

## BAB 6

### KESIMPULAN DAN SARAN

#### 6.1. Kesimpulan

Pemilihan alternatif desain menggunakan alternatif desain 3 sesuai penilaian secara faktor teknis dan ekonomis. Kesimpulan dari hasil pembuatan mesin pemotong lembaran plastik adalah sebagai berikut:

- a. Didapat mesin pemotong lembaran plastik sesuai dengan permintaan *client* dengan spesifikasi seperti pada Tabel 6.1.

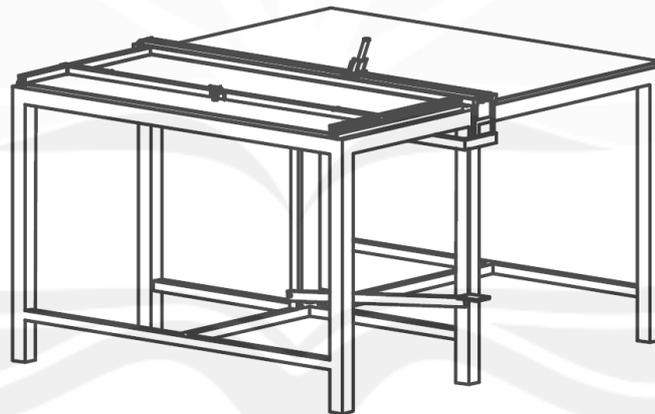
**Tabel 6.1. Spesifikasi Mesin Pemotong Lembaran Plastik**

Spesifikasi Fisik	
Dimensi	Panjang = 1500 mm Lebar = 1300 mm Tinggi = 900 mm
Berat	46 kg
Sistem pemotongan	Geser
Panjang pisau	50 mm
Ukuran maksimal <i>input</i>	Panjang = 1500 mm Lebar = 1200 mm Tebal = 0,3 mm
Ukuran <i>output</i>	Panjang = 500 mm
Kecepatan produksi	258 lembar per jam
Harga	
Mesin	Rp. 5.296.500,00

b. Hal-hal yang didapat berdasarkan pengujian yang dilakukan adalah:

1. Ukuran panjang maksimal material awal yang akan dipotong adalah 1200 mm.
2. Ukuran panjang maksimal produk yang dihasilkan adalah 500 mm.
3. Kecepatan produksi mesin ini adalah 258 lembar per jam atau 4 kali lipat dari kecepatan waktu produksi dengan menggunakan cara pemotongan yang selama ini dilakukan di Laboratorium Proses Produksi Universitas Atma Jaya.

c. Mesin pemotong lembaran plastik yang didapat dapat dilihat pada Gambar 6.1.



Gambar 6.1. Mesin Pemotong Lembaran Plastik

## 6.2. Saran

Mesin pemotong lembaran plastik ini sudah dapat memenuhi tuntutan fungsi dari *client*, namun mesin ini masih dapat dikembangkan dengan cara menambah motor untuk menggerakkan *stopper*, pisau, dan konveyor untuk material secara otomatis. Selain itu, juga dapat

ditambahkan arah pemotongan pada mesin sehingga *output* yang didapat dapat menghasilkan panjang sekaligus lebar yang diinginkan.



## DAFTAR PUSTAKA

- Cross, N., 1994, *Engineering Design Methods*, ed. 2, John Wiley & Sons, Inc, England.
- Noegroho., 2010, *Perancangan dan Pembuatan Automatic Cardboard Slitter*, Akademi Teknik Mesin dan Industri, Cikarang.
- Soelistyo., 2003, *Perancangan Mesin Pemotong Jerami*, Universitas Indonesia, Depok.
- Sudibyoy, B., 1973, *Bantalan Gelinding*, ATMI Press, Surakarta.
- Sudibyoy, B., 1973, *Kekuatan dan Tegangan Ijin*, ATMI Press, Surakarta.
- Sudibyoy, B., *Poros Penyangga dan Poros Transmisi*, ATMI Press, Surakarta.
- Sular, 1991, *Tabel Elemen Mesin*, ATMI Press, Surakarta.
- Sularso, 1978, *Dasar-dasar Perancangan dan Pemilihan Elemen Mesin*, Bandung.
- Suroto, A., *Strength of Materials*, ATMI Press, Surakarta.



Lampiran 1: Wawancara Dengan Narasumber untuk Mendapat Atribut Desain dan Daftar Tuntutan

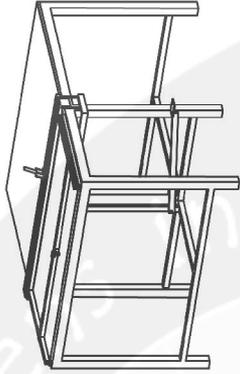
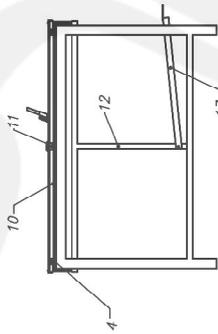
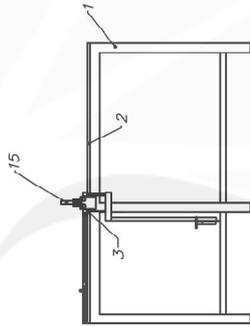
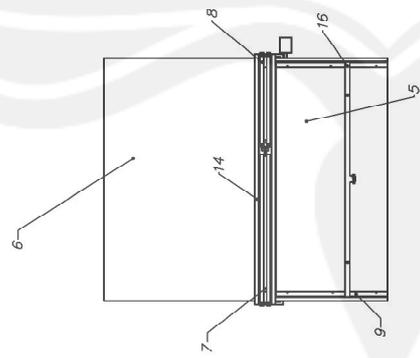
1. Faktor apa saja yang mempengaruhi perancangan suatu mesin?  
Faktor keamanan, konstruksi, pengoperasian, perawatan, dan biaya.
2. Faktor keamanan bagaimana yang dimaksud?  
Ada pengaman agar pisau tidak melukai operator saat *setting* mesin dan material.
3. Konstruksi bagaimana yang diinginkan?  
Konstruksi sesederhana mungkin dengan proses pemotongan secara manual yang dapat memenuhi seluruh tuntutan fungsi.
4. Tuntutan produk bagaimana yang diinginkan?
  - Produk yang dihasilkan dapat memiliki panjang maksimal 500 mm.
  - Permukaan lembaran plastik tidak ada cacat (tergores, lecet).
  - Hasil pemotongan lurus, siku, dan presisi.
  - Menghilangkan penggunaan mal.
5. Bagaimana dengan pengoperasian dan perawatan?
  - Pengoperasian yang mudah, peletakan *part* saat *assembling* diatur sedemikian rupa sehingga mesin dapat dioperasikan oleh 1 orang operator saja.
  - Perawatan yang mudah, hanya pelumasan pada *part* tertentu dan *part* tersebut diletakan di tempat yang tidak tersembunyi.
6. Bagaimana dengan biaya?
  - Biaya maksimal adalah Rp. 5.000.000,00 (lima juta rupiah).

- Biaya dicapai sekecil mungkin dengan cara pemilihan *part*, material, dan proses permesinan yang tepat.





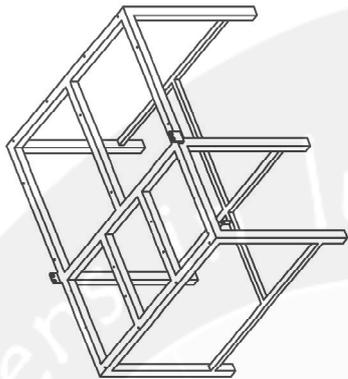
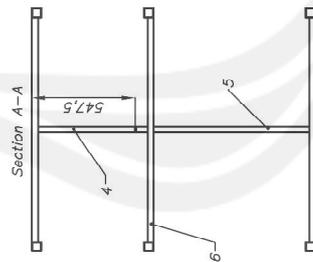
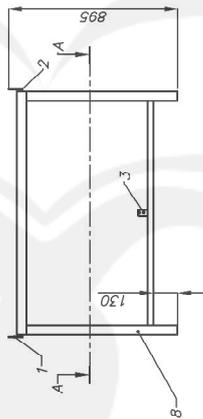
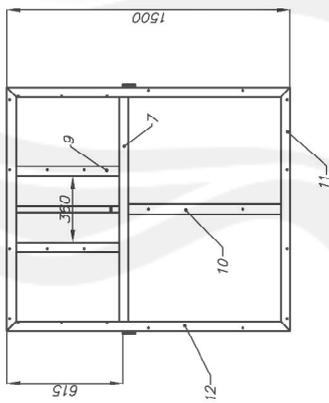
## **LAMPIRAN 2**



Pieces	Description	Item	Material	Dimension	P/O
2	Rail Bearing	16			Purchase
1	Blade Holder	15			Order
2	Presser	14			Order
1	Foot Step	13			Order
1	Linker	12			Order
1	Nilon Handle	11			Order
1	Stopper	10			Order
2	Rail	9			Order
2	Blade Rail	8			Order
1	Spans Hati	7			Order
1	Melamin Input	6			Order
1	Melamin Output	5			Order
2	Front Spacer	4			Order
1	Triplek Output	3			Order
1	Triplek Input	2			Order
1	Frame	1			Order

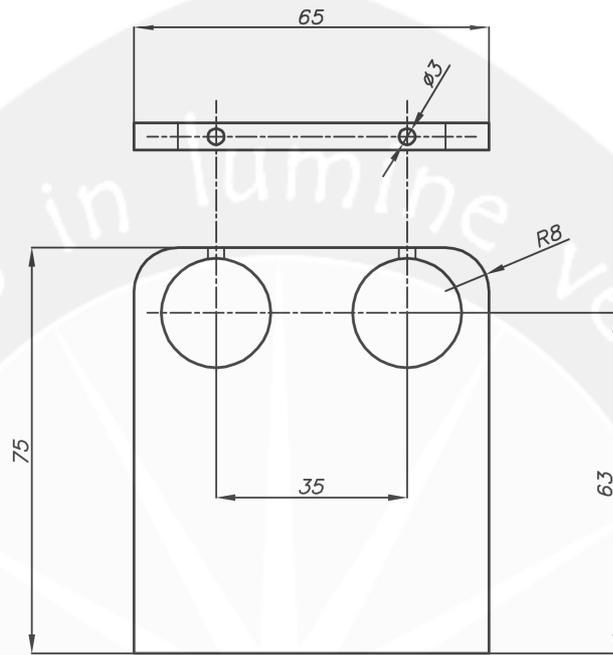
Revision Index	Drawn by : Irawan, A.	Scale : 1:20
	Reg. Nbr. : 101606380	Unit : mm
	Date : 11102011	Material :
	Checked by : T.B.Hanandoko	Sign. :
A3 MESIN PEMOTONG LEMBARAN PLASTIK		
Assy		
INDUSTRIAL ENGINEERING		Operation
UJUY		Weid
Origin.	Rep.	Rep.by.
		Dwg. Nbr. : 10000
		Sn. : Ns.



Pieces	Description	Item	Material	Dimension	P/O
2	Frame 9	12	Hollow	50x50	
2	Frame 8	11	Hollow	50x50	
1	Frame 7	10	Hollow	50x50	
2	Frame 6	9	Hollow	50x50	
1	Frame 5	8	Hollow	50x50	
6	Frame 4	7	Hollow	50x50	
3	Frame 3	6	Hollow	30x30	
1	Frame 2	5	Hollow	30x30	
1	Frame 1	4	Hollow	30x30	
1	Footstep Base	3	Plat	l=5	
2	Base Spacer	2	Plat	t=10	
2	Rail Base	1	Plat	t=5	

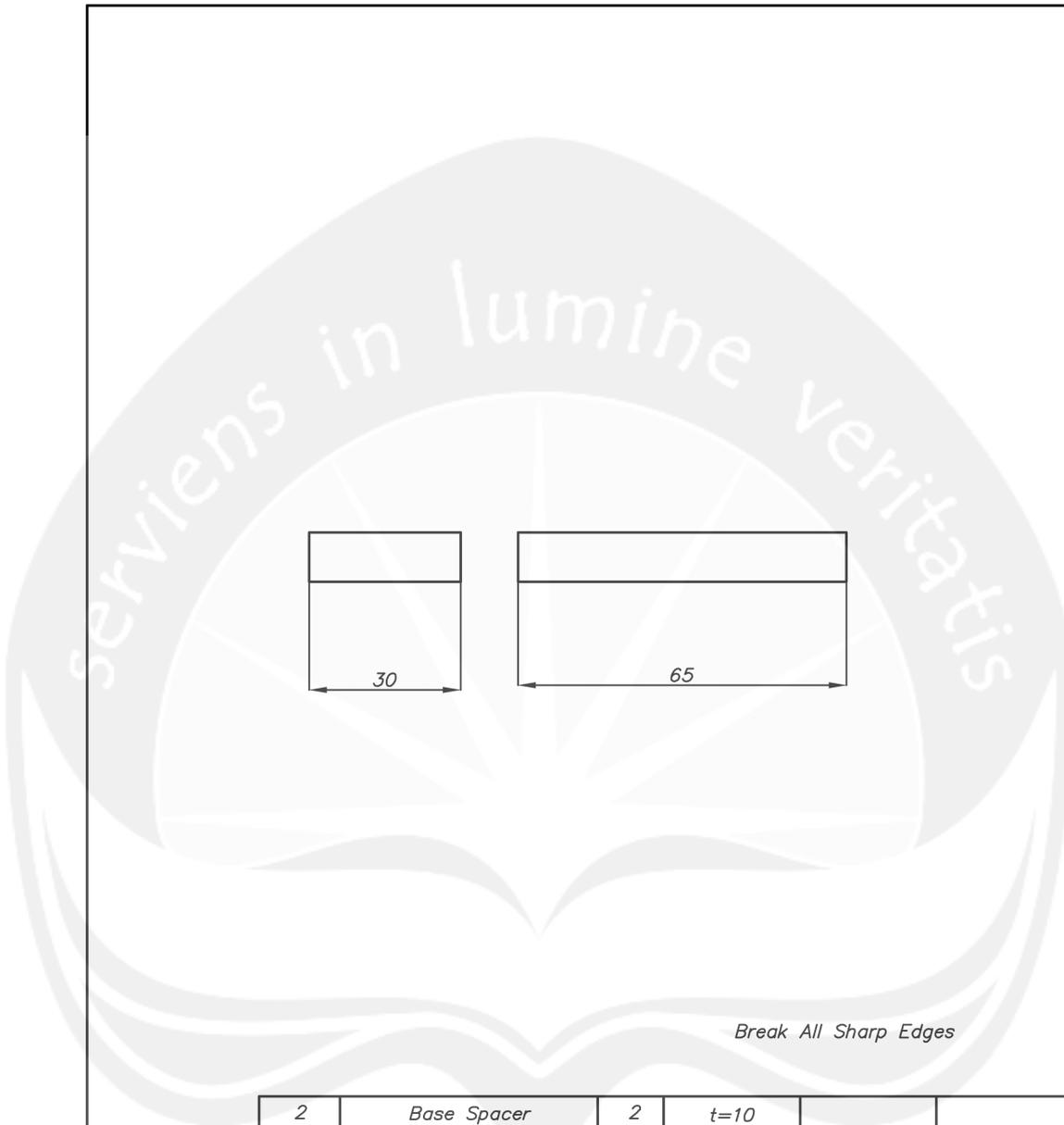
  

Revision Index		Drawn by	: Irawan. A.	Scale	: 1:20
		Reg. Nbr.	: 101606380	Unit	: mm
		Date	: 11102011	Material	:
		Checked by	: T.B.Hanandoko	Sign.	:
		A3	MESIN PEMOTONG LEMBARAN PLASTIK	Assy Frame Mela	
INDUSTRIAL ENGINEERING		Operation		Weld	Dwg. Nrc
UJUY					100
Origin.	Rep.	Rep.by.			Sn. Ns.



