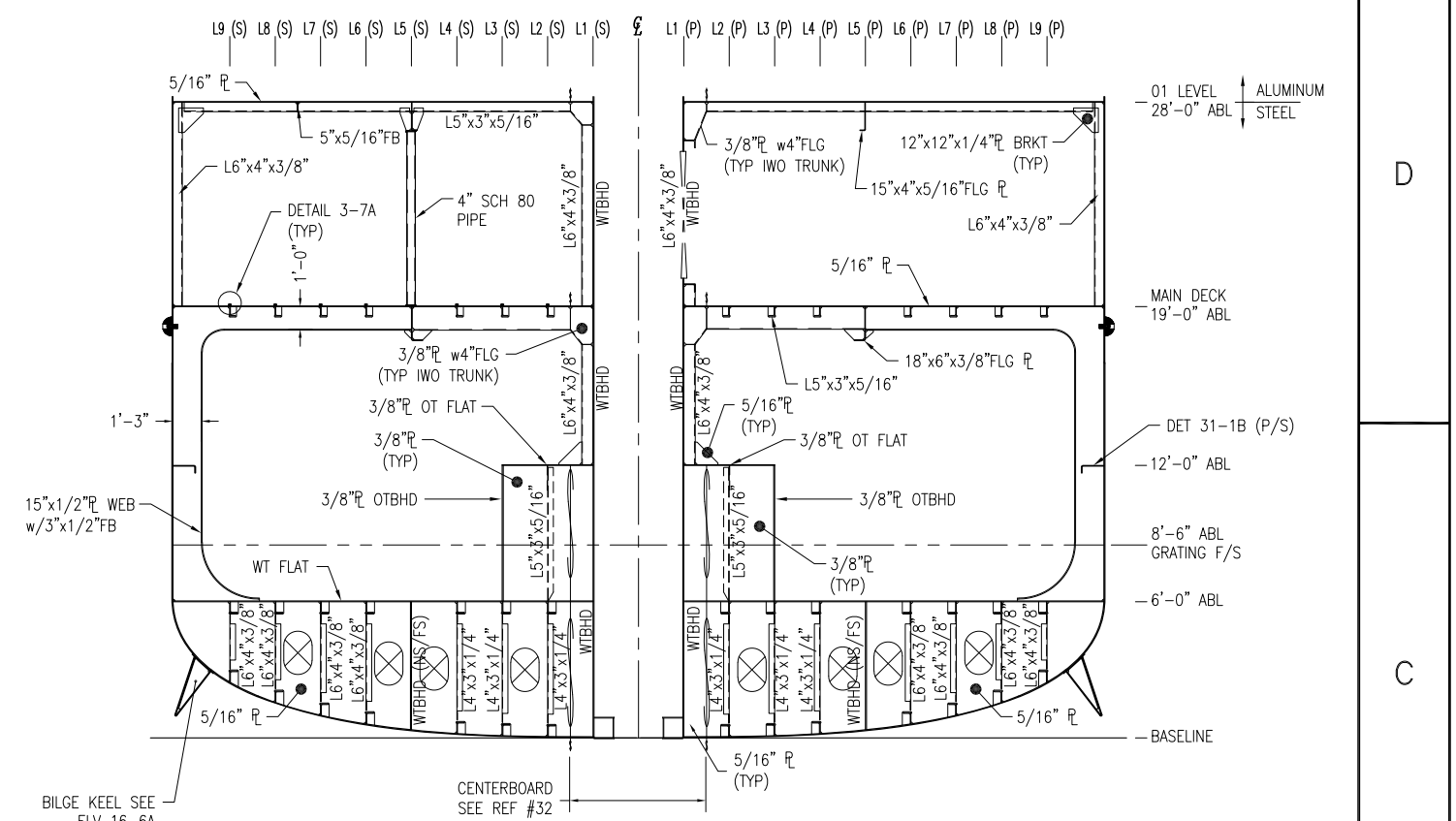
PROFESSIONAL ENGINEER STAMP

8 7 6 5 4 3 2 1



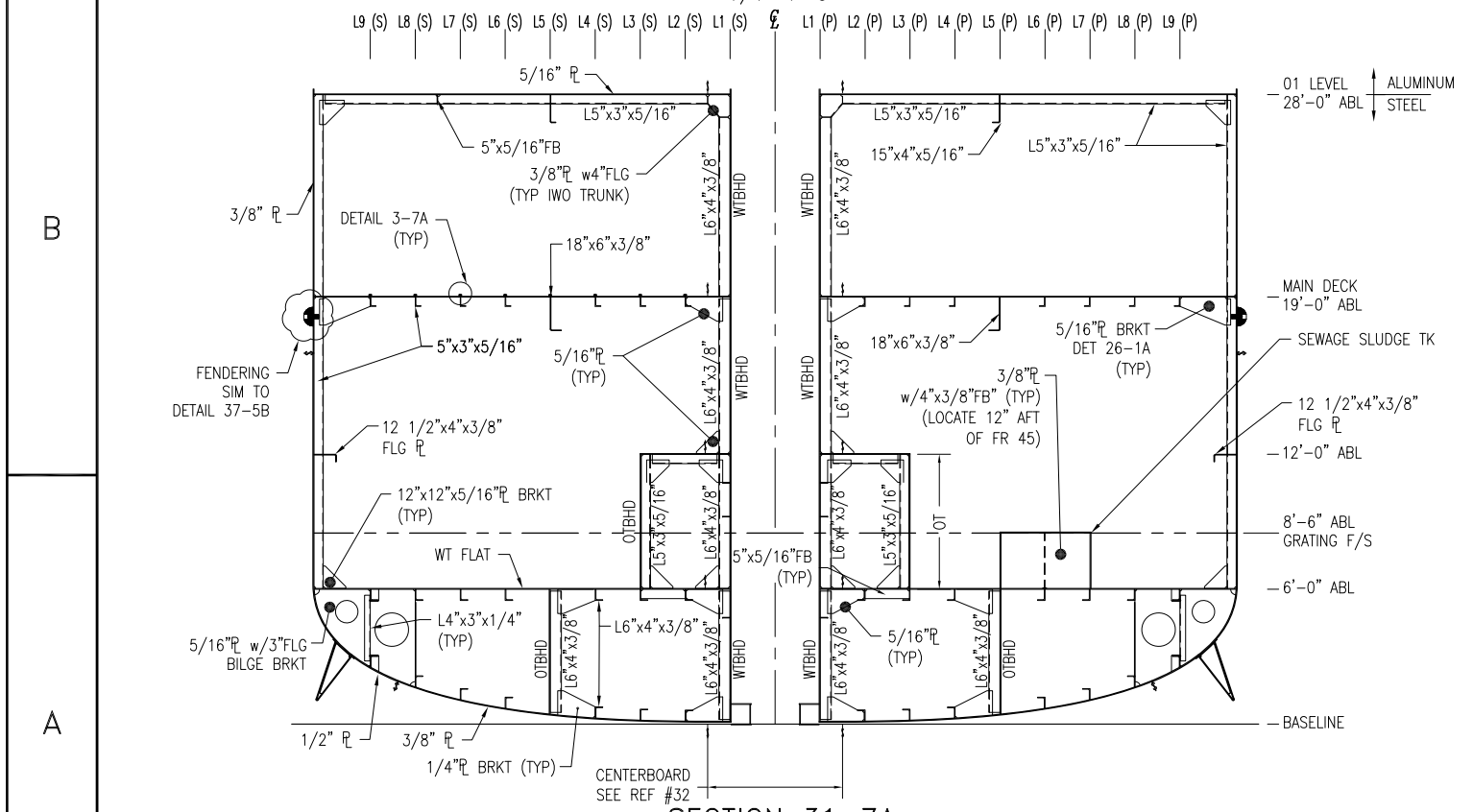
SECTION 31-7D

FR 43
LOOKING AFT
1/4"=1'-0"



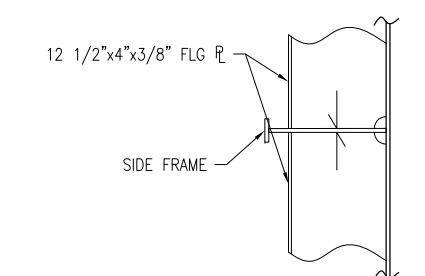
SECTION 31-3D

FR 44
LOOKING AFT
1/4"=1'-0"



SECTION 31-7A

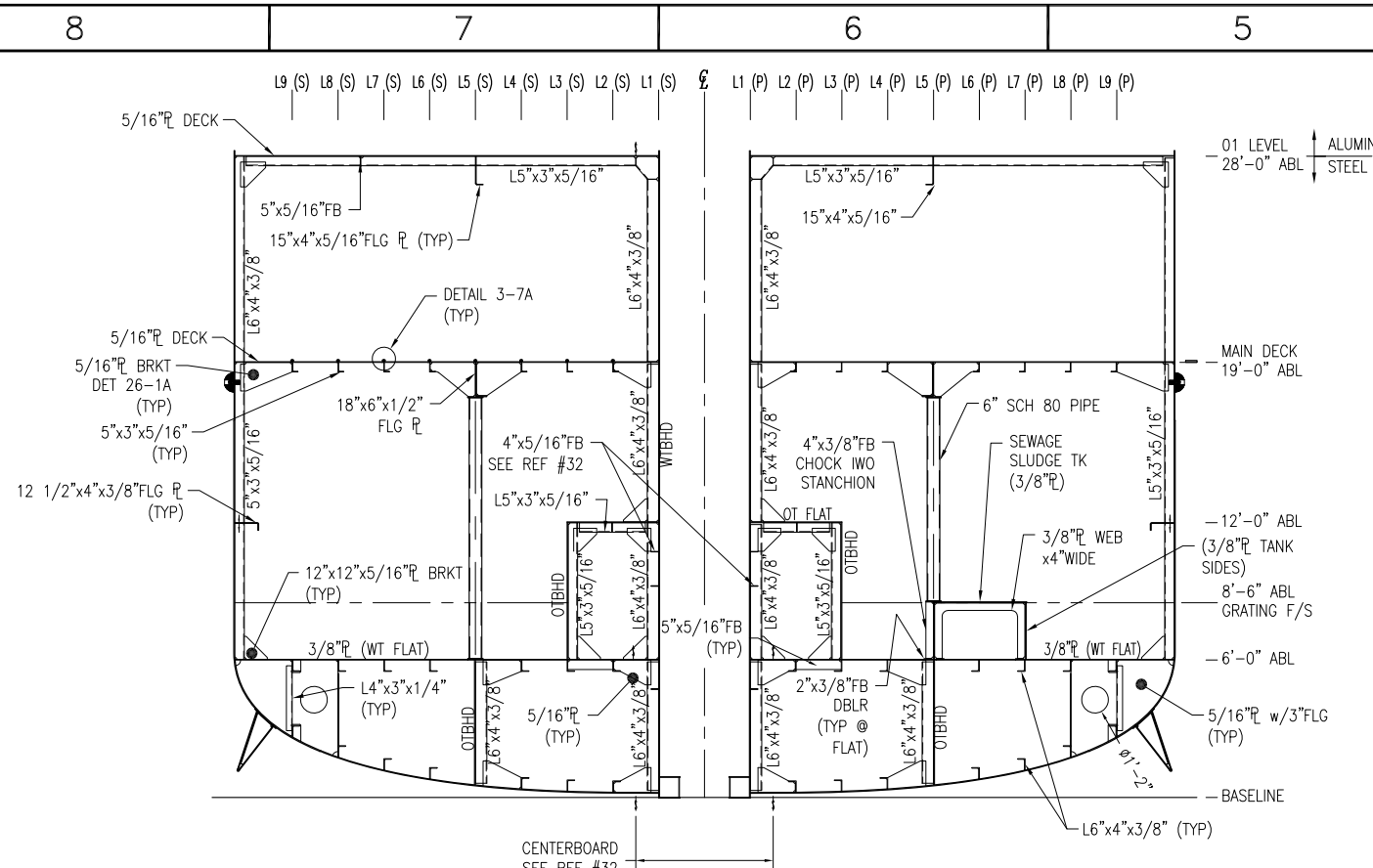
FR 45
LOOKING AFT
1/4"=1'-0"



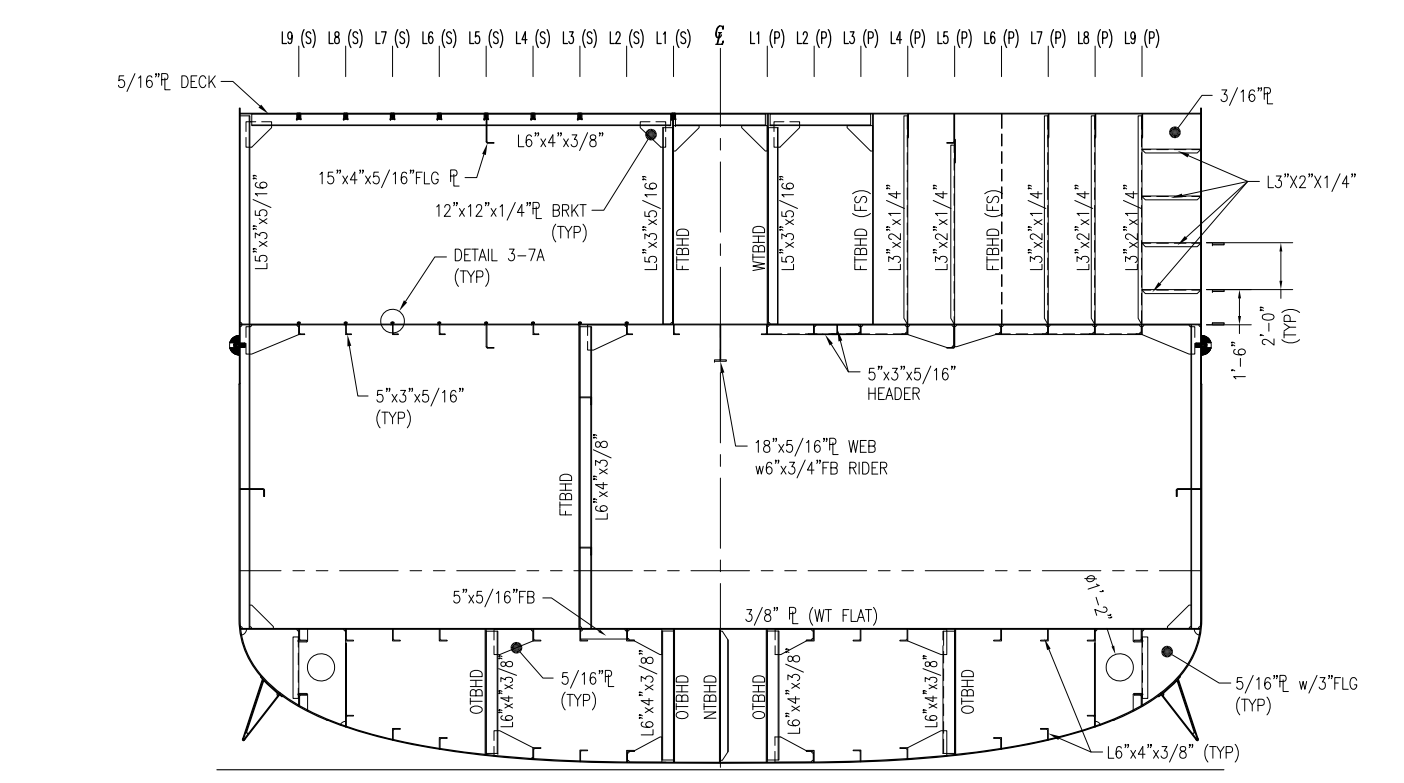
DETAIL 31-1B
LOOKING DOWN
1"=1'-0"

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 43, 44, & 45			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 31 OF 46	

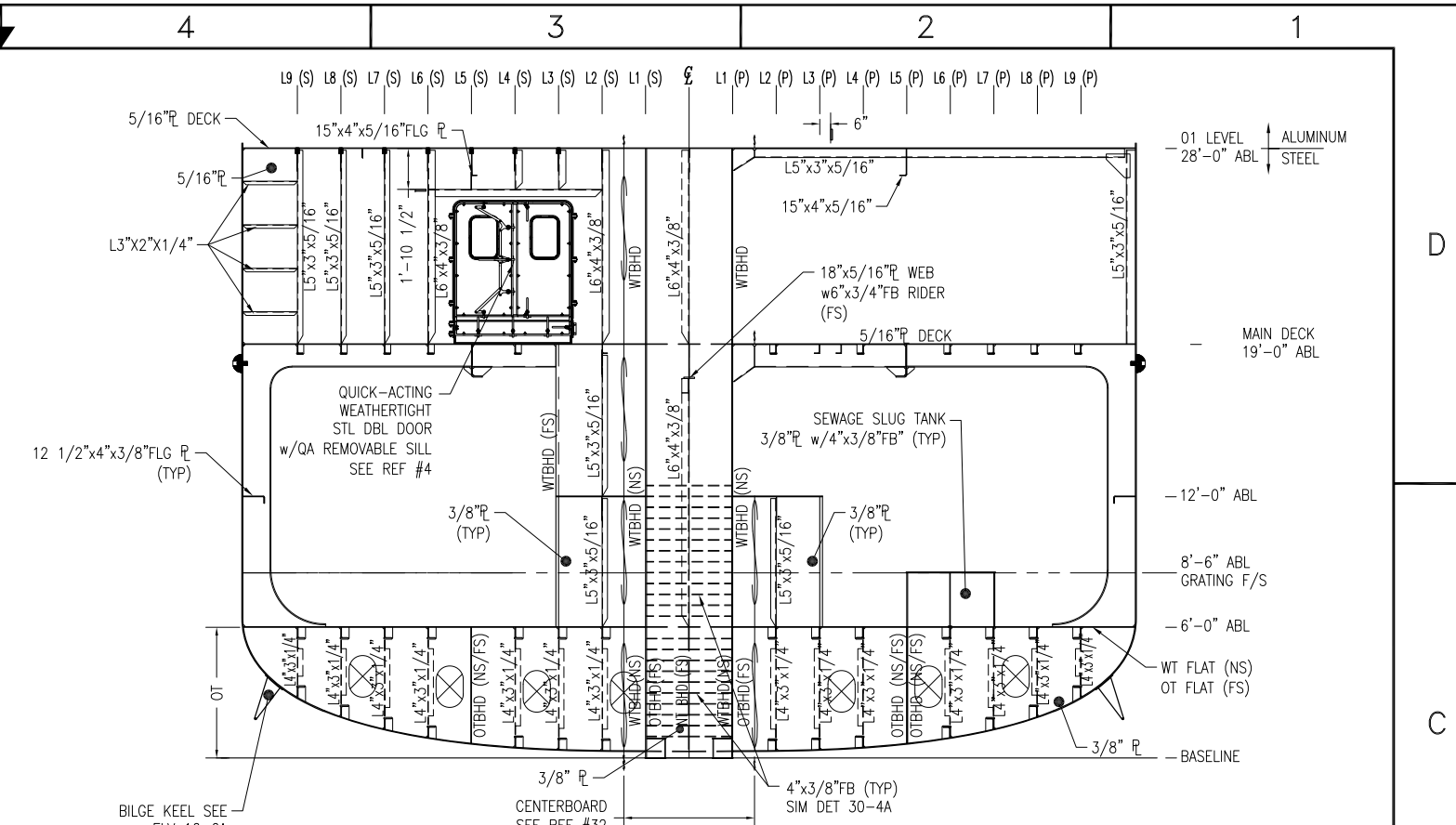
8 7 6 5 4 3 2 1



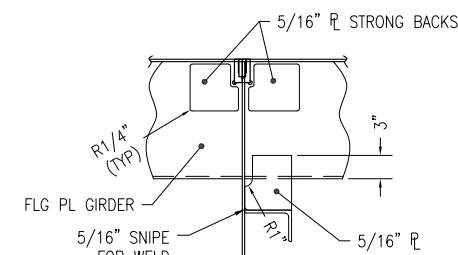
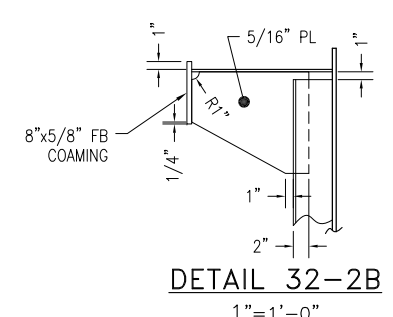
SECTION 32-7D
FR 46
LOOKING AFT
1/4"=1'-0"



SECTION 32-7A
FR 48
LOOKING AFT
1/4"=1'-0"



SECTION 32-3D
FR 47
LOOKING AFT
1/4"=1'-0"



