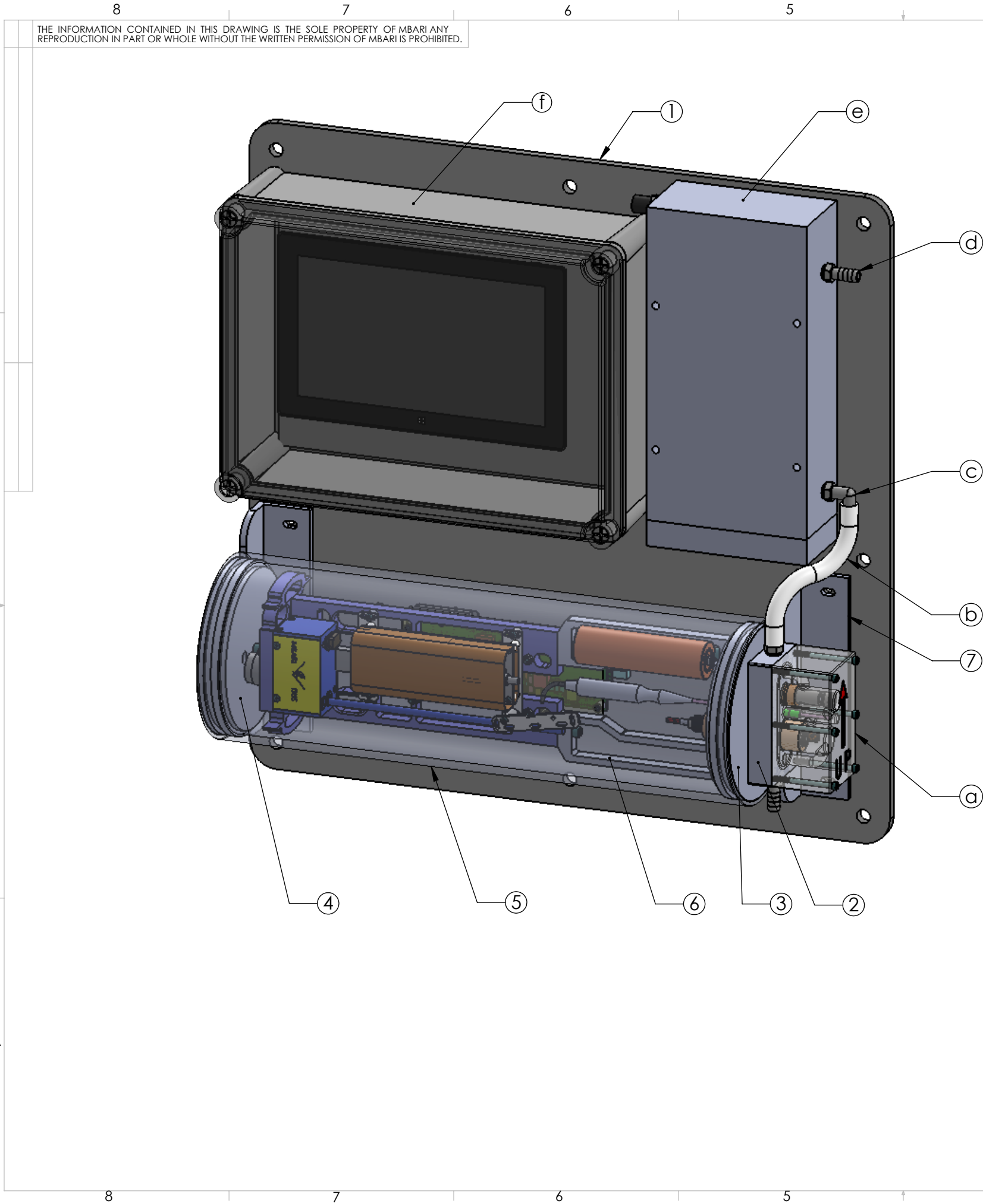


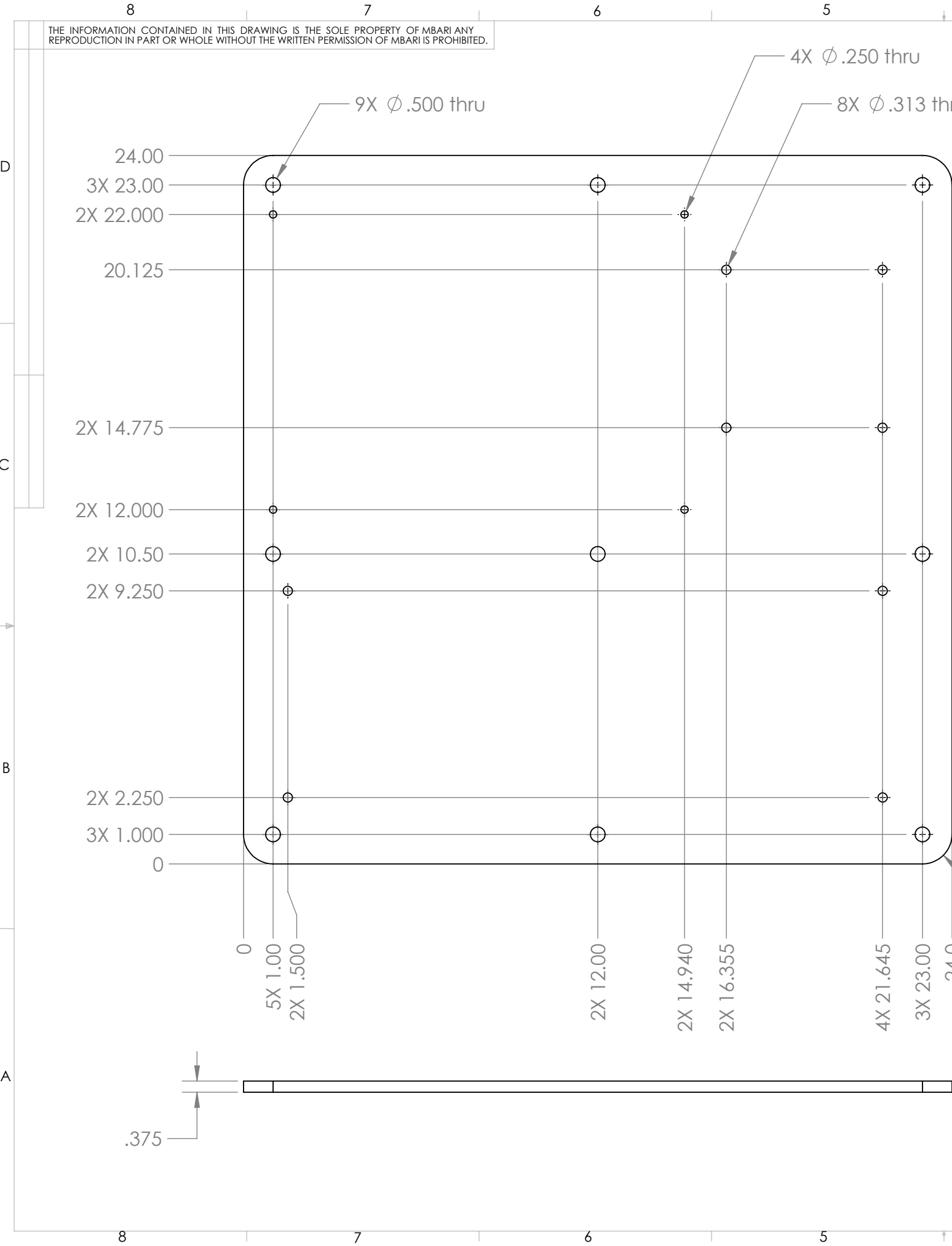


REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		

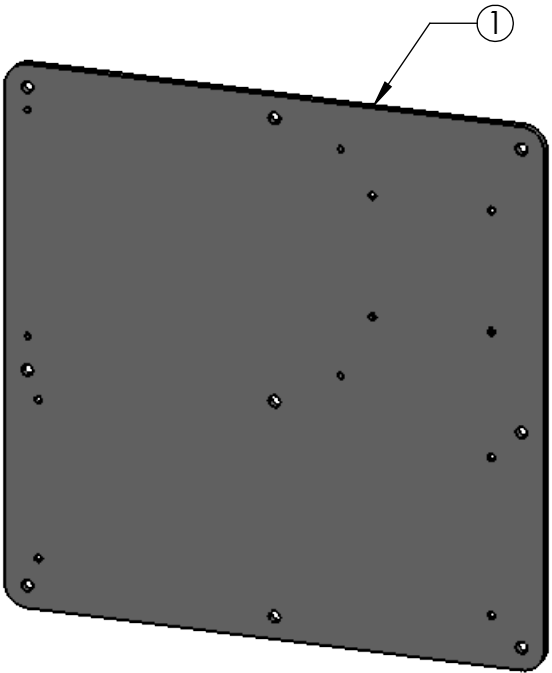
	8		Weld nuts	McMaster 90572A400
f	1		Controller	Washdown Enclosure (McMaster 69945K156)
e	1		CTD	Seabird SBE45
d	3		Straight fitting	McMaster 5372K117
c	1		Angle fitting	McMaster 5372K317
b	1		Tygon tube	3/8" ID by 5/8" OD
a	1		Flowcell	Printed (ProtoCafe; Clear H6K)
Item No.	Qty	Part No.	Description	Material Specification
Other Parts				

8	1		Modified EquiTech Stem	PEEK
7	2		Angle Bracket	2" x 1/4" PVC angle (McMaster 8659K51)
6	2		Chassis Mount	1/2" Al plate
5	1		Housing	6" Sch-40 pipe (white PVC)
4	1		sbEndcap-connector end	Gray PVC
3	1		sbEndcap-sensor end	Gray PVC
2	1		Sensor Block	PEEK
1	1		Mounting Board	HDPE , UHMW or similarly tough, 3/8" sheet