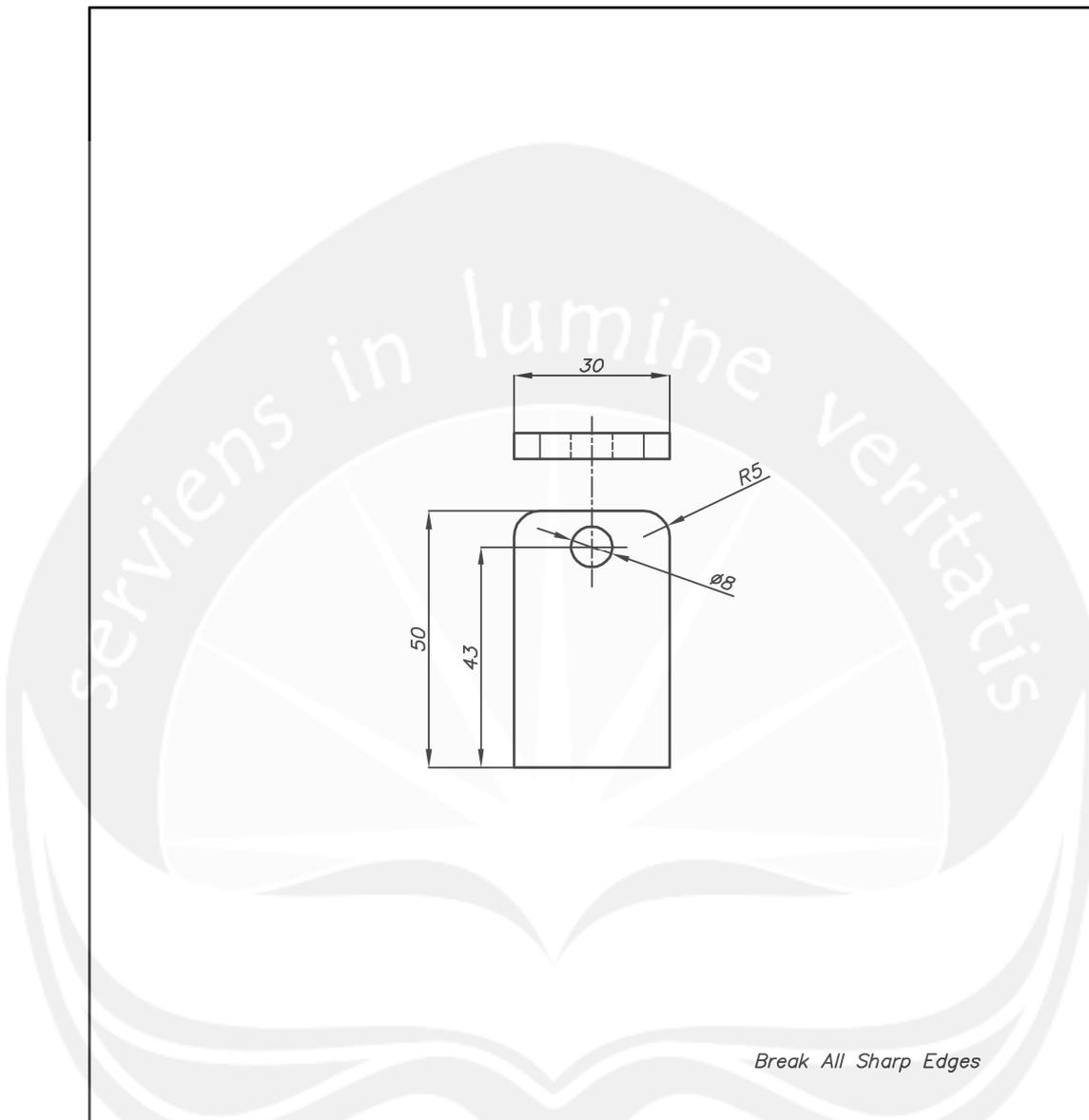
Break All Sharp Edges

Pieces	Description	Item	Material	Dimension	Remarks
2	Rail Base	1	t=5		
Revision Index		Drawn by : Irawan A.		Scale : 1:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : plat	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Mill	Dwg. Nr. 101
Origin.	Rep.	Rep.by.	Sn. Ns.		



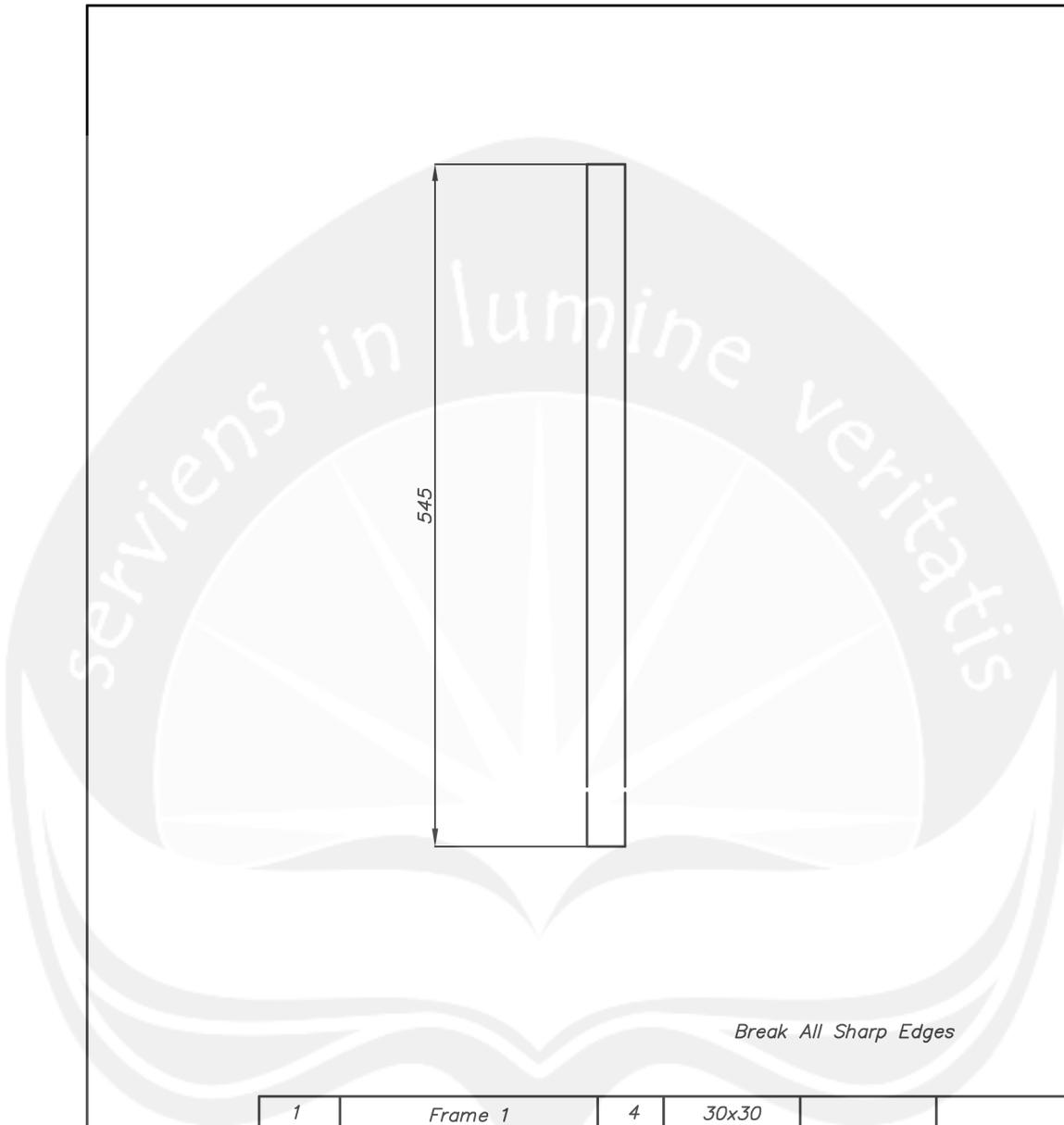
Break All Sharp Edges

2	Base Spacer	2	t=10		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : plat	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Mill	Dwg. Nr. 102
Origin.	Rep.	Rep.by.	Sn.	Ns.	



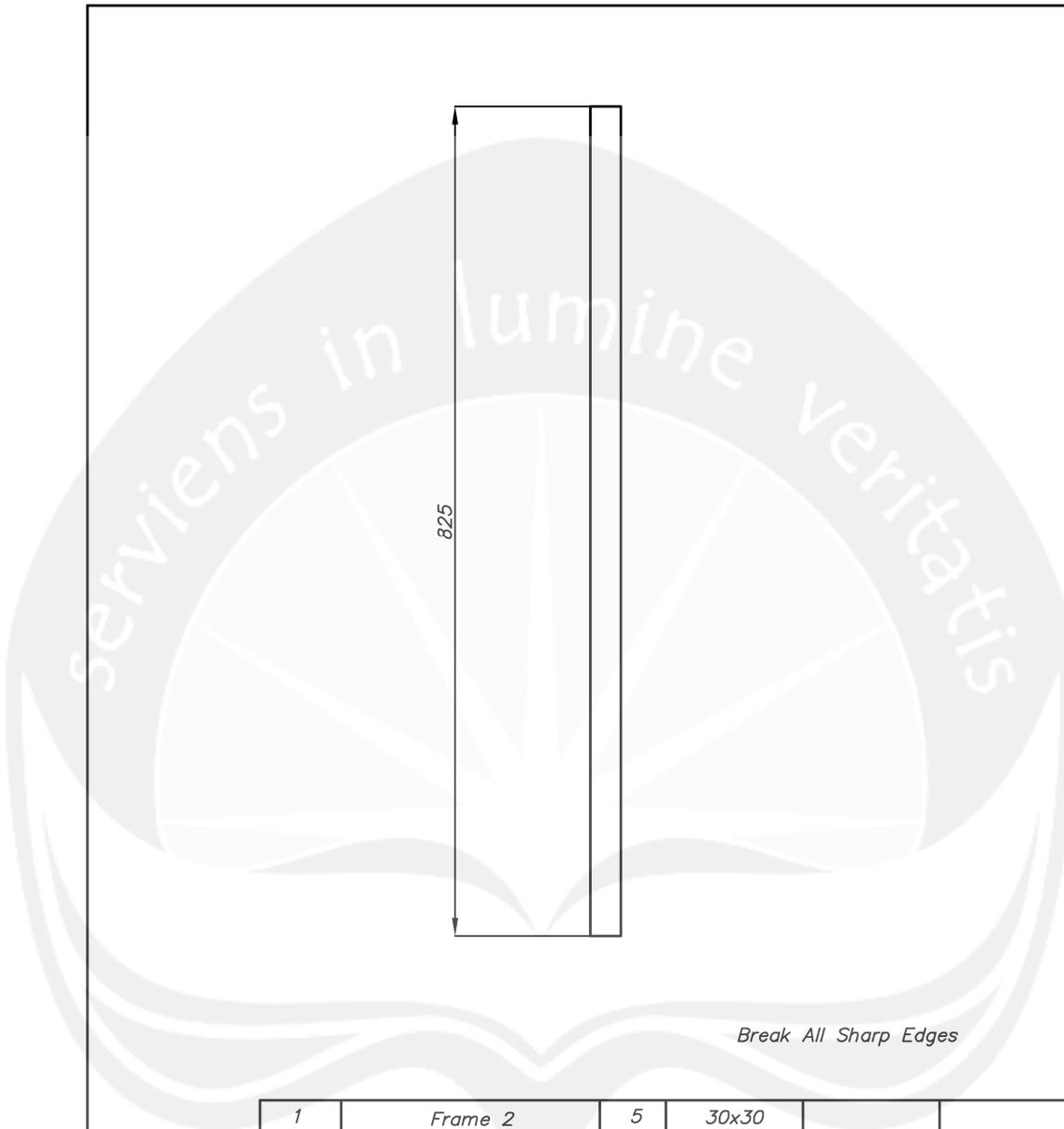
Break All Sharp Edges

1	Footstep Base	3	t=5		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : plat	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Mill	Dwg. Nr. 101
Origin.	Rep.	Rep.by.	Sn. Ns.		



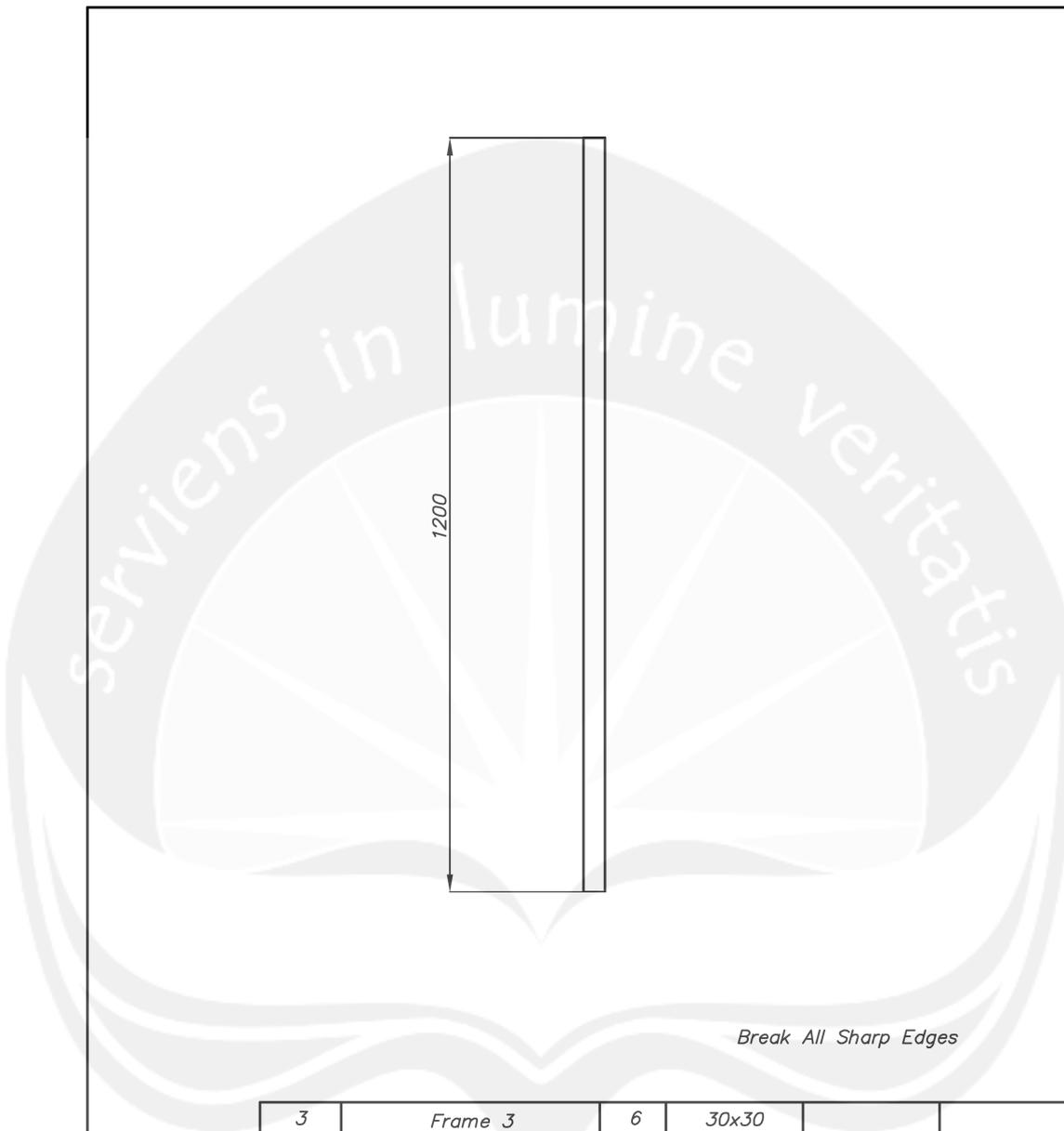
Break All Sharp Edges

Pieces	Description	Item	Material	Dimension	Remarks
1	Frame 1	4	30x30		
Revision Index		Drawn by : Irawan A.		Scale : 1:4	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : hollow	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut	Dwg. Nr. 104
Origin.		Rep.		Rep.by.	Sn. Ns.