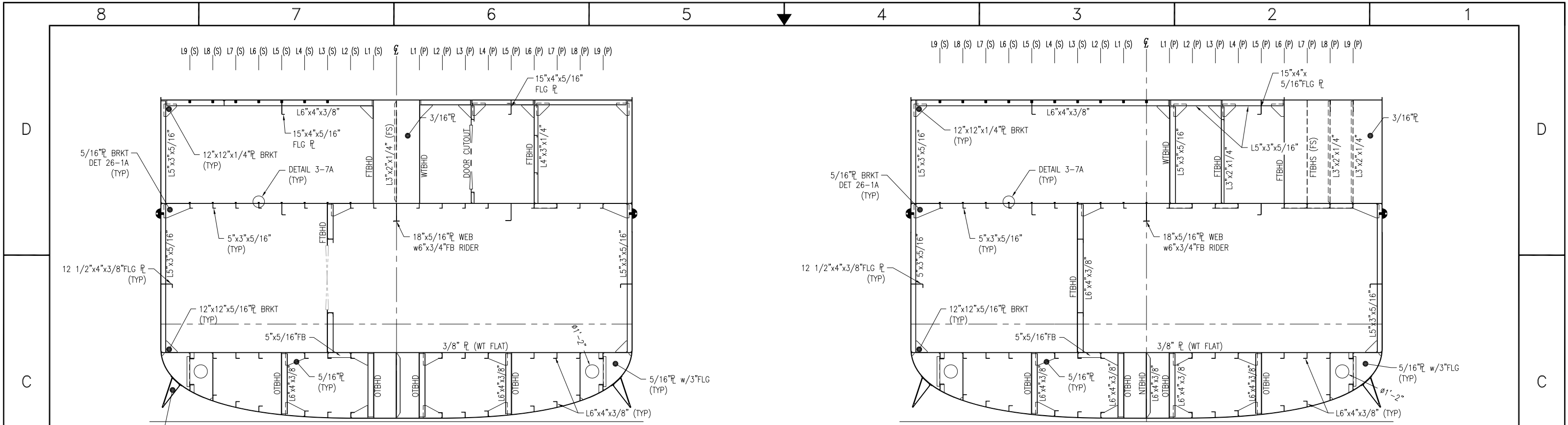
SECTION 32-1B
TRANSVERSE BULKHEAD
TIE-DOWN DETAIL
1"=1'-0"

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CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL
STEEL HULL
STRUCTURAL ARRANGEMENT
FRAMES 46, 47, & 48

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 32 OF 46

PROFESSIONAL ENGINEER STAMP

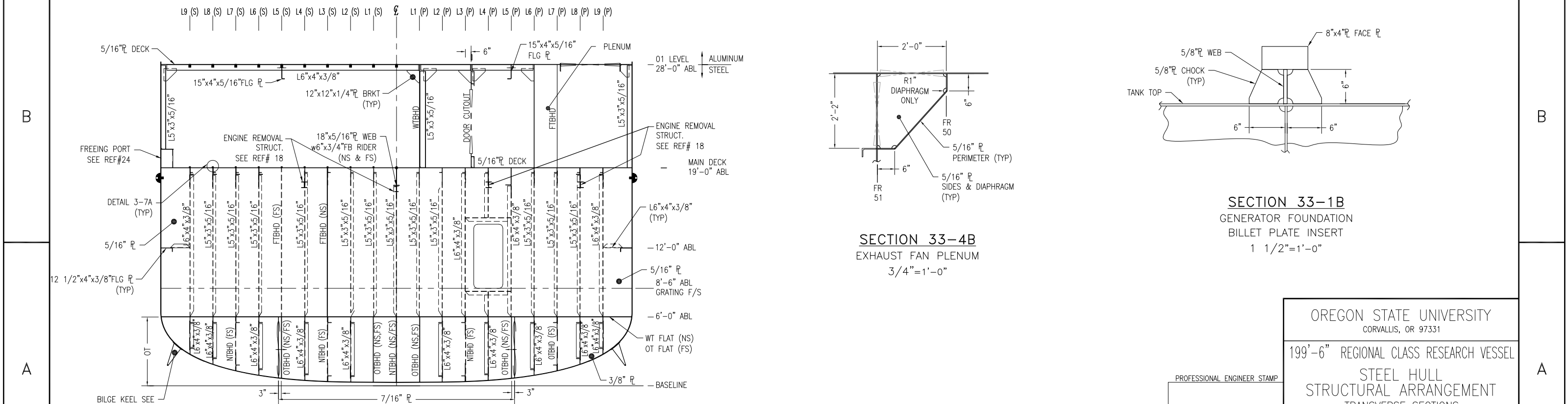


SECTION 33-7D

FR 49
LOOKING AFT
1/4"=1'-0"

SECTION 33-3D

FR 50
LOOKING AFT
1/4"=1'-0"



SECTION 33-7A

FR 51
LOOKING AFT
1/4"=1'-0"

SECTION 33-4B

EXHAUST FAN PLENUM
3/4"=1'-0"

SECTION 33-1B

GENERATOR FOUNDATION
BILLET PLATE INSERT
1 1/2"=1'-0"

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CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 49, 50, & 51

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 33 OF 46

PROFESSIONAL ENGINEER STAMP

8 7 6 5 4 3 2 1

D

C

B

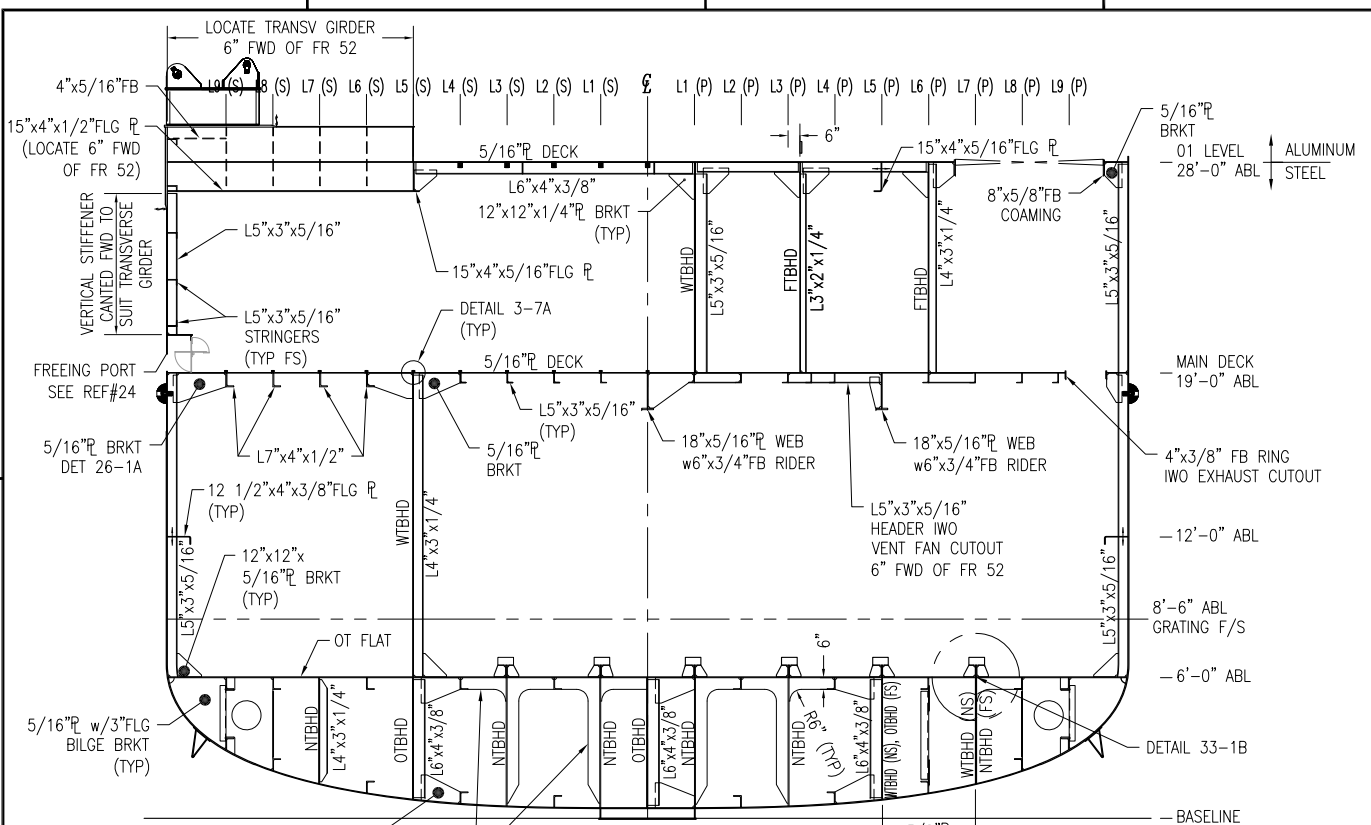
A

D

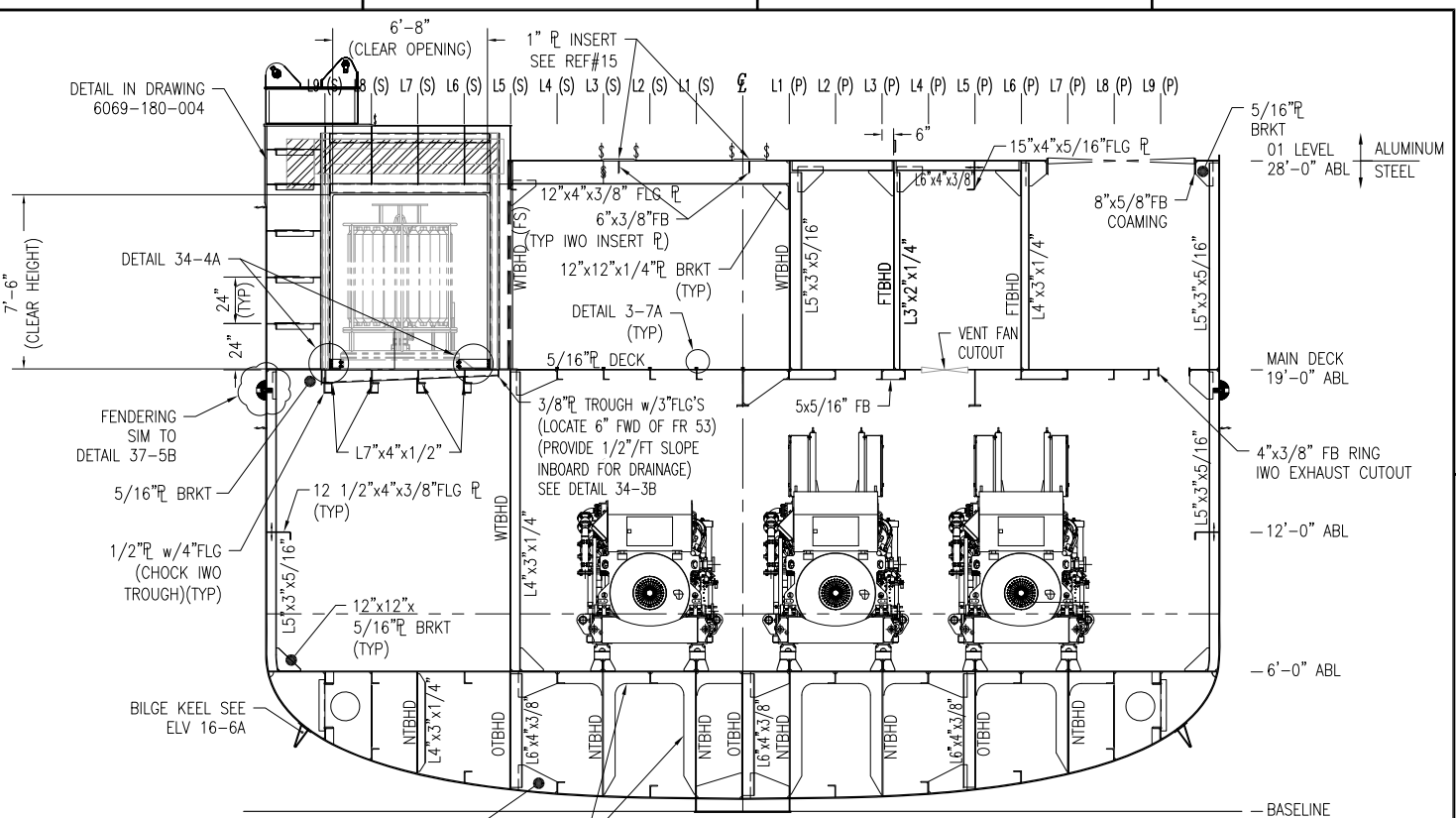
C

B

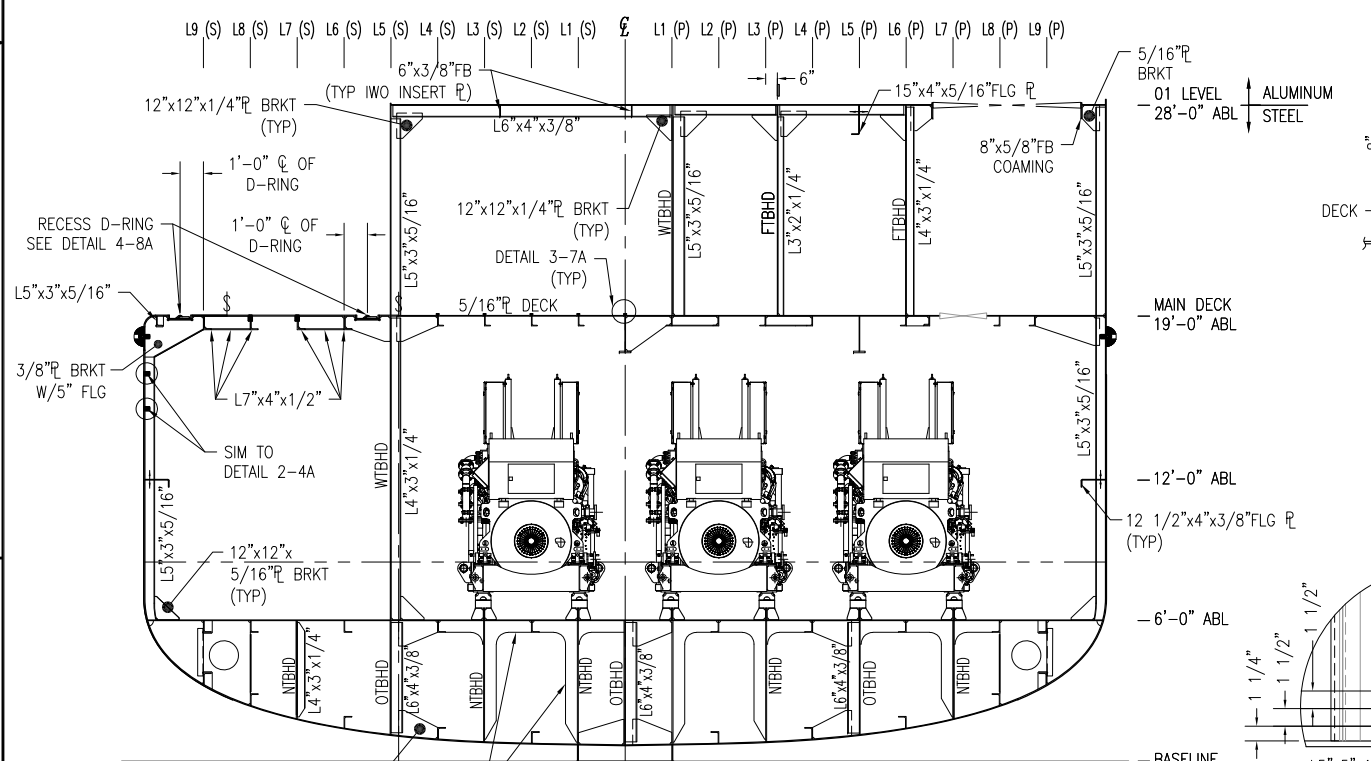
A



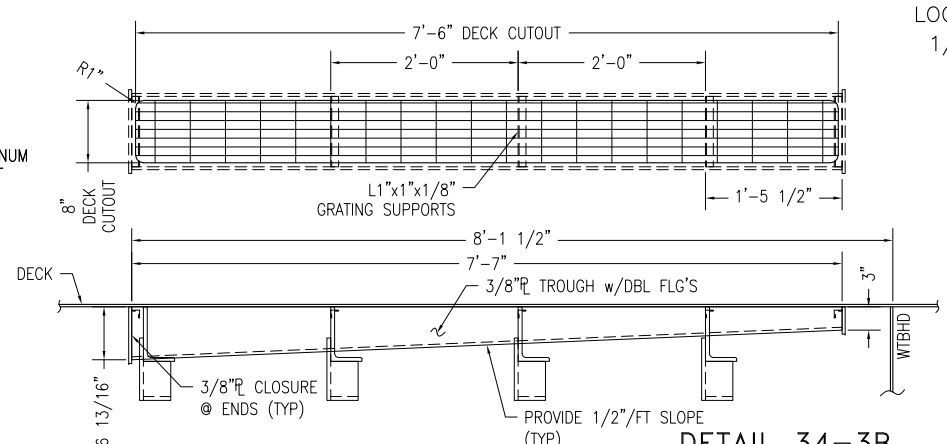
SECTION 34-7D
FR 52
LOOKING AFT
1/4"=1'-0"



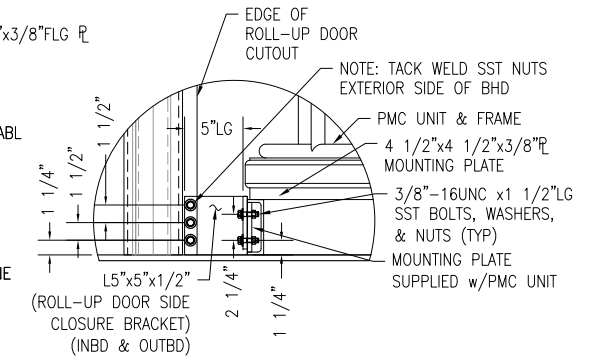
SECTION 34-3D
FR 53
LOOKING AFT
1/4"=1'-0"



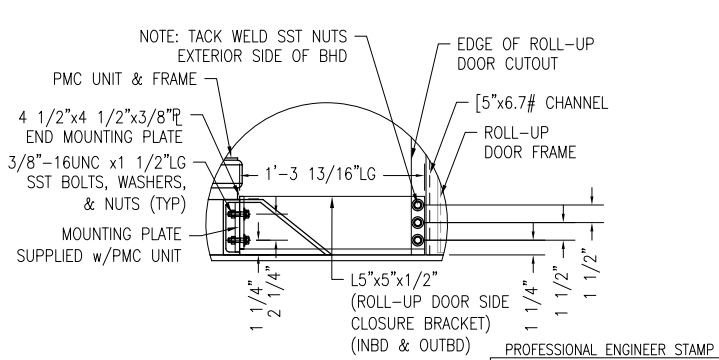
SECTION 34-7A
FR 54
LOOKING AFT
1/4"=1'-0"



DETAIL 34-3B
DRAIN TROUGH (TRANSVERSE MOUNTED) LOCATED 6" FWD OF ROLL-UP DOOR
@ FR 53 DRAIN TROUGH (LONG'L MOUNTED LOCATED IN VESTIBULE FR 61 TO 63, SIMILAR)
1"=1'-0"



SECTION 34-4A
PMC FRAME & ROLL-UP DOOR
CLOSURE FRAME
1 1/2"=1'-0"



SECTION 34-4A
PMC FRAME & ROLL-UP DOOR
CLOSURE FRAME
1 1/2"=1'-0"

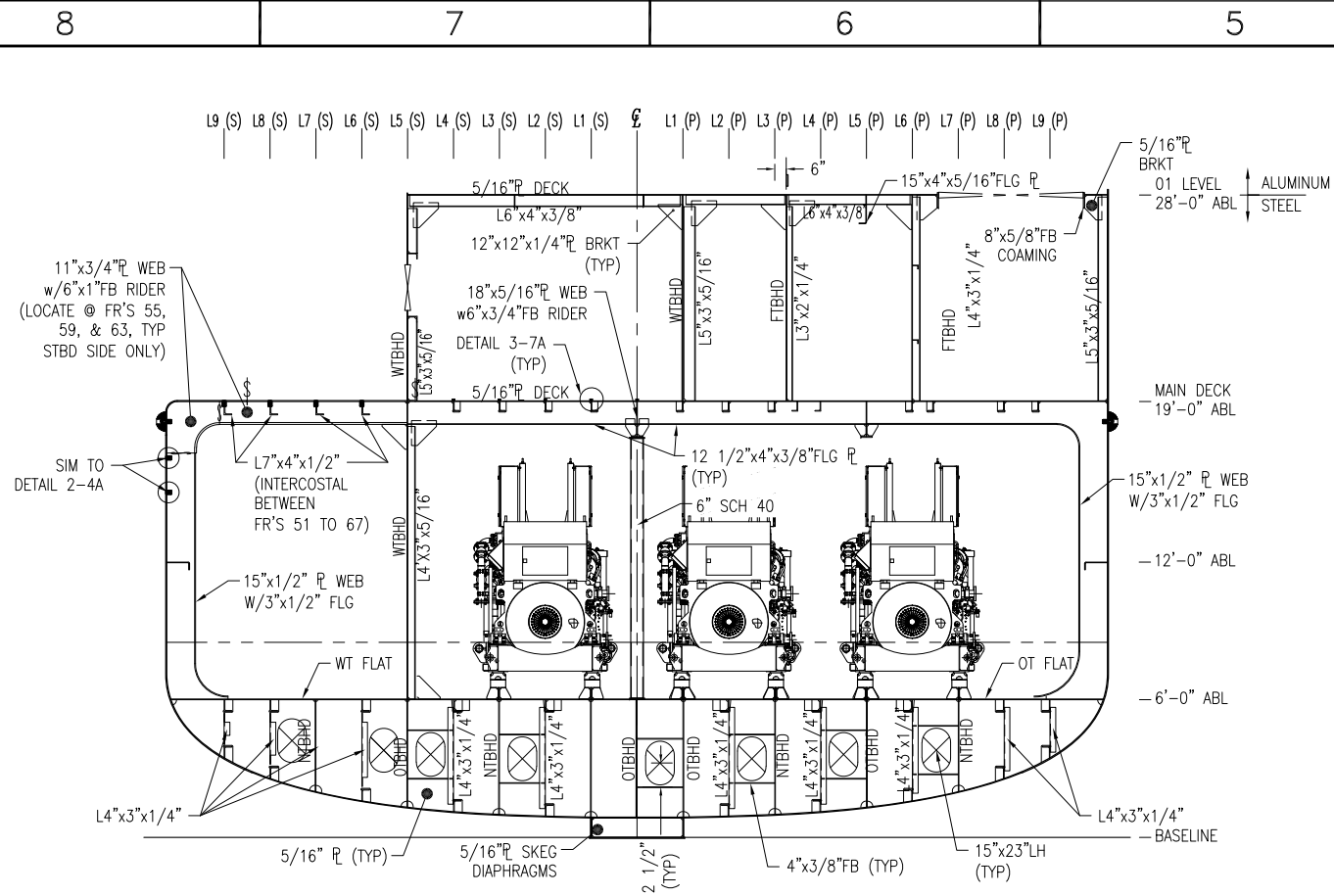
OREGON STATE UNIVERSITY
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199'-6" REGIONAL CLASS RESEARCH VESSEL