Item No.	Qty	Part No.	Description	Material Specification

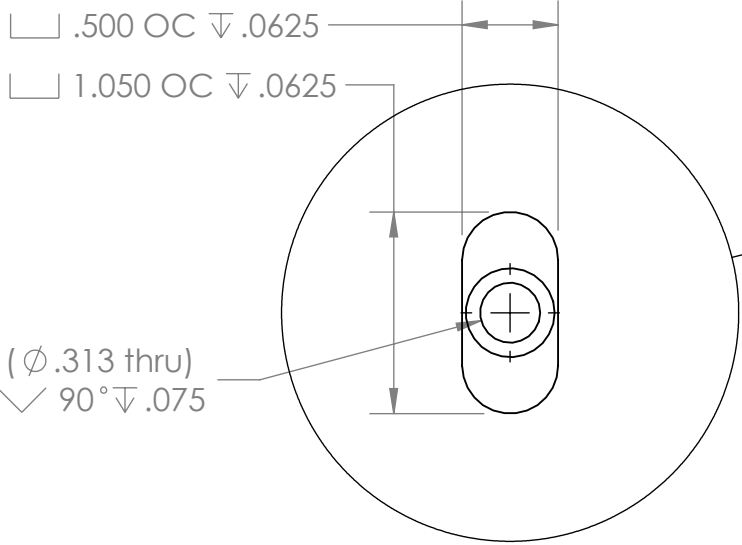
Bill of Materials										
Shop / Q.C.		UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:			APPROVALS	DATE	Monterey Bay Aquarium Research Institute			
Inspector		1 PLACE DIM ±1/16	2 PLACE DIM ±.02	3 PLACE DIM ±.005	ANGLES ±1°	DRAWN Hans Jannasch	10/20/17	MBARI 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1700 		
Shop Foreman		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				
Engineer						CHECKED				
NEXT ASSY Description	NEXT ASSY Number					PROJECT NO.		Shipboard pH and ISUS		
						PROJECT				
Application		DO NOT SCALE DRAWING				WEIGHT		SIZE B	DWG. NO. 321jaha-Shipboard_pH+ISUS	REV.
		3				2		SCALE 1:3	CAD FILE: Tornado/chem/SWfiles	SHEET 1 OF 7
								1		



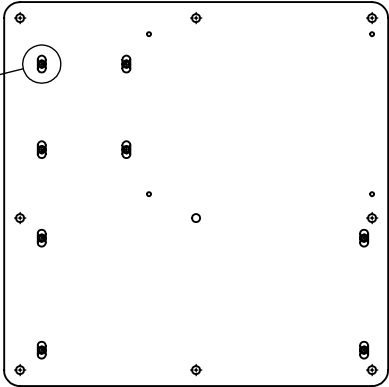
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		



