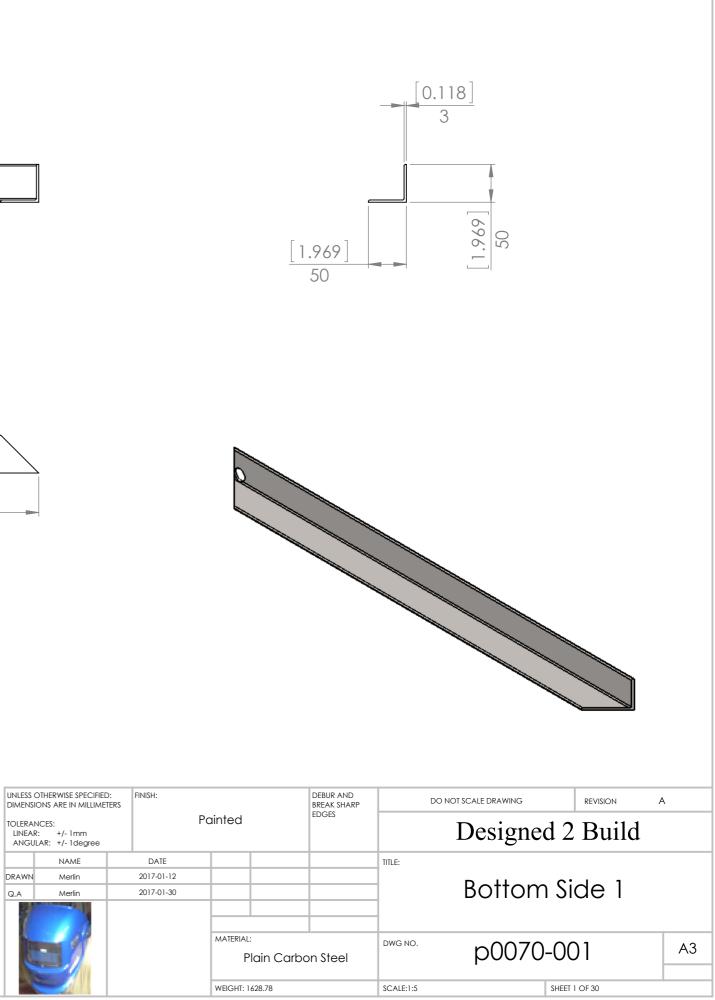
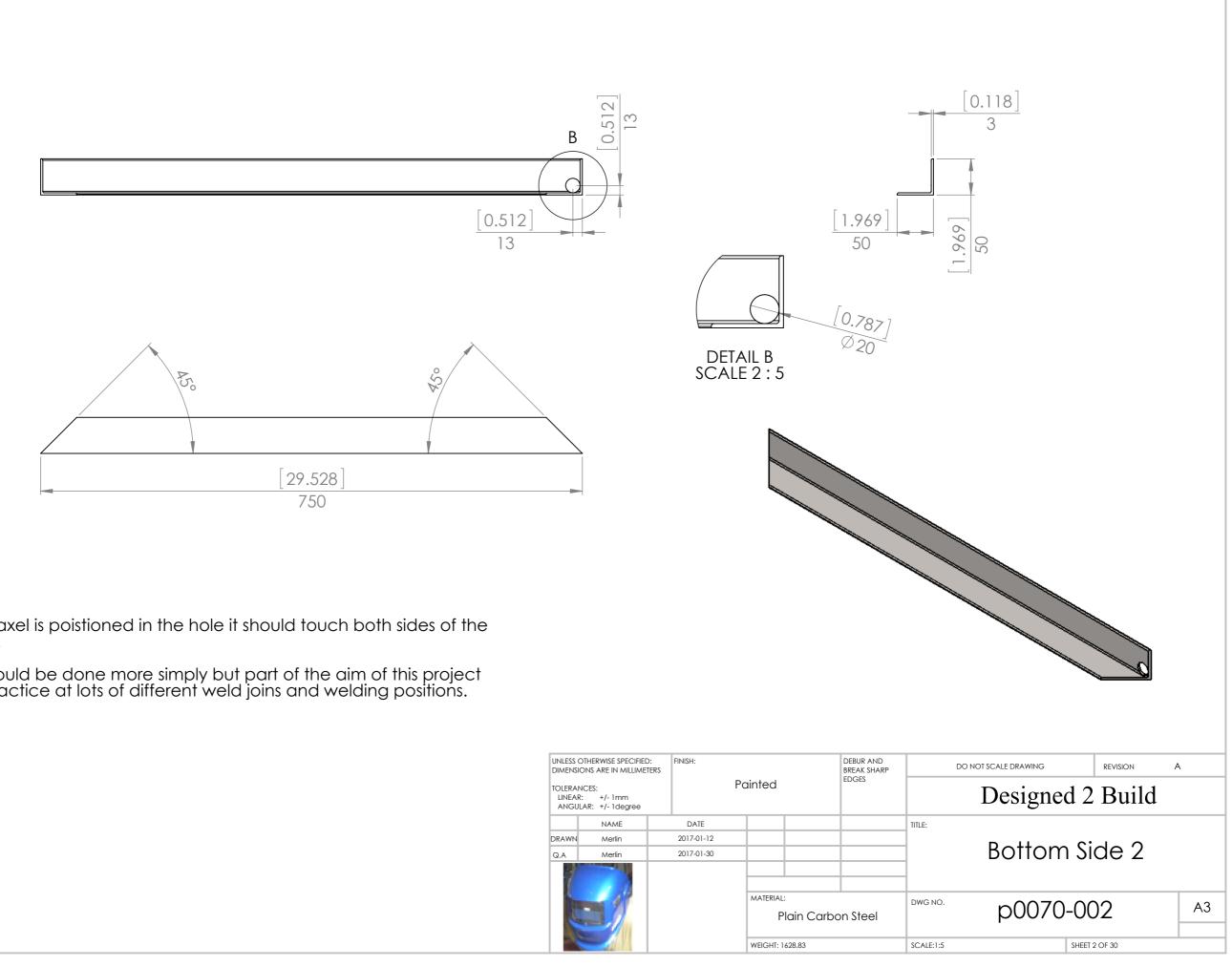


When the axel is poistioned in the hole it should touch both sides of the end angle.

The axel could be done more simply but part of the aim of this project is to get practice at lots of different weld joins and welding positions.

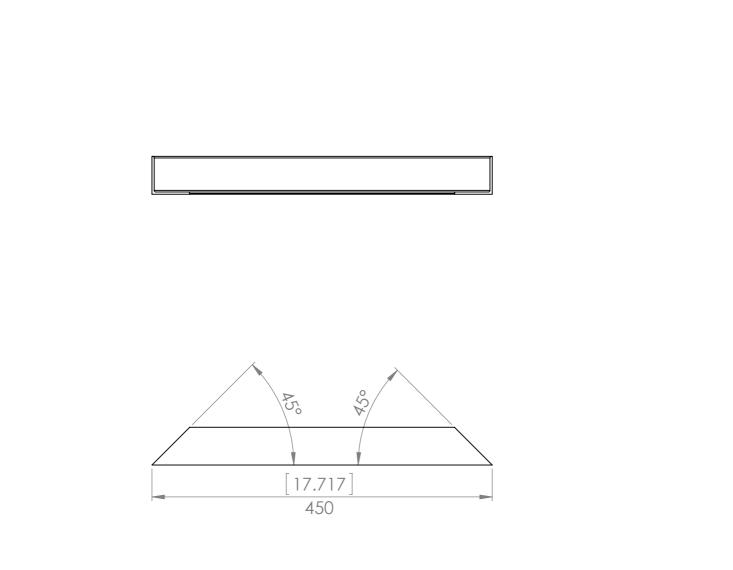




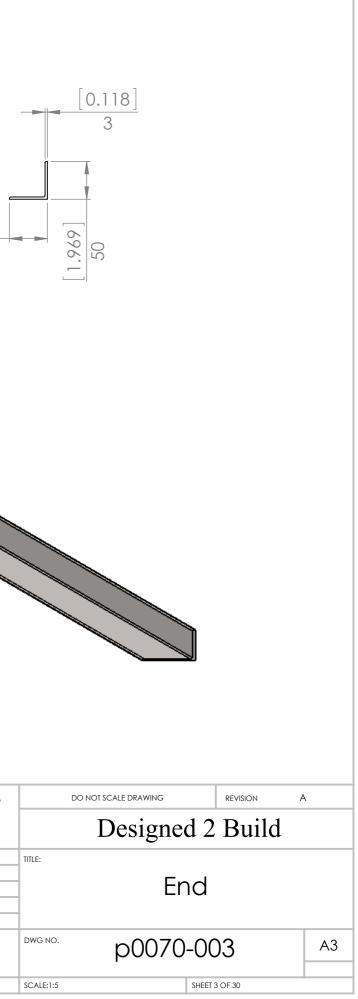
When the axel is poistioned in the hole it should touch both sides of the end angle.

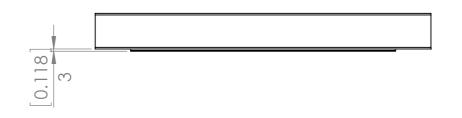
The axel could be done more simply but part of the aim of this project is to get practice at lots of different weld joins and welding positions.

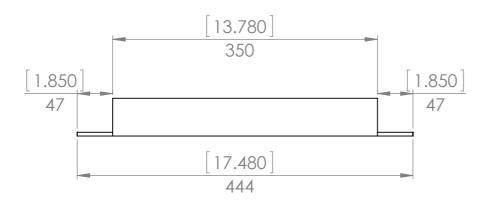
DIMENSION TOLERANC LINEAR:	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		FINISH:	Po	ainted		DEBUR AND BREAK SHARP EDGES
	NAME		DATE				
DRAWN	Merlin		2017-01-12				
Q.A	Merlin		2017-01-30				
					MATERIAL	: Iain Carbo	on Steel
					WEIGHT: 1	628.83	



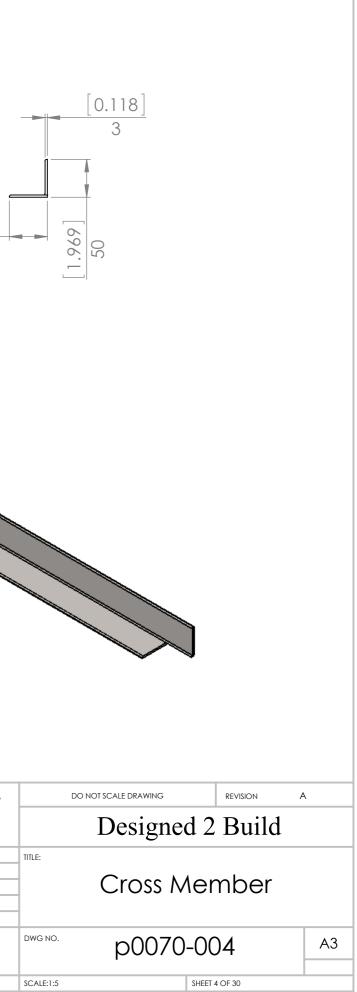
DIMENSIC TOLERAN LINEAR:	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		FINISH:	DEBUR AND BREAK SHARP EDGES		
	NAME		DATE			
DRAWN	Merlin		2017-01-12			
Q.A	Merlin		2017-01-30			
	J			MATERIAL P WEIGHT: 5	Plain Carbo	on Steel

