

[20 de Septiembre del 2019]
Proyecto CNC

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Ingeneria en Mecatronica
Universidad Politecnica
Primer Avance de Proyecto
Cinematica de Robots

Desarrollo de un Robot serial del tipo CNC,

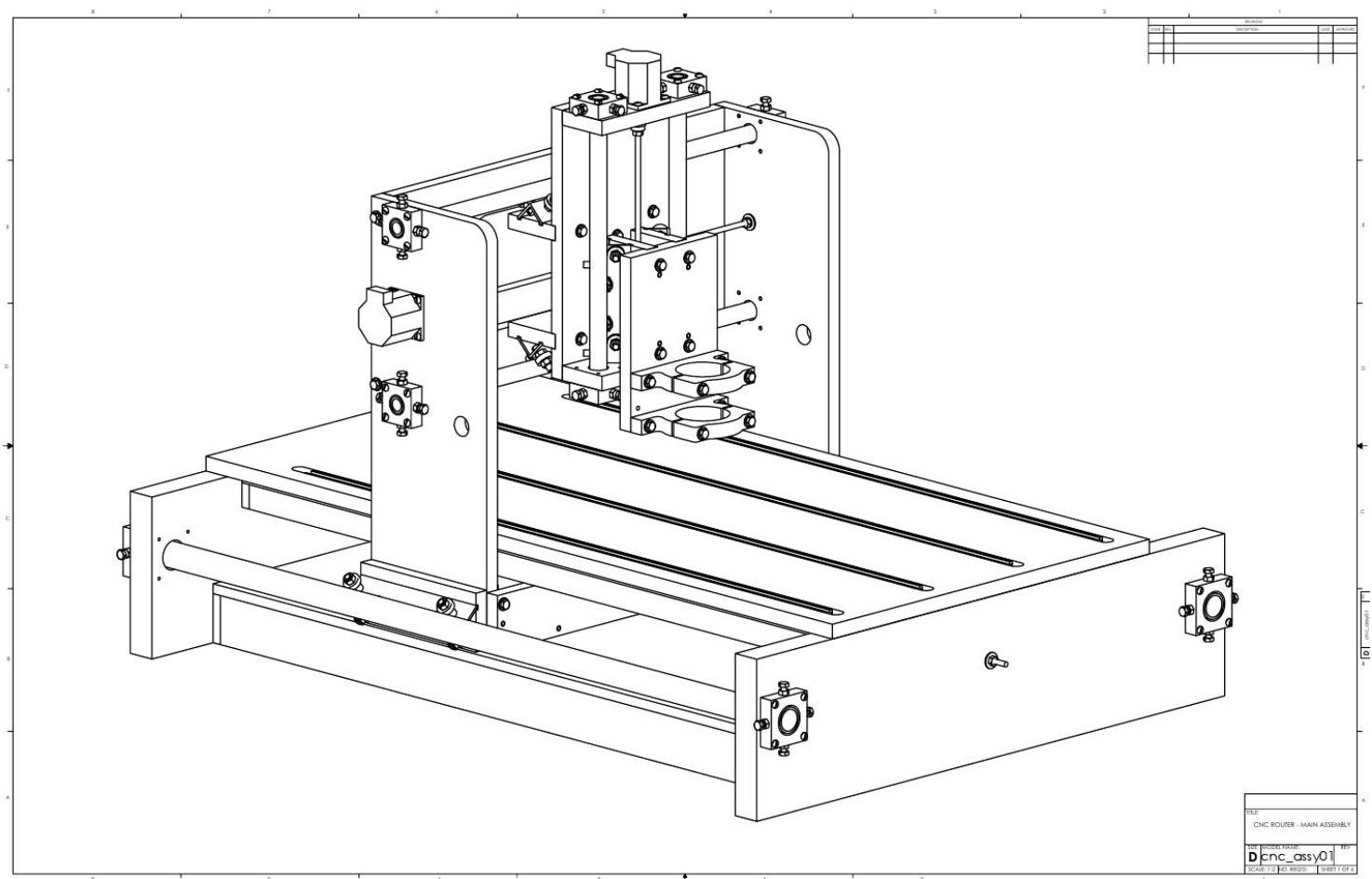
Definicion de Materia: La cinemática de robots La cinemática de un robot es el estudio de los movimientos de un robot. En un análisis cinemático la posición, velocidad y aceleración de cada uno de los elementos del robot son calculados sin considerar las fuerzas que causan el movimiento. La relación entre el movimiento y las fuerzas asociadas son estudiadas en la dinámica de robots.

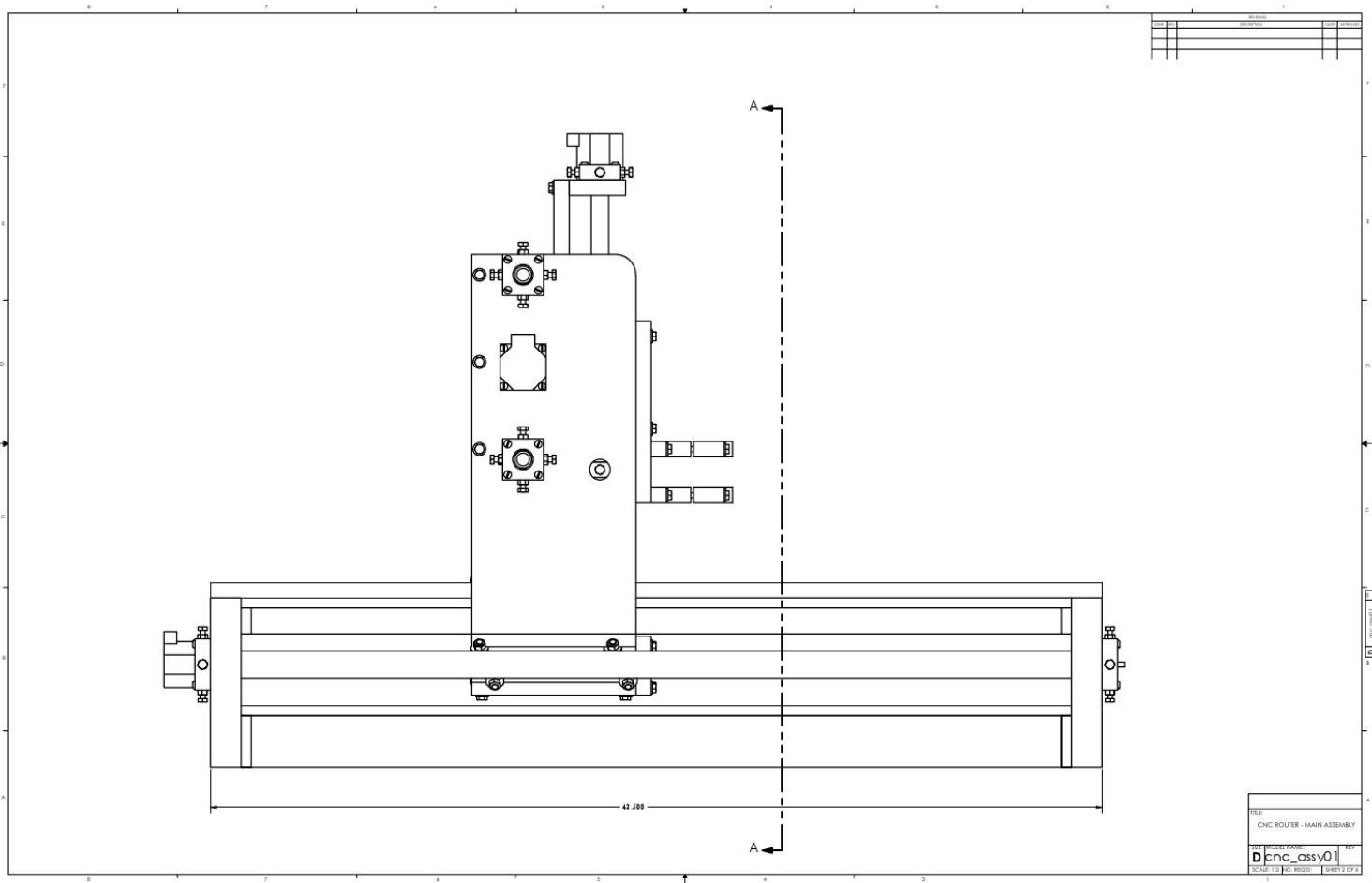
Propósito de Materia: El propósito de esta materia es el conocimiento de los tipos de robots industriales donde se pide la elaboración de un robot serial como proyecto a realizar para el período séptimo cuatrimestre, y la elaboración del robot serial será, de tipo CNC.

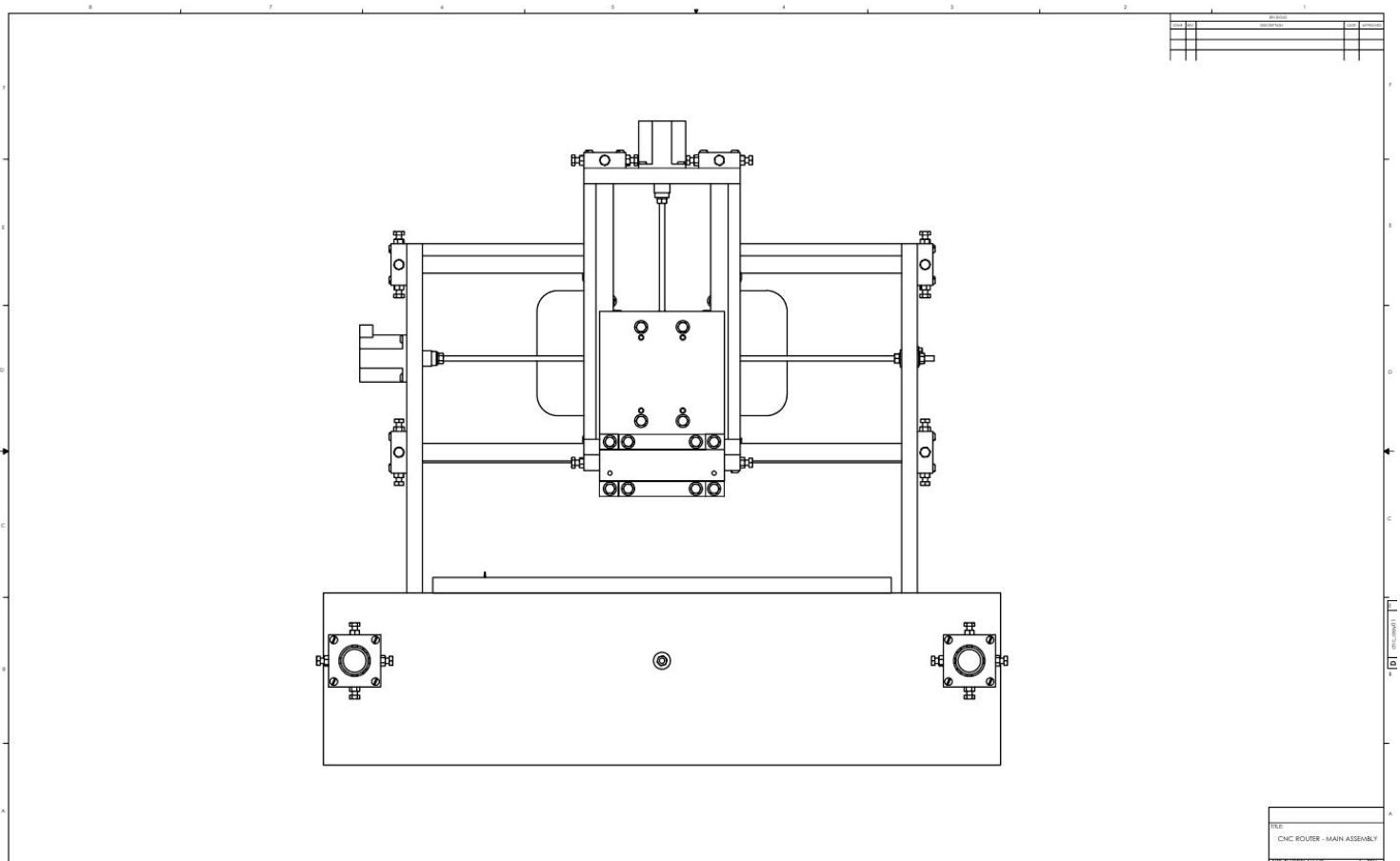
Rubrica para la entrega: Un robot CNC tiene 3 movimientos en particulares en el espacio es decir se mueve en el plano X en el plano Y y en el plano Z. Nuestra propuesta con el profesor fue aprobada por lo que se pide unas medidas estándares para la realización del robot. Las medidas: son 60cm X 60cm en Y mi 45 cm en Z.

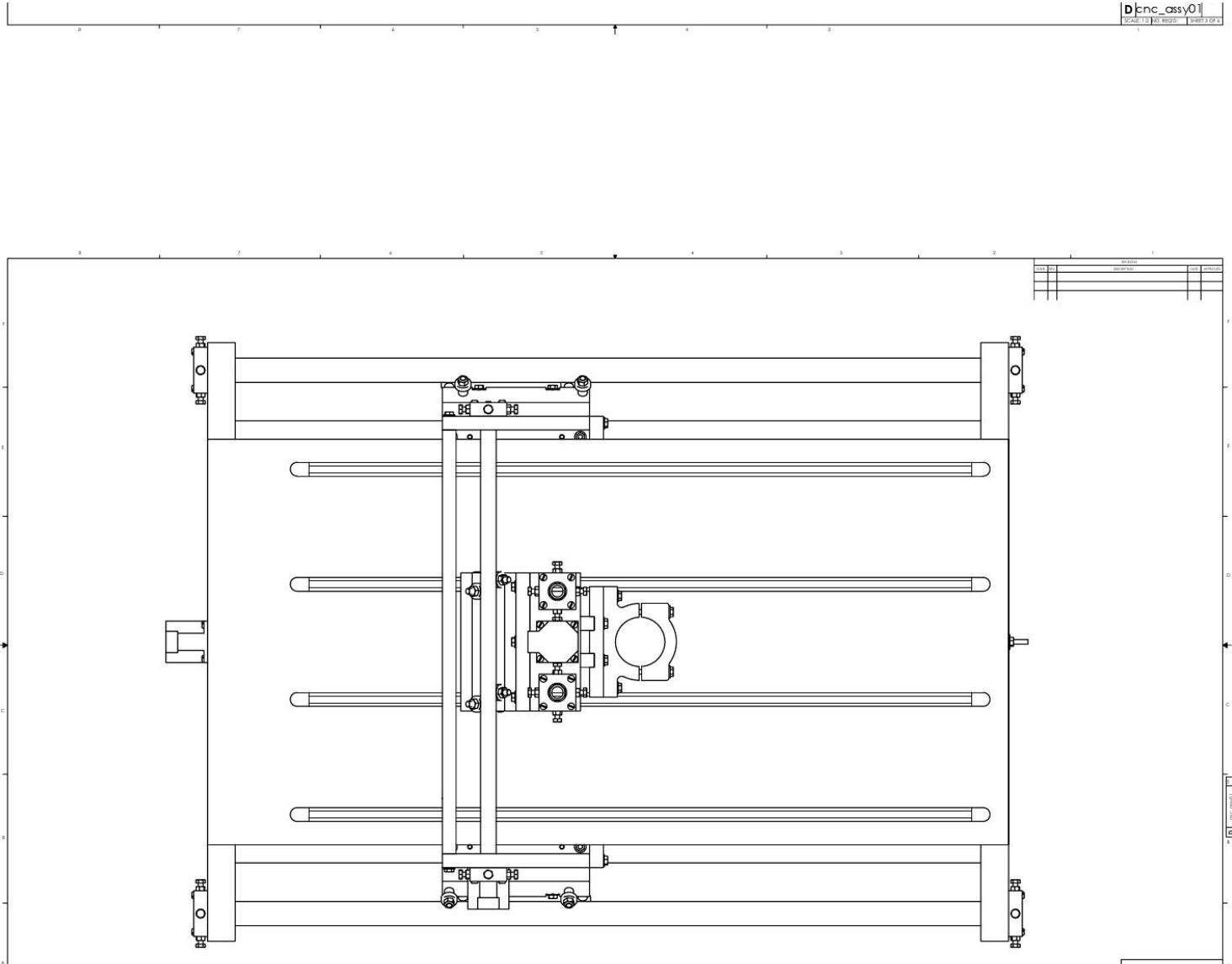
A continuacion adjunto los planos del Robot serial tipo CNC.

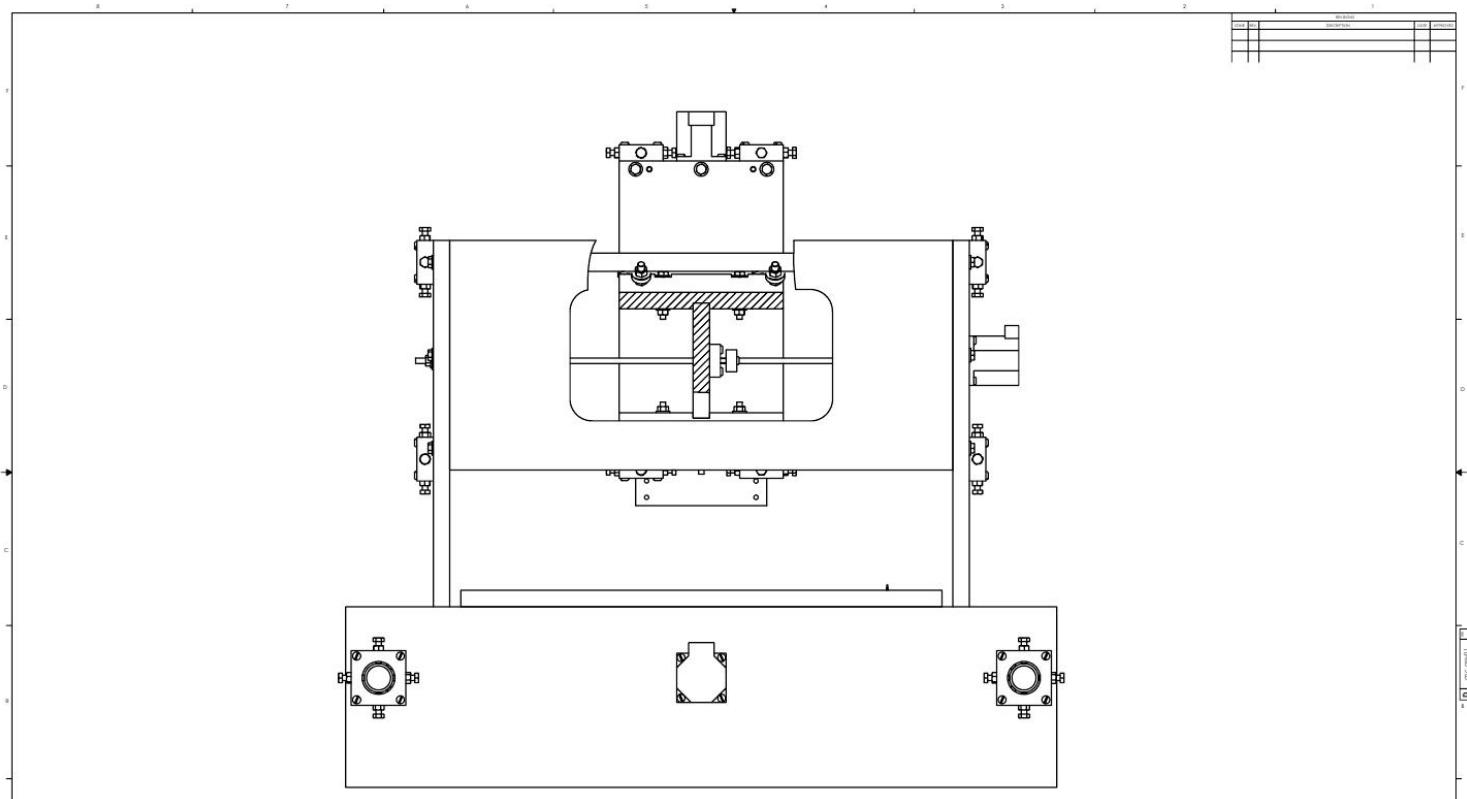
Everardo Estrella

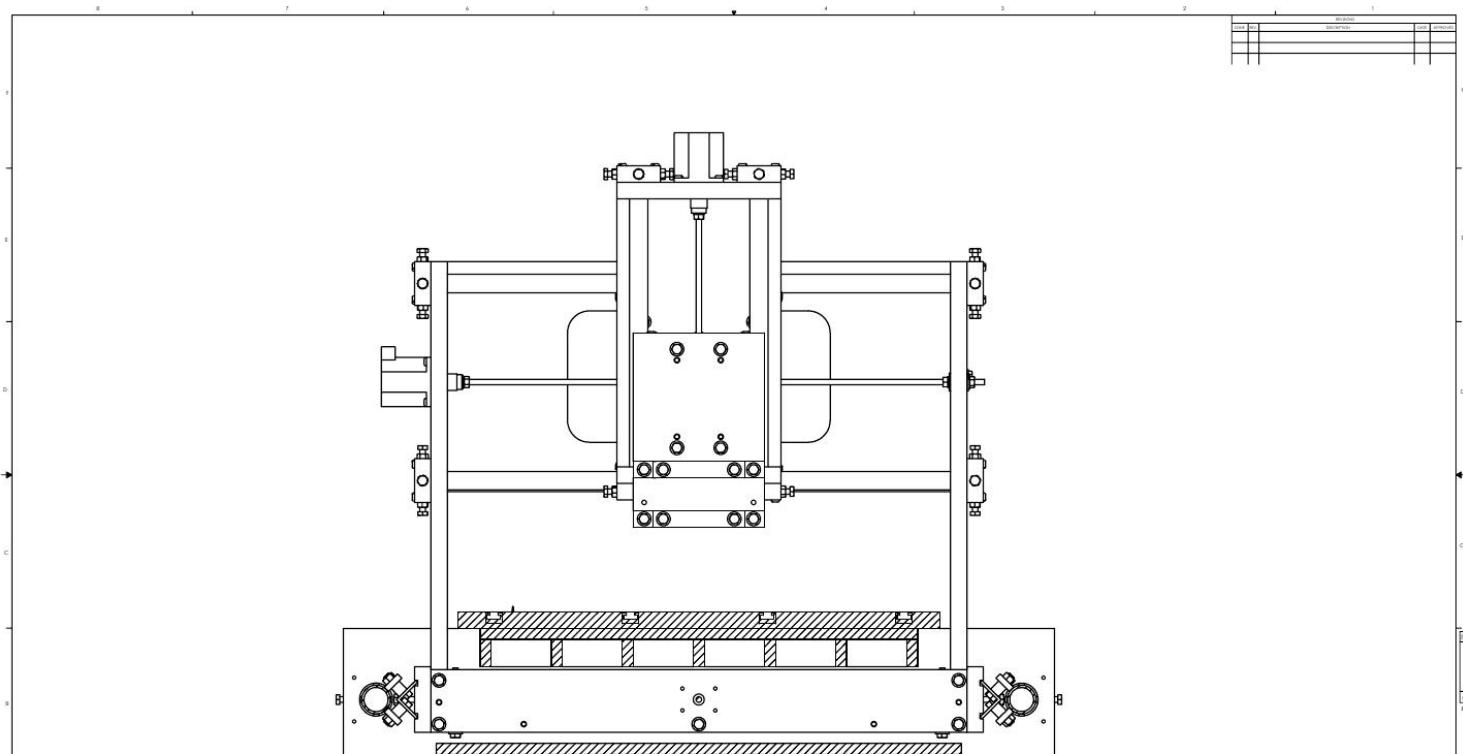
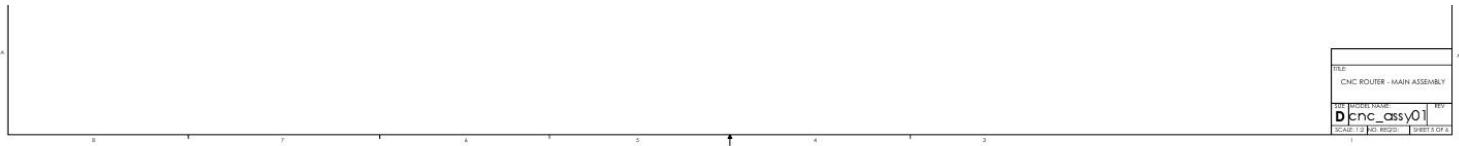


