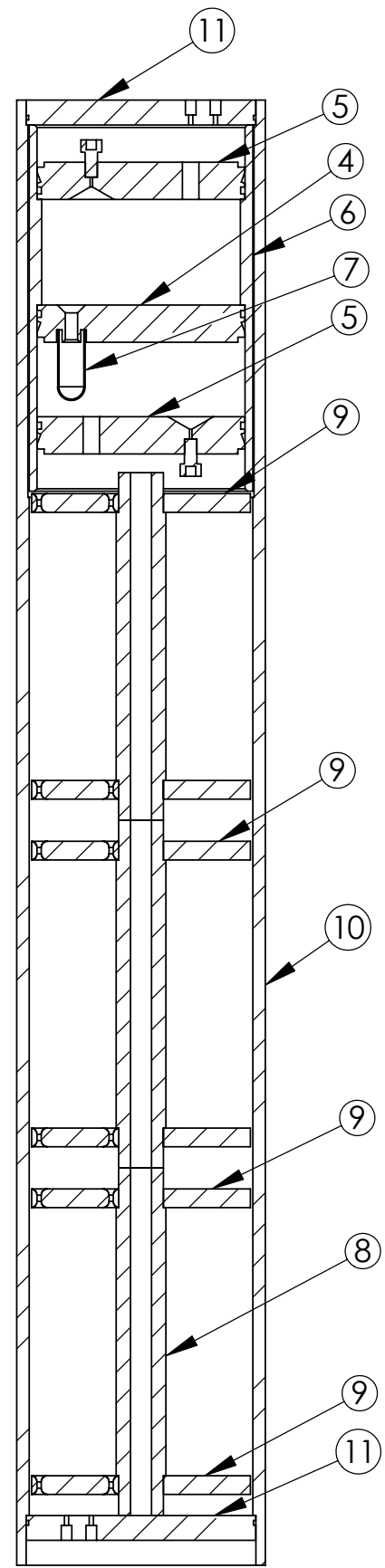


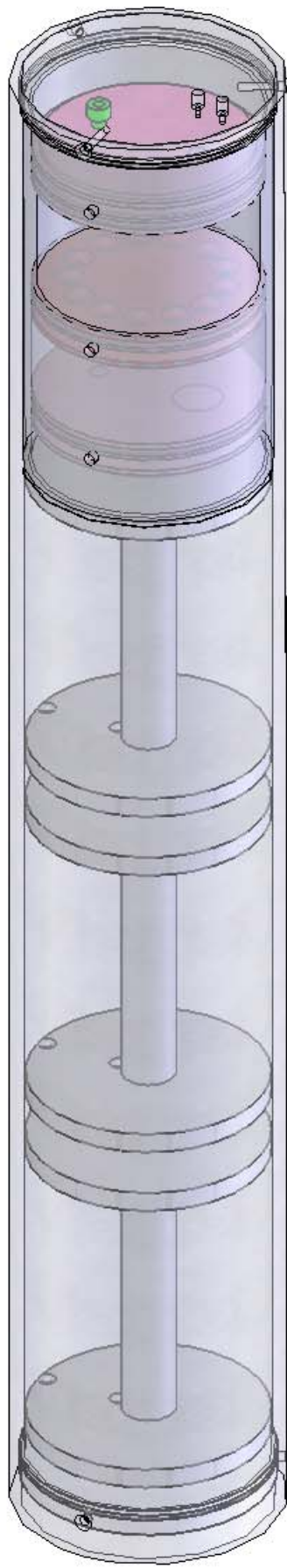
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		
A	3-yr version	6/17/05	HWJ