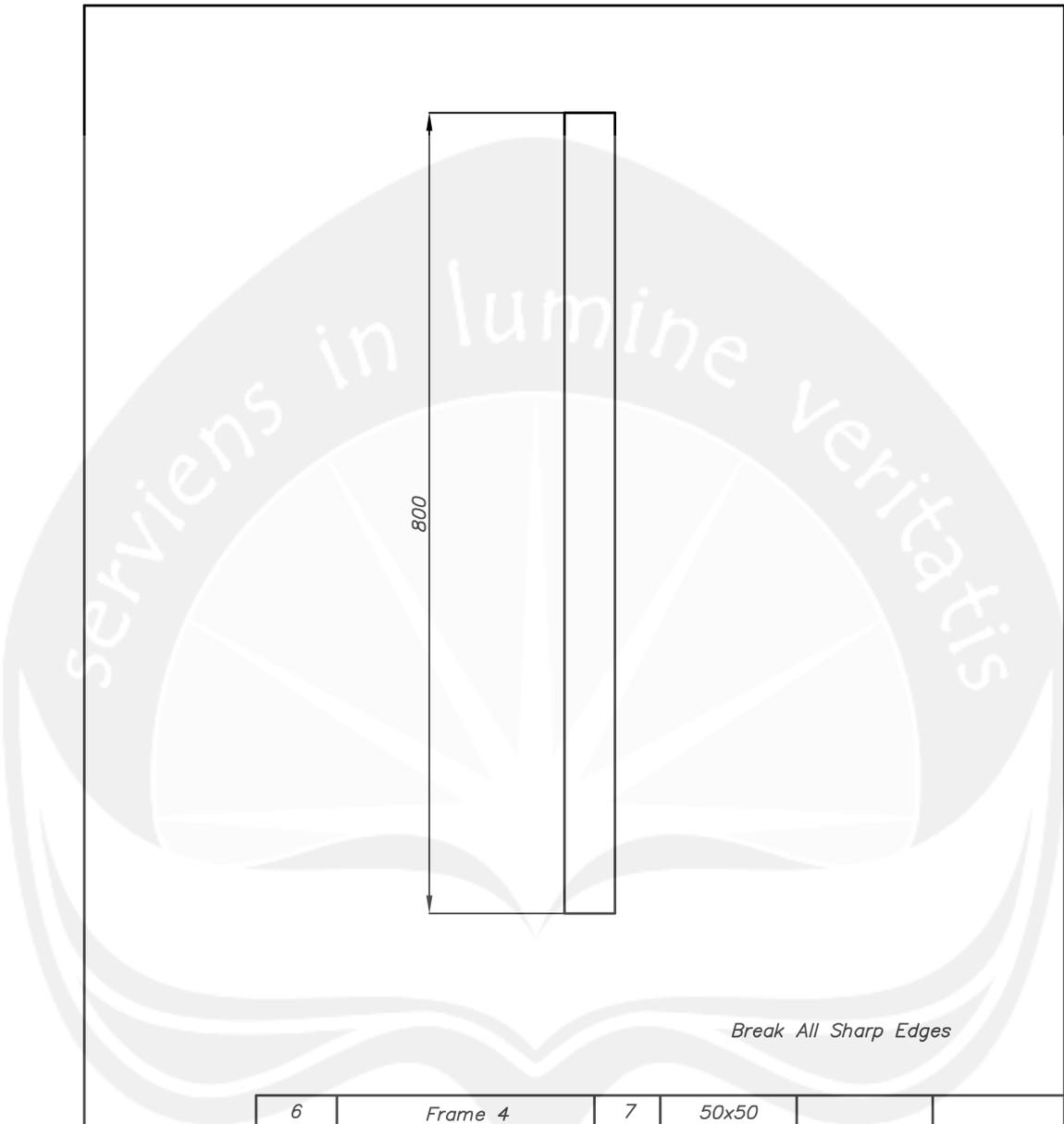
Break All Sharp Edges

1	Frame 2	5	30x30		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:5	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : hollow	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut	Dwg. Nr. 105
Origin.	Rep.	Rep.by.	Sn. Ns.		



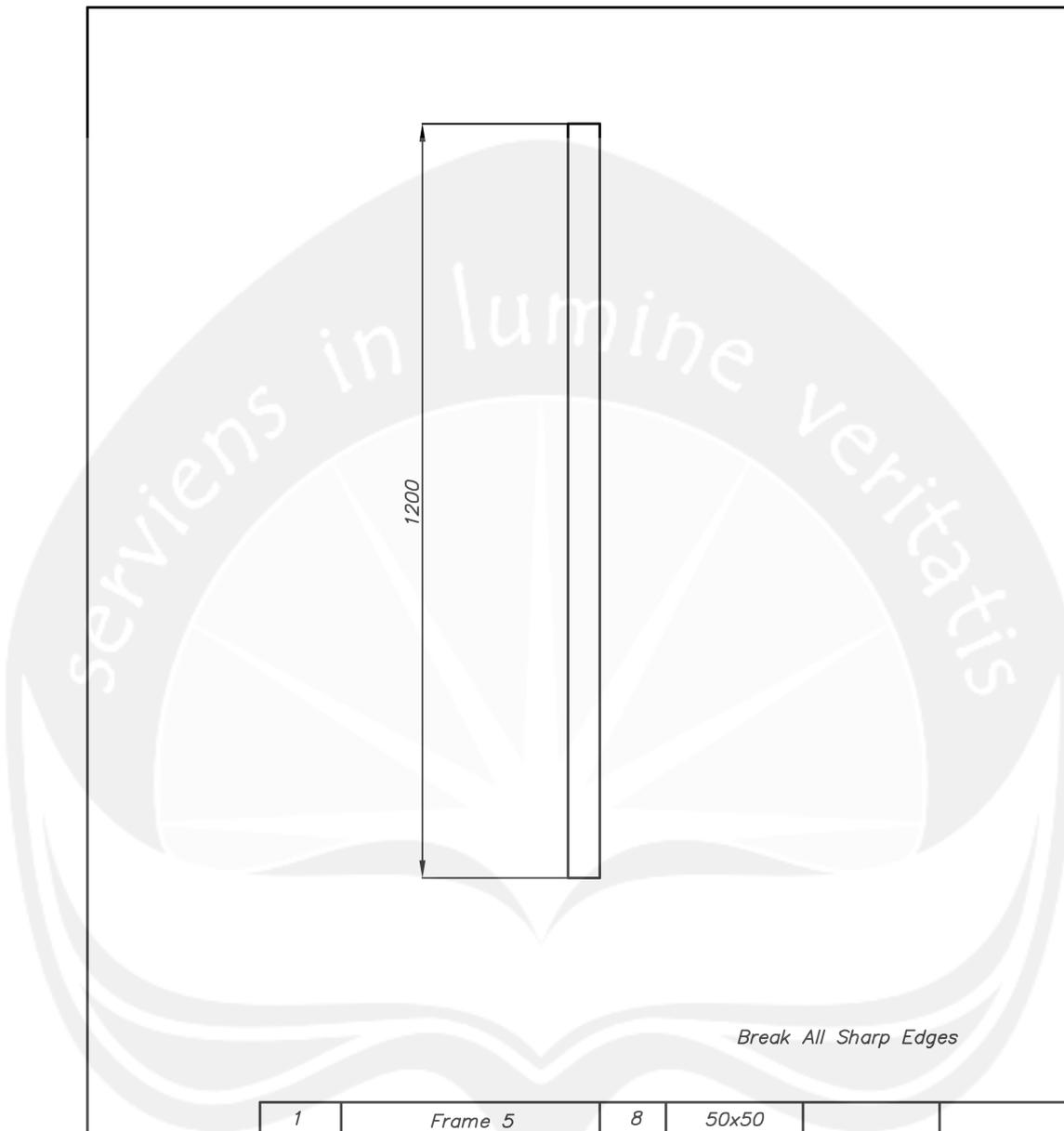
Break All Sharp Edges

3	Frame 3	6	30x30		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:8	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : hollow	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut	Dwg. Nr. 106
Origin.	Rep.	Rep.by.	Sn. Ns.		



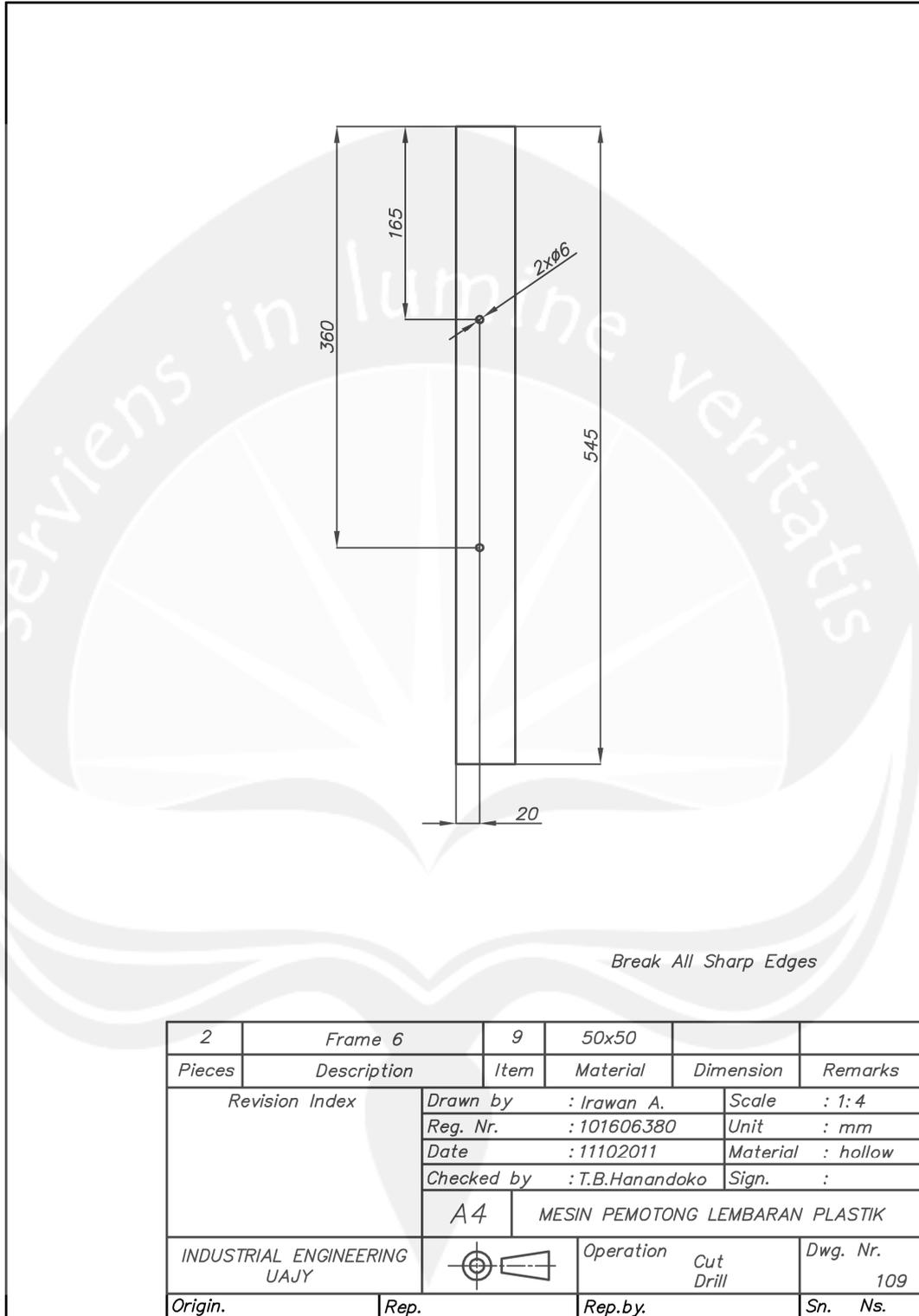
Break All Sharp Edges

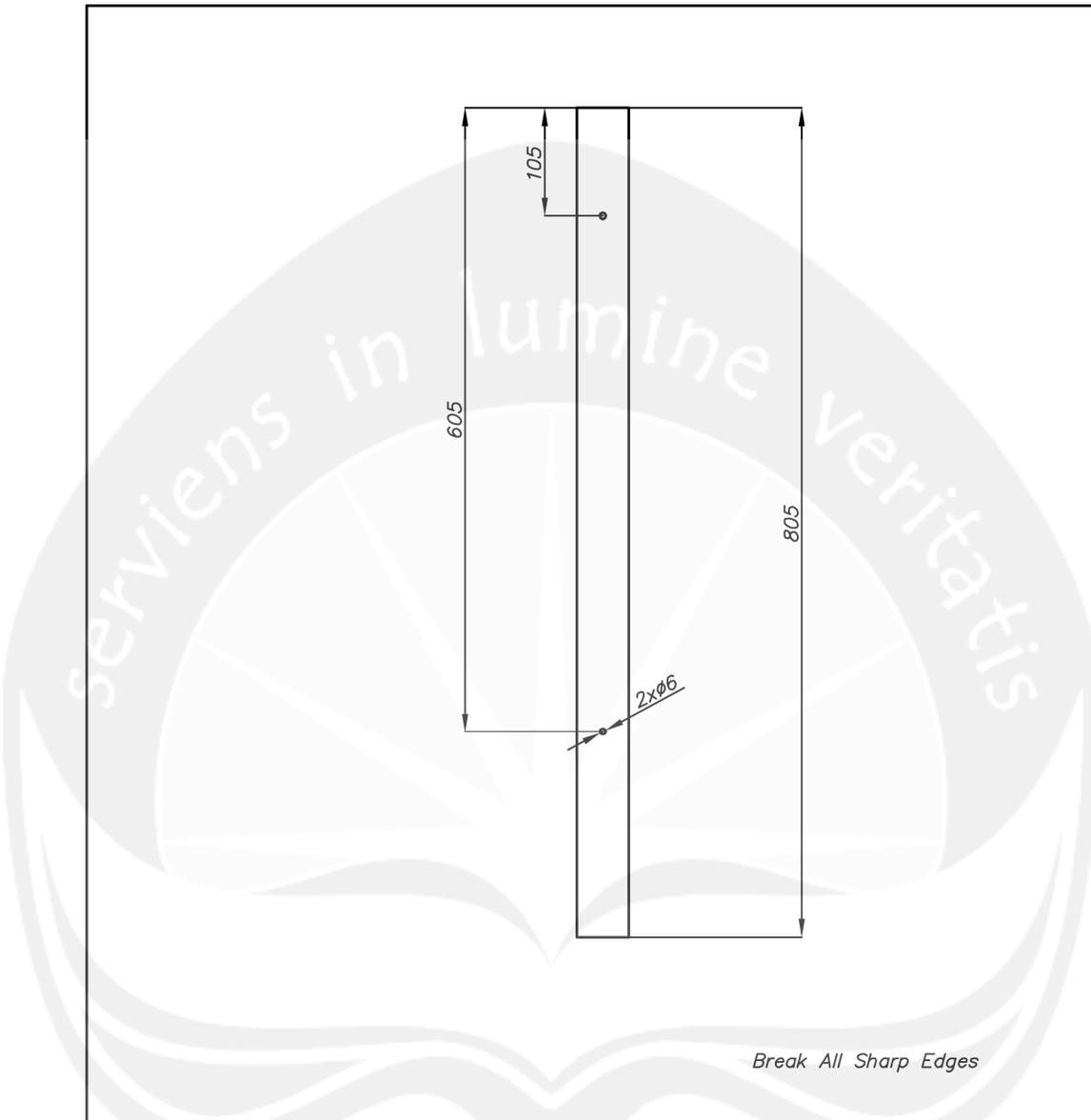
6	Frame 4	7	50x50		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:5	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : hollow	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut	Dwg. Nr. 107
Origin.	Rep.	Rep.by.	Sn.	Ns.	