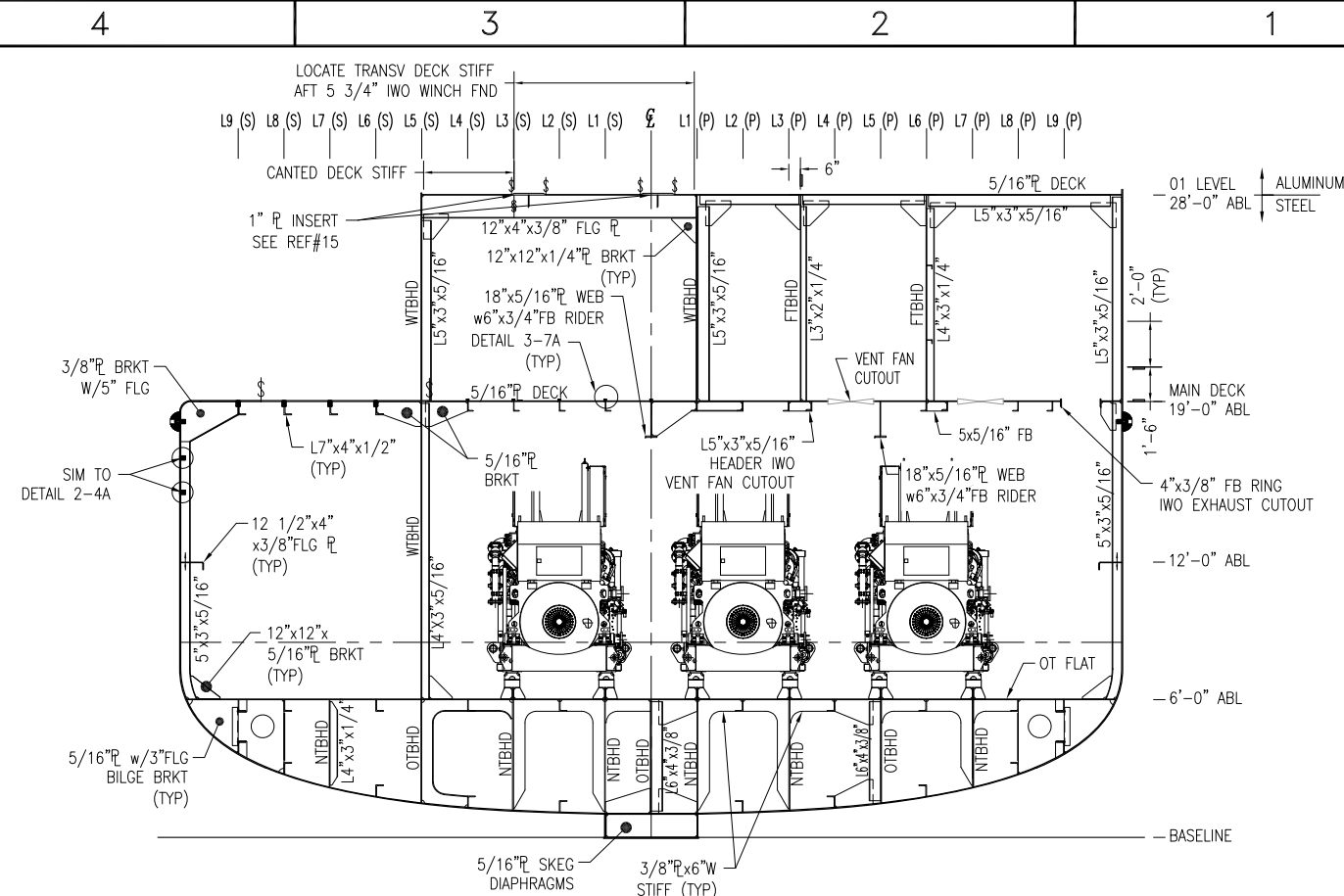
STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 52, 53, & 54

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 34 OF 46

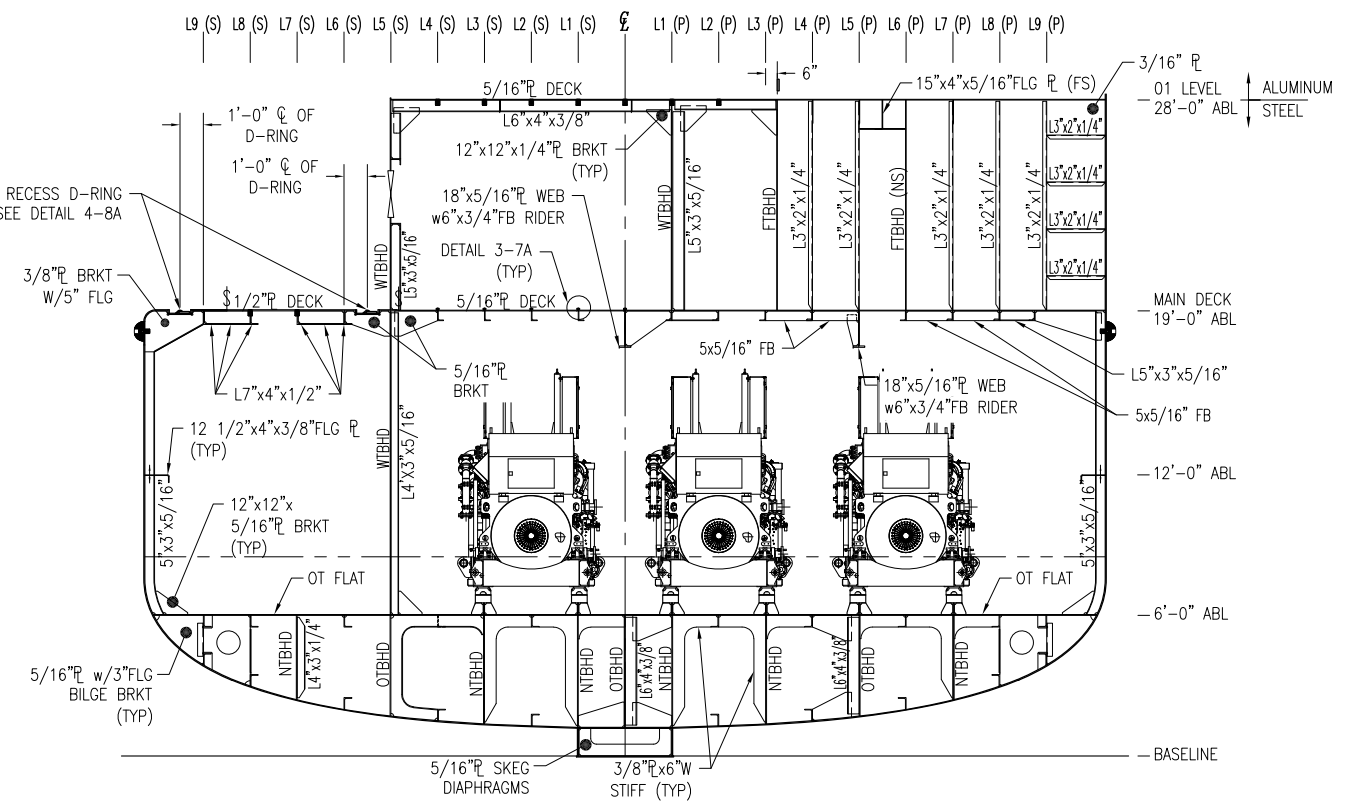
8 7 6 5 4 3 2 1



SECTION 35-7D
FR 55
LOOKING AFT
1/4"=1'-0"



SECTION 35-3D
FR 56
LOOKING AFT
1/4"=1'-0"



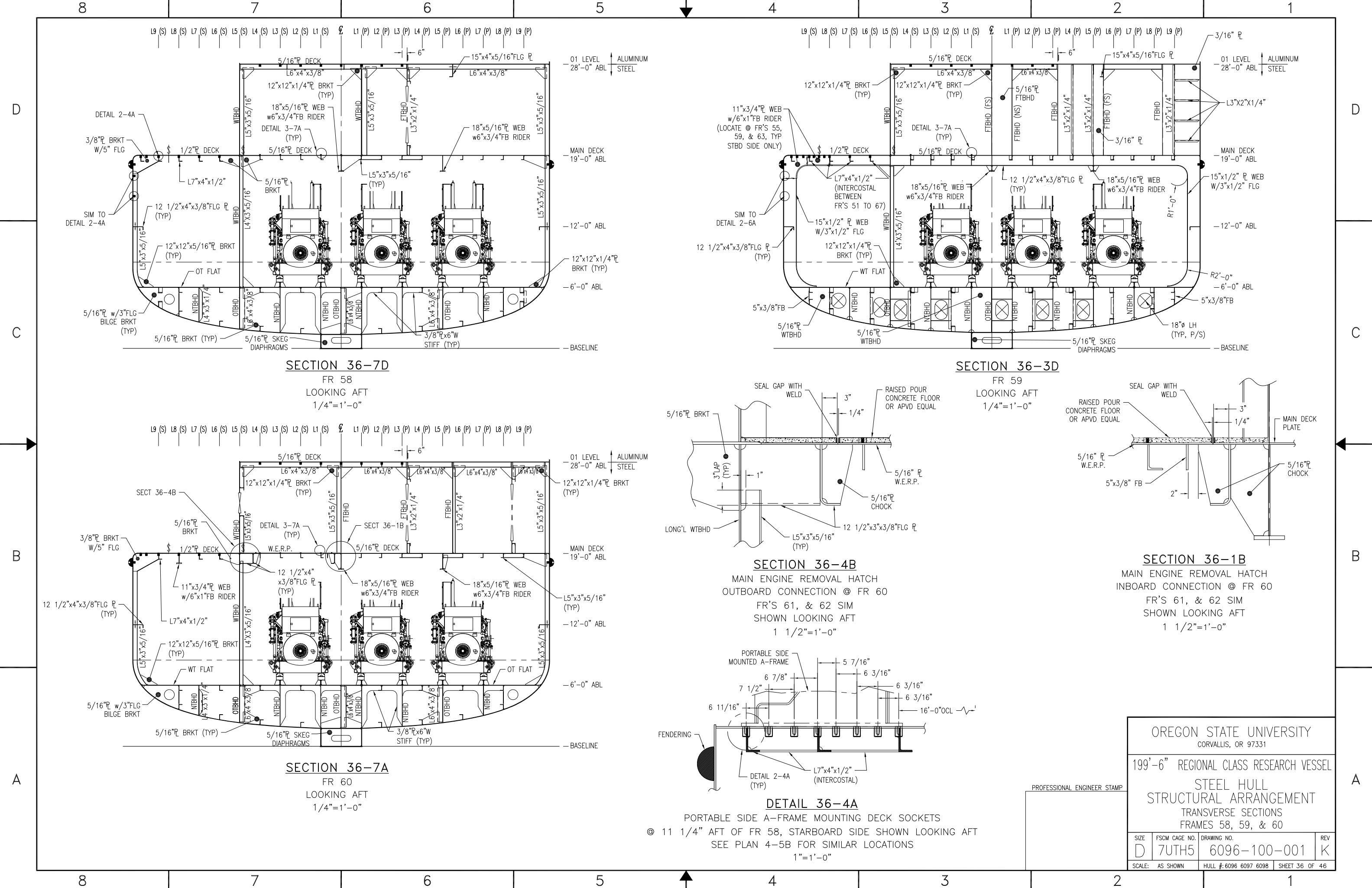
SECTION 35-7A
FR 57
LOOKING AFT
1/4"=1'-0"

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CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 55, 56, & 57

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 35 OF 45



SECTION 36-7D

FR 58
LOOKING AFT
1/4"=1'-0"

SECTION 36-3D

FR 59
LOOKING AFT
1/4"=1'-0"

SECTION 36-7A

FR 60
LOOKING AFT
1/4"=1'-0"

SECTION 36-4B

MAIN ENGINE REMOVAL HATCH
OUTBOARD CONNECTION @ FR 60
FR'S 61, & 62 SIM
SHOWN LOOKING AFT
1 1/2"=1'-0"

SECTION 36-1B

MAIN ENGINE REMOVAL HATCH
INBOARD CONNECTION @ FR 60
FR'S 61, & 62 SIM
SHOWN LOOKING AFT
1 1/2"=1'-0"

DETAIL 36-4A

PORTABLE SIDE A-FRAME MOUNTING DECK SOCKETS
@ 11 1/4" AFT OF FR 58, STARBOARD SIDE SHOWN LOOKING AFT
SEE PLAN 4-5B FOR SIMILAR LOCATIONS
1"=1'-0"

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CORVALLIS, OR 97331

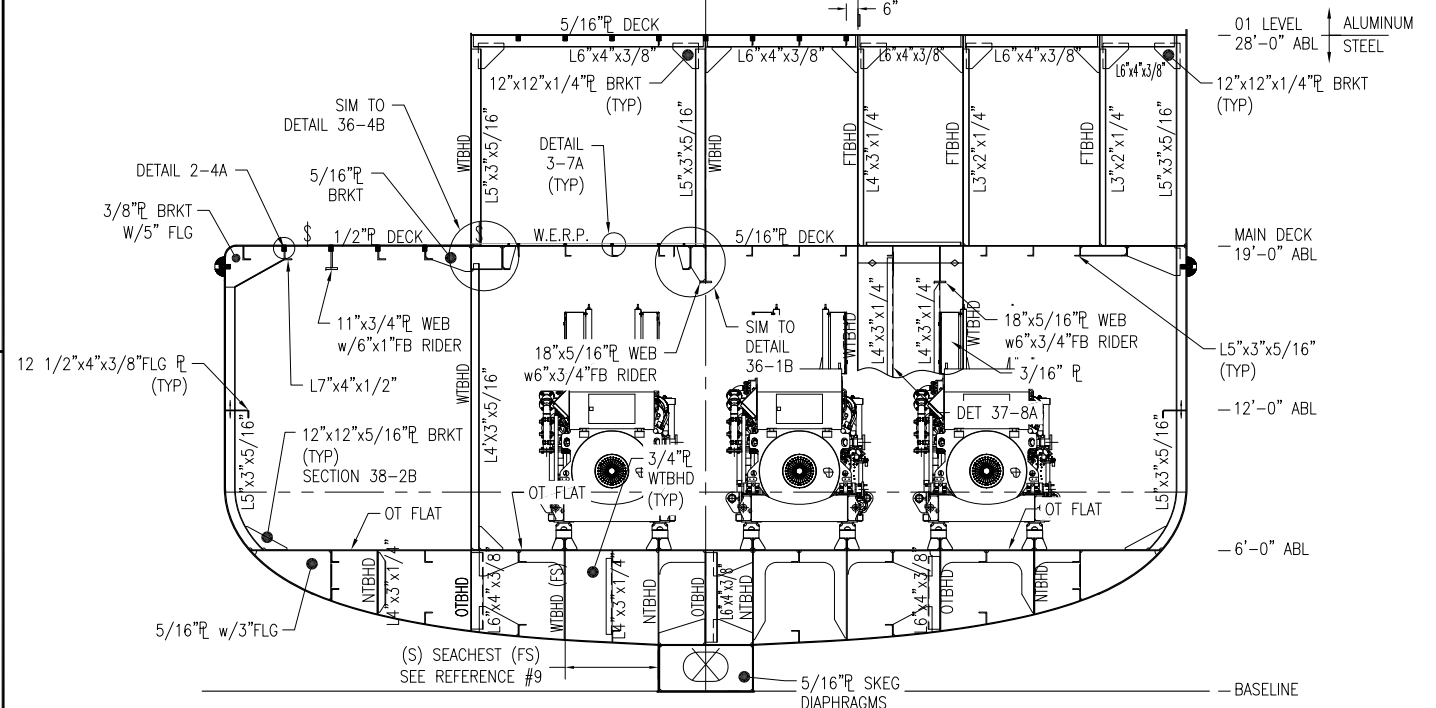
199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 58, 59, & 60

SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 36 OF 46

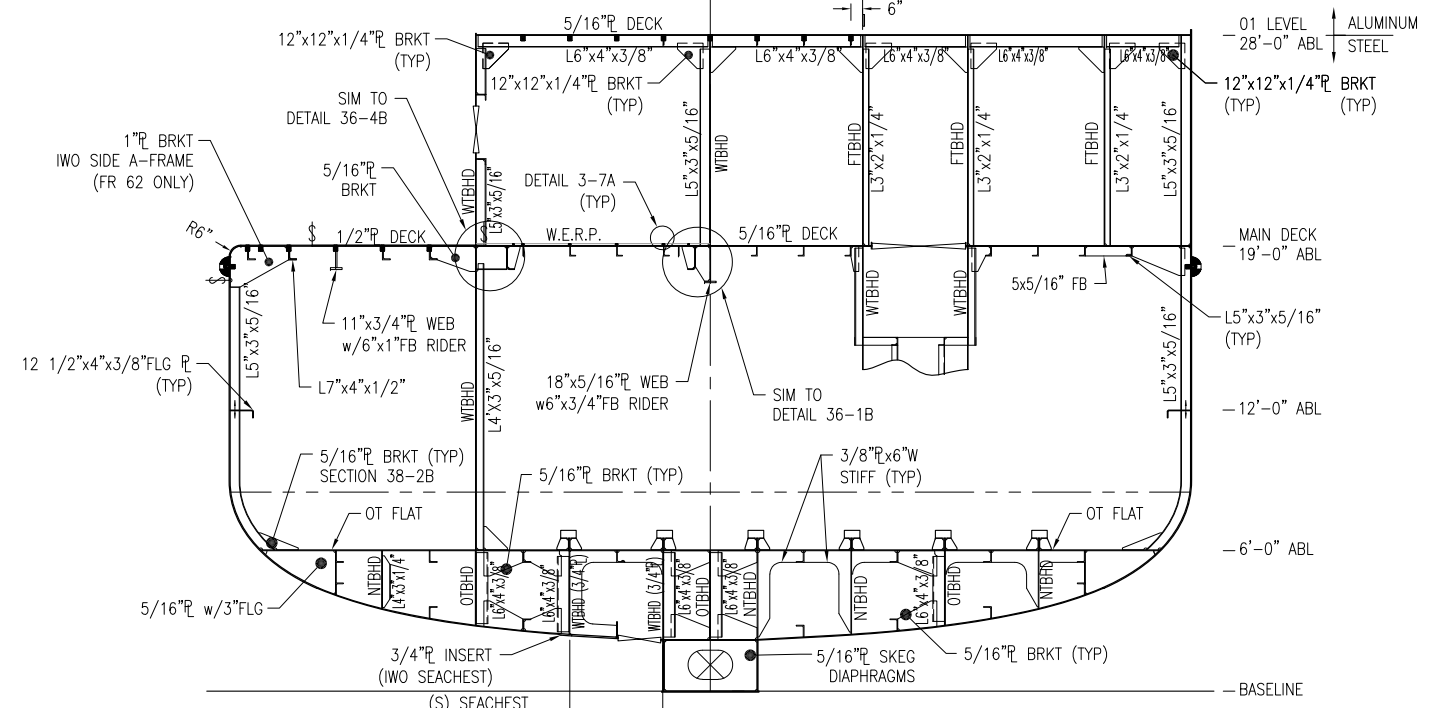
PROFESSIONAL ENGINEER STAMP

L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)

