Industrialised Building System (IBS) is a System, Not merely a Component.

It consists of the main component - the structural component but it requires an efficient and cost effective connection system to prevent the commonly-faced water leakage and crack at connection or joint which impede further the acceptance level of IBS.

Music : www.bensound.com

Industrialised Building System Provider is one Who knows the Way, goes the Way and shows the Way.

Discover more at :
www.hcprecast.com
www.facebook.com/hcprecast

HC Precast System is a

Complete ***IBS*** *solution particularly*

in a design and build precast system *Developed* *by*

HC PRECAST SYSTEM SDN. BHD.

HCPS was founded in ***2002*** *after years of Research and Development mainly focused on tackling the Water leakage issue. Through years of hard work and constant refinement to the system, HCPS through this Proprietary System currently holds Six (6) Intellectual Properties (IP). Among the highlights of the HCPS's system is the ability of the Structure to withstand earthquake forces (test conducted in collaboration with* UTM JOHOR).

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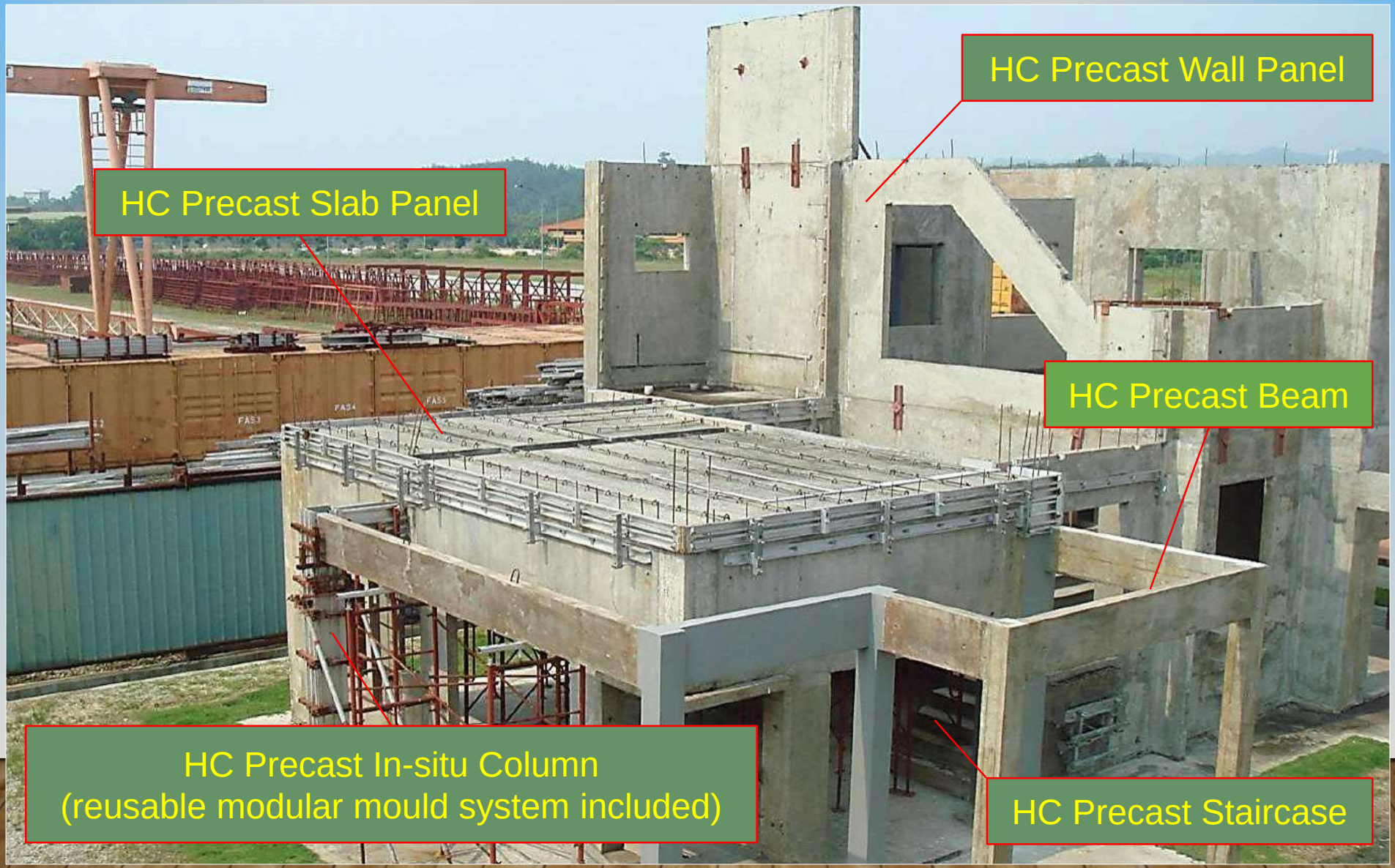
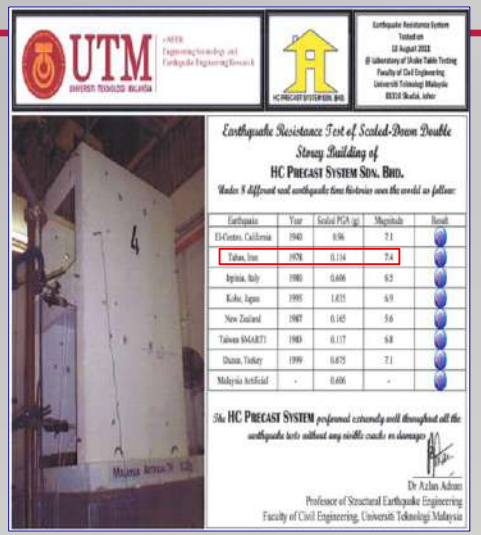
HC Precast System *is a* ***complete IBS solution*** *particularly in a design and build precast system* ***developed*** *by* ***HC PRECAST SYSTEM SDN. BHD.***

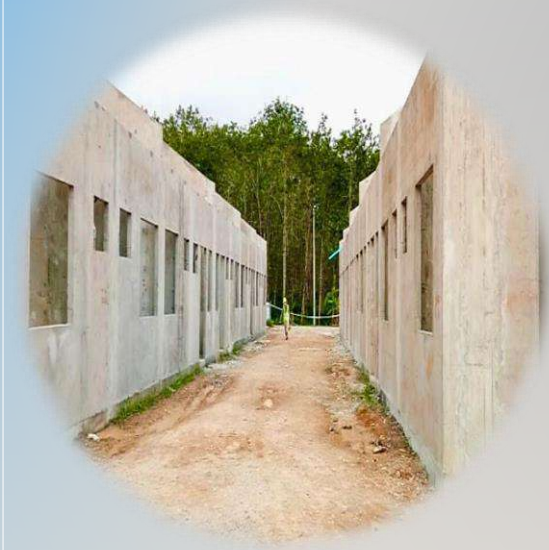


HCPS was founded in **2002** after years of **Research** and **Development** mainly focused on tackling the **water leakage** issue. Through years of hard work and constant refinement to the system, **HCPS** through this **proprietary system** currently holds **six (6) Intellectual Properties (IP)**. Among the highlights of the **HCPS's system** is the ability of the **structure to withstand earthquake forces** (test **conducted** in **collaboration** with **UTM JOHOR**)

HCPS is one of the **very few** one-stop precast system provider in which not only we own the **earthquake** resistant **monolithic wall,modular shear keys (wet joint) with multi-box system** with key features of the connecting **shear keys** that possess tested structural integrity and preventing **water leakage** in wet climate environment as well as eliminating the possibility of **zigzag crack** along the connecting zone



HCPS *is open to all types of Potential business models, including Technology Transfer to interested parties. Our Manual Book contains full information on setting up a Precast Factory, Mould Engineering & Sequence of Work which includes conversion of conventional structural drawings, and the precast concrete SOP for our HCPS monolithic wall, modular shear keys (wet joint) with multi-box system.*



Industrialised Building System Provider

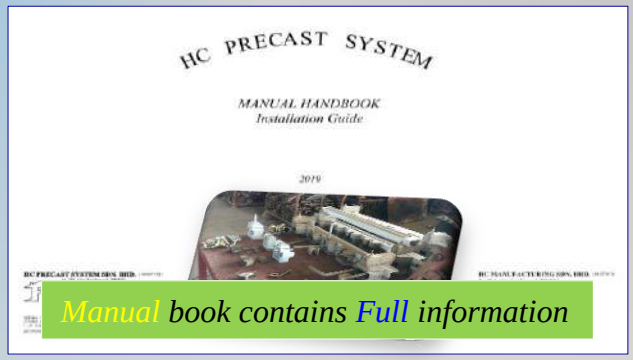
Is one Who knows the Way, goes the Way and shows the Way.

Discover more at : www.hcprecast.com , www.facebook.com/hcprecast

HCPS is open to all types of **Potential** business models, including **Technology Transfer** to interested parties. Our Manual Book contains full information on setting up a Precast Factory, Mould Engineering, Sequence of Work which includes conversion of conventional structural drawings, and the precast concrete SOP for our **HCPS** monolithic wall, Modular Shear Keys (wet joint) with multi-box system Industrialised Building System

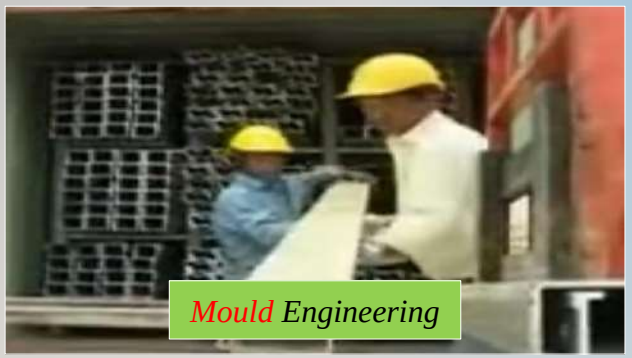
Provider is one Who knows the Way, goes the Way and shows the Way

Potential business models, including Technology Transfer to interested parties.

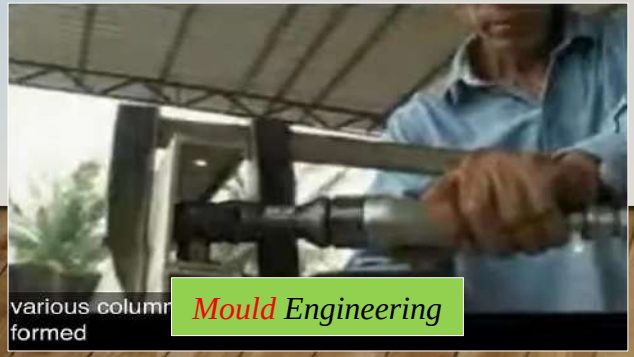


Manual book contains Full information

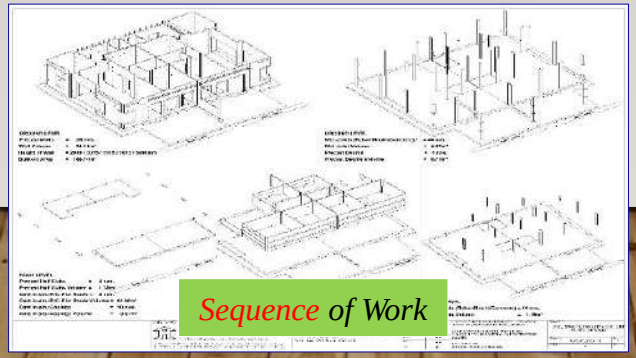
Setting up a Precast Factory



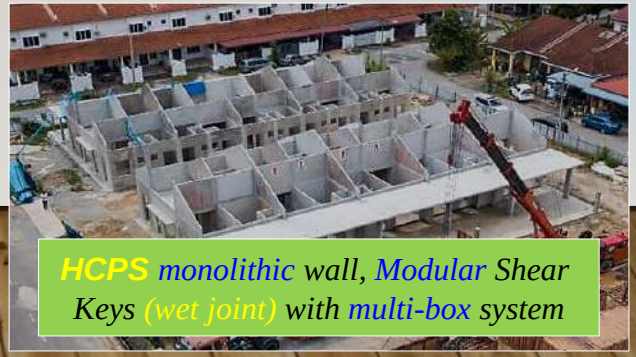
Mould Engineering



Mould Engineering



Sequence of Work



HCPS monolithic wall, Modular Shear Keys (wet joint) with multi-box system

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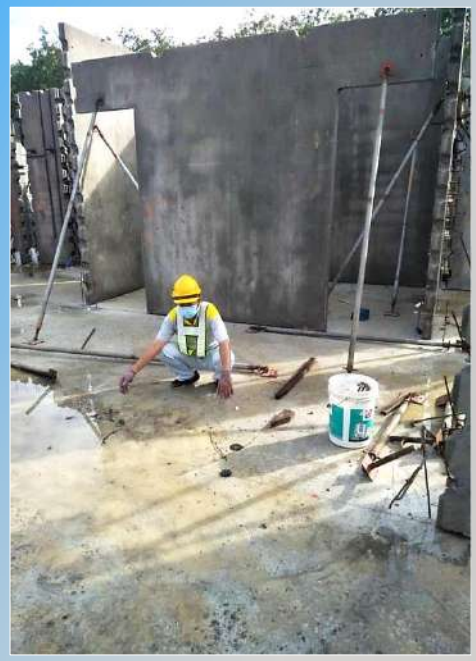


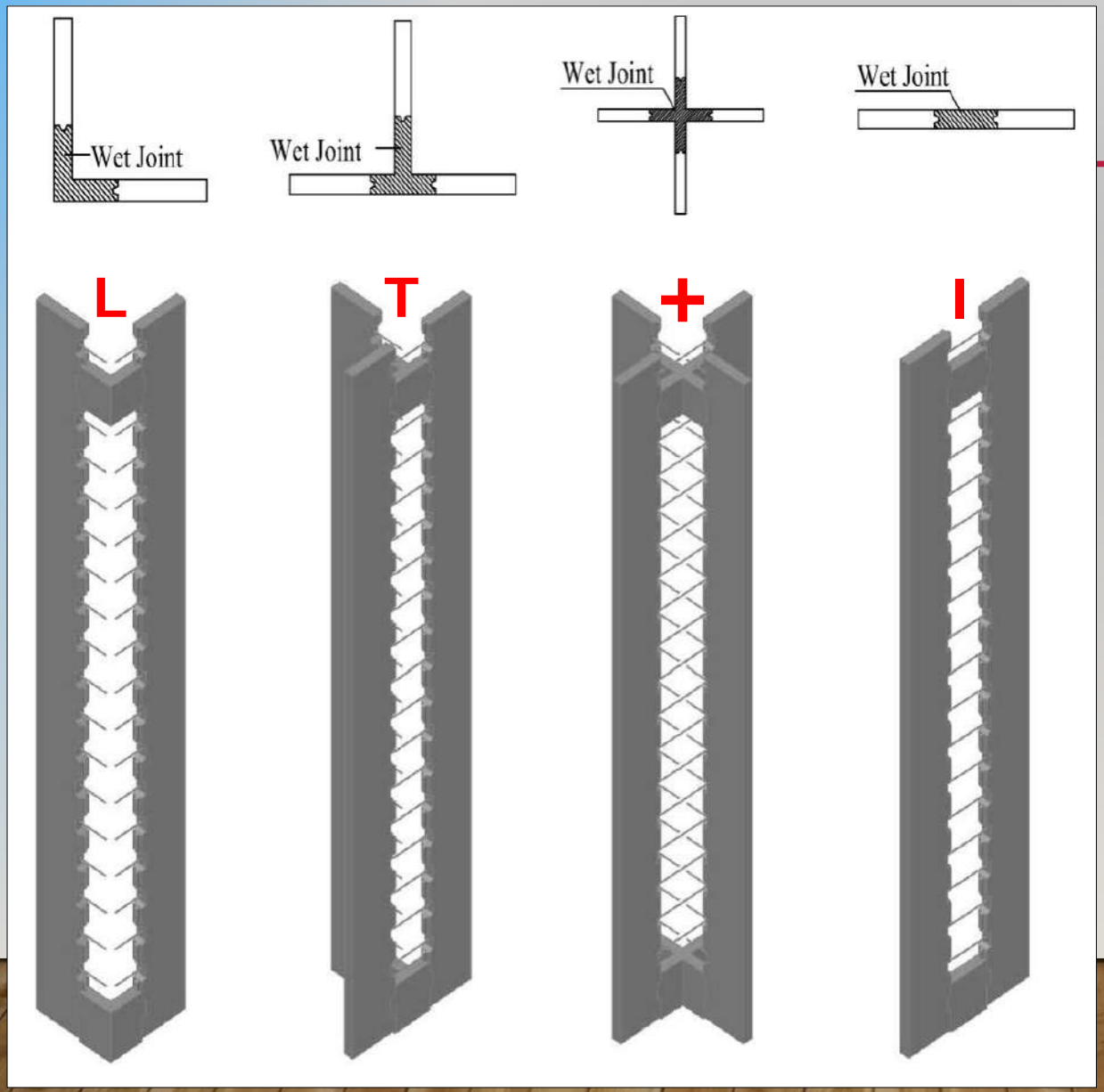
HC PRECAST SYSTEM SDN. BHD.

- *Success weighs heavily where most precast solutions have failed.*
  Our revolutionary patented "shear key joint" system have managed to resolve the very issue which have plagued the precast industry, water leakages and crack.

- *Real Industrialised Building System Provider*
- *Monolithic wall, Modular Shear Keys (wet joint) with Multi-box system*
- *Not a one-stop-centre Salesman*
- *Not an outsourcing management Company*
- *Real Experience, Ideal Technology & Professional Implementation.*
- *Industrialised Building System Provider is one Who knows the Way, goes the Way and shows the Way.*

IBS CONCEPT : Sequence of work - 5 Steps

HCPS's *success weighs heavily where most precast solutions have failed. Our revolutionary patented "shear key joint" system have managed to resolve the very issue which have plagued the precast industry, water leakages and crack .*



*This **patented system** has helped to eradicate the most common issue with **Precast Concrete** construction, water leakages.*

- *Wet joint*
- *Tongue and groove*
- *Seamless interfacing*

HCPS's *Success weighs heavily where most precast solutions have failed. Our revolutionary patented "shear key joint" system have managed to resolve the very issue which have plagued the precast industry, water leakages and crack.*

HCPS precast system that emulates the monolithic Multi-box system has excellent water proving capability.

This is proven by our Rasa double story training unit that was exposed to weather for 14 years without roof till date, owing thanks to our patented revolutionary shear key joint system which also prevents joint crack.

*HCPS's Success weighs heavily where most precast solutions have **failed.** Our revolutionary patented shear key joint system have managed to resolve the very issue which have plagued the precast industry, water leakages and crack.*

Real Industrialised Building System *Provider*

Monolithic *wall,* ***Modular*** *Shear Keys (wet joint) with* ***Multi-box*** *system*

Real Industrialised Building System Provider

***Monolithic** wall, **Modular** Shear Keys (wet joint) with **Multi-box** system*

Real Industrialised Building System Provider

***Monolithic** wall, **Modular** Shear Keys (wet joint) with **Multi-box** system*

Not a one-stop-centre Salesman

Not an outsourcing management Company

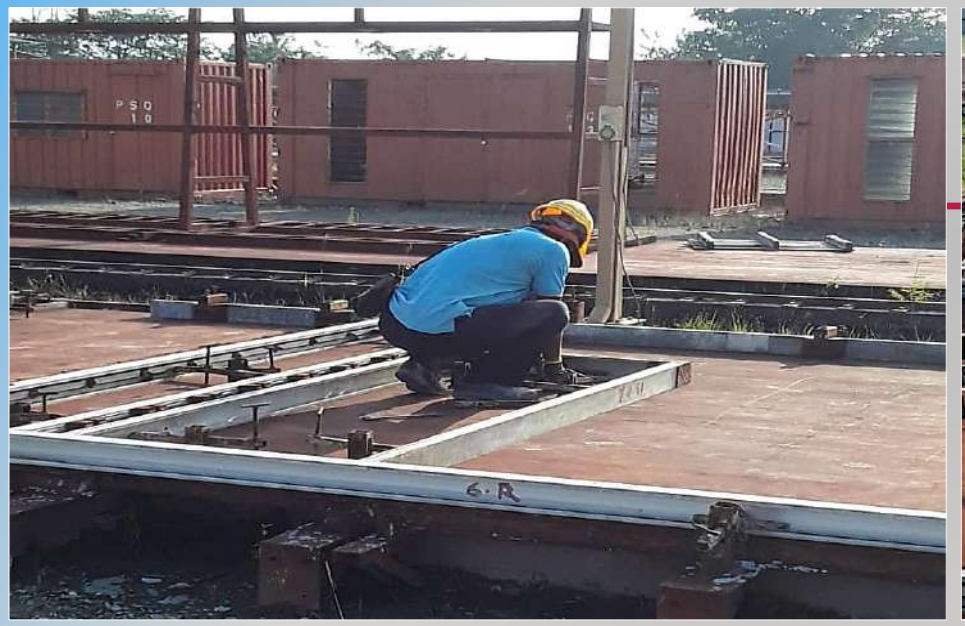
***Real** Industrialised Building System Provider,*

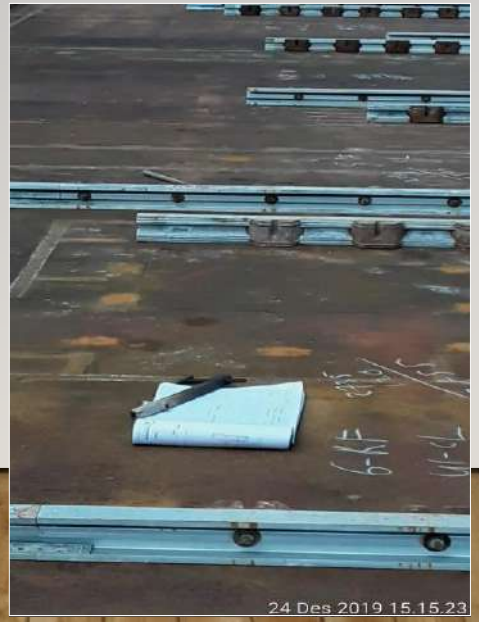
Not a one-stop-centre Salesman

Not an outsourcing management Company

Not a one-stop-centre Salesman

Not an outsourcing management Company





Not a one-stop-centre Salesman

Not an outsourcing management Company







Real Experience, Ideal Technology & Professional Implementation.

Industrialised Building System Provider

is one Who knows the Way, goes the Way and shows the Way.