Break All Sharp Edges

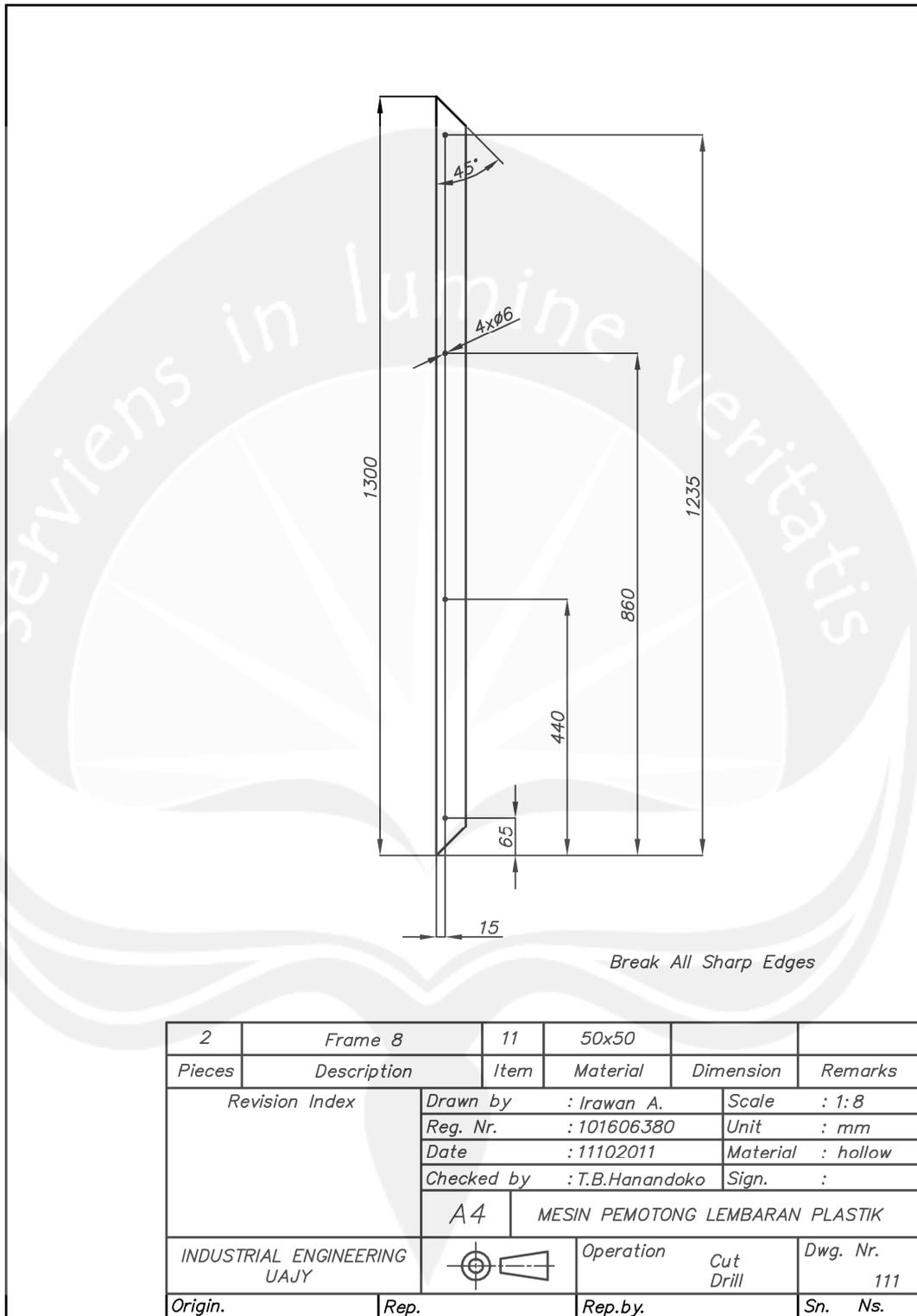
1	Frame 5	8	50x50			
Pieces	Description	Item	Material	Dimension	Remarks	
Revision Index		Drawn by : Irawan A.		Scale : 1:8		
		Reg. Nr. : 101606380		Unit : mm		
		Date : 11102011		Material : hollow		
		Checked by : T.B.Hanandoko		Sign. :		
		A4	MESIN PEMOTONG LEMBARAN PLASTIK			
INDUSTRIAL ENGINEERING UAJY				Operation	Cut	Dwg. Nr. 108
Origin.	Rep.	Rep.by.	Sn.	Ns.		

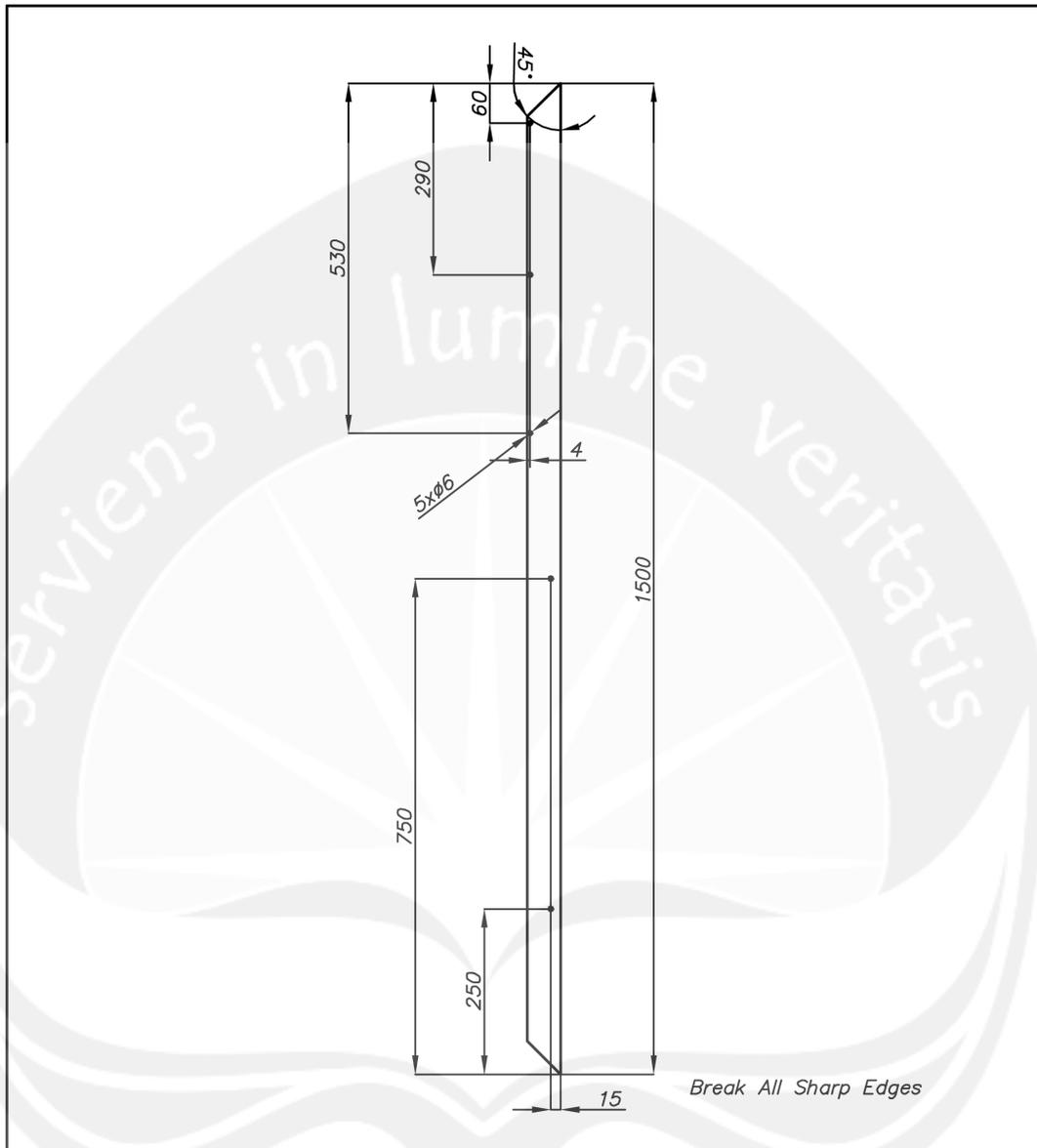




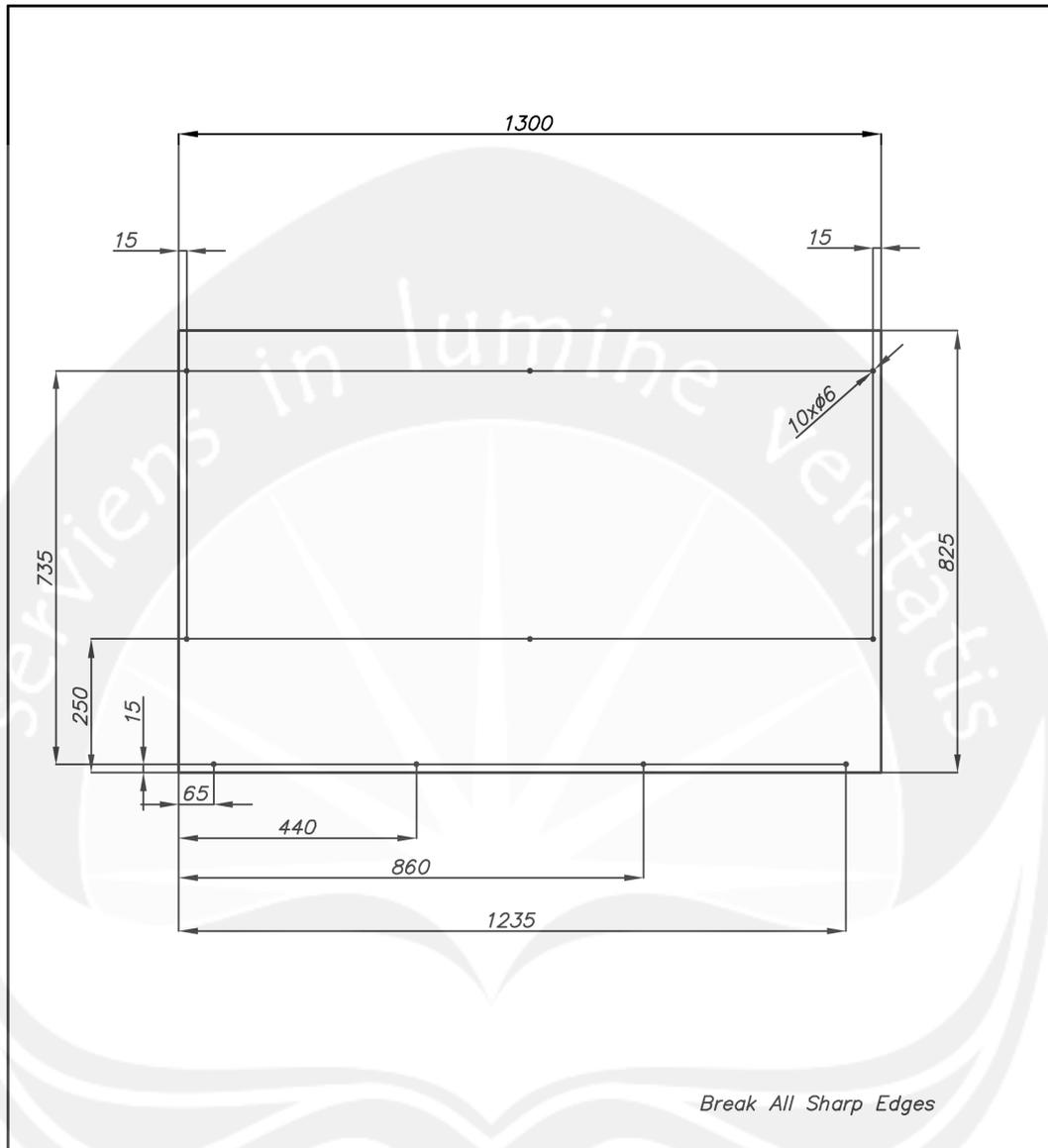
Break All Sharp Edges

1	Frame 7	10	50x50		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:5	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : hollow	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut Drill	Dwg. Nr. 110
Origin.	Rep.	Rep.by.	Sn.		Ns.



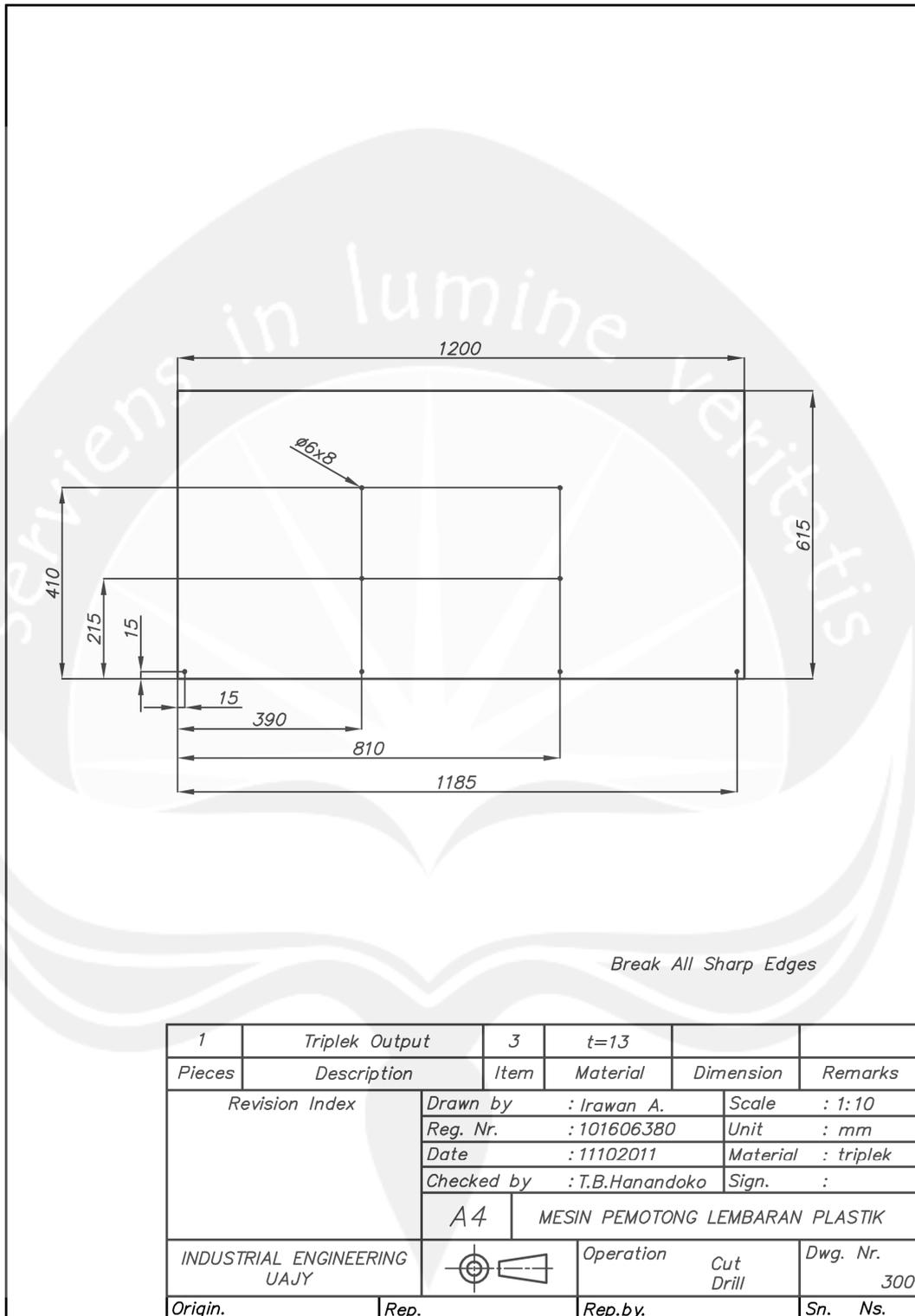


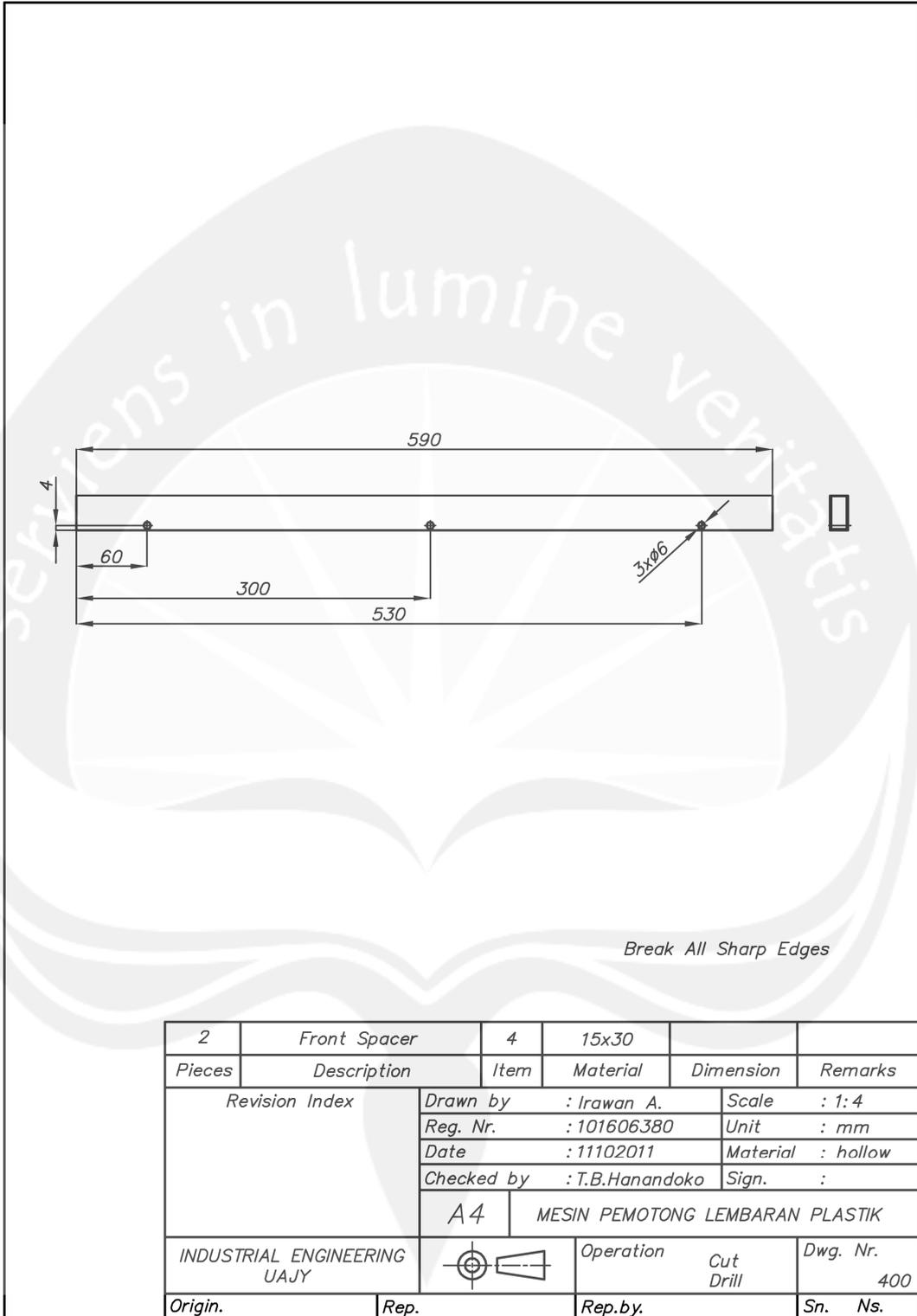
2	Frame 9	12	50x50		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:8	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : hollow	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY			Operation	Cut Drill	Dwg. Nr. 112
Origin.	Rep.	Rep.by.	Sn.		Ns.