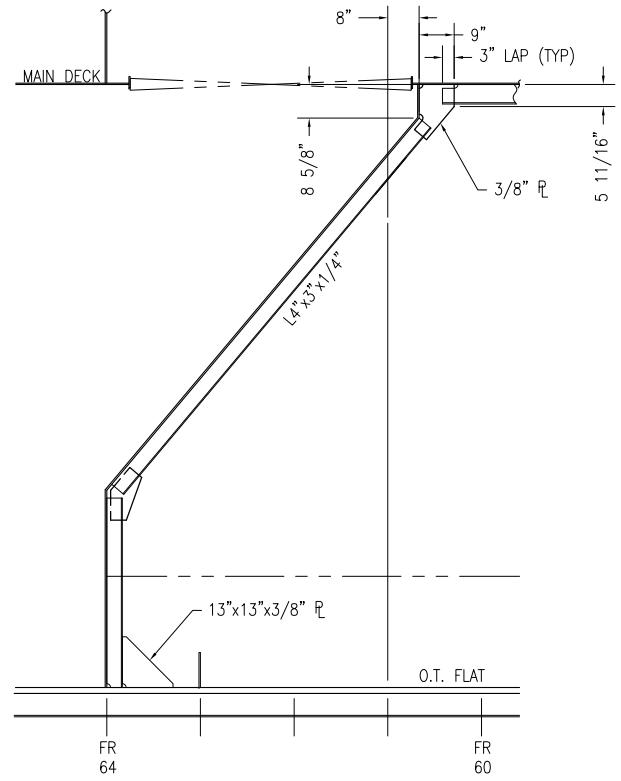


SECTION 37-7D
FR 61
LOOKING AFT
1/4"=1'-0"

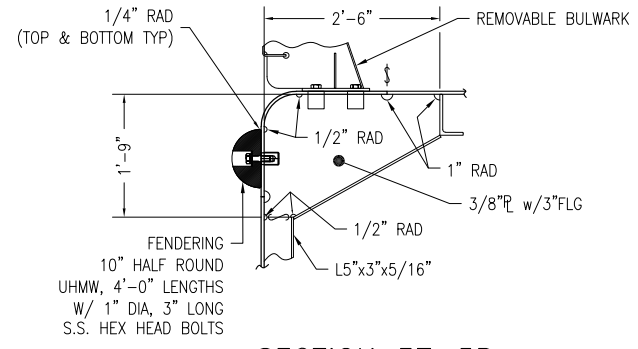
L9 (S) L8 (S) L7 (S) L6 (S) L5 (S) L4 (S) L3 (S) L2 (S) L1 (S) L1 (P) L2 (P) L3 (P) L4 (P) L5 (P) L6 (P) L7 (P) L8 (P) L9 (P)



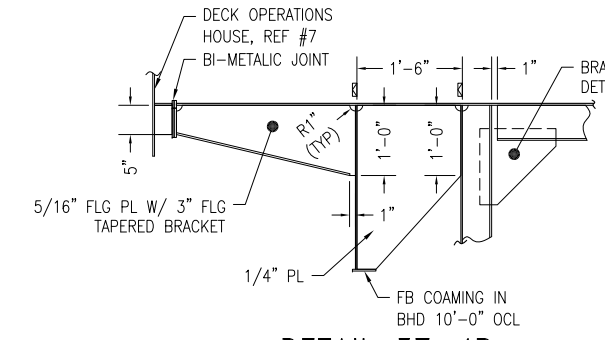
SECTION 37-3D
FR 62
LOOKING AFT
1/4"=1'-0"



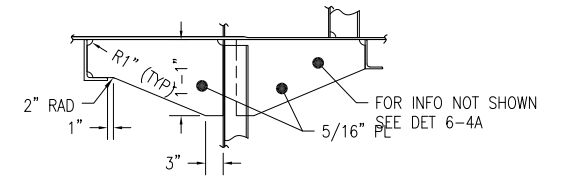
DETAIL 37-8A
STAIR BHD STIFFENER
@ 8'-0" OCL PORT
3/4"=1'-0"



SECTION 37-5B
CORNER BRACKET
BETWEEN DECK AND SHELL
3/4"=1'-0"



DETAIL 37-4B
BRACKETS UNDER
DECK OPERATIONS HOUSE
01 DECK AT FR 62
3/4"=1'-0"



DETAIL 37-2B
BRACKETS UNDER
DECK OPERATIONS HOUSE
MAIN DECK AT FR 62
3/4"=1'-0"

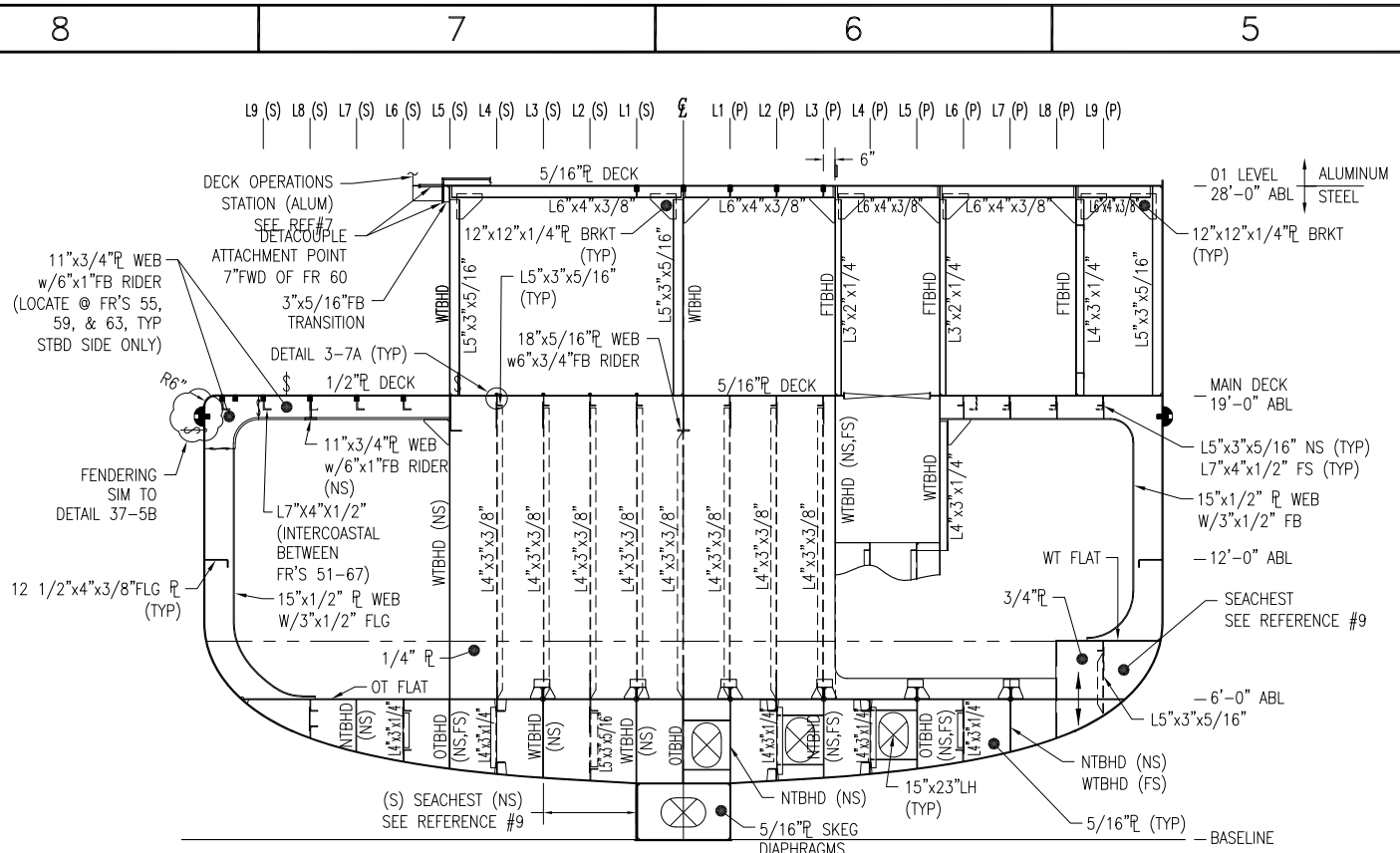
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

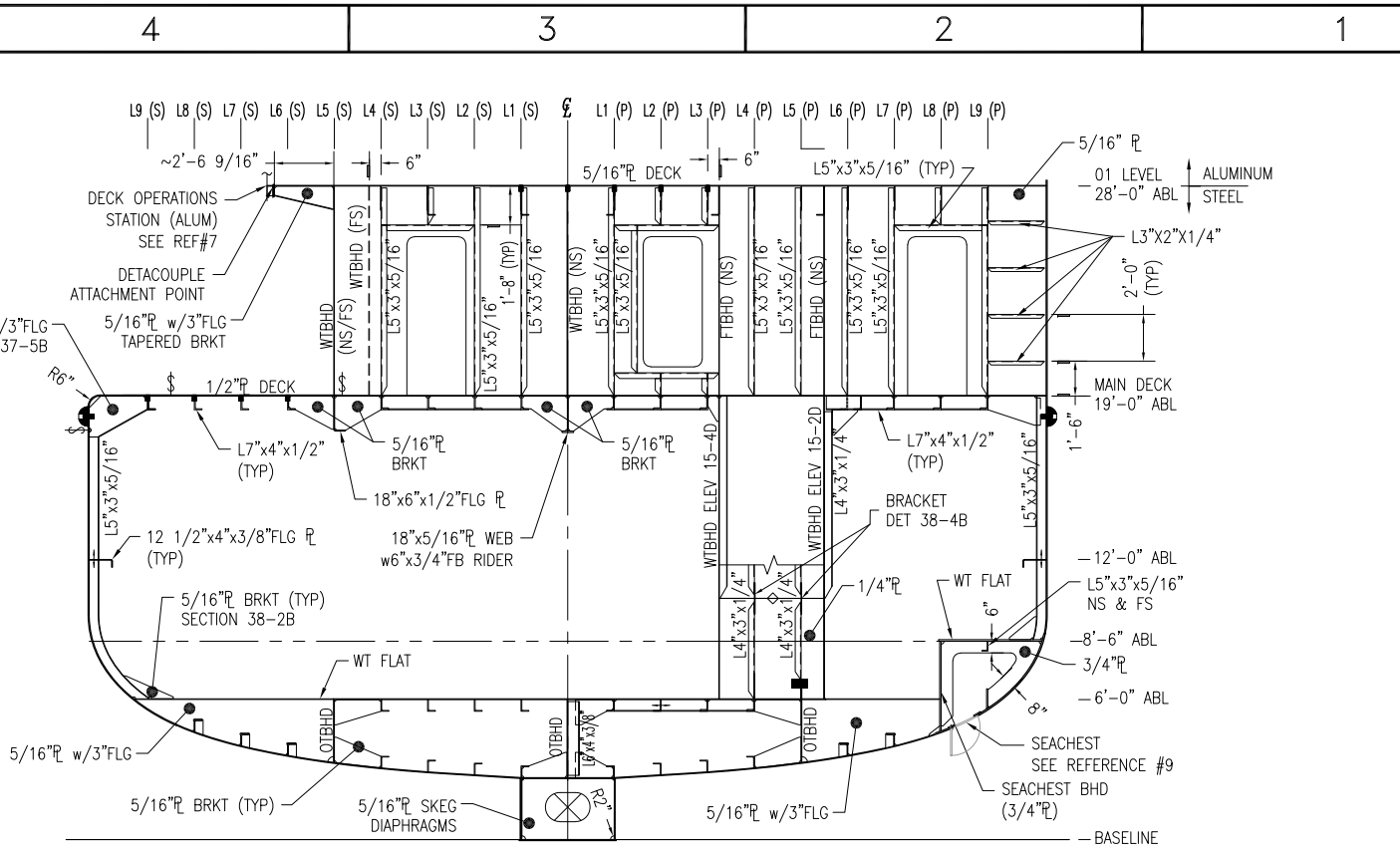
STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 61, & 62

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 37 OF 46

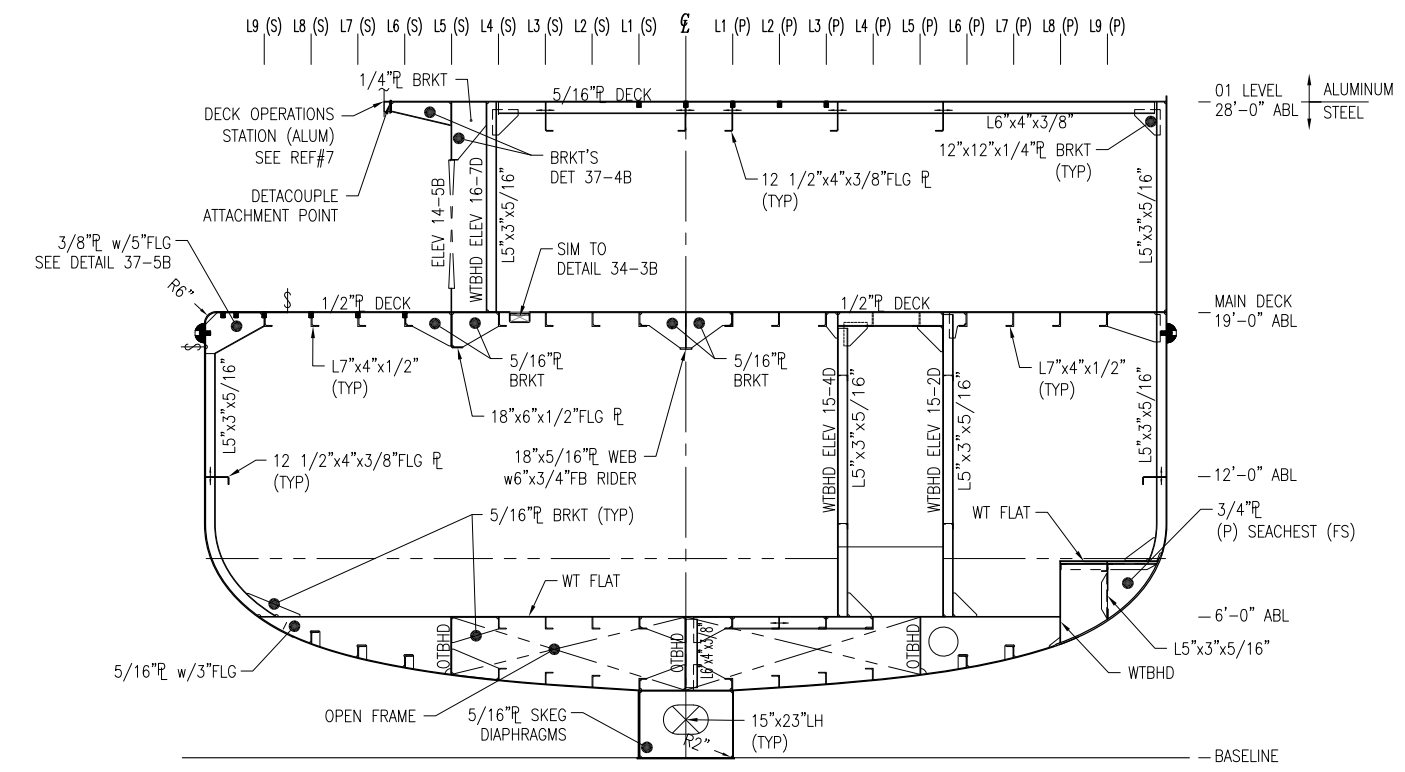
PROFESSIONAL ENGINEER STAMP



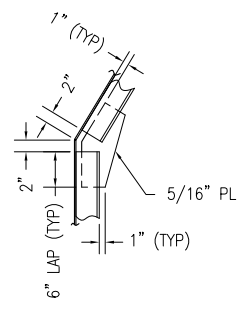
SECTION 38-7D
FR 63
LOOKING AFT
1/4"=1'-0"



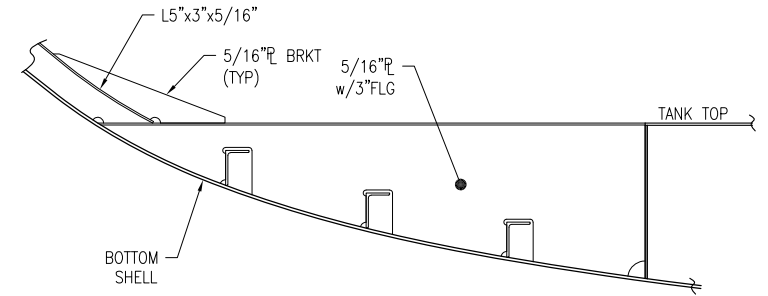
SECTION 38-3D
FR 64
LOOKING AFT
1/4"=1'-0"



SECTION 38-7B
FR 65
LOOKING AFT
1/4"=1'-0"



DETAIL 38-4B
STAIRWELL BRACKET CONNECTION
3/4"=1'-0"

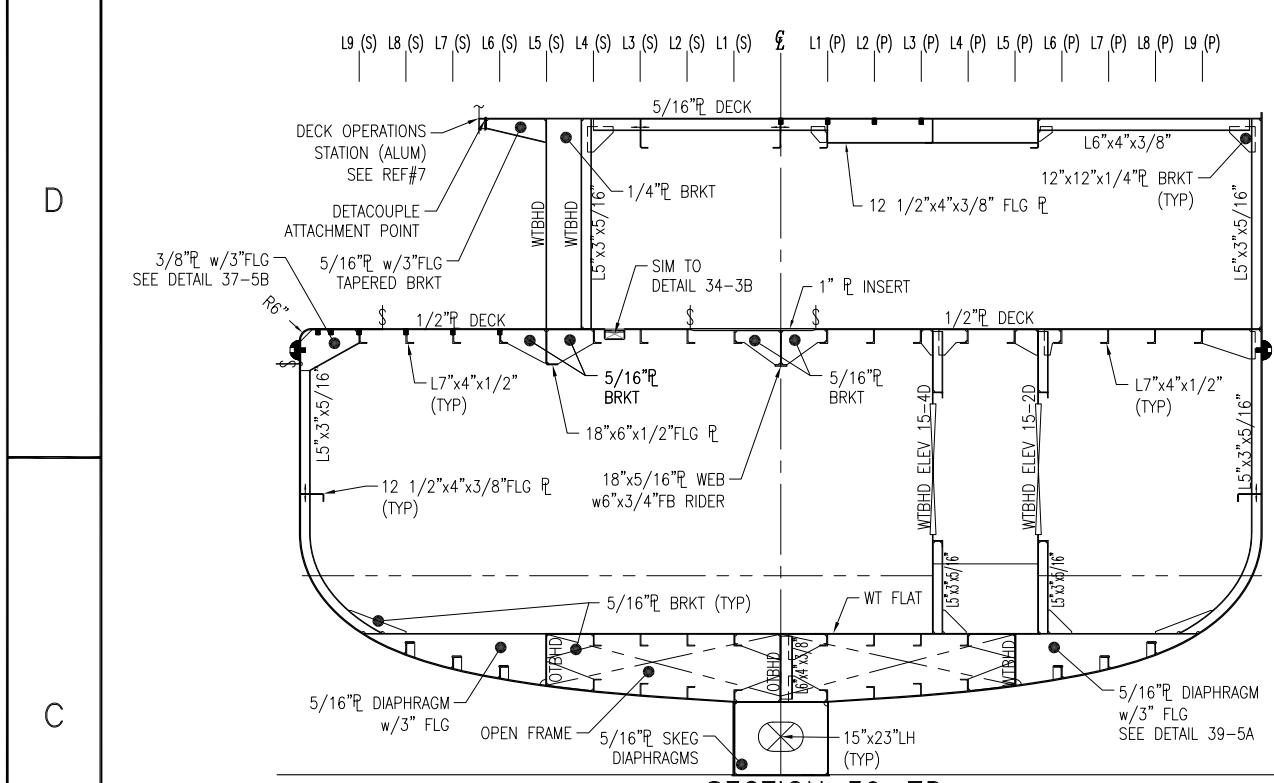


DETAIL 38-2B
BILGE BRACKET CONNECTION
3/4"=1'-0"

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199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 63, 64, & 65			
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 38 OF 46