Front Side



8X DETAIL A
SCALE 1 : 1



Back Side

1	1		Mounting Board	Black HDPE or UHMW, 3/8" sheet				
Item No.	Qty	Part No.	Description	Material Specification				
Bill of Materials								
Shop / Q.C.		UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:		APPROVALS	DATE	Monterey Bay Aquarium Research Institute MBARI 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1700 		
Inspector		1 PLACE DIM ±1/16	2 PLACE DIM ±.02	3 PLACE DIM ±.005	ANGLES ±1°		DRAWN Hans Jannasch	10/20/17
Shop Foreman		1. DIMENSIONS ARE IN INCHES					ENGINEER	
Engineer		2. DIMENSION LIMITS HELD AFTER PLATING.					CHECKED	
		3. REMOVE BURRS AND SHARP EDGES .015 MAX.						
		4. MACHINED FILLET RADII .0150-.030.				PROJECT NO.		
NEXT ASSY Description	NEXT ASSY Number	5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005				PROJECT		
		6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.						
Application	DO NOT SCALE DRAWING			WEIGHT	SIZE B	DWG. NO. 321jaha-Shipboard_pH+ISUS	REV.	
					SCALE 1:3	CAD FILE: Tornado/chem/SWfiles	SHEET 2 OF 7	

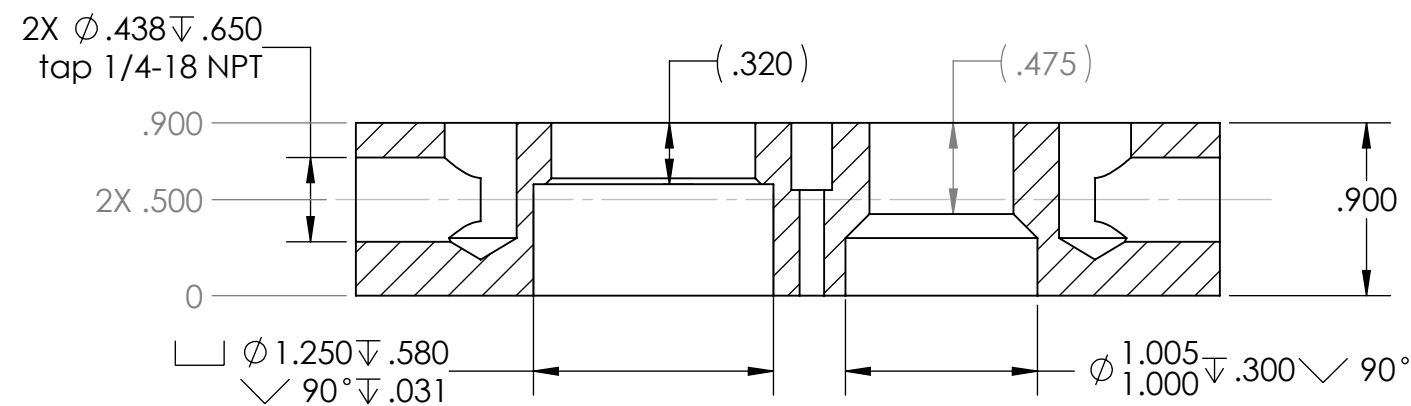
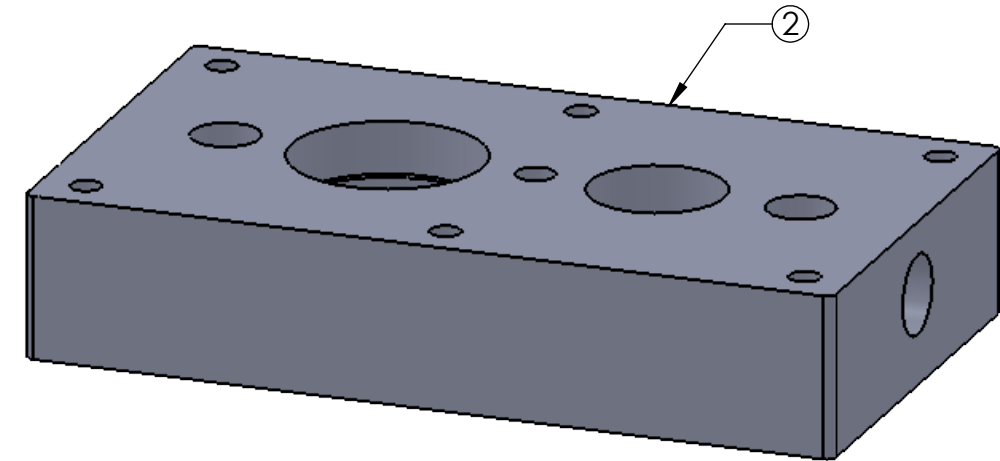
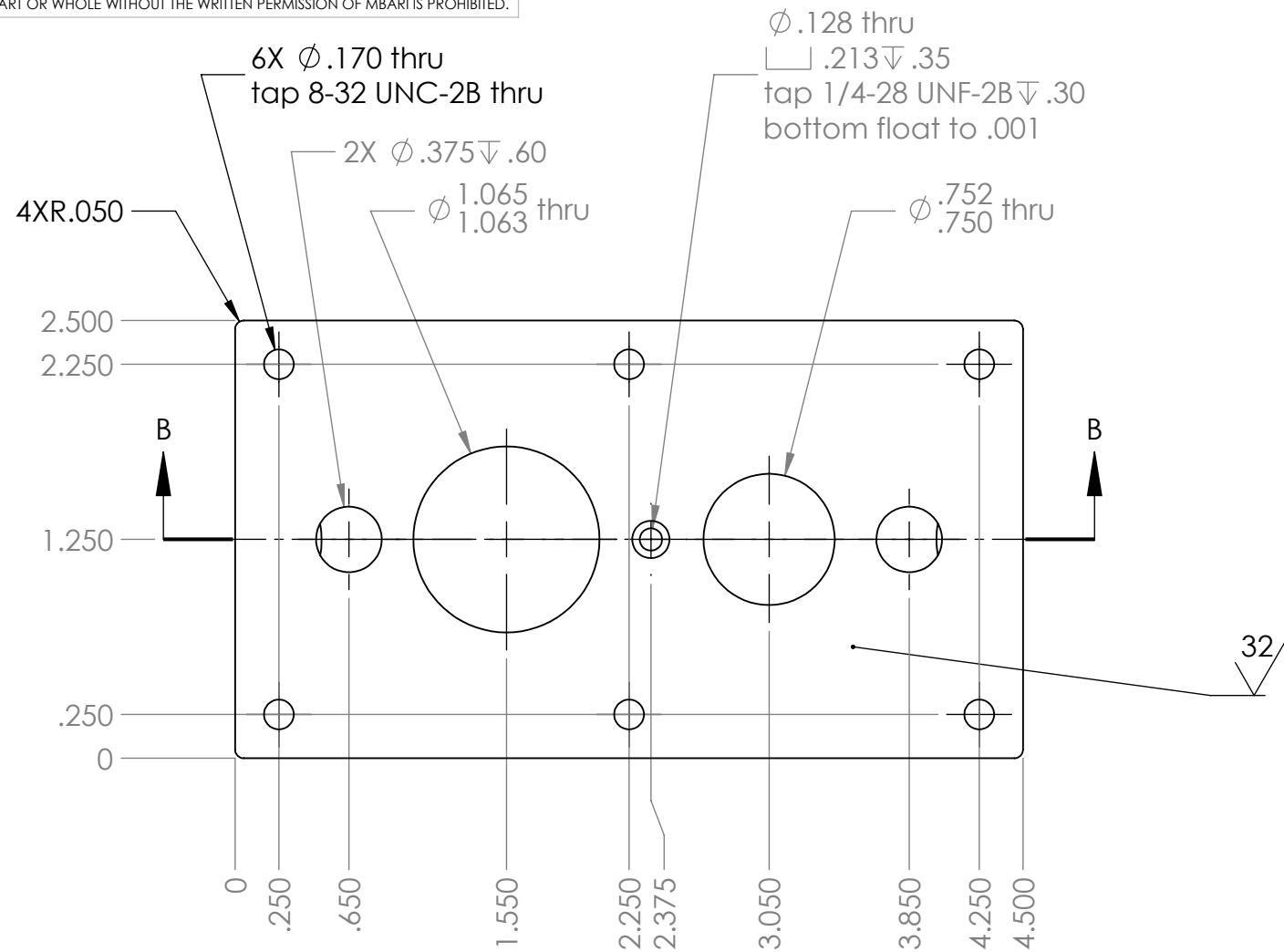
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PH: (831) 775-1700