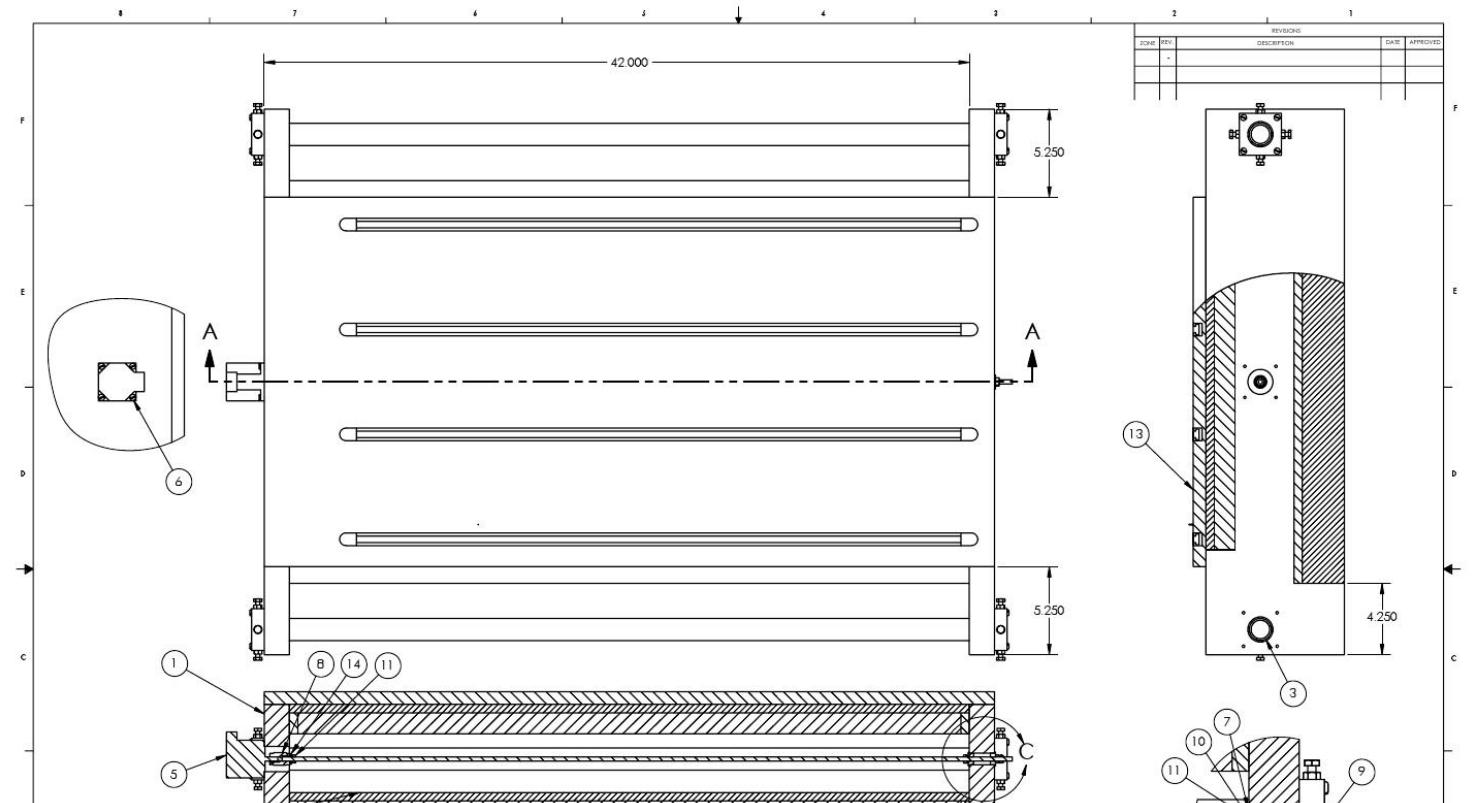
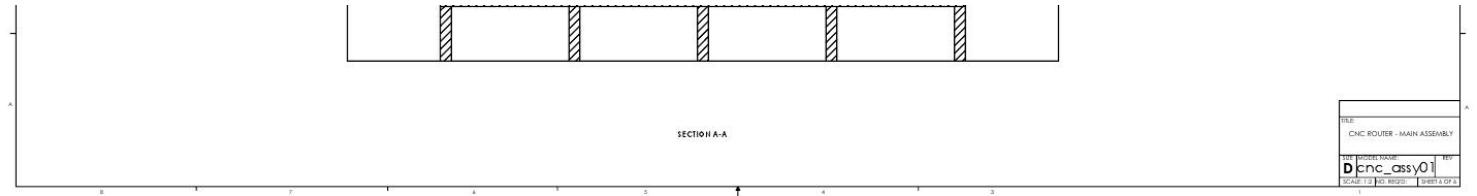


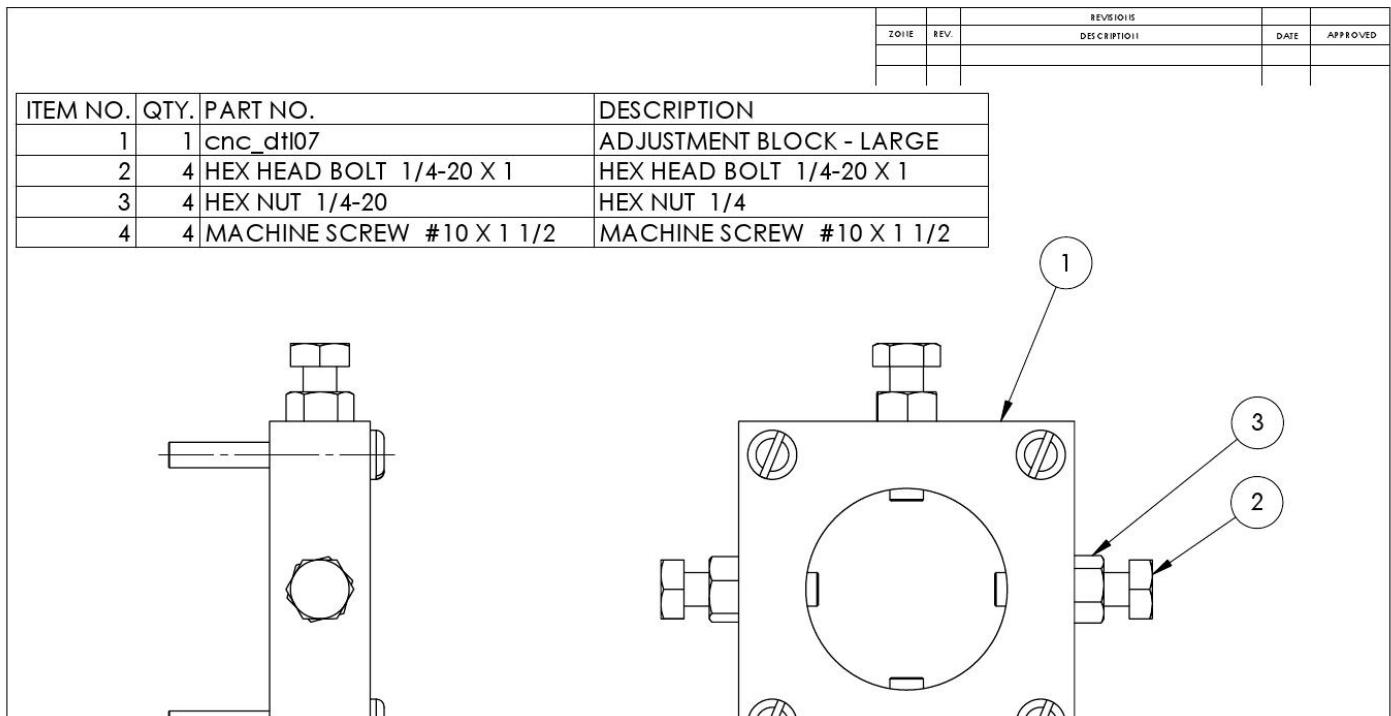
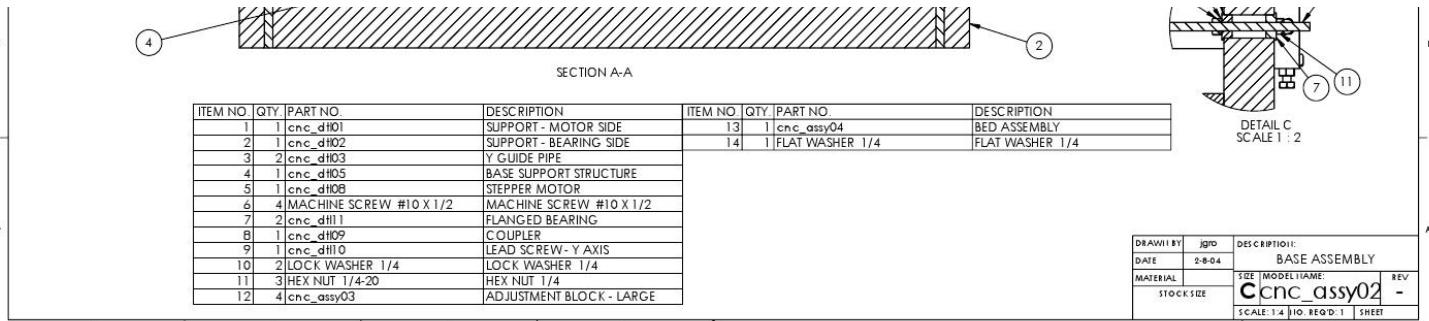


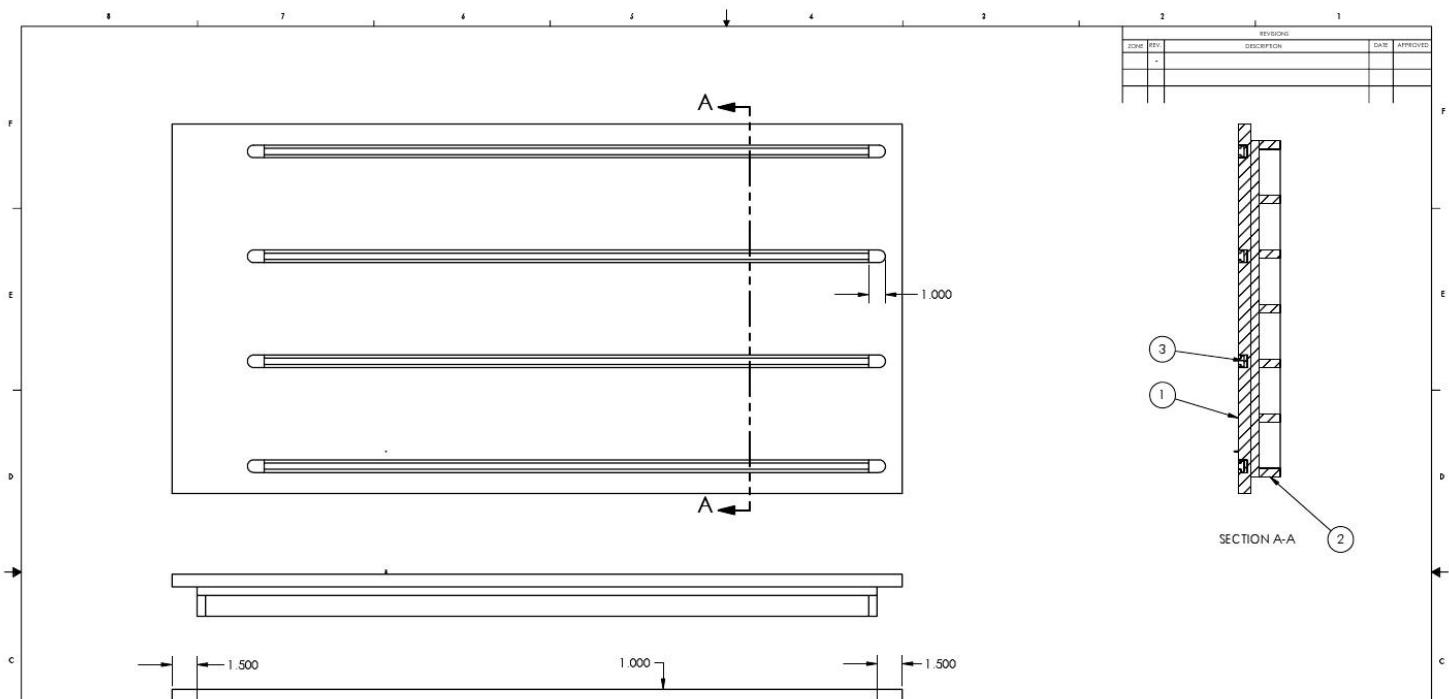
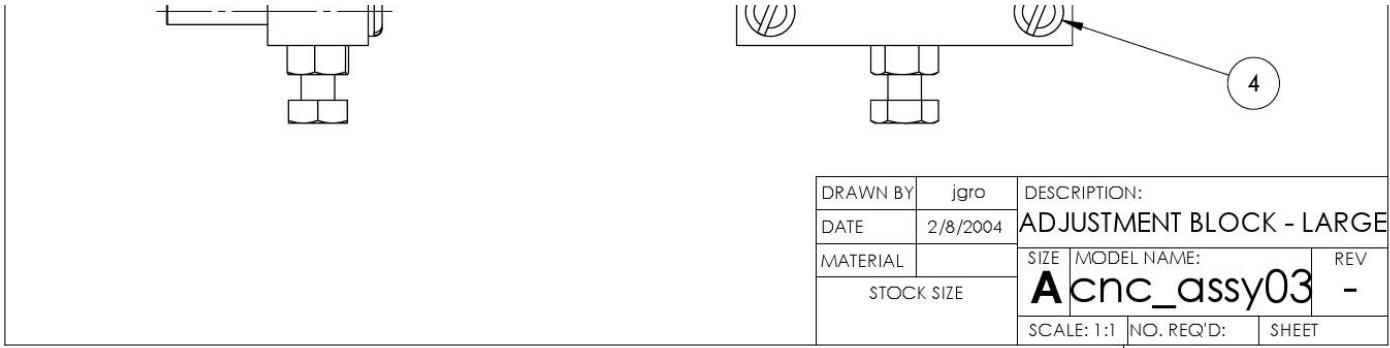


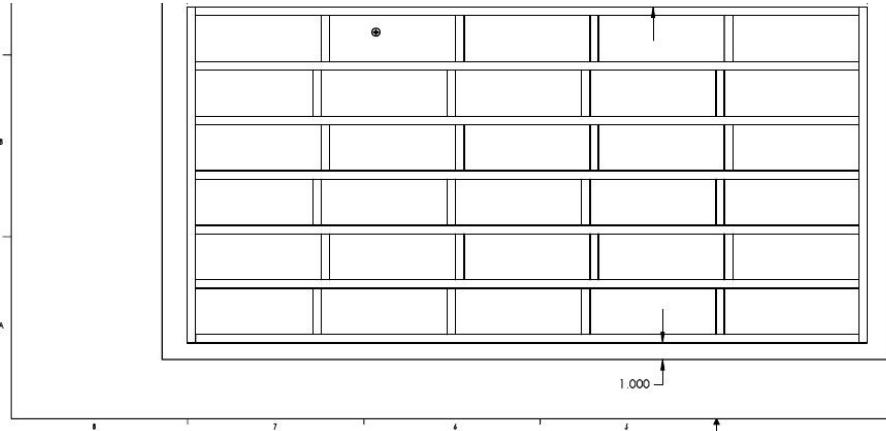










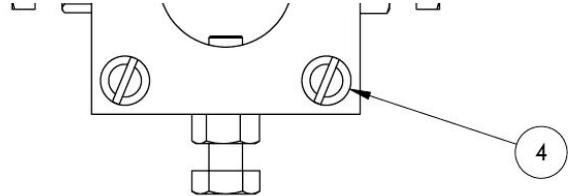
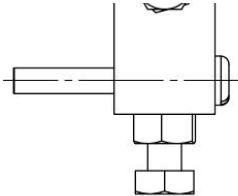


ITEM NO	QTY	PART NO	DESCRIPTION
1	1	cnc_dt04	CUTTING RFD.
2	1	cnc_dt06	BED SUPPORT
3	4	cnc_dfl12	HOLD DOWN CHANNEL
4	1	wood_screw	WOOD SCREW

DRAWN BY: JGD DATE: 0-8-04
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 STOCK SIZE: SCALE: 1:4 10. REQS: 1 SHEET

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE

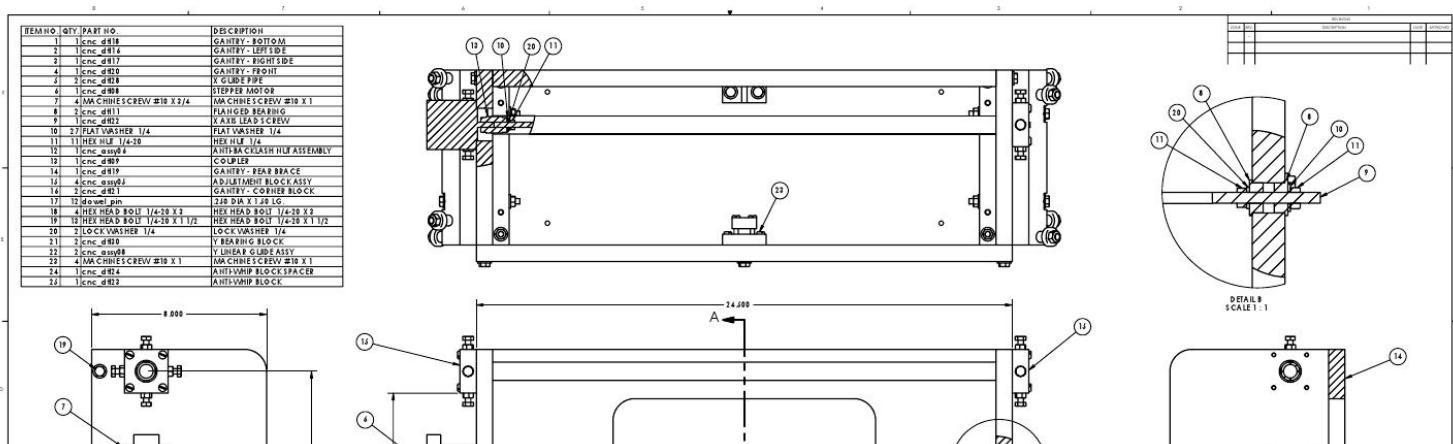
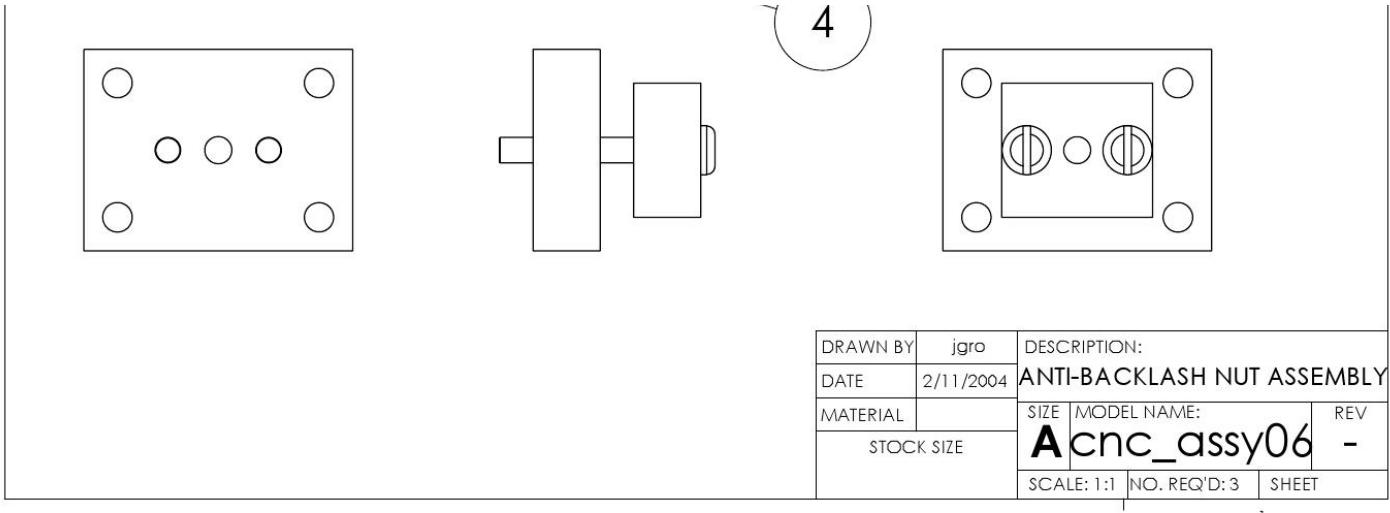
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1	1	cnc_dt13	ADJUSTMENT BLOCK - SMALL
2	4	HEX HEAD BOLT 1/4-20 X 1	HEX HEAD BOLT 1/4-20 X 1
3	4	HEX NUT 1/4-20	HEX NUT 1/4
4	4	MACHINE SCREW #10 X 1 1/2	MACHINE SCREW #10 X 1 1/2

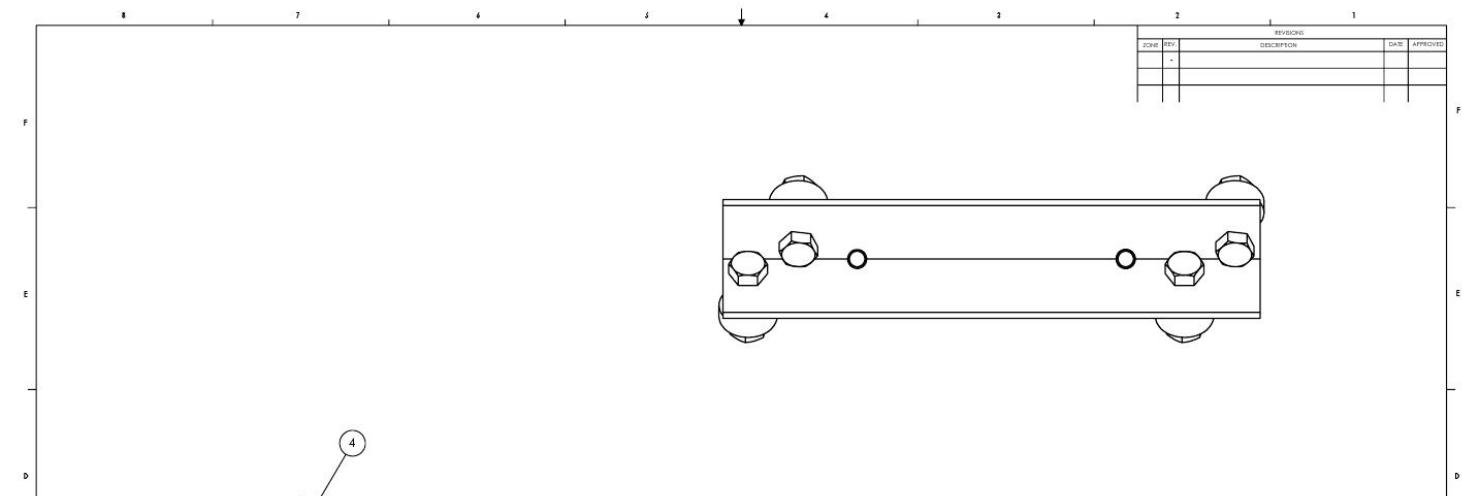
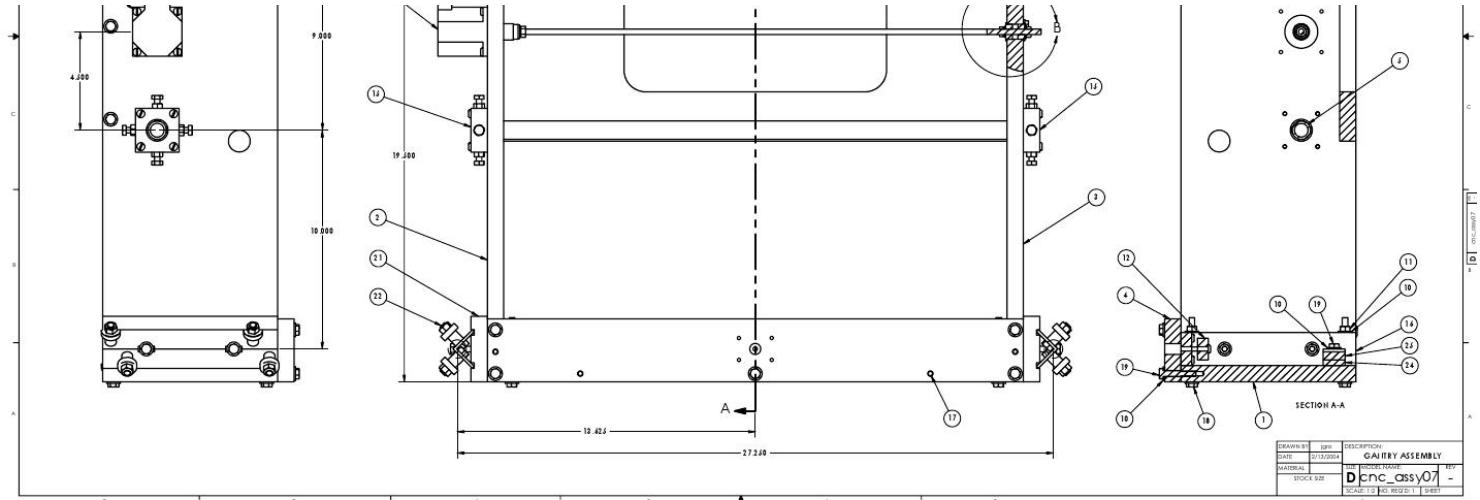