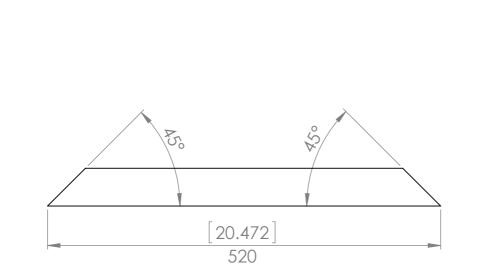




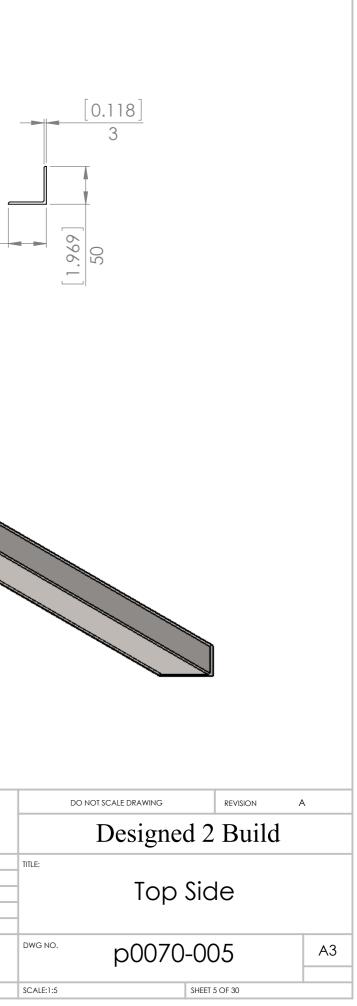


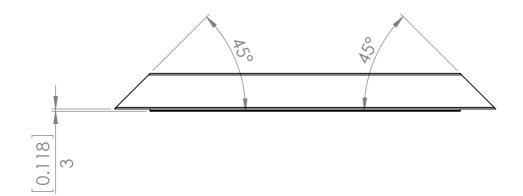
DIMENSION TOLERANC LINEAR:	UNLESS OTHERWISE SPECIFIED; DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		Painted	DEBUR AND BREAK SHARP EDGES
	NAME	DATE		
DRAWN	Merlin	2017-01-12		
Q.A	Merlin	2017-01-30		
			MATERIAL: Plain C WEIGHT: 895,47	arbon Steel

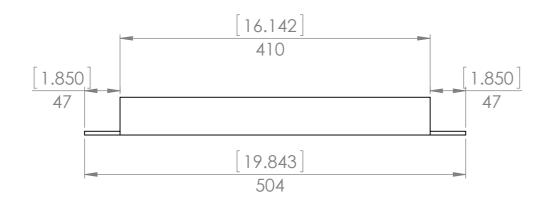




UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		MENSIONS ARE IN MILLIMETERS DIERANCES: PO INEAR: +/- 1mm			ainted	DEBUR AND BREAK SHARP EDGES	
	NAME		DATE				
DRAWN	Merlin		2017-01-12				
Q.A Merlin			2017-01-30				
1							
					MATERIAL	: Plain Carbo	on Steel
					WEIGHT: 1	115.00	

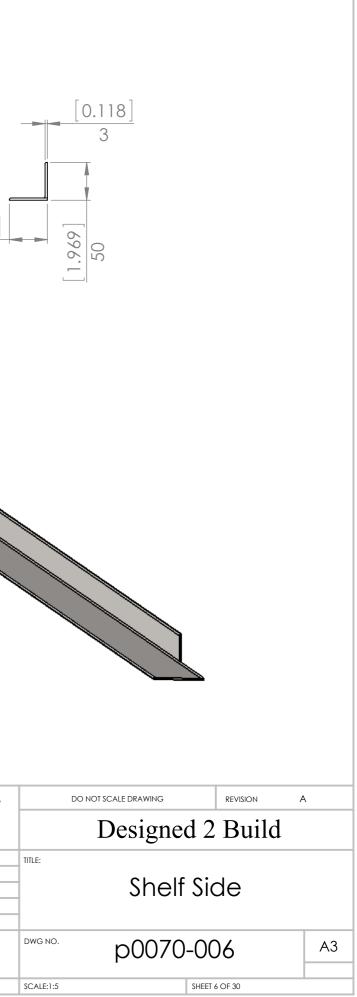


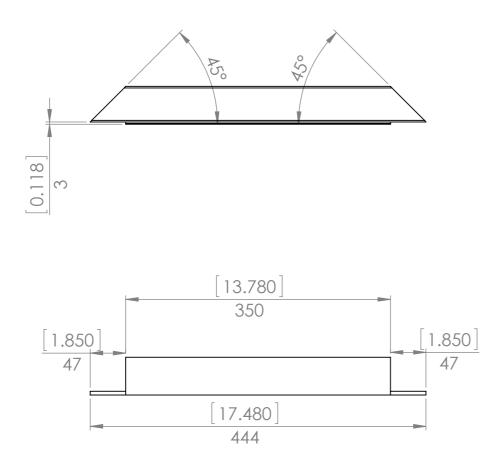




Another part which could be greatly simplified if you want to. I did it this way because, as I have said, part of the reason behind this design is to get welding practice.

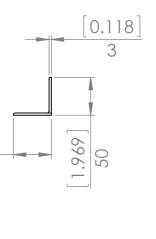
DIMENSION TOLERANC LINEAR:	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		FINISH:	Po	ainted		DEBUR AND BREAK SHARP EDGES
	NAME		DATE				
DRAWN	Merlin		2017-01-12				
Q.A	Merlin		2017-01-30				
					MATERIAL P WEIGHT: 9	lain Carbo	on Steel





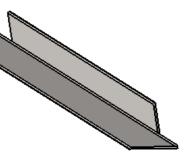
Another part which could be greatly simplified if you want to. I did it this way because, as I have said, part of the reason behind this design is to get welding practice.