Shipboard pH and ISUS

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REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		

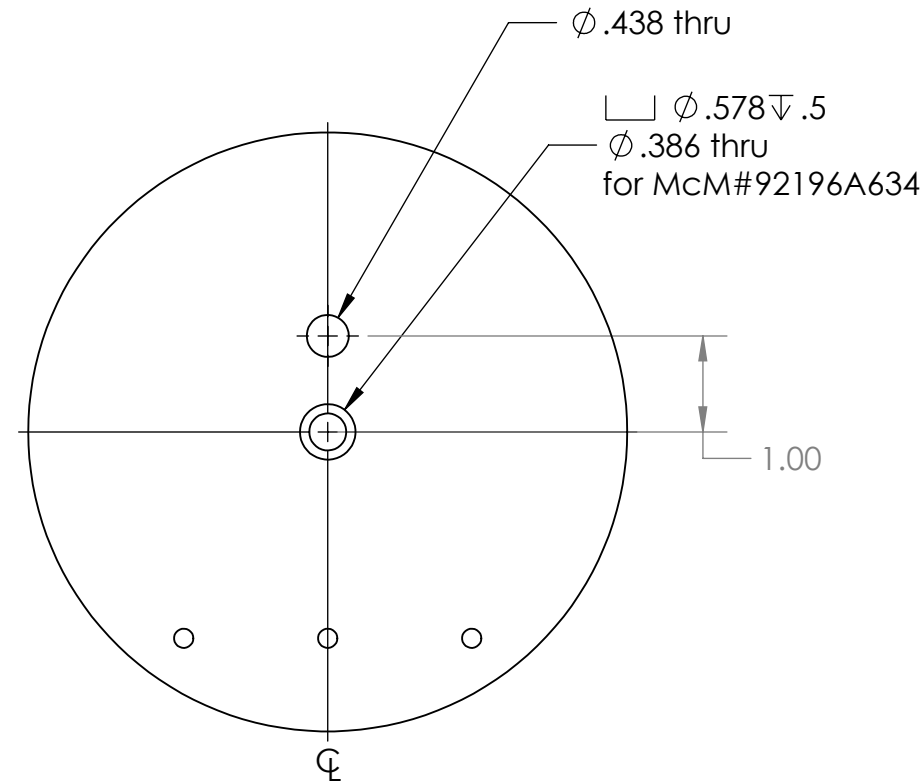
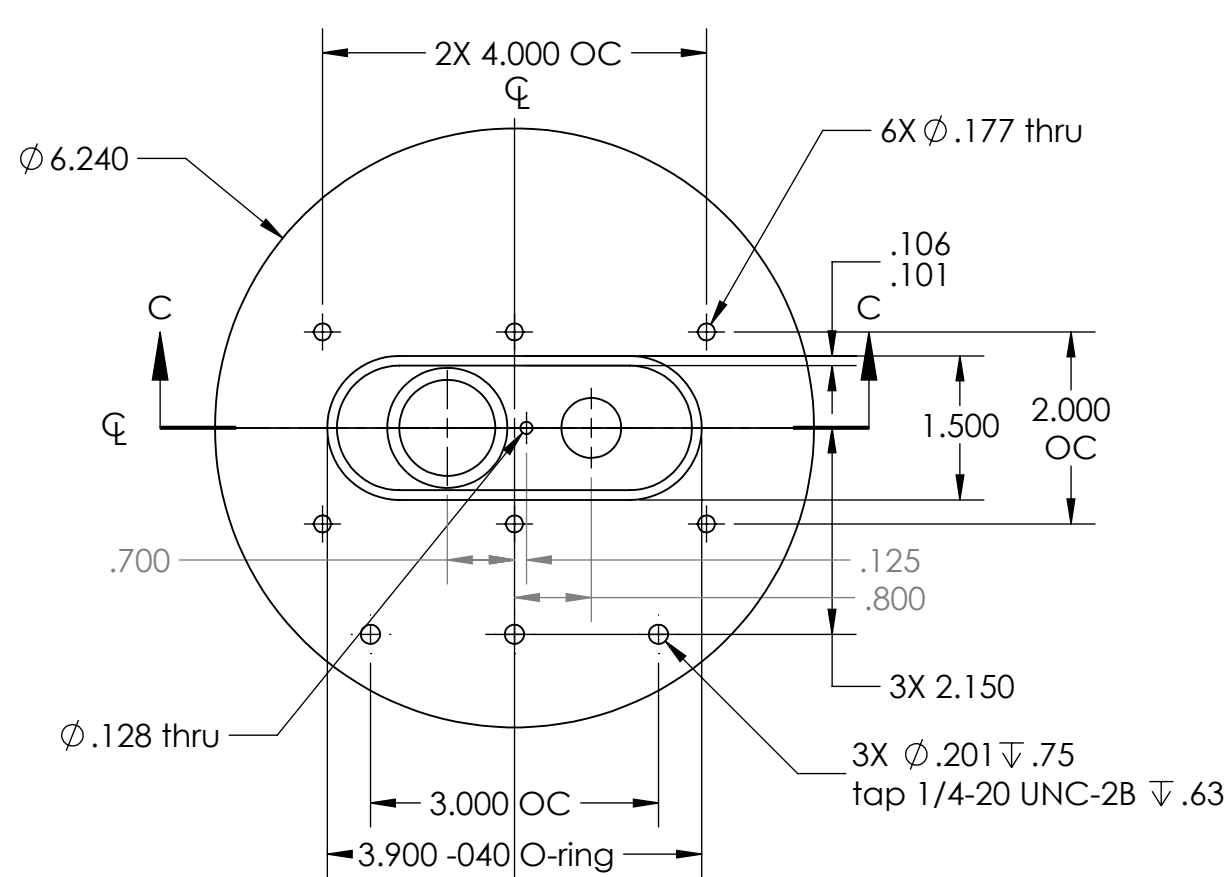