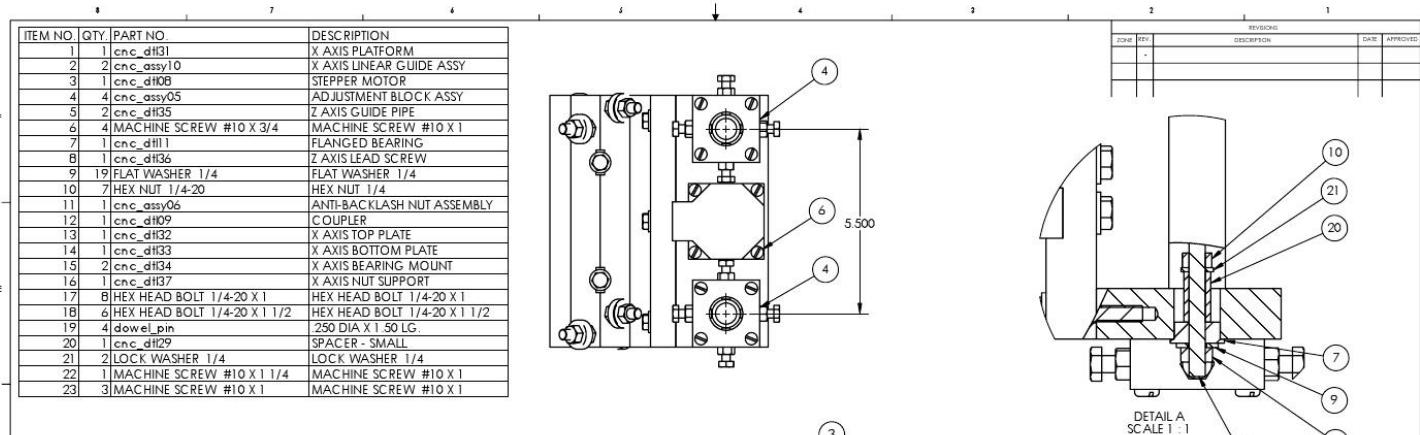
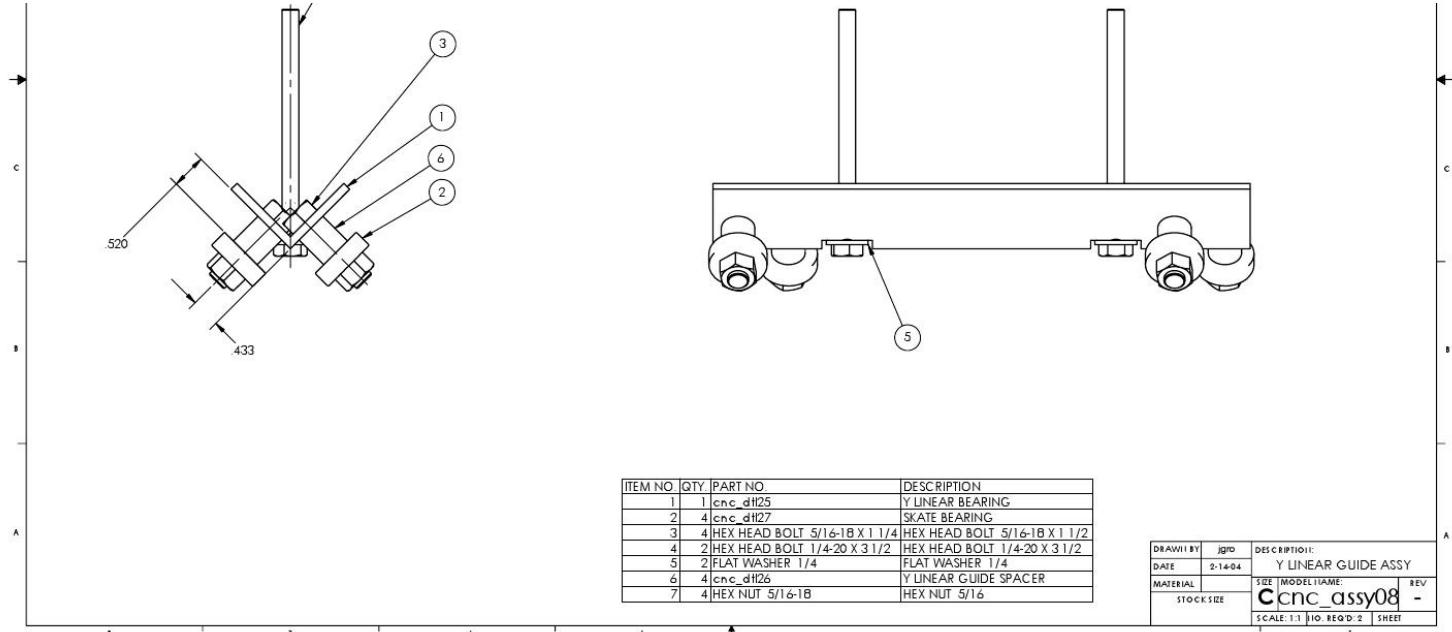
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MATERIAL		SIZE MODEL NAME: REV
STOCK SIZE		A cnc_assy05 -
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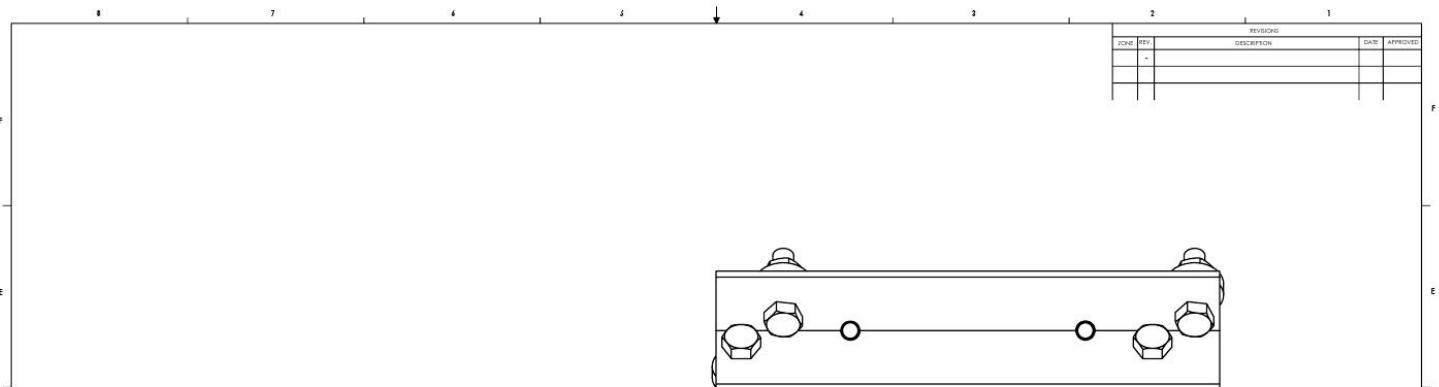
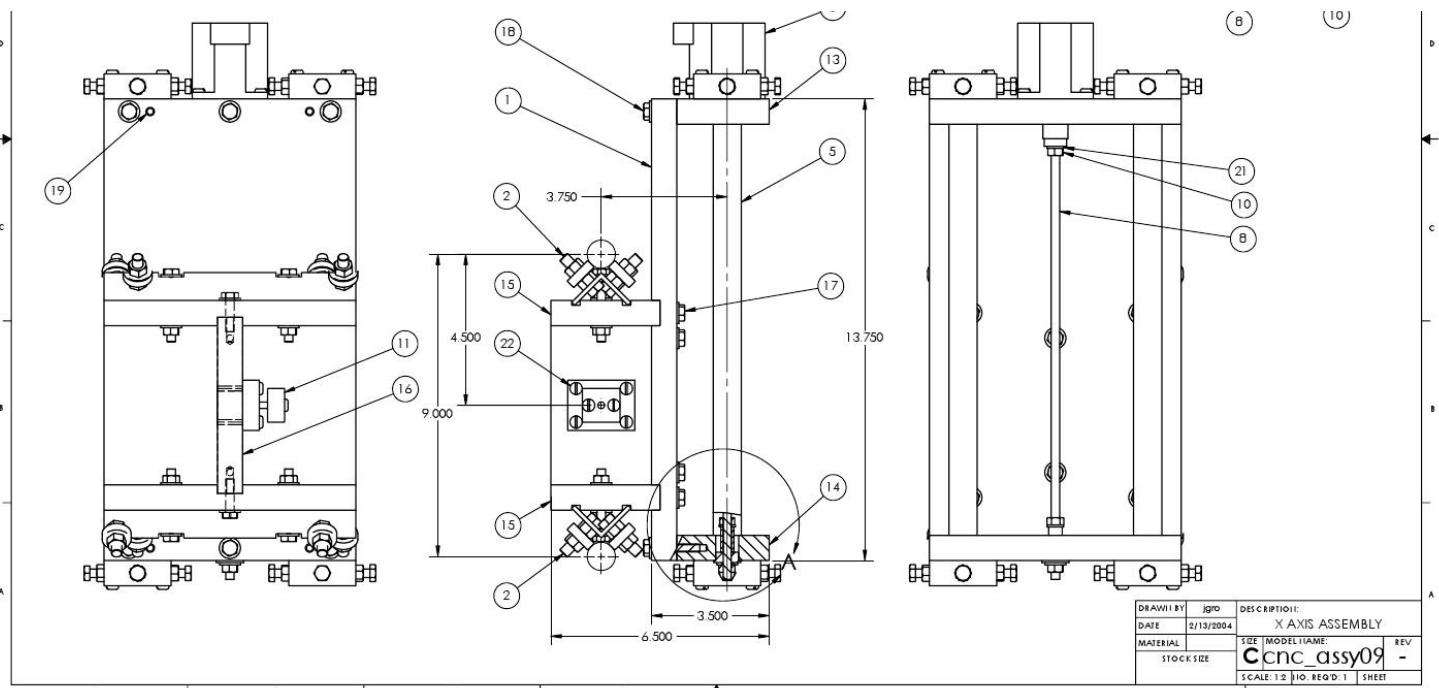
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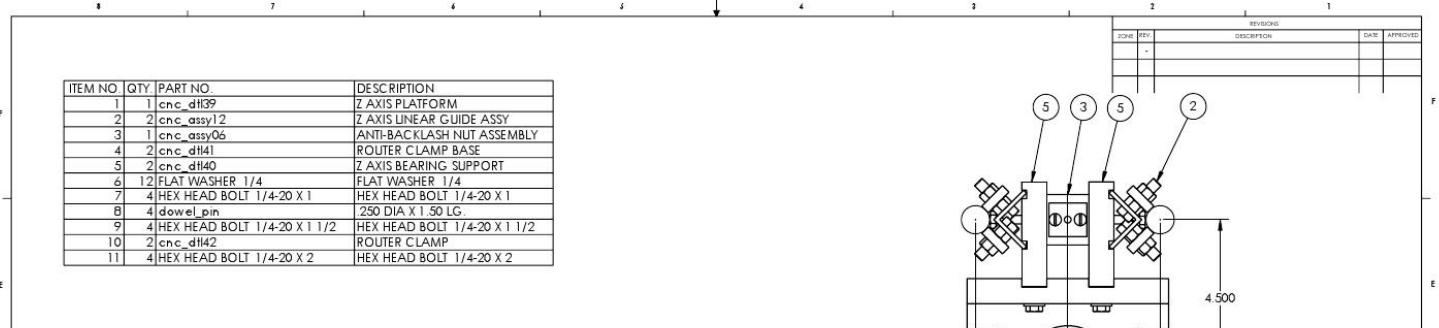
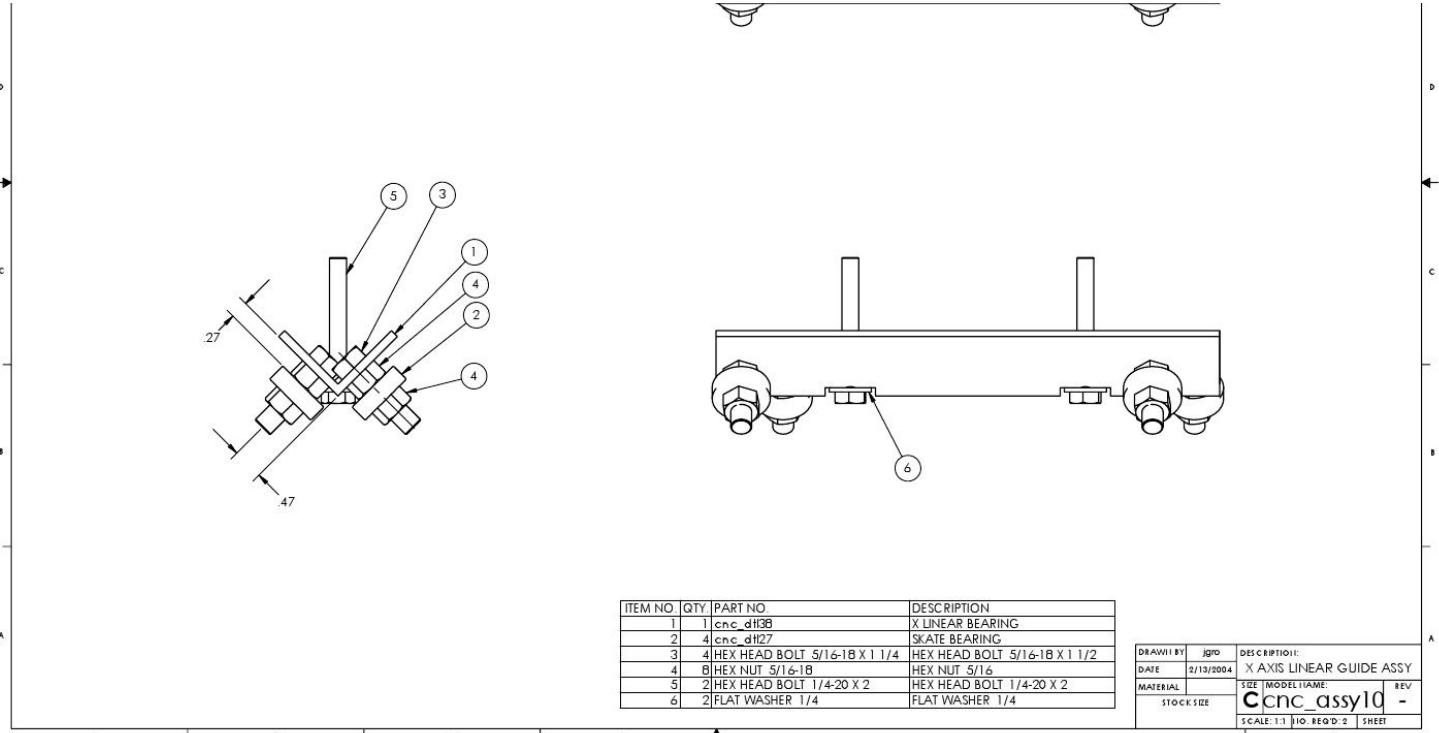
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			ZONE	REV.	DESCRIPTION	DATE	APPROVED
1	1	cnc_dtl15			NUT TENSIONER		
3	2	MACHINE SCREW #10 X 1 1/2			MACHINE SCREW #10 X 1 1/2		
4	1	cnc_dtl14			ANTI-BACKLASH NUT		

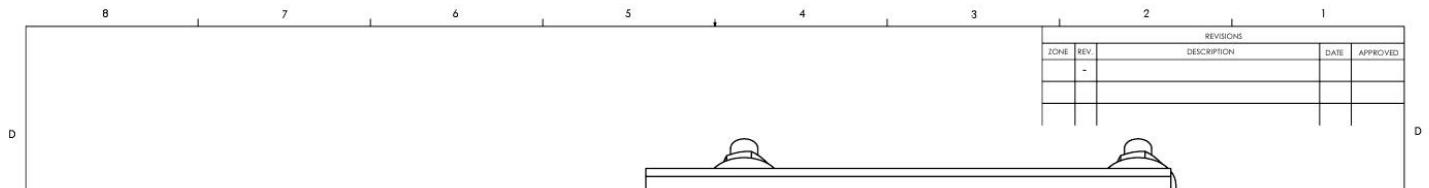
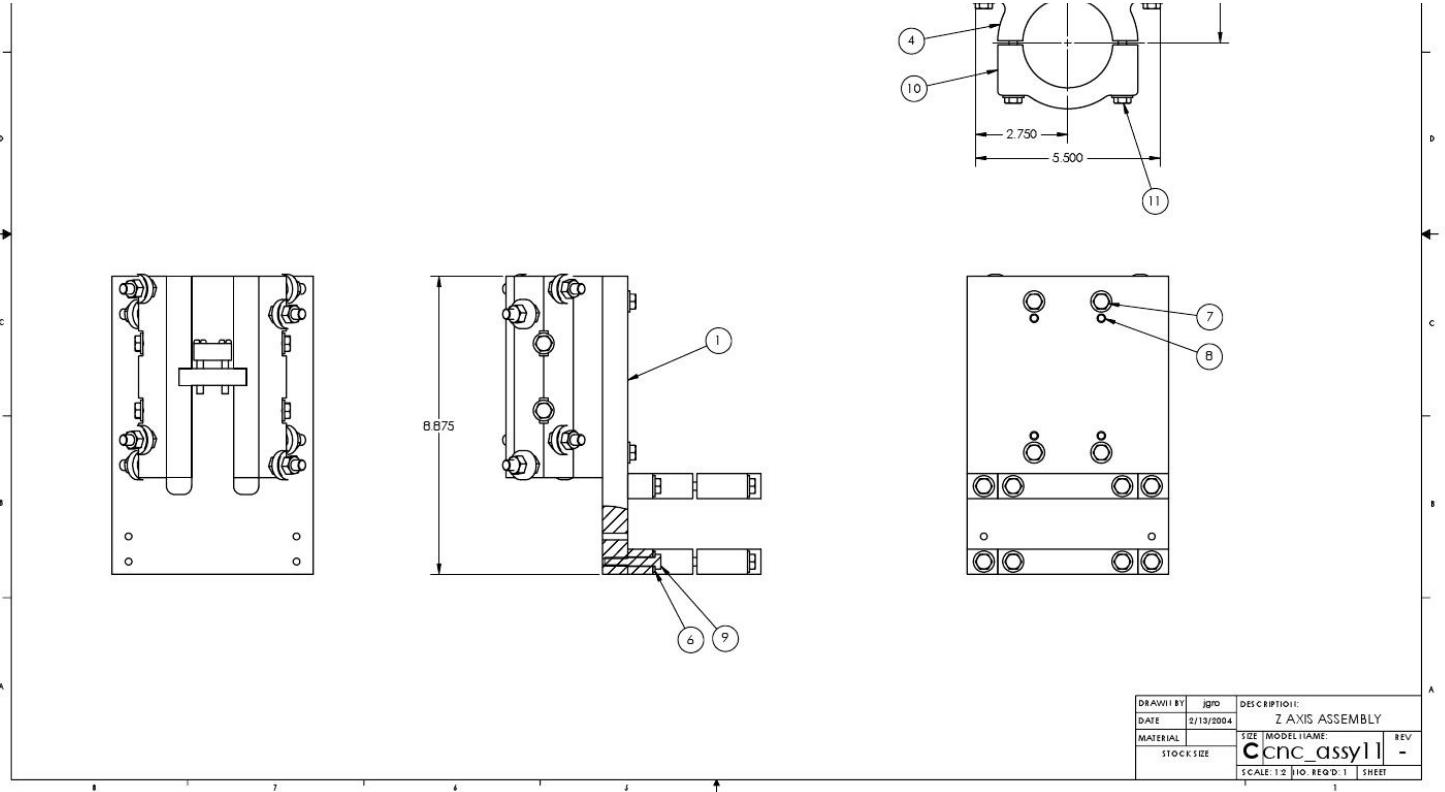


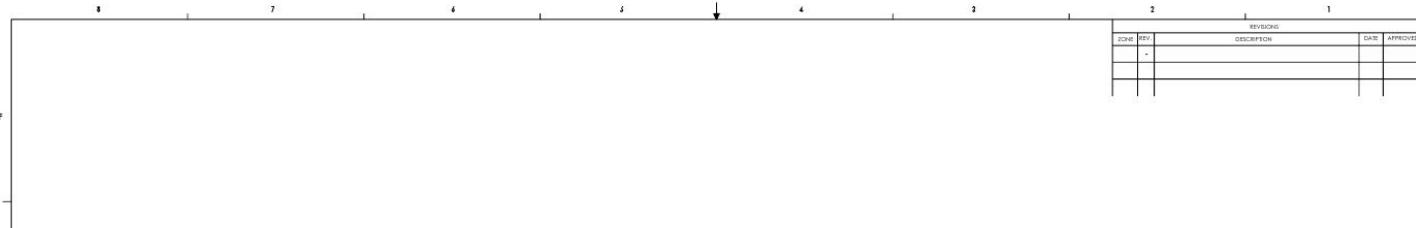
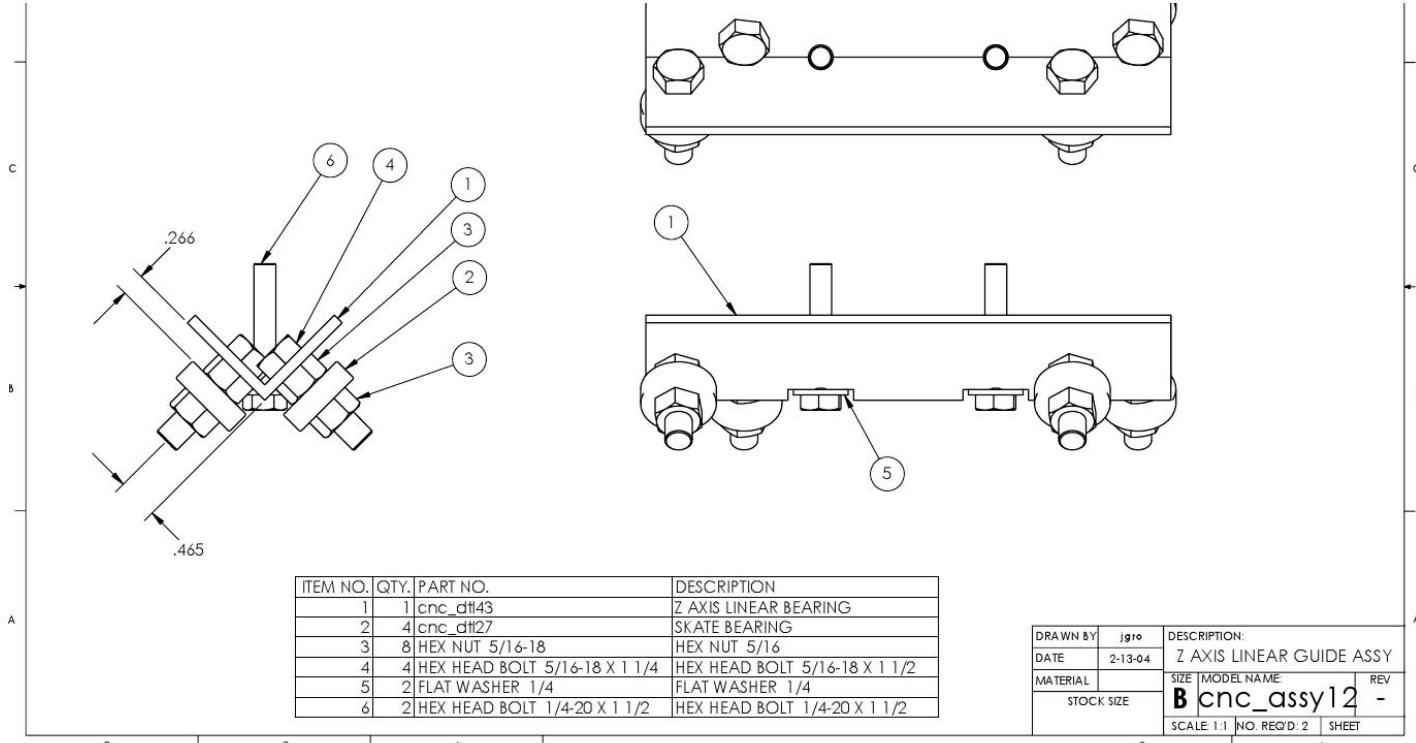