IBS CONCEPT

Precast Elements requirements to complete a building is

sequence of work - 5 Steps

i) *Step 1* - Drawing conversion :

- *2D Architect* drawing to *3D IBS system drawing*
- *Original M&E* drawing to *M&E IBS system shop drawing*

ii) *Step 2 (off-site) : - Mould fabrication*

iii) *Step 3 (off-site) : - Production sequence (advance casting)*

iv) *Step 4 (off-site) : - Delivery sequence (4 options)*

v) *Step 5 (on-site) : - Installation sequence (numbering)*

Speed

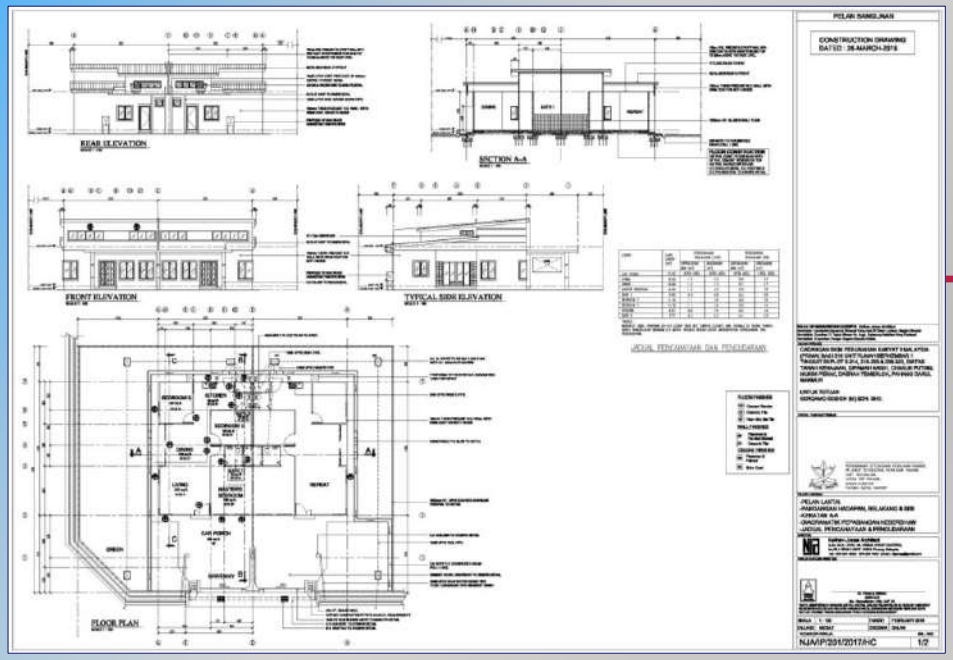
Decide by

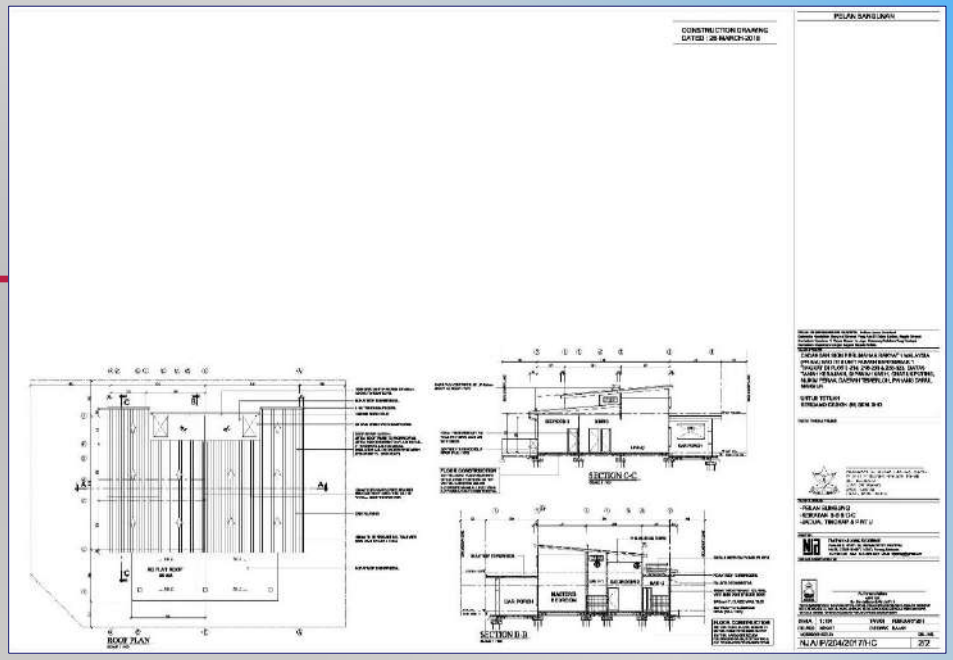
Client

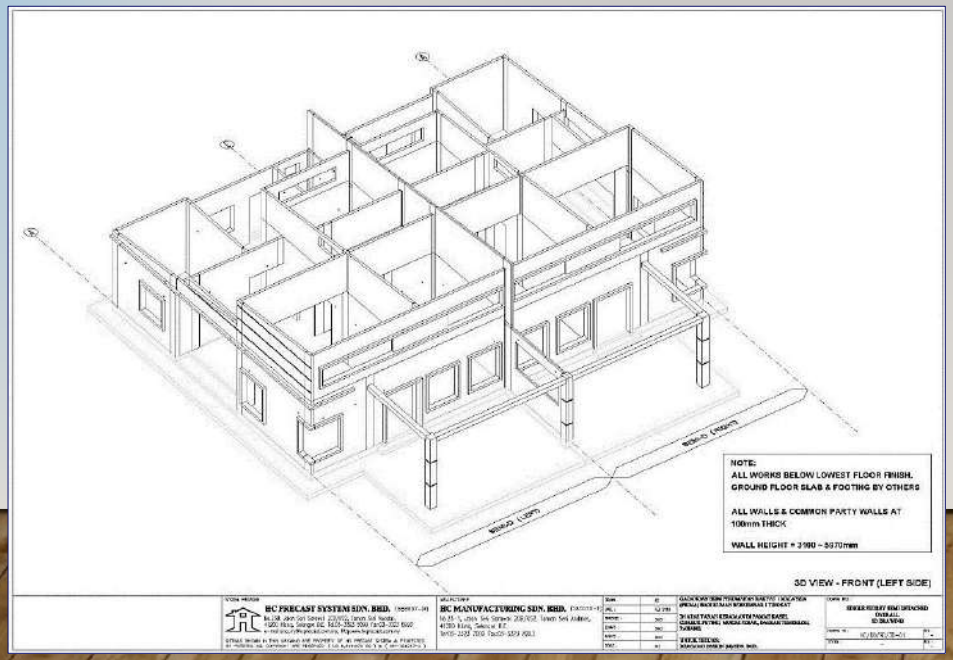
➢ *Precast element comply to the Building by Law & Bsi code*

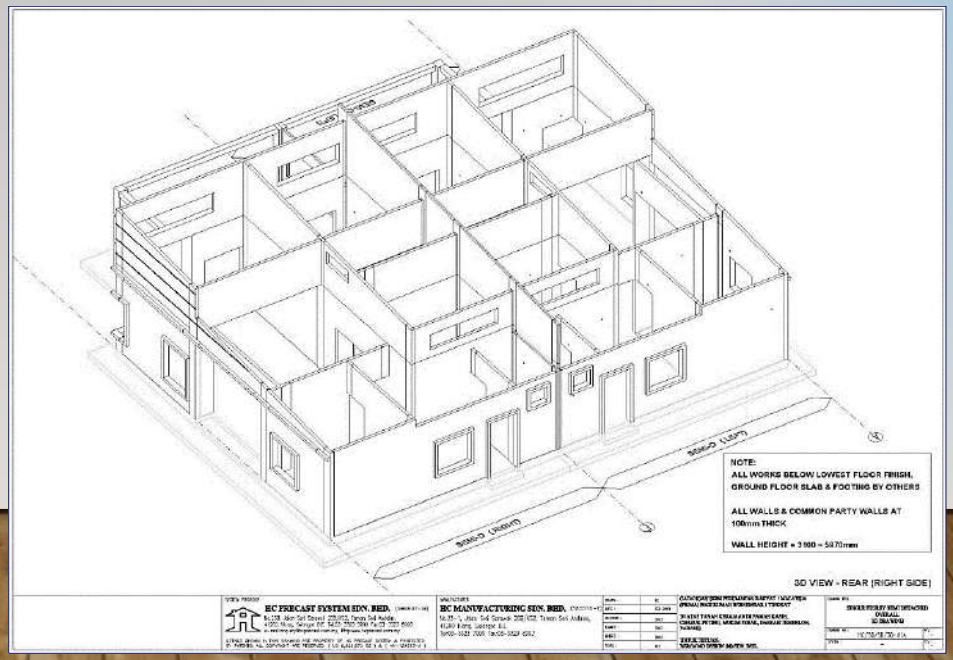
➢ *Independent Checker on Shear Key (Wet Joint) HCPS's Precast R.C. wall panels*

Step 1 - Drawing conversion : - *2D Architect* drawing to *3D IBS system drawing* *(1 month)*

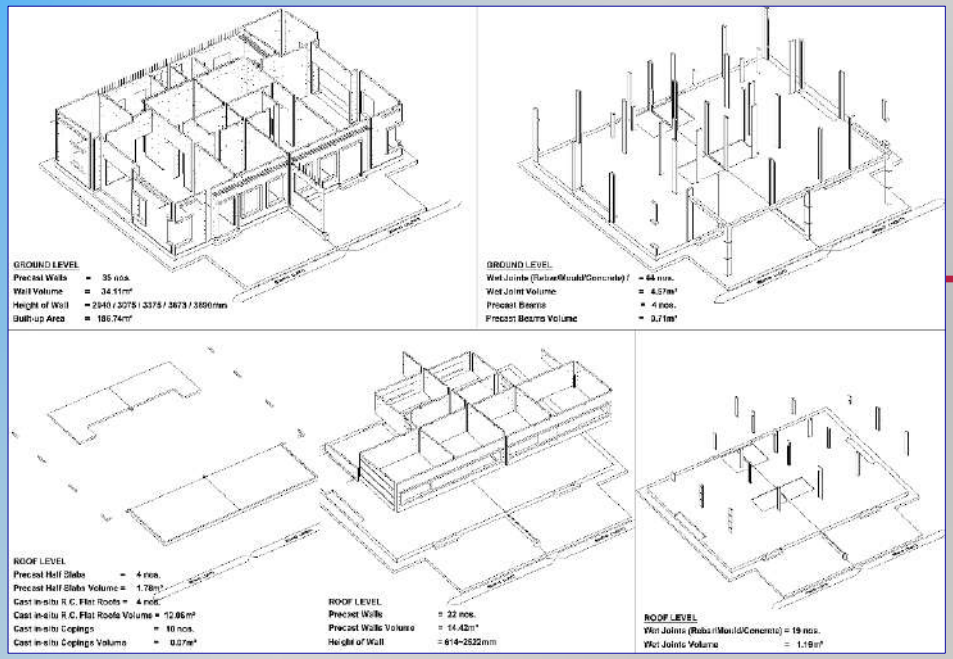


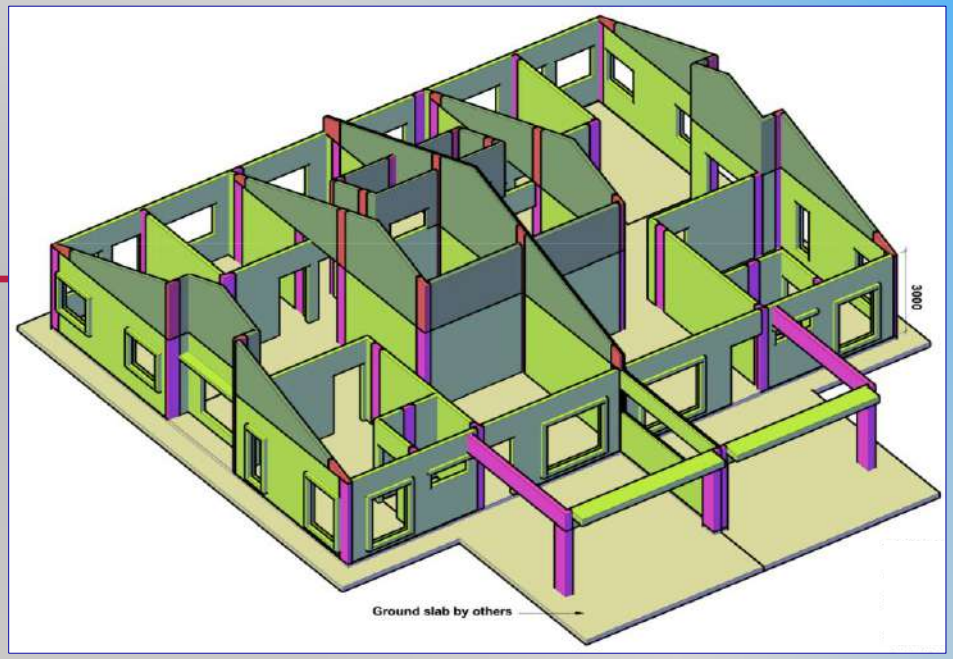






Produce State-of-art *Systemized* Integrated *3D* Digital *Model*





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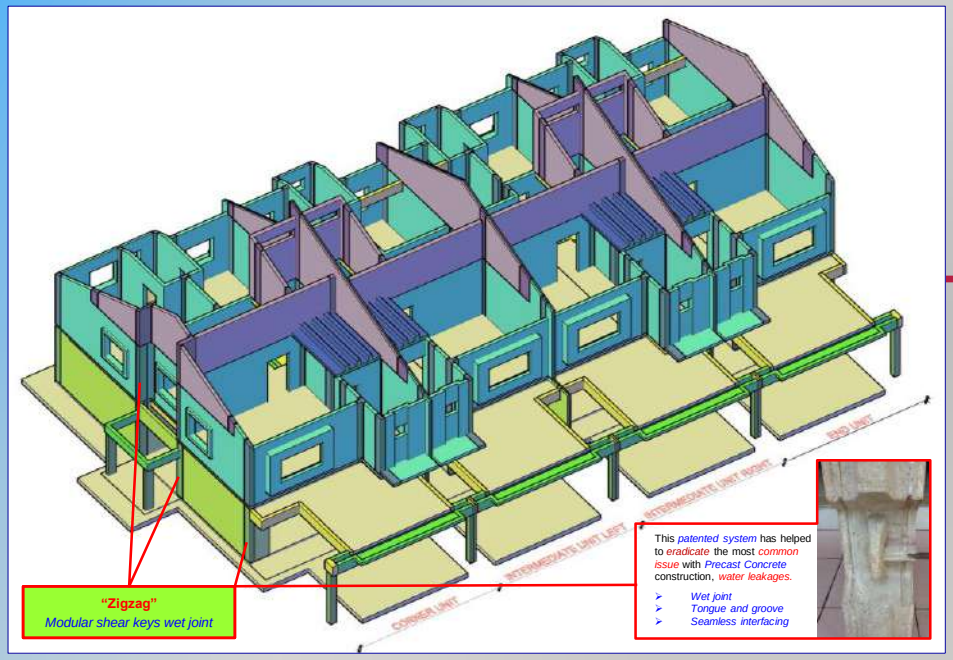
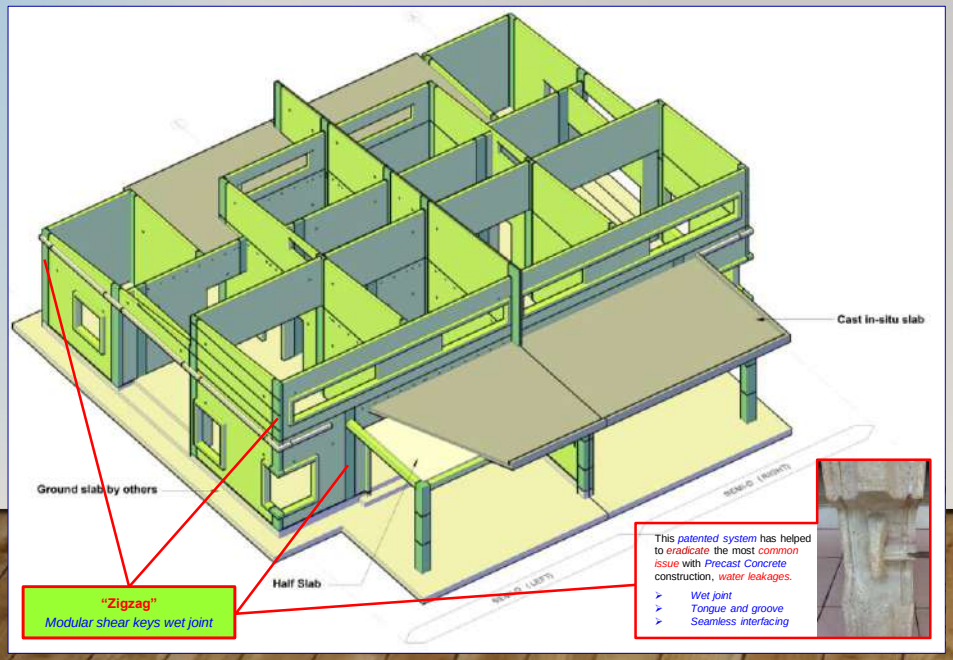
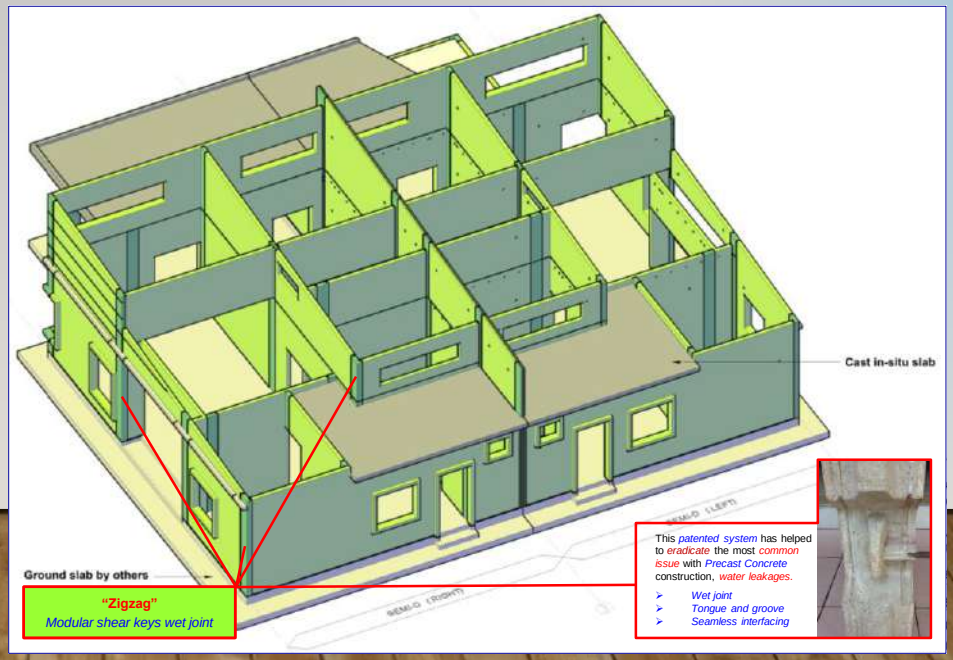
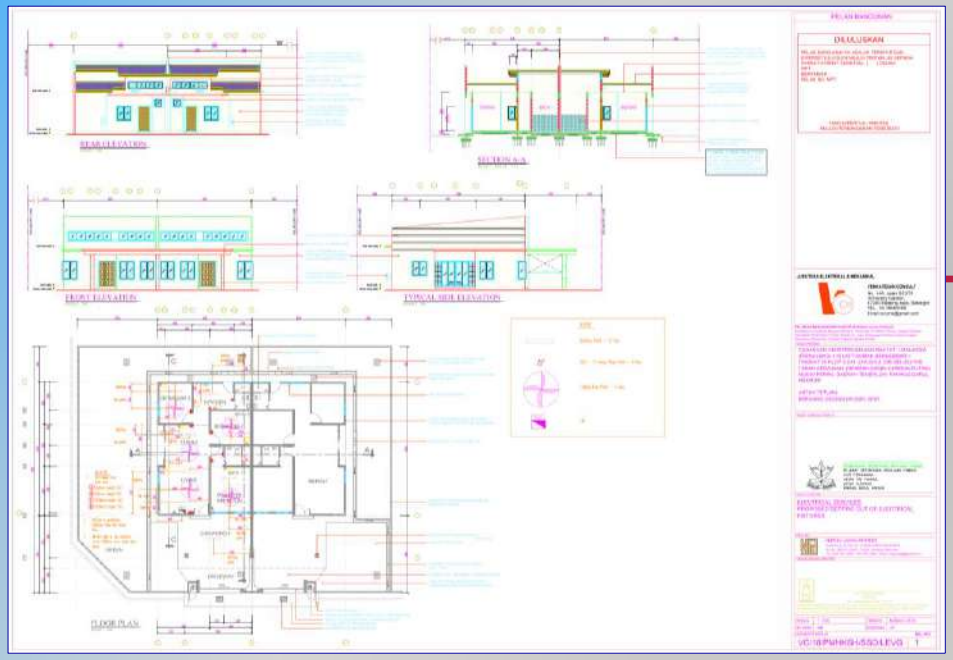
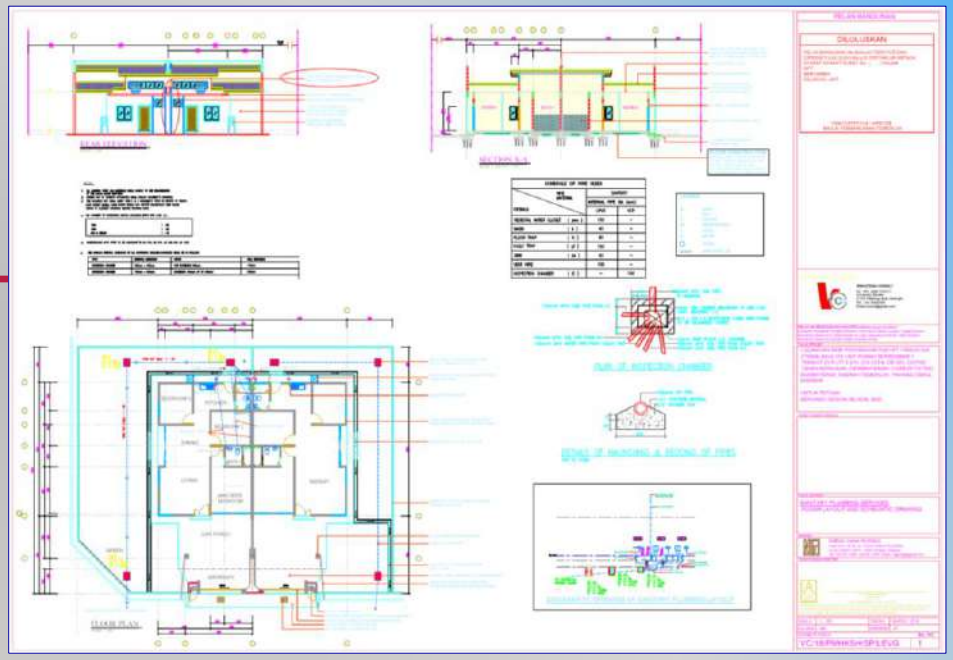