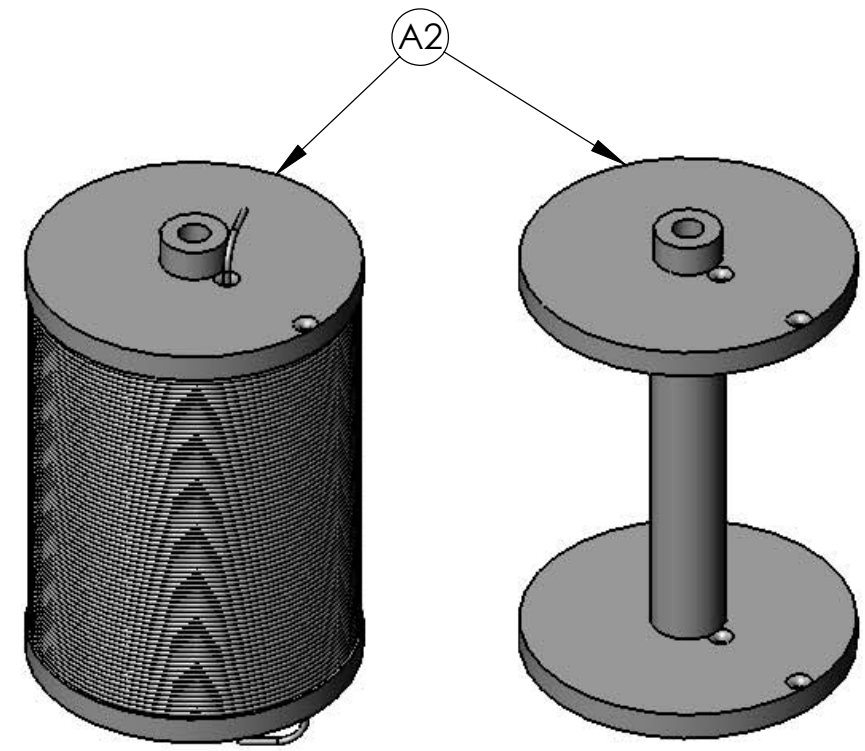
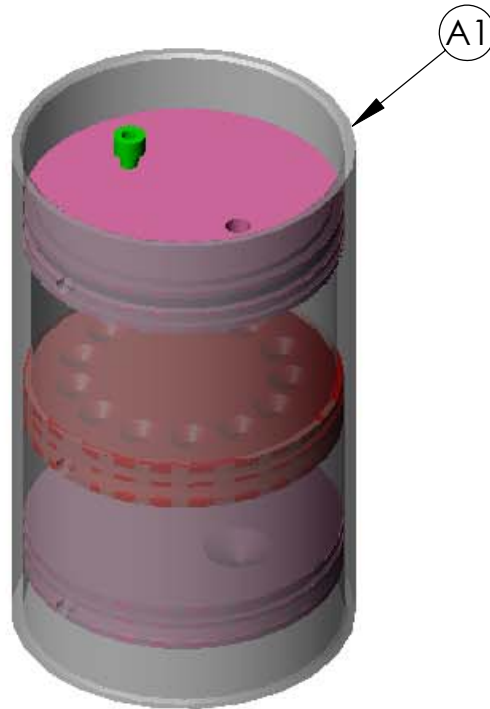
D
C
B
A



Seafloor OsmoSampler Section



Seafloor OsmoSampler Assembly



Wrapped Spool Assy

Note 7.
Bonded spools to be wrapped with evenly laid tubing in one continuous length. Tubing must not be kinked, pinched, severely stretched, or have joints. All Teflon tubing will be supplied by MBARI.
Tubing comes on 1000 ft spools. Loose tubing ends should extend 24-30 in on each end.

A2- Wrap with .079in OD Teflon tubing, 21 layers of about 68 wraps per layer. Total length about (~980 ft).

ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
12	2@		OsmoSampler Retainers	3/4" PVC or HDPE
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	5" OD 1/4" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" PVC rod
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	4.5" OD 1/4" wall Clear Acrylic Tube
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN	Hans Jannasch	04/20/04
+1/16	+1/32	+1/64	±1/2	ENGINEER	Jon Erickson	5/10/04
1. DIMENSIONS ARE IN INCHES				CHECKED		
2. DIMENSION LIMITS HELD AFTER PLATING.				PROJECT NO.		
3. REMOVE BURRS AND SHARP EDGES .015 MAX.				701445		
4. MACHINED FILLET RADII .0150-.030.				PROJECT		
5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005				Juan de Fuca Boreholes		
6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.				SCALE		
				DO NOT SCALE DRAWING		
				WEIGHT		

Monterey Bay Aquarium Research Institute

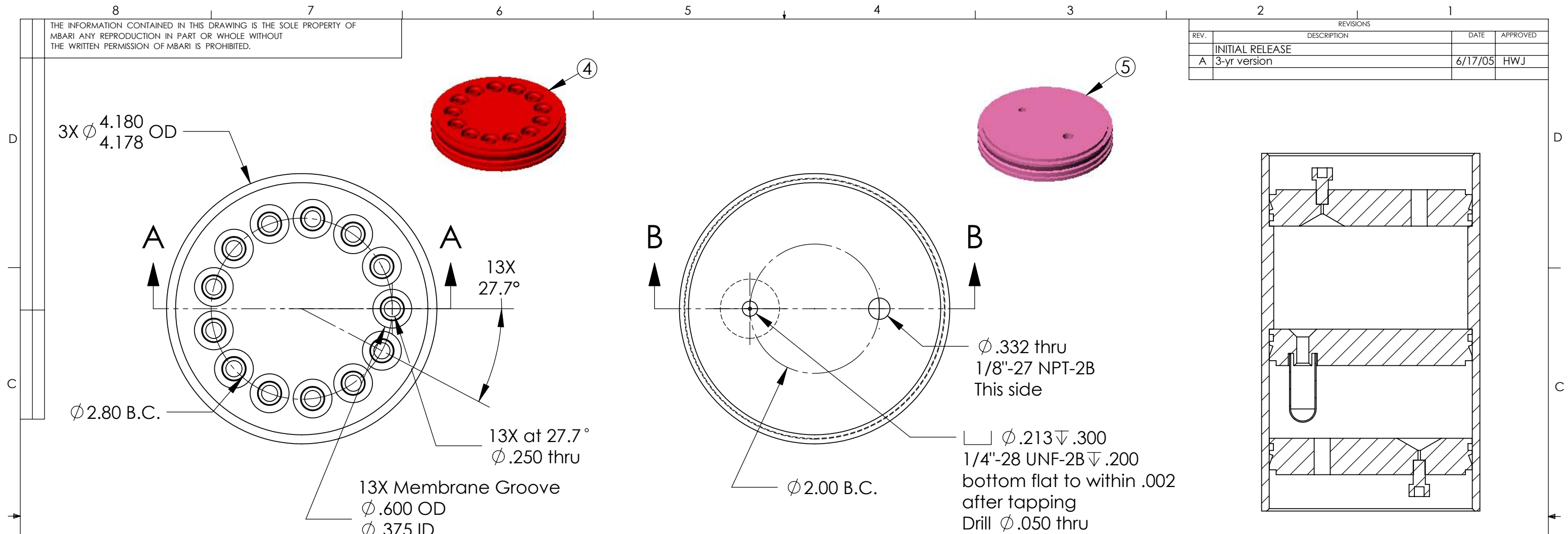
7700 Sandholdt RD.
Moss Landing, CA 95039
PH: (831) 775-1770