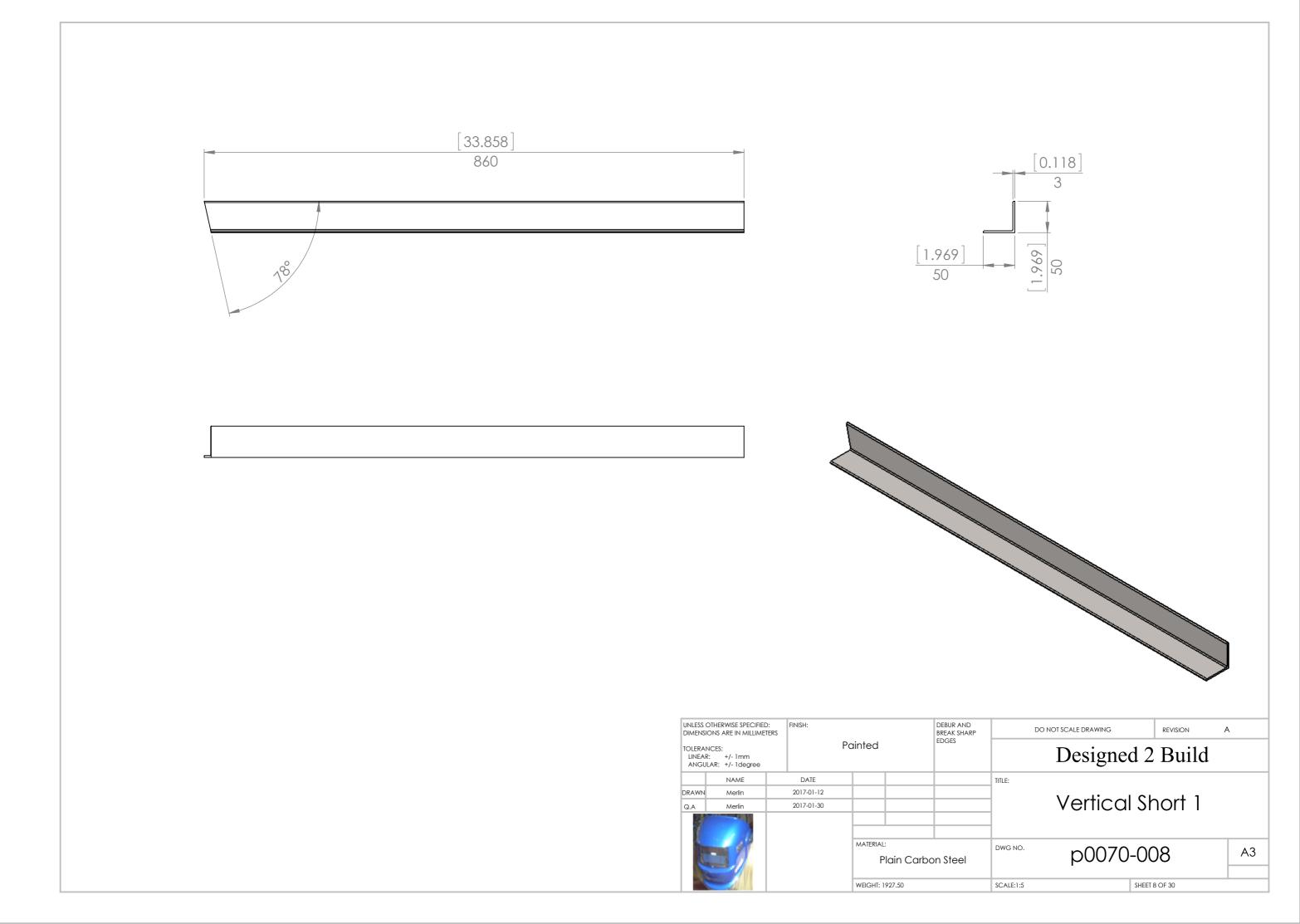


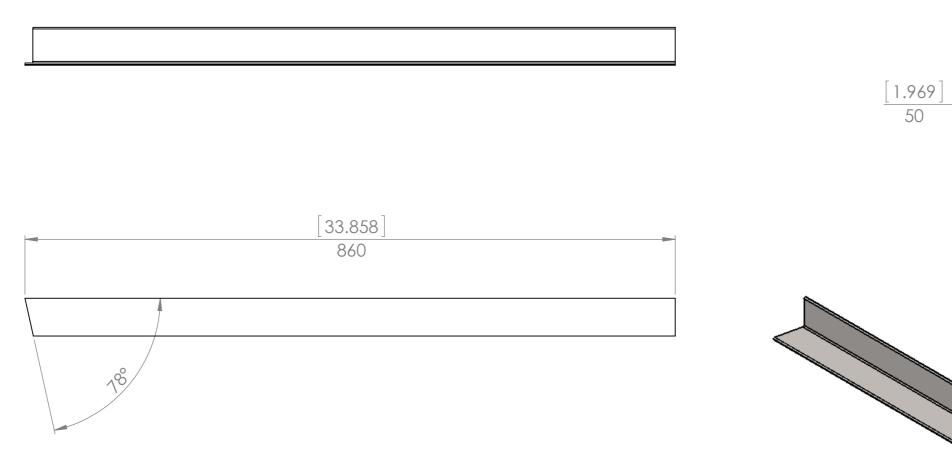
[1.969

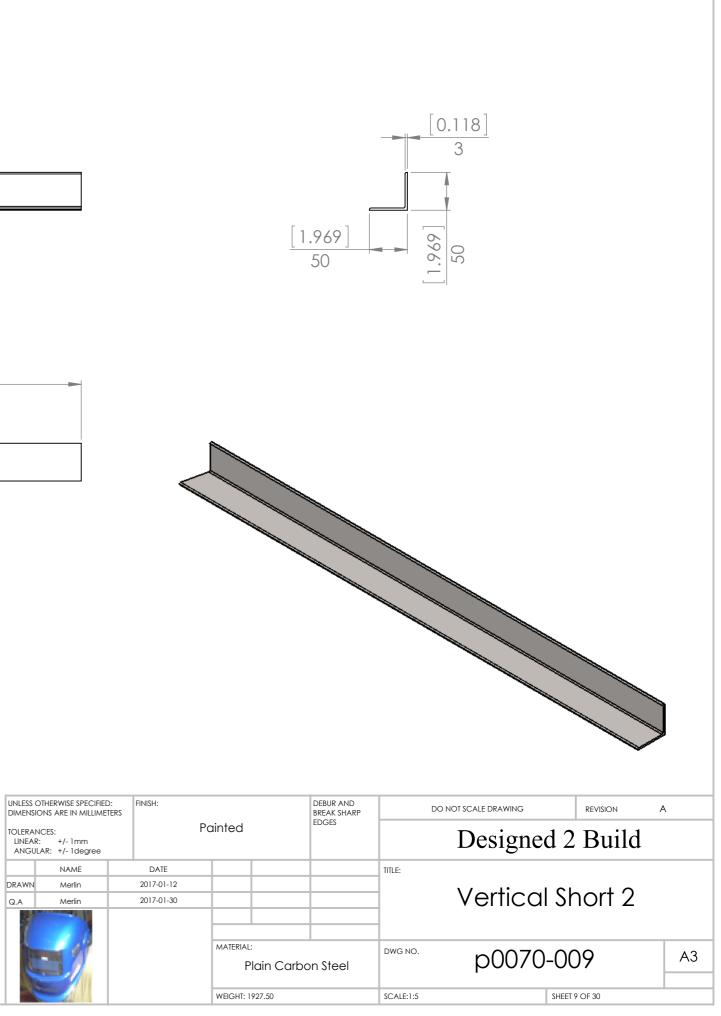
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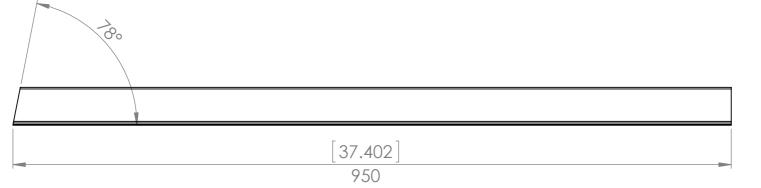


<b>b</b>	DO NOT SCALE DRAWING	REVISION	А						
	Designed 2 Build								
	TITLE:								
	Shelf End								
	DWG NO. p0070-	p0070-007							
	SCALE:1:5	SHEET 7 OF 30							

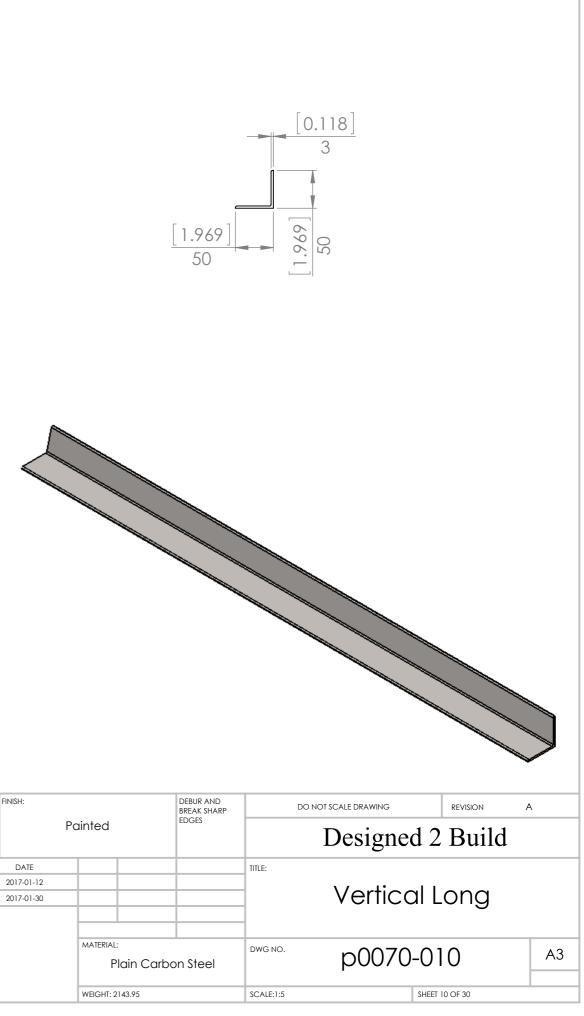




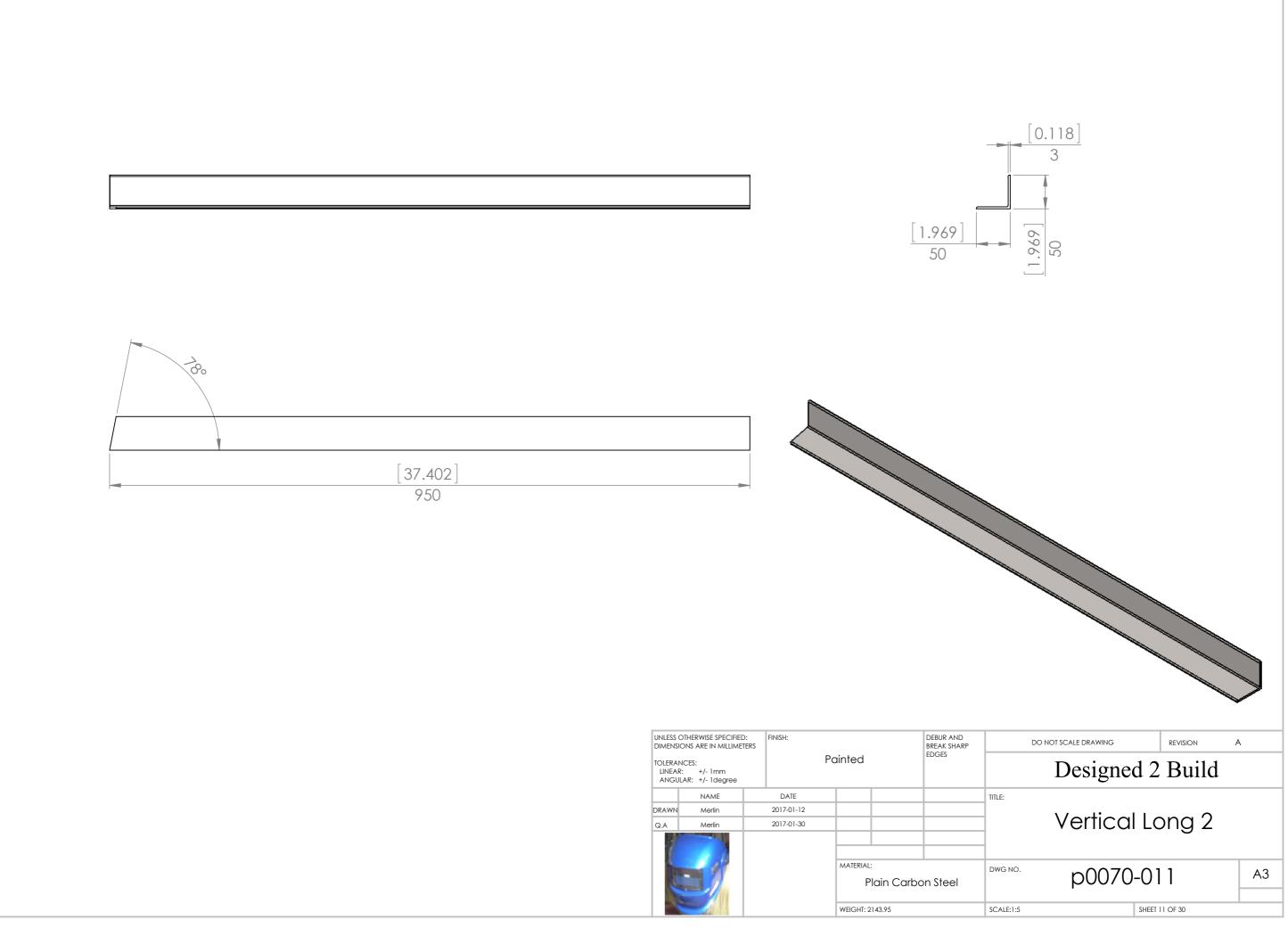




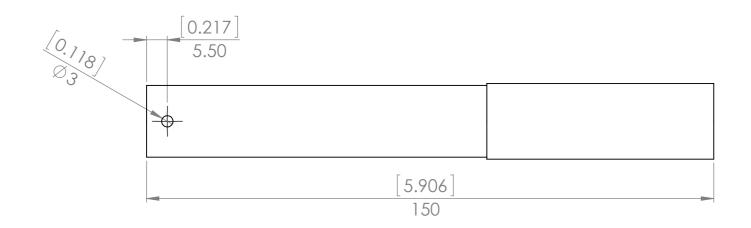


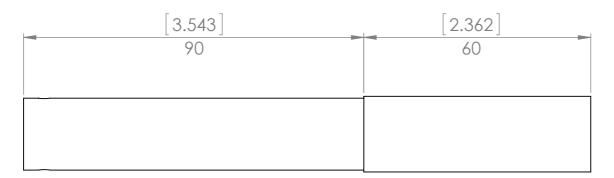


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree			Pc	ainted		DEBUR AND BREAK SHARP EDGES
	NAME	DATE				
DRAWN	Merlin	2017-01-12				
Q.A	Merlin	2017-01-30				
1						
E				MATERIAL	: Plain Carbo	on Steel
				WEIGHT: 2	2143.95	



DIMENSIO TOLERANO LINEAR:	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		FINISH:	DEBUR AND BREAK SHARP EDGES			
	NAME		DATE				
DRAWN	Merlin		2017-01-12				
Q.A	Merlin		2017-01-30				
of the	Y				MATERIAL P WEIGHT: 2	Plain Carbo	on Steel