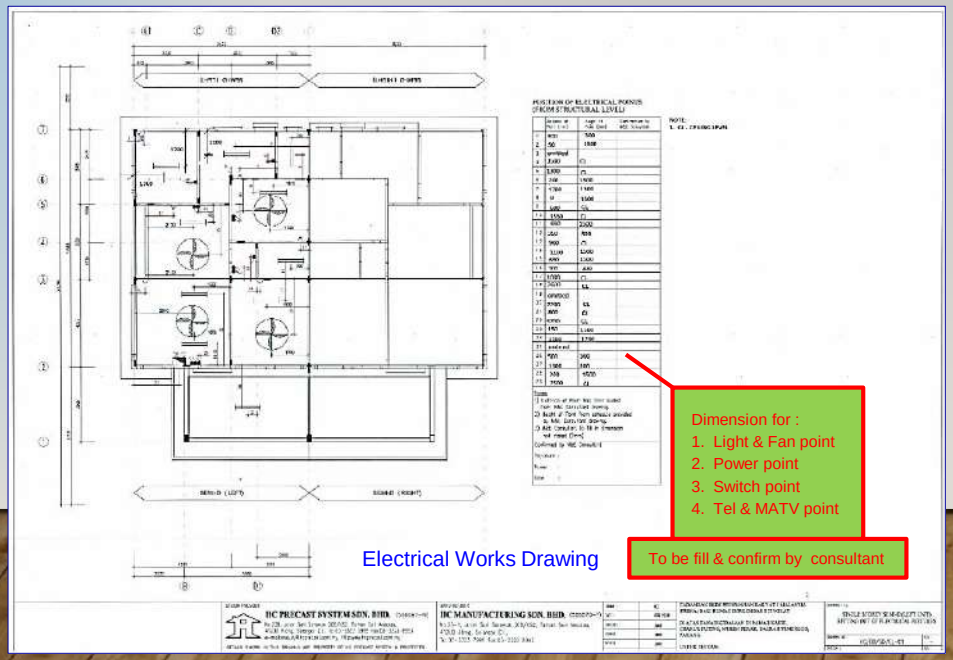


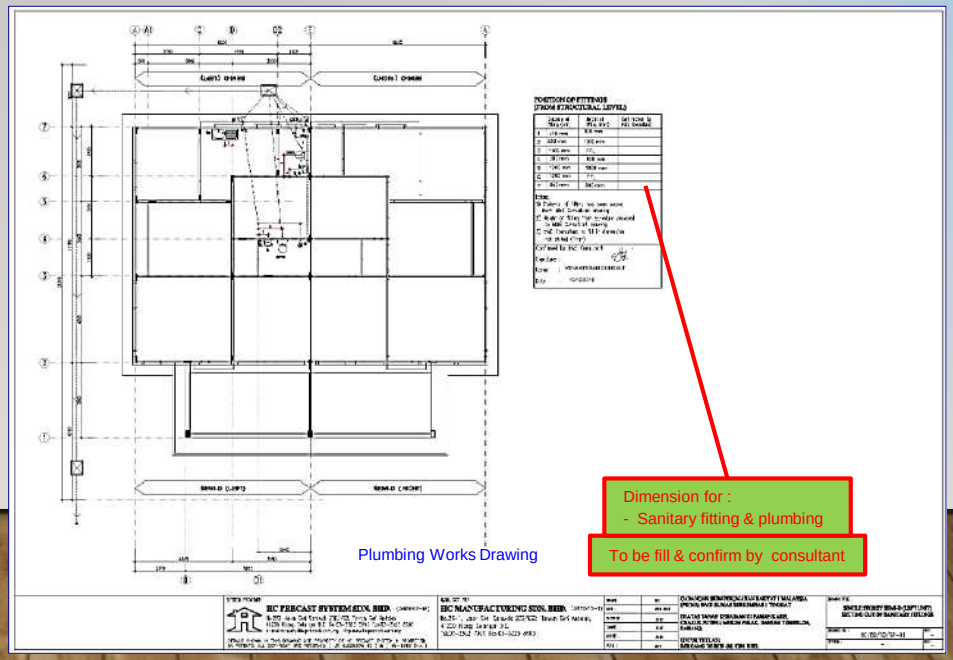


Step 1 - Drawing conversion : - *Original M&E* drawing to *M&E IBS system shop drawing* *(1 month)*

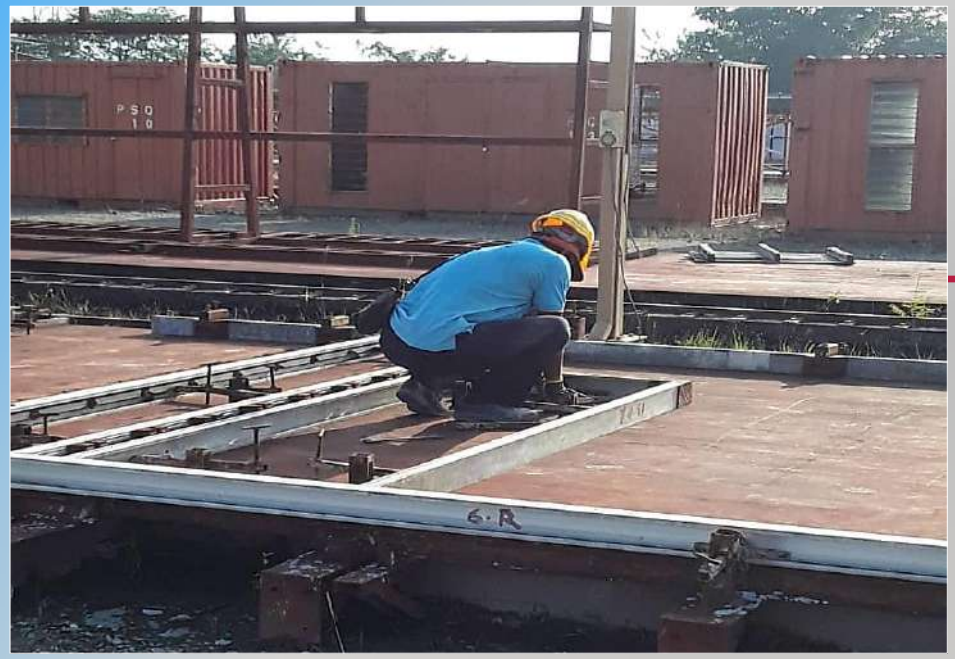








Step 2 - (off-site) : - Mould fabrication (1 month)



Step 2 - (off-site) : - Mould fabrication (1 month)







Step 2 - (off-site) : - Mould fabrication (1 month)

Step 2 - (off-site) : - Mould fabrication (1 month)

Step 2 - (off-site) : - Mould fabrication (1 month)








Step 3 - (off-site) : - Production advance casting (1 month)

Step 4 - (off-site & on-site) : - Delivery sequence (4 options)

Logistic Option (Decide by Client)

1 *Option 1*
- Bay yard (factory) to block yard (project site)

2 *Option 2 : Advance Casting*
- Bay yard (factory) to site yard (project site)

3 *Option 3 : Advance Casting*
- Storage yard (factory) to block yard (project site)

4 *Option 4 : Advance Casting*
- Storage yard (factory) to site yard (project site)

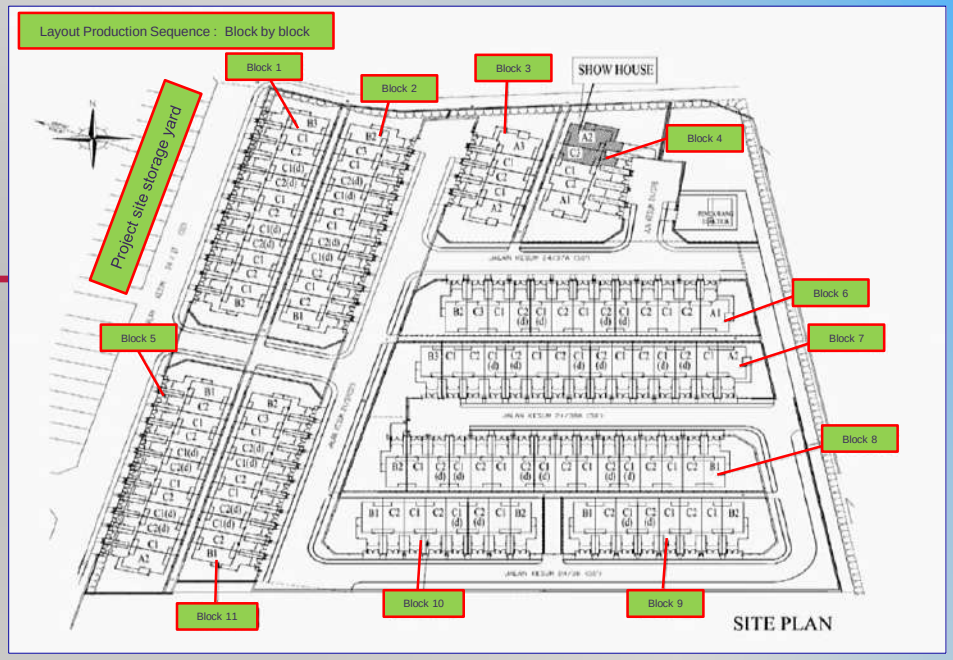
Notes :

a) *Client / Consultant / Main contractor need to choose which option to be used before production.*

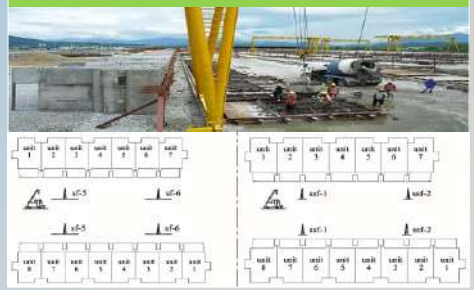
b) *Rate for RM 900.00 / m3 includes for option 1 & 3.*

c) *An additional of RM 30.00 / m3 need to be charges for option 2 & 4*

d) *Crusher run base to be provided at site yard for option 1 - 4.*



1. Bay Yard to Block Yard – Advance Casting

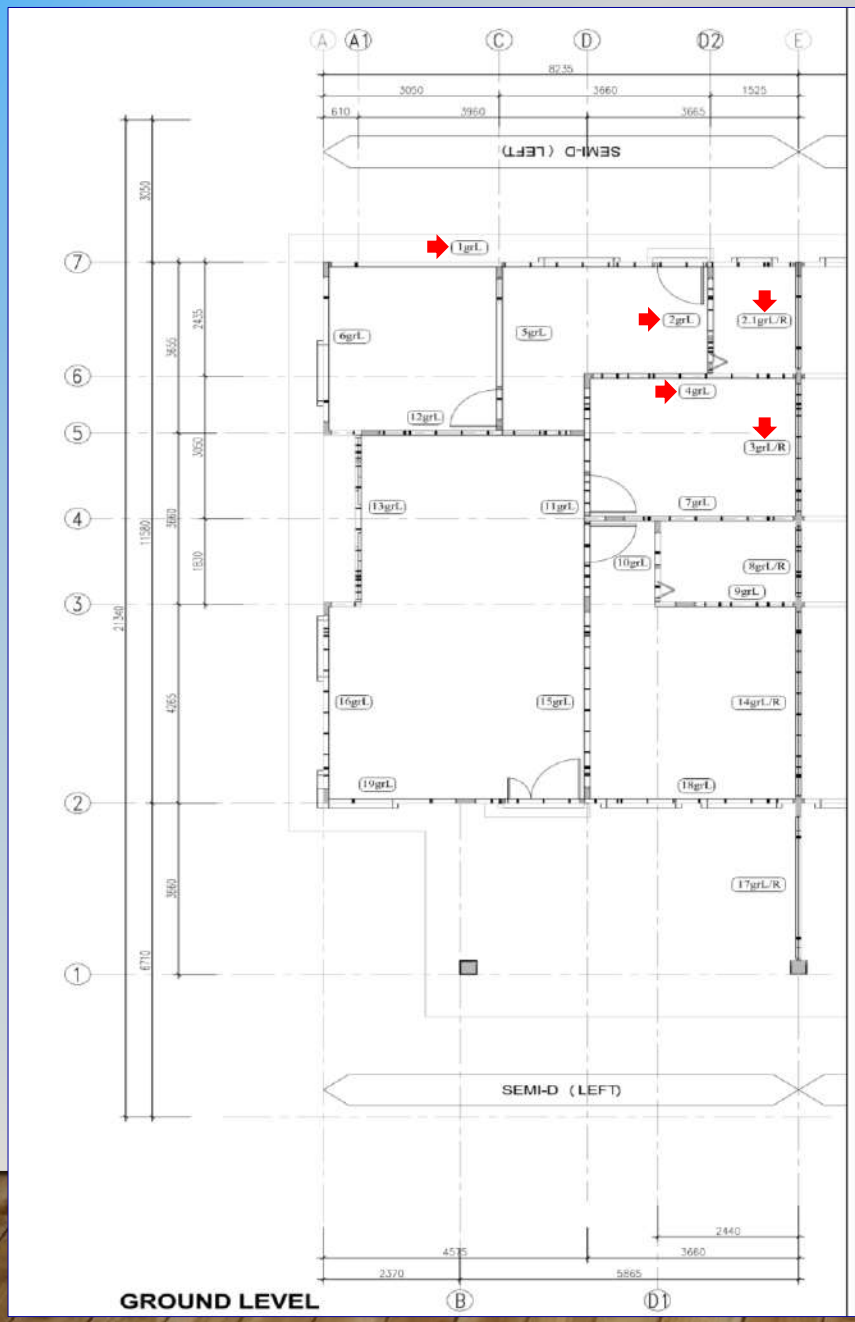


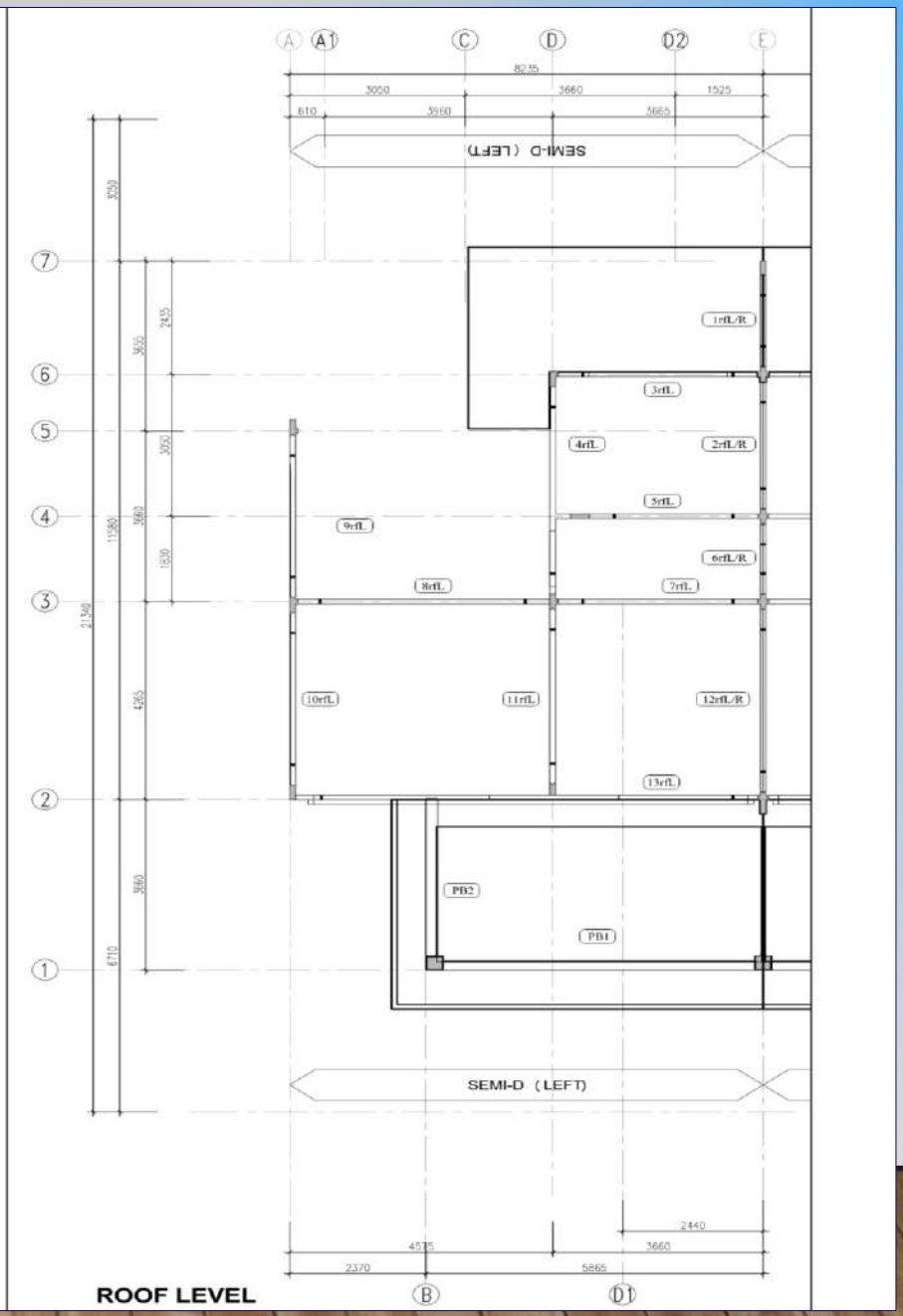
2. Bay Yard to Site yard (project) – Advance Casting

3. Storage Yard (factory) to Block Yard – Advance Casting

4. Storage Yard (factory) to Site Yard (project) – Advance Casting

Step 5 - (on-site) : - Installation sequence (numbering)





Step 5 - (on-site) : - Installation sequence (numbering)

HCPS's Precast element comply to the Building by Law & Bsi code

Uniform building by law :

- Page 35 section 86 (2) *clearly stated* the *single storey house* may be in *load-bearing 100mm solid masonry* or in-situ concrete.

[Section 84 – 86]

(3) Every brick or masonry wall of a building founded on strip footings shall be provided with a damp proof course which shall be—

(a) at a height of not less than 150 millimetres above the surface of the ground adjoining the wall; and

(b) beneath the level of the underside of the lowest timbers of the ground floor resting on the wall, or where the ground floor is a solid floor, not higher than the level of the upper surface of the concrete or other similar solid material forming the structure of the floor.

(4) Where any part of a floor of the lowest or only storey of a building is below the surface of the adjoining ground and a wall or part of a wall of the storey is in contact with the ground—

(a) the wall or part of the wall shall be constructed or provided with a vertical damp proof course so as to be impervious to moisture from its base to a height of not less than 150 millimetres above the surface of the ground; and

(b) an additional damp proof course shall be inserted in the wall or part of the wall at its base.

(5) Where the floor or any part of the walls of a building is subject to water pressure, that portion of the floor or wall below ground level shall be waterproof.

85. For the purposes of this Part wherever references are made to the thickness of any brick wall, the maximum or minimum thickness of such wall shall not exceed the nominal thickness plus or minus the maximum tolerance permissible under any standard specification.

86. (1) All party walls shall generally be of not less than 200 millimetres total thickness of solid masonry or *in-situ* concrete which may be made up of two separate skins each of not less than 100 millimetres thickness if constructed at different times:

Provided that in multi-storeyed flats and terrace houses of reinforced concrete or of protected steel framed construction having floors and roofs constructed to the requirements of these By-laws, the party wall thereof shall not be less than 100 millimetres total thickness.

(2) Party walls in single storeyed houses may be in load-bearing 100 millimetres solid masonry or *in-situ* concrete provided the requirements of Part V, VI and VII of these By-laws are complied with.

(3) All party walls shall be carried above the upper surface of the roof to a distance of not less than 230 millimetres at right angles to such upper surface.

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British Standard (BSI) :

- BS 8110_1:1997 - Page 21 Table 3.3
- ***Nominal cover*** *to all reinforcement and Table 3.4*
- *Nominal cover to all reinforcement (including links) to meet* ***specified periods*** *of* ***fire resistance.***

BS 8110-1:1997

Table 3.3 — Nominal cover to all reinforcement (including links) to meet durability requirements (see NOTE 1)

Conditions of exposure (see 3.3.1)	Nominal cover: Dimensions in millimetres				
Mild	25	20	20*	20*	20*
Moderate	—	35	30	25	20
Severe	—	—	40	30	25
Very severe	—	—	50*	40*	30
Most severe	—	—	—	—	50
Abrasive	—	—	—	See NOTE 3	See NOTE 3
Maximum free water/cement ratio	0.65	0.60	0.55	0.50	0.45
Minimum cement content (kg/m³)	275	300	325	350	400
Lowest grade of concrete	C30	C35	C40	C45	C50

Table 3.4 — Nominal cover to all reinforcement (including links) to meet specified periods of fire resistance (see NOTES 1 and 2)

Fire resistance h	Nominal cover: Beams*		Floors		Ribs		Columns*
	Simply supported mm	Continuous mm	Simply supported mm	Continuous mm	Simply supported mm	Continuous mm	mm
0.5	20*	20*	20*	20*	20*	20*	20*
1	20*	20*	20	20	20	20*	20*
1.5	20	20*	20	20	35	20	20
2	40	30	30	25	45	30	35
3	60	40	45	35	55	45	45
4	70	50	55	45	65	55	55

21

Clearly stated of these BSI code are complied with.

British Standard (BSI) :

- BS 8110_1:1997 : Page 134. Table 6.2
- *Minimum period* before *striking formwork (concrete made with Portland cement 42.5 to BS 12:1991 or sulfate-resisting Portland cement 42.5 to BS 4027:1991).*

Table 6.2 — Minimum period before striking formwork (concrete made with Portland cement 42.5 to BS 12:1991 or sulfate-resisting Portland cement 42.5 to BS 4027:1991)

Type of framework	Minimum period before striking	
	Surface temperature of concrete	
	16 °C and above	t °C (any temperature between 0 °C and 16 °C)
Vertical formwork to columns, walls and large beams	12 h	$\frac{300}{t+10}$ h
Soffit formwork to slabs	4 days	$\frac{100}{t+10}$ days
Soffitt formwork to beams and props to slabs	10 days	$\frac{250}{t+10}$ days
Props to beams	14 days	$\frac{360}{t+10}$ days

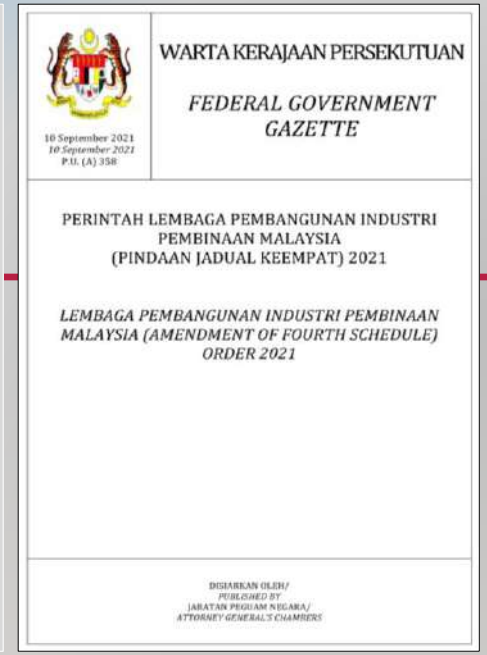
NOTE This table can be applied to PC and SRPC of higher cement strength classes.