SIZE B	DWG. NO. 157jaha.DWG	REV. A
SCALE	CAD FILE: TORNADO/CHEM/SWFILES	SHEET 1 OF 5

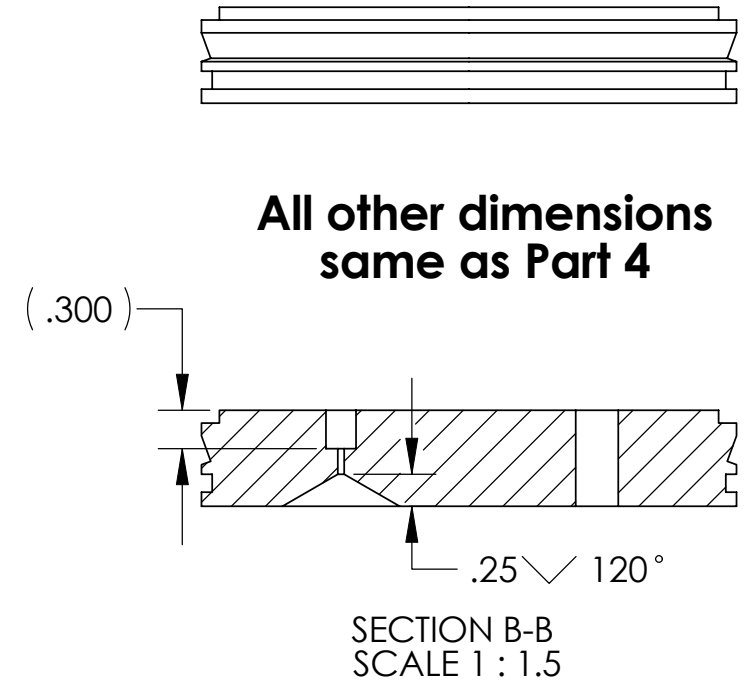
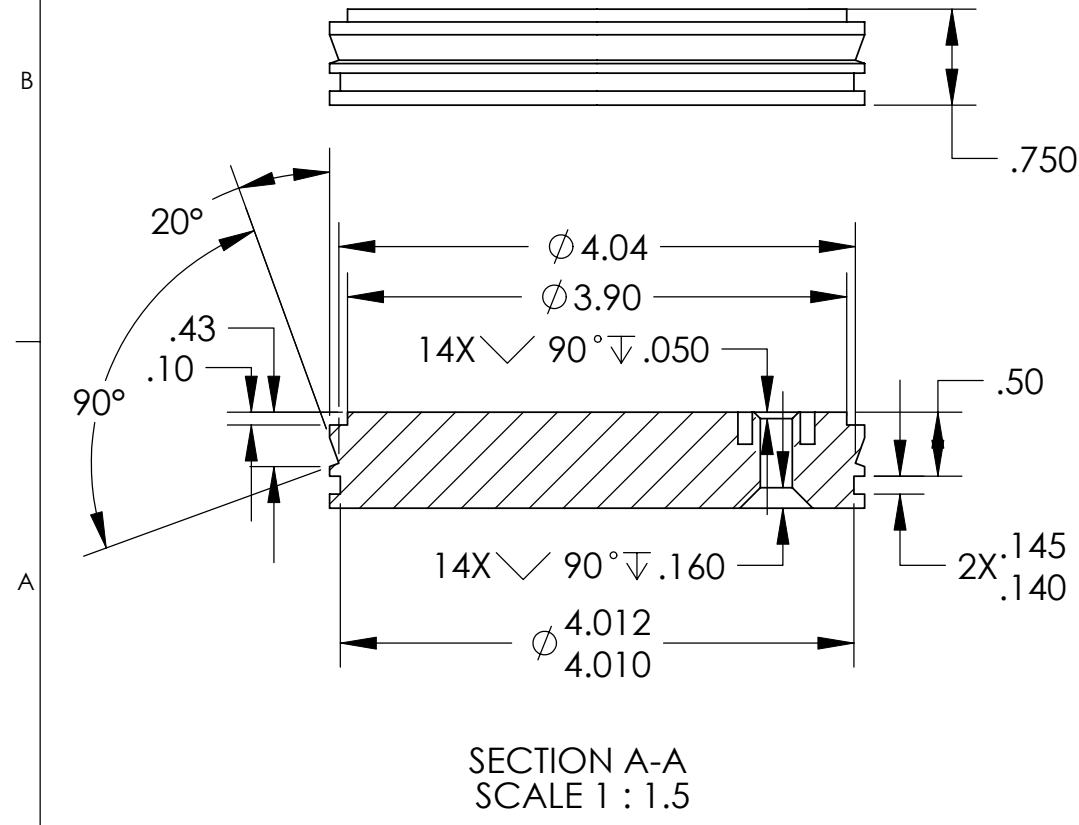
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		
A	3-yr version	6/17/05	HWJ