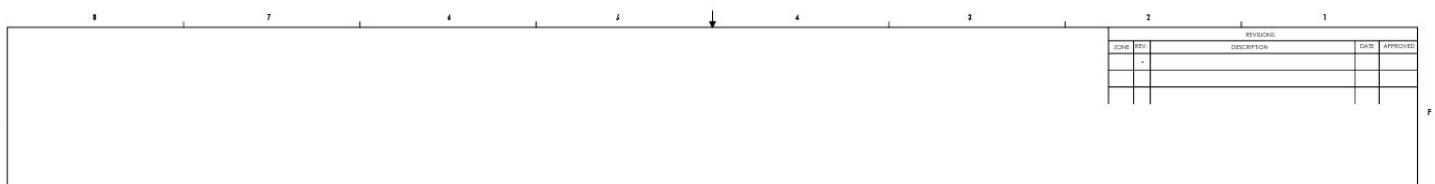
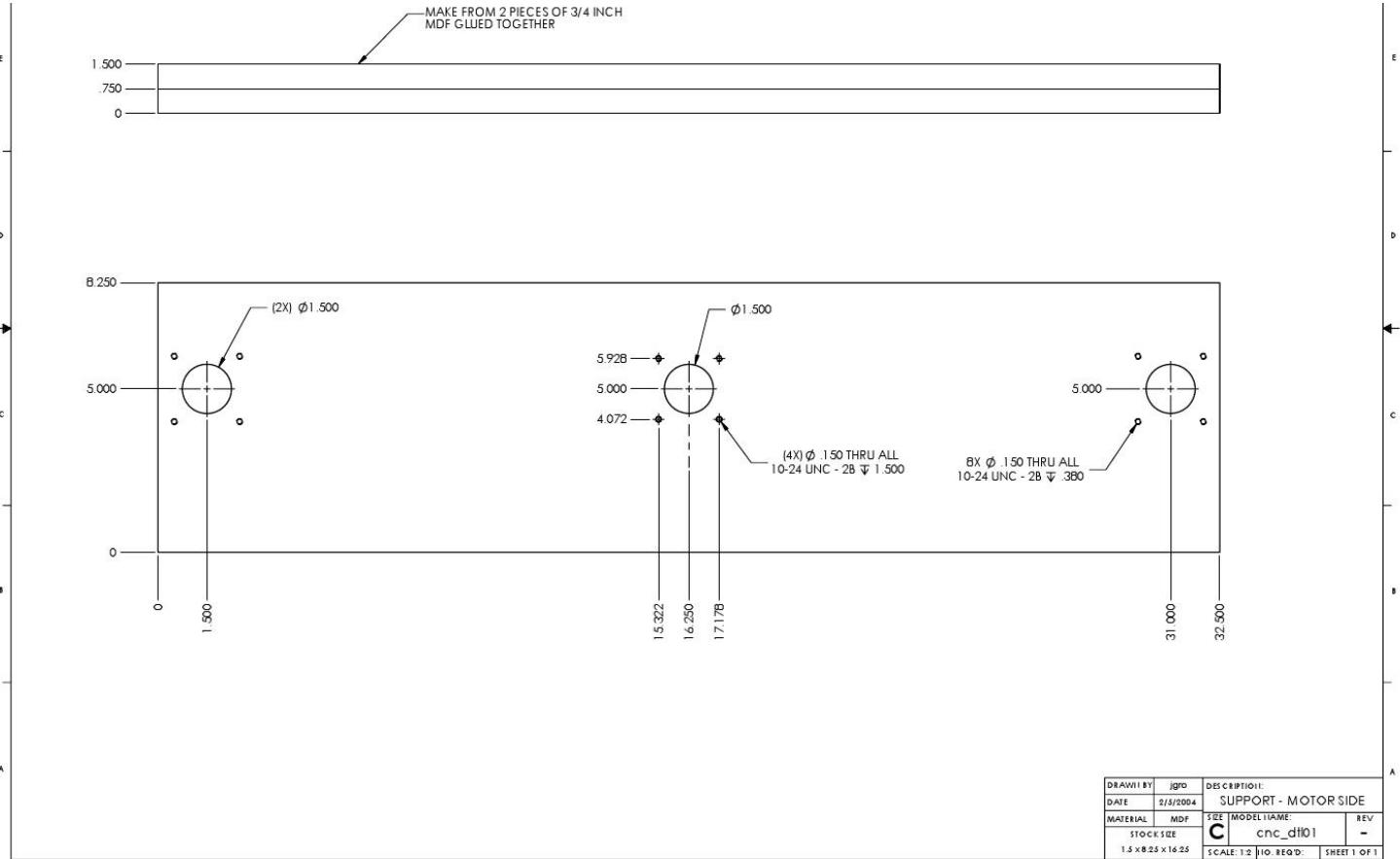