SECTION B-B

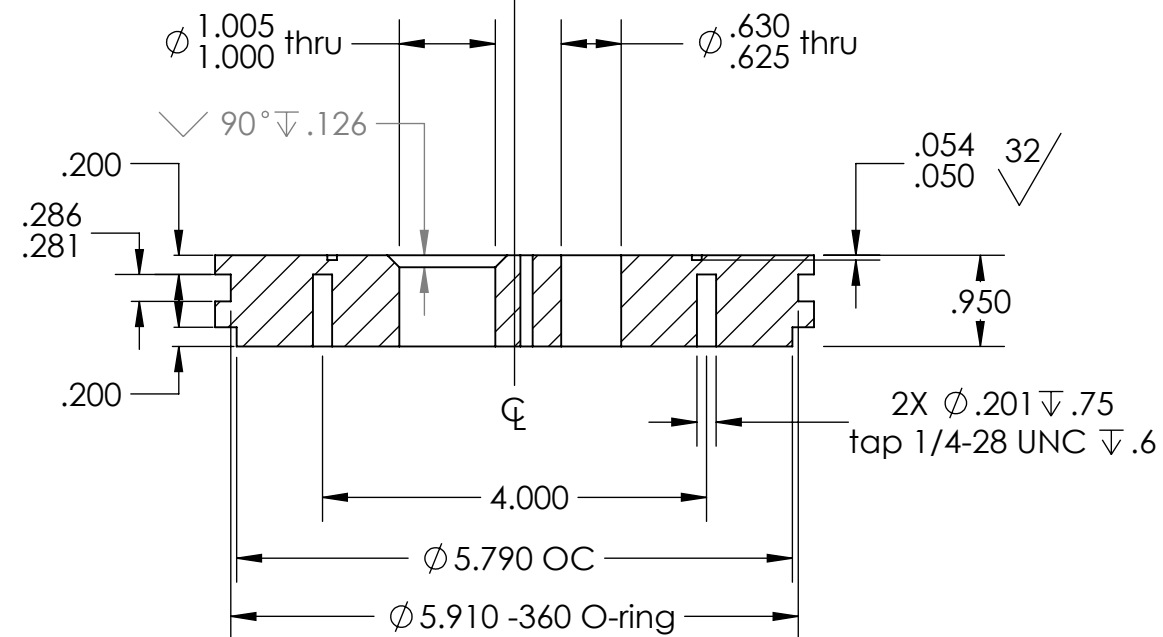
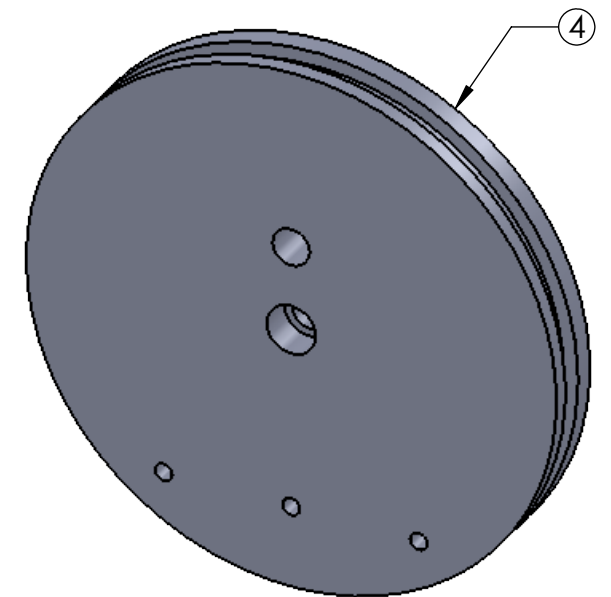
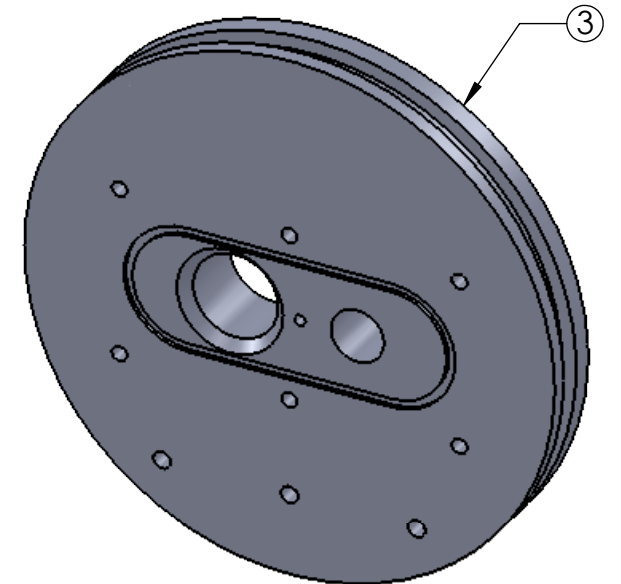
2	1		Sensor Block		PEEK
Item No.	Qty	Part No.	Description		Material Specification
Bill of Materials					
Shop / Q.C.		UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:		APPROVALS DATE	
Inspector		1 PLACE DIM ±1/16	2 PLACE DIM ±.02	3 PLACE DIM ±.005	ANGLES ±1°
Shop Foreman		1. DIMENSIONS ARE IN INCHES			DRAWN Hans Jannasch 10/20/17
Engineer		2. DIMENSION LIMITS HELD AFTER PLATING.			ENGINEER
		3. REMOVE BURRS AND SHARP EDGES .015 MAX.			CHECKED
		4. MACHINED FILLET RADII .0150-.030.			PROJECT NO.
NEXT ASSY Description	NEXT ASSY Number	5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005			PROJECT
		6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE.			
Application		DO NOT SCALE DRAWING		WEIGHT	
				Monterey Bay Aquarium Research Institute MBARI 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1700 	
				Shipboard pH and ISUS	
		SIZE B DWG. NO. 321jaha-Shipboard_pH+ISUS		REV.	
		SCALE 1:3 CAD FILE: Tomado/chem/SWfiles		SHEET 3 OF 7	