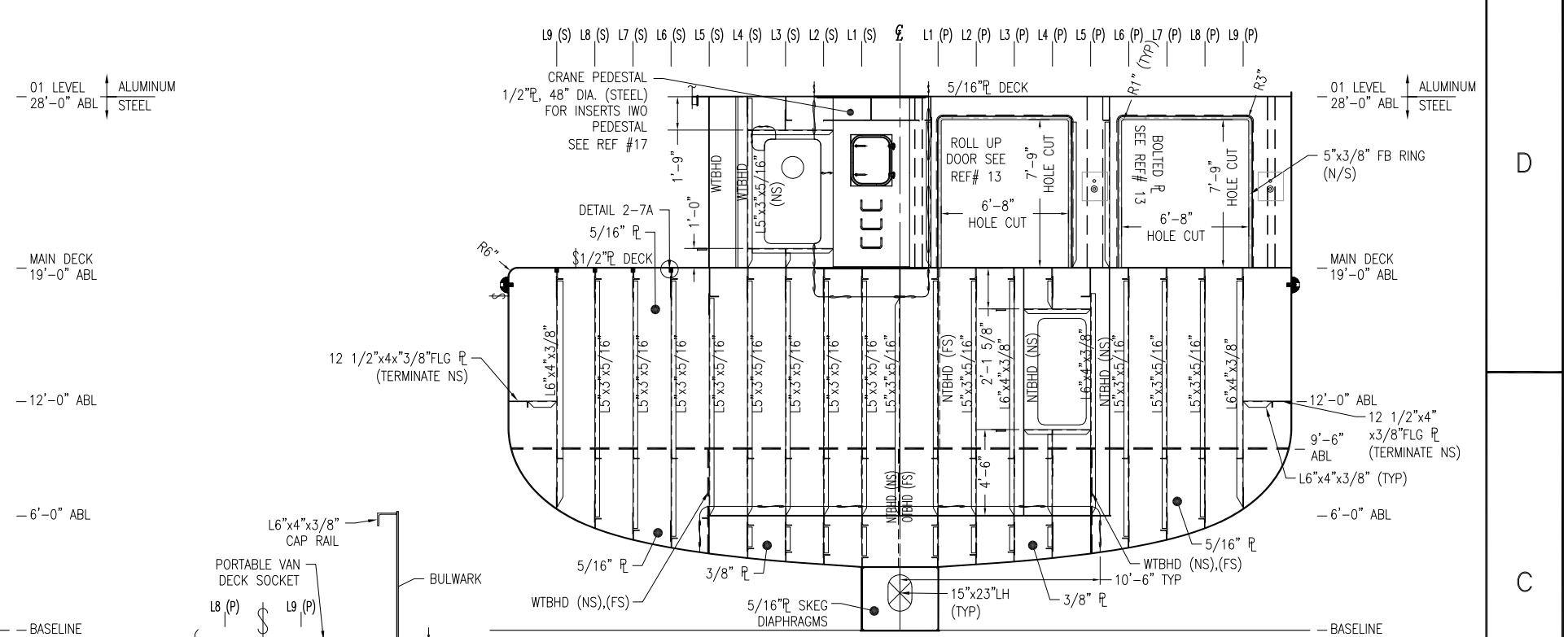
PROFESSIONAL ENGINEER STAMP

8 7 6 5 4 3 2 1



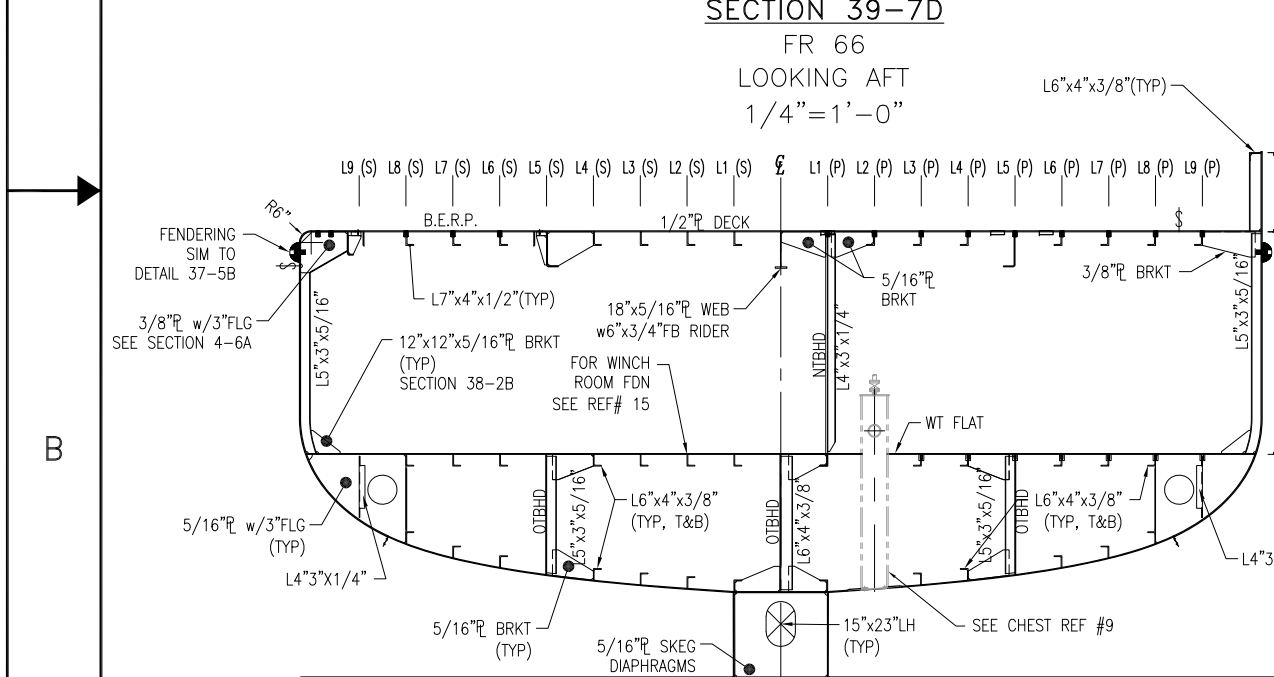
SECTION 39-7D

FR 66
LOOKING AFT
1/4" = 1'-0"



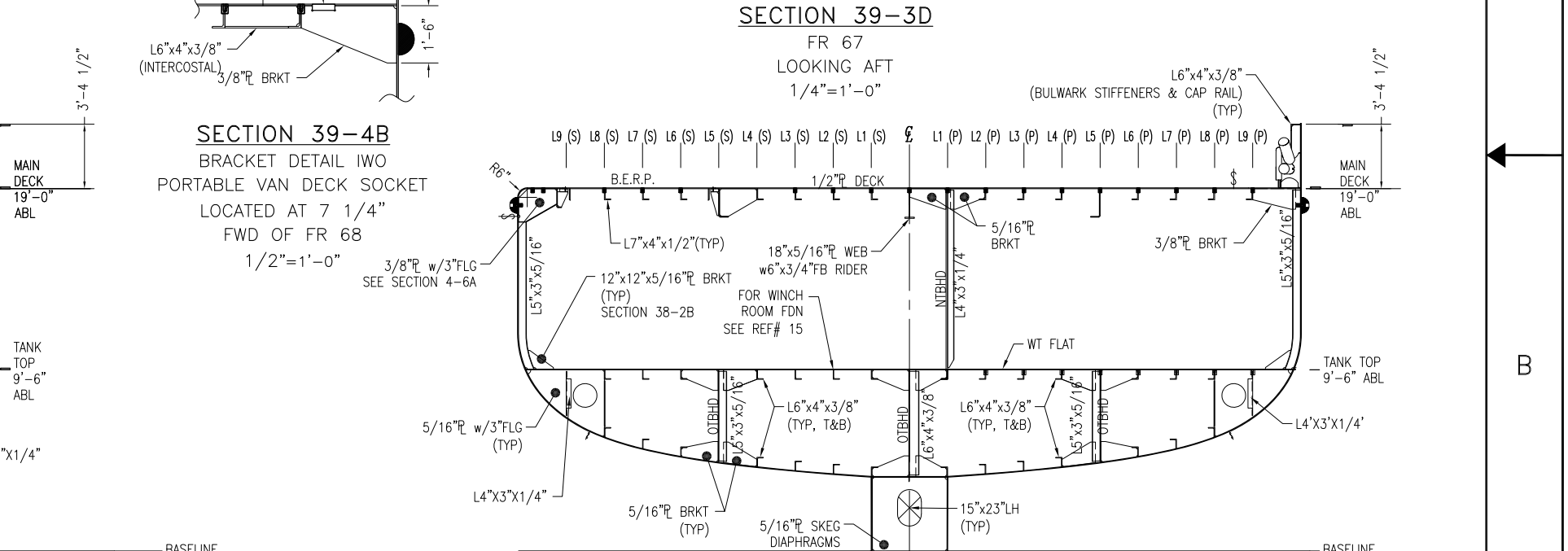
SECTION 39-3D

FR 67
LOOKING AFT
1/4" = 1'-0"



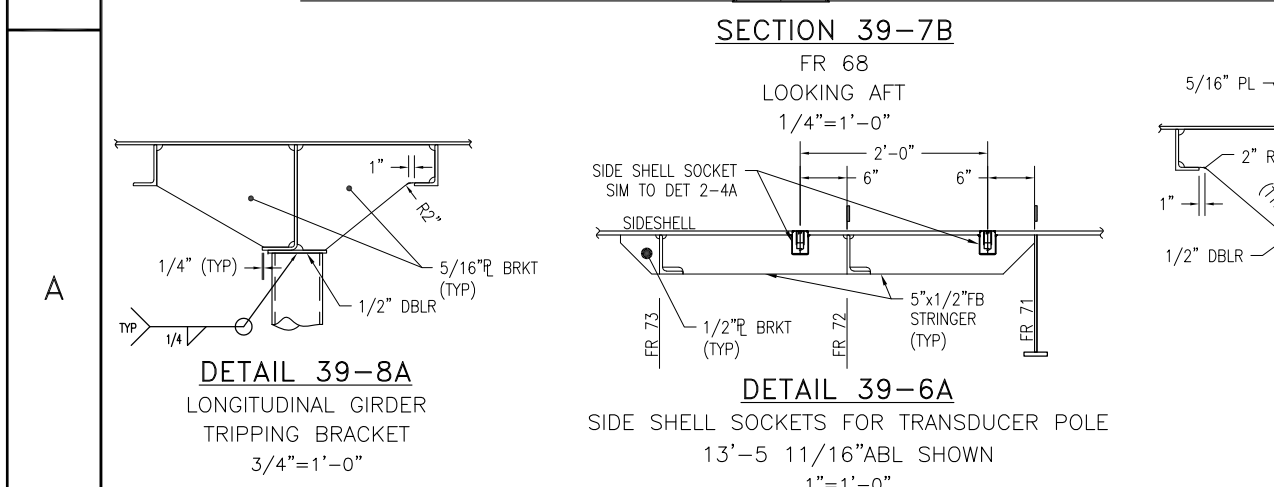
SECTION 39-7B

FR 68
LOOKING AFT
1/4" = 1'-0"



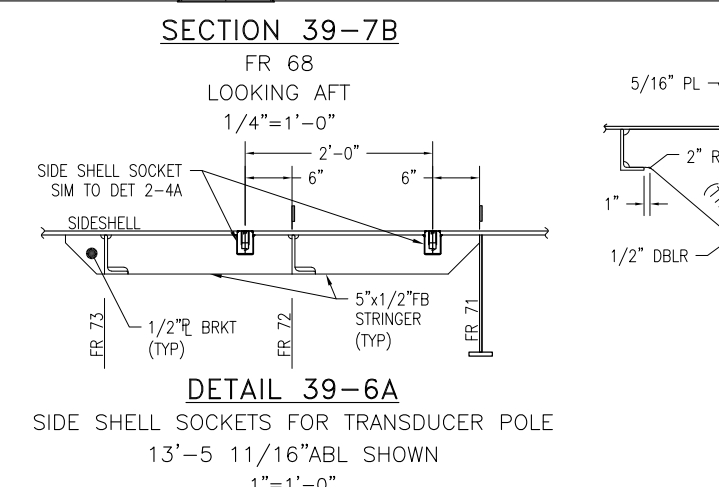
SECTION 39-3B

FR 69
LOOKING AFT
1/4" = 1'-0"



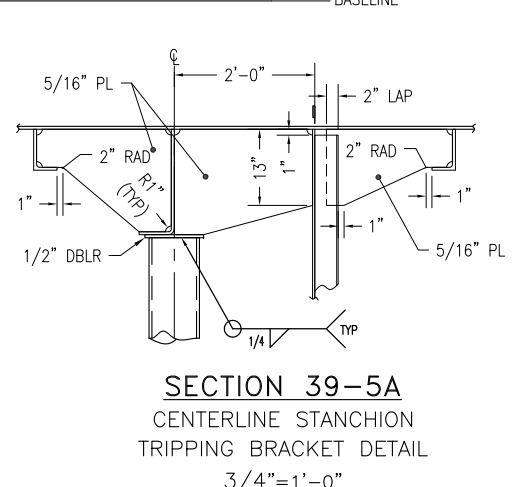
DETAIL 39-8A

LONGITUDINAL GIRDER
TRIPPING BRACKET
3/4" = 1'-0"



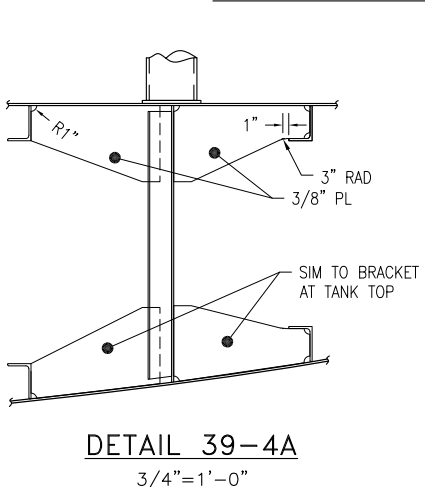
DETAIL 39-6A

SIDE SHELL SOCKETS FOR TRANSDUCER POLE
13'-5 11/16" ABL SHOWN
1" = 1'-0"



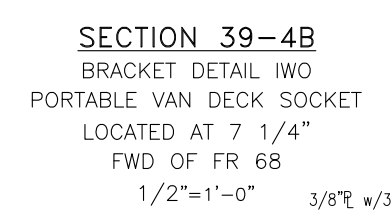
SECTION 39-5A

CENTERLINE STANCHION
TRIPPING BRACKET DETAIL
3/4" = 1'-0"



DETAIL 39-4A

3/4" = 1'-0"



SECTION 39-4B

BRACKET DETAIL IWO
PORTABLE VAN DECK SOCKET
LOCATED AT 7 1/4"
FWD OF FR 68
1/2" = 1'-0"

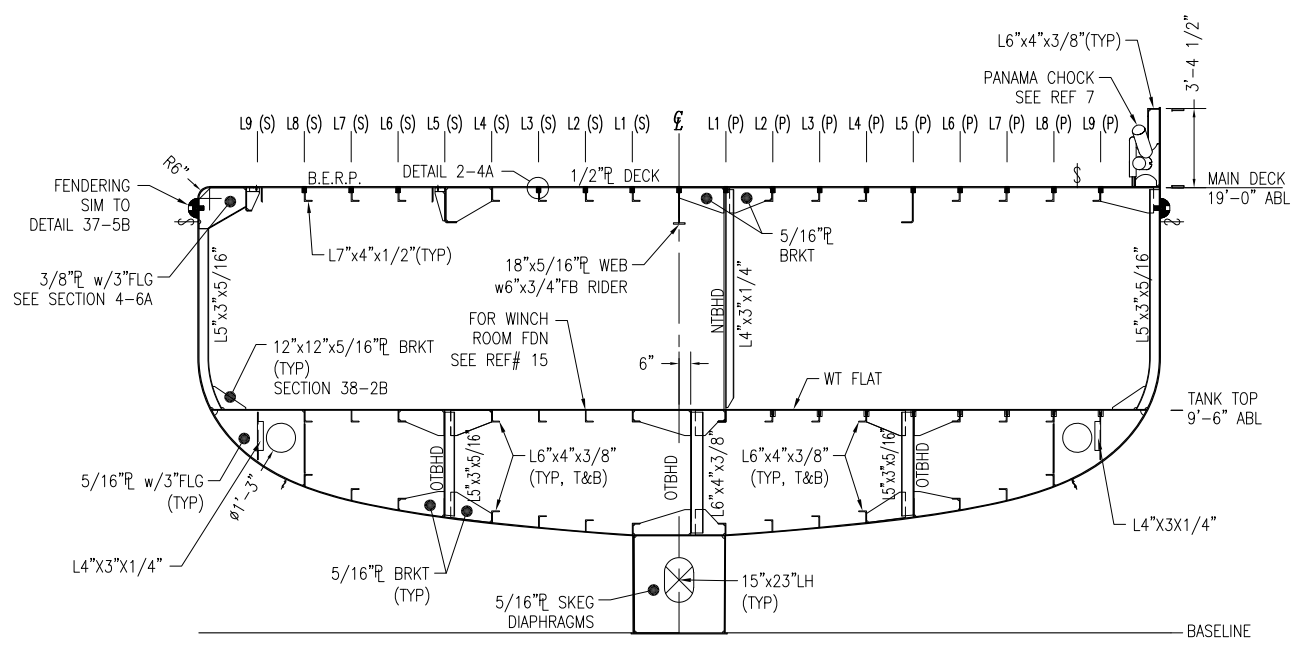
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMES 66, 67, 68, & 69			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 39 OF 46	

8 7 6 5 4 3 2 1

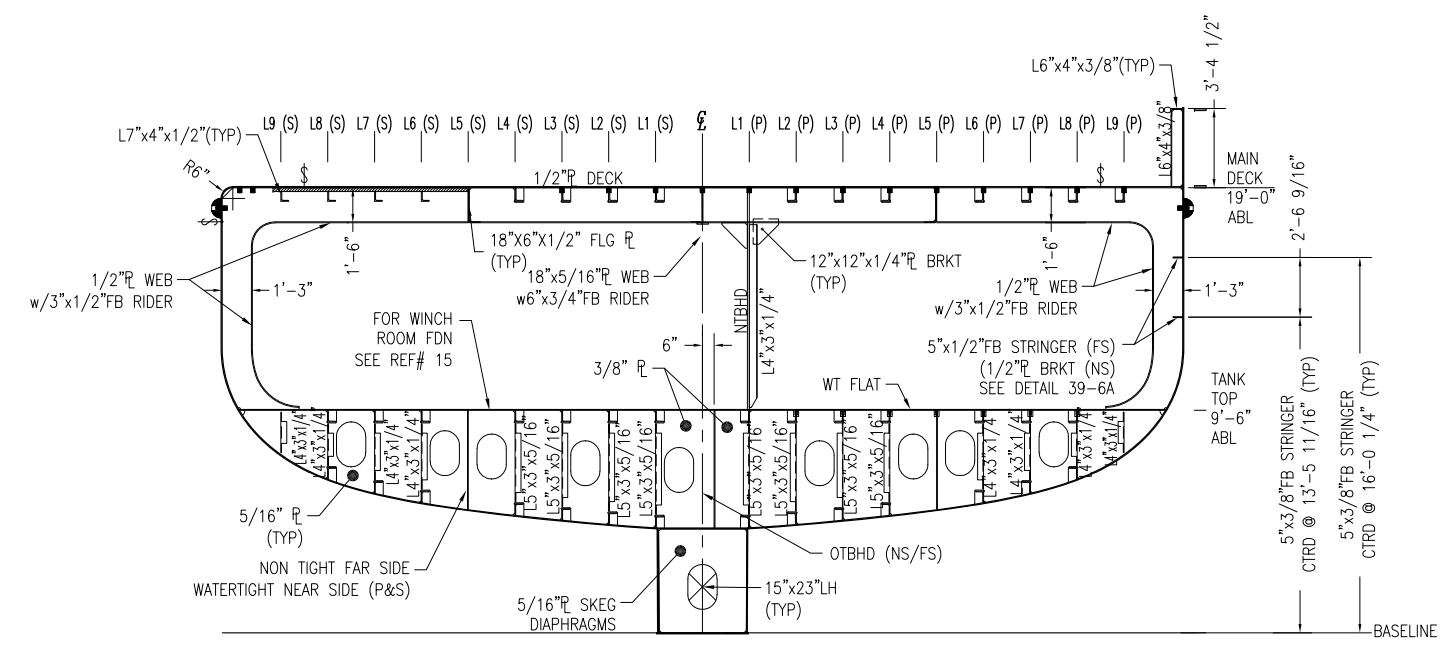
8 7 6 5 4 3 2 1

D

D



SECTION 40-7D
FR 70
LOOKING AFT
1/4"=1'-0"