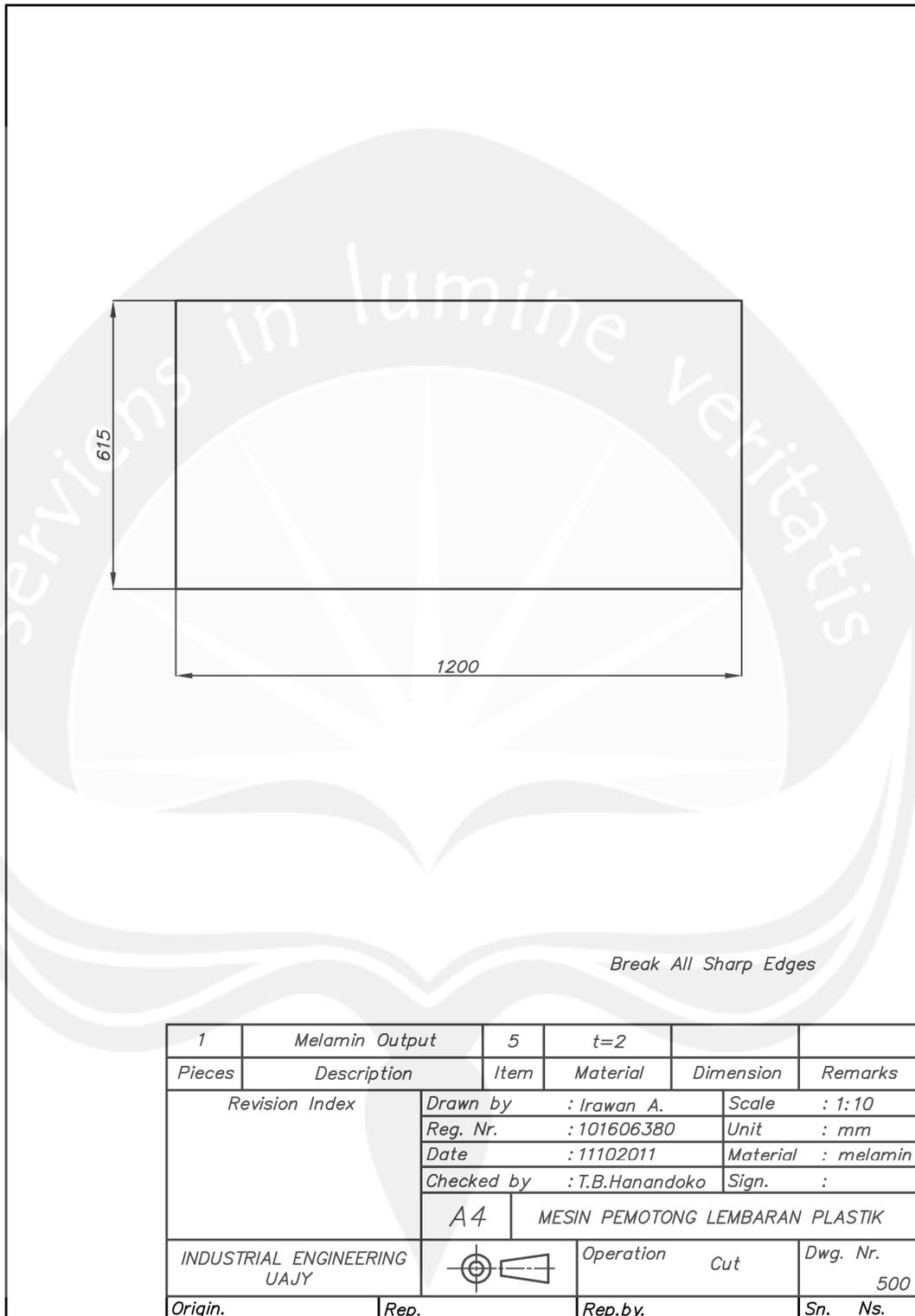


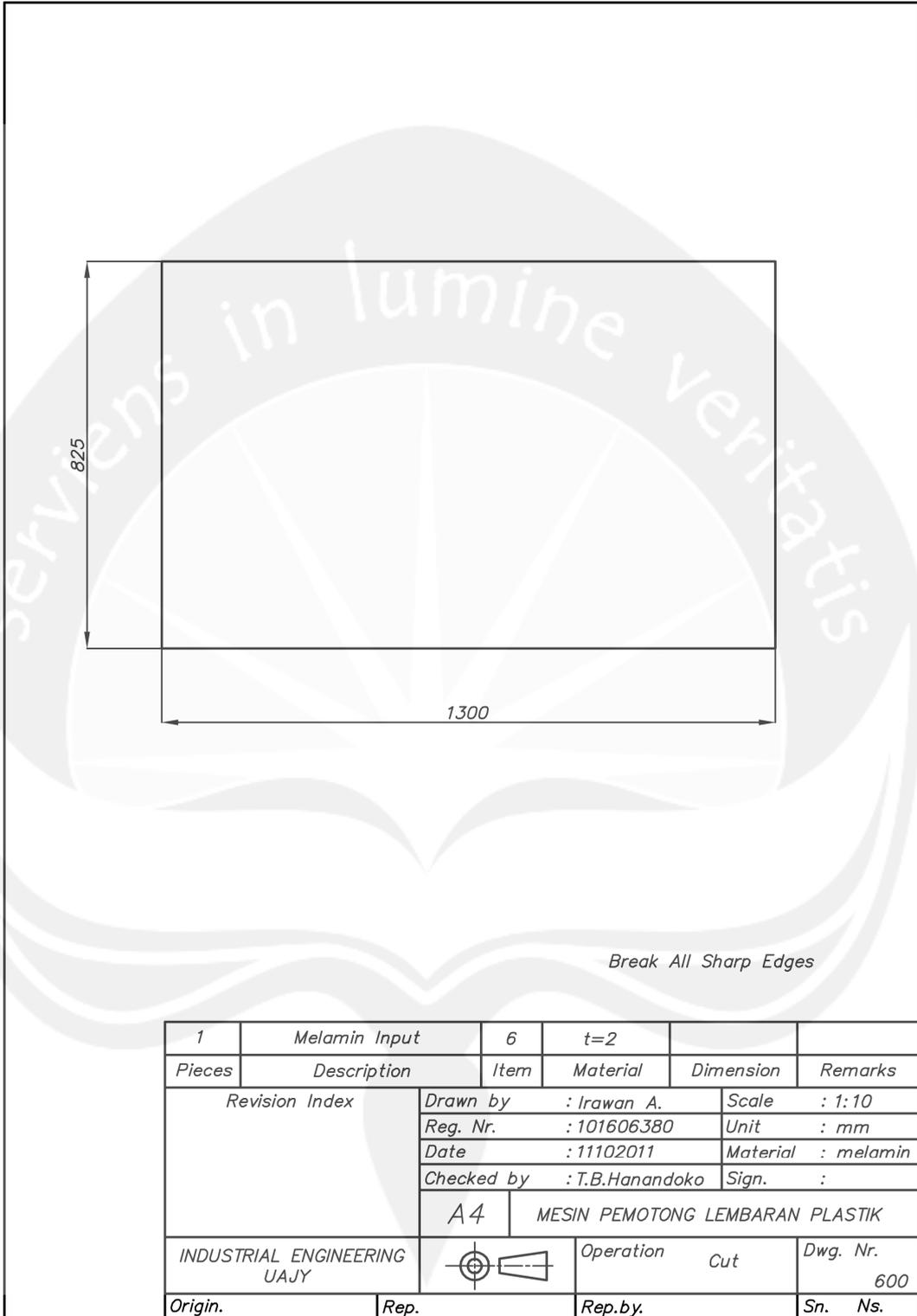
Break All Sharp Edges

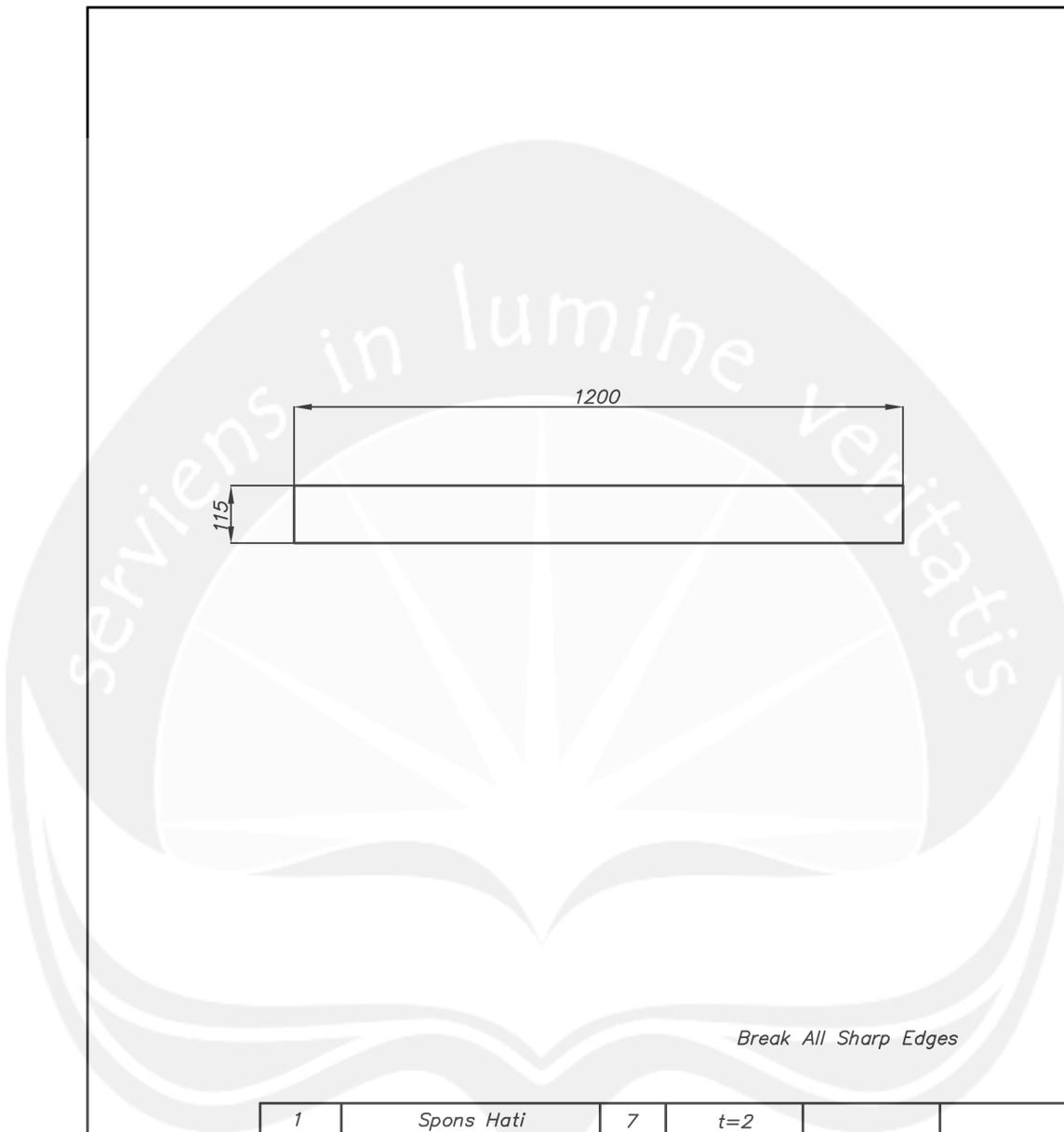
1	Triplek Input	2	t=13		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:10	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : triplek	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY			Operation	Cut Drill	Dwg. Nr. 200
Origin.	Rep.	Rep.by.	Sn.	Ns.	