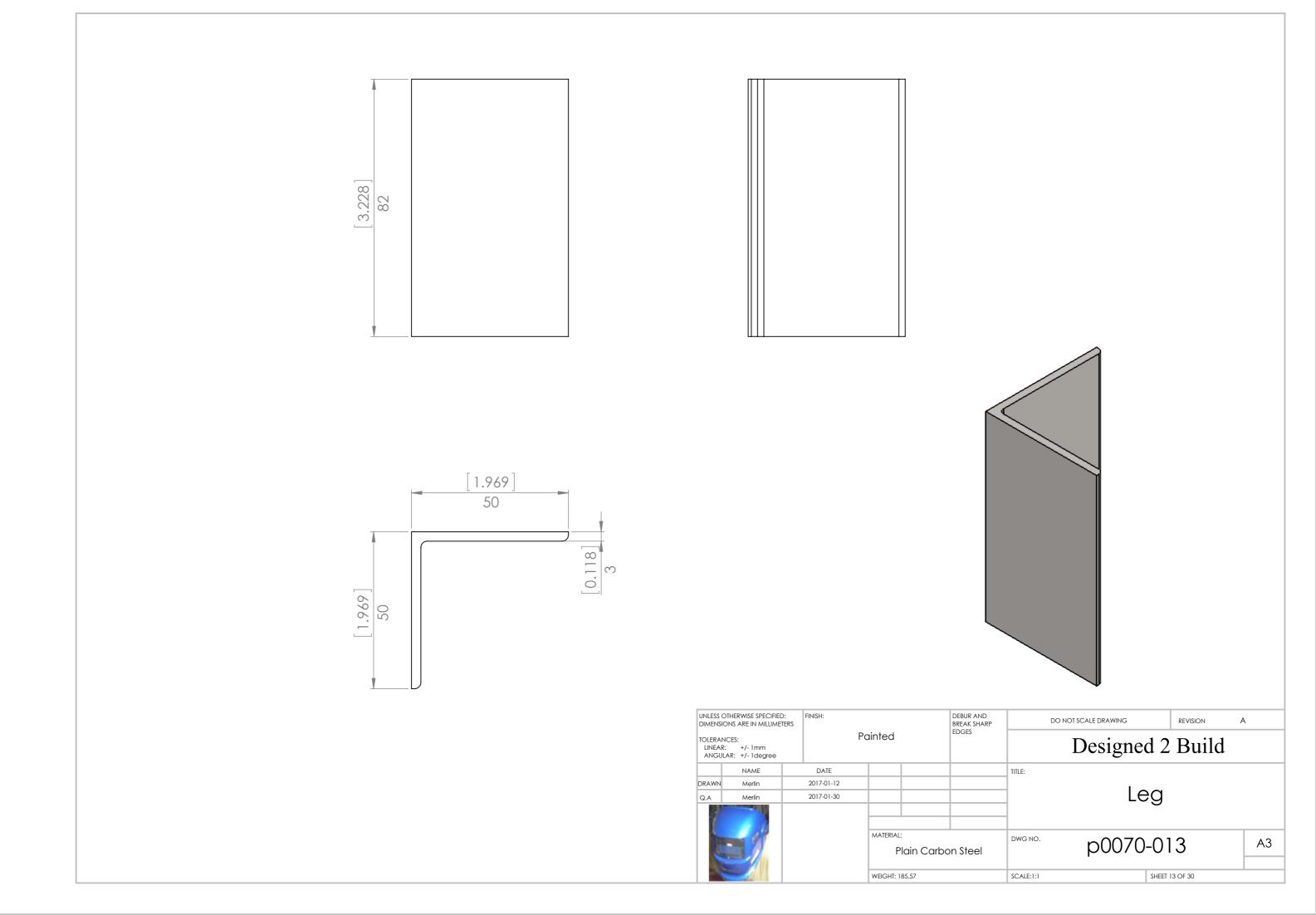
The axel stock which I had available for the build was 20mm but the wheels I bought took a 3/4" (19mm) axel so I turned it down to suit.

No need to do anything fancy if you are lucky enough to have matching sizes on hand, just adjust the size of the holes you drill for the axels accordingly.

Polish the end the wheel fits on.

NAME DATE Image: Constraint of the system   DRAWN Merlin 2017-01-12 Image: Constraint of the system Image: Constraint of the system   Q.A Merlin 2017-01-30 Image: Constraint of the system Image: Constraint of the system   Where the system Image: Constraint of the system Image: Constraint of the system Image: Constraint of the system   Image: Constraint of the system Image: Constraint of the system Image: Constraint of the system Image: Constraint of the system	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		ERS	ed/Polisl	ned	DEBUR AND BREAK SHARP EDGES
Q.A Merlin 2017-01-30 Image: Constraint of the		NAME	DATE			
MATERIAL:	DRAWN	Merlin	2017-01-12			
	Q.A	Merlin	2017-01-30			
						on Steel

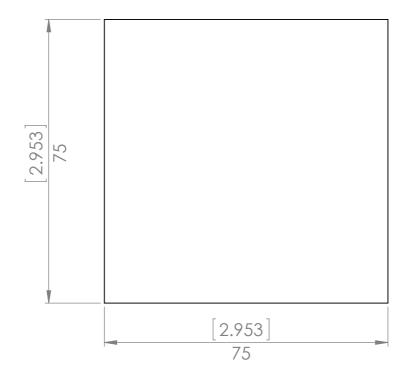




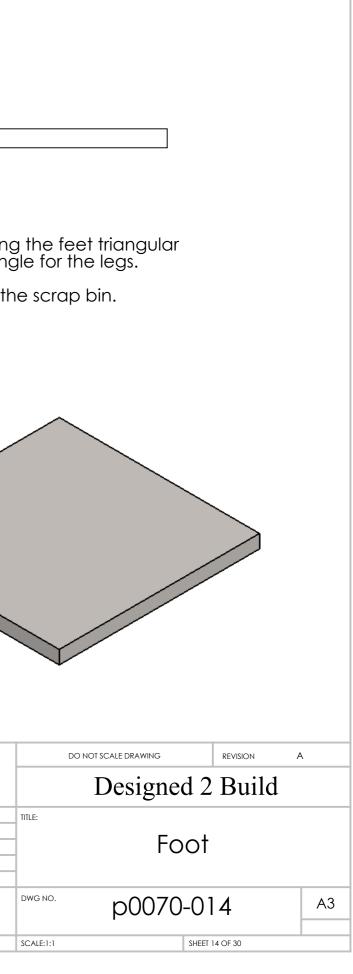


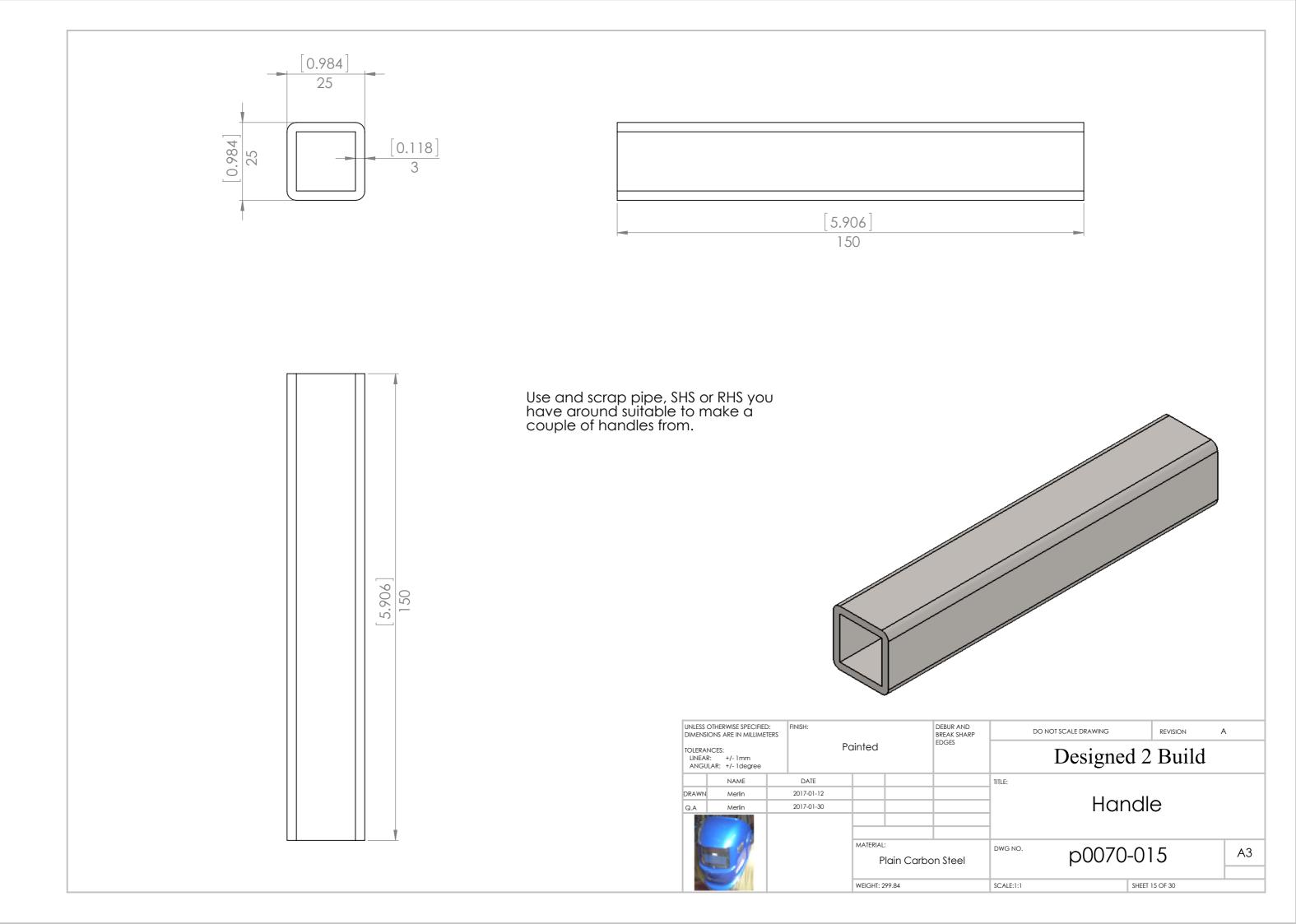
As you will see in the pictures I ended up making the feet triangular on the prototype and a little larger than the angle for the legs.