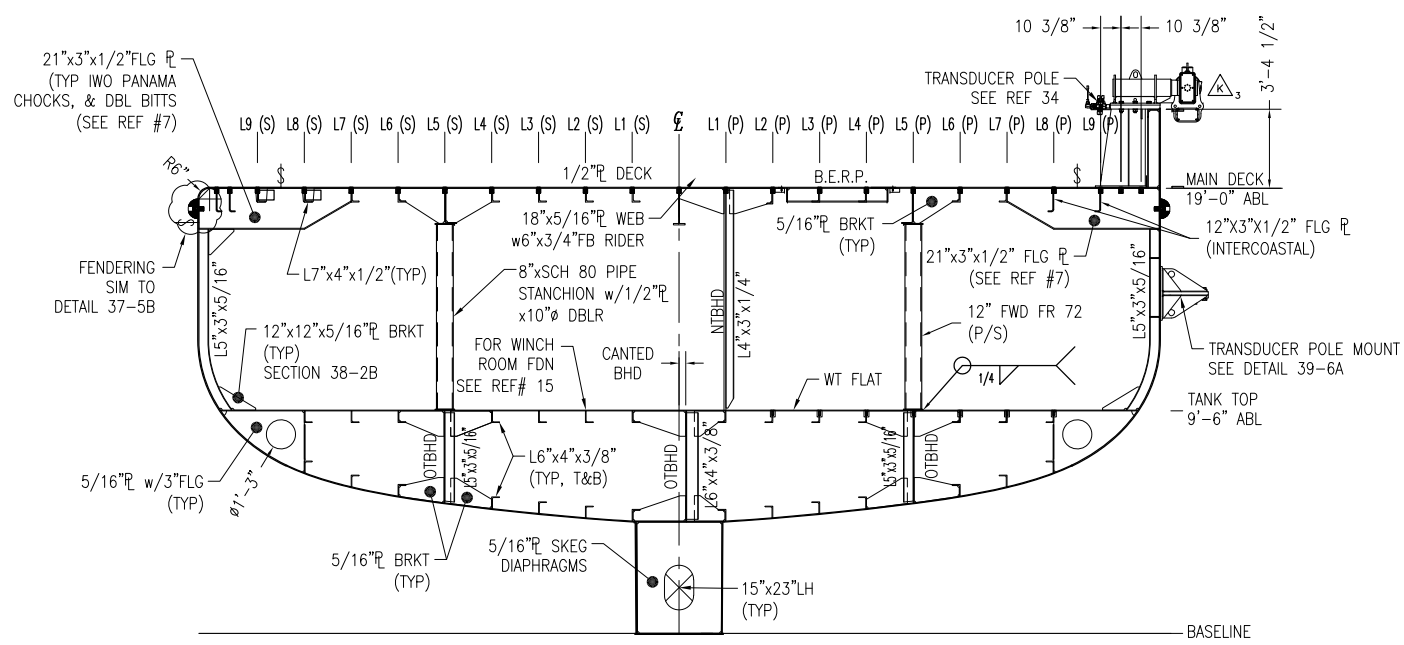
SECTION 40-3D
FR 71
LOOKING AFT
1/4"=1'-0"

C

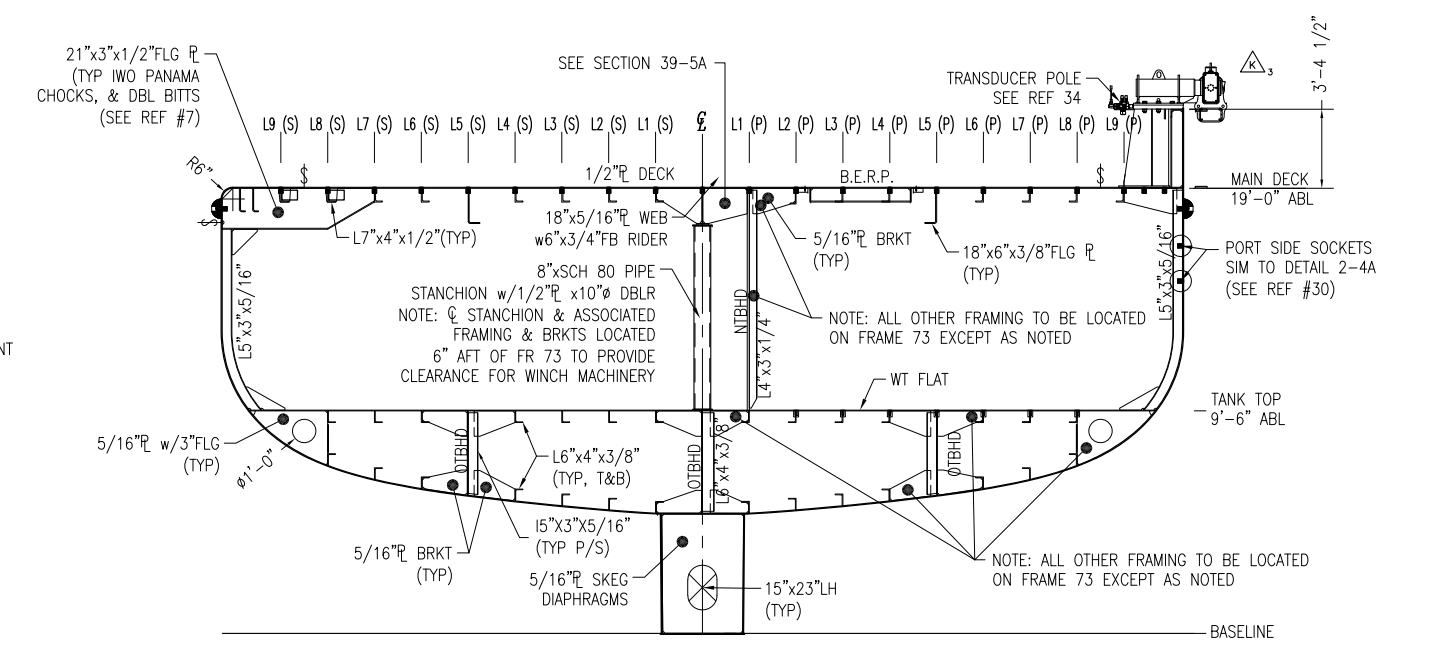
C

B

B



SECTION 40-7B
FR 72
LOOKING AFT
1/4"=1'-0"



SECTION 40-3B
FR 73
LOOKING AFT
1/4"=1'-0"

A

A

OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

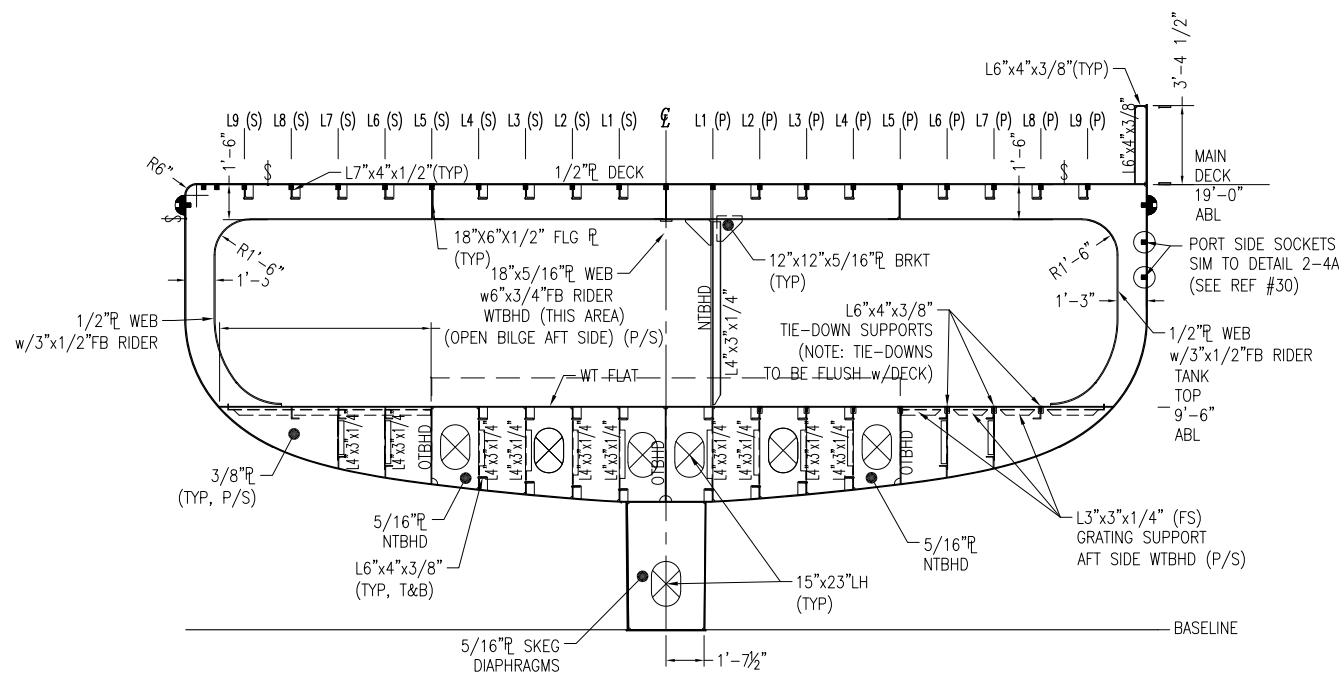
199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 70, 71, 72, & 73

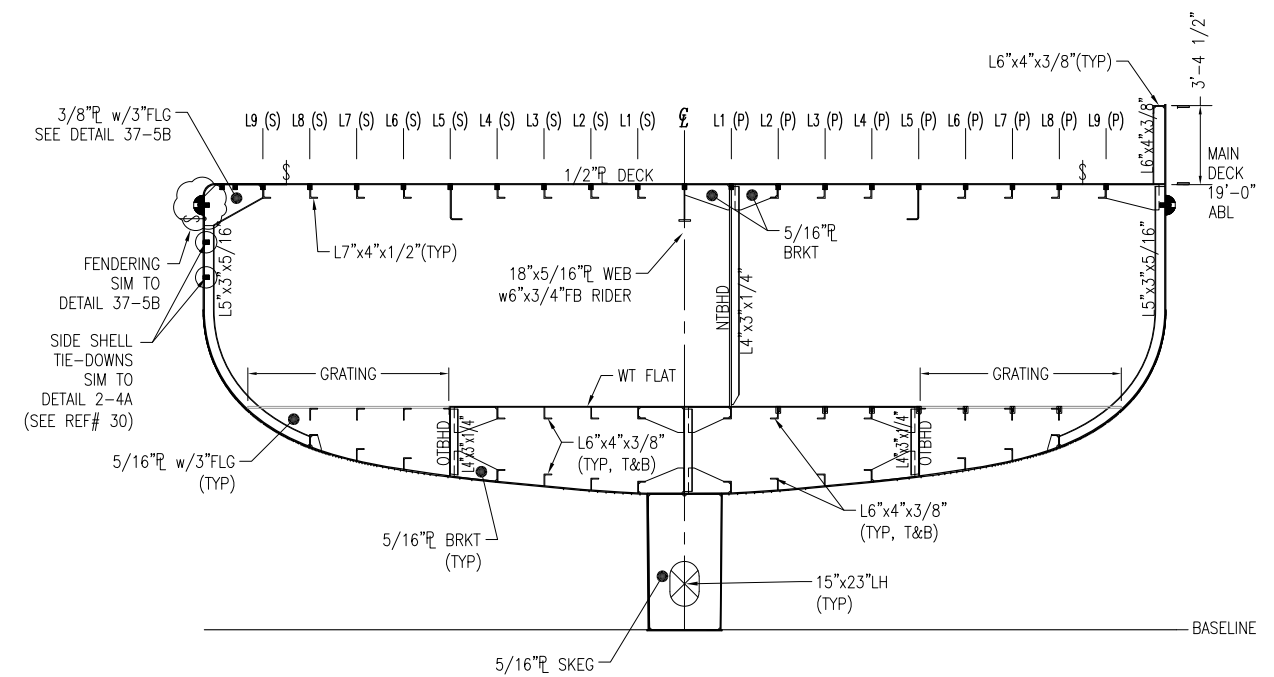
SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL # 6096 6097 6098	SHEET 40 OF 46

PROFESSIONAL ENGINEER STAMP

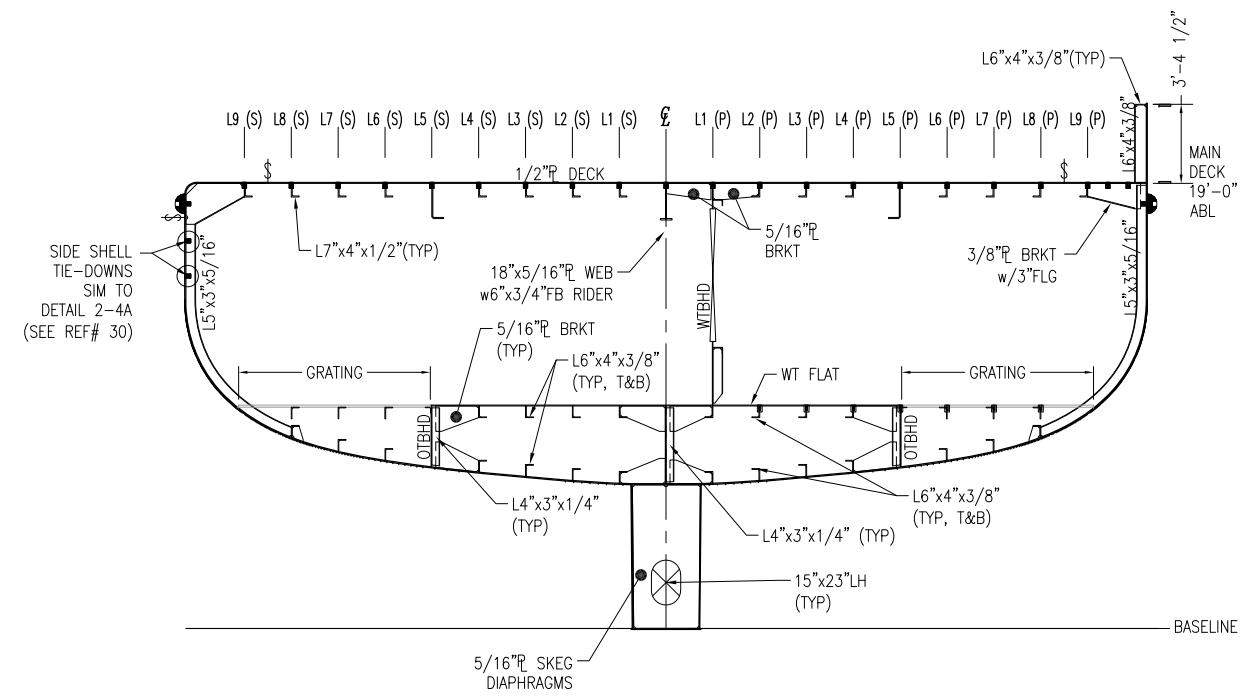
8 7 6 5 4 3 2 1



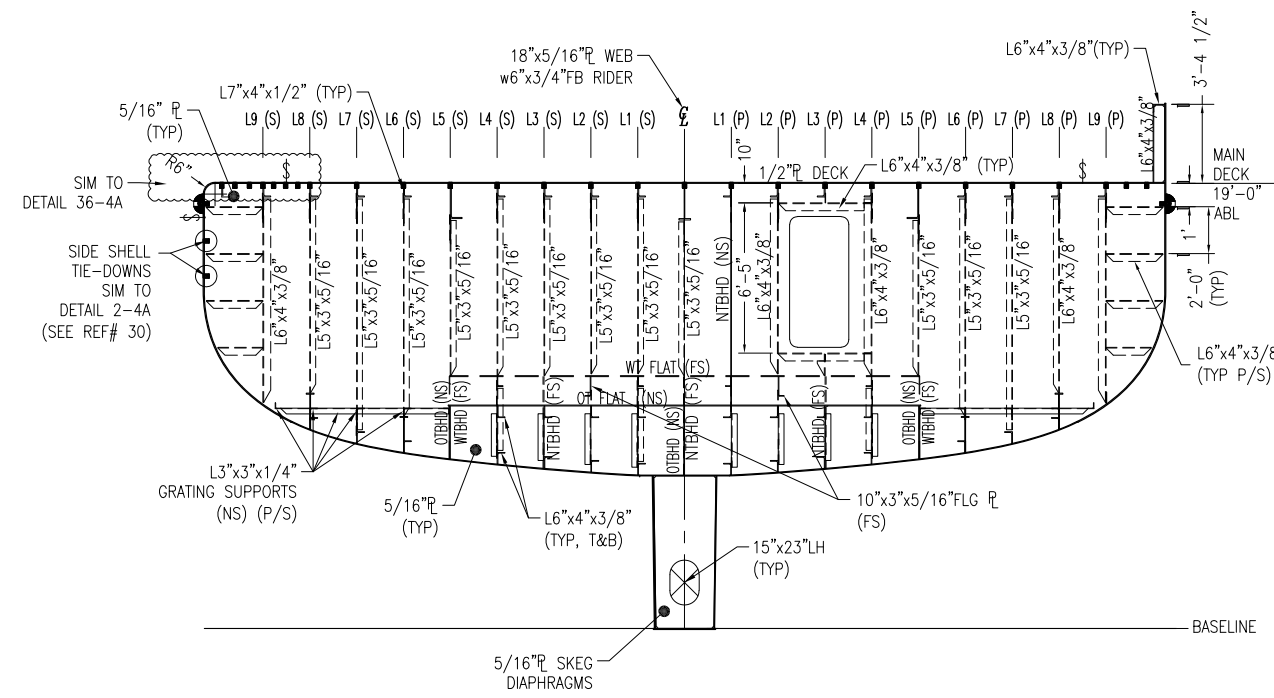
SECTION 41-7D
FR 74
LOOKING AFT
1/4"=1'-0"



SECTION 41-3D
FR 75
LOOKING AFT
1/4"=1'-0"



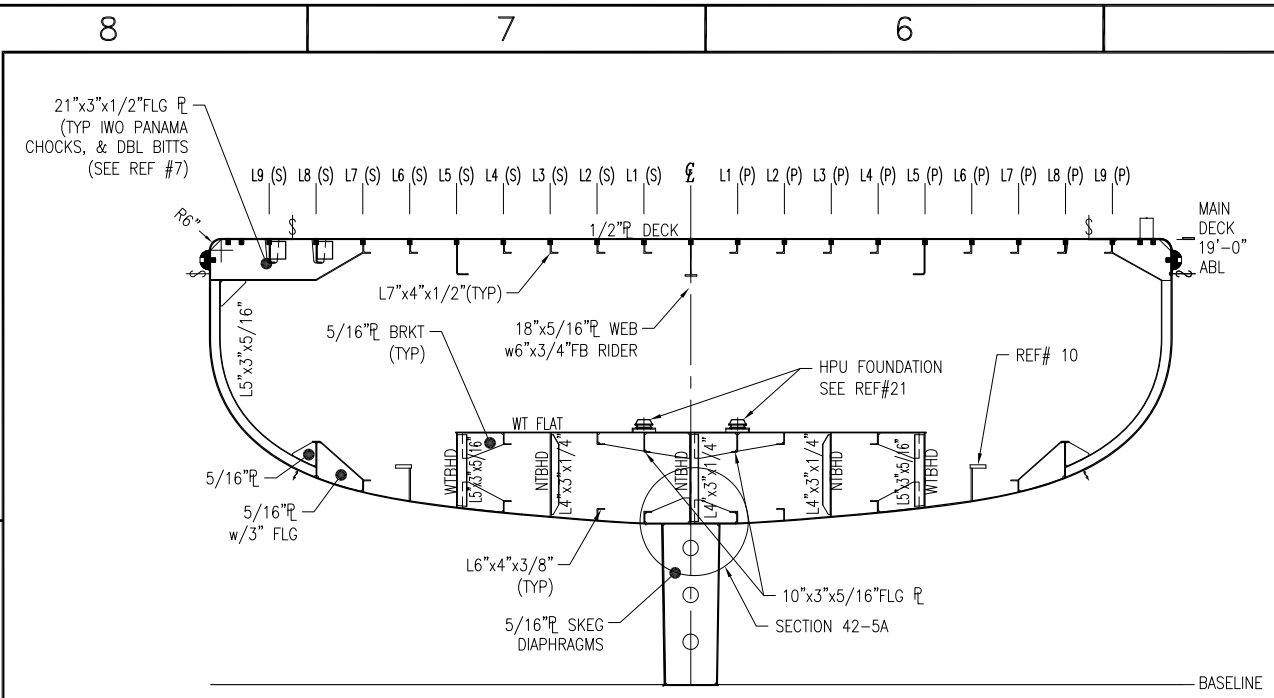
SECTION 41-7B
FR 76
LOOKING AFT
1/4"=1'-0"



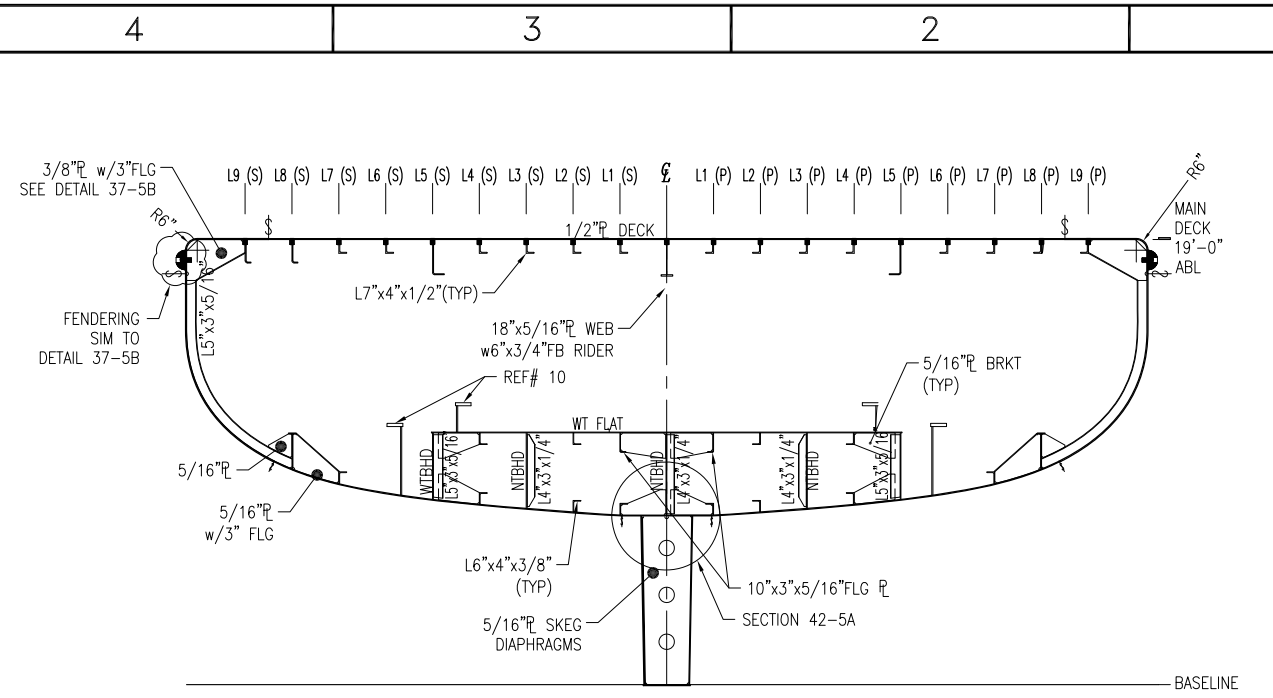
SECTION 41-3B
FR 77
LOOKING AFT
1/4"=1'-0"