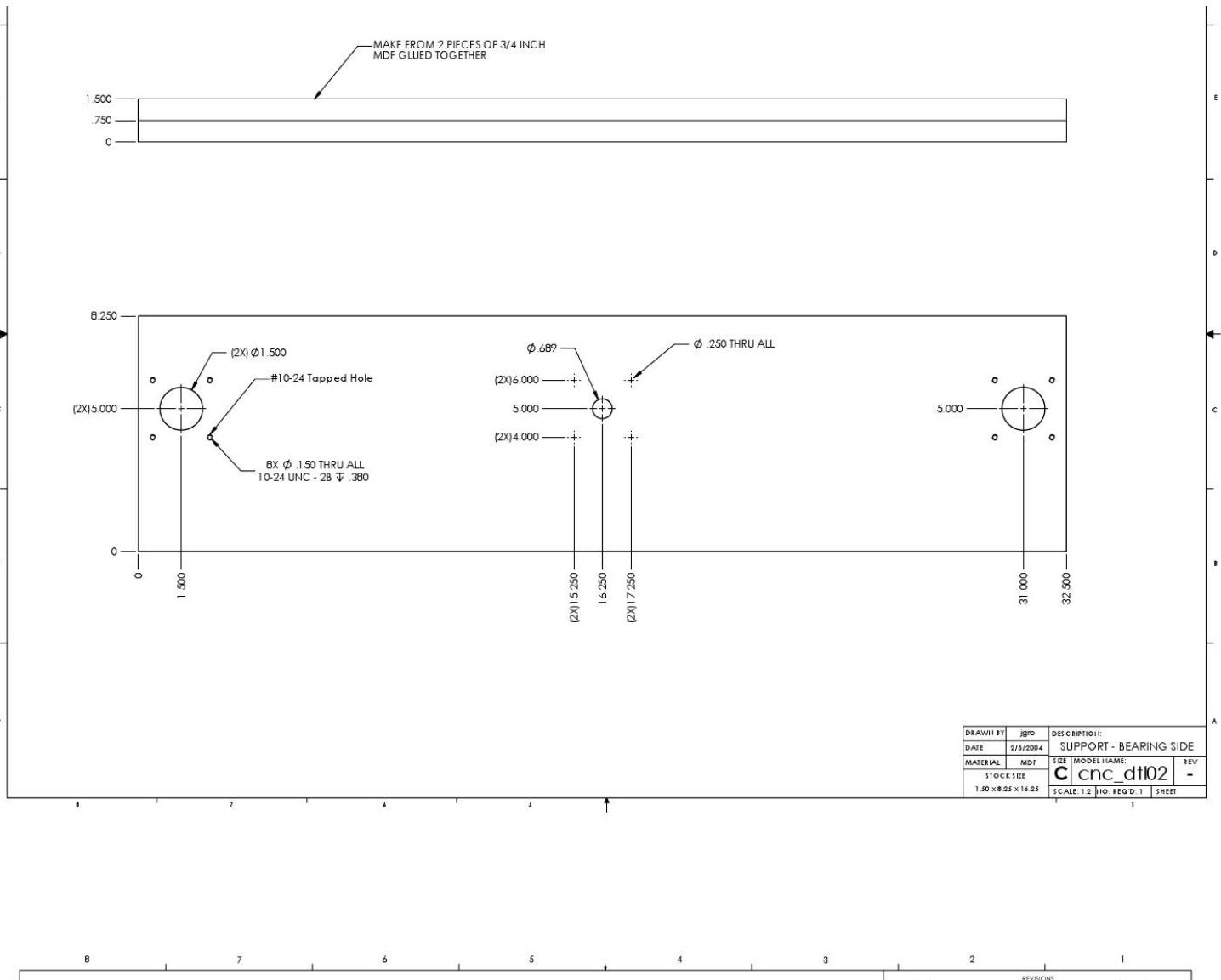


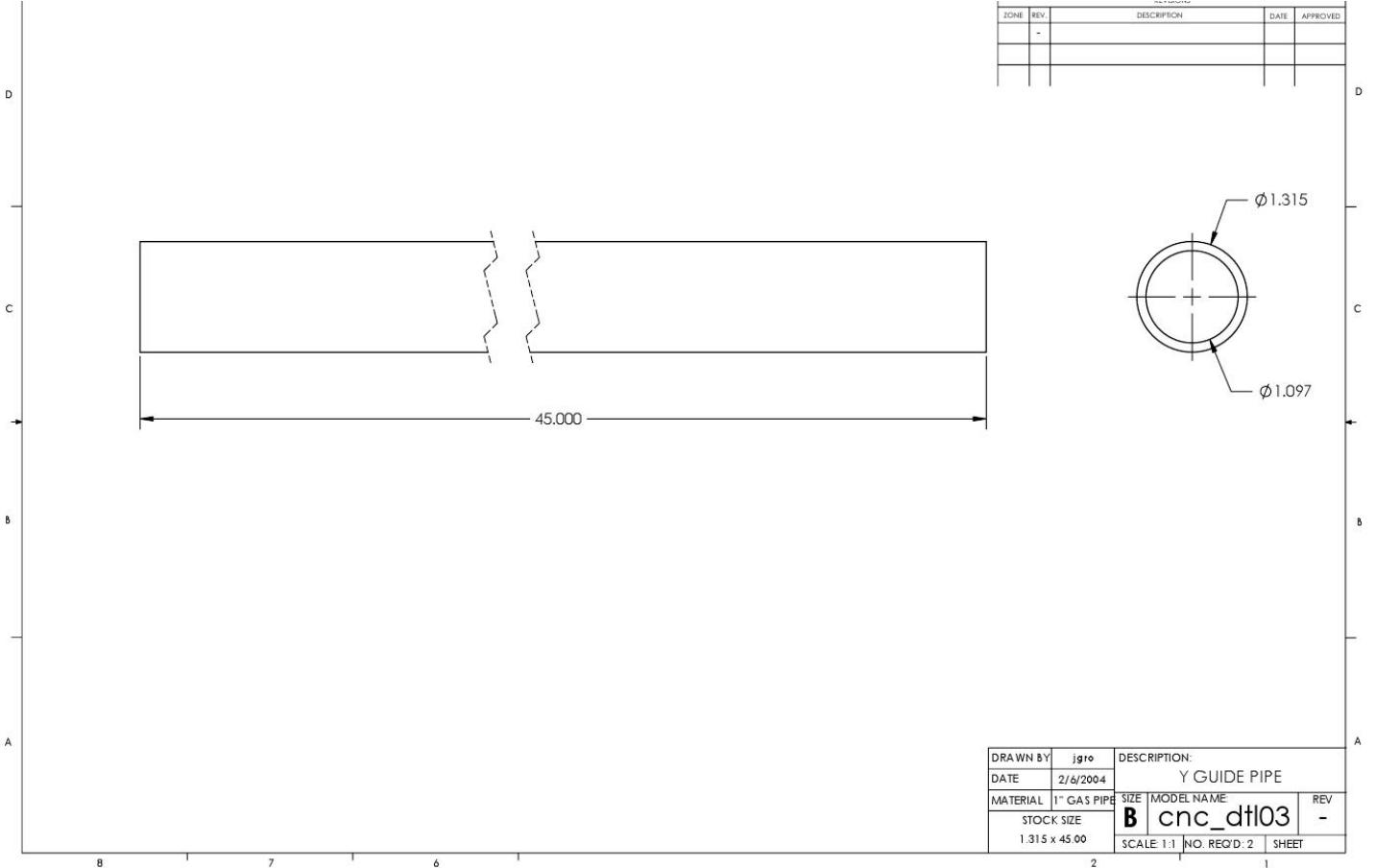


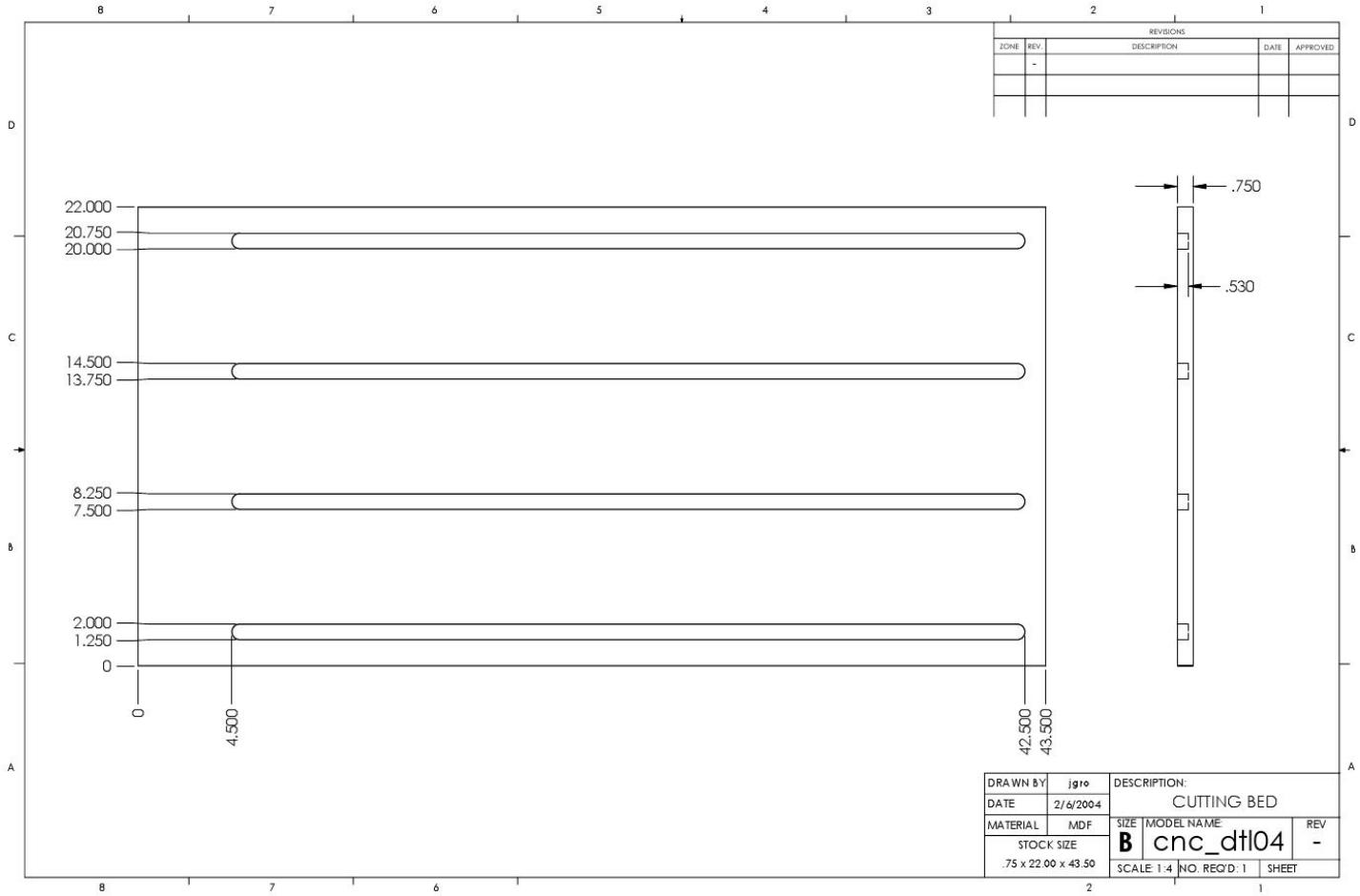


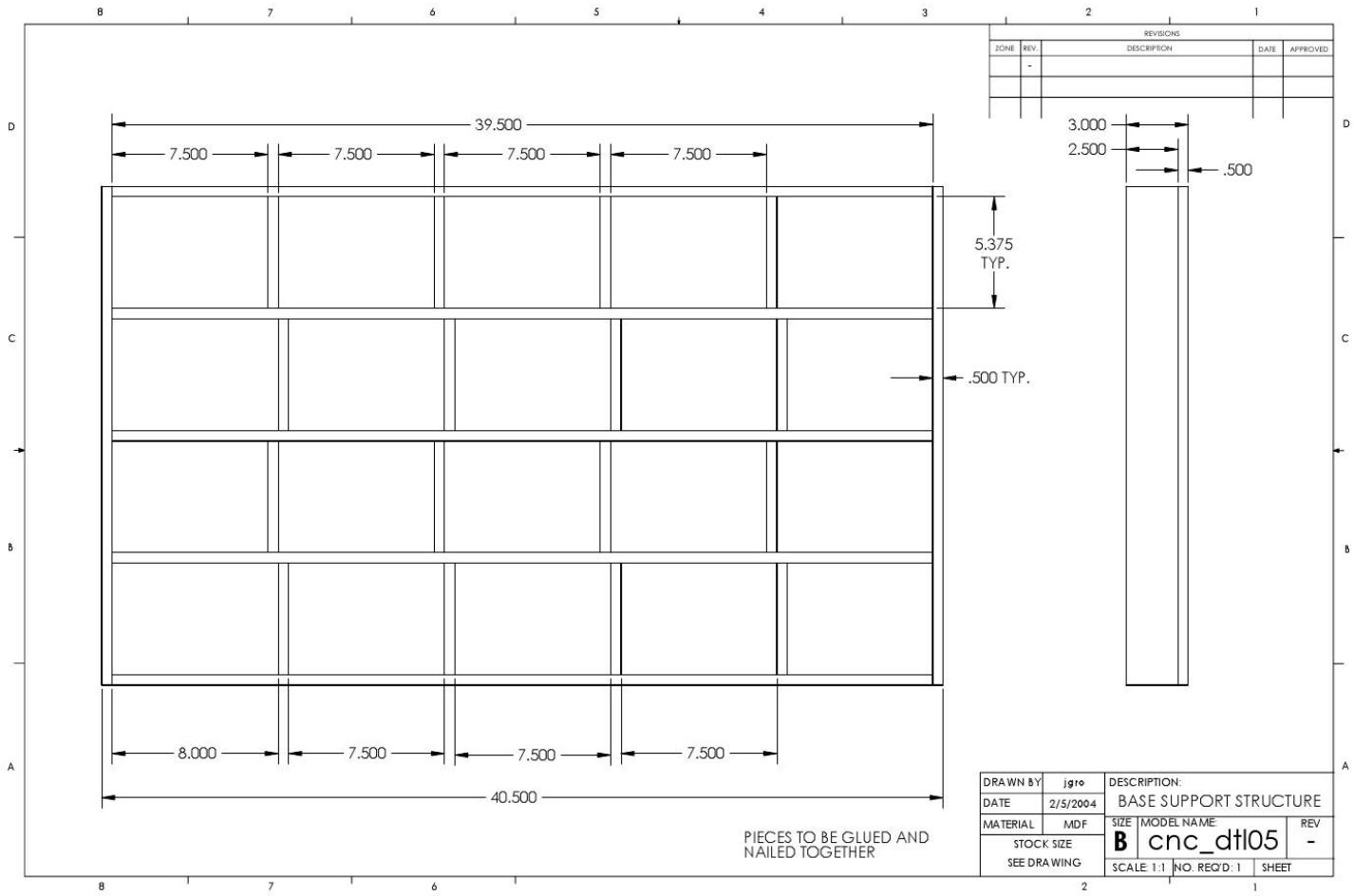


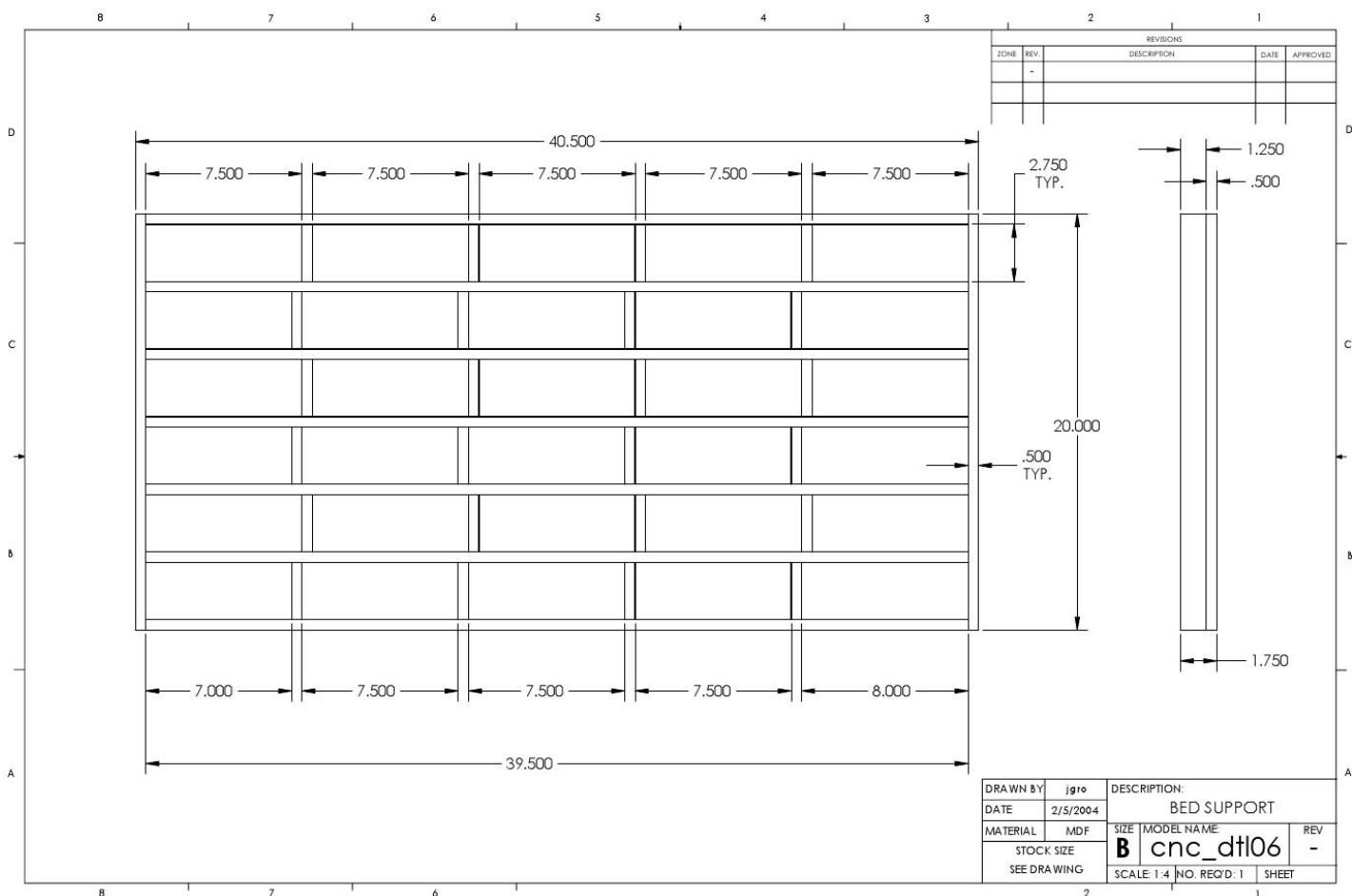


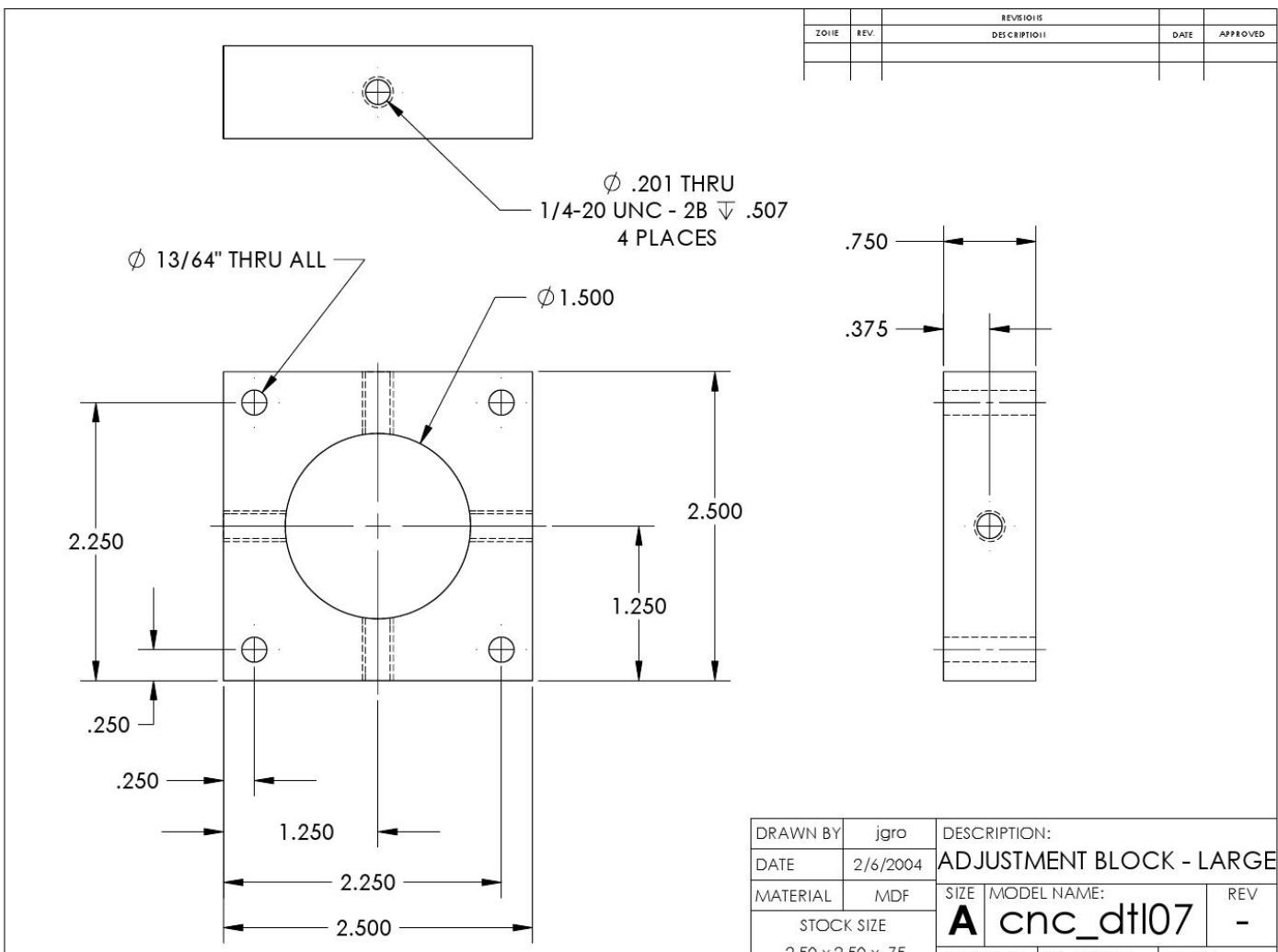


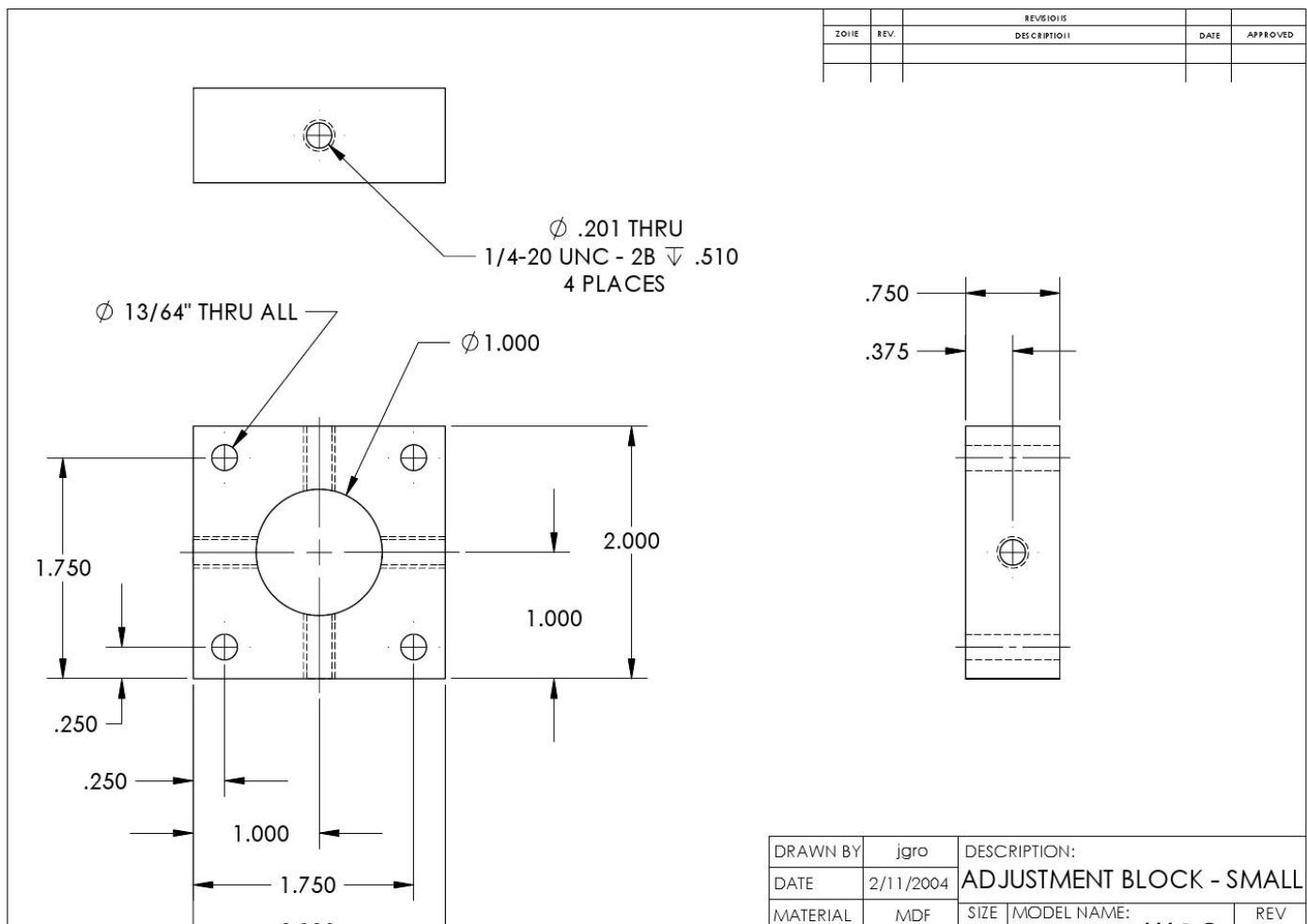












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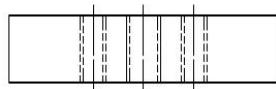
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A|cnc_dt113| -

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ϕ .201 THRU ALL
1/4-20 UNC - 2B THRU ALL

Ø .150 THRU ALL
- 10-24 UNC - 2B THRU ALL

—→ | | ← .500

.250 → ←

.625

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12

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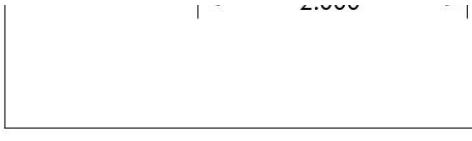
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DRAWN B

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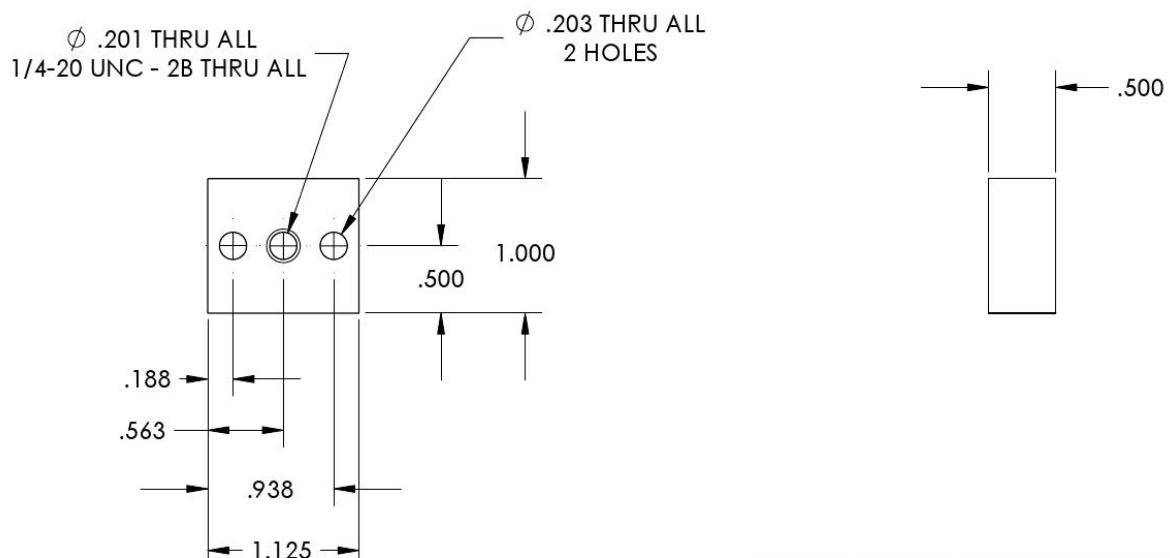
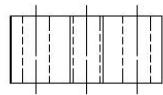
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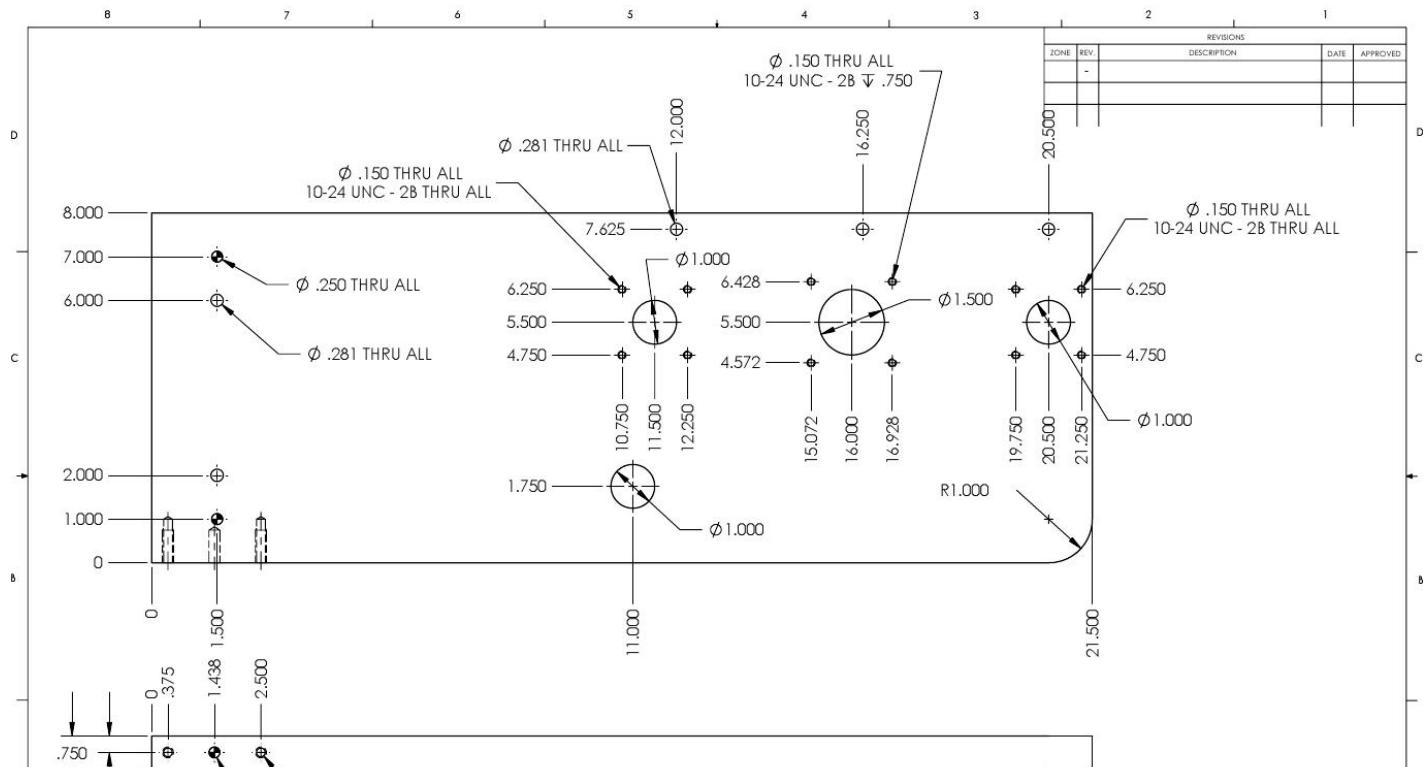
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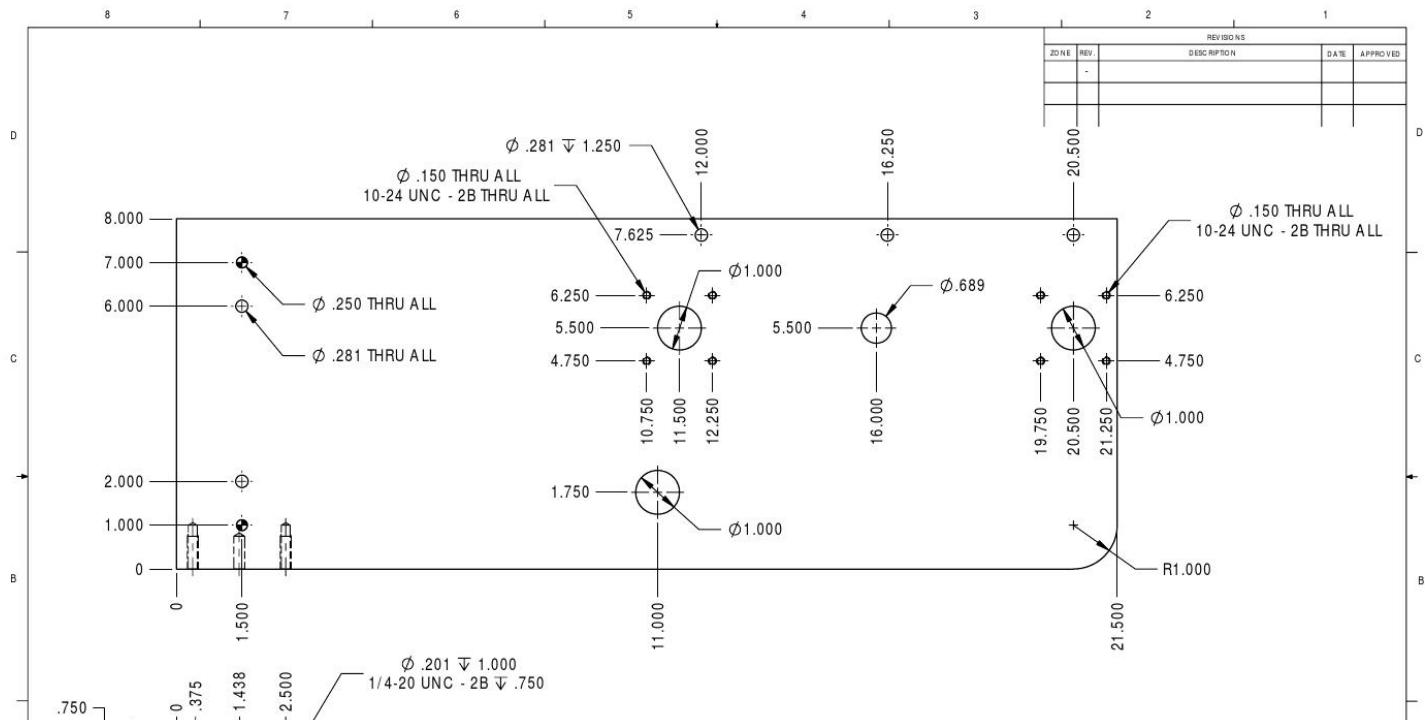
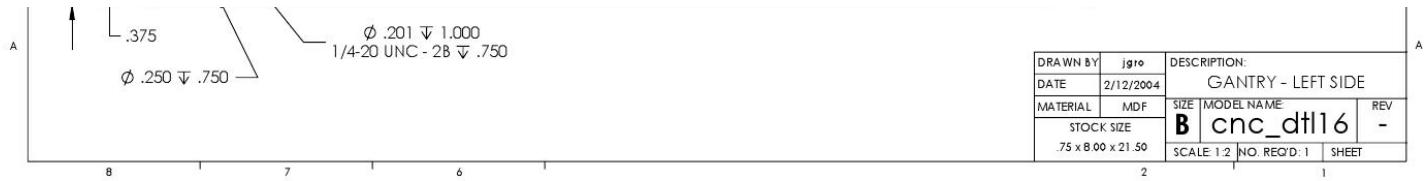
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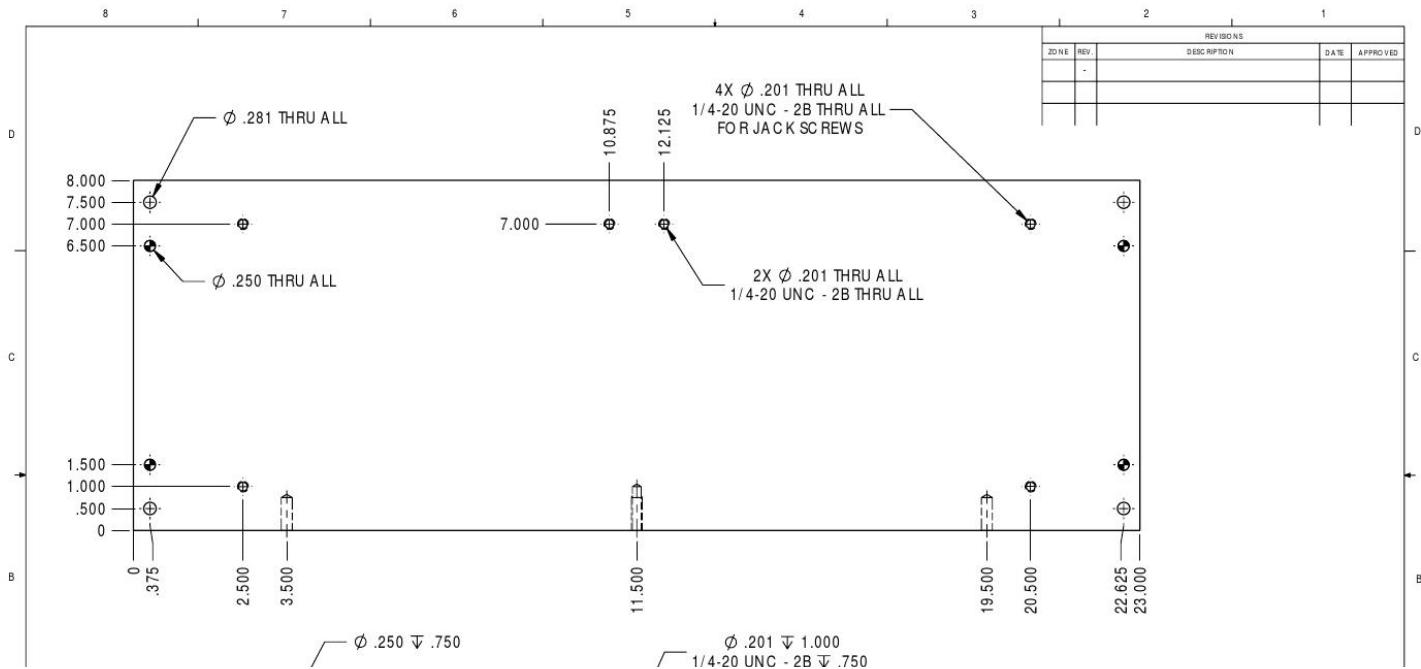
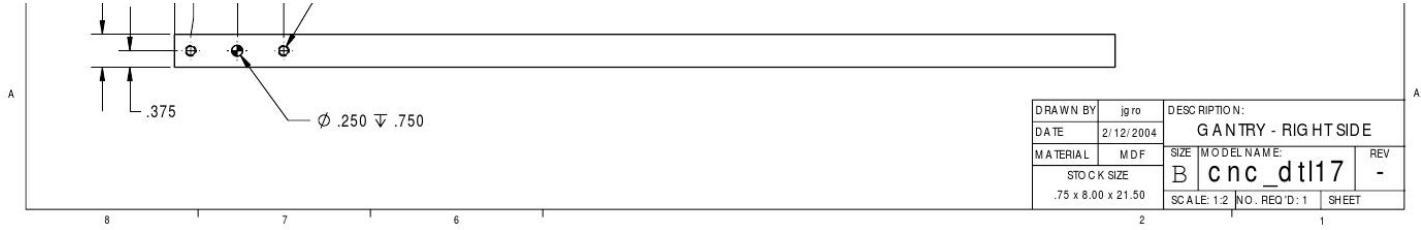
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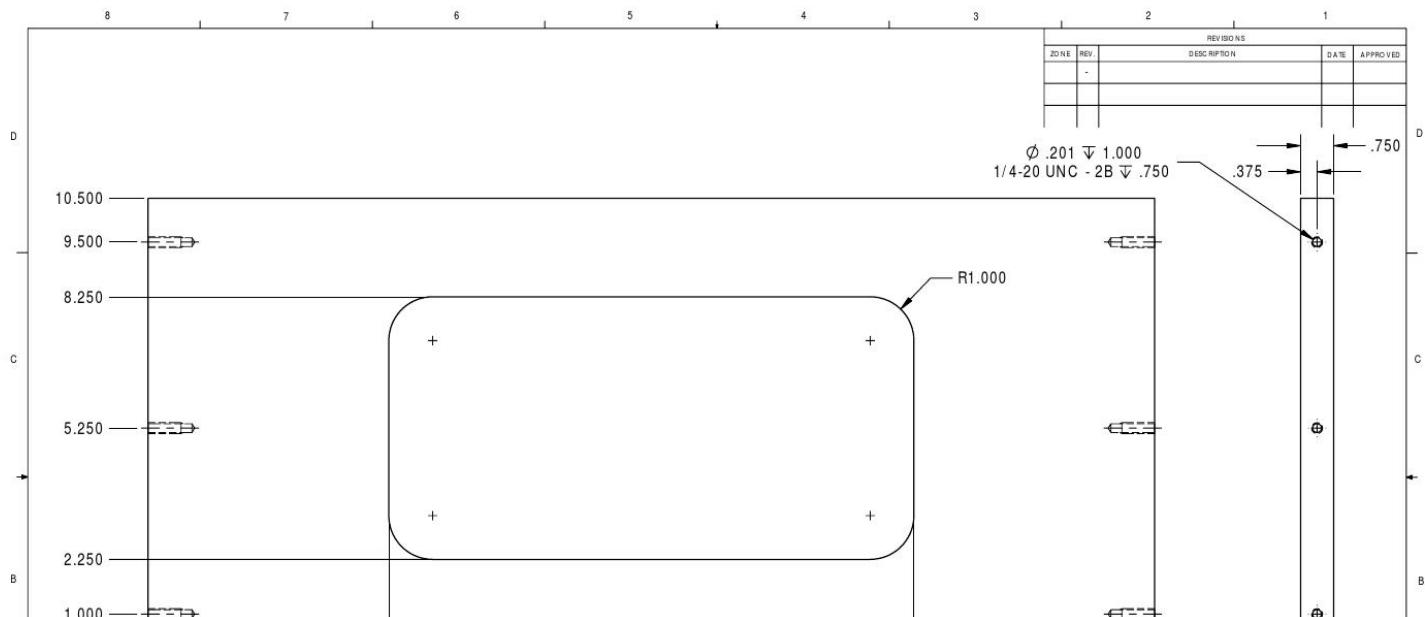
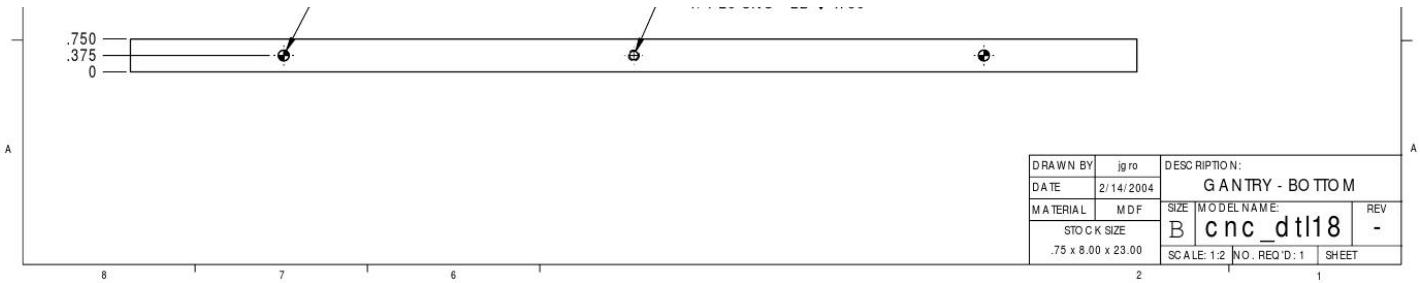