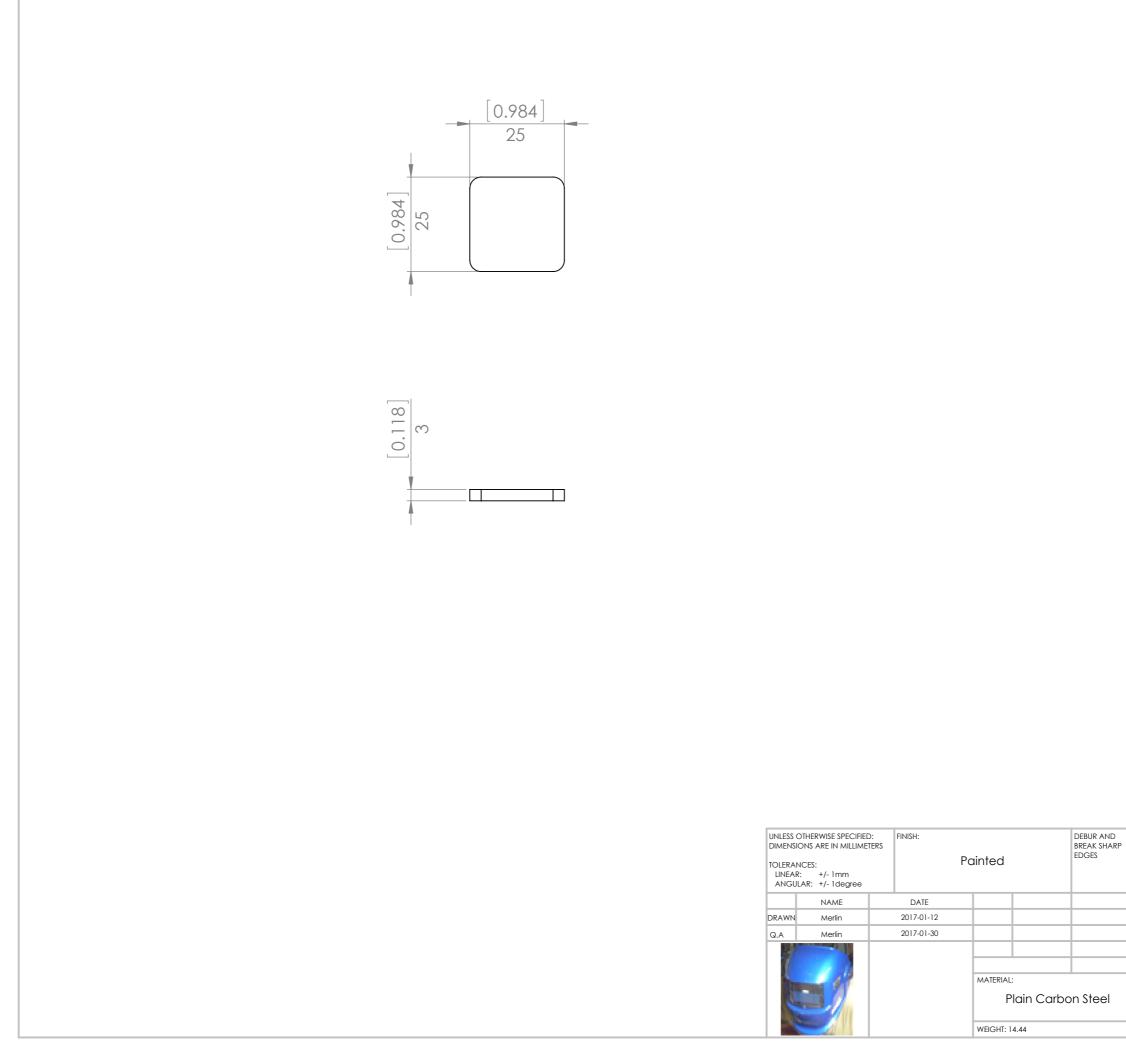
Basically because I had two perfect pieces in the scrap bin.



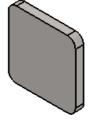
DIMENS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES:		FINISH:	DEBUR AND BREAK SHARP EDGES		
TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree						
	NAME		DATE			
DRAWN	Merlin		2017-01-12			
Q.A	Merlin		2017-01-30			
	and the second se					
1						
	- 11			MATERIAL		
				Plain Carbo		on Steel
				WEIGHT: 2	219.37	

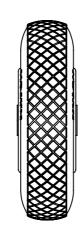


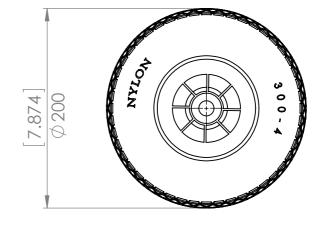




	DO NOT SCALE DRAWING REVISION A								
	Design & Build								
TITLE:	Handle End Cap								
DWG NO.	p0070-016								
SCALE:1:1	SHEET 16 OF 30								



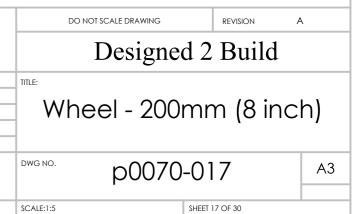


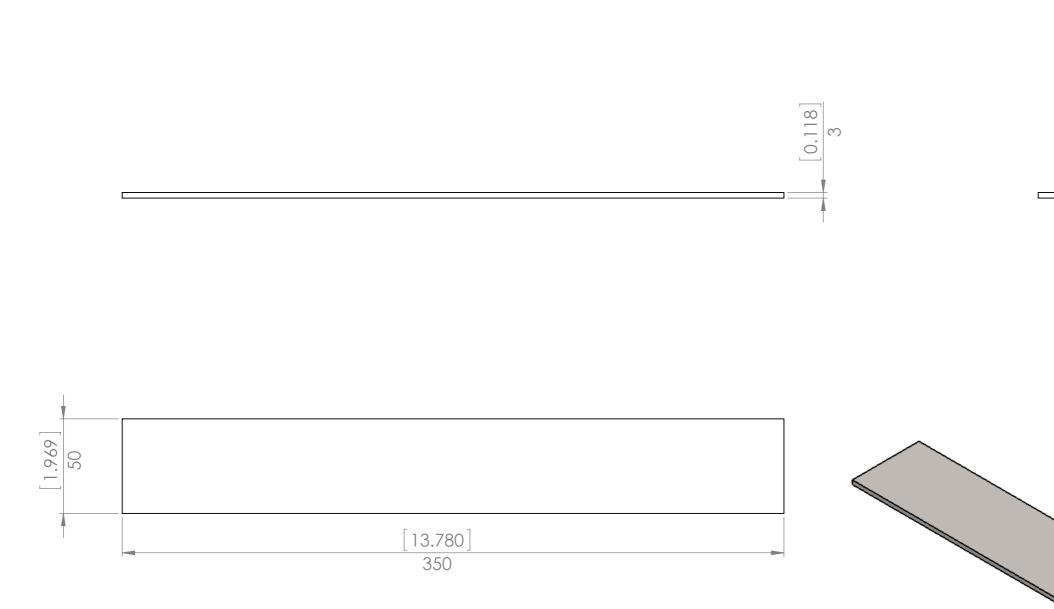


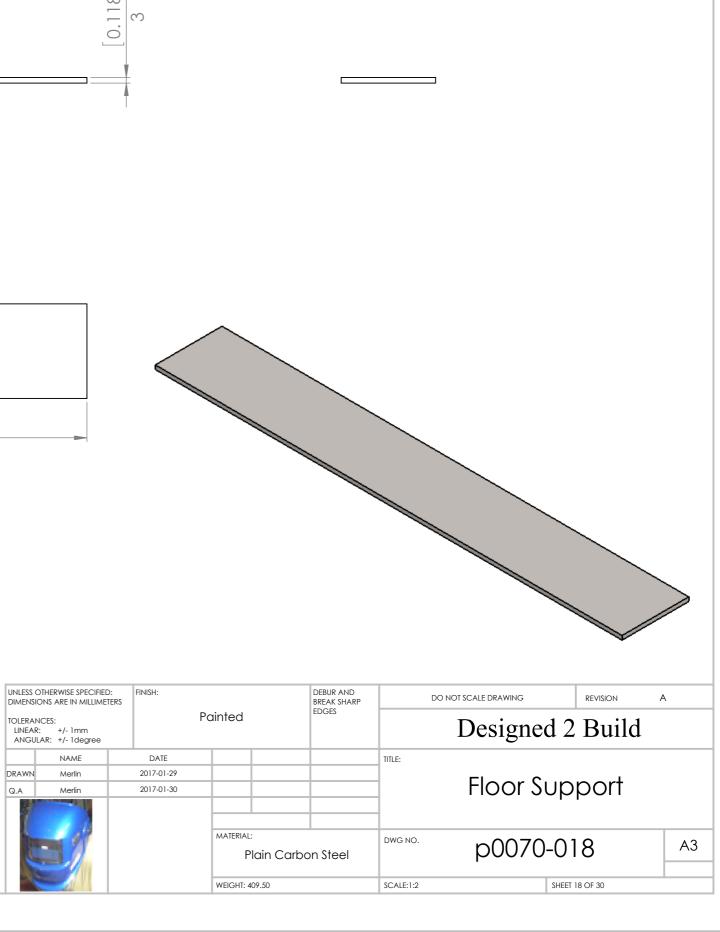
I picked up some solid rubber wheels for the job. Anything around 200mm (8") should be fine.

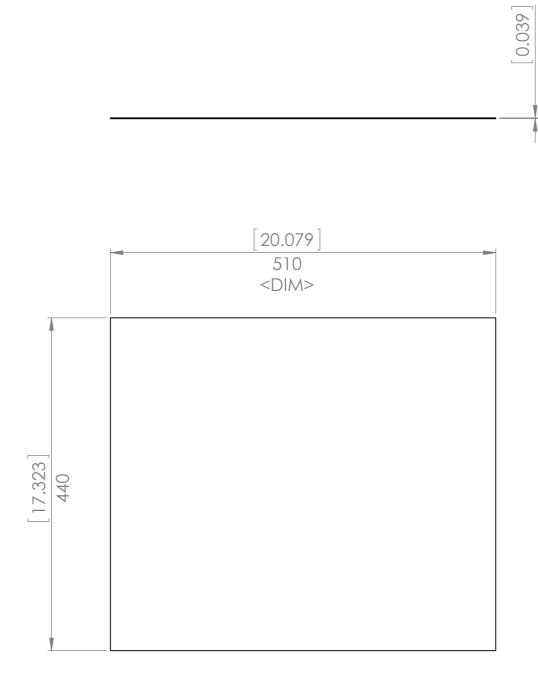


DIMENSI TOLERAN LINEAR	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		FINISH:	As Received				
	NAME		DATE					
DRAWN	n		-					
Q.A	Merlin		2017-01-30					
					MATERIAL WEIGHT:	:		





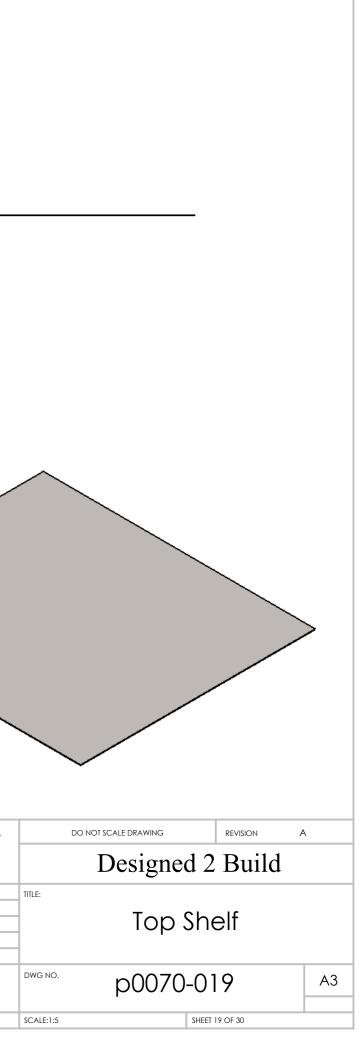


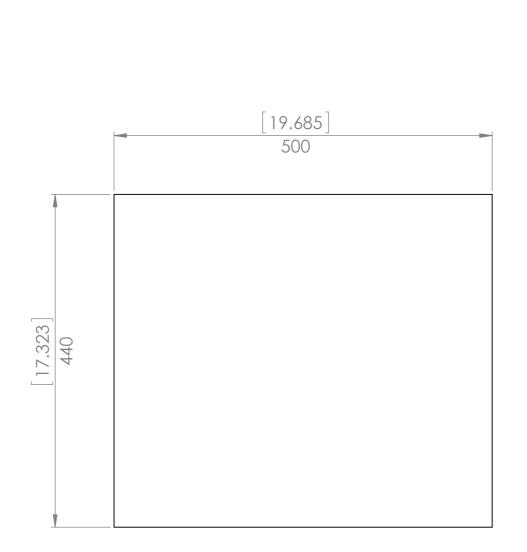


I cut the shelves from the panels off an old washing machine.