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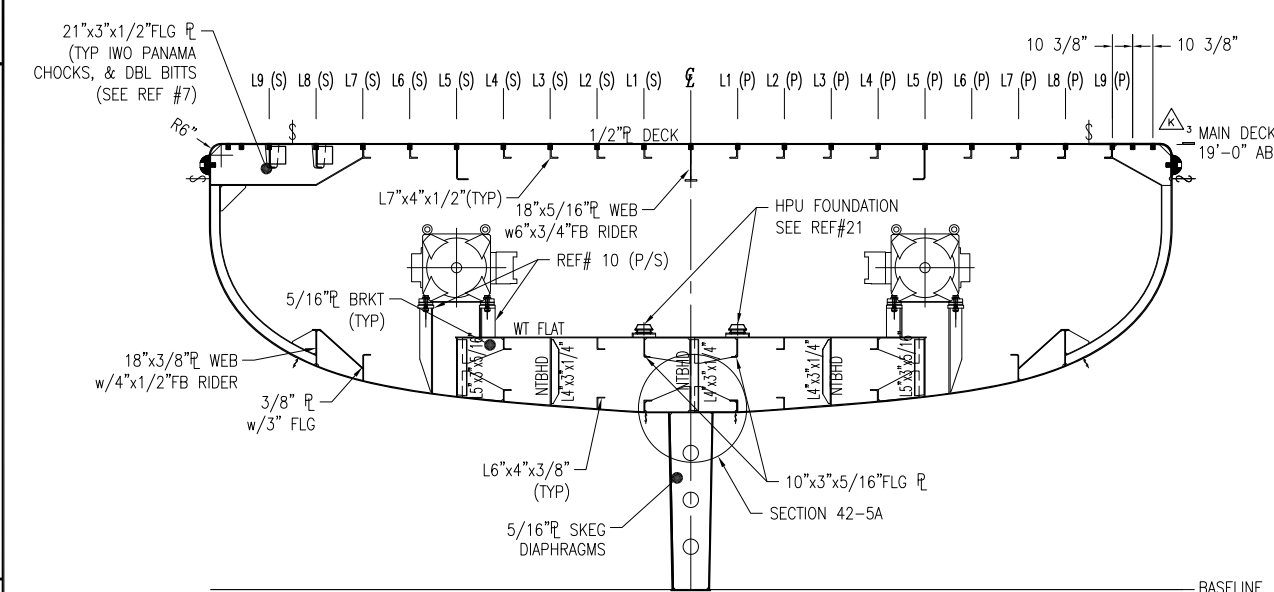
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 74, 75, 76, & 77			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN		HULL #: 6096 6097 6098	SHEET 41 OF 46



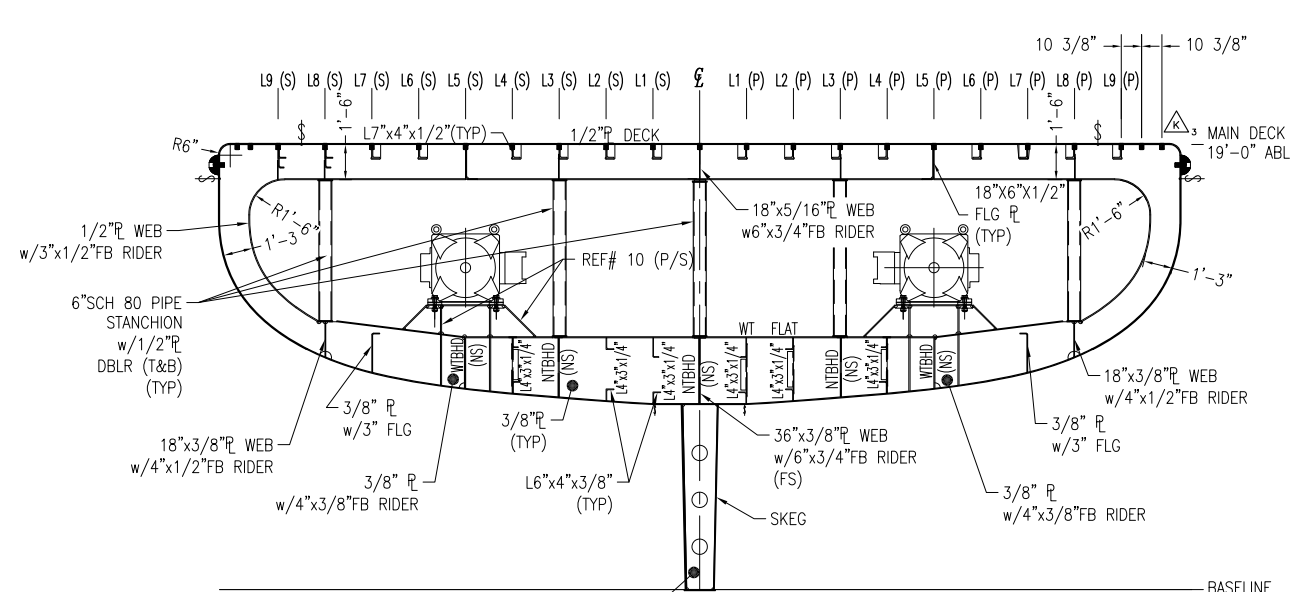
SECTION 42-7D
FR 78
LOOKING AFT
1/4"=1'-0"



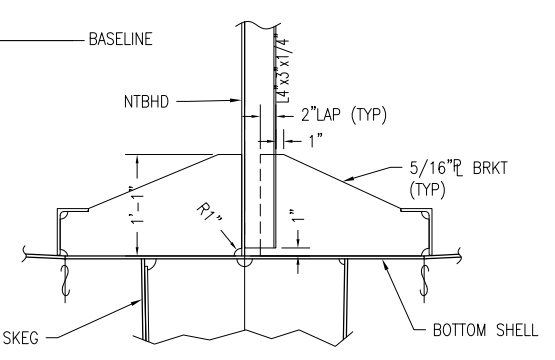
SECTION 42-3D
FR 79
LOOKING AFT
1/4"=1'-0"



SECTION 42-7B
FR 80
LOOKING AFT
1/4"=1'-0"



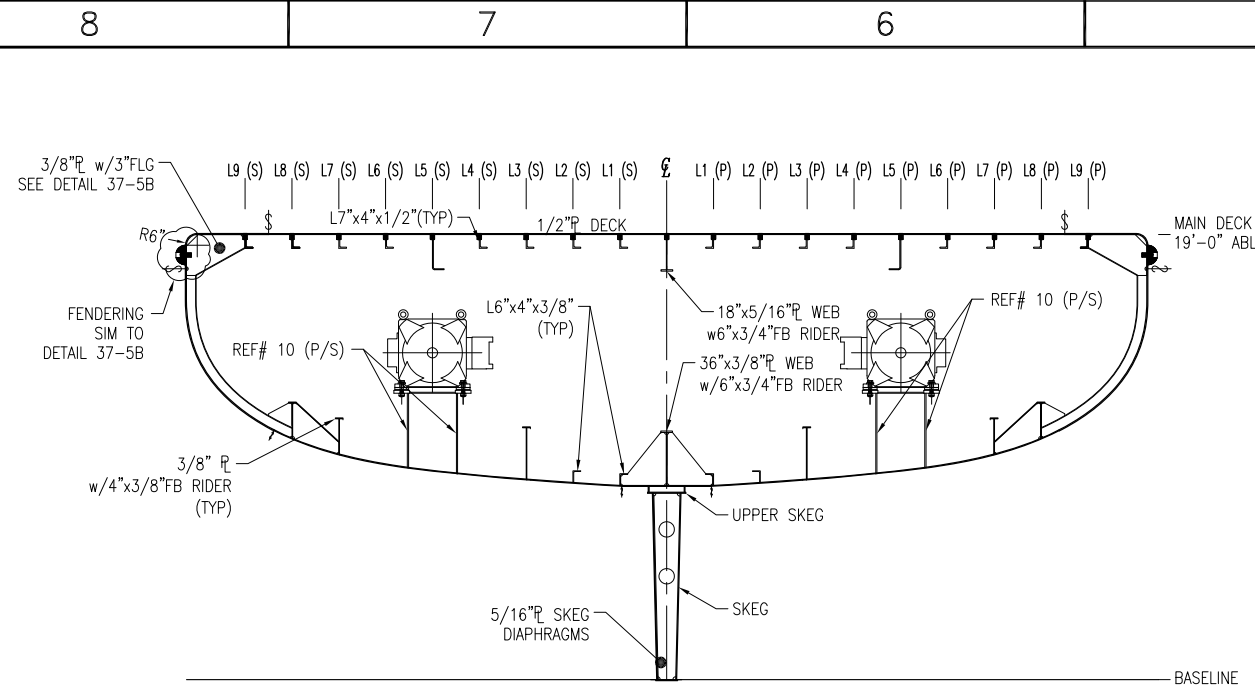
SECTION 42-3B
FR 81
LOOKING AFT
1/4"=1'-0"



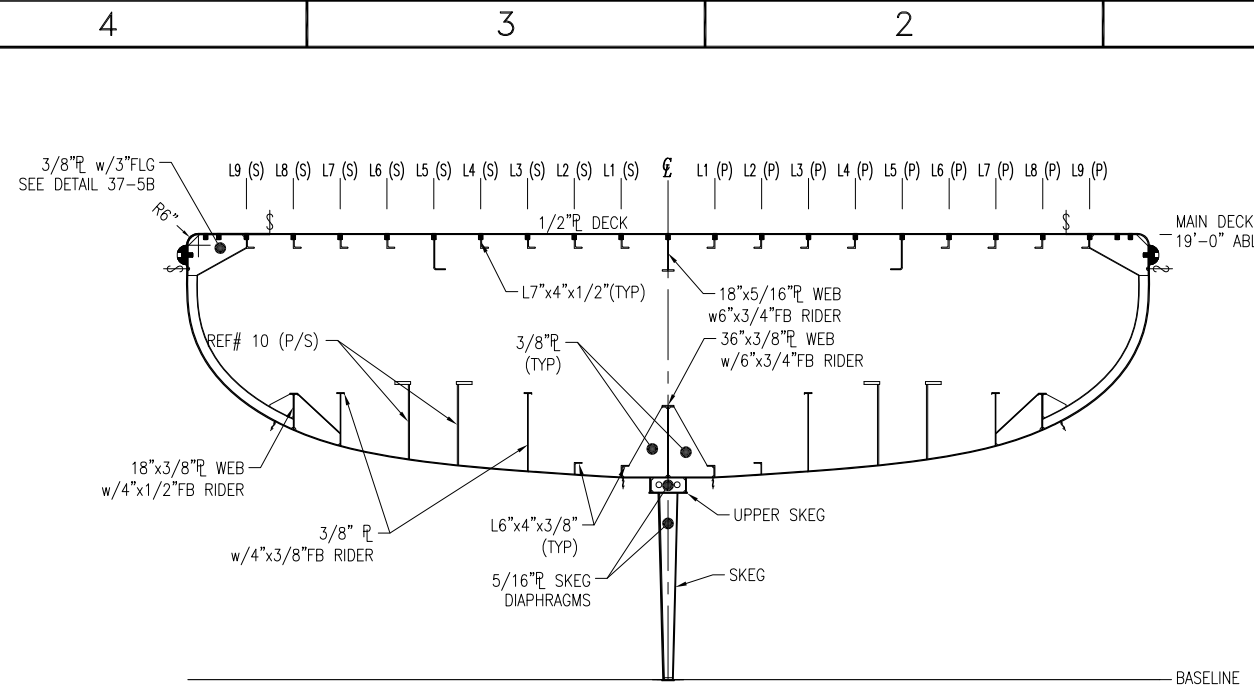
SECTION 42-5A
TYPICAL BOTTOM BRACKET
SHOWN LOOKING AFT
1"=1'-0"

PROFESSIONAL ENGINEER STAMP

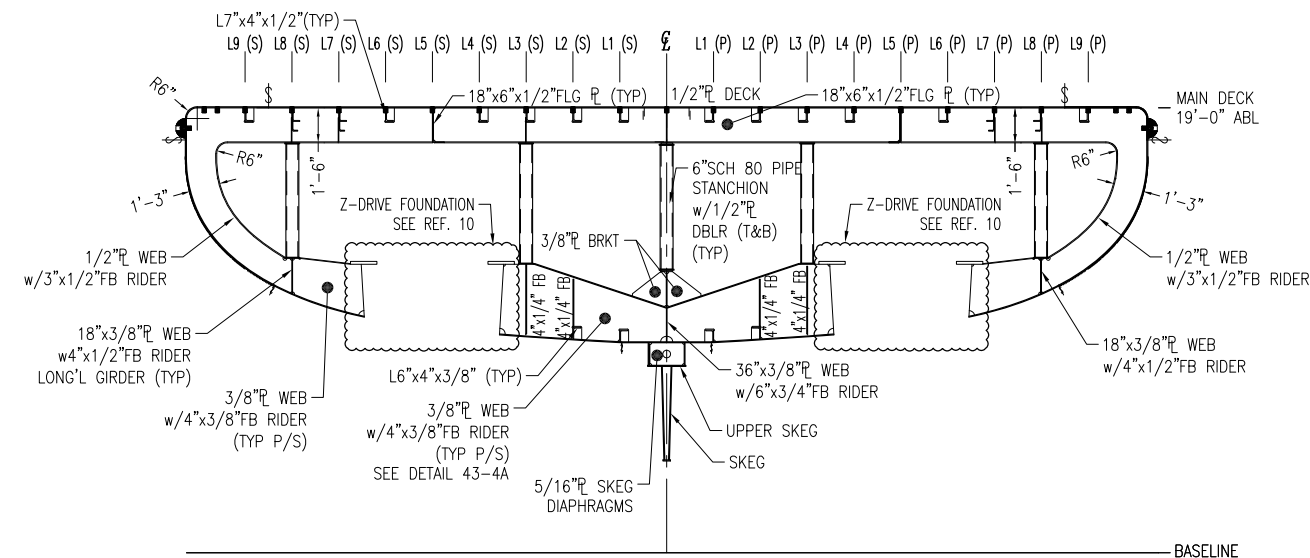
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 78, 79, 80, & 81			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 42 OF 46	



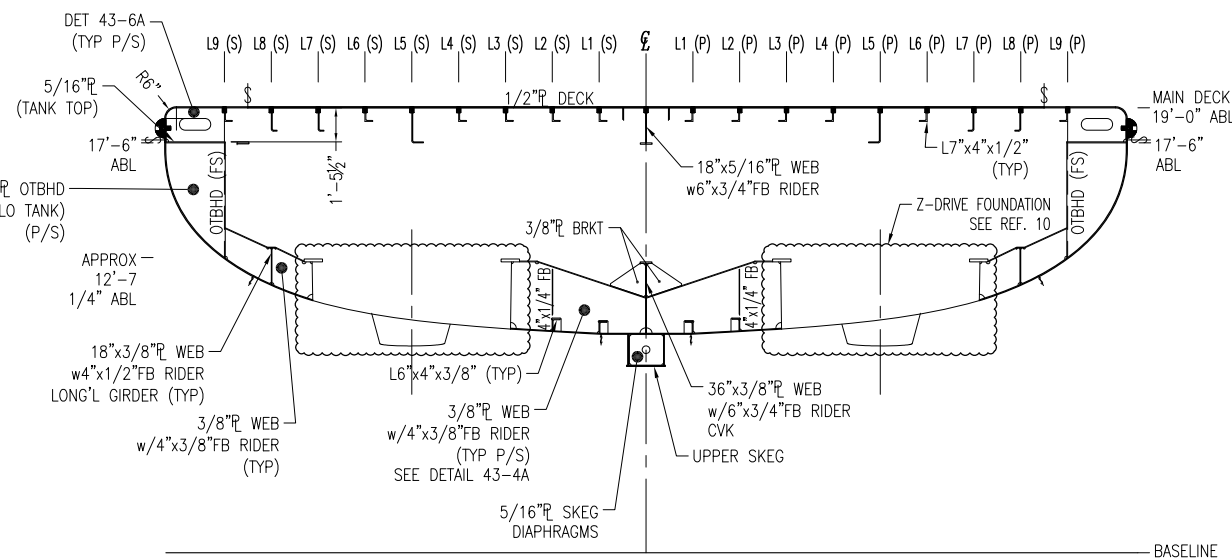
SECTION 43-7D
FR 82
LOOKING AFT
1/4" = 1'-0"



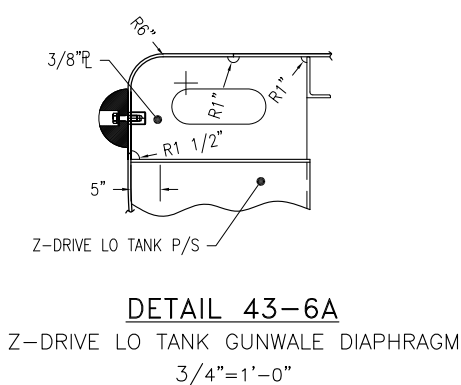
SECTION 43-3D
FR 83
LOOKING AFT
1/4" = 1'-0"



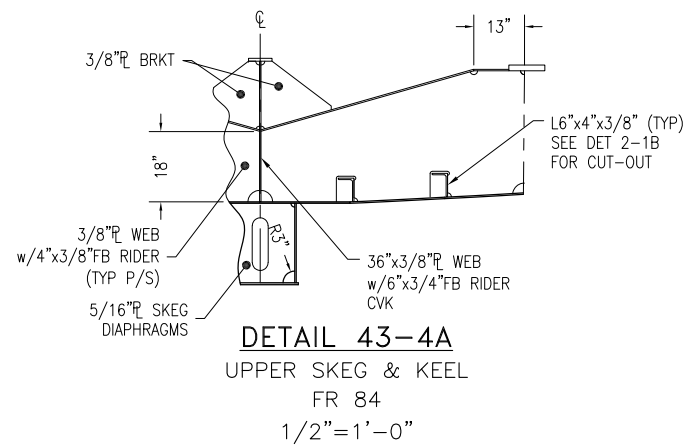
SECTION 43-7B
FR 84
LOOKING AFT
1/4" = 1'-0"



SECTION 43-3B
FR 85
LOOKING AFT
1/4" = 1'-0"



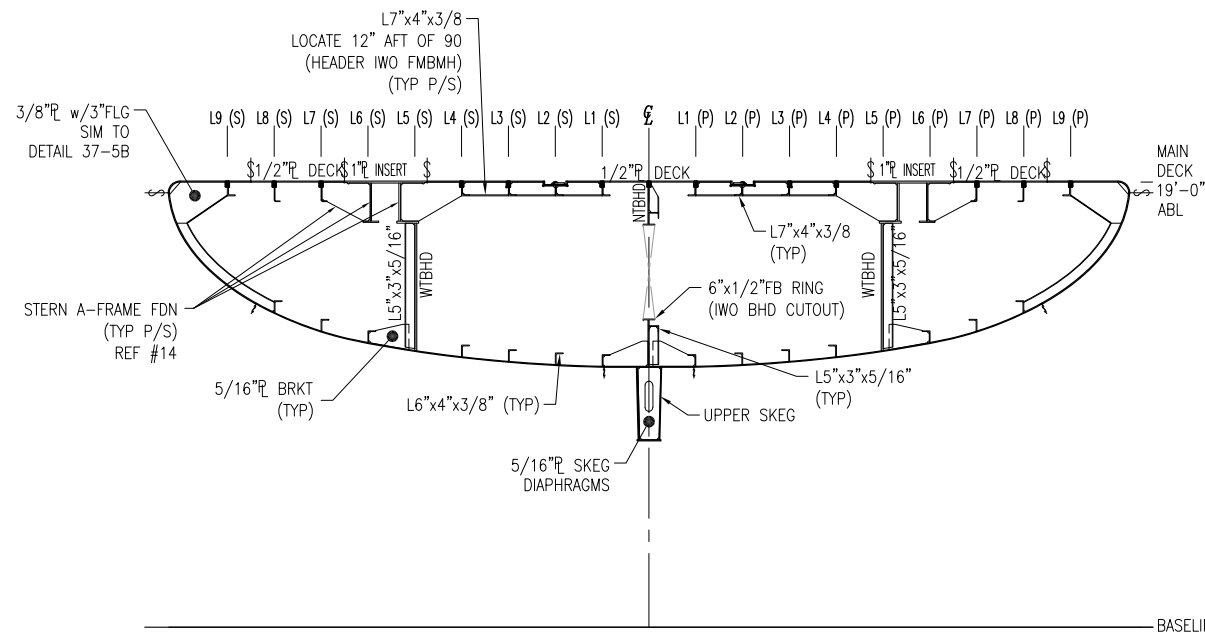
DETAIL 43-6A
FR 84
Z-DRIVE LO TANK GUNWALE DIAPHRAGM
3/4" = 1'-0"