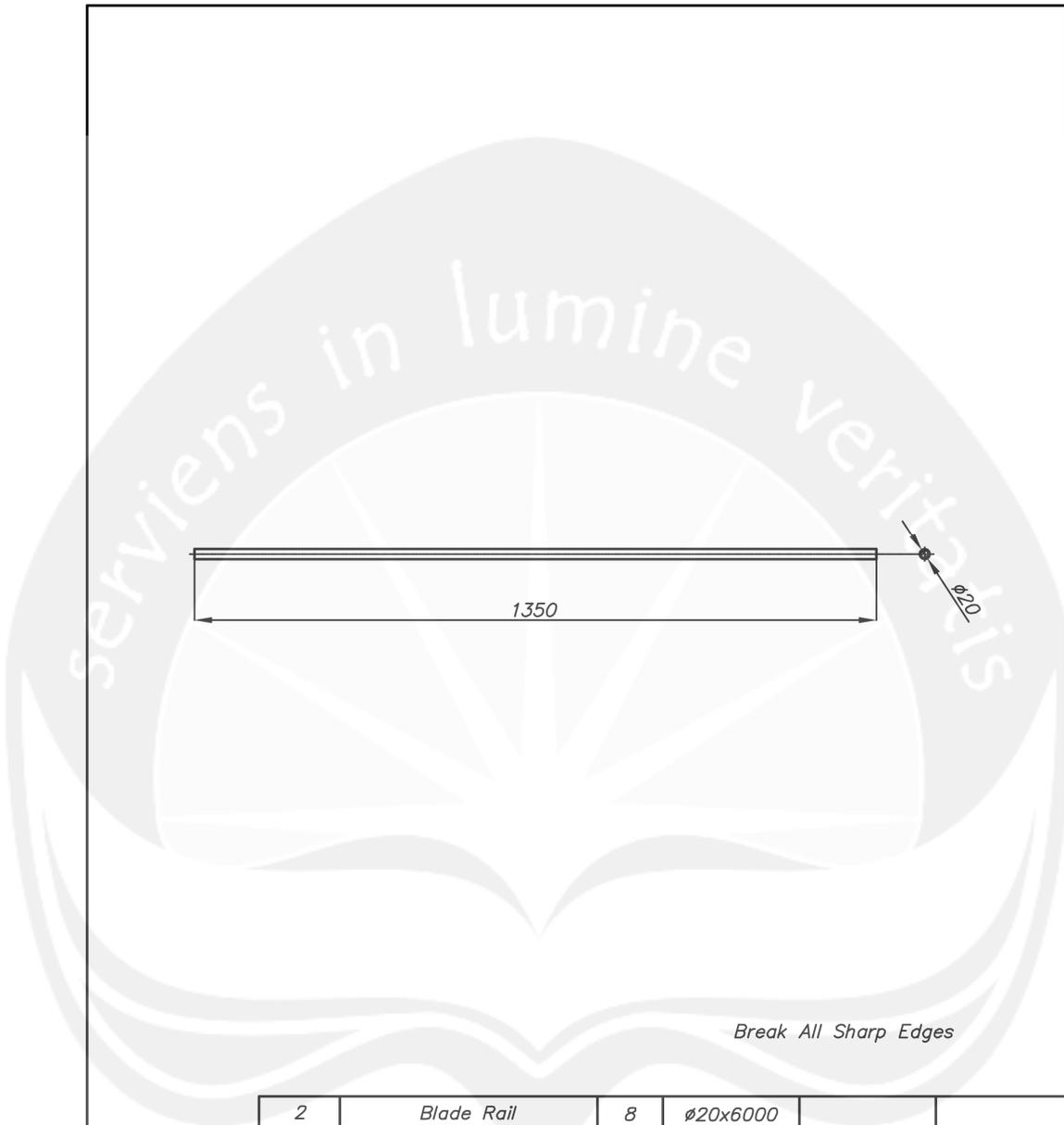




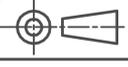


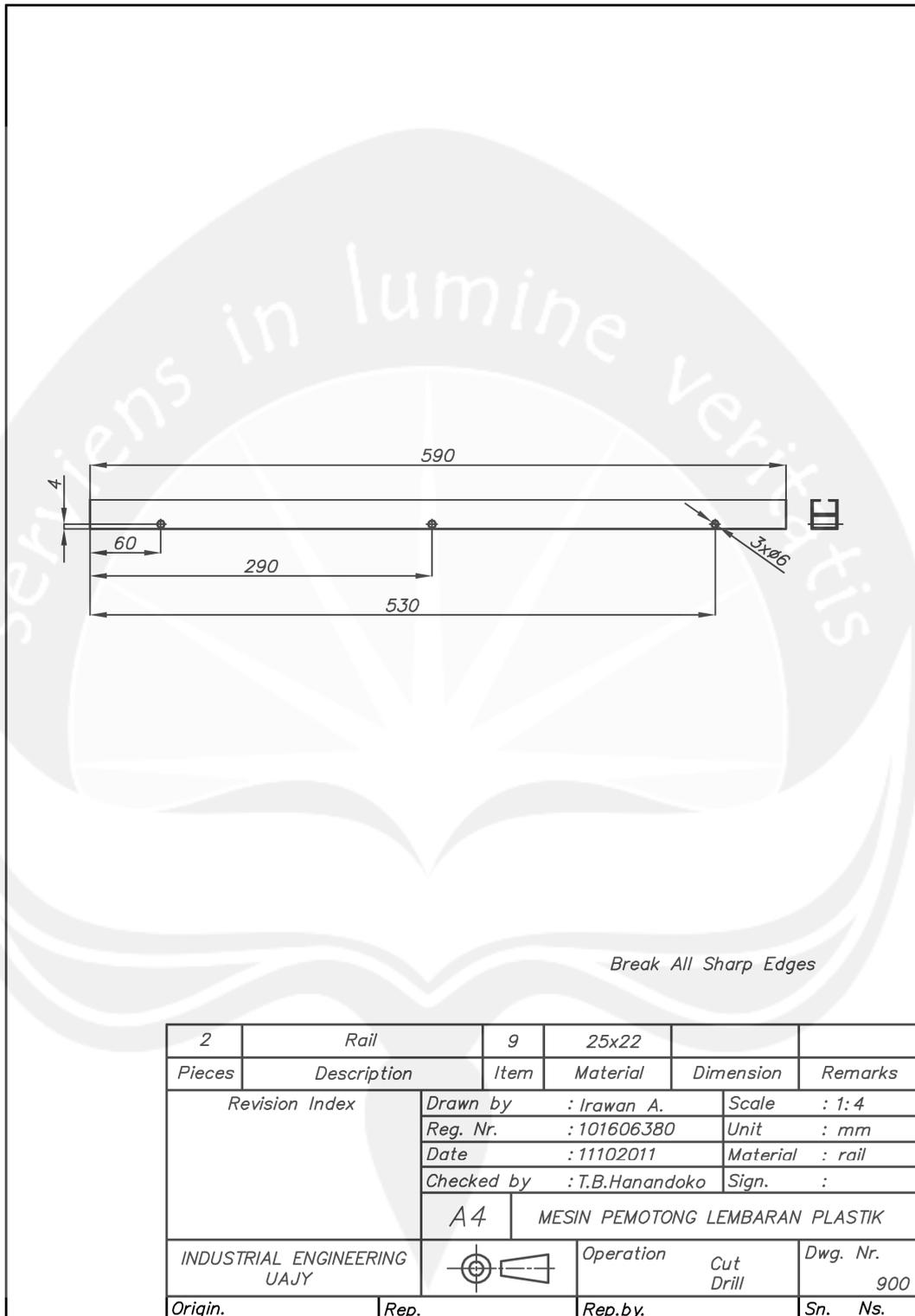
Break All Sharp Edges

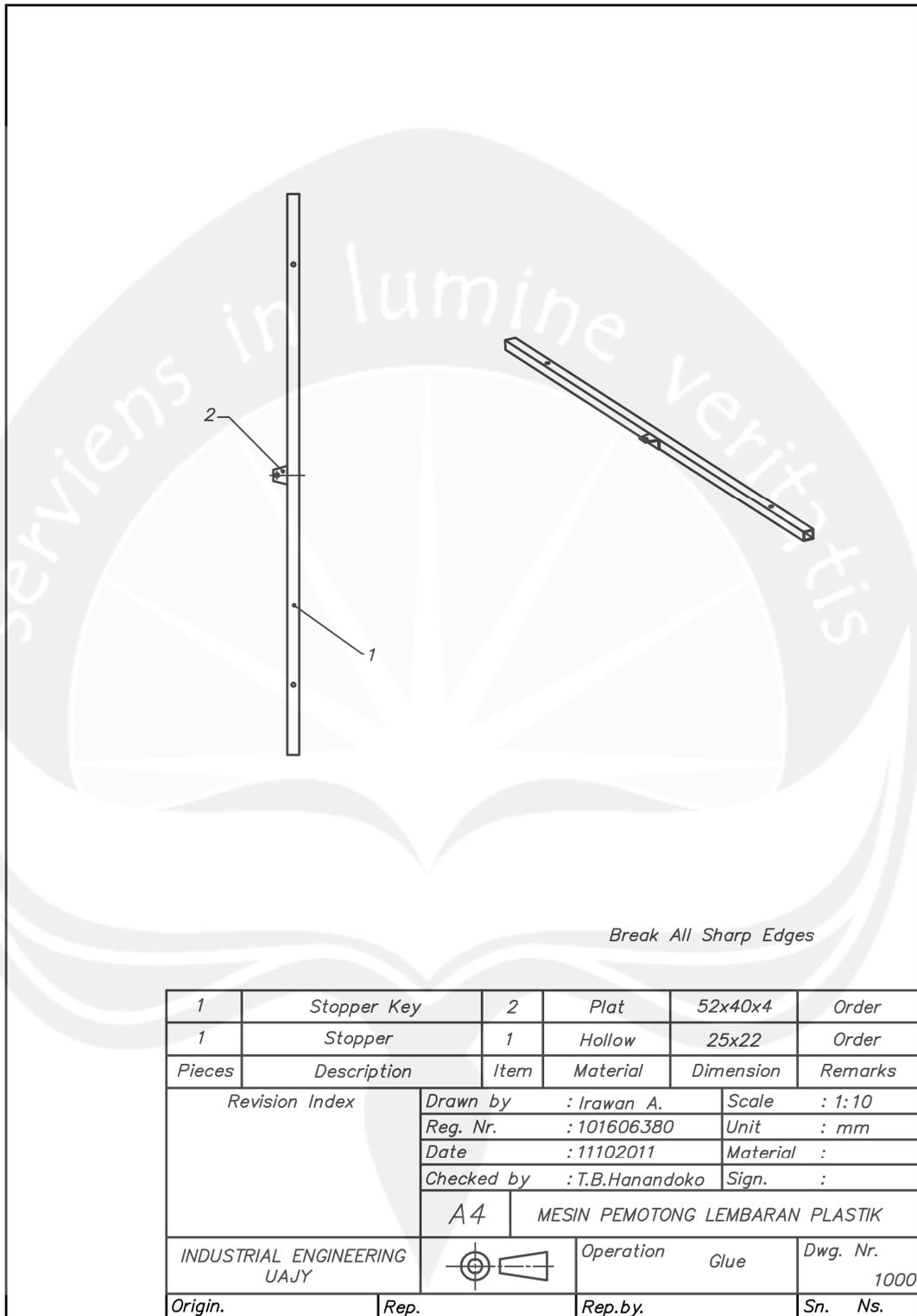
1	Spons Hati	7	t=2			
Pieces	Description	Item	Material	Dimension	Remarks	
Revision Index		Drawn by : Irawan A.		Scale : 1:10		
		Reg. Nr. : 101606380		Unit : mm		
		Date : 11102011		Material : spons		
		Checked by : T.B.Hanandoko		Sign. :		
		A4	MESIN PEMOTONG LEMBARAN PLASTIK			
INDUSTRIAL ENGINEERING UAJY				Operation	Cut	Dwg. Nr. 700
Origin.	Rep.	Rep.by.	Sn.	Ns.		

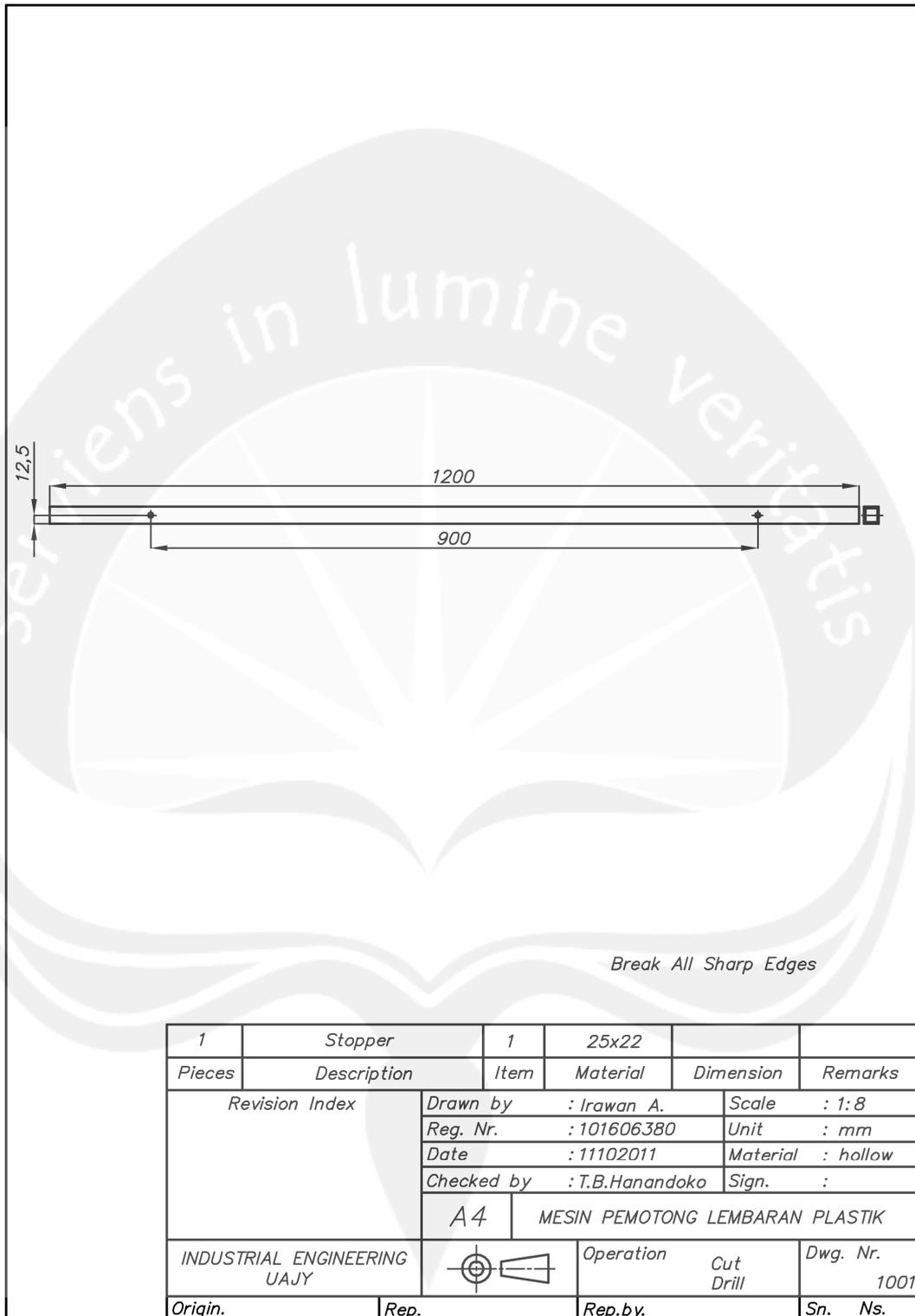


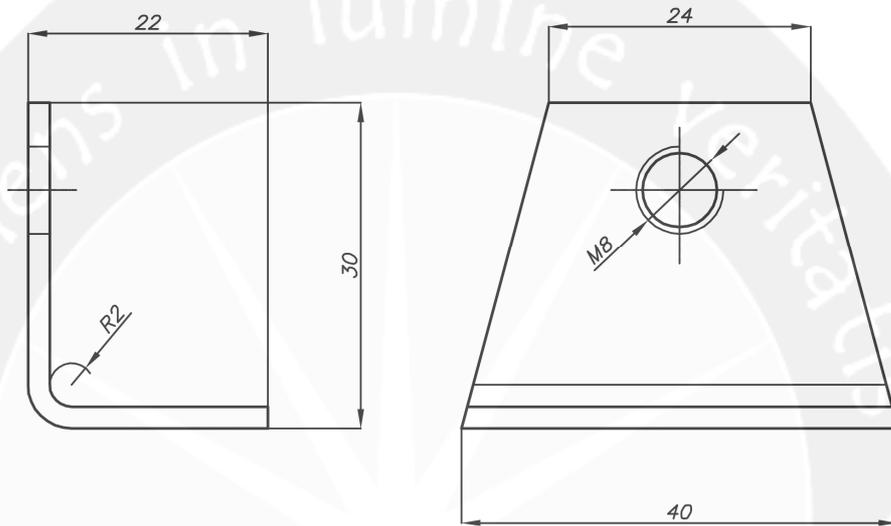
Break All Sharp Edges

2	Blade Rail	8	ø20x6000			
Pieces	Description	Item	Material	Dimension	Remarks	
Revision Index		Drawn by : Irawan A.		Scale : 1:10		
		Reg. Nr. : 101606380		Unit : mm		
		Date : 11102011		Material : pipe		
		Checked by : T.B.Hanandoko		Sign. :		
		A4	MESIN PEMOTONG LEMBARAN PLASTIK			
INDUSTRIAL ENGINEERING UAJY				Operation	Cut	Dwg. Nr. 800
Origin.	Rep.	Rep.by.	Sn.	Ns.		