Federal Government Gazette : Lembaga Pembangunan Industri Pembinaan Malaysia (Amendment of Fourth Schedule) Order 2021

HC Precast System

Monolithic wall,
Modular Shear Keys
(wet joint) with
Multi-box system

Comply to the
Building by Law
&
Bsi code



WARTA KERAJAAN PERSEKUTUAN

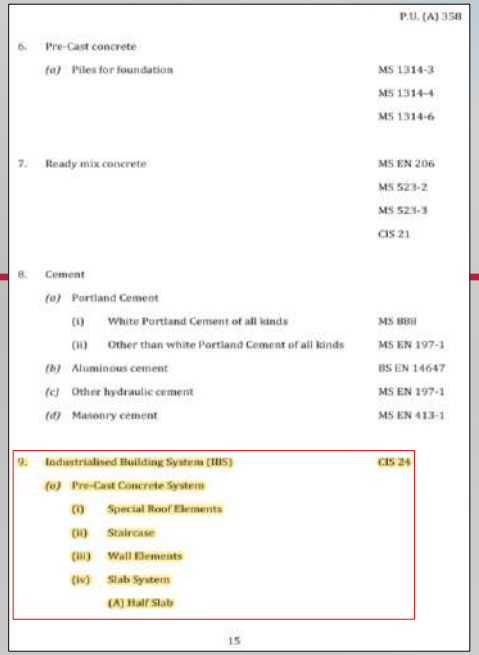
FEDERAL GOVERNMENT GAZETTE

10 September 2021
10 September 2021
P.U. (A) 358

PERINTAH LEMBAGA PEMBANGUNAN INDUSTRI PEMBINAAN MALAYSIA (PINDAAN JADUAL KEEMPAT) 2021

LEMBAGA PEMBANGUNAN INDUSTRI PEMBINAAN MALAYSIA (AMENDMENT OF FOURTH SCHEDULE) ORDER 2021

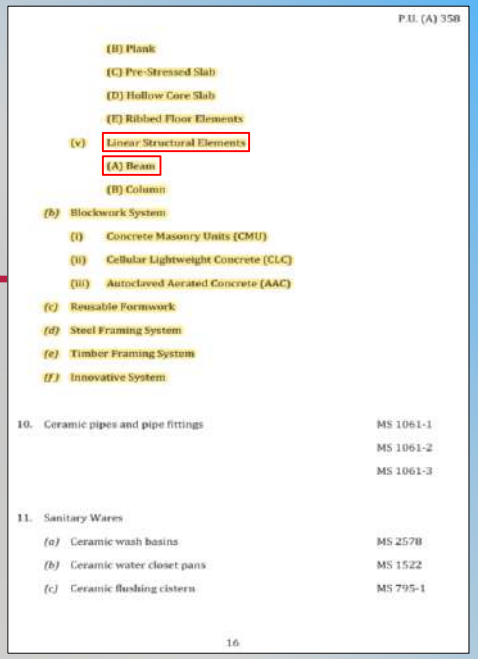
DISIARKAN OLEH/
PUBLISHED BY
JABATAN PEGUAM NEGARA/
ATTORNEY GENERAL'S CHAMBERS



P.U. (A) 358

6.	Pre-Cast concrete	
	(a) Piles for foundation	MS 1314-3
		MS 1314-4
		MS 1314-6
7.	Ready mix concrete	MS EN 206
		MS 523-2
		MS 523-3
		CIS 21
8.	Cement	
	(a) Portland Cement	
	(i) White Portland Cement of all kinds	MS 888
	(ii) Other than white Portland Cement of all kinds	MS EN 197-1
	(b) Aluminous cement	BS EN 14647
	(c) Other hydraulic cement	MS EN 197-1
	(d) Masonry cement	MS EN 413-1
9.	Industrialised Building System (IBS)	CIS 24
	(a) Pre-Cast Concrete System	
	(i) Special Roof Elements	
	(ii) Staircase	
	(iii) Wall Elements	
	(iv) Slab System	
	(A) Half Slab	

15



P.U. (A) 358

(B) Plank
(C) Pre-Stressed Slab
(D) Hollow Core Slab
(E) Ribbed Floor Elements
(v) Linear Structural Elements
(A) Beam
(B) Column
(b) Blockwork System
(i) Concrete Masonry Units (CMU)
(ii) Cellular Lightweight Concrete (CLC)
(iii) Autoclaved Aerated Concrete (AAC)
(c) Reusable Formwork
(d) Steel Framing System
(e) Timber Framing System
(f) Innovative System

10.	Ceramic pipes and pipe fittings	MS 1061-1
		MS 1061-2
		MS 1061-3
11.	Sanitary Wares	
	(a) Ceramic wash basins	MS 2578
	(b) Ceramic water closet pans	MS 1522
	(c) Ceramic flushing cistern	MS 795-1

16

STANDARD INDUSTRI PEMBINAAN
(CONSTRUCTION INDUSTRY STANDARD)

CIS 24 : 2018

IBS MANUFACTURER & PRODUCT ASSESSMENT & CERTIFICATION (IMPACT)

Description: "Verification, Validation, Testing and Certification"

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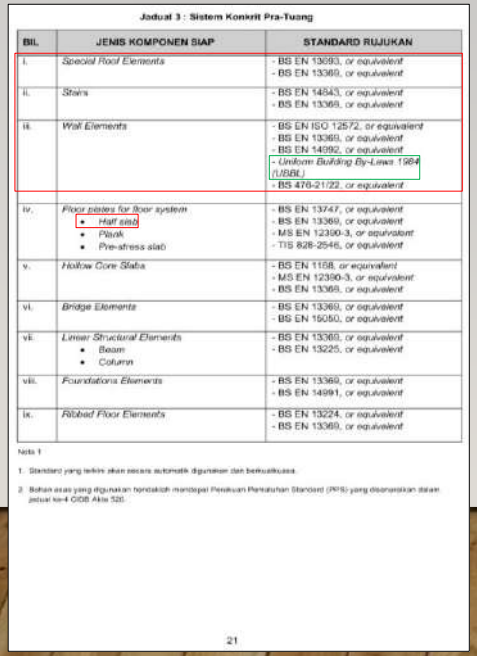
CONSTRUCTION INDUSTRY DEVELOPMENT BOARD MALAYSIA

CIDB Construction Industry Development Board Malaysia
LEMBAGA PEMBANGUNAN INDUSTRI PEMBINAAN MALAYSIA



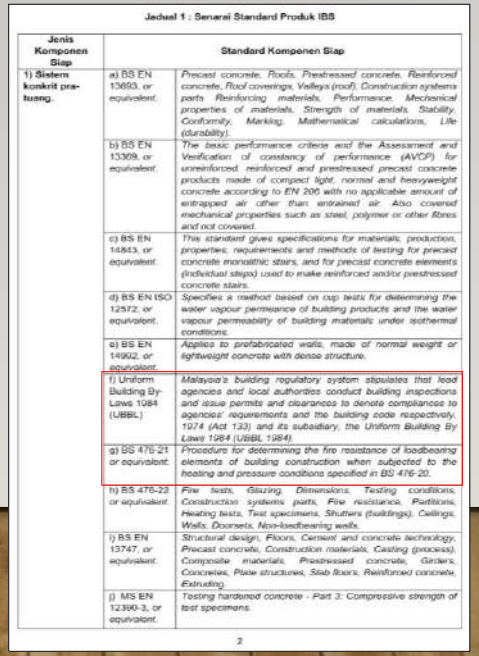
Jadual 3 : Sistem Konkrit Pra-Tuang

BIL.	JENIS KOMPONEN SIAP	STANDARD RUJUKAN
i.	*Special Roof Elements*	- BS EN 13693, or equivalent - BS EN 13369, or equivalent
ii.	*Stairs*	- BS EN 14843, or equivalent - BS EN 13369, or equivalent
iii.	*Wall Elements*	- BS EN ISO 12572, or equivalent - BS EN 13369, or equivalent - BS EN 14992, or equivalent - Uniform Building By-Laws 1984 (UBBL) - BS 476-21/22, or equivalent
iv.	*Floor plates for floor system* • Half slab • Plank • Pre-stress slab	- BS EN 13747, or equivalent - BS EN 13369, or equivalent - MS EN 12390-3, or equivalent - BS EN 13369, or equivalent - TIS 828-2546, or equivalent
v.	*Hollow Core Slabs*	- BS EN 1168, or equivalent - MS EN 12390-3, or equivalent - BS EN 13369, or equivalent
vi.	*Bridge Elements*	- BS EN 13369, or equivalent - BS EN 15050, or equivalent
vii.	*Linear Structural Elements* • Beam • Column	- BS EN 13369, or equivalent - BS EN 13225, or equivalent
viii.	*Foundations Elements*	- BS EN 13369, or equivalent - BS EN 14991, or equivalent
ix.	*Ribbed Floor Elements*	- BS EN 13224, or equivalent - BS EN 13369, or equivalent

Nota 1

1. Standard yang terkini akan secara automatik digunakan dan berkuatkuasa.
2. Bahan asas yang digunakan hendaklah mendapat Perakuan Pematuhan Standard (PPS) yang disenaraikan dalam jadual ke-4 CIDB Akta 520.

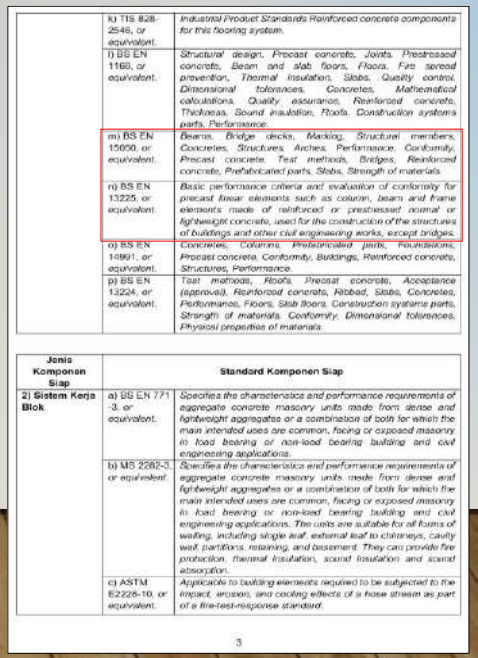
21



Jadual 1 : Senarai Standard Produk IBS

Jenis Komponen Siap	Standard Komponen Siap	
1) Sistem konkrit pra-tuang.	a) BS EN 13693, or equivalent.	*Precast concrete, Roofs, Prestressed concrete, Reinforced concrete, Roof coverings, Valleys (roof), Construction systems parts, Reinforcing materials, Performance, Mechanical properties of materials, Strength of materials, Stability, Conformity, Marking, Mathematical calculations, Life (durability).*
	b) BS EN 13309, or equivalent.	*The basic performance criteria and the Assessment and Verification of constancy of performance (AVCP) for unreinforced, reinforced and prestressed precast concrete products made of compact light, normal and heavyweight concrete according to EN 206 with no applicable amount of entrapped air other than entrained air. Also covered mechanical properties such as steel, polymer or other fibres and not covered.*
	c) BS EN 14843, or equivalent.	*This standard gives specifications for materials, production, properties, requirements and methods of testing for precast concrete monolithic stairs, and for precast concrete elements (individual steps) used to make reinforced and/or prestressed concrete stairs.*
	d) BS EN ISO 12572, or equivalent.	*Specifies a method based on cup tests for determining the water vapour permeance of building products and the water vapour permeability of building materials under isothermal conditions.*
	e) BS EN 14992, or equivalent.	*Applies to prefabricated walls, made of normal weight or lightweight concrete with dense structure.*
	f) Uniform Building By-Laws 1984 (UBBL)	*Malaysia's building regulatory system stipulates that lead agencies and local authorities conduct building inspections and issue permits and clearances to denote compliances to agencies' requirements and the building code respectively. 1974 (Act 133) and its subsidiary, the Uniform Building By Laws 1984 (UBBL 1984).*
	g) BS 476-21 or equivalent.	*Procedure for determining the fire resistance of loadbearing elements of building construction when subjected to the heating and pressure conditions specified in BS 476-20.*
	h) BS 476-22 or equivalent.	*Fire tests, Glazing, Dimensions, Testing conditions, Construction systems parts, Fire resistance, Partitions, Heating tests, Test specimens, Shutters (buildings), Ceilings, Walls, Doorsets, Non-loadbearing walls.*
	i) BS EN 13747, or equivalent.	*Structural design, Floors, Cement and concrete technology, Precast concrete, Construction materials, Casting (process), Composite materials, Prestressed concrete, Girders, Concretes, Plate structures, Slab floors, Reinforced concrete, Estimating.*
	j) MS EN 12390-3, or equivalent.	*Testing hardened concrete - Part 3: Compressive strength of test specimens.*

2

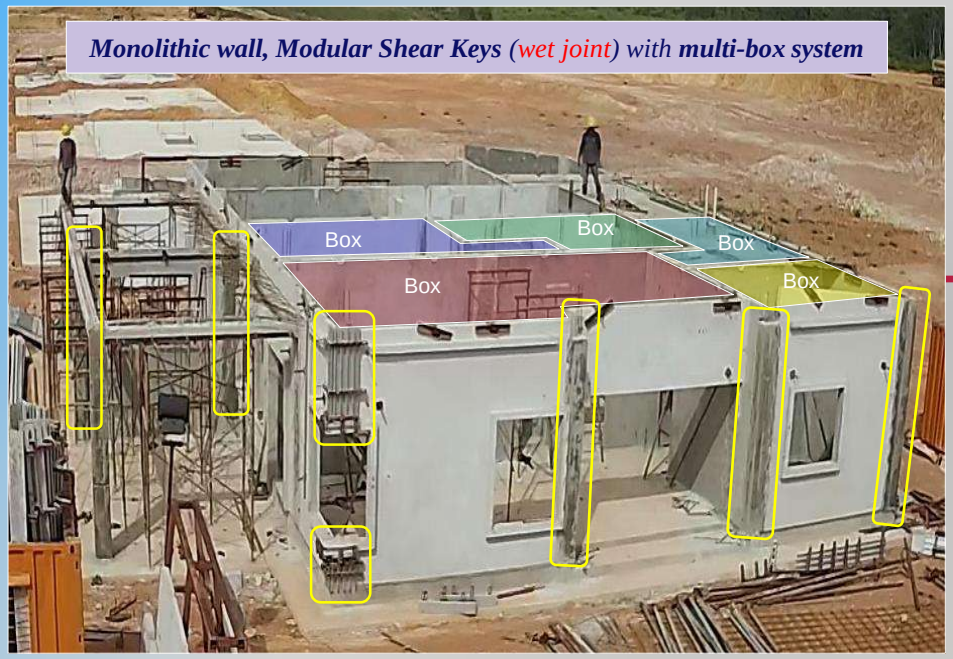


	k) TIS 828-2546, or equivalent.	*Industrial Product Standards Reinforced concrete components for this flooring system.*
	l) BS EN 1168, or equivalent.	*Structural design, Precast concrete, Joints, Prestressed concrete, Beam and slab floors, Floors, Fire spread prevention, Thermal insulation, Slabs, Quality control, Dimensional tolerances, Concretes, Mathematical calculations, Quality assurance, Reinforced concrete, Thickness, Sound insulation, Roofs, Construction systems parts, Performance.*
	m) BS EN 15050, or equivalent.	*Beams, Bridge decks, Marking, Structural members, Concretes, Structures, Arches, Performance, Conformity, Precast concrete, Test methods, Bridges, Reinforced concrete, Prefabricated parts, Slabs, Strength of materials.*
	n) BS EN 13225, or equivalent.	*Basic performance criteria and evaluation of conformity for precast linear elements such as column, beam and frame elements made of reinforced or prestressed normal or lightweight concrete, used for the construction of the structures of buildings and other civil engineering works, except bridges.*
	o) BS EN 14991, or equivalent.	*Concretes, Columns, Prefabricated parts, Foundations, Precast concrete, Conformity, Buildings, Reinforced concrete, Structures, Performance.*
	p) BS EN 13224, or equivalent.	*Test methods, Roofs, Precast concrete, Acceptance (approval), Reinforced concrete, Ribbed, Slabs, Concretes, Performance, Floors, Slab floors, Construction systems parts, Strength of materials, Conformity, Dimensional tolerances, Physical properties of materials.*

Jenis Komponen Siap	Standard Komponen Siap	
2) Sistem Kerja Blok	a) BS EN 771-3, or equivalent.	*Specifies the characteristics and performance requirements of aggregate concrete masonry units made from dense and lightweight aggregates or a combination of both for which the main intended uses are common, facing or exposed masonry in load bearing or non-load bearing building and civil engineering applications.*
	b) MS 2282-3, or equivalent.	*Specifies the characteristics and performance requirements of aggregate concrete masonry units made from dense and lightweight aggregates or a combination of both for which the main intended uses are common, facing or exposed masonry in load bearing or non-load bearing building and civil engineering applications. The units are suitable for all forms of walling, including single leaf, external leaf to chimneys, cavity wall, partitions, retaining, and basement. They can provide fire protection, thermal insulation, sound insulation and sound absorption.*
	c) ASTM E2226-10, or equivalent.	*Applicable to building elements required to be subjected to the impact, erosion, and cooling effects of a hose stream as part of a fire-test-response standard.*

3

Independent Checker on Shear Key (Wet Joint) HCPS's Precast R.C. wall panels



Monolithic wall, Modular Shear Keys** (wet joint) with **multi-box system

Perunding PaduReka Sdn. Bhd.
CONSULTING ENGINEERS

Cadangan Pembinaan Kompleks Bank Gen Biji Benih Pertanian Di Ibu Pejabat Mardi, Serdang, Selangor

Supplementary Independent Checker Engineer's Report No. 5-1 on Shear Key Joints For Precast R.C. Wall Panels

Prepared By :
Perunding PaduReka Sdn. Bhd.
41A Jalan Jejaka 2
Taman Maluri
Cheras
55100 Kuala Lumpur

18 January 2010

Cadangan Pembinaan Kompleks Bank Gen Biji Benih Pertanian Di Ibu Pejabat Mardi, Serdang, Selangor
- **Supplementary Independent Checker Engineer's Report No. 5-1 on Shear Key Joints For Precast R.C. Wall Panels**

1) In ICE Report No.5, the special recess and protruding keys at both ends of precast r.c. wall panels was mentioned under Section (2) (g). However the shear capacity of the shear key joints was not dealt with because the detailed dimensions / configuration of the shear keys was not made available at that time. On January 13, 2010, Perunding ACE Sdn. Bhd. released the details of the key joints and hence this supplementary ICE's Report No. 5-1 is meant to deal with the shear capacity of the special joint.

2) Ultimate Shear Capacity of the Key Joints

a) By definition, the shear keys can be classified as "castellated" joints and according to the requirements of joints transmitting shear under Clause 5.3.7 (c) of BS 8110, Part 1, no shear reinforcement is required if the shear stress due to ultimate loads is less than 1.3 N/mm², calculated on the minimum root area of a castellated joint.

b) The shear keys rely on mechanical interlock and the development of a confined diagonal compressive strut across the shear plane. A taper is provided for the keys to facilitate removal of formwork. This also assists in confining the concrete in the cast insitu r.c. columns. The interfaces are prevented from moving apart by the R10-300 dowel bars (500mm long) spaced at every corresponding shear key position of 300 mm c/c. Current detailing indicates shorter anchorage length in the precast wall panels and longer into the cast insitu columns. Correct detailing should be of equal length of 250mm on both sides from the interface.

c) Based on the details of the castellated joint provided (see attached joint), the minimum roof area is 32,160 mm² (201mm x 160mm).

Hence, ultimate shear V = 32,160 x 1.3 / 10^3 = 41.8 kN per key.

Cadangan Pembinaan Kompleks Bank Gen Biji Benih Pertanian Di Ibu Pejabat Mardi, Serdang, Selangor
- **Supplementary Independent Checker Engineer's Report No. 5-1 on Shear Key Joints For Precast R.C. Wall Panels**

The compressive strut force, C is estimated at 47 kN while the force normal to the shear joint, N is about 22 kN. As such, the compressive stress in concrete, f_c = 47 x 10^3 / 160 x 79 = 3.72 N/mm² (0.105 f_{cu}) is satisfactory while normal force, N of 22 kN tends to separate the panel, which in turn resisted by the R10 dowel bars. However, if the dowel bar is of mild steel, the capacity of anchorage is only estimated at π x 10 x 1.66 x 250 / 10^3 = 13 kN which is inadequate to resist 22 kN for maximum ultimate shear stress of 1.3 N/mm². Therefore, the shear capacity should be proportionately reduced to 41.8 kN x 13 / 22 = 24.7 kN per key if the dowel shear is of mild steel.

Nevertheless, if the T10 dowel bars are used, the anchorage force is estimated at π x 10 x 2.96 x 250 / 3 = 23 kN per key and the ultimate shear capacity can remain at 41.8 kN per key.

d) Further enhancement of shear capacity can be achieved by calculating the dowel shear in accordance with Clause 3.3.7 (d) of BS 8110; Part 1.

The shear force, V should not exceed the value given by

$V = 0.6 F_k \tan\phi$

Where

F_k is 0.95 $f_y A_{sc}$ or the anchorage value of the reinforcement, whichever is lesser

F_k = 13 kN for f_y = 250 N/mm² (f_t = 0.28 √ 35 = 1.66 N/mm²) and

F_k = 23 kN for f_y = 460 N/mm² (f_t = 0.5 √ 35 = 2.96 N/mm²) based on 10 mm bar of anchorage length of 250 mm

Cadangan Pembinaan Kompleks Bank Gen Biji Benih Pertanian Di Ibu Pejabat Mardi, Serdang, Selangor
- **Supplementary Independent Checker Engineer's Report No. 5-1 on Shear Key Joints For Precast R.C. Wall Panels**

A_s is the minimum area of dowel reinforcement

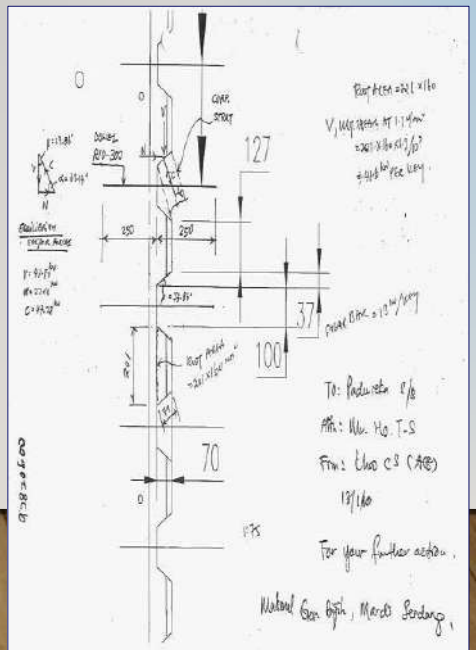
ϕ is the angle of internal friction between the faces of the joint. $\tan\phi$ is 1.7 from Table 5.3 of BS 8110 : Part 1. However, this tanϕ is best determined by tests under Research and Development if possible.

It is interesting to note that 0.6 $\tan\phi$ ≈ 1.0 and V ≈ F_k.

e) The total ultimate shear capacity of the shear key joint is assessed as follows :-

From (c) above, for R10 dowel, V_c	=	24.7 kN
From (d) above, for R10 dowel, V_s	=	13 kN
Total, V_t	=	37.7 kN per key

The number of effective keys times 37.7 kN shall determine the ultimate shear capacity of the shear key joint of a precast r.c. wall panel.



HC Precast System

HCPS can suit to wider range of Architectural demand due to the in-house mould design, engineering and fabrication to have a proper construction sequence which is the number one key feature in any IBS construction method.