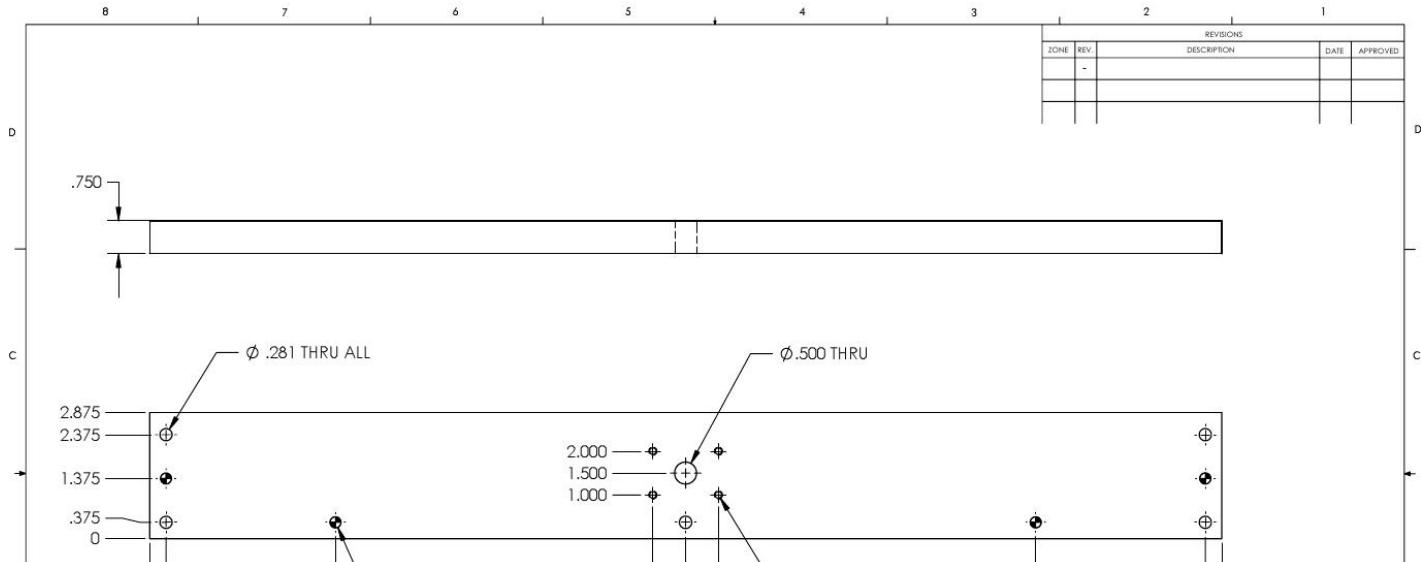
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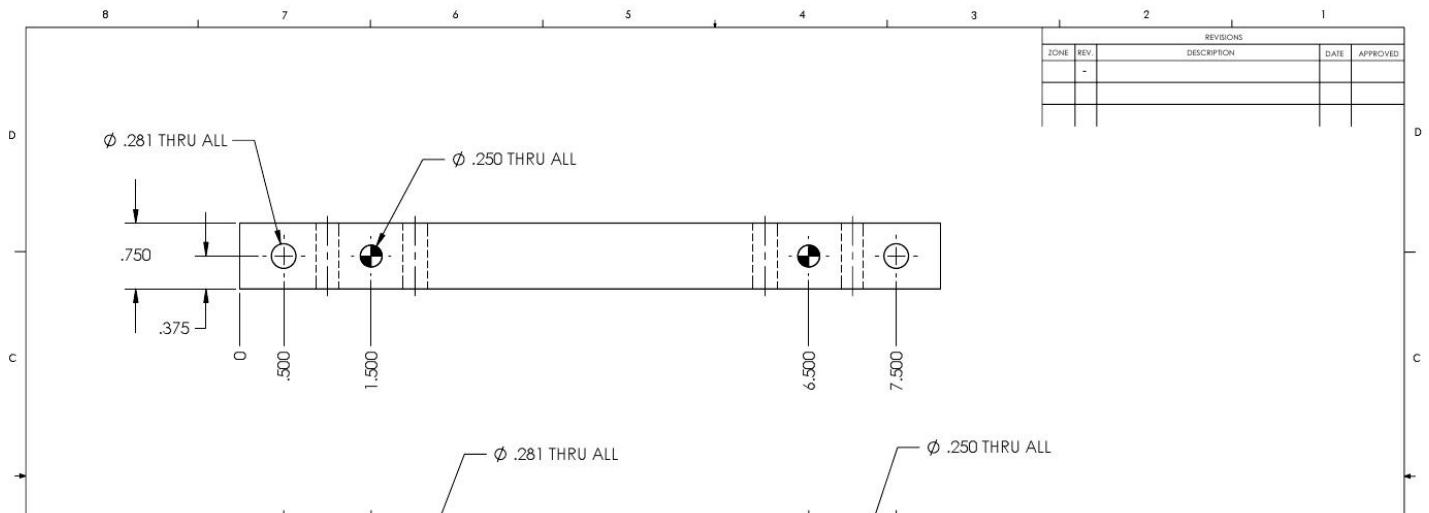


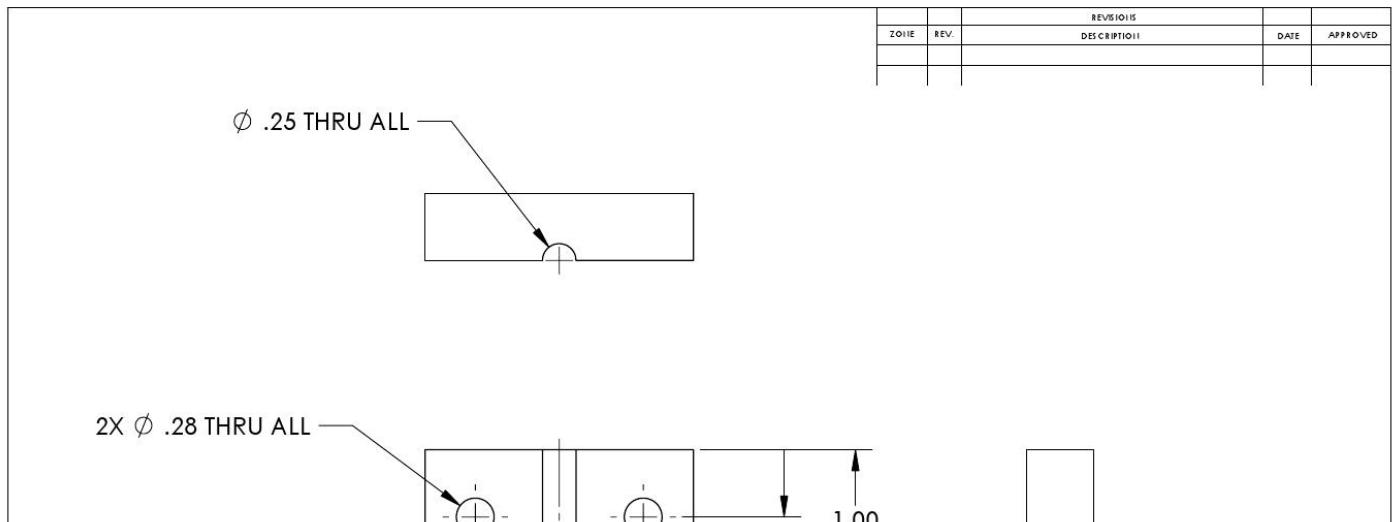
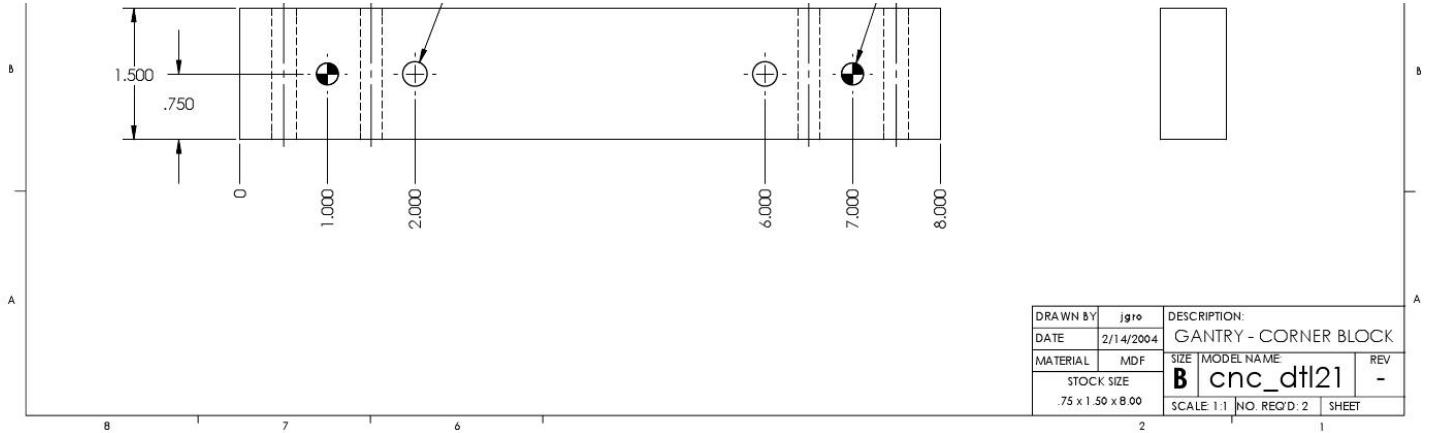


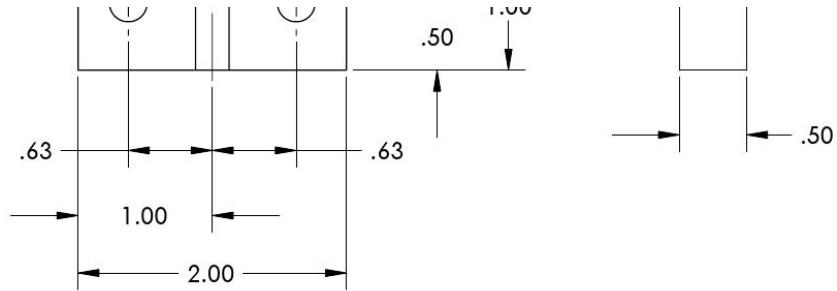








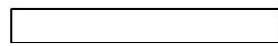




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SIZE		MODEL NAME:		REV
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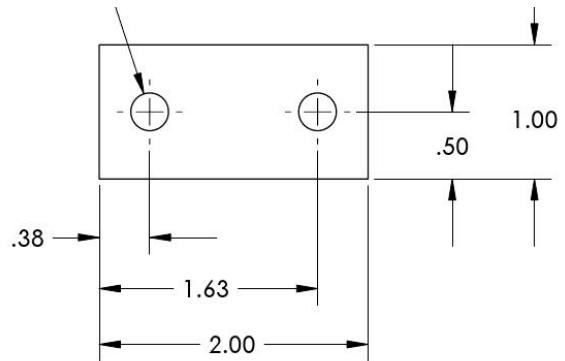
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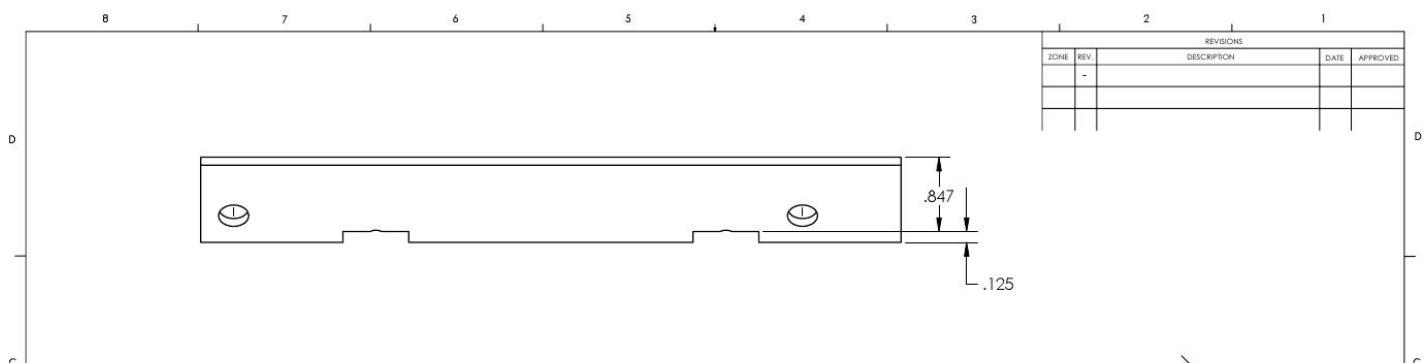
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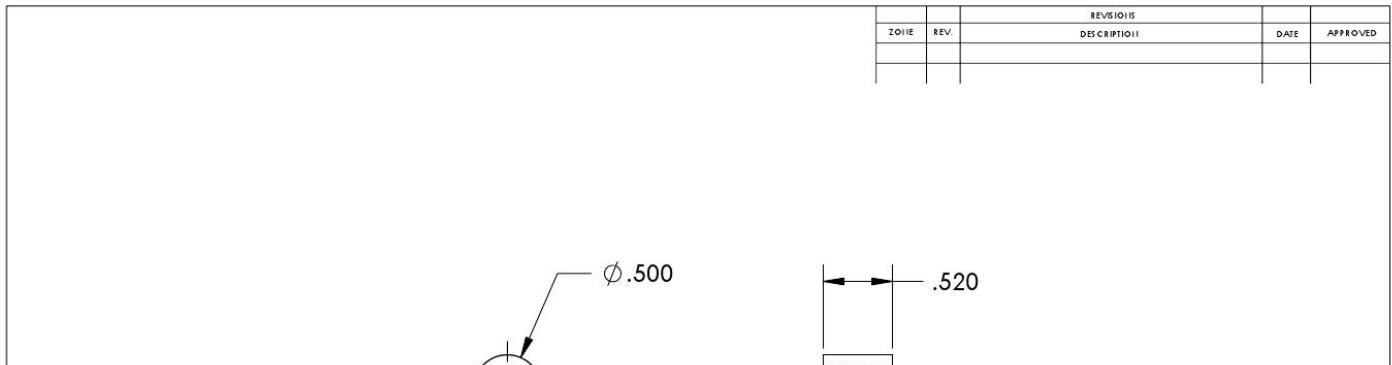
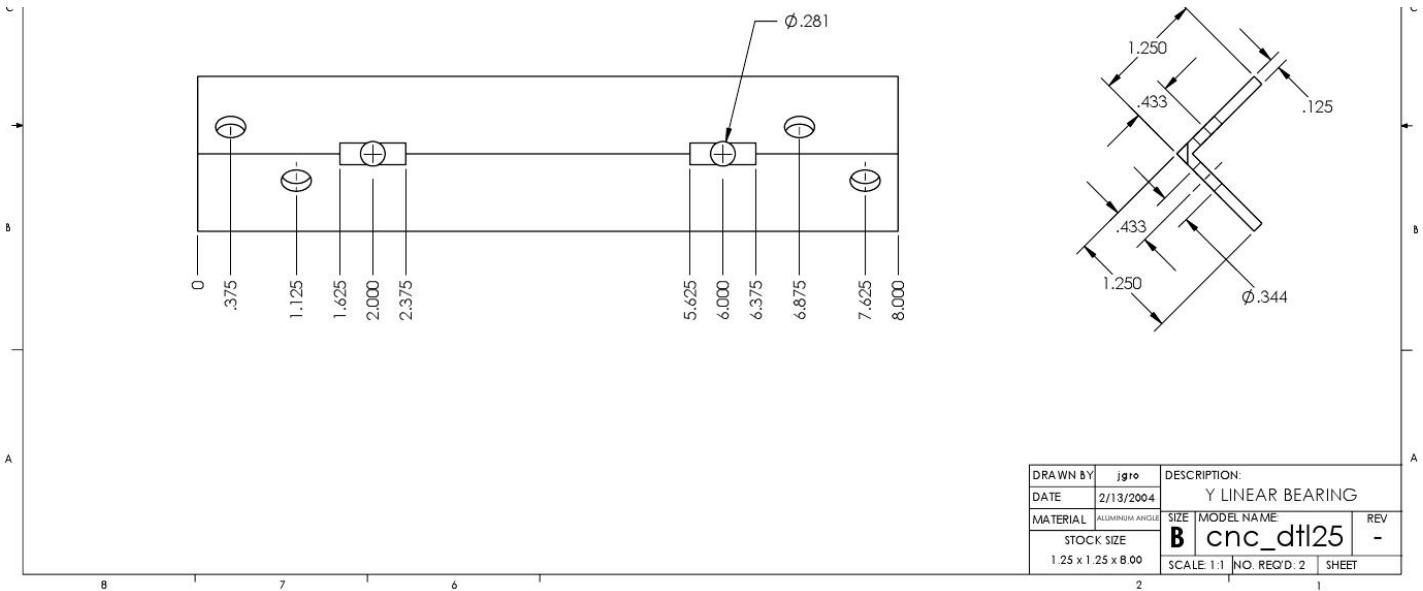
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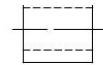
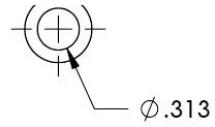


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REVISIONS			
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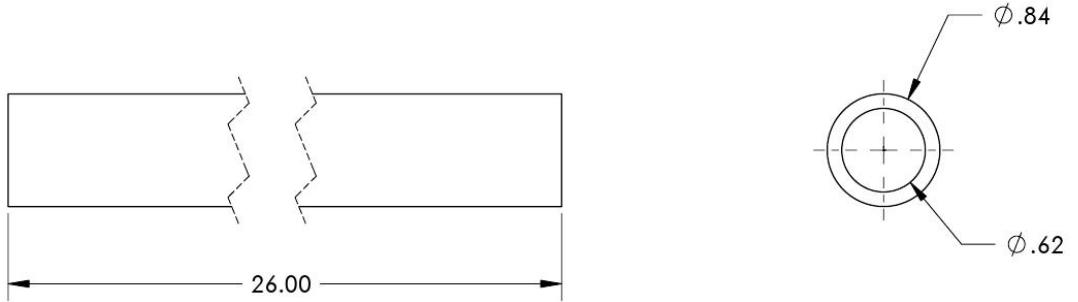




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MATERIAL	ALUMINUM	SIZE MODEL NAME:		
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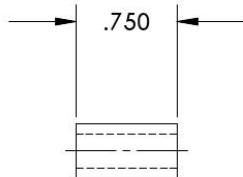
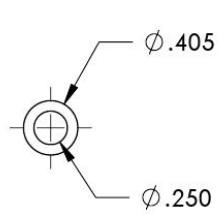
		REVISIONS		
ZONE	REV.	DESCRIPTION	DATE	APPROVED



DRAWN BY	jgro	DESCRIPTION:		
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MATERIAL	1/2" GAS PIPE			
SIZE	STOCK SIZE .84 x 26.00	MODEL NAME:	REV	
		A cnc_dtl28	-	
SCALE:	1:1	NO. REQ'D:	2	SHEET

1

ZOME	REV.	REVISIONS		DATE	APPROVED
		DESCRIPTION			



MAKE FROM 1/8 PIPE
DRILL OUT CENTER TO DIMESION SHOWN

DRAWN BY	jgro	DESCRIPTION:	
DATE	2-13-04	SPACER - SMALL	
MATERIAL	1/8 PIPE	SIZE	
STOCK SIZE	.41 x .75	MODEL NAME:	A
		CNC_dtl29	-
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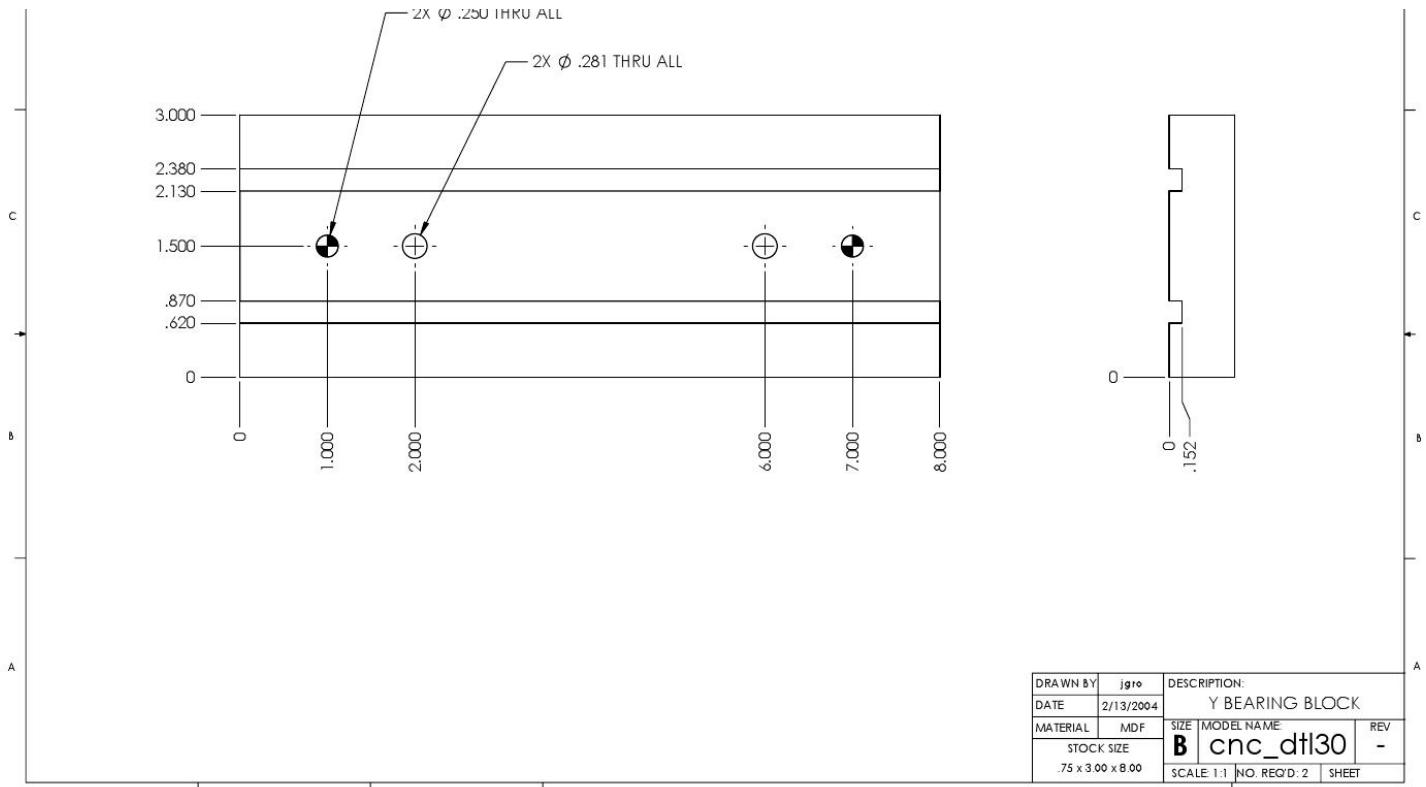
8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
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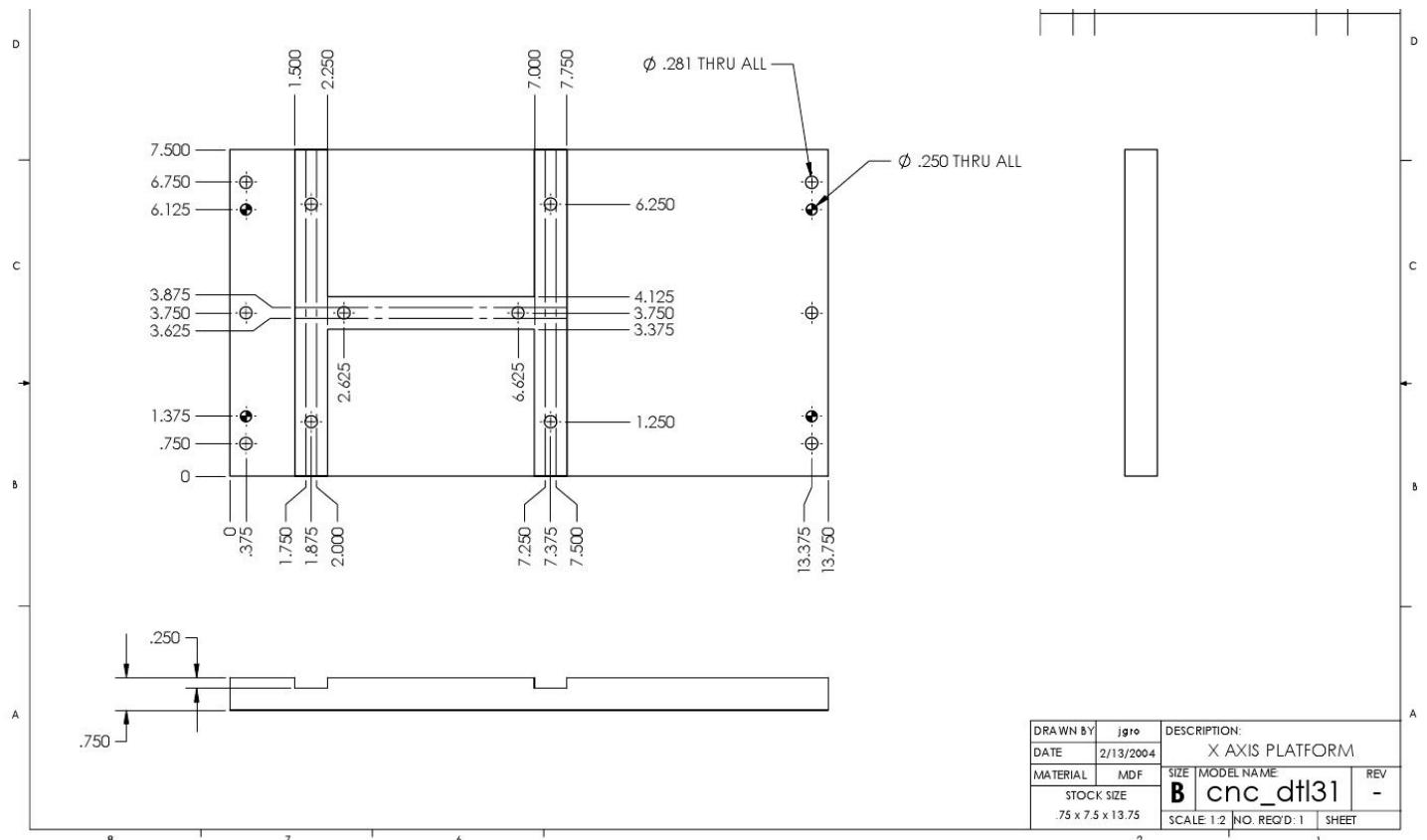
OVERALL LENGTH