Pump Assembly Section
Pump to be assembled at MBARI



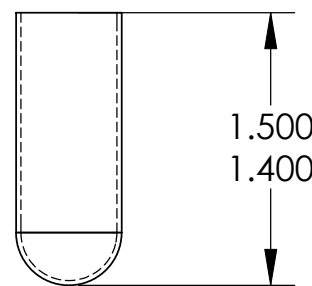
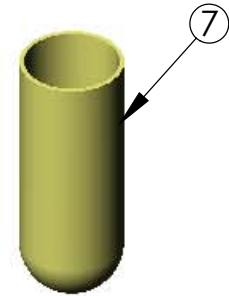
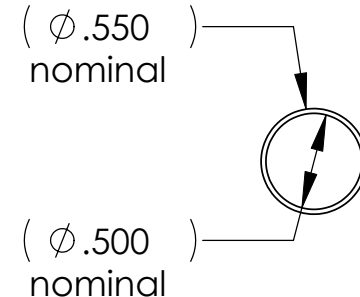
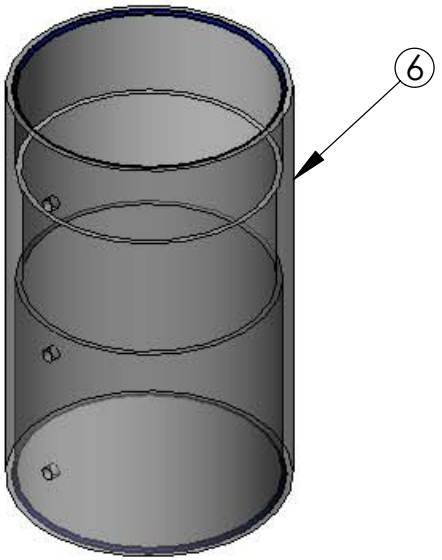
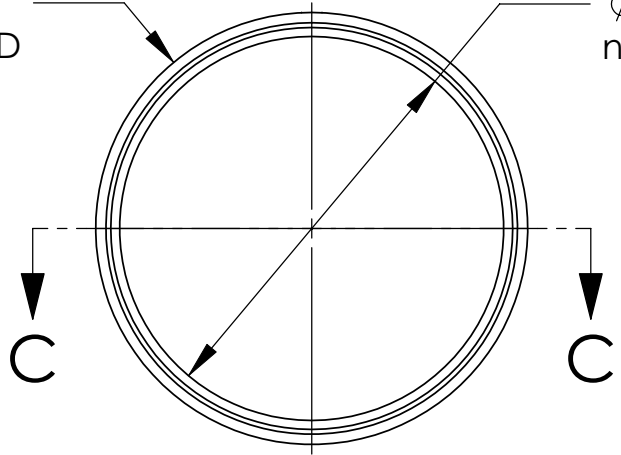
ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
12	2@		OsmoSampler Retainers	3/4" PVC or HDPE
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	5" OD 1/4" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" PVC rod
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	4.5" OD 1/4" wall Clear Acrylic Tube
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN	CHECKED	
$\pm .016$	$\pm .012$	$\pm .005$	$\pm .1$	Hans Jannasch	Jon Erickson	04/20/04
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.				Monterey Bay Aquarium Research Institute 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770		
PROJECT NO. 701445				PROJECT Juan de Fuca Boreholes		SIZE B DWG. NO. 157jaha.DWG REV. A
APPLICATION DO NOT SCALE DRAWING				WEIGHT		SCALE CAD FILE: TORNADO/CHEM/SWFILES SHEET 1 OF 5