DETAIL 43-4A
FR 84
UPPER SKEG & KEEL
1/2" = 1'-0"

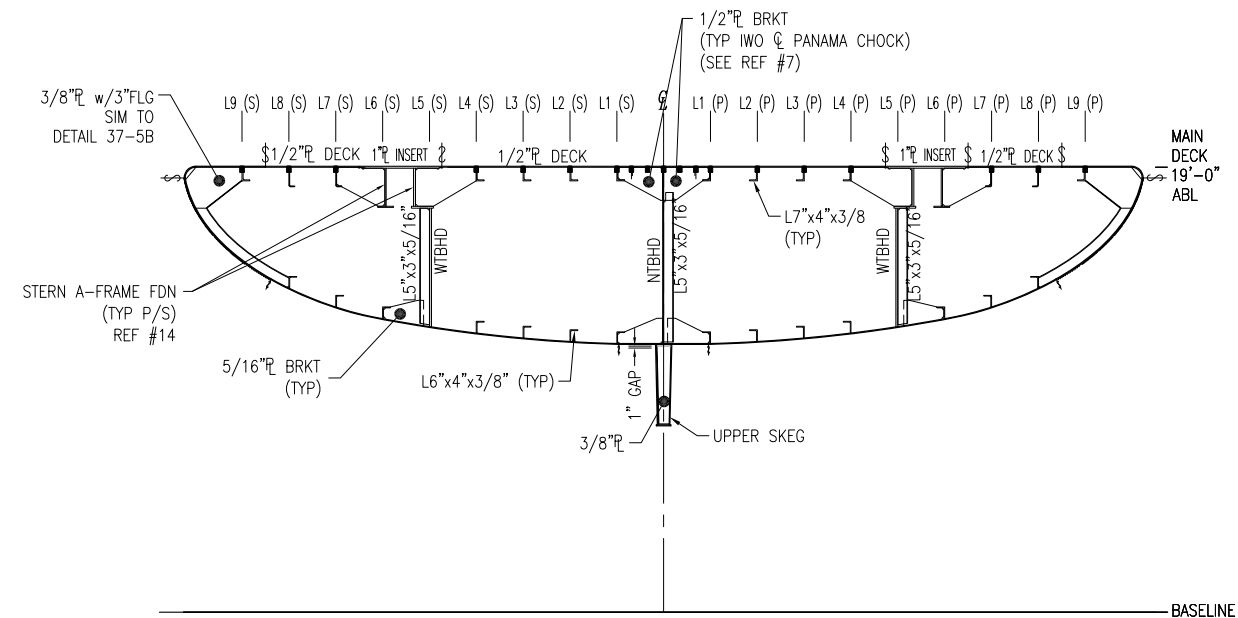
OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT FRAMES 82, 83, 84, & 85			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 43 OF 46	

PROFESSIONAL ENGINEER STAMP



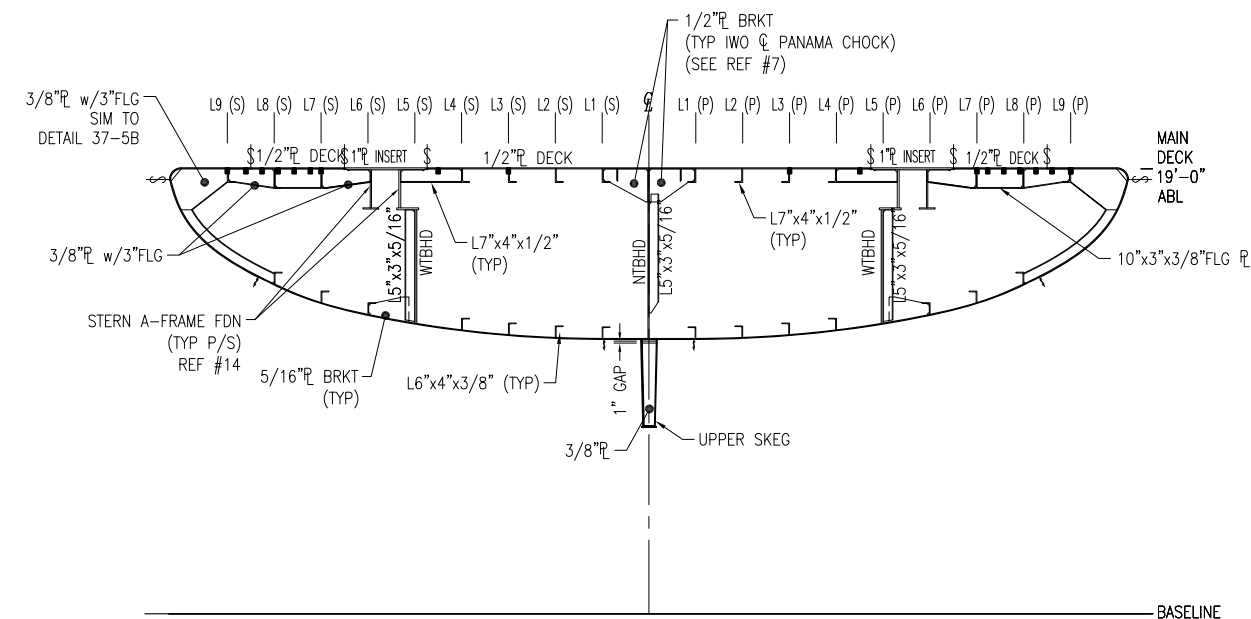
SECTION 45-7D

FR 90
SHOWN LOOKING AFT
1/4" = 1'-0"



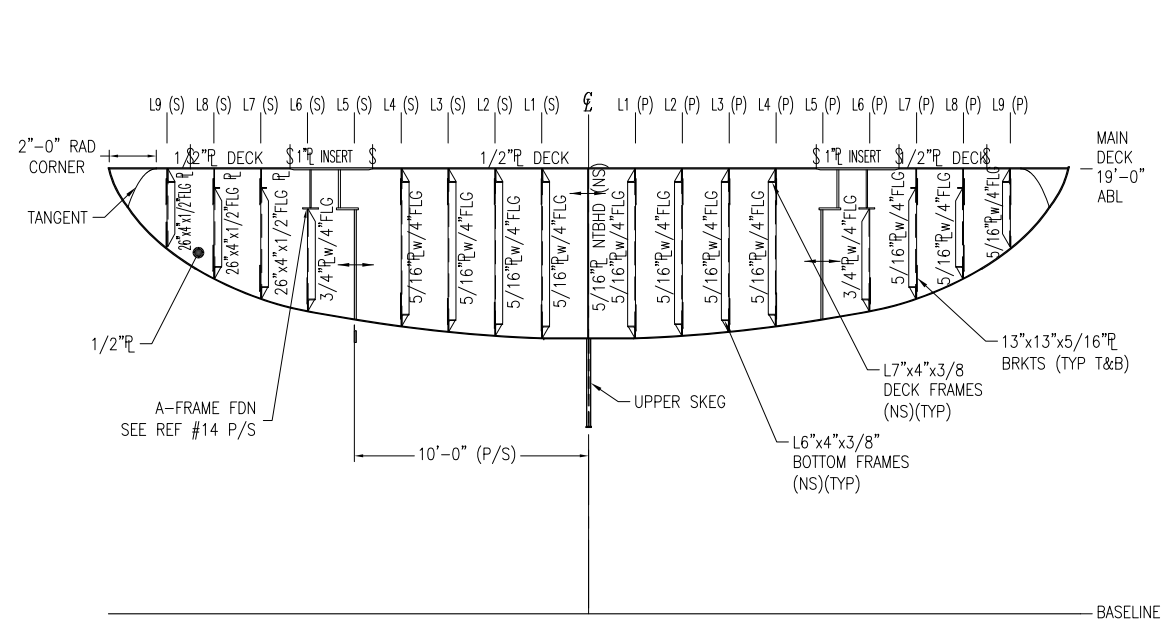
SECTION 45-3D

FR 91
SHOWN LOOKING AFT
1/4" = 1'-0"



SECTION 45-7B

FR 92
SHOWN LOOKING AFT
1/4" = 1'-0"



SECTION 45-3B

TRANSOM
SHOWN LOOKING AFT
1/4" = 1'-0"

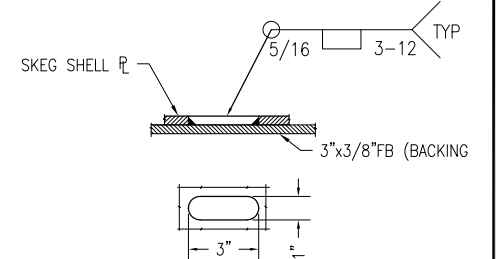
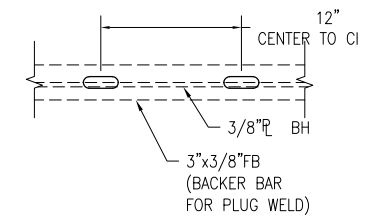
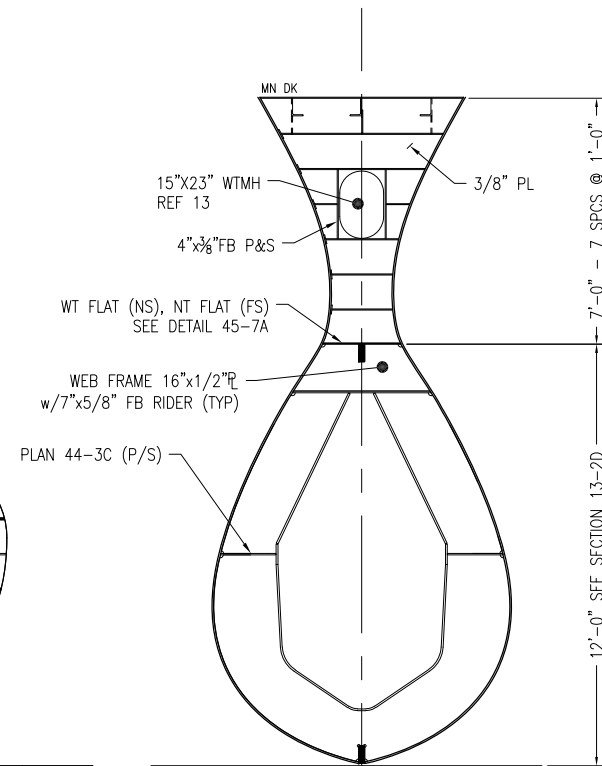
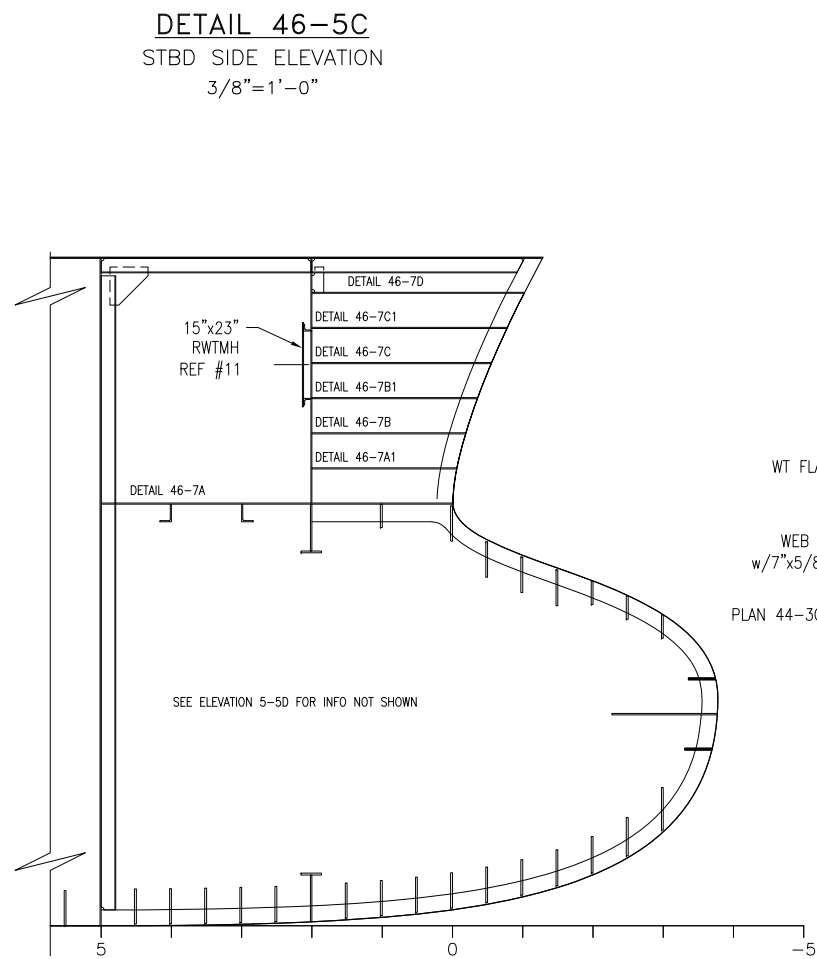
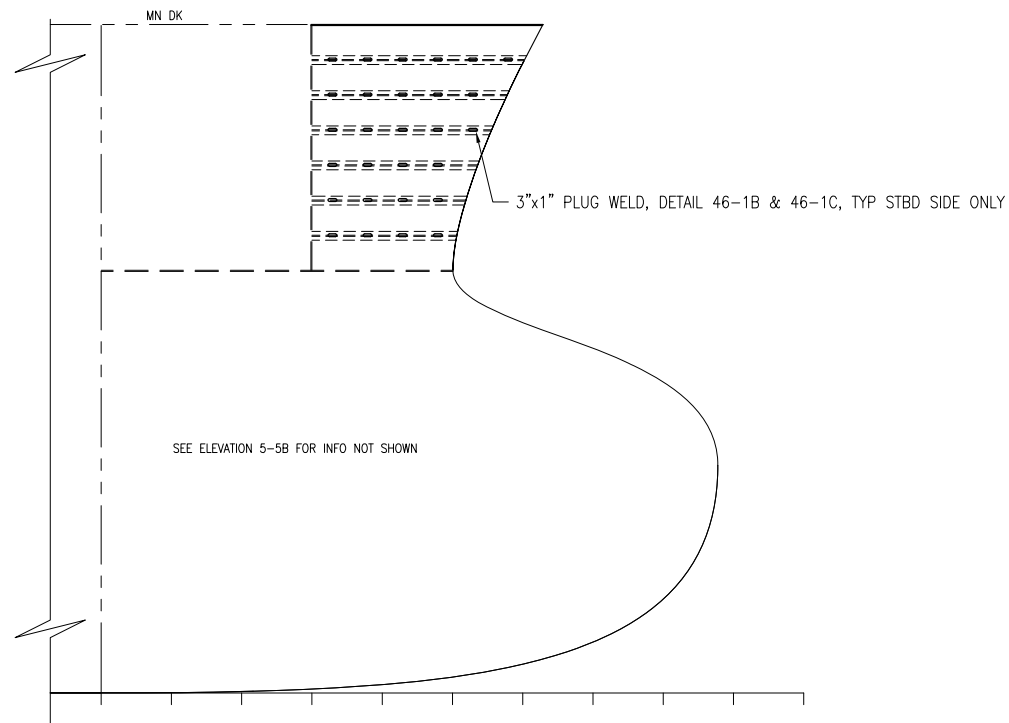
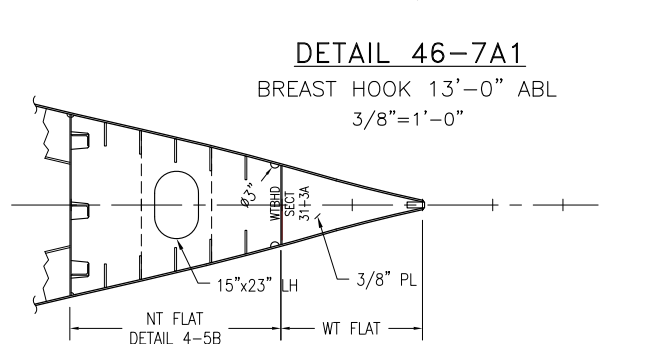
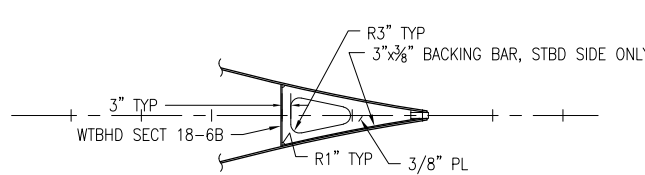
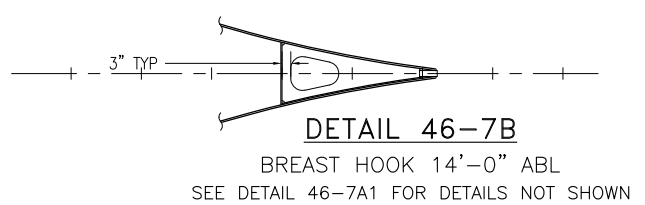
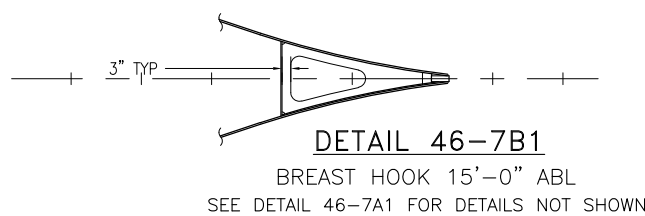
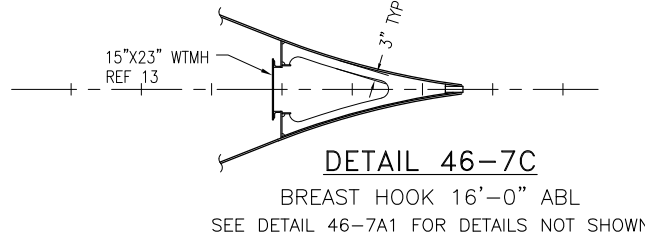
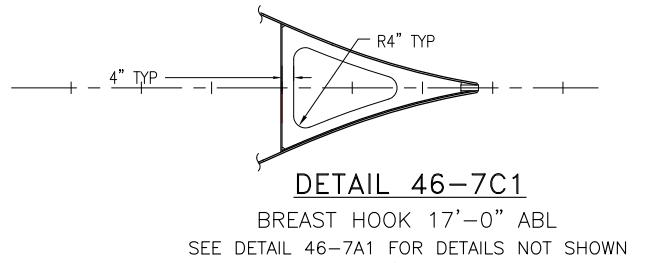
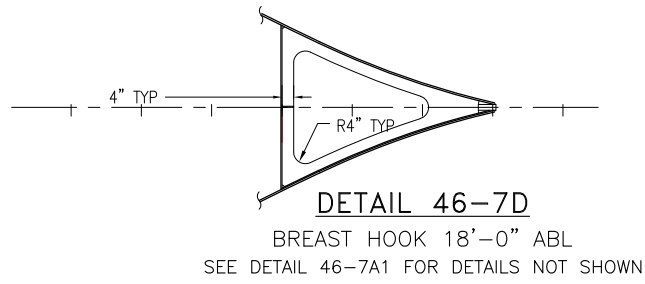
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OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

199'-6" REGIONAL CLASS RESEARCH VESSEL

STEEL HULL
STRUCTURAL ARRANGEMENT
TRANSVERSE SECTIONS
FRAMES 90, 91, & TRANSOM

SIZE	FSCM CAGE NO.	DRAWING NO.	REV
D	7UTH5	6096-100-001	K
SCALE:	AS SHOWN	HULL #: 6096 6097 6098	SHEET 45 OF 46



PROFESSIONAL ENGINEER STAMP

OREGON STATE UNIVERSITY CORVALLIS, OR 97331			
199'-6" REGIONAL CLASS RESEARCH VESSEL			
STEEL HULL STRUCTURAL ARRANGEMENT TRANSVERSE SECTIONS FRAMES 87, 88, & TRANSOM			
SIZE D	FSCM CAGE NO. 7UTH5	DRAWING NO. 6096-100-001	REV K
SCALE: AS SHOWN	HULL #: 6096 6097 6098	SHEET 46 OF 46	