4 *elements* shape *required to* complete *a building :* **L, T, + & I** *shape* wet joint *with modular* shear keys *and precast element* panel *with* coping *(*one cast *and using* reusable *modular mould).*

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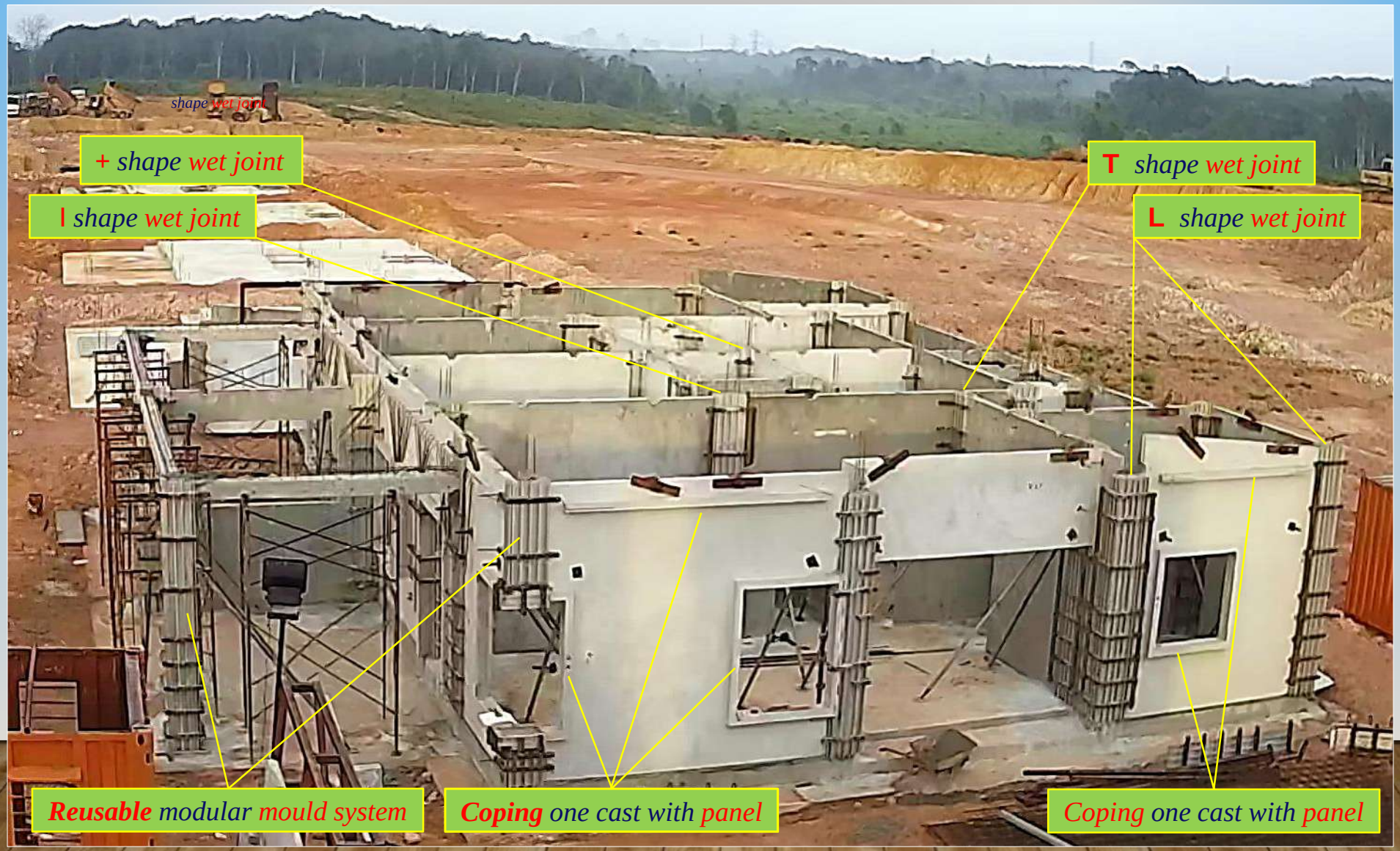

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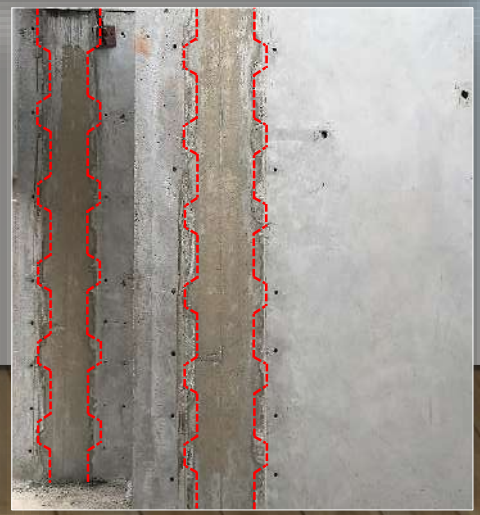
IBS *is a system, Not merely a Component.*
It consists of the main component - the structural component but it requires an efficient and cost effective connection system to prevent the commonly-faced water leakage and crack at connection or joint which impede further the acceptance level of ***IBS.***



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HCPS precast system that emulates the monolithic Multi-box system has excellent water proving capability. This is proven by our Rasa double story training unit that was exposed to weather for 14 years without roof till date, owing thanks to our patented revolutionary shear key joint system which also prevents joint crack.

IBS is a system, not merely a component. It consists of the main component - the structural component but it requires an efficient and cost effective connection system to prevent the commonly-faced water leakage and crack at connection or joint which impede further the acceptance level of IBS.

Monolithic wall, Modular Shear Keys (wet joint) with multi-box system

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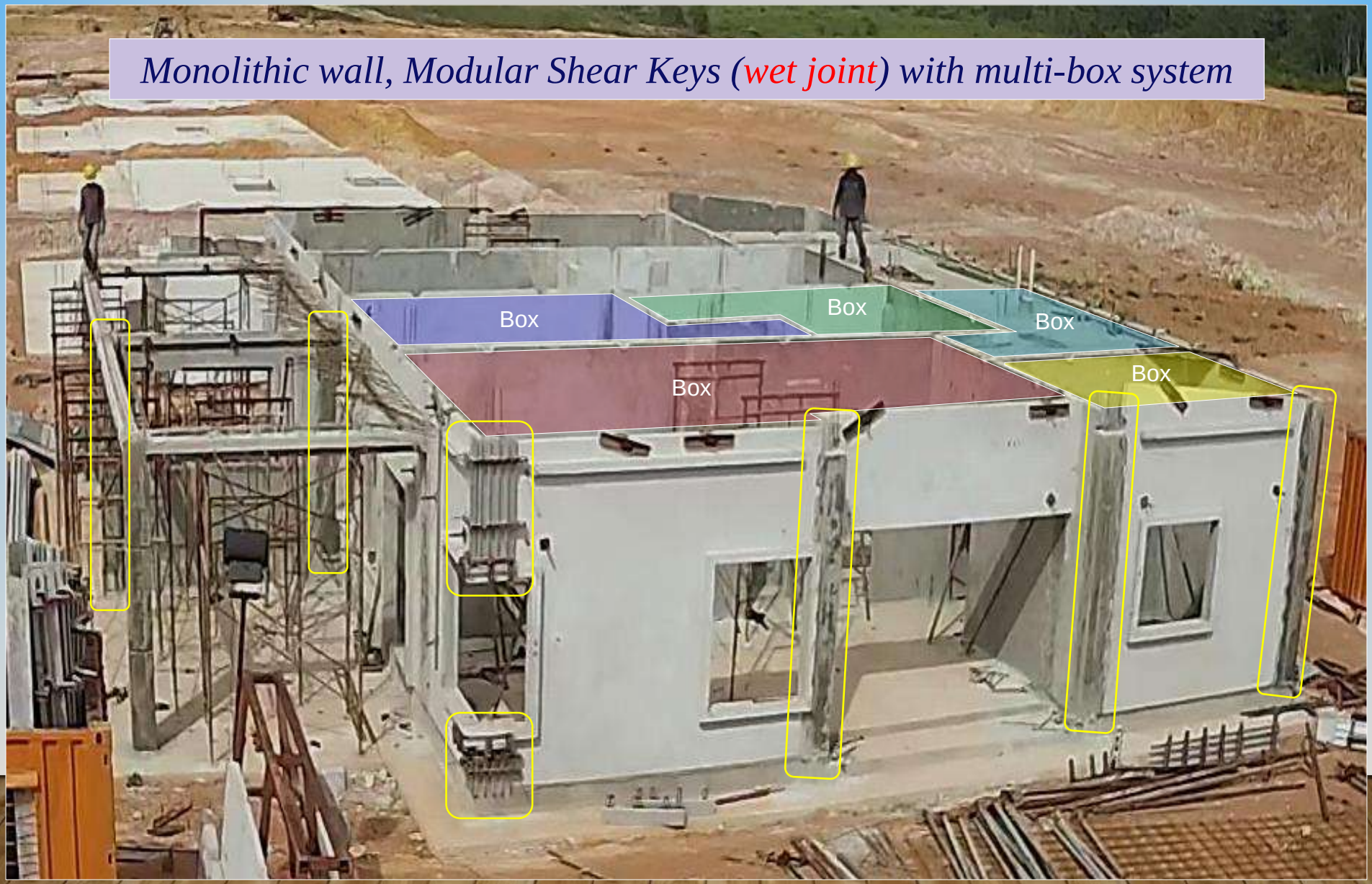

HCPS *is open to all types of* *Potential business models,* *including* *Technology Transfer* *to interested parties. Our* *Manual Book contains* *full* *information on setting up a* *Precast Factory, Mould Engineering.*

Complete ***IBS*** *solution particularly in a design and build precast system* *Developed* *by*

HC PRECAST SYSTEM SDN. BHD.

QUALITY I ECO-FRIENDLY I ECONOMICAL

HC PRECAST SYSTEM

MANUAL HANDBOOK
Installation Guide

Not a *one-stop-centre* *Salesman*

2019

HC PRECAST SYSTEM SDN. BHD. (586697-M)
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Taman Seri Andalas,
41200 Klang, Selangor D. E
Tel:03-3323 5999 Fax:03-3323 8993
e-mail : enquiry@hcprecast.com.my
Http : www.hcprecast.com.my

(SYSTEM PROVIDER)

HC MANUFACTURING SDN. BHD. (585570-T)
No.23-1, Jalan Seri Sarawak 20B/KS2,
Taman Seri Andalas,
41200 Klang, Selangor D.E.
Tel:03-3323 7999 Fax:03-3323 8993

Manual Book Contains *complete information*
on setting up a ***Precast Factory*** *and* ***Mould Engineering Facility***

Not a IBS

One-stop-centre Salesman

Training Unit 1 : Load Bearing Wall (9)

Guard House (8)

Show Unit (Office) (6)

(10) Engineering Workshop & Quarter

(7) Training Unit 2 : Non-Load Bearing Wall

(1) Slump & Cube Test Corner

Storage Yard (5)

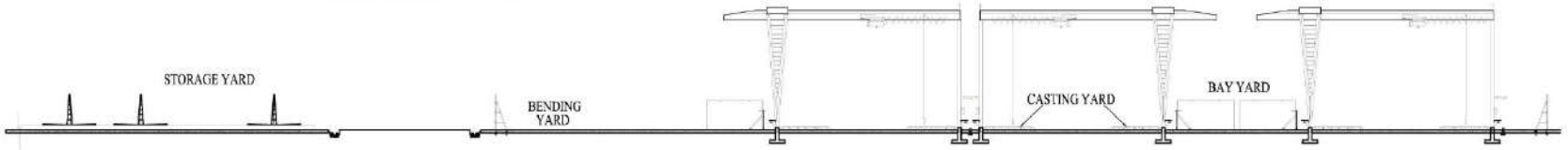
Bending Yard (4)

(3) Casting Yard

(2) Bay Yard

Quality Control

1. Ready Mix Concrete(Concrete Grade 35)
2. Slump Test Carried Out on every Delivery
3. Cube Test Taken for every 20m³
4. Rebound Hammer test Carried Out on Daily on selected panel
5. Lifting of Panel ONly After Minimum 18 hours to Bay Yard
7. Panel Stored in Bay Yard for 7 days (curing)









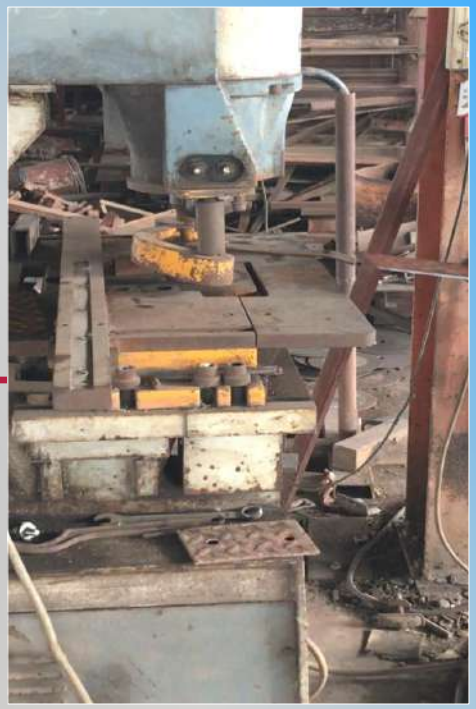









KINGSLAND




金大捐
JDY-20

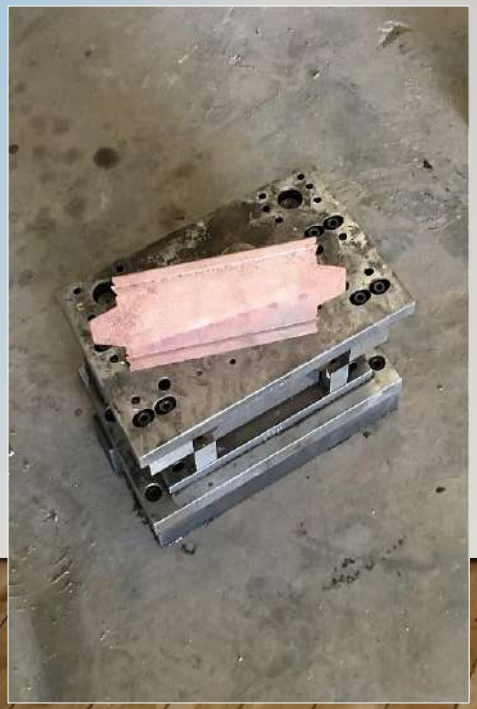














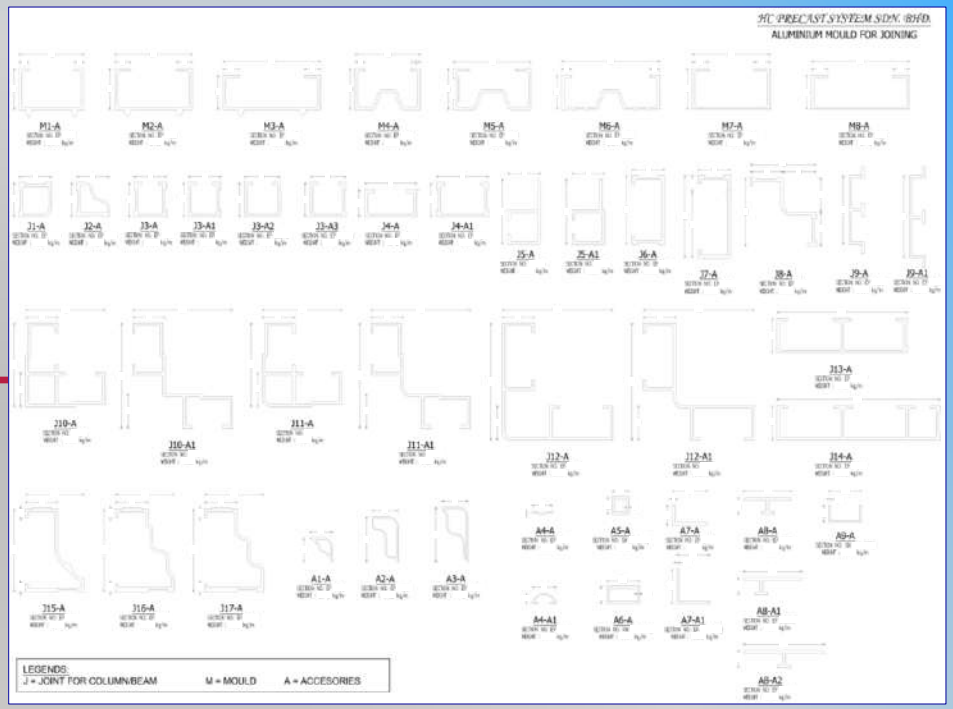


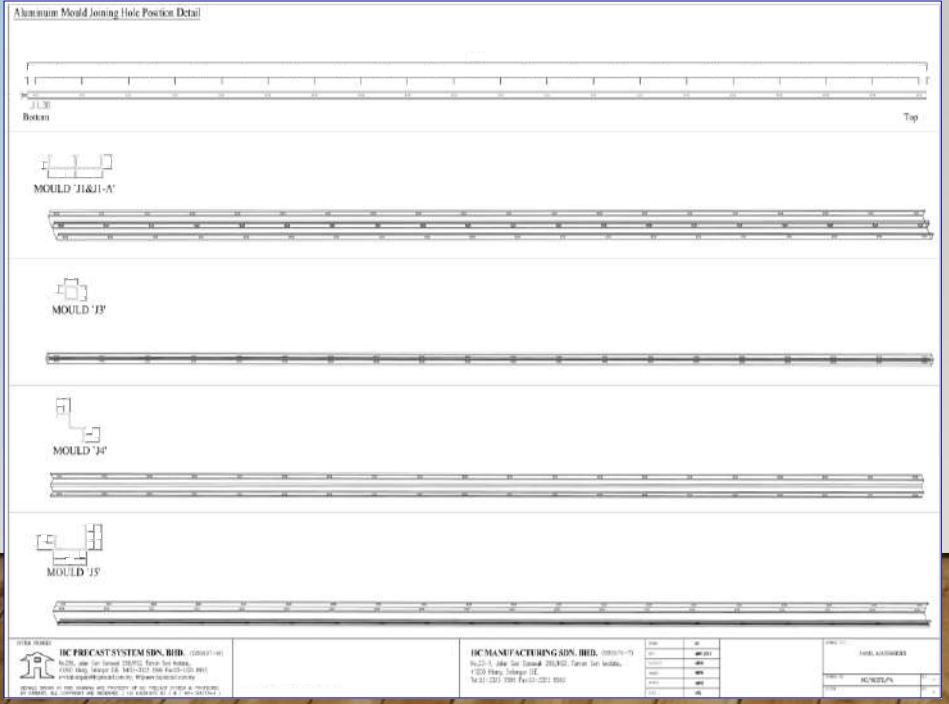


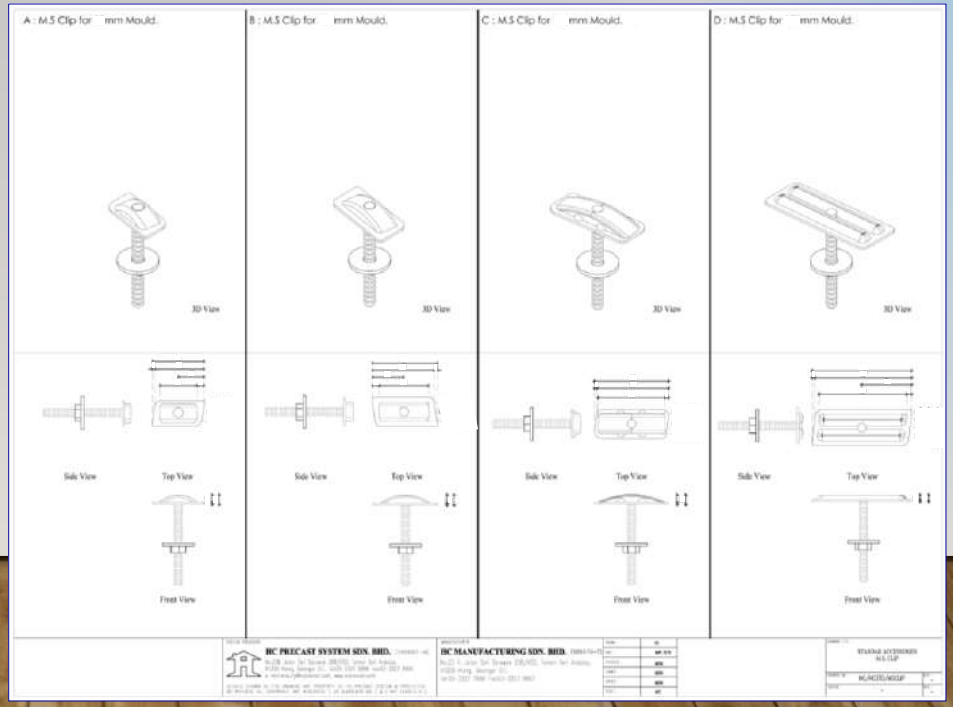
HC PRECAST SYSTEM SDN. BHD.

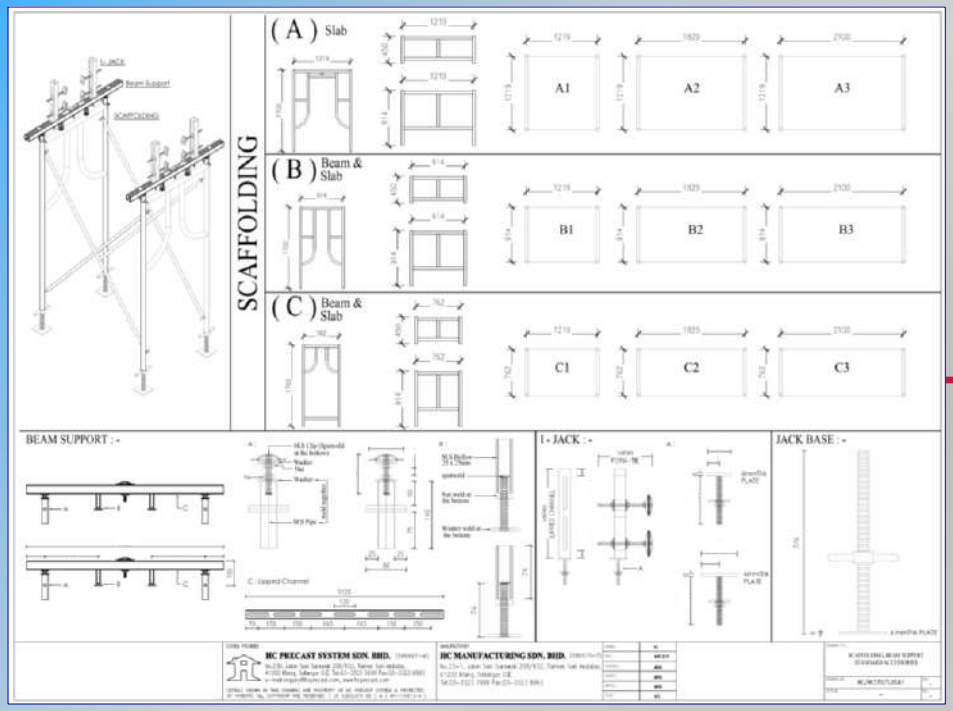
QUALITY I ECO-FRIENDLY I ECONOMICAL

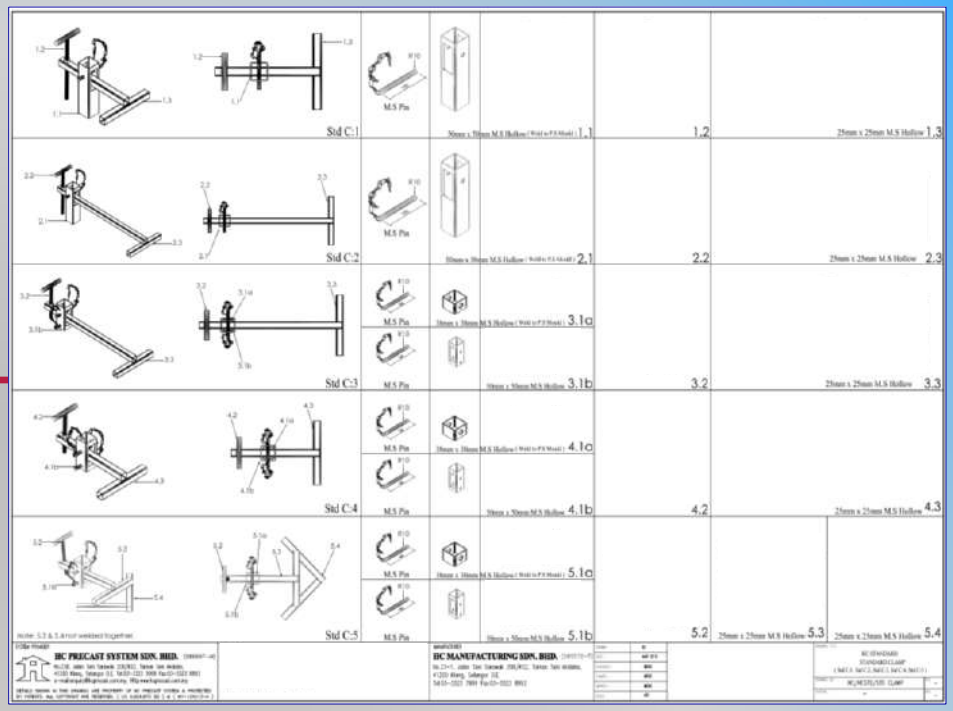
1 - HC STANDARD











HC PRECAST SYSTEM SDN. BHD.