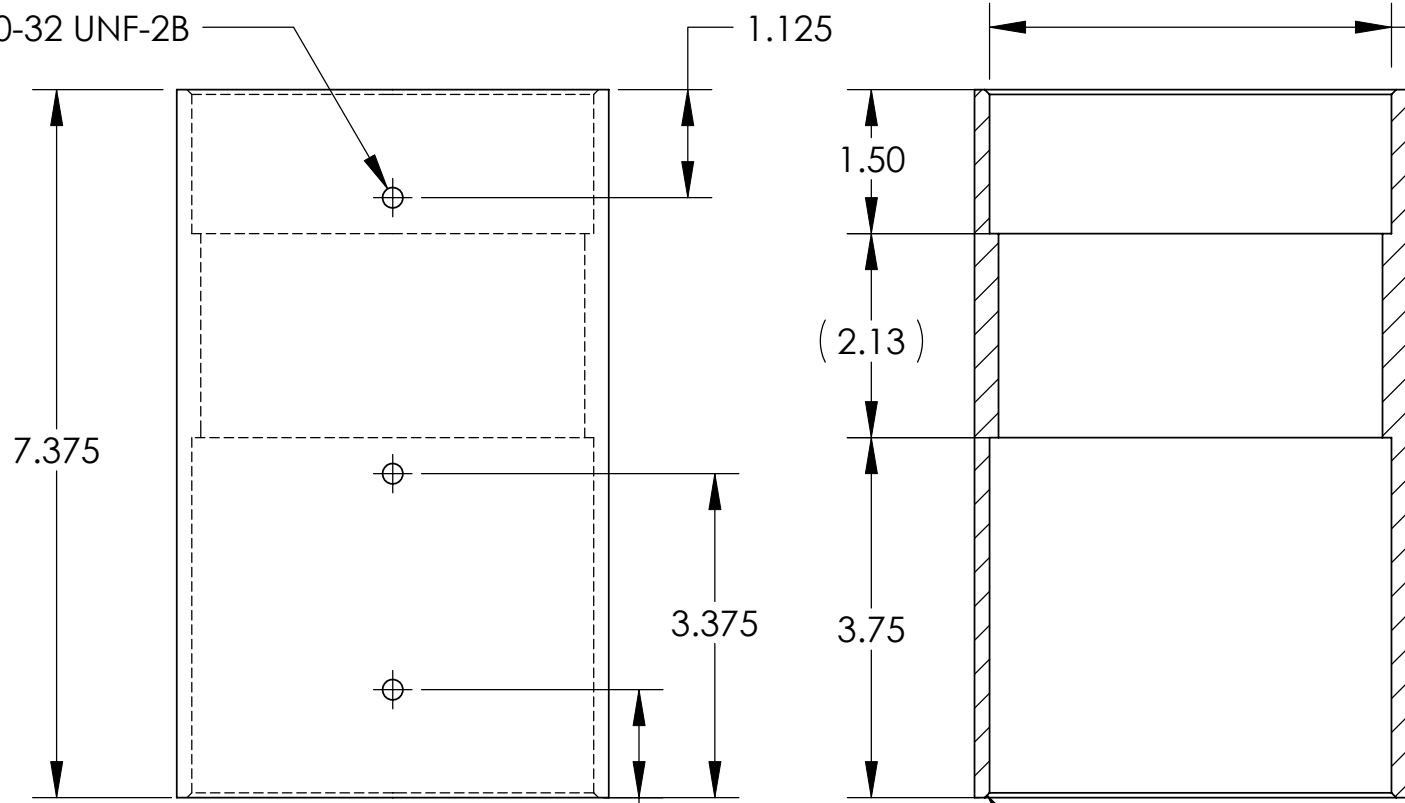
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		
A	3-yr version	6/17/05	HWJ

ϕ 4.50 nominal OD
 ϕ 4.00 nominal ID



3X 10-32 UNF-2B



2X ϕ 4.189
 ϕ 4.187
 -155 O-ring
 both ends

2X both ends
 .05 X 45°

SECTION C-C

ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
12	2@		OsmoSampler Retainers	3/4" PVC or HDPE
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	5" OD 1/4" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" PVC rod
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	4.5" OD 1/4" wall Clear Acrylic Tube
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:			
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES
$\pm .016$	$\pm .012$	$\pm .005$	$\pm .1$