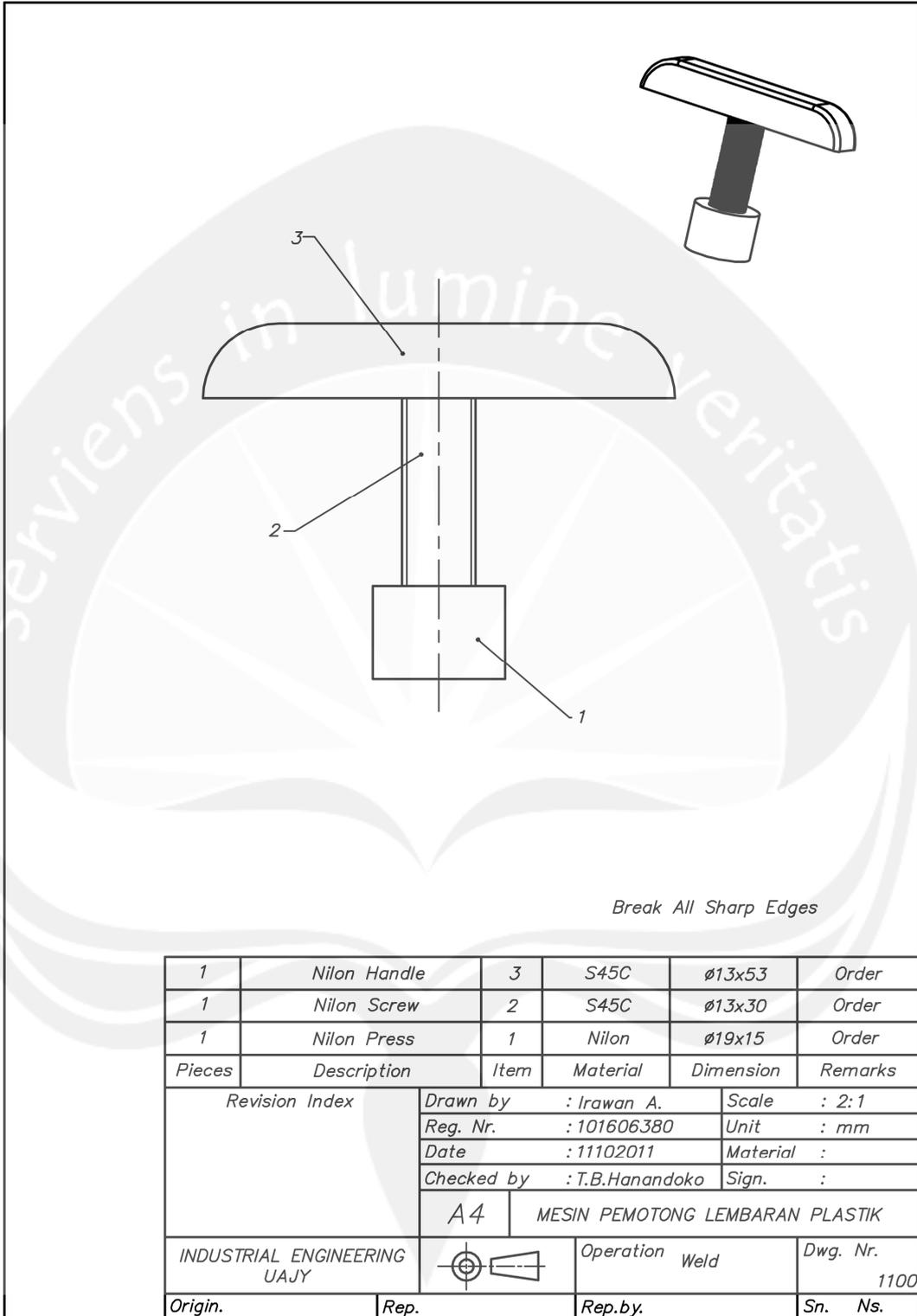


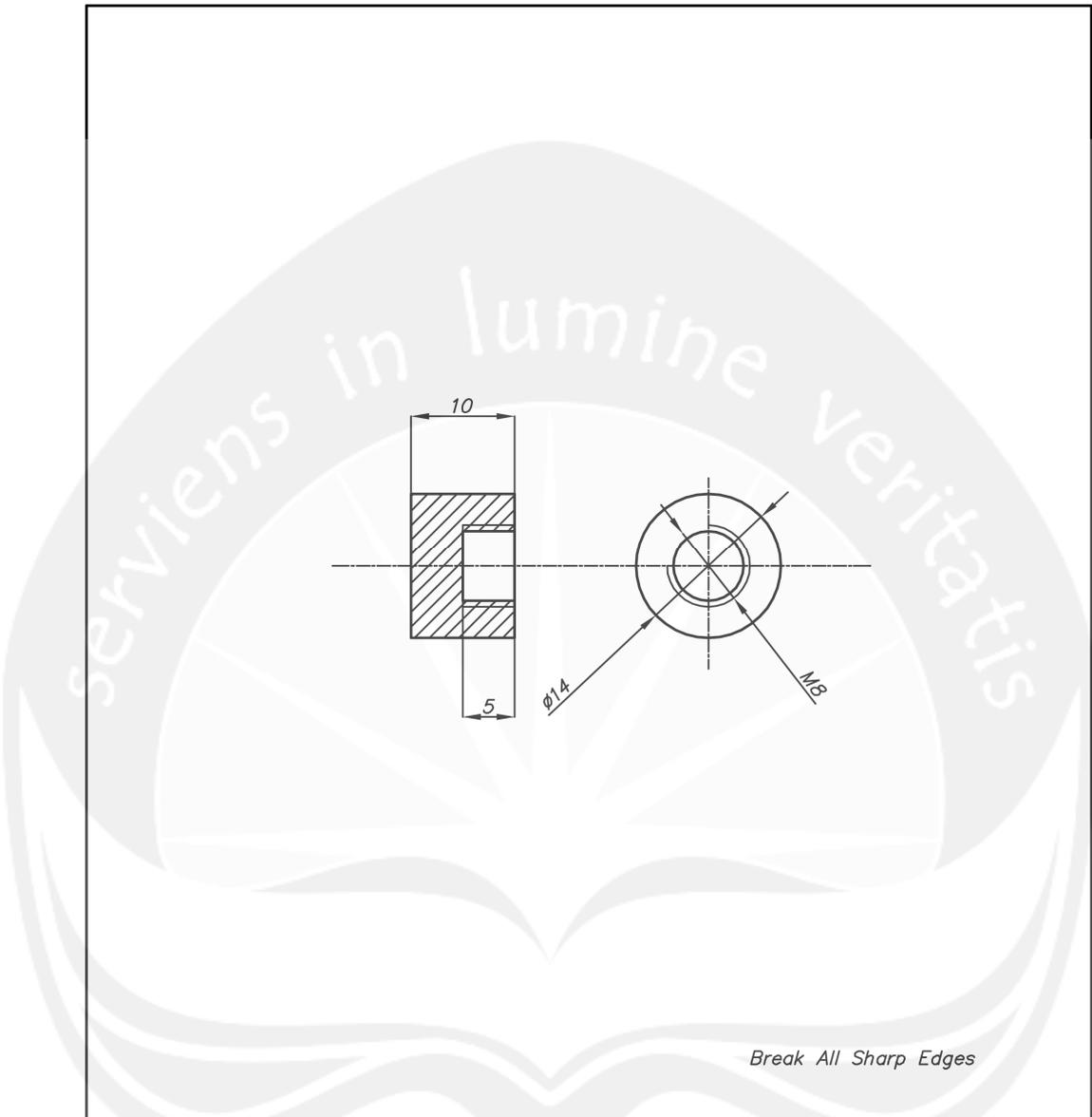




Break All Sharp Edges

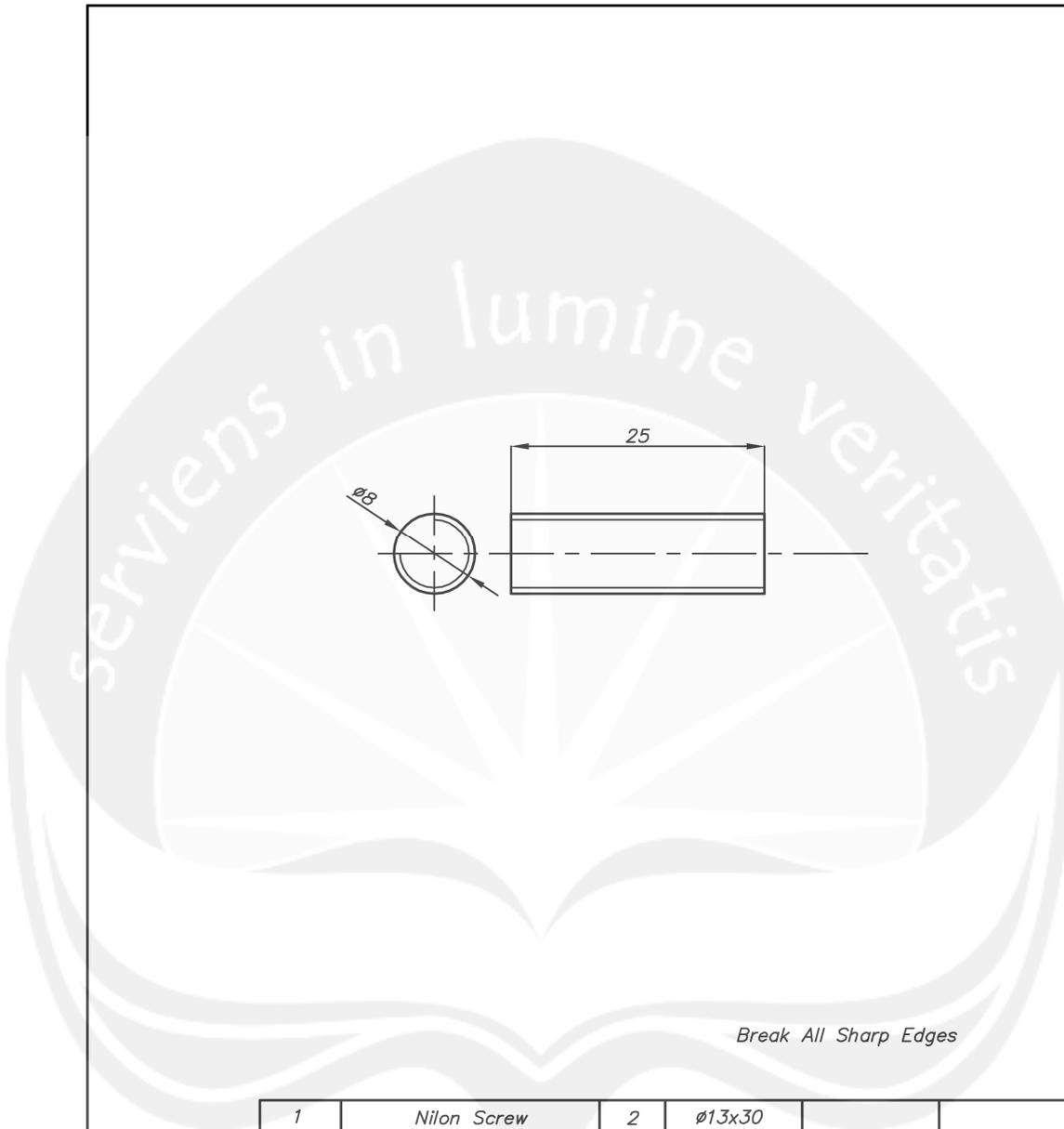
1	Stopper Key	2	52x40x4		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 2:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : plat	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Mill Bend	Dwg. Nr. 1002
Origin.	Rep.	Rep.by.	Sn.	Ns.	





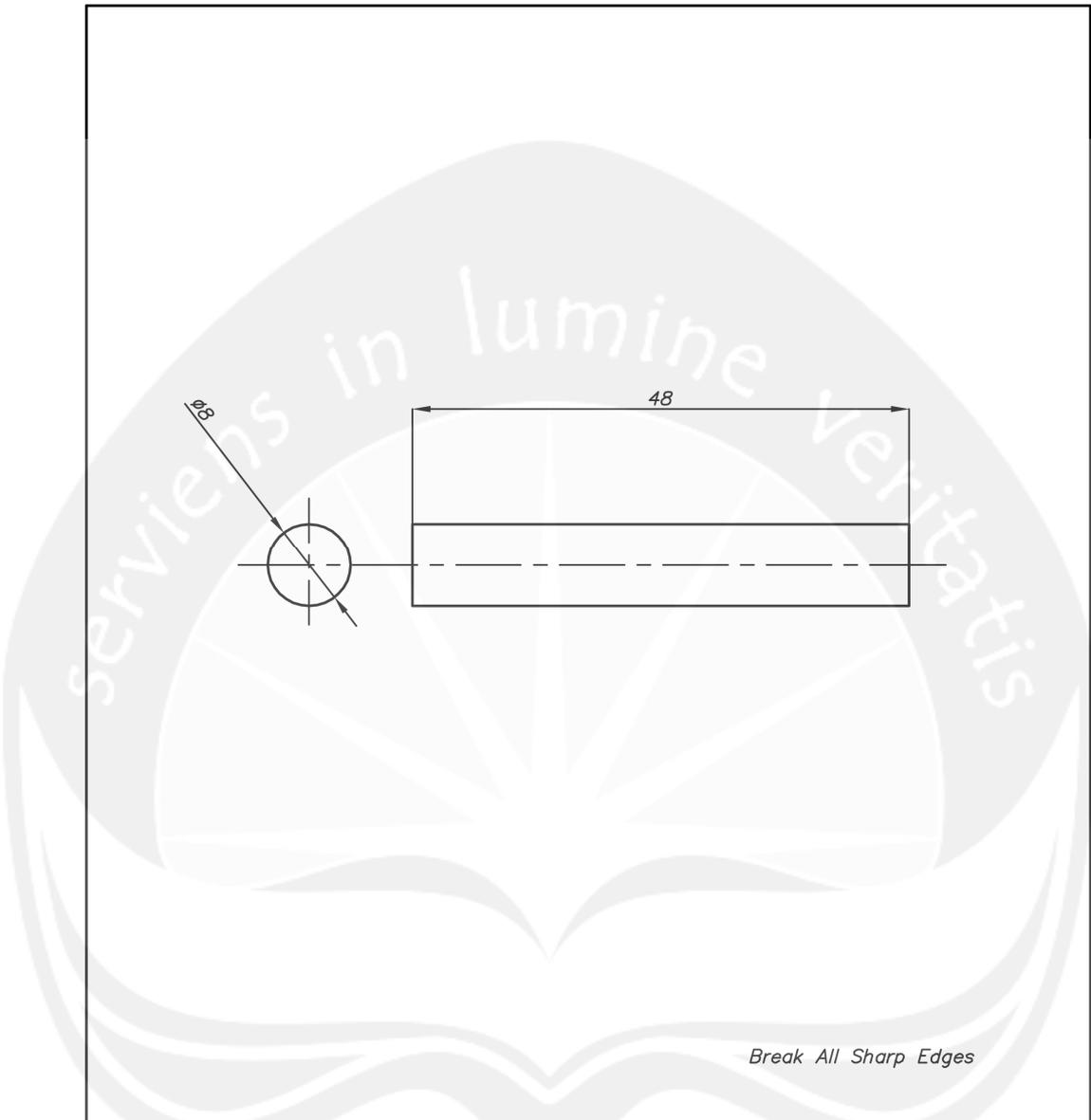
Break All Sharp Edges

1	Nilon Press	1	Ø19x15		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 2:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : nilon	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Turn	Dwg. Nr. 1101
Origin.	Rep.	Rep.by.	Sn.	Ns.	



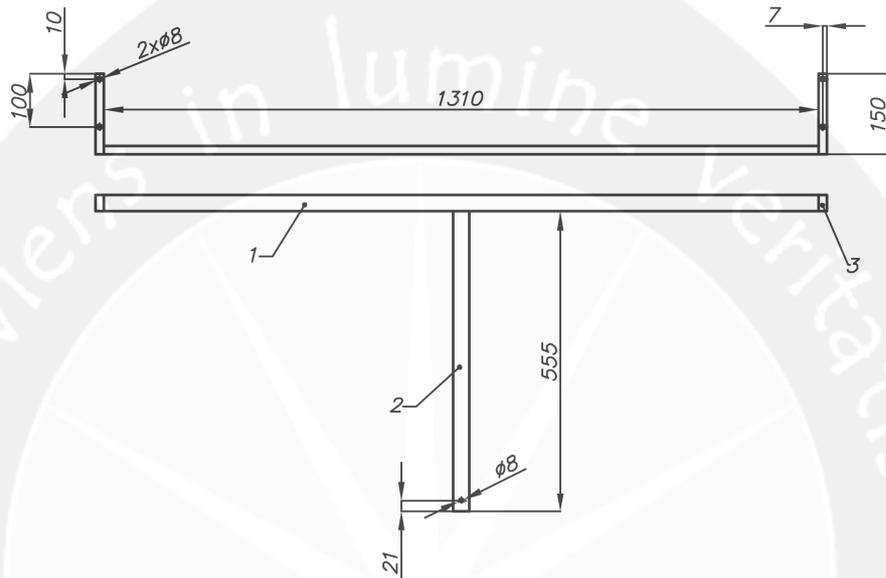
Break All Sharp Edges

1	Nilon Screw	2	$\phi 13 \times 30$		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 2:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : S45C	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Turn	
				Dwg. Nr. 1102	
Origin.		Rep.		Rep.by.	
				Sn. Ns.	