QUALITY I ECO-FRIENDLY I ECONOMICAL

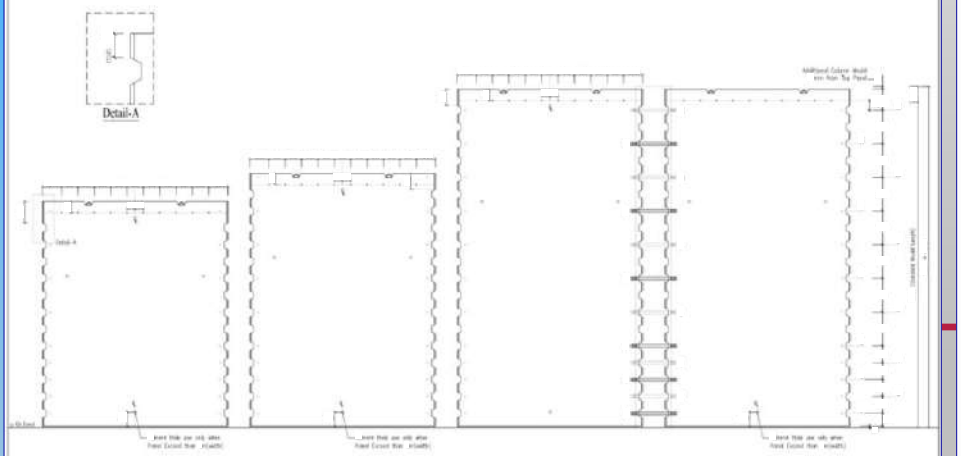
2 - PANEL STANDARD

2a : panel casting
2b : panel installation
2c : panel prop
2d : panel storage
2e : panel accessories
2f : door & window

HC PRECAST SYSTEM SDN. BHD.

QUALITY I ECO-FRIENDLY I ECONOMICAL

2a : PANEL CASTING



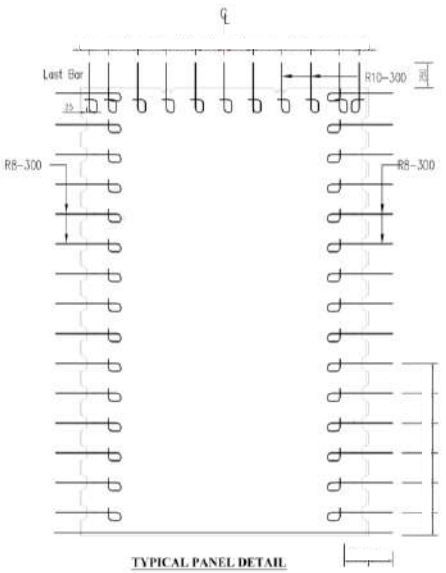
Panel Thickness - mm
Max. Panel Height : Meter
Max. Panel Width : Meter

Panel Thickness - mm
Max. Panel Height : Meter
Max. Panel Width : Meter

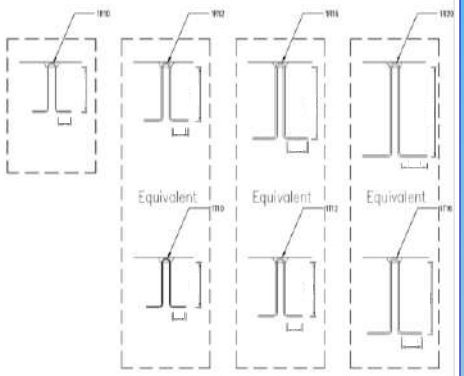
Panel Thickness - mm & mm
Max. Panel Height : Meter
Max. Panel Width : Meter

HC PRECAST SYSTEM SDN. BHD.

HC MANUFACTURING SDN. BHD.



TYPICAL PANEL DETAIL



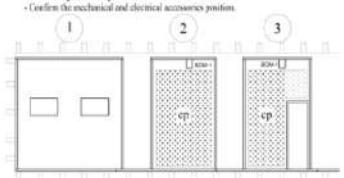
TYPICAL LIFTING HOOK DETAIL

HC PRECAST SYSTEM SDN. BHD.

HC MANUFACTURING SDN. BHD.

INSPECTION (2) - (PANEL CASTING ARRANGEMENT)

Before casting the panel,
- Check the dimension of the panel.
- Check the door, window and opening position.
- Check the bar arrangement.
- Check the starter bar position.
- Check the formtie holes and prop holes position.
- Check the lifting hook position.
- Check the chequered plate for tiling.
- Check the groove line position.
- Confirm the mechanical and electrical accessories position.

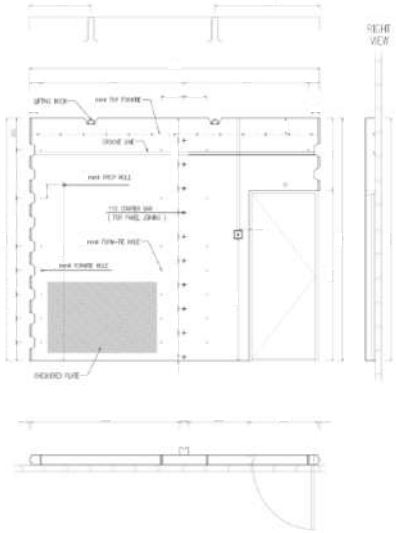


1gr1.<R
3470(OP1&OP1)
P&F(std),M1
TF3

2gr1.<R
2075
P&F(std)
TF2

3gr1.
2155(D1)
P&F(std),M1
TF2

Panel Thk.	Side Mould	Top Mould	Base Mould
mm	M-7	J1-A	M-6
mm	M-2	M-5	M-4
mm	M-8	M-5A	M-4A
mm	M-8	M-5A	M-4A
mm	J2-D M-7 J2-D	J2-D J1-A J2-D	J3-D M-6 J2-D



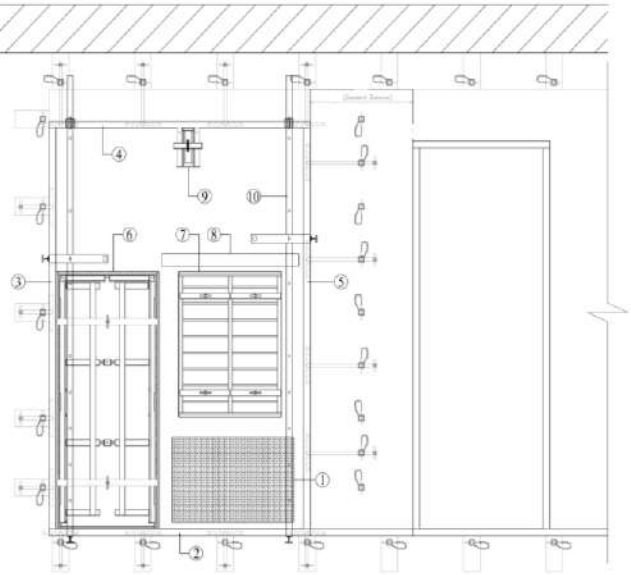
50st 3820 (D4)

std.2	120	~	2200	(std)	3	~	~		

HC PRECAST SYSTEM SDN. BHD.

HC MANUFACTURING SDN. BHD.

Sequence For Panel Mould Installation
From Step 1 to 10



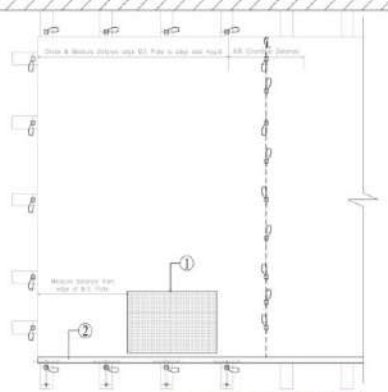
PLAN VIEW

HC PRECAST SYSTEM SDN. BHD.

HC MANUFACTURING SDN. BHD.

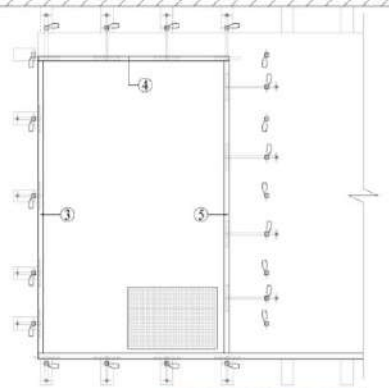
Sequence For Panel Mould Installation

* Step (1) - Install Chequered Plate
* Step (2) - Install Bottom Side Aluminium Mould



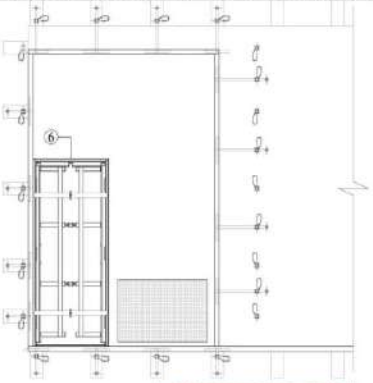
STEP - 1 & 2

* Step (3) - Install Left Side Aluminium Mould
* Step (4) - Install Top Side Aluminium Mould
* Step (5) - Install Right Side Aluminium Mould



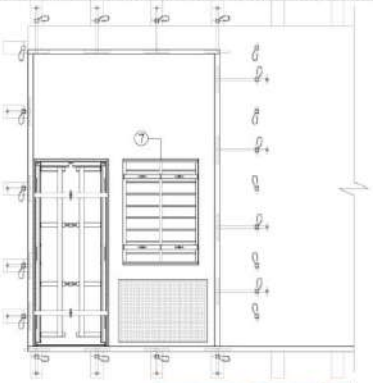
STEP - 3,4 & 5

* Step (6) - Install Door Frame & Inner Frame



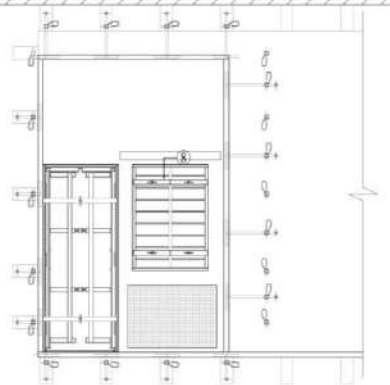
STEP - 6

* Step (7) - Install Window Frame & Inner Frame



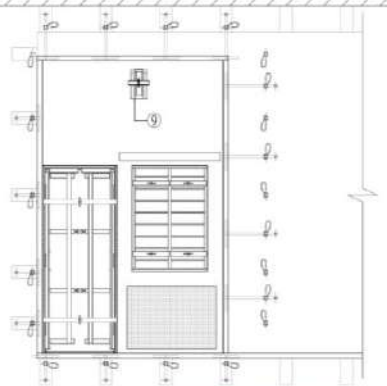
STEP - 7

* Step (8) - Install Precast Window Cornice



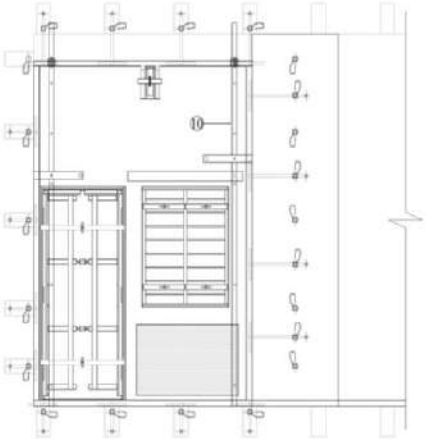
STEP - 8

* Step (9) - Install Beam Opening

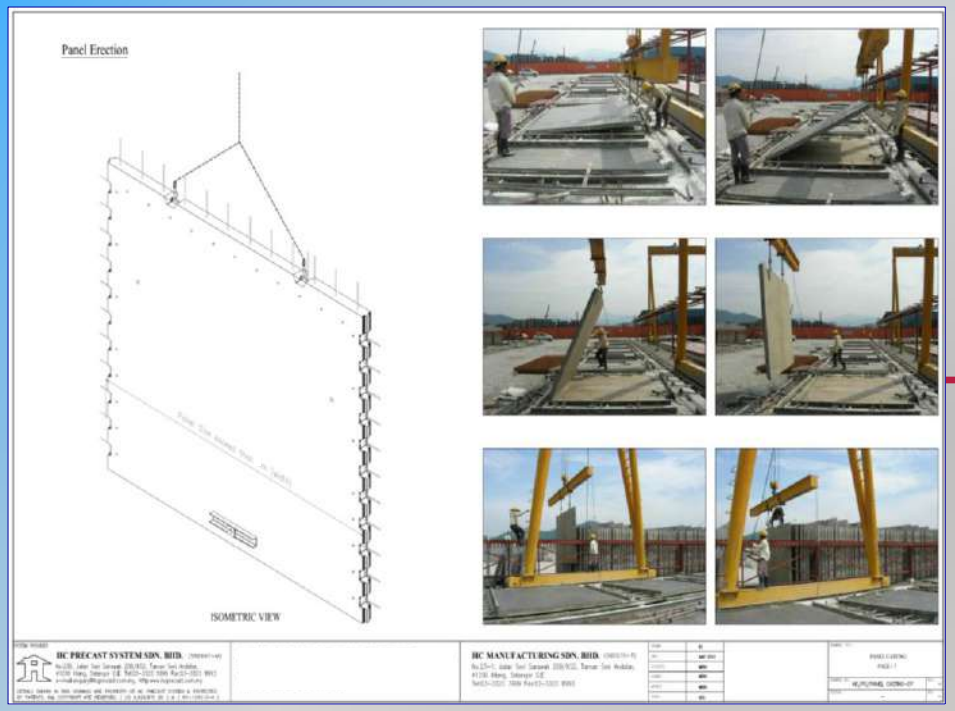


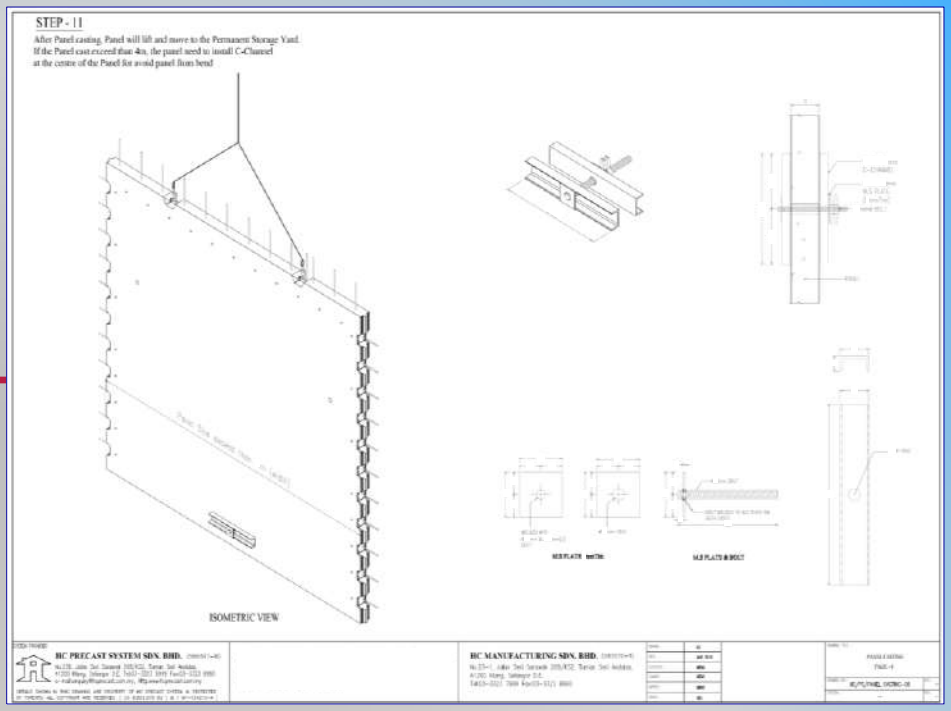
STEP - 9

* Step (10) - Install P&F



STEP - 10

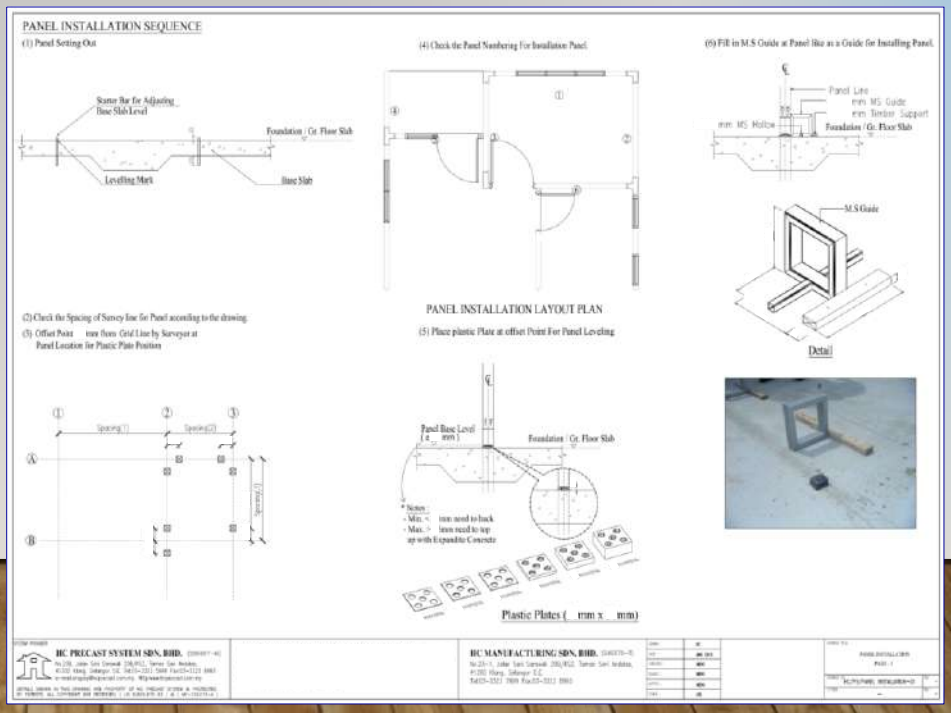




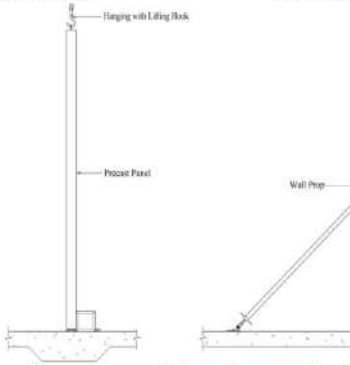
HC PRECAST SYSTEM SDN. BHD.

QUALITY I ECO-FRIENDLY I ECONOMICAL

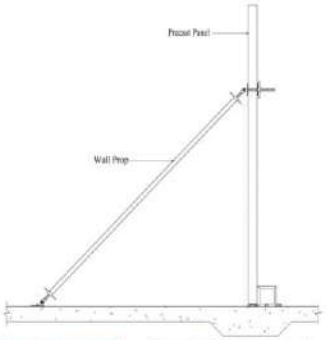
2b : PANEL INSTALLATION

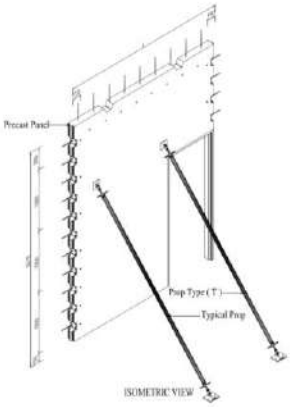


(7) Lifting the Panel by using Crane.



(8) Support the Panel with Prop and Check Horizontal and Vertical Alignment.






Site Precast Training Unit


Site Precast Training Unit

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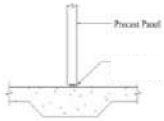
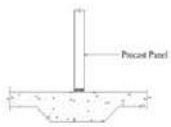
HC MANUFACTURING SDN. BHD.

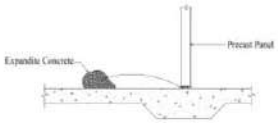
(9) Clear the gap between floor slab and Panel Base.
Then Insert Rubber Hose as per drawing shown.



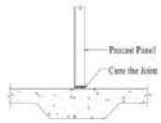
(11) After 1 hour, remove Rubber Hose and Fill up the joint with Expandite Concrete.



(10) Wet the Joint. Then Fill in the Expandite Concrete to Fully Fill up the gap.



(11) *After finishing the Grouting Work, Joint must be cured up to 7 days.



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INSPECTION - (1) PRECAST PARTY WALL INSTALLATION

STEP - 1

Lift the Precast Party Wall to the position by using Crane.

STEP - 2

Support the Precast Party Wall with Prop and tie with C-Channel.
See Drawing.

STEP - 3

Check the vertical and horizontal alignment of Party Wall to meet plane connection between Party Wall and Lower Precast Panel.

STEP - 4

Before fitting the Column Mould,
-Bend up the Starter bars from the Party Wall to the straight position. (Same as Precast Panel)
-Clean the Column Joint as free from dust, oil, grease and debris.
-Paint the Column Mould with mould oil.

STEP - 5

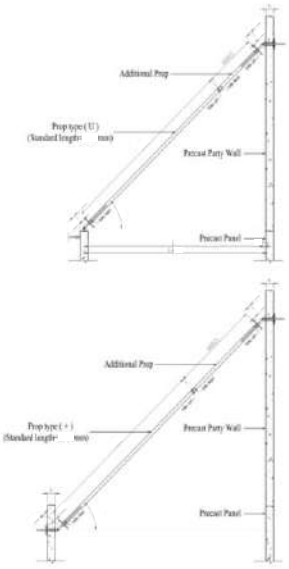
Install the Party Wall Column Mould.
See Drawing.

STEP - 6

After concreting, joint must be cured for 7 days.
After dismantling the Column Mould, it must be cleaned for further use.

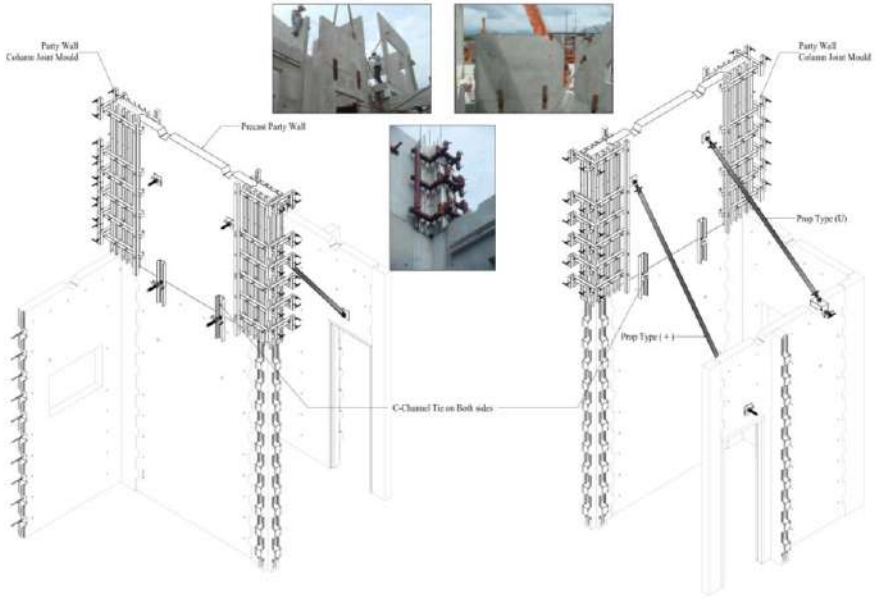
STEP - 7

Props and C-channel Ties should be removed three days after concreting the column joint.



Party Wall and Prop Installation Side View

HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.



HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

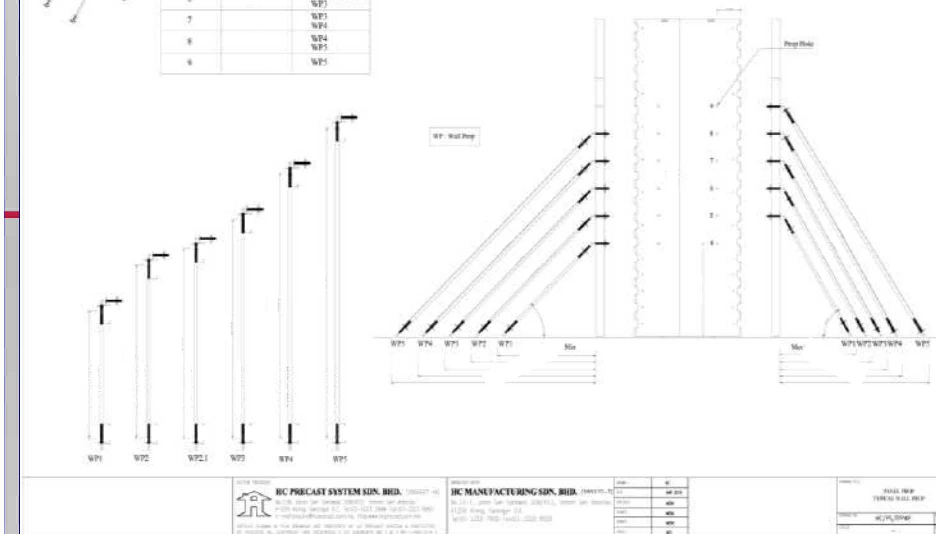
HC PRECAST SYSTEM SDN. BHD.

QUALITY I ECO-FRIENDLY I ECONOMICAL

2c : PANEL PROP

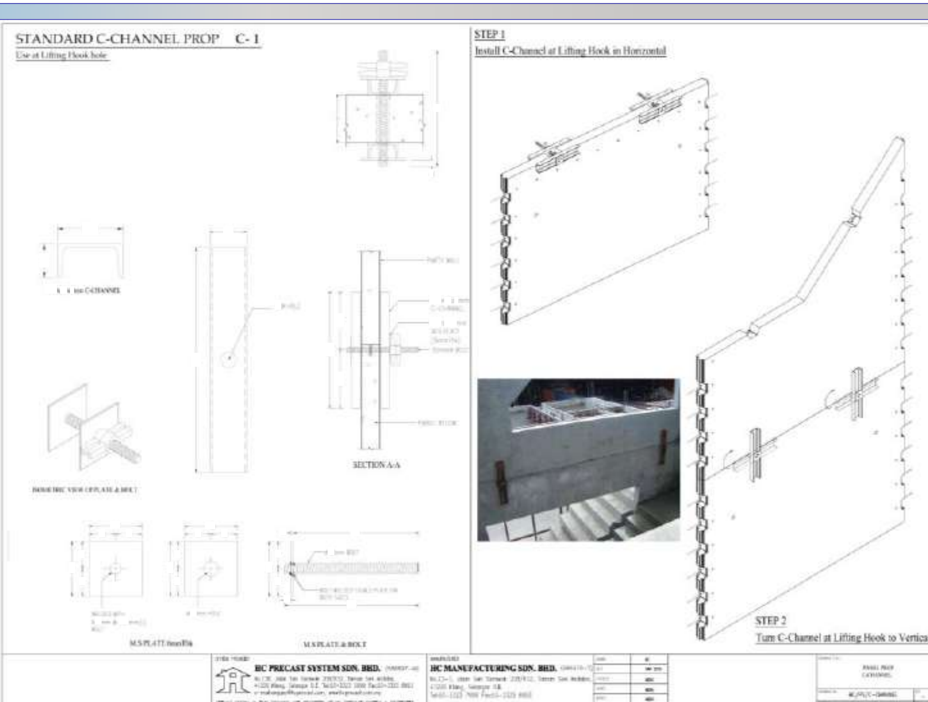
WALL PROP (WP)

Prop Hole no	Standard Prop Hole Height	Wall Prop (WP)
4		WP1
5		WP1 WP2 & WP2.1
6		WP2 & WP2.1 WP3
7		WP3 WP4
8		WP4 WP5
9		WP5



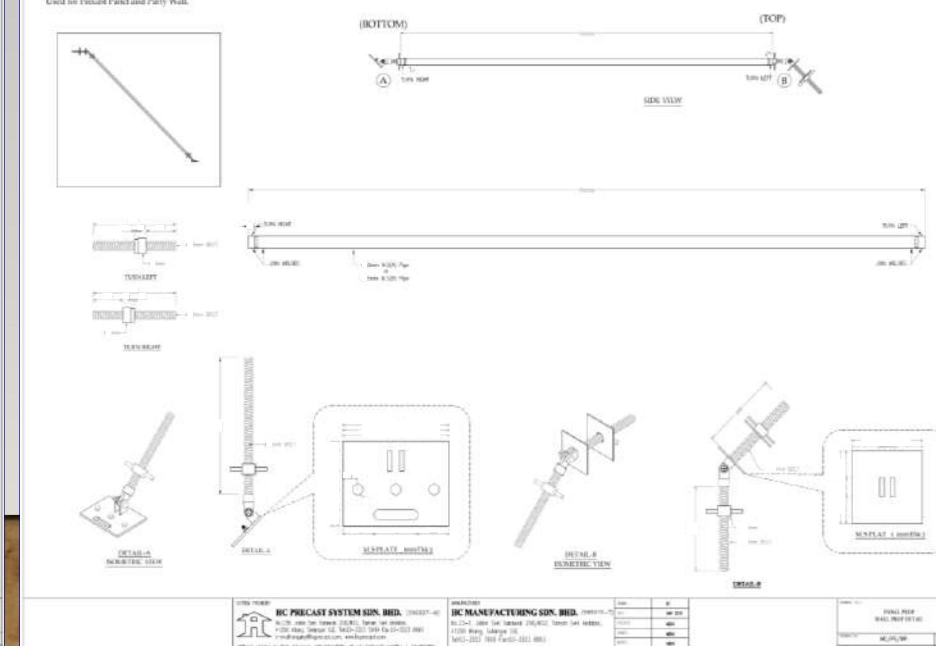
STANDARD C-CHANNEL PROP C- 1

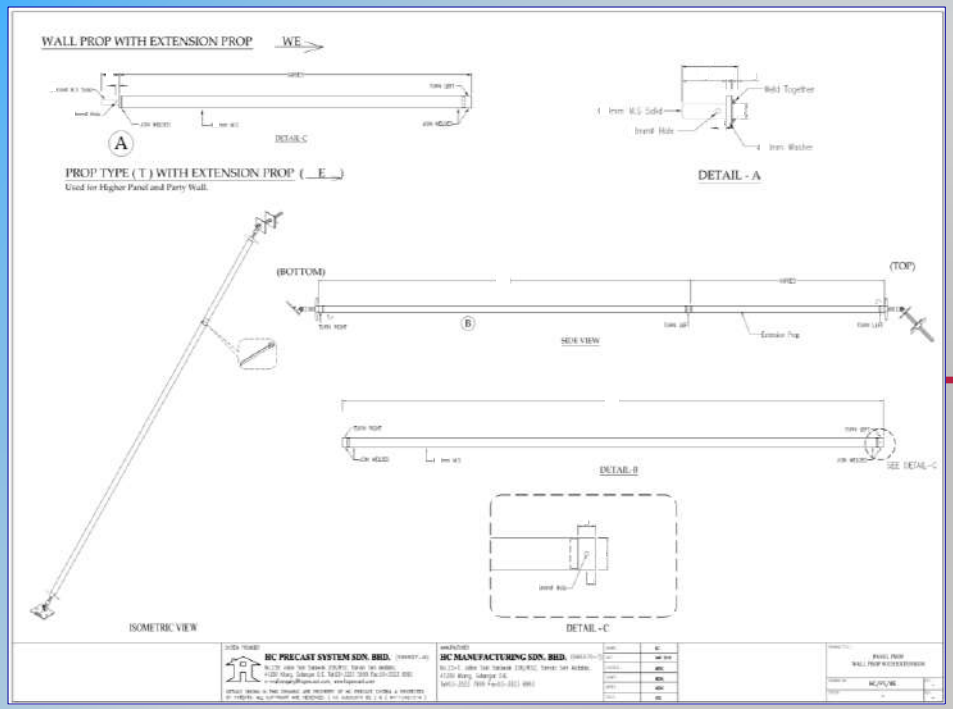
Use at Lifting Hook hole

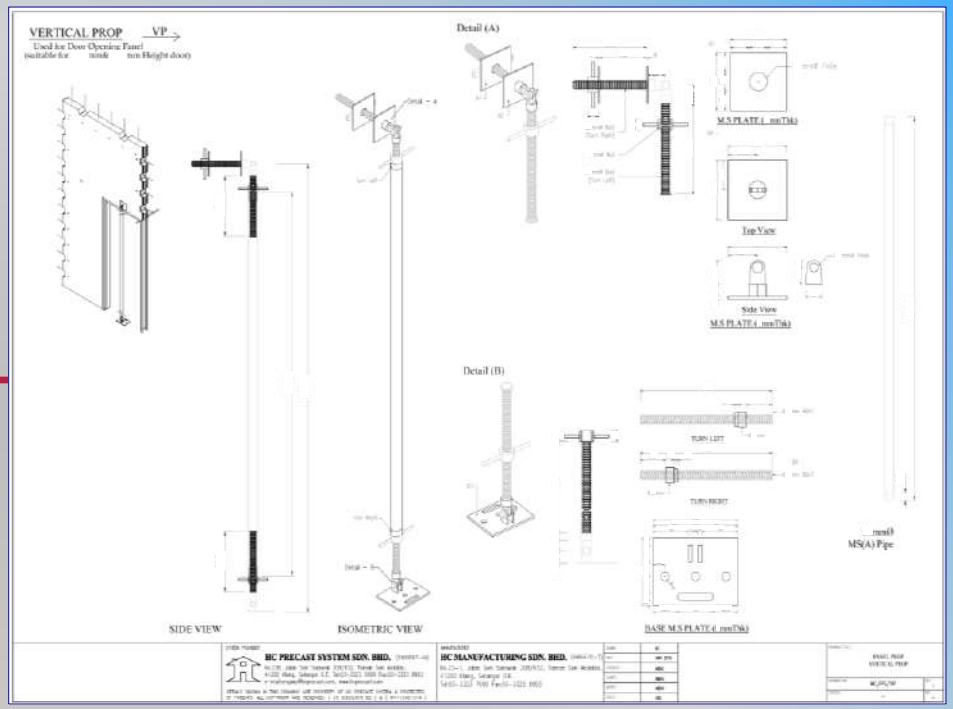


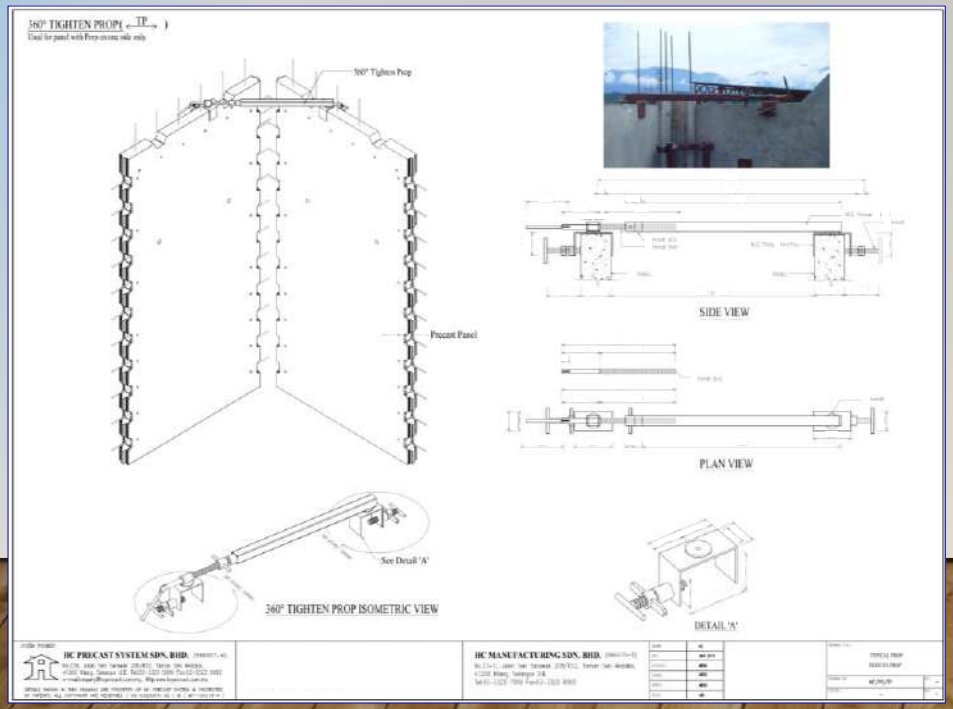
WALL PROP WP

Used for Precast Panel and Party Wall.









HC PRECAST SYSTEM SDN. BHD.

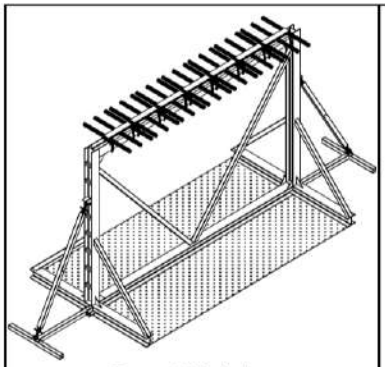
QUALITY I ECO-FRIENDLY I ECONOMICAL

Real Experience

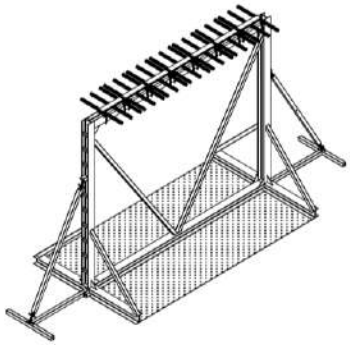
Ideal Technology

Professional Implementation

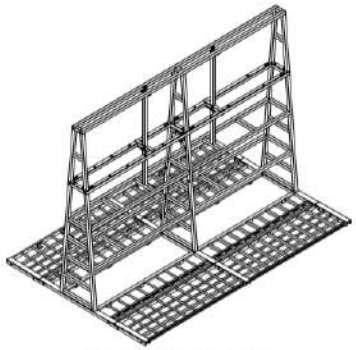
Not just Theory but it's *Real*



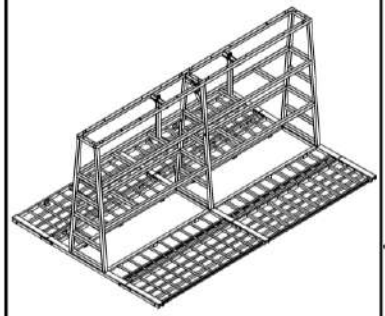
Panel Holder
2800



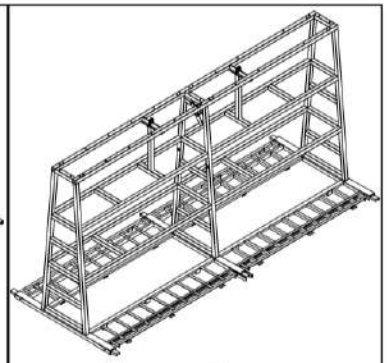
Panel Holder
3400



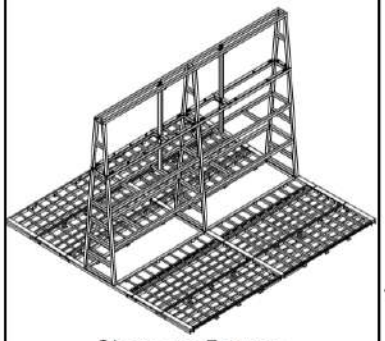
Storage Frame



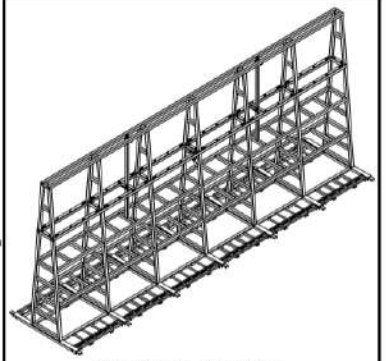
Storage Frame
3m



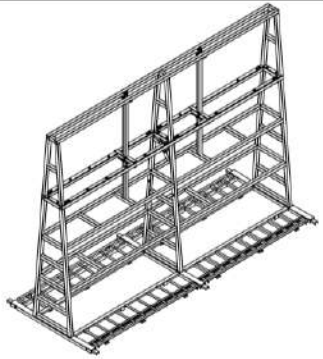
Storage Frame
6m



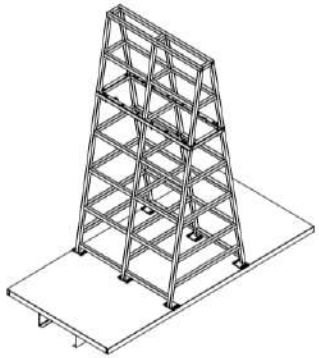
Storage Frame
6m & EXT



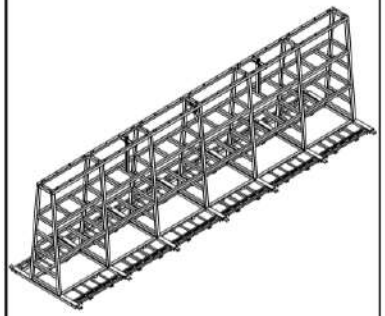
Storage Frame
10.5m



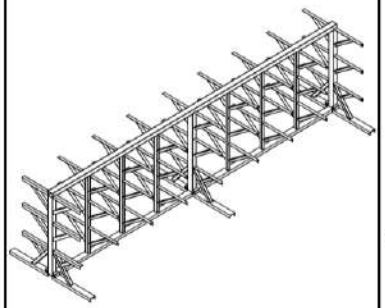
Small Storage Frame &
Transport Frame 6m



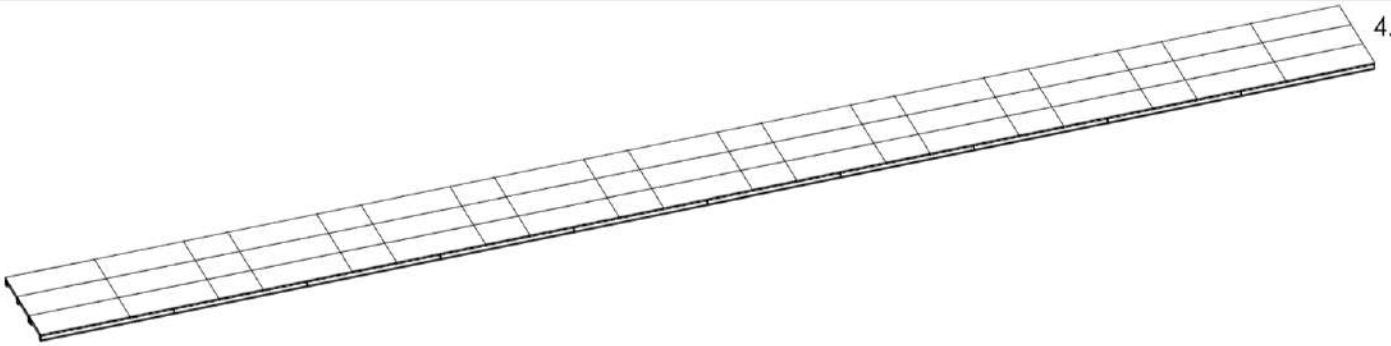
Transport Frame
2.45 x 5m



Transport Frame
10.5m



Reinforcement Rack
6m



4.5 x 6m

Moveable Bayard

SYSTEM PROVIDER

HC PRECAST SYSTEM SDN. BHD. (586697-M)
No.23B, Jalan Seri Sarawak 20B/KS2, Taman Seri Andalas,
41200 Klang, Selangor D.E. Tel:03-3323 5999 Fax:03-3323 8993
e-mail:enquiry@hcprecast.com.my. Http:www.hcprecast.com.my

MANUFACTURER

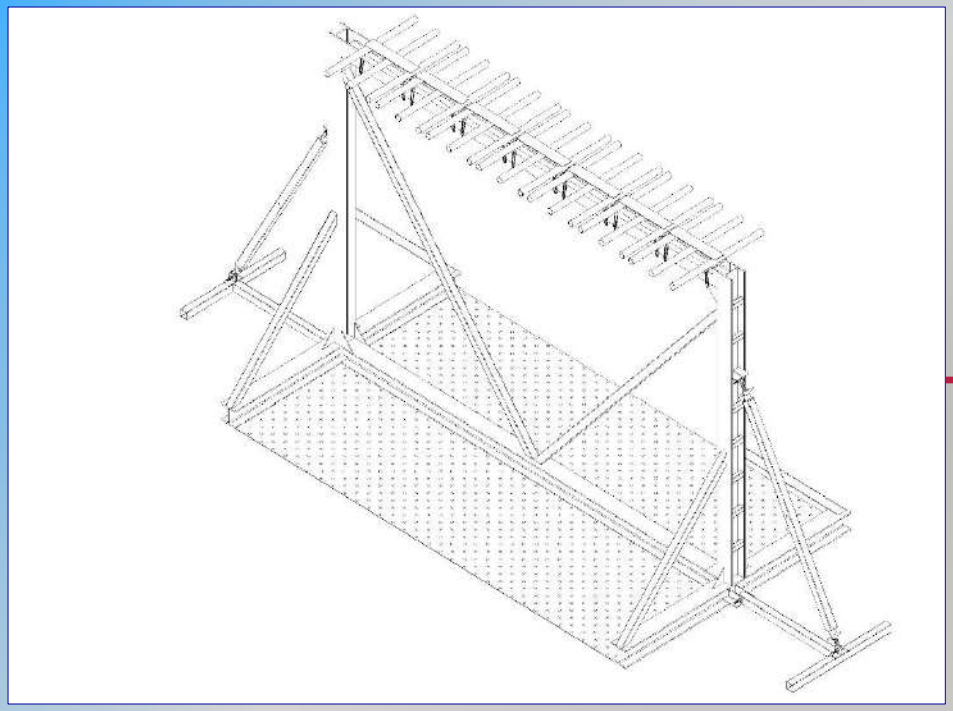
HC MANUFACTURING SDN. BHD. (585570-T)
No.23-1, Jalan Seri Sarawak 20B/KS2, Taman Seri Andalas,
41200 Klang, Selangor D.E.
Tel:03-3323 7999 Fax:03-3323 8993

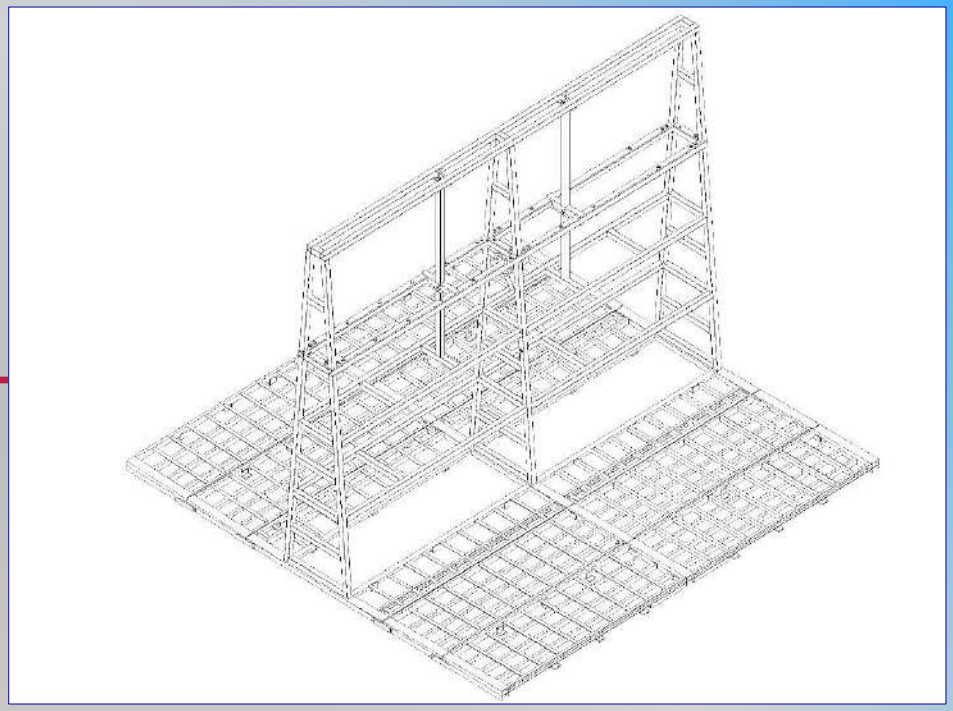
DRAWN :	SYA
DATE :	FEB 2011
CHECKED :	3993
DRAWN :	3993
APPVD :	3993
SCALE :	NTS