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	INITIAL RELEASE		



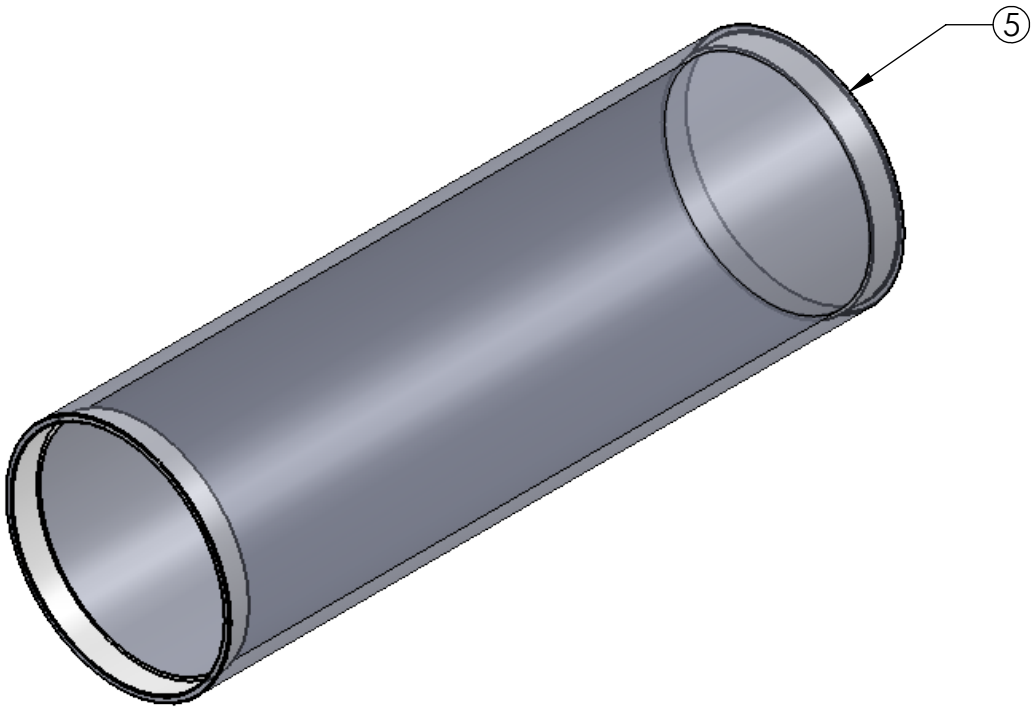