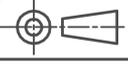


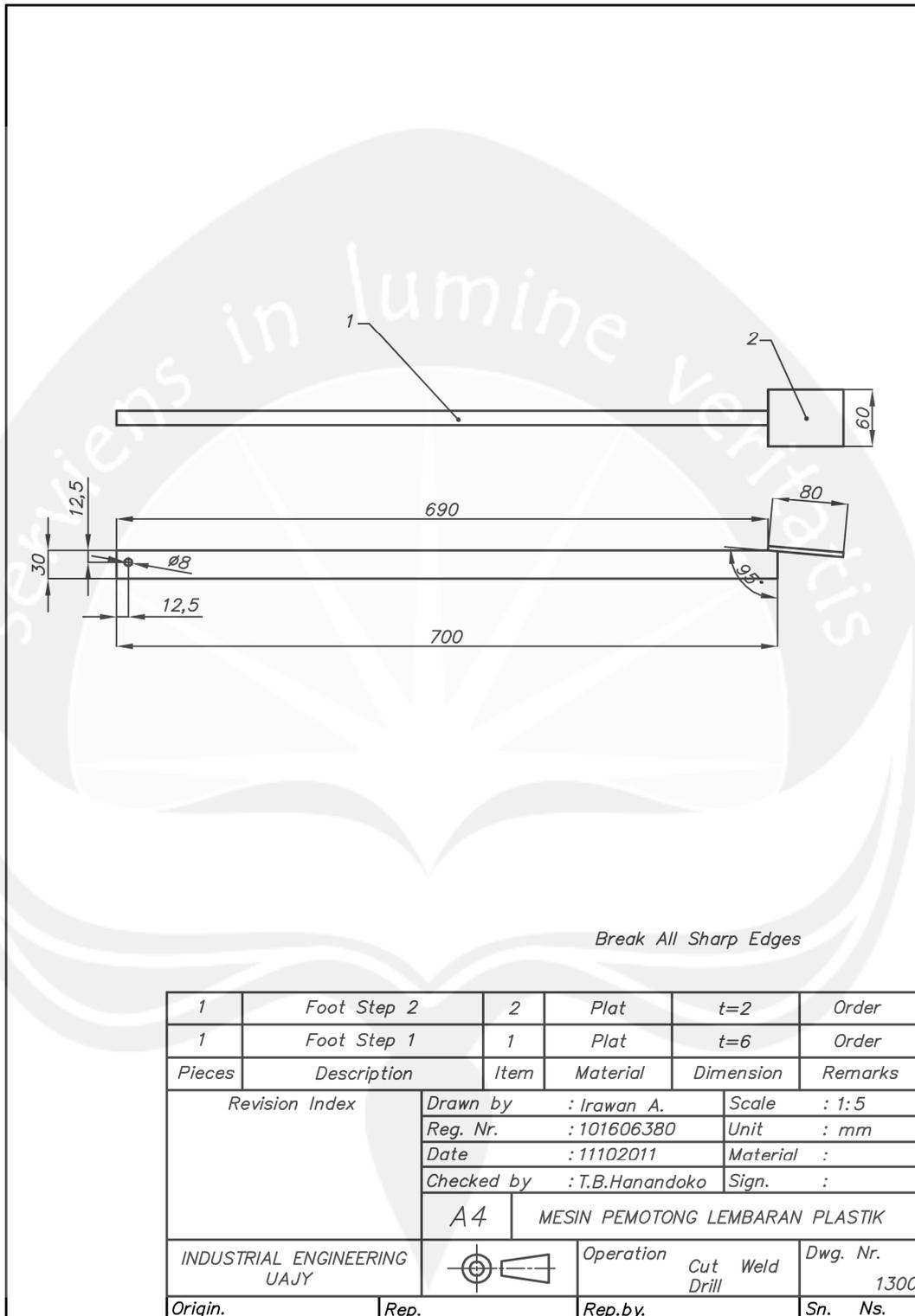
Break All Sharp Edges

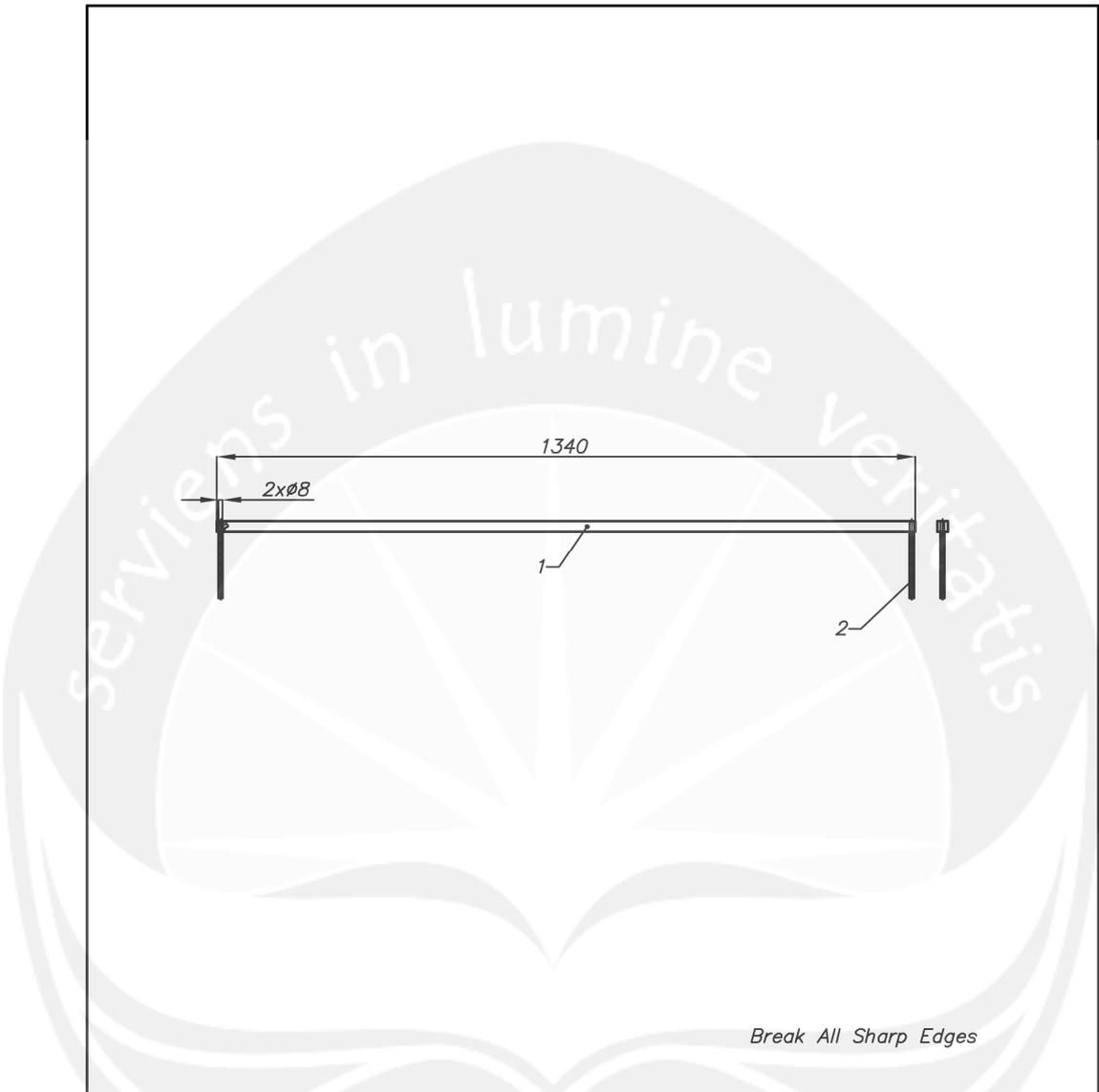
1	Nilon Handle	3	Ø13x53		
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 2:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material : S45C	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Turn	Dwg. Nr. 1103
Origin.	Rep.	Rep.by.	Sn.	Ns.	



Break All Sharp Edges

2	Linker 3	3	Hollow	30x15	Order
1	Linker 2	2	Hollow	30x15	Order
1	Linker 1	1	Hollow	30x15	Order
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:10	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material :	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut Weld Drill	Dwg. Nr. 1200
Origin.	Rep.	Rep.by.	Sn.	Ns.	



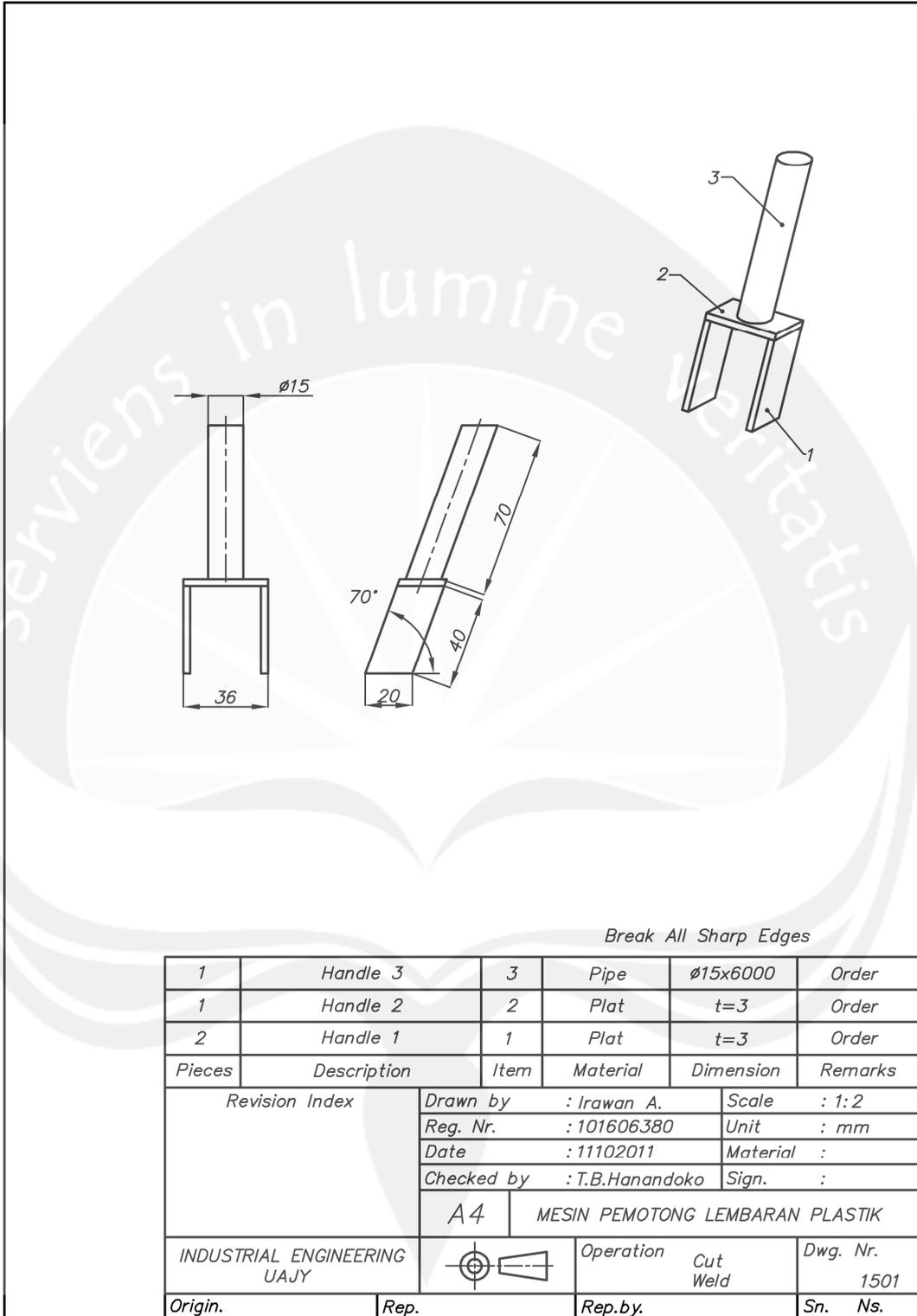


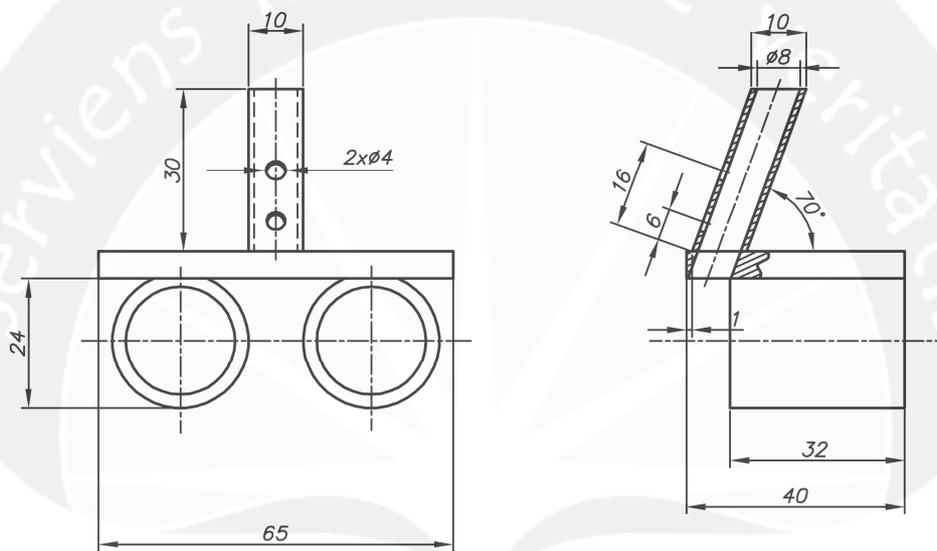
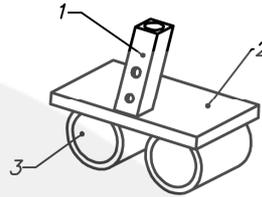
Break All Sharp Edges

4	Bolt M8	2		p=150	Purchase
2	Presser	1	Hollow	20x20	Order
Pieces	Description	Item	Material	Dimension	Remarks
Revision Index		Drawn by : Irawan A.		Scale : 1:10	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material :	
		Checked by : T.B.Hanandoko		Sign. :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY				Operation Cut Drill	Dwg. Nr. 1400
Origin.	Rep.	Rep.by.	Sn.	Ns.	

*Break All Sharp Edges*

1	<i>Blade</i>	3			<i>Purchase</i>
1	<i>Handle</i>	2			<i>Order</i>
1	<i>Blade Holder</i>	1			<i>Order</i>
<i>Pieces</i>	<i>Description</i>	<i>Item</i>	<i>Material</i>	<i>Dimension</i>	<i>Remarks</i>
<i>Revision Index</i>		<i>Drawn by</i> : Irawan A.		<i>Scale</i> : 1:1	
		<i>Reg. Nr.</i> : 101606380		<i>Unit</i> : mm	
		<i>Date</i> : 11102011		<i>Material</i> :	
		<i>Checked by</i> : T.B.Hanandoko		<i>Sign.</i> :	
		A4	MESIN PEMOTONG LEMBARAN PLASTIK		
INDUSTRIAL ENGINEERING UAJY			<i>Operation</i> Weld	<i>Dwg. Nr.</i> 1500	
<i>Origin.</i>		<i>Rep.</i>		<i>Rep.by.</i>	
				<i>Sn. Ns.</i>	





Break All Sharp Edges

Pieces	Description	Item	Material	Dimension	Remarks
2	Blade Holder 3	3	Pipe	Ø25x6000	Order
1	Blade Holder 2	2	Plat	t=5	Order
1	Blade Holder 1	1	S45C	40x15x15	Order
Revision Index		Drawn by : Irawan A.		Scale : 1:1	
		Reg. Nr. : 101606380		Unit : mm	
		Date : 11102011		Material :	
		Checked by : T.B.Hanandoko		Sign. :	
		A4		MESIN PEMOTONG LEMBARAN PLASTIK	
INDUSTRIAL ENGINEERING UAJY				Operation Cut Weld Mill	
Dwg. Nr. 1502		Rep.by.		Sn. Ns.	
Origin.		Rep.			