Monterey Bay Aquarium Research Institute

7700 Sandholdt RD.
 Moss Landing, CA 95039
 PH: (831) 775-1770

PROJECT NO. 701445

PROJECT Juan de Fuca Boreholes

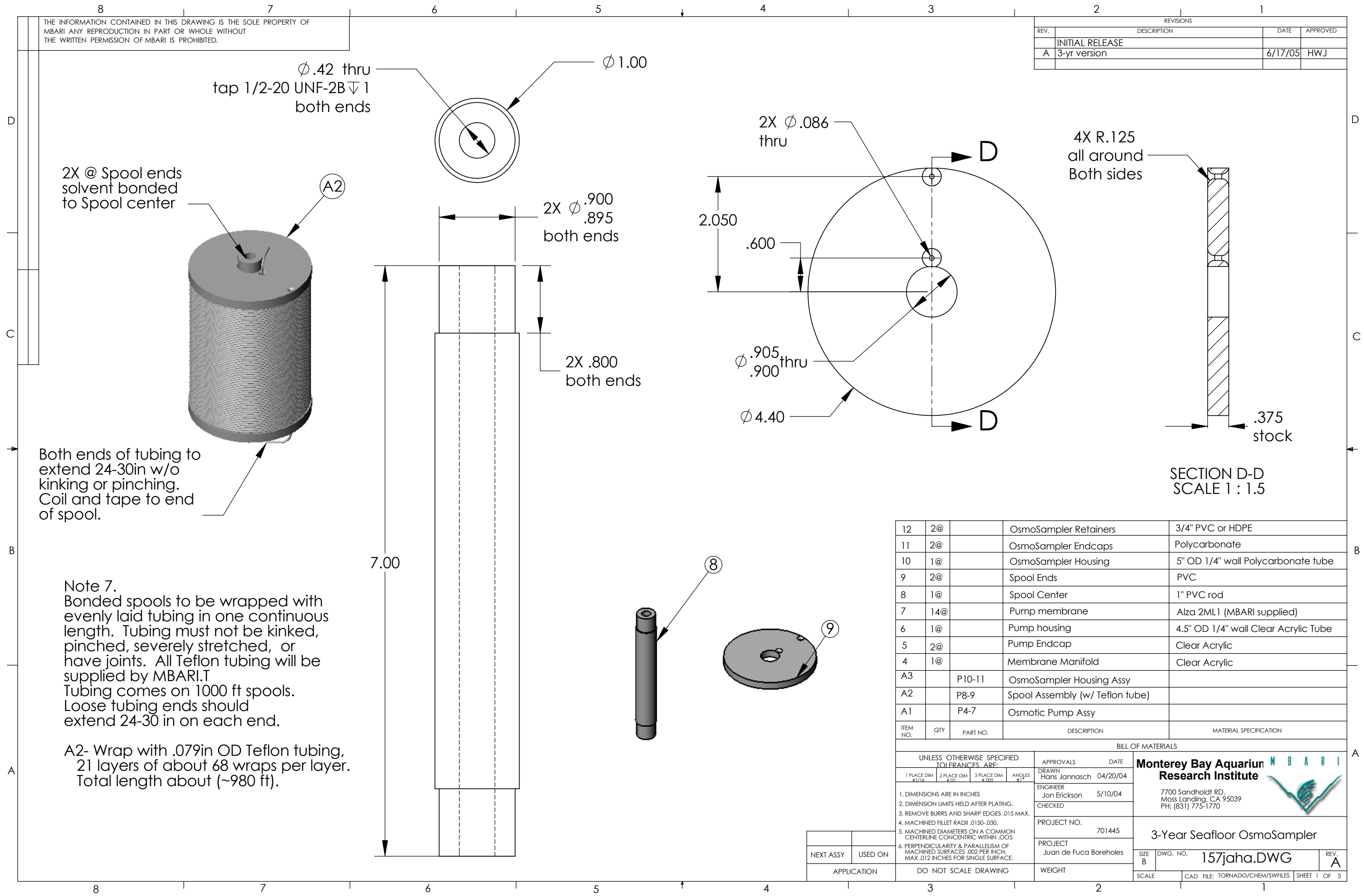
SCALE B DWG. NO. 157jaha.DWG REV. A

APPROVALS	DATE
DRAWN Hans Jannasch	04/20/04
ENGINEER Jon Erickson	5/10/04
CHECKED	
PROJECT NO.	701445
PROJECT	Juan de Fuca Boreholes
WEIGHT	

NEXT ASSY	USED ON

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		
A	3-yr version	6/17/05	HWJ



Both ends of tubing to extend 24-30in w/o kinking or pinching. Coil and tape to end of spool.

Note 7.
Bonded spools to be wrapped with evenly laid tubing in one continuous length. Tubing must not be kinked, pinched, severely stretched, or have joints. All Teflon tubing will be supplied by MBARI.T
Tubing comes on 1000 ft spools. Loose tubing ends should extend 24-30 in on each end.