Expanded metal would have been preferrable but that's not what I had to hand.

DIMENSION TOLERANC LINEAR:	HERWISE SPECIFIED IS ARE IN MILLIMET ES: +/- 1mm R: +/- 1degree	ERS	Painted		DEBUR AND BREAK SHARP EDGES	
	NAME	DATE				
DRAWN	Merlin	2017-01-29				
Q.A	Merlin	2017-01-30				
			MATERIAL	L: Plain Carbon Steel		
25			WEIGHT:	1749.32		



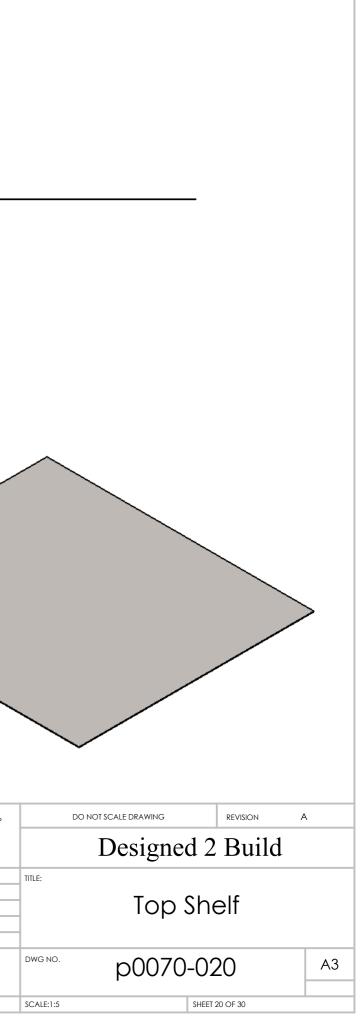


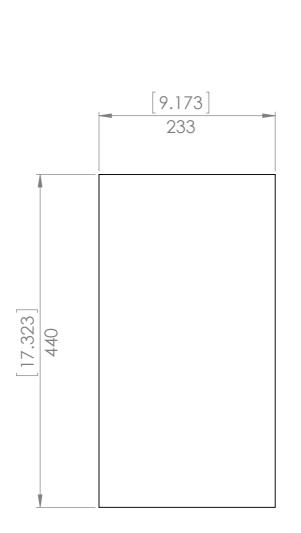
0.039

I cut the shelves from the panels off an old washing machine.

Expanded metal would have been preferrable but that's not what I had to hand.

DIMENSION TOLERANC LINEAR:	HERWISE SPECIFIED IS ARE IN MILLIME ES: +/- 1mm R: +/- 1degree		Pc	ainted		DEBUR AND BREAK SHARP EDGES
	NAME	DATE				
DRAWN	Merlin	2017-01-29				
Q.A	Merlin	2017-01-30				
1						
				MATERIAL	: Iain Carbo	on Steel
				WEIGHT: 1	716.00	

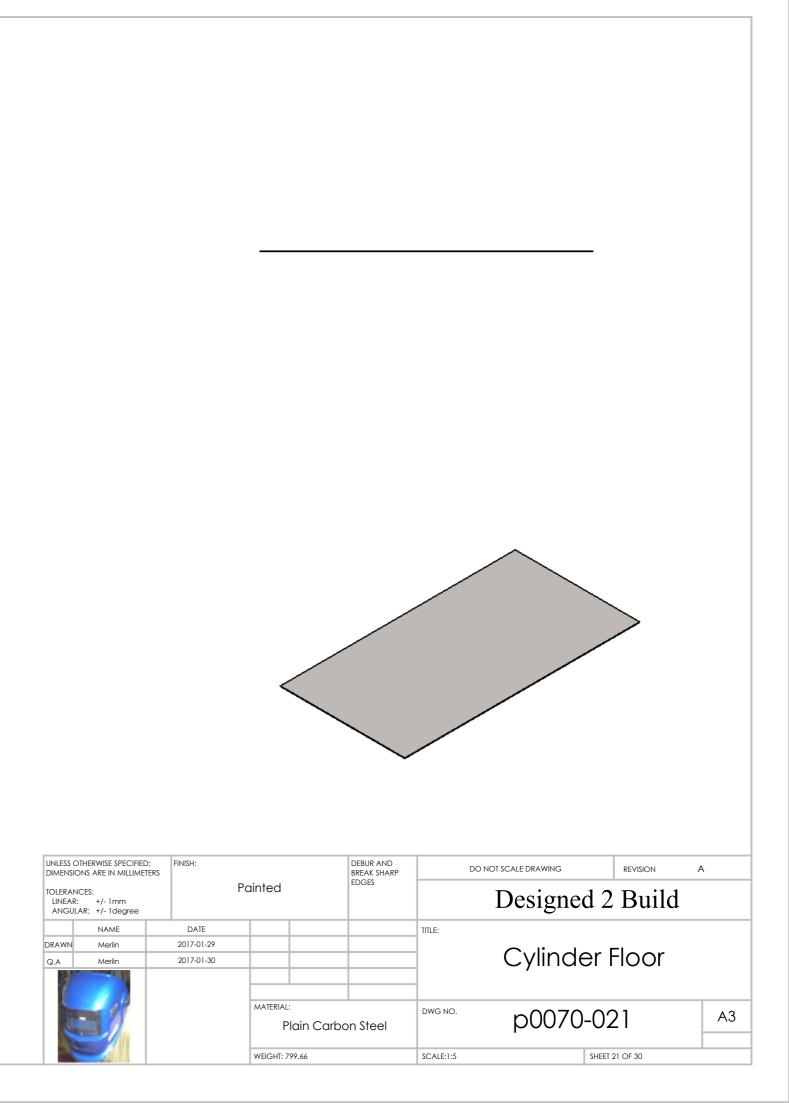


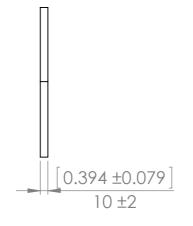


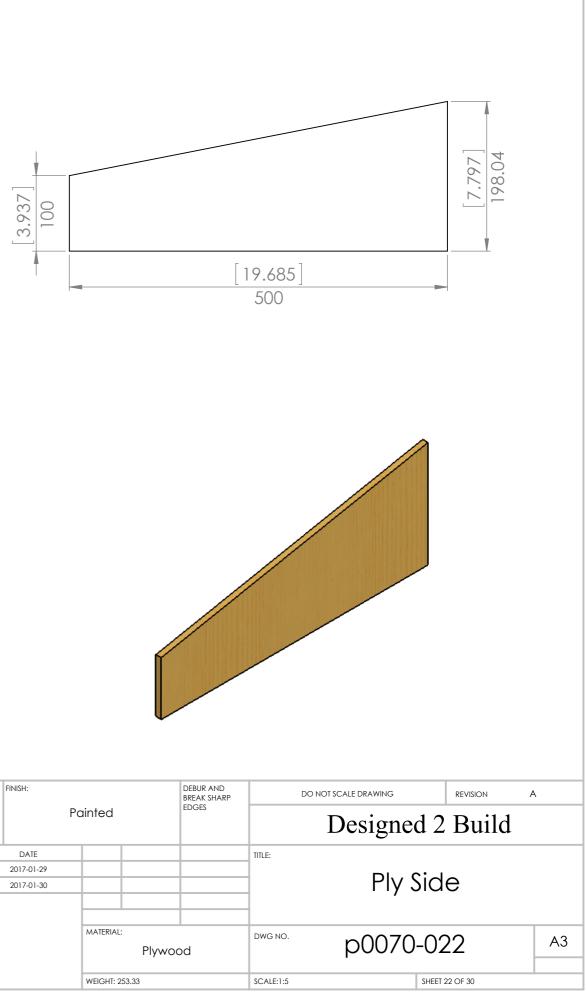
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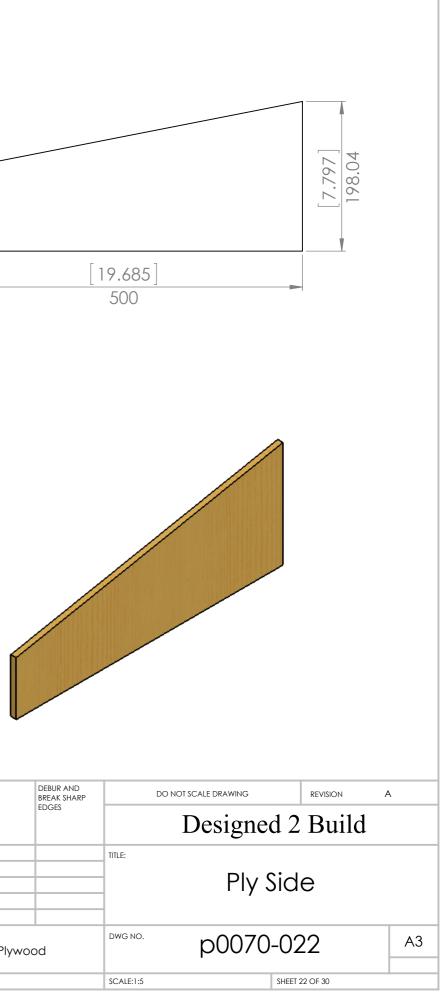
I cut the shelves from the panels off an old washing machine.

Expanded metal would have been preferrable but that's not what I had to hand.



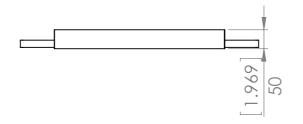


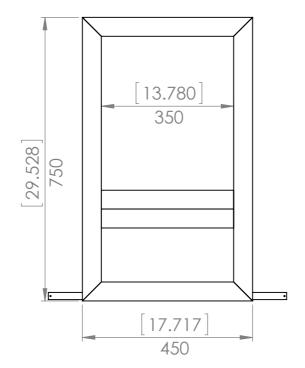




DIMENSION TOLERANC LINEAR:		FINISH:	Pc	ainted	DEBUR AND BREAK SHARP EDGES	
	NAME	DATE				
DRAWN	Merlin	2017-01-29				
Q.A	Merlin	2017-01-30				
				MATERIAL	Plywoo	od
				WEIGHT: 2	253.33	

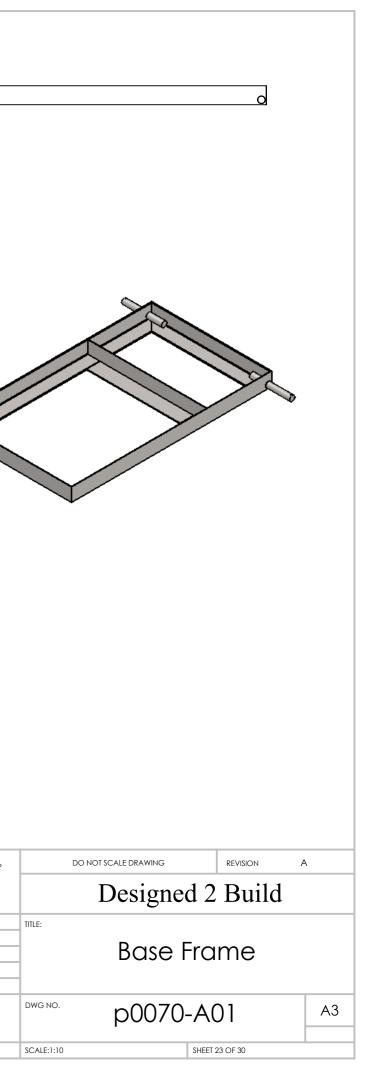
The sole reason for these is to provide somewhere to mount the hose reels I got from the local dollar shop.