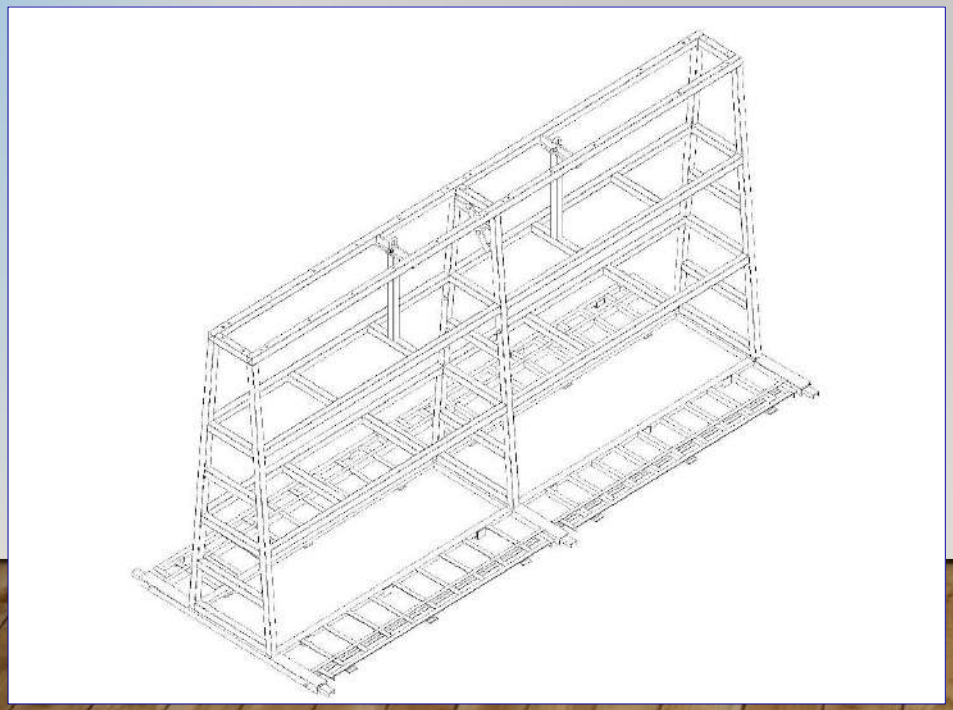
DRAWING TITLE :
Rasa Factory
All Frame Type

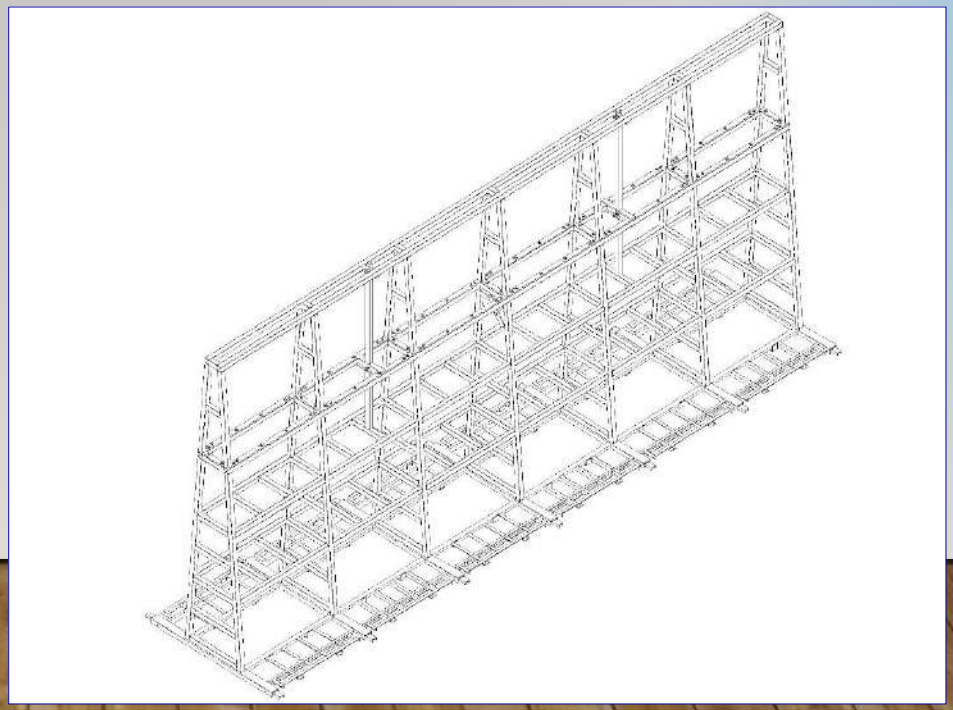
DRAWING NO : HC/RasaFactory/Frame REV : -

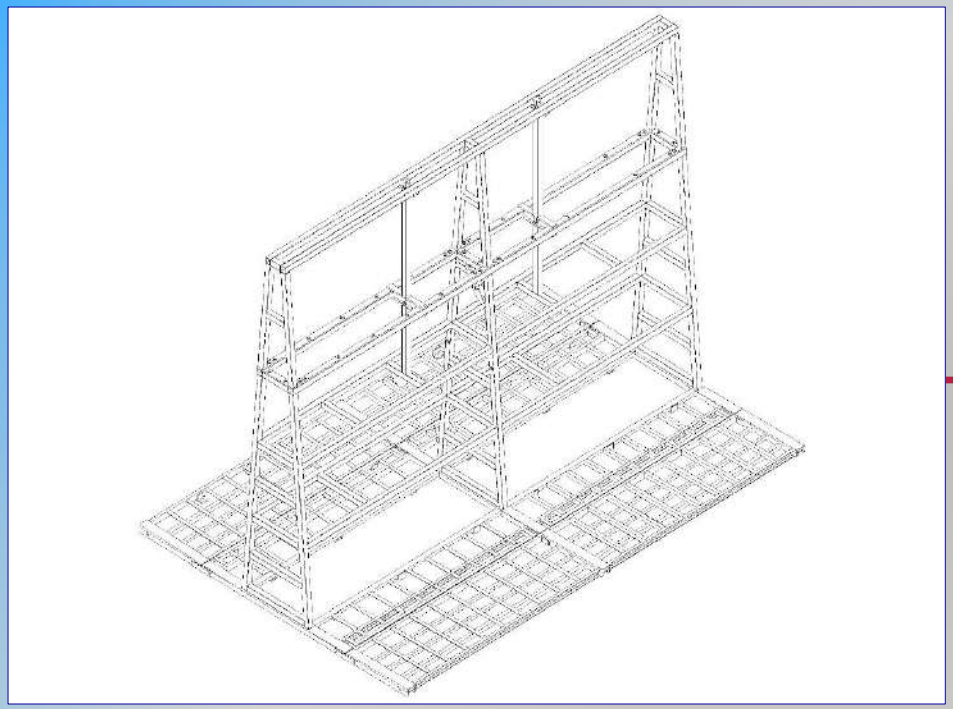
SHEET : -- REV : -

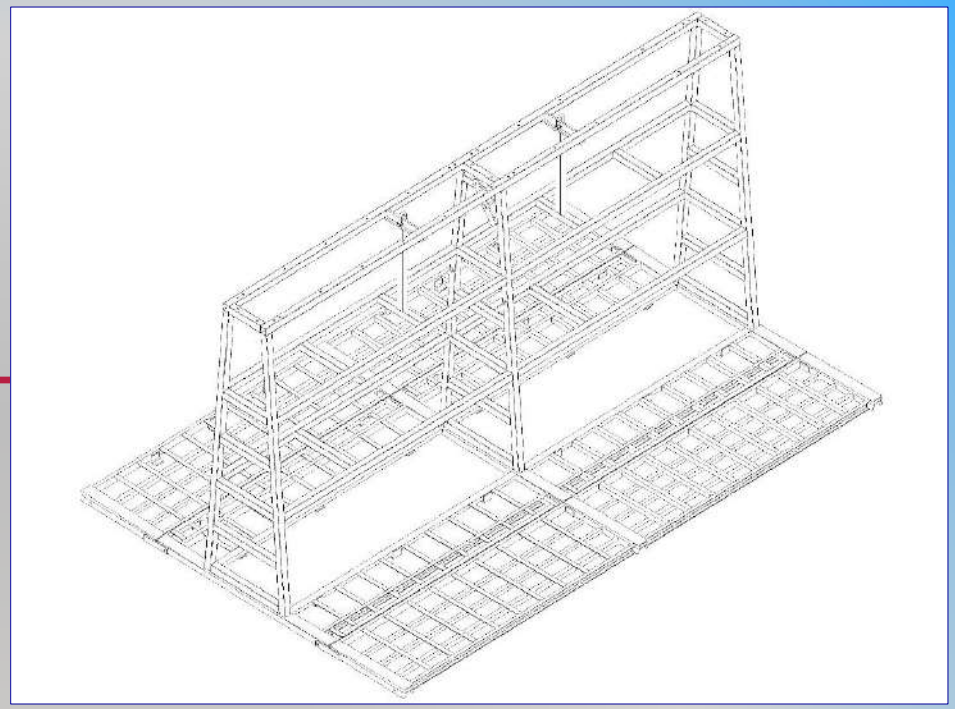


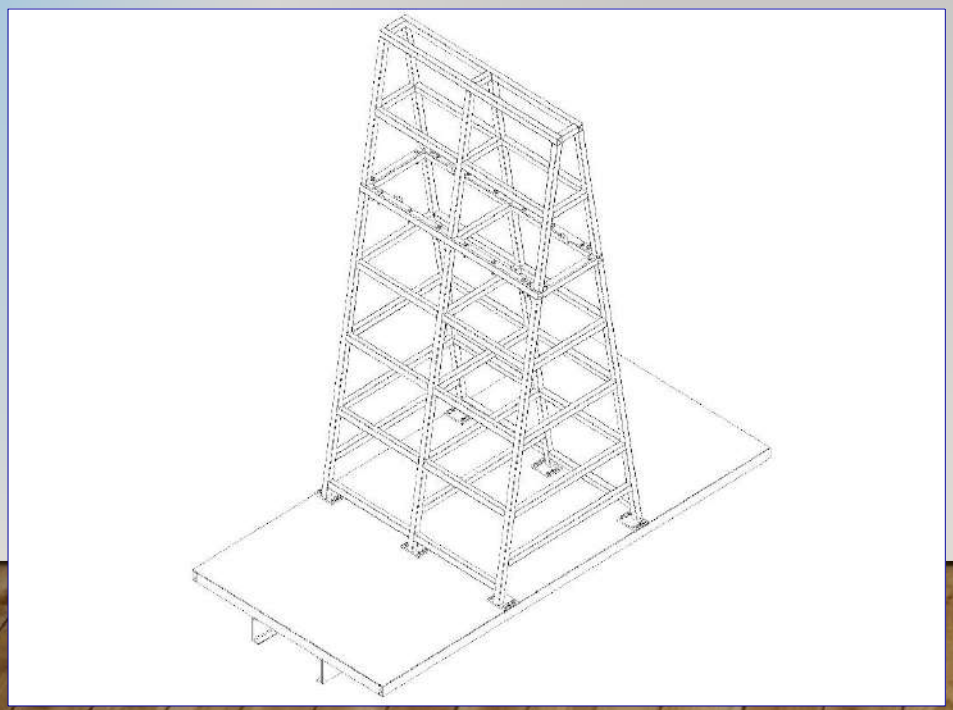


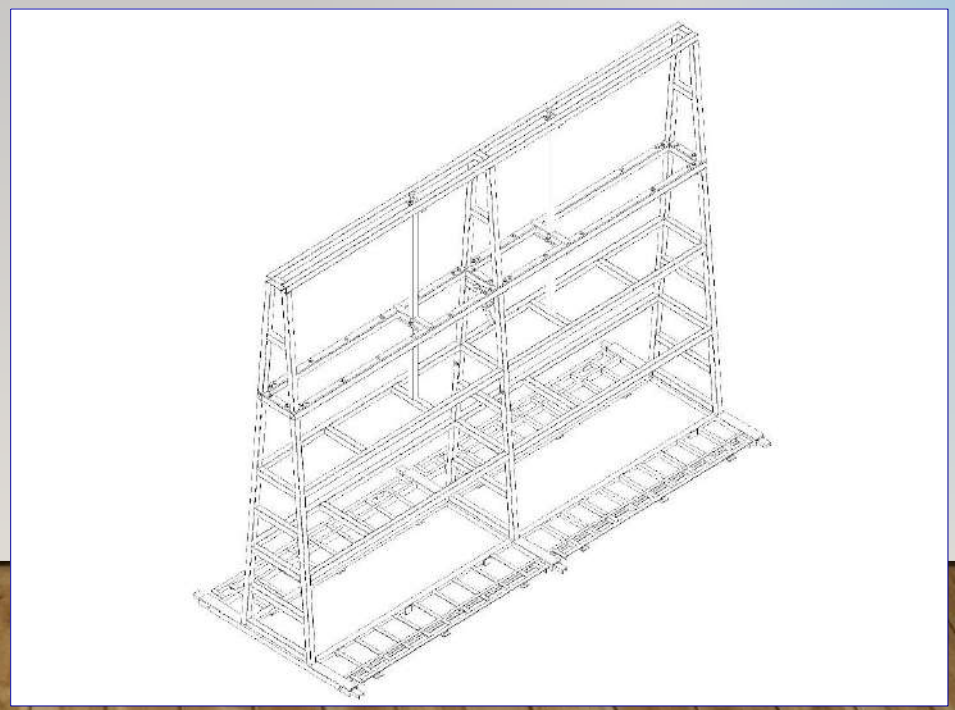


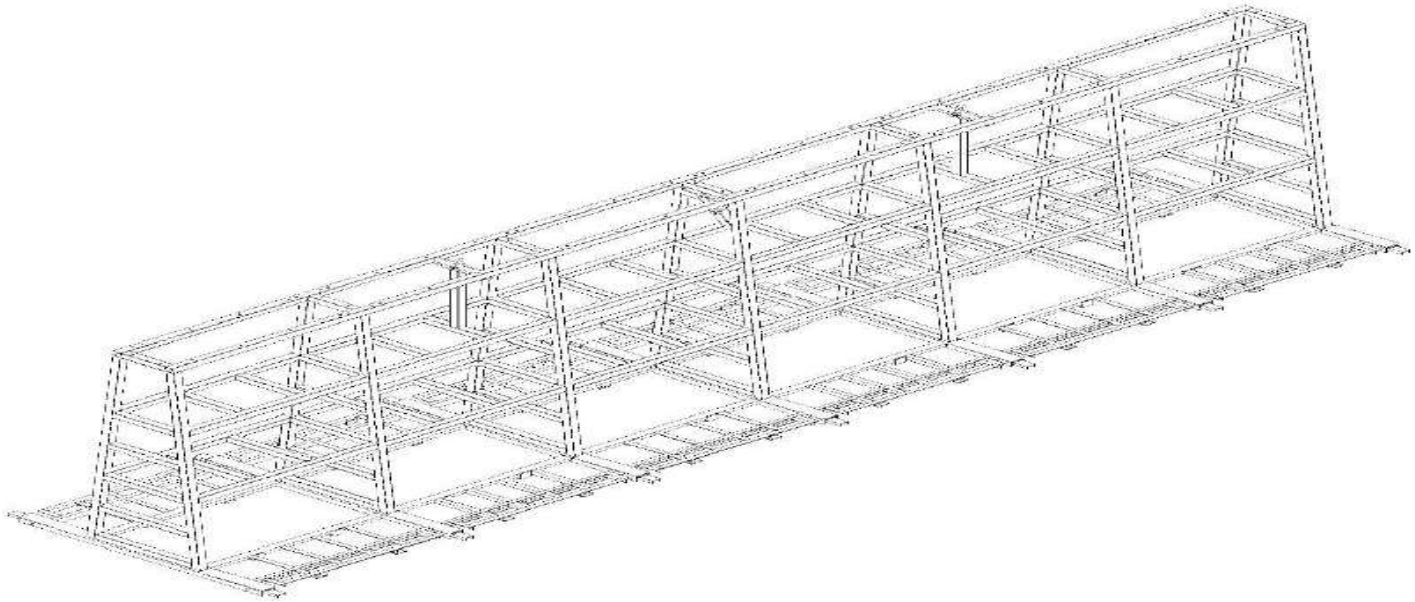


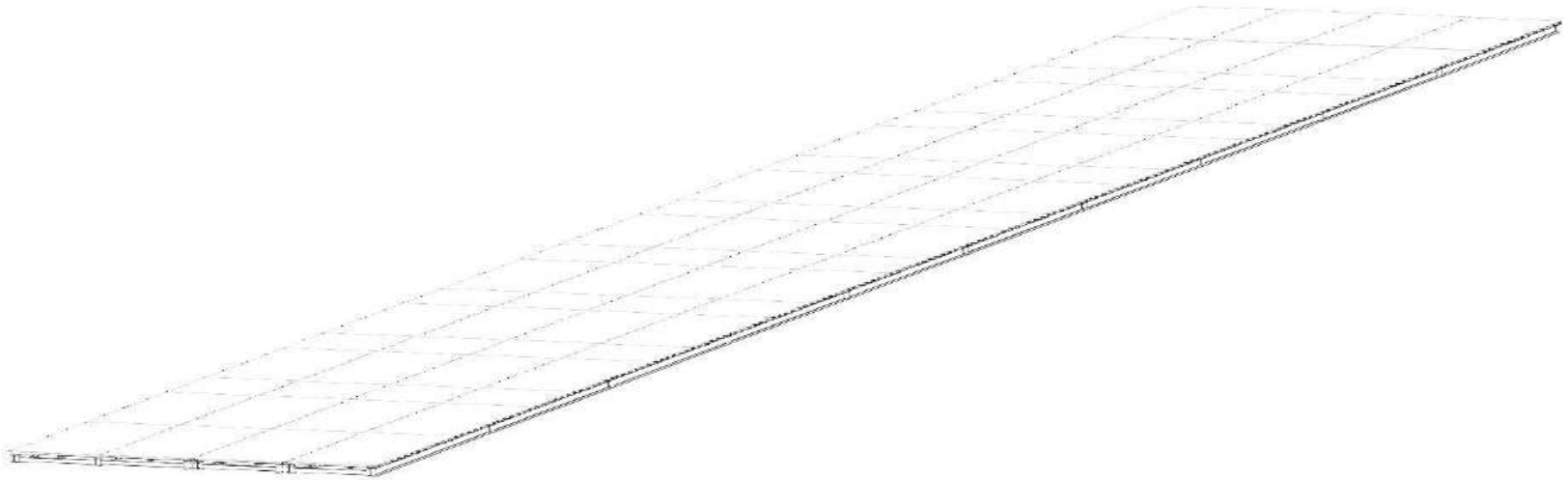


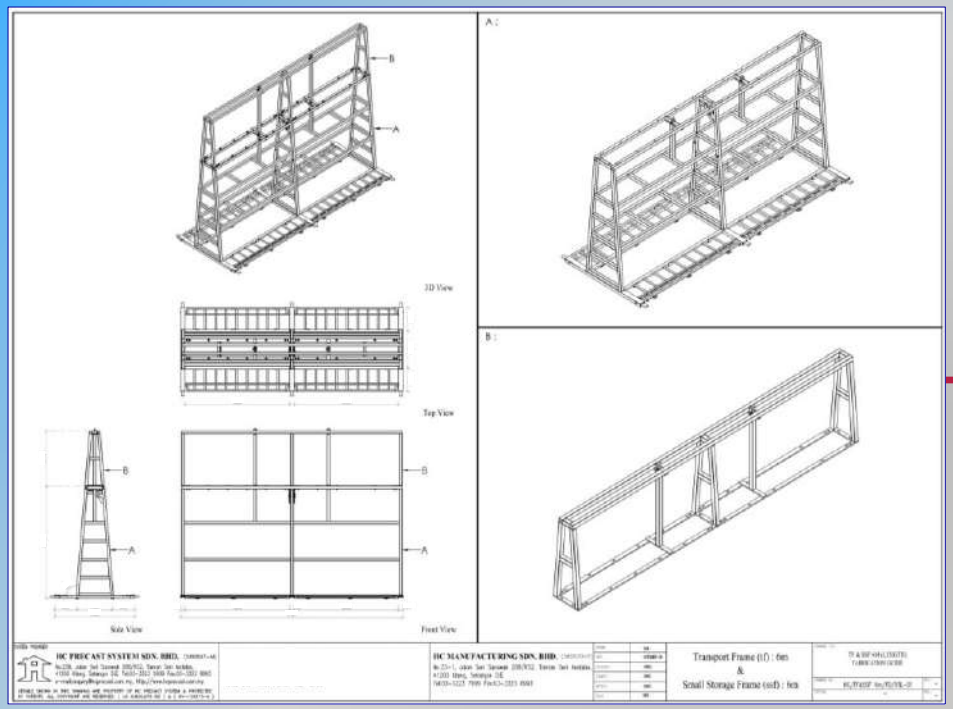


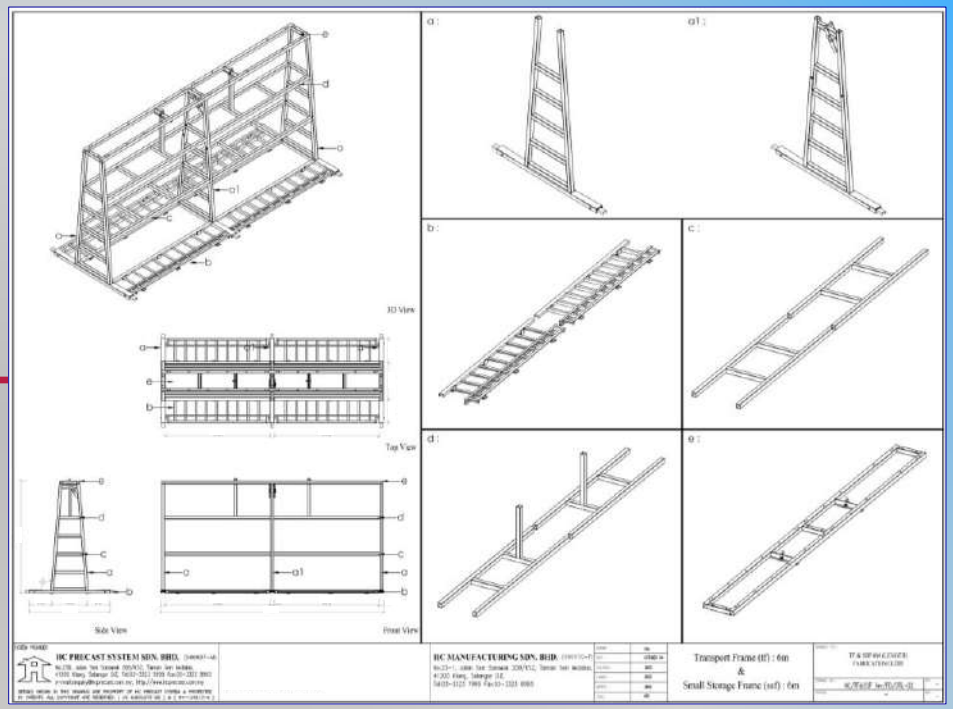