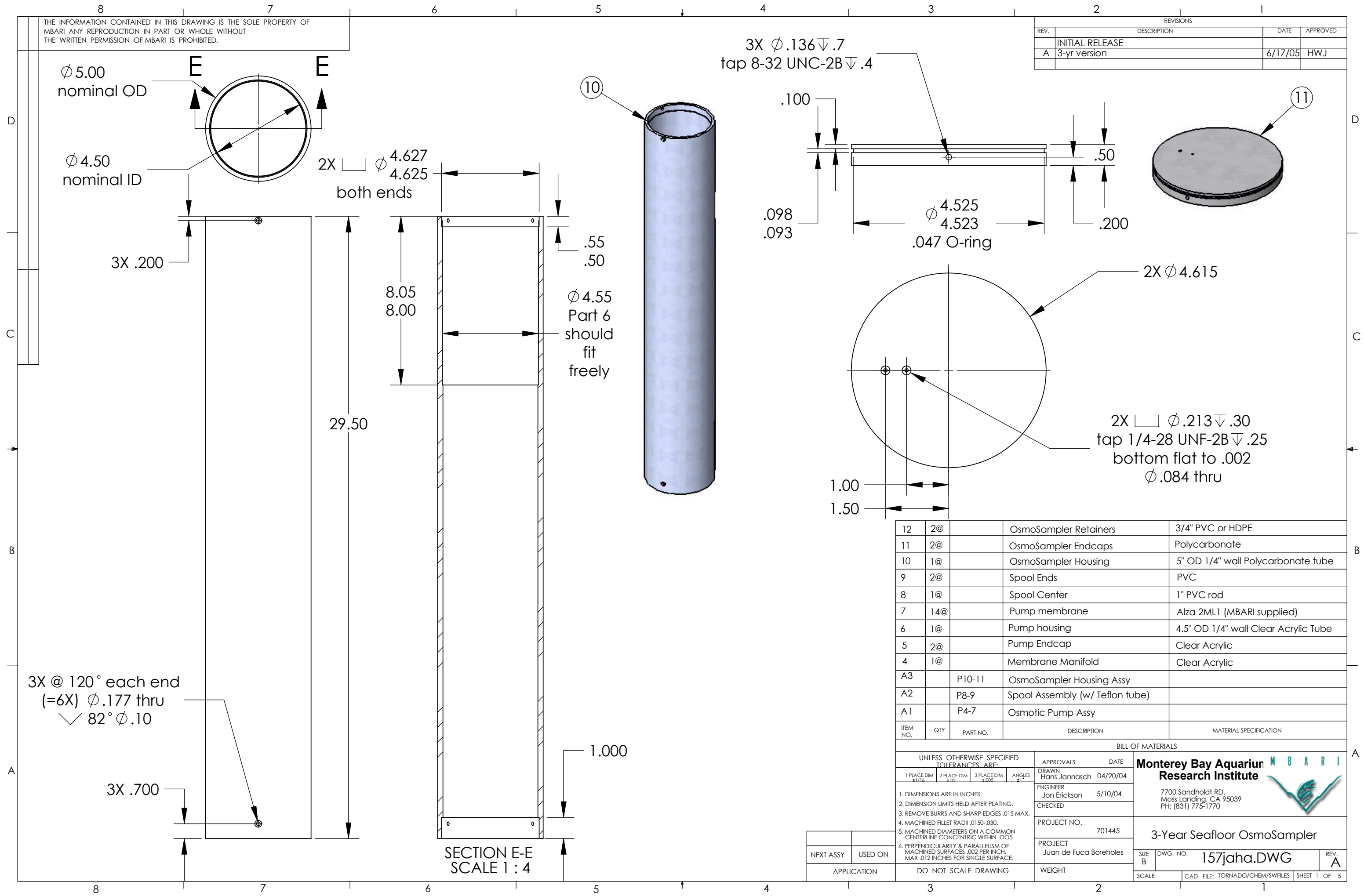
A2- Wrap with .079in OD Teflon tubing, 21 layers of about 68 wraps per layer. Total length about (~980 ft).

ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
12	2@		OsmoSampler Retainers	3/4" PVC or HDPE
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	5" OD 1/4" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" PVC rod
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
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5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN	Hans Jannasch	04/20/04
+0.016	+0.012	+0.005	±1	ENGINEER	Jon Erickson	5/10/04
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.				CHECKED		
PROJECT NO. 701445				Monterey Bay Aquarium Research Institute 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770		
PROJECT Juan de Fuca Boreholes						
NEXT ASSY USED ON		APPLICATION DO NOT SCALE DRAWING		WEIGHT		SCALE B
				DWG. NO. 157jaha.DWG		REV. A
				SHEET 1 OF 5		

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		
A	3-yr version	6/17/05	HWJ



ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
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A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN	DATE	
$\pm .116$	$\pm .102$	$\pm .005$	$\pm .1$	Hans Jannasch	04/20/04	
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.				ENGINEER	5/10/04	
				CHECKED		
				PROJECT NO.	701445	
				PROJECT	Juan de Fuca Boreholes	
				SCALE		
				DO NOT SCALE DRAWING		
				WEIGHT		