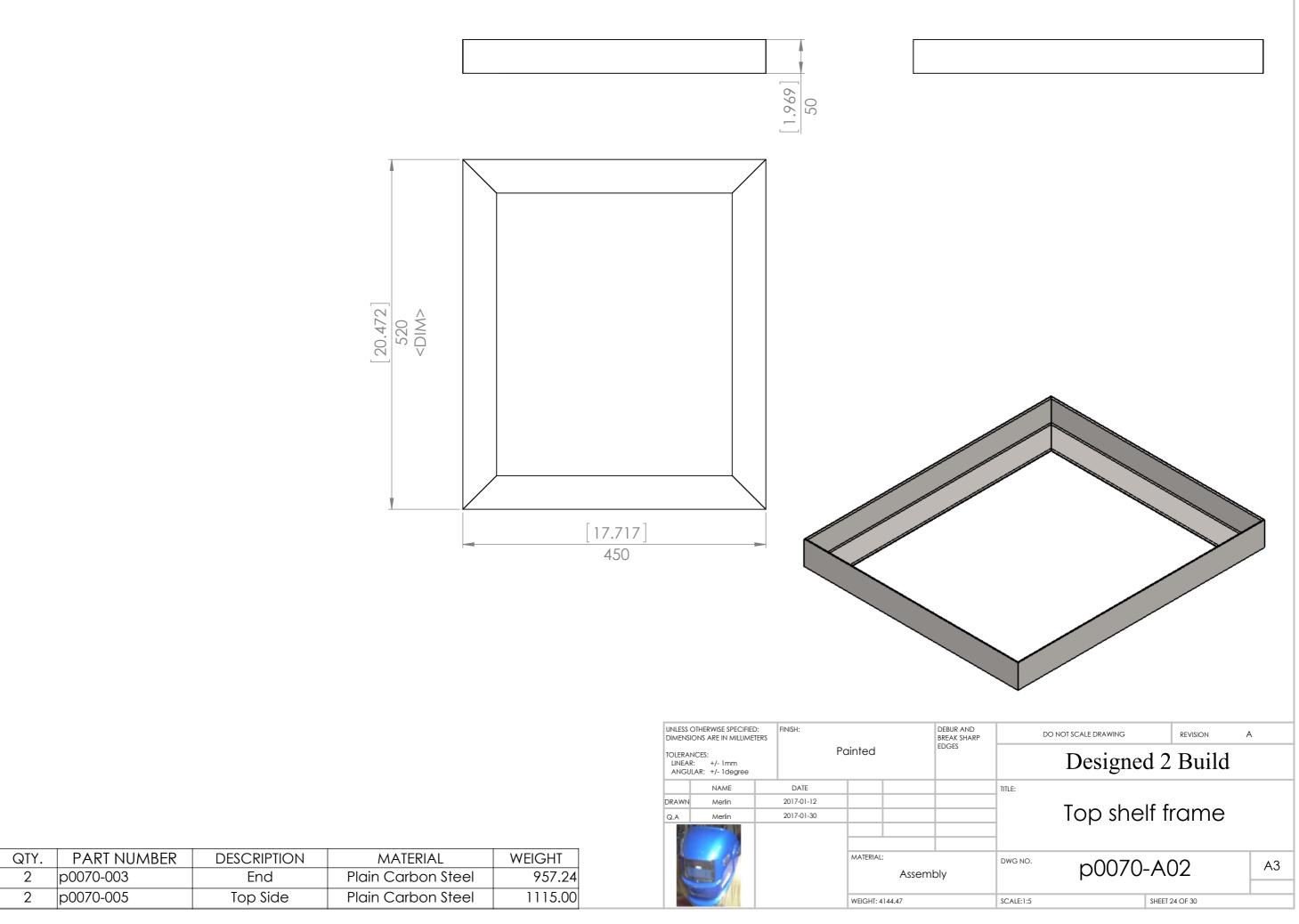




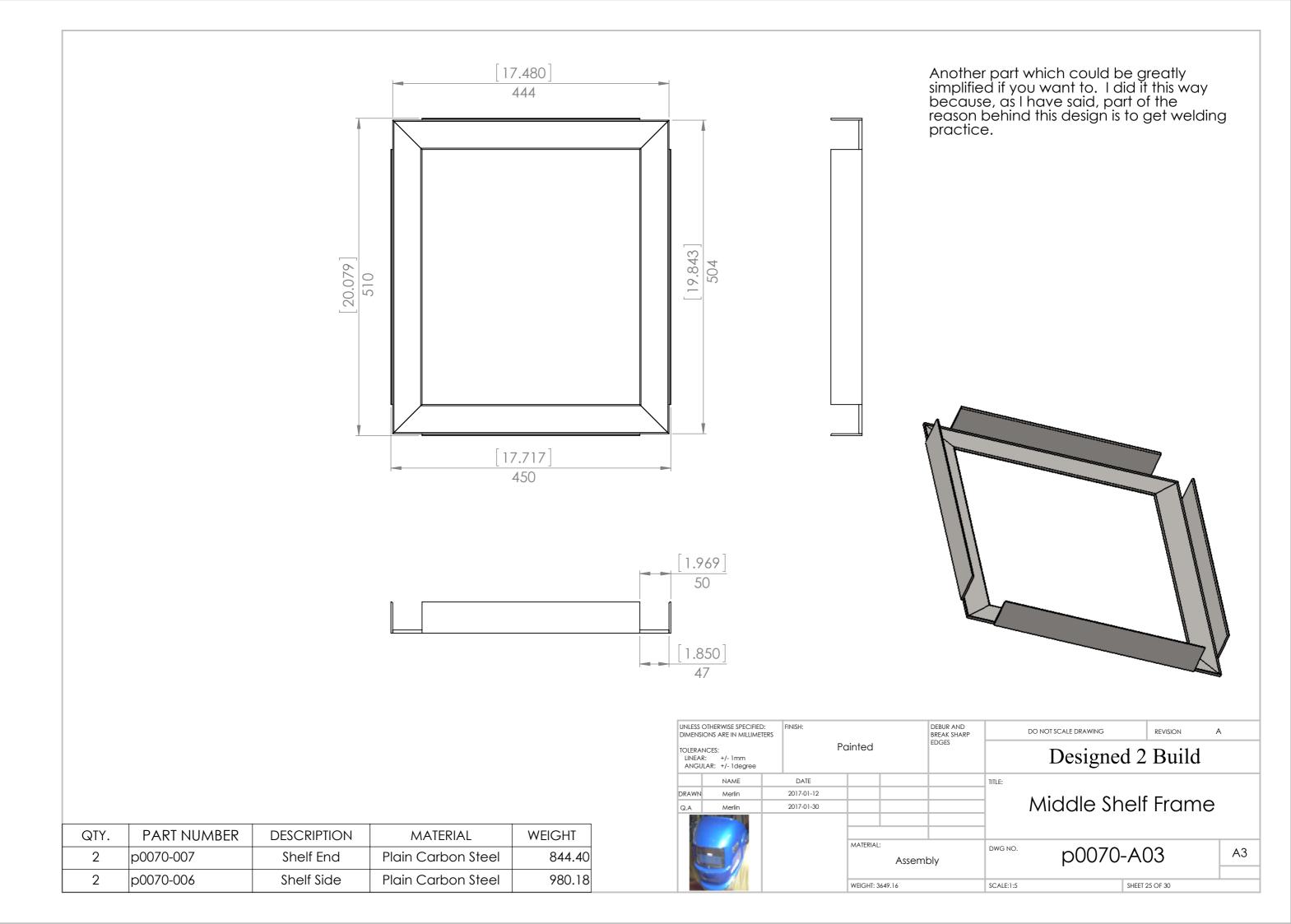
DIMENSION TOLERANC LINEAR:	HERWISE SPECIFIED NS ARE IN MILLIMET CES: +/- 1mm R: +/- 1degree		Po	ainted		DEBUR AND BREAK SHARP EDGES
	NAME	DATE				
DRAWN	Merlin	2017-01-12				
Q.A	Merlin	2017-01-30				
				MATERIAL	: Assem	bly
				WEIGHT: 7	7167.08	

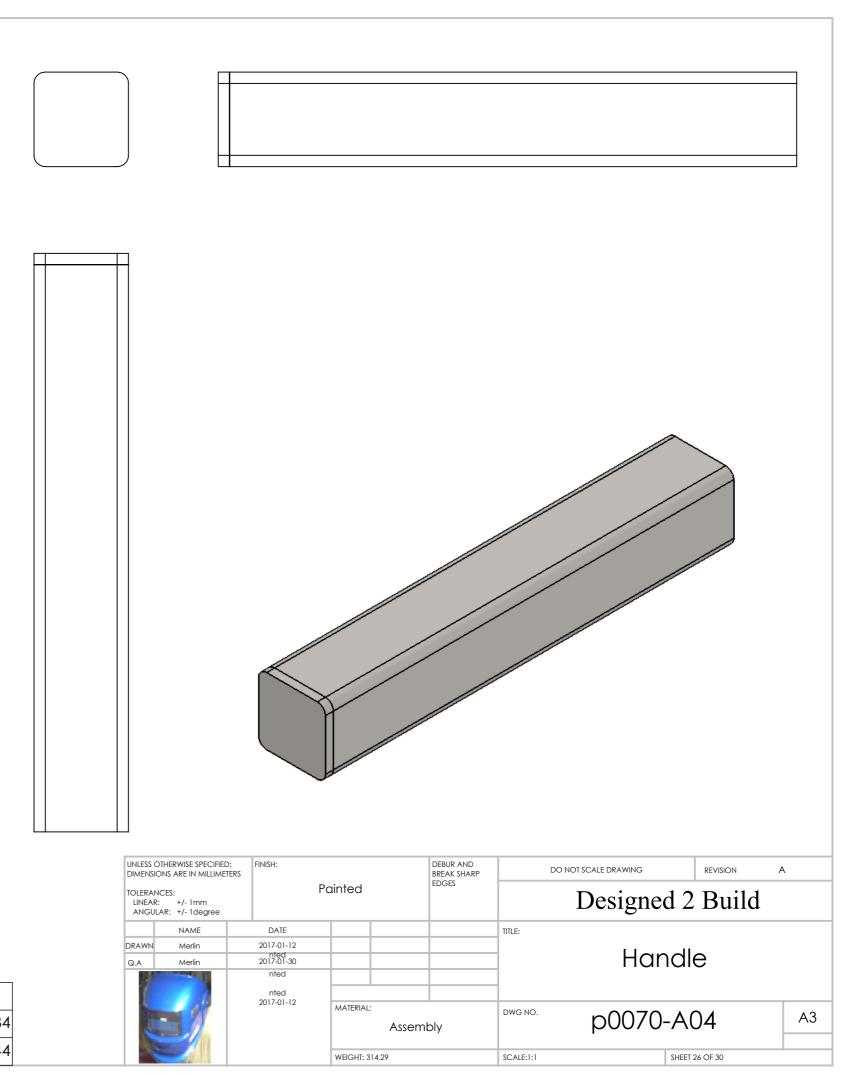
QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
2	p0070-003	End	Plain Carbon Steel	957.24
1	p0070-001	Bottom Side 1	Plain Carbon Steel	1628.78
1	p0070-002	Bottom Side 2	Plain Carbon Steel	1628.83
1	p0070-004	Cross Member	Plain Carbon Steel	895.47
1	p0070-018	Floor Support	Plain Carbon Steel	409.50
2	p0070-012	Axel	Plain Carbon Steel	345.02