All other dimesions same as Part 3



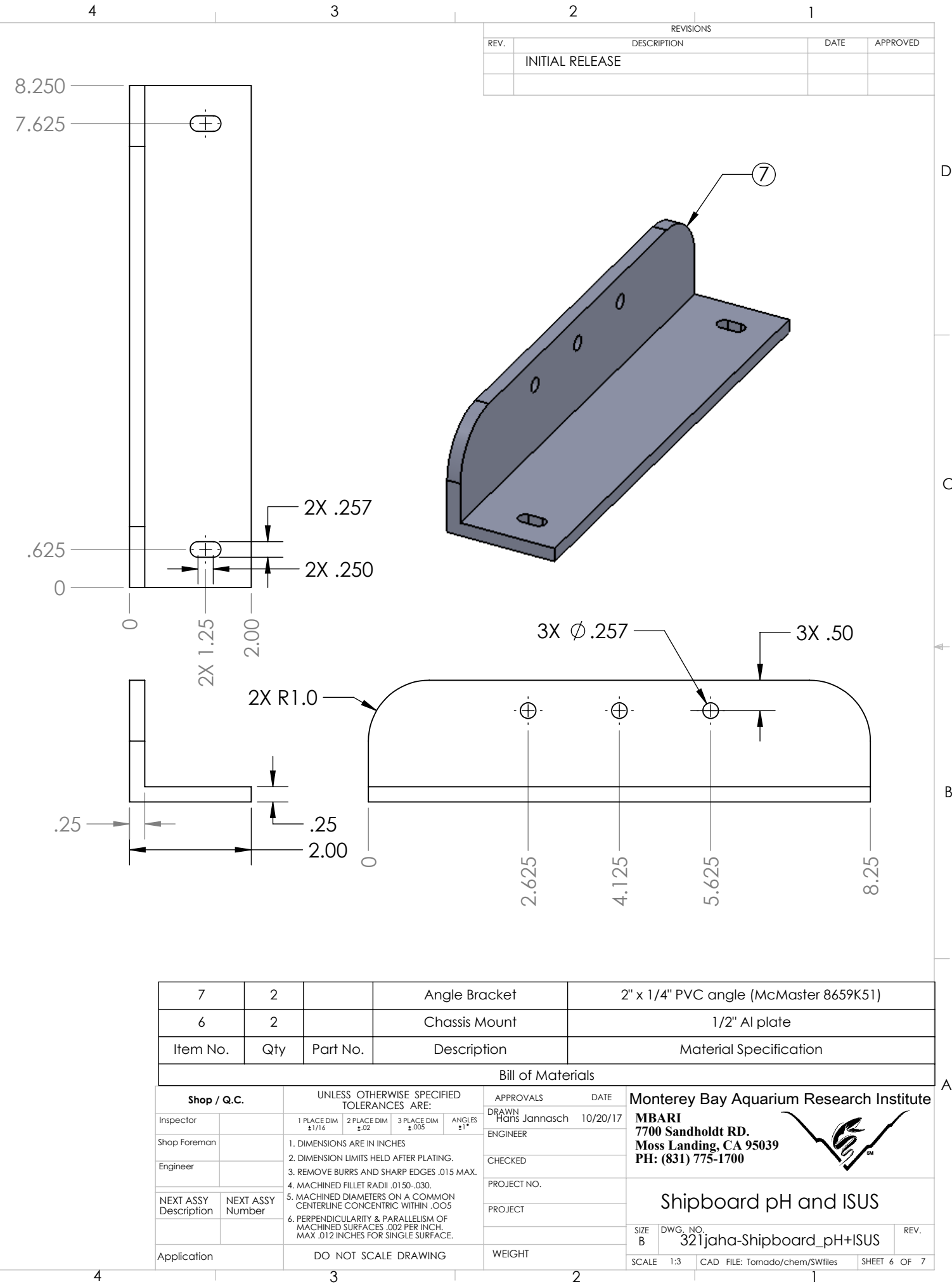
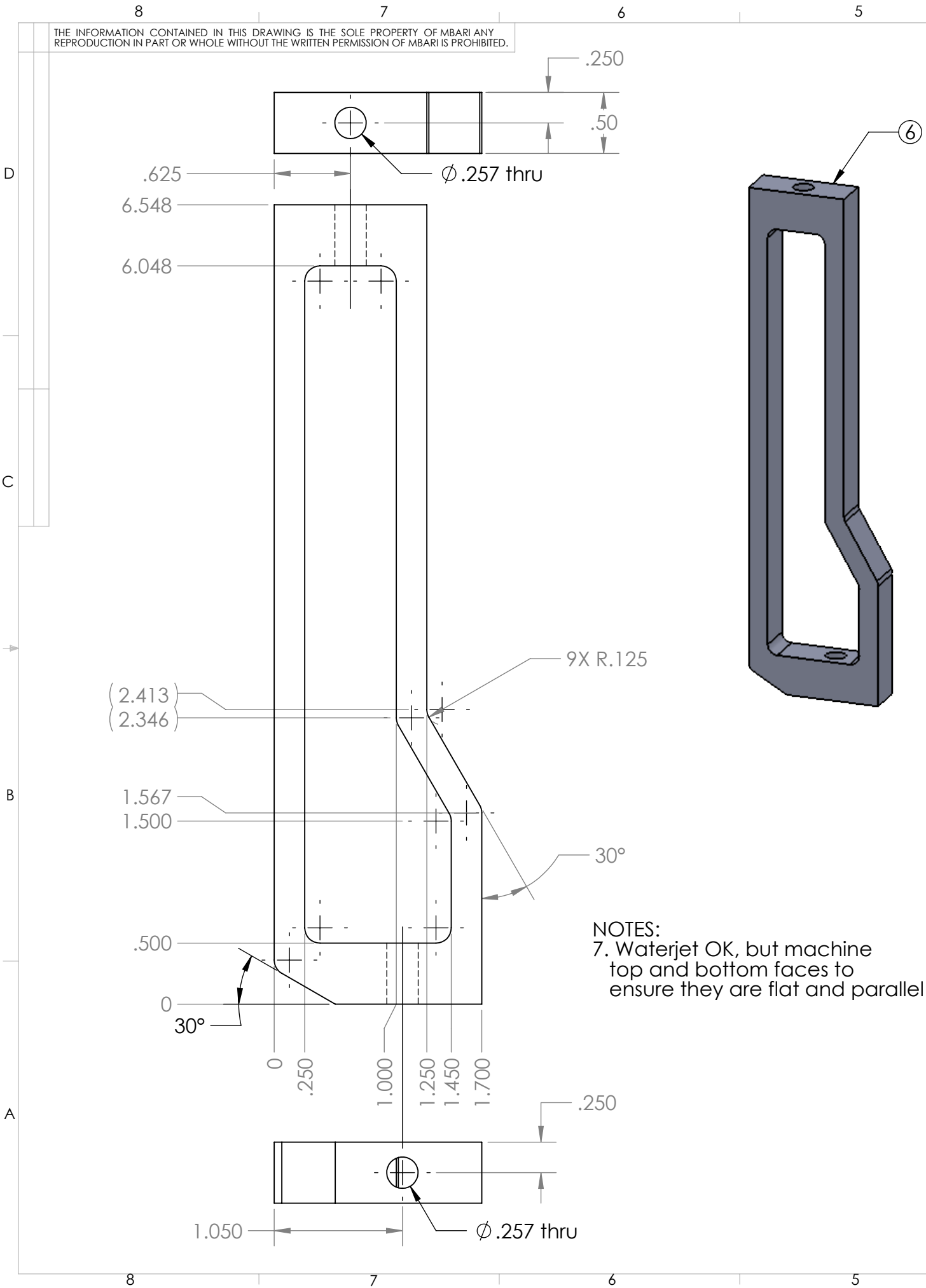
SECTION C-C