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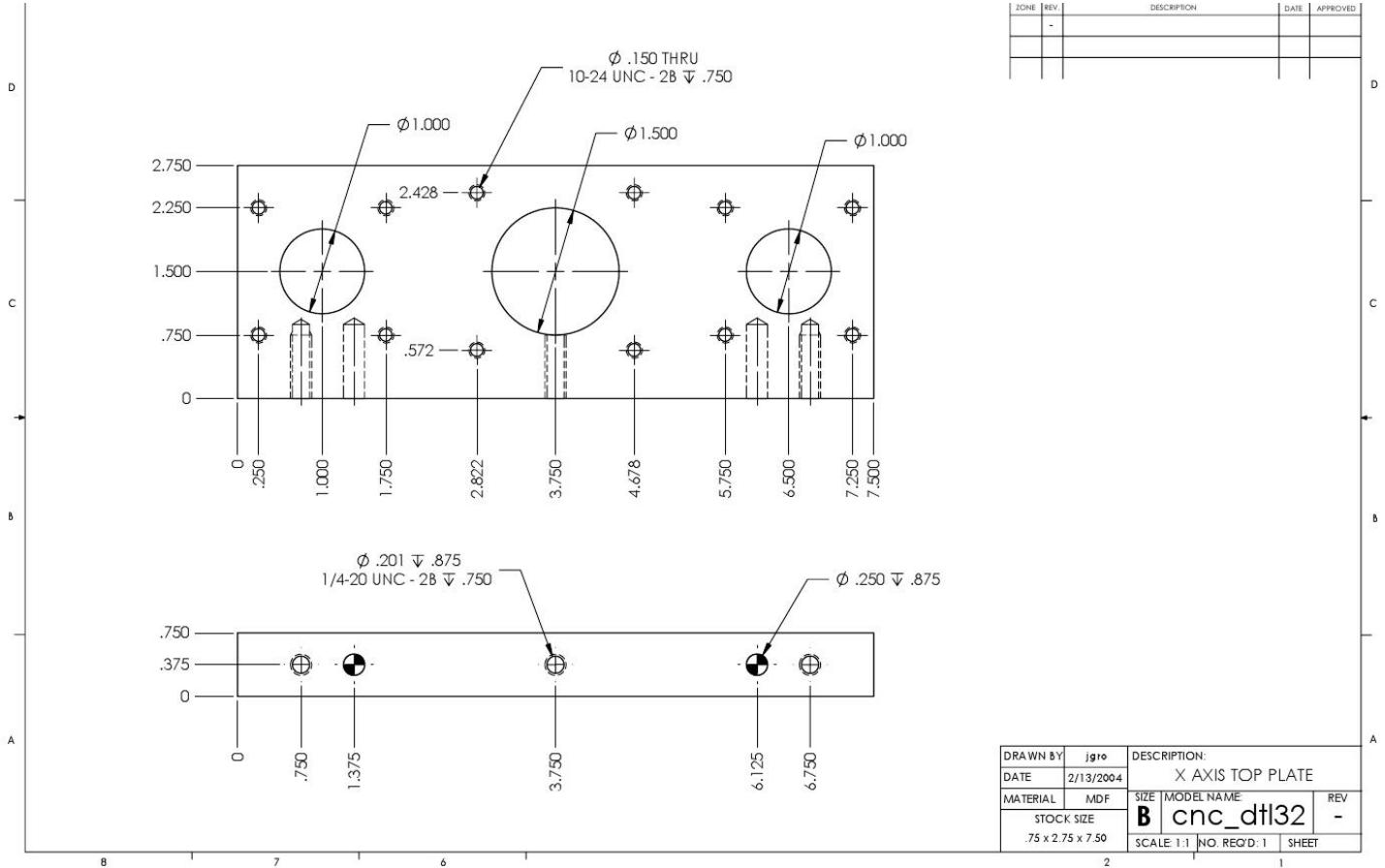


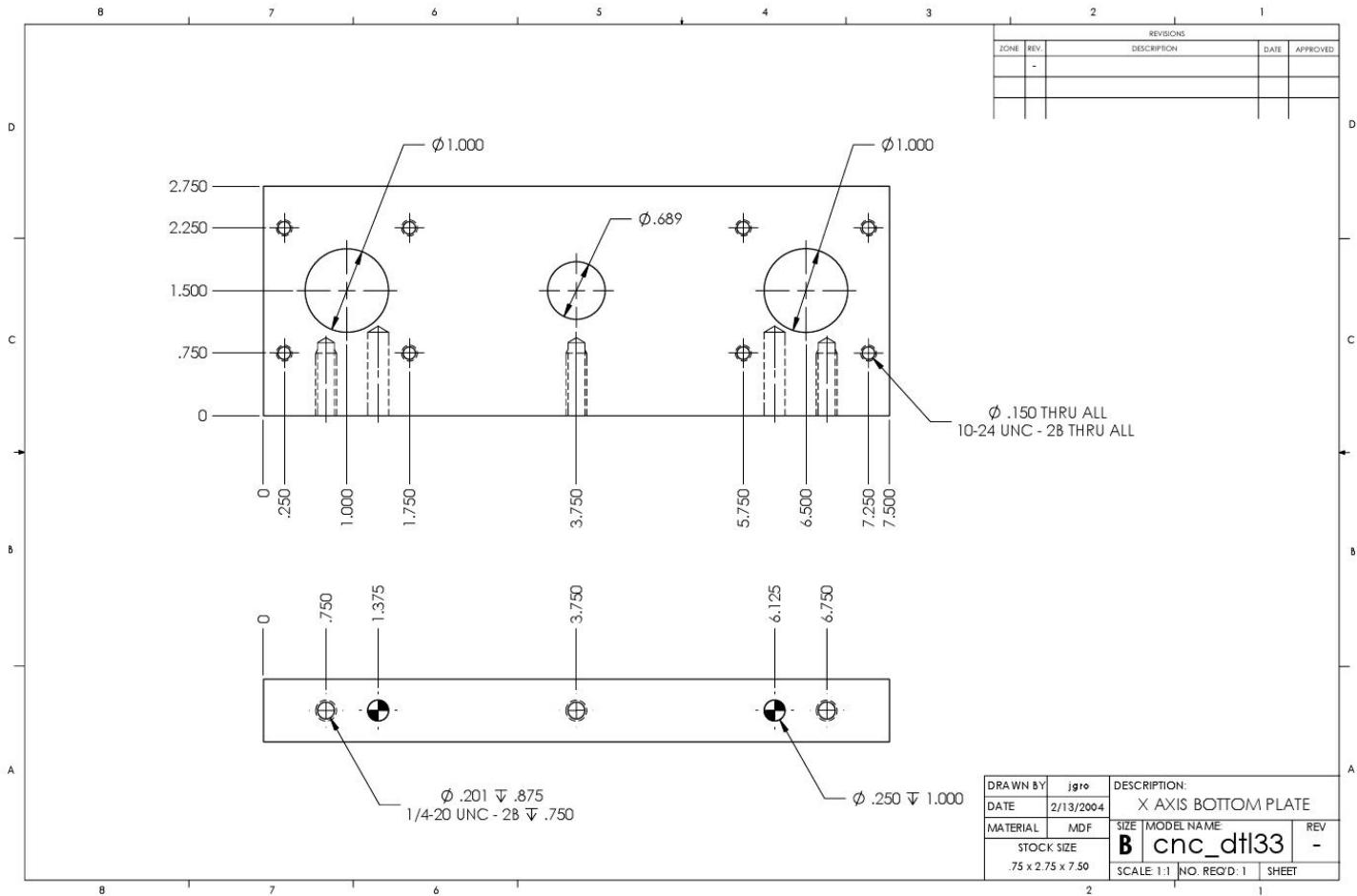
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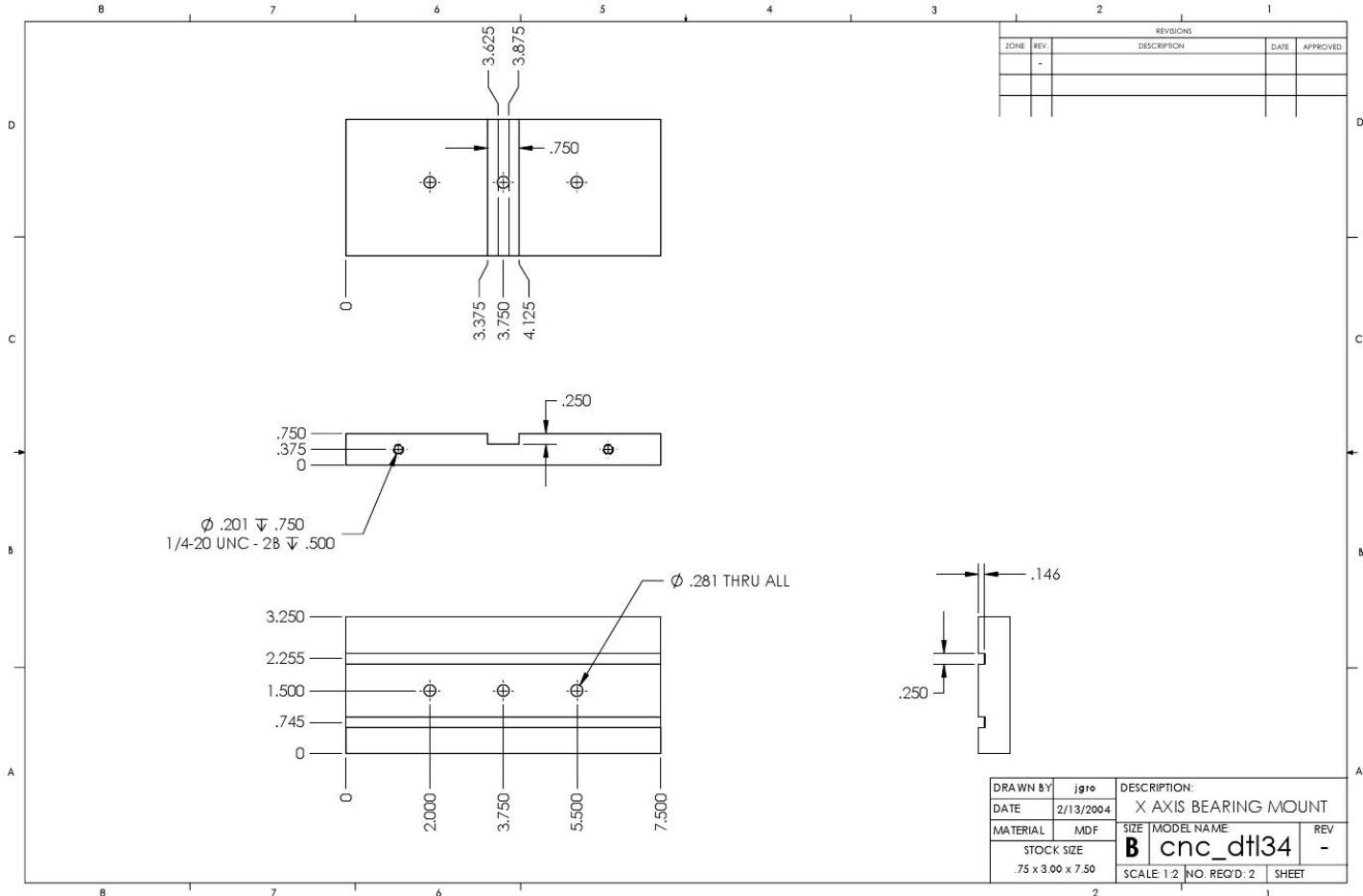
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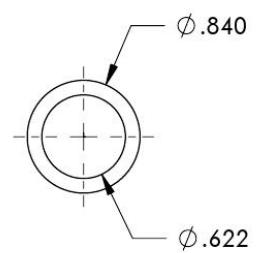
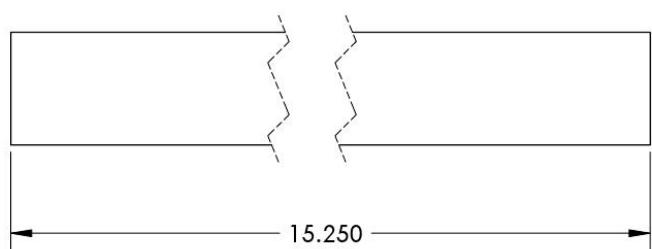
REVISIONS



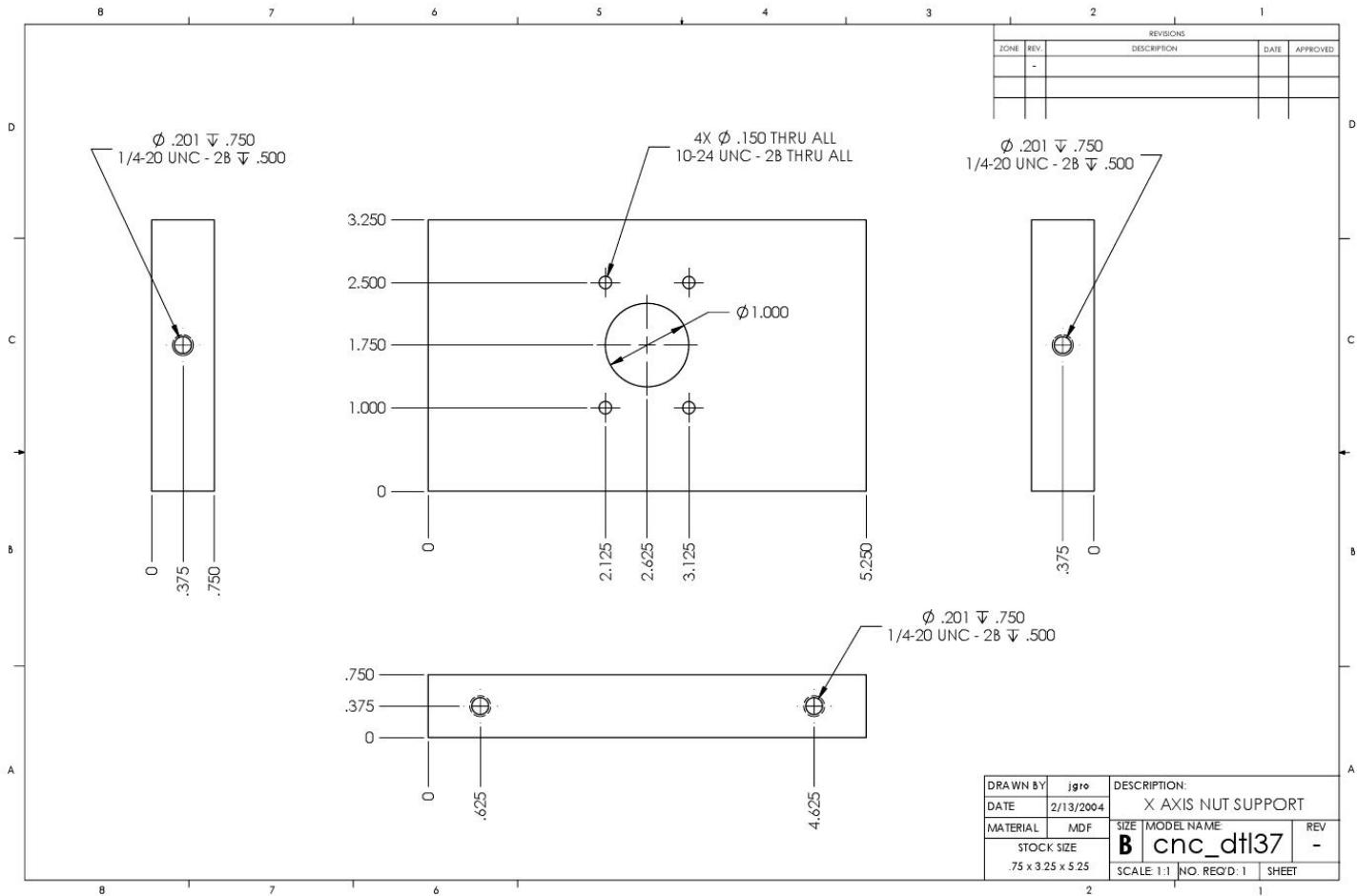


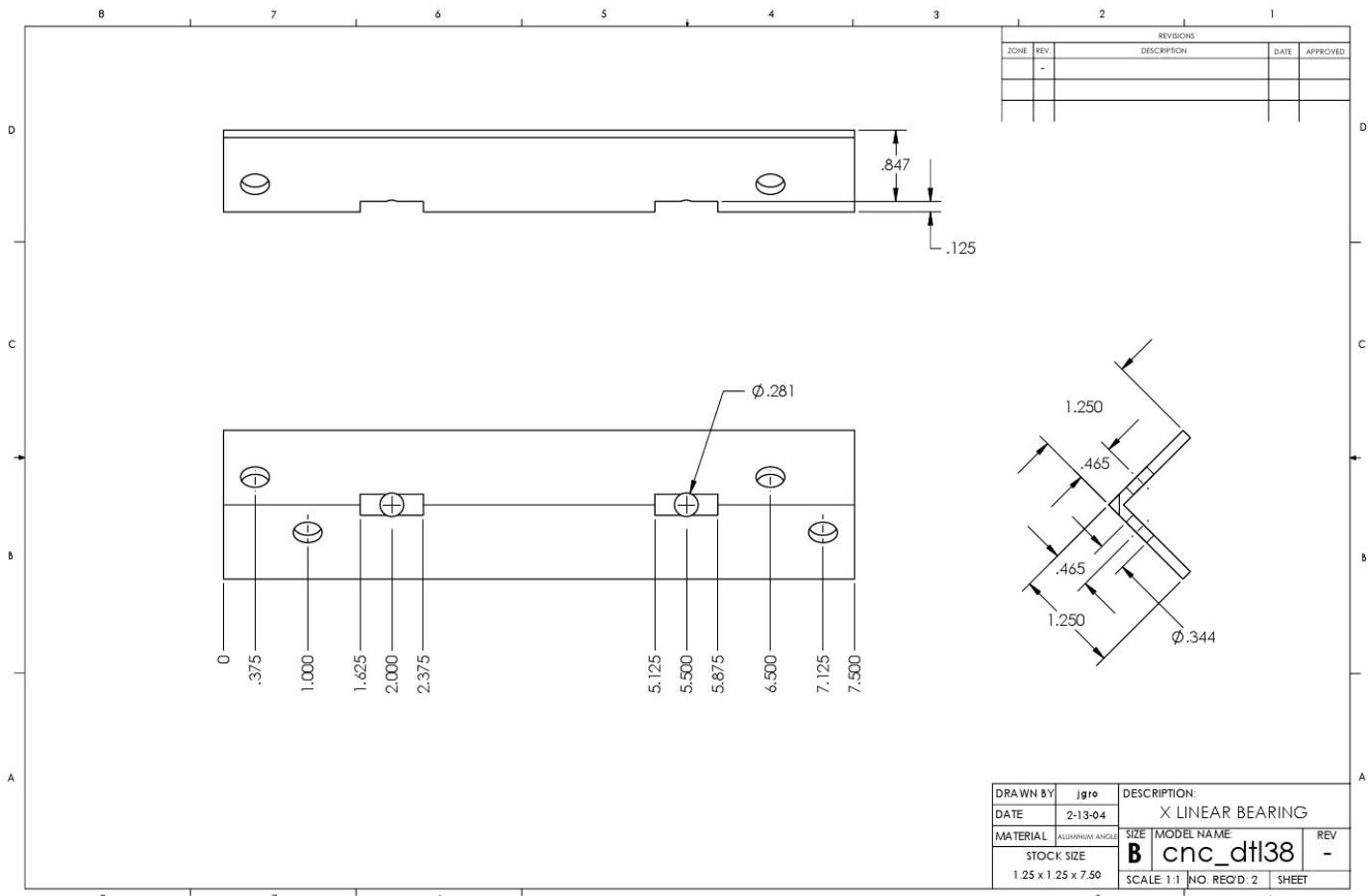


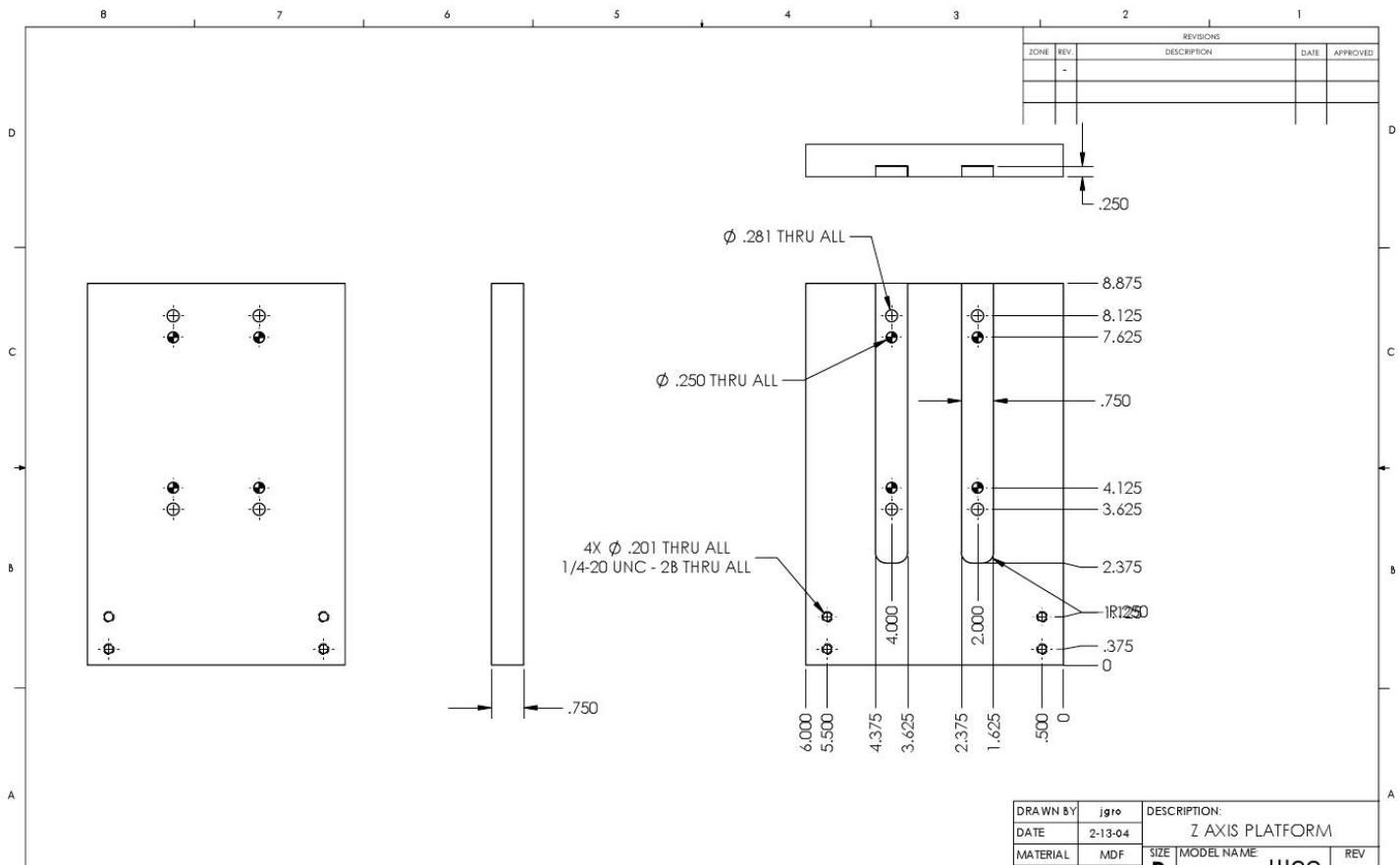
		REVISIONS	
ZONE	REV.	DESCRIPTION	DATE



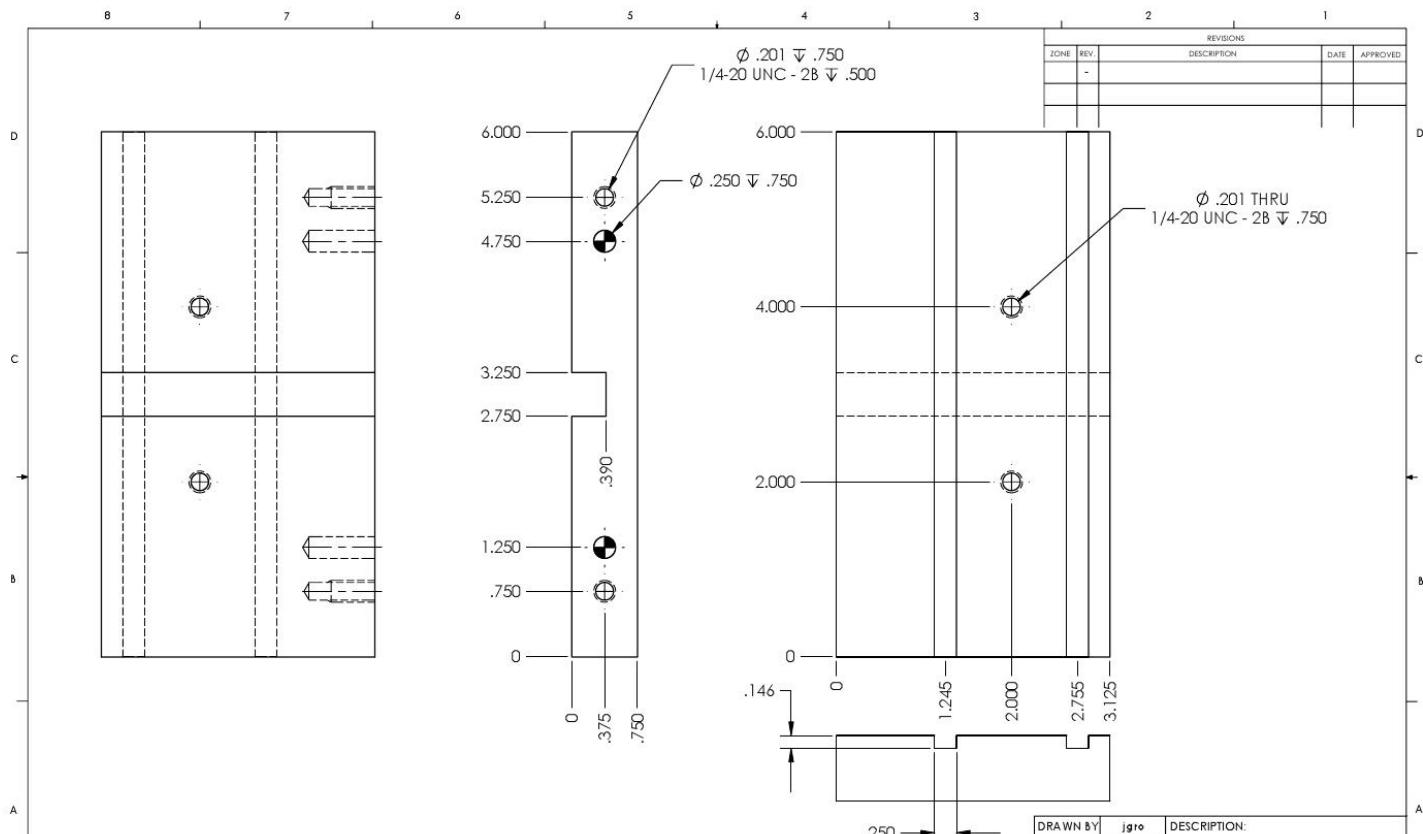
DRAWN BY	jgro	DESCRIPTION:	
DATE	2/13/2004	Z AXIS GUIDE PIPE	
MATERIAL	1/2 GAS PIPE	SIZE	MODEL NAME:
STOCK SIZE		A	cnc_dtl35
.84 x 15.25			-
SCALE: 1:1	NO. REQ'D:	SHEET	1



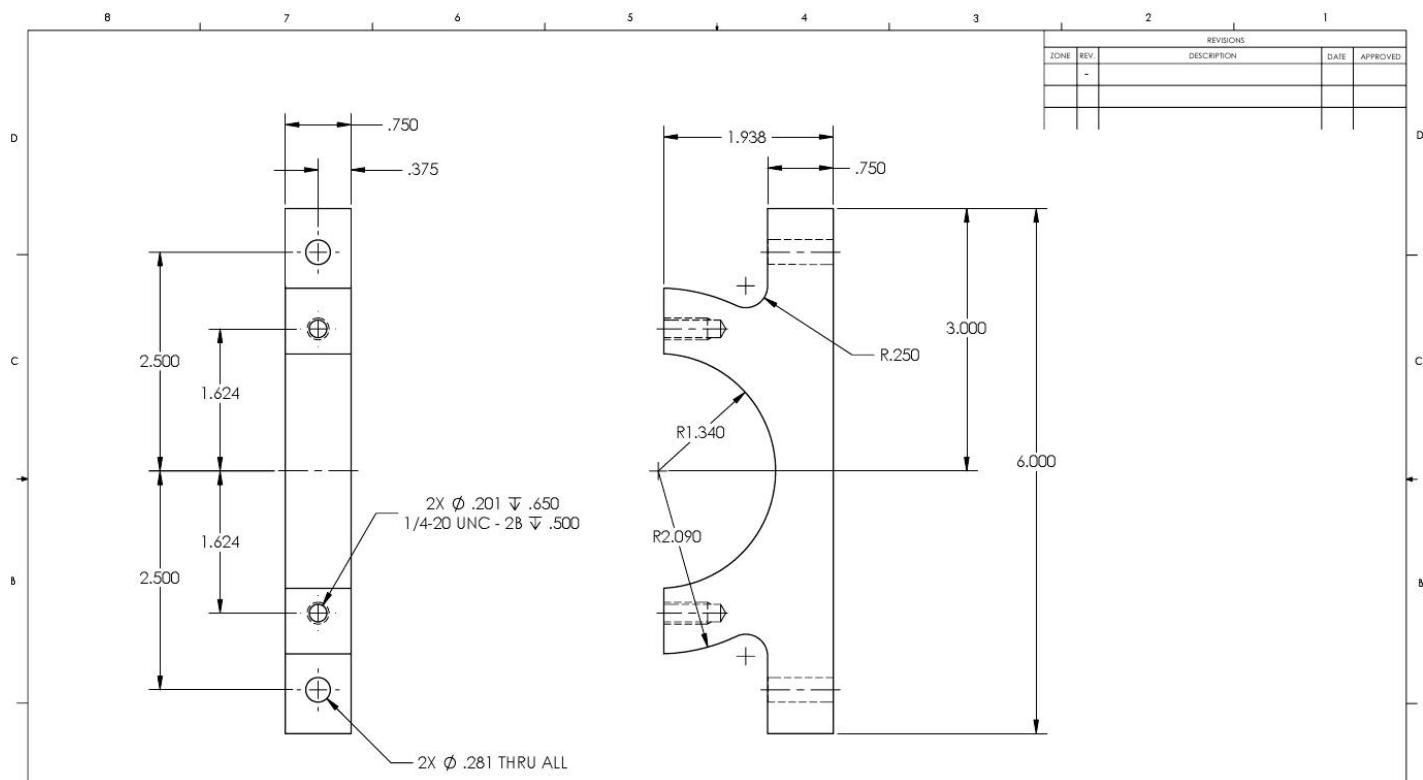




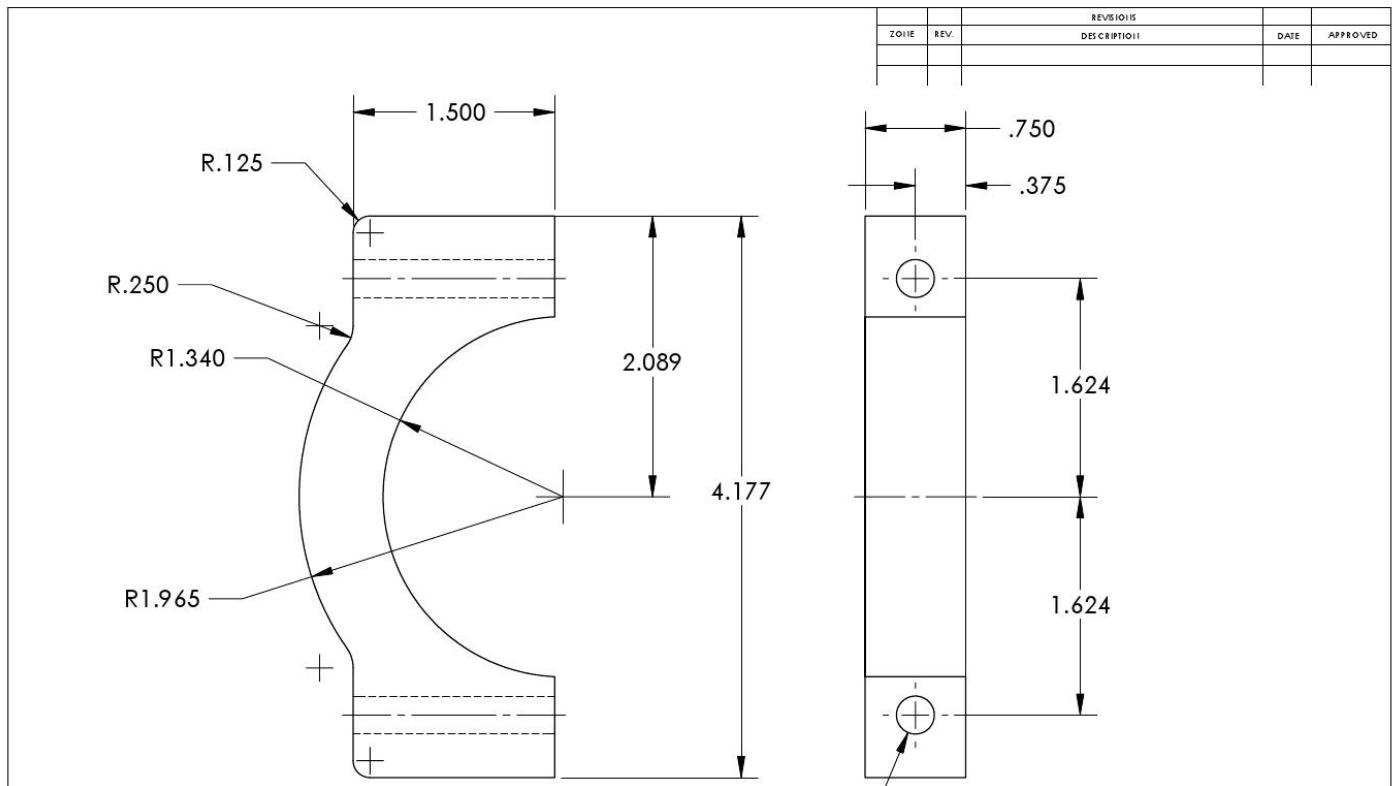
STOCK SIZE
 75 x 6.00 x 8.88 | **B** | **CNC ALLOY** | -
 SCALE 1:2 NO. REQ'D. 1 SHEET



.400		Z AXIS BEARING SUPPORT
DATE	2/13/2004	
MATERIAL	MDF	SIZE
STOCK SIZE	B	MODEL NAME
.75 x 2.875 x 6.00	cnc_dtl40	REV
SCALE 1:1	NO. REQ'D. 2	SHEET



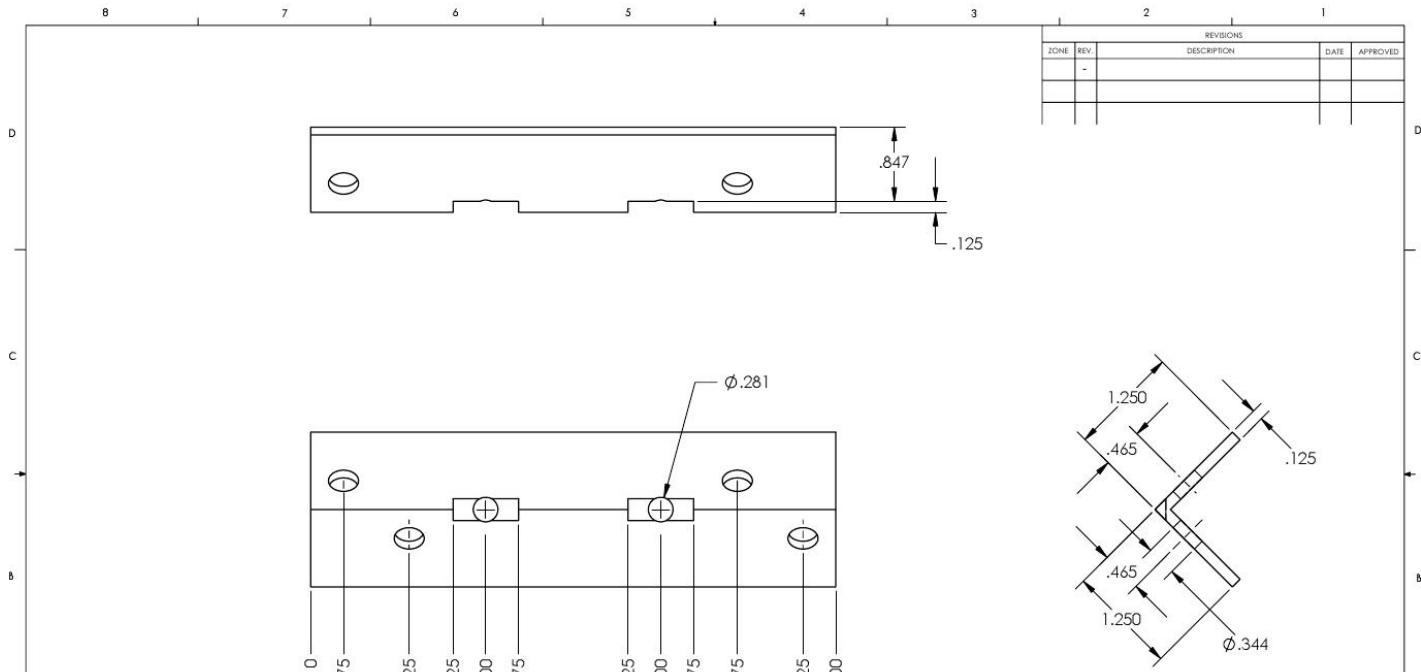
A										A
8	1	7	1	6	1					
DRAWN BY	jgto	DESCRIPTION:	ROUTER CLAMP BASE							
DATE	2/13/2004									
MATERIAL	MDF	SIZE	MODEL NAME							
STOCK SIZE	75 x 2.00 x 6.00	B	cnc_dt141							
SCALE 1:1	NO. REQ'D. 2	SHEET	1	2	1					



2X \emptyset .281 THRU ALL

DRAWN BY	jgro	DESCRIPTION:	
DATE	2/13/2004	ROUTER CLAMP	
MATERIAL	MDF	SIZE MODEL NAME:	
		A	cnc_dtl42
		REV	-
	.75 x 1.97 x 4.18	SCALE: 1:1	NO. REQ'D: 2
			SHEET

1



.3	1.1'	1.6'	3.6'	4.0'	4.3'	4.8'	5.6'	6.0'																				
A								A																				
<table border="1"> <tr> <td>DRAWN BY</td> <td>jg10</td> <td>DESCRIPTION:</td> <td>Z AXIS LINEAR BEARING</td> </tr> <tr> <td>DATE</td> <td>2-13-04</td> <td>ITEM NO.</td> <td>REV.</td> </tr> <tr> <td>MATERIAL</td> <td>ALUMINUM ANGLE</td> <td>MODEL NAME</td> <td>-</td> </tr> <tr> <td>STOCK SIZE</td> <td>1.25 x 1.25 x 6.00</td> <td>SCALE 1:1</td> <td>NO. REQ'D. 2</td> </tr> <tr> <td colspan="4">SHEET 1</td> </tr> </table>									DRAWN BY	jg10	DESCRIPTION:	Z AXIS LINEAR BEARING	DATE	2-13-04	ITEM NO.	REV.	MATERIAL	ALUMINUM ANGLE	MODEL NAME	-	STOCK SIZE	1.25 x 1.25 x 6.00	SCALE 1:1	NO. REQ'D. 2	SHEET 1			
DRAWN BY	jg10	DESCRIPTION:	Z AXIS LINEAR BEARING																									
DATE	2-13-04	ITEM NO.	REV.																									
MATERIAL	ALUMINUM ANGLE	MODEL NAME	-																									
STOCK SIZE	1.25 x 1.25 x 6.00	SCALE 1:1	NO. REQ'D. 2																									
SHEET 1																												

8 1 7 1 6 1 5 1 4 1 3 1 2 1 1 1

2 1 1 1 1 1 1 1 1 1 1 1 1 1 1

ITEM NO	QTY	PART NO	VENDOR NO	WEIGHT	STOCK SIZE	MATERIAL	DESCRIPTION			
							ZONE	REV.	REVISIONS	
							DESCRIPTION	DATE	APPROVED	
1	1	cnc_dtl01			1.5 x 8.25 x 16.25	MDF	SUPPORT - MOTOR SIDE			
2	1	cnc_dtl02			1.50 x 8.25 x 16.25	MDF	SUPPORT - BEARING SIDE			
3	2	cnc_dtl03			1.315 x 45.00	1" GAS PIPE	Y GUIDE PIPE			
4	1	cnc_dtl04			75 x 22.00 x 43.50	MDF	CUTTING BED			
5	1	cnc_dtl05			SEE DRAWING	MDF	BASE SUPPORT STRUCTURE			
6	1	cnc_dtl06			SEE DRAWING	MDF	BED SUPPORT			
7	4	cnc_dtl07			2.50 x 2.50 x .75	MDF	ADJUSTMENT BLOCK - LARGE			
8	3	cnc_dtl08	www.xylotex.com				STEPPER MOTOR			
9	3	cnc_dtl09	www.mec1.com				C COUPLER			
10	1	cnc_dtl10			1/4-20 x 43.50	1/4-20 ROD	LEAD SCREW - Y AXIS			
11	5	cnc_dtl11	www.mcmaster.com				FLANGED BEARING			
12	4	cnc_dtl12	www.rockler.com		50 x .75 x 36.00	ALUMINUM	HOLD DOWN CHANNEL			
13	8	cnc_dtl13			75 x 2.00 x 2.00	MDF	ADJUSTMENT BLOCK - SMALL			
14	3	cnc_dtl14	www.mcmaster.com		50 x 1.50 x 2.00	DELRIN	ANTI-BACKLASH NUT			
15	3	cnc_dtl15	www.mcmaster.com		50 x 1.00 x 1.13	DELRIN	NUT TENSIONER			
16	1	cnc_dtl16			75 x 8.00 x 21.50	MDF	GANTRY - LEFT SIDE			
17	1	cnc_dtl17			75 x 8.00 x 21.50	MDF	GANTRY - RIGHT SIDE			
18	1	cnc_dtl18			75 x 8.00 x 23.00	MDF	GANTRY - BOTTOM			
19	1	cnc_dtl19			75 x 10.50 x 23.00	MDF	GANTRY - REAR BRACE			
20	1	cnc_dtl20			75 x 2.88 x 24.50	MDF	GANTRY - FRONT			
21	2	cnc_dtl21			75 x 1.50 x 8.00	MDF	GANTRY - CORNER BLOCK			
22	1	cnc_dtl22			25 x 24.50	1/4-20 THREADED ROD	X AXIS LEAD SCREW			
23	1	cnc_dtl23	www.mcmaster.com		50 x 1.00 x 2.00	DELRIN	ANTI-WHIP BLOCK			
24	1	cnc_dtl24			25 x 1.00 x 2.00	MDF	ANTI-WHIP BLOCK SPACER			
25	2	cnc_dtl25			1.25 x 1.25 x 8.00	ALUMINUM ANGLE	Y LINEAR BEARING			
26	8	cnc_dtl26			.50 x .52	ALUMINUM	Y LINEAR GUIDE SPACER			
27	24	cnc_dtl27			.5 x 22		SKATE BEARING			
28	2	cnc_dtl28			84 x 26.00	1/2" GAS PIPE	X GUIDE PIPE			
29	1	cnc_dtl29			41 x .75	1/8 PIPE	SPACER - SMALL			
30	2	cnc_dtl30			75 x 3.00 x 8.00	MDF	Y BEARING BLOCK			
31	1	cnc_dtl31			75 x 7.5 x 13.75	MDF	X AXIS PLATFORM			
32	1	cnc_dtl32			75 x 2.75 x 7.50	MDF	X AXIS TOP PLATE			
33	1	cnc_dtl33			75 x 2.75 x 7.50	MDF	X AXIS BOTTOM PLATE			
34	2	cnc_dtl34			75 x 3.00 x 7.50	MDF	X AXIS BEARING MOUNT			
35	2	cnc_dtl35			84 x 15.25	1/2 GAS PIPE	Z AXIS GUIDE PIPE			
36	1	cnc_dtl36			25 x 13.50	1/4-20 THREADED ROD	Z AXIS LEAD SCREW			
37	1	cnc_dtl37			75 x 3.25 x 5.25	MDF	X AXIS NUT SUPPORT			
38	2	cnc_dtl38			1.25 x 1.25 x 7.50	ALUMINUM ANGLE	X LINEAR BEARING			

39	1	cnc_d1#39			75 x 6.00 x 6.00	MDF	Z AXIS PLATFORM
40	2	cnc_d1#40			75 x 2.875 x 6.00	MDF	Z AXIS BEARING SUPPORT
41	2	cnc_d1#41			75 x 2.00 x 6.00	MDF	ROUTER CLAMP BASE
42	2	cnc_d1#42			75 x 1.97 x 4.18	MDF	ROUTER CLAMP
44	2	cnc_d1#43			1.25 x 1.25 x 6.00	ALUMINUM ANGLE	Z AXIS LINEAR BEARING 1250 DIA X 1.50 LG.
45	20	dowel_pn					FLAT WASHER 1/4
46	71	FLAT WASHER 1/4					HEX HEAD BOLT 1/4-20 X 1
47	60	HEX HEAD BOLT 1/4-20 X 1					HEX HEAD BOLT 1/4-20 X 1 1/2
48	27	HEX HEAD BOLT 1/4-20 X 1 1/2					HEX HEAD BOLT 1/4-20 X 2
49	8	HEX HEAD BOLT 1/4-20 X 2					HEX HEAD BOLT 1/4-20 X 3
50	4	HEX HEAD BOLT 1/4-20 X 3					HEX HEAD BOLT 1/4-20 X 3 1/2
51	4	HEX HEAD BOLT 1/4-20 X 3 1/2					HEX HEAD BOLT 5/16-18 X 1 1/2
52	24	HEX HEAD BOLT 5/16-18 X 1 1/4					HEX NUT 1/4-20
53	69	HEX NUT 1/4-20					HEX NUT 5/16
54	40	HEX NUT 5/16-18					LOCK WASHER 1/4
55	6	LOCK WASHER 1/4					MACHINE SCREW #10 X 1
56	7	MACHINE SCREW #10 X 1					MACHINE SCREW #10 X 1 1/2
57	54	MACHINE SCREW #10 X 1 1/2					MACHINE SCREW #10 X 1 1/4
58	1	MACHINE SCREW #10 X 1 1/4					MACHINE SCREW #10 X 1/2
59	4	MACHINE SCREW #10 X 1/2					MACHINE SCREW #10 X 1
60	8	MACHINE SCREW #10 X 3/4					WOOD SCREW
61	1	wood_screw					

DRAWN BY	JGPO	DESCRIPTION:
DATE	2-13-04	CNC ROUTER - STOCK LIST
MATERIAL	SIZE / MODEL / NAME: Ccnc_assy01 REV	
STOCK SIZE	SCALE: 1:1 NO. REQ'D: 1 SHEET	