QTY.	PARI NUMBER	DESCRIPTION	MATERIAL	WEIGHT
2	p0070-003	End	Plain Carbon Steel	957.24
2	p0070-005	Top Side	Plain Carbon Steel	1115.00



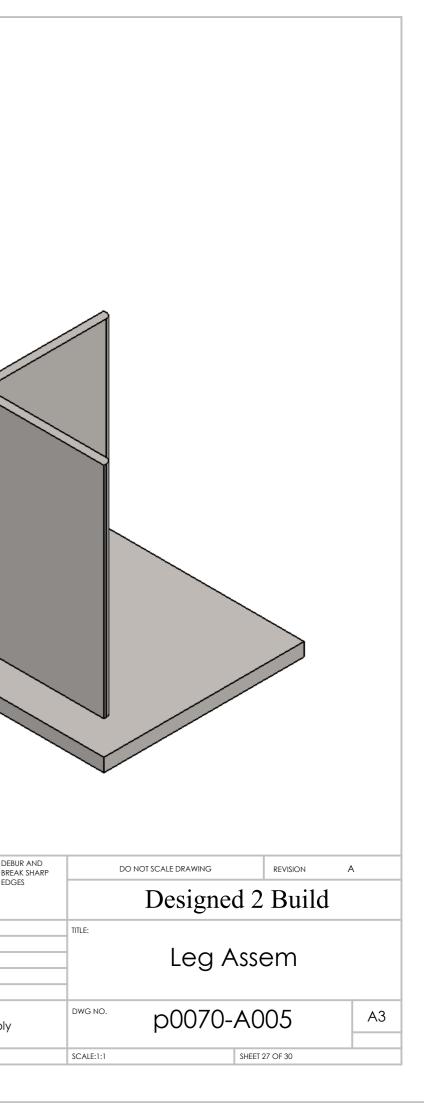


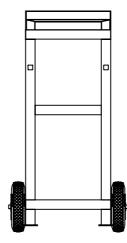
DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		-	Painted		BREAK SHARP EDGES
	NAME	DATE			
DRAWN	Merlin	2017-01-12			
Q.A	Merlin	nted 2017-01-30			
1		nted nted			
		2017-01-12	MATERIA	L: Assem	bly
			WEIGHT:	314.29	

QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	p0070-015	Handle	Plain Carbon Steel	299.84
1	p0070-016	Handle End Cap	Plain Carbon Steel	14.44

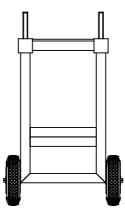
										//
						S OTHERWISE SPECIFIED: ISIONS ARE IN MILLIMETERS ANCES: AR: +/- 1mm SULAR: +/- 1degree		Painted	DEI BRI EDI	BU
					DRAW	NAME	DATE 2017-01-12			_
					Q.A	Merlin	2017-01-30			_
QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT	1	1				_
1	p0070-014	Foot	Plain Carbon Steel	219.37				MATERIAL:	Assembly	,
1	p0070-013	Leg	Plain Carbon Steel	185.57				WEIGHT: 404		
	•	•		•						_

QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	p0070-014	Foot	Plain Carbon Steel	219.37
1	p0070-013	Leg	Plain Carbon Steel	185.57

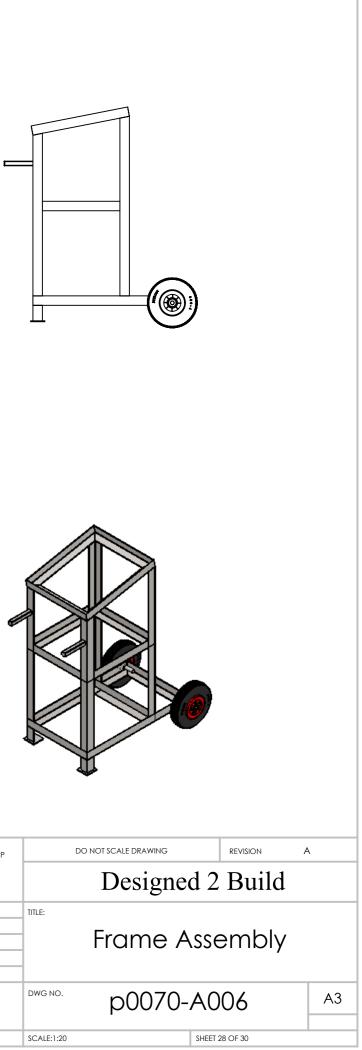


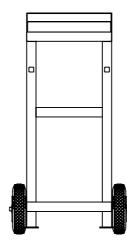


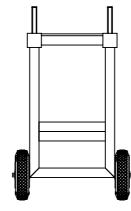
QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	p0070-A01	Base Frame	Assembly	7167.08
1	p0070-010	Vertical Long	Plain Carbon Steel	2143.95
1	p0070-011	Vertical Long 2	Plain Carbon Steel	2143.95
1	p0070-008	Vertical Short 1	Plain Carbon Steel	1927.50
1	p0070-009	Vertical Short 2	Plain Carbon Steel	1927.50
1	p0070-A02	Top shelf frame	Assembly	4144.47
1	p0070-A03	Middle Shelf Frame	Assembly	3649.16
2	p0070-A005	Leg Assem	Assembly	404.95
2	p0070-A04	Handle	Assembly	314.29
2		Wheel - 200mm (8 inch)	Assembly	3317.41



DIMENSION TOLERANC LINEAR:	HERWISE SPECIFIEI IS ARE IN MILLIME IES: +/- 1mm R: +/- 1degree		FINISH:	Pc	ainted		DEBUR AND BREAK SHARP EDGES
	NAME		DATE				
DRAWN	Merlin		2017-01-14				
Q.A	Merlin		2017-01-30				
				MATERIAL	: Asseml		
	1				WEIGHT: 3		Jiy

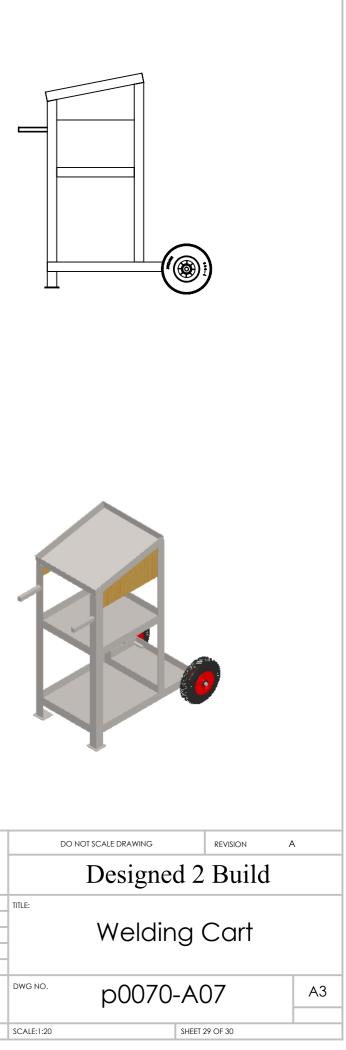






UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree			FINISH: Painted				DEBUR AND BREAK SHARP EDGES
	NAME		DATE				
DRAWN	Merlin		2017-01-18				
Q.A	Merlin		2017-01-30				
					MATERIAL	: Assemt	oly
					WEIGHT: 37664.57		

1					
	QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
	1	p0070-A006	Frame Assembly	Assembly	31176.92
	2	p0070-022	Ply Side	Plywood	253.33
	1	p0070-019	Top Shelf	Plain Carbon Steel	1749.32
	2	p0070-020	Top Shelf	Plain Carbon Steel	1716.00
	1	p0070-021	Cylinder Floor	Plain Carbon Steel	799.66



QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
4	p0070-003	End	Plain Carbon Steel	957.24
1	p0070-001	Bottom Side 1	Plain Carbon Steel	1628.78
1	p0070-002	Bottom Side 2	Plain Carbon Steel	1628.83
1	p0070-004	Cross Member	Plain Carbon Steel	895.47
1	p0070-018	Floor Support		
2	p0070-012	Axel		
1	p0070-010	Vertical Long	Plain Carbon Steel	2143.95
1	p0070-011	Vertical Long 2	Plain Carbon Steel	2143.95
1	p0070-008	Vertical Short 1	Plain Carbon Steel	1927.50
1	p0070-009	Vertical Short 2	Plain Carbon Steel	1927.50
2	p0070-005	Top Side	Plain Carbon Steel	1115.00
2	p0070-007	Shelf End	Plain Carbon Steel	844.40
2	p0070-006	Shelf Side	Plain Carbon Steel	980.18
2	p0070-014	Foot	Plain Carbon Steel	219.37
2	p0070-013	Leg	Plain Carbon Steel	185.57
2	p0070-015	Handle	Plain Carbon Steel	299.84
2	p0070-016	Handle End Cap	Plain Carbon Steel	14.44
2	p0070-017	Wheel - 200mm (8 inch)		
2	p0070-022	Ply Side	Plywood	253.33
1	p0070-019	Top Shelf	Plain Carbon Steel	1749.32
2	p0070-020	Top Shelf	Plain Carbon Steel	1716.00
1	p0070-021	Cylinder Floor	Plain Carbon Steel	799.66

## DISCLAIMER:

I have build these racks and have used them without a problem.

Be warned that I am not an engineer and there has been very little in the way of strength analysis done on this. It is all eyeball engineering.

I provide the plans as an example of something that has worked for me. They are provided for educational purposes only. I want to stress in the strongest possible terms that if you choose to build something from these plans then you do so entirely at your own risk.

Where the plans feature a "QA Date" this only means that I have actually built the item in the plans and completed the build on that date. It does **NOT** mean that the design passed any form of quality assurance.

I have no control of the quality of construction nor the modifications you may make to the design. I take no responsibility for anything you choose to do with these plans.

If you do not fully understand everything above or if you do not fully agree with it then DO NOT USE THESE PLANS.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: LINEAR: +/- 1mm ANGULAR: +/- 1degree		FINISH: Painted		DEBUR AND BREAK SHARP EDGES			
	NAME		DATE				
DRAWN	Merlin		2017-01-18				
Q.A	Merlin		2017-01-30				
27	and the second se						
1							
					MATERIAL: Assembly		bly
					WEIGHT: 37664.57		