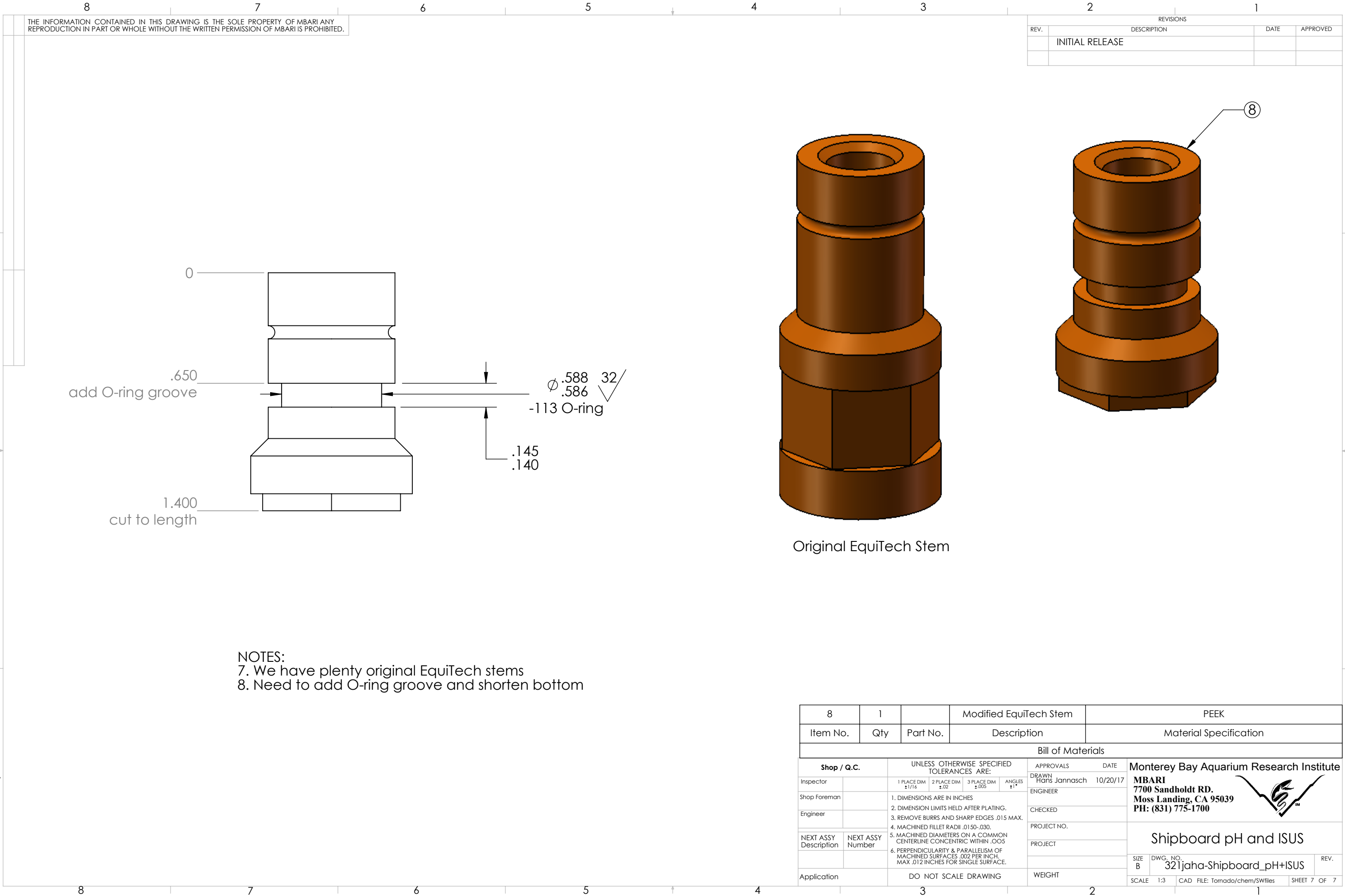
4	1		sbEndcap-connector end	Gray PVC
3	1		sbEndcap-sensor end	Gray PVC
Item No.	Qty	Part No.	Description	Material Specification

Bill of Materials											
Shop / Q.C.		UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE		Monterey Bay Aquarium Research Institute MBARI 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1700 	
Inspector		1 PLACE DIM ±1/16	2 PLACE DIM ±.02	3 PLACE DIM ±.005	ANGLES ±1°	DRAWN Hans Jannasch	10/20/17	ENGINEER			
Shop Foreman		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.			
Engineer						PROJECT					
NEXT ASSY Description	NEXT ASSY Number										
Application		DO NOT SCALE DRAWING				WEIGHT					
		SIZE B		DWG. NO. 321jaha-Shipboard_pH+ISUS		REV.					
		SCALE 1:3		CAD FILE: Tornado/chem/SWfiles		SHEET 4		OF 7			



5		1				Housing		6" Sch-40 pipe (white PVC)					
Item No.		Qty		Part No.		Description		Material Specification					
Bill of Materials													
Shop / Q.C.		UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE		Monterey Bay Aquarium Research Institute MBARI 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1700 			
Inspector		1 PLACE DIM ±.1/16		2 PLACE DIM ±.02		3 PLACE DIM ±.005		ANGLES ±1°				DRAWN Hans Jannasch 10/20/17	
Shop Foreman		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							
Engineer						CHECKED							
NEXT ASSY Description						NEXT ASSY Number		PROJECT NO.					
						PROJECT				Shipboard pH and ISUS			
Application		DO NOT SCALE DRAWING				WEIGHT		SIZE B				DWG. NO. 321jaha-Shipboard_pH+ISUS	
								SCALE 1:3		CAD FILE: Tornado/chem/SWfiles		SHEET 5 OF 7	





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add O-ring groove

ϕ .588
.586
32/
-113 O-ring

1.400
cut to length

NOTES:
7. We have plenty original EquiTech stems
8. Need to add O-ring groove and shorten bottom

Original EquiTech Stem

8		1		Modified EquiTech Stem		PEEK		
Item No.		Qty	Part No.	Description		Material Specification		
Bill of Materials								
Shop / Q.C.		UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:			APPROVALS		DATE	
Inspector		1 PLACE DIM ±1/16	2 PLACE DIM ±.02	3 PLACE DIM ±.005	ANGLES ±1°	DRAWN Hans Jannasch	10/20/17	
Shop Foreman		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		
Engineer						CHECKED		
NEXT ASSY Description	NEXT ASSY Number					PROJECT NO.		
						PROJECT		
						WEIGHT		
Application		DO NOT SCALE DRAWING			SCALE 1:3			CAD FILE: Tornado/chem/SWfiles
					SHEET 7			OF 7

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Shipboard pH and ISUS			
SIZE B	DWG. NO. 321jaha-Shipboard_pH+ISUS	REV.	

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Shipboard pH and ISUS

SIZE B DWG. NO. 321jaha-Shipboard_pH+ISUS REV.