Monterey Bay Aquarium Research Institute

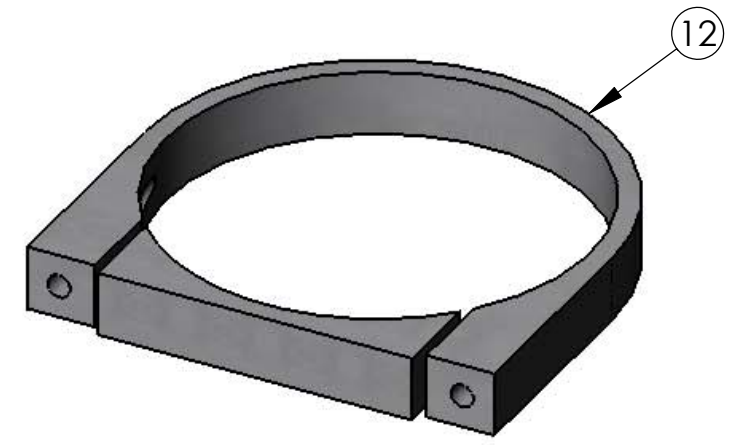
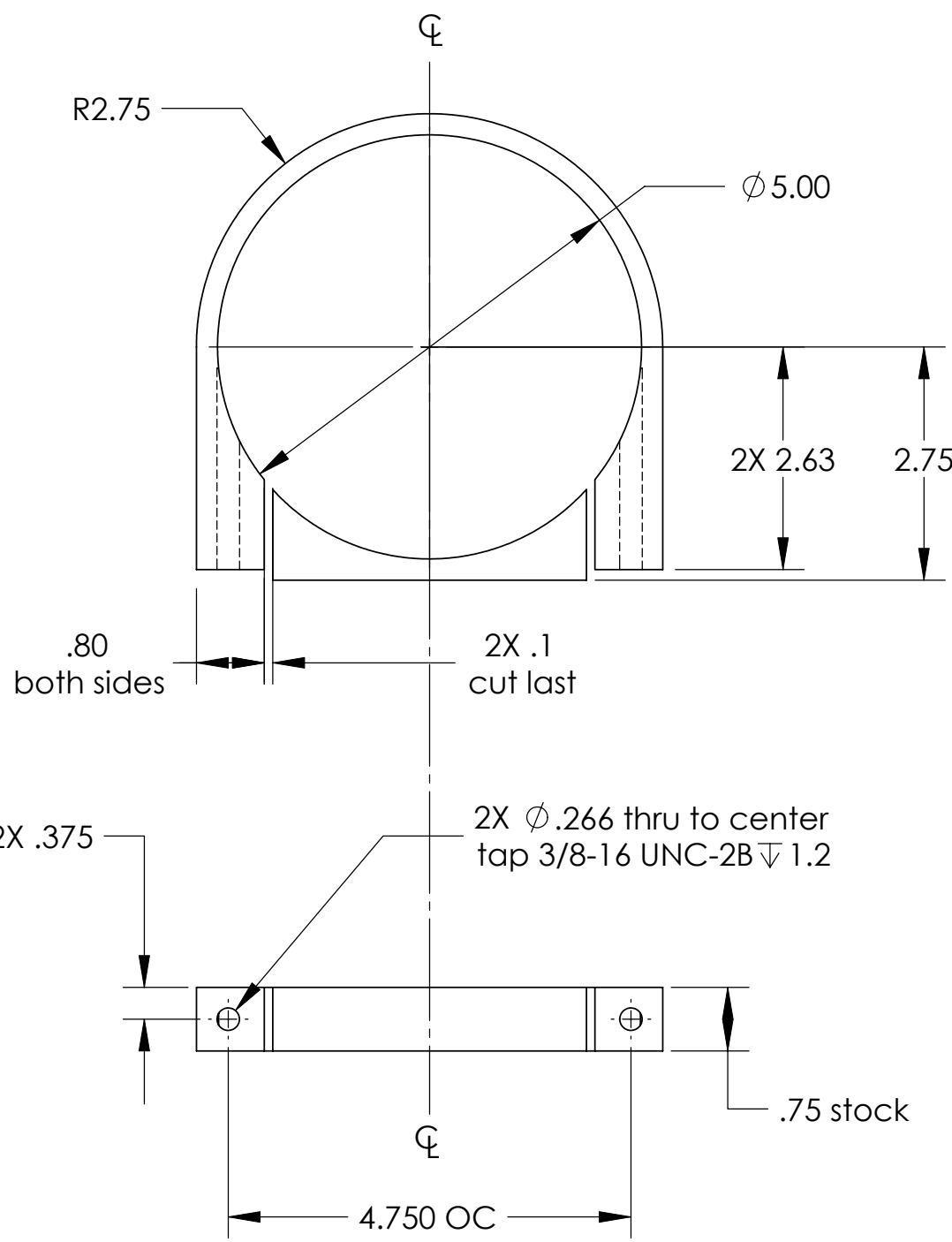
7700 Sandholdt RD.
Moss Landing, CA 95039
PH: (831) 775-1770

3-Year Seafloor OsmoSampler		SIZE B	DWG. NO. 157jaha.DWG	REV. A
SCALE	CAD FILE: TORNADO/CHEM/SWFILES	SHEET 1 OF 5		

SECTION E-E
SCALE 1 : 4

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		
A	3-yr version	6/17/05	HWJ



ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
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10	1@		OsmoSampler Housing	5" OD 1/4" wall Polycarbonate tube
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8	1@		Spool Center	1" PVC rod
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	4.5" OD 1/4" wall Clear Acrylic Tube
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE	MONTEREY BAY AQUARIUM RESEARCH INSTITUTE	
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN	Hans Jannasch	04/20/04	<p>7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770</p>	
+0.016	+0.012	+0.005	±.1	ENGINEER	Jon Erickson	5/10/04		
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.				CHECKED				
				PROJECT NO.	701445		3-Year Seafloor OsmoSampler	
				PROJECT	Juan de Fuca Boreholes		SIZE B	DWG. NO. 157jaha.DWG
				APPLICATION	DO NOT SCALE DRAWING		SCALE	CAD FILE: TORNADO/CHEM/SWFILES SHEET 1 OF 5

NEXT ASSY	USED ON

8 7 6 5 4 3 2 1

D
C
B
A

D
C
B
A

8 7 6 5 4 3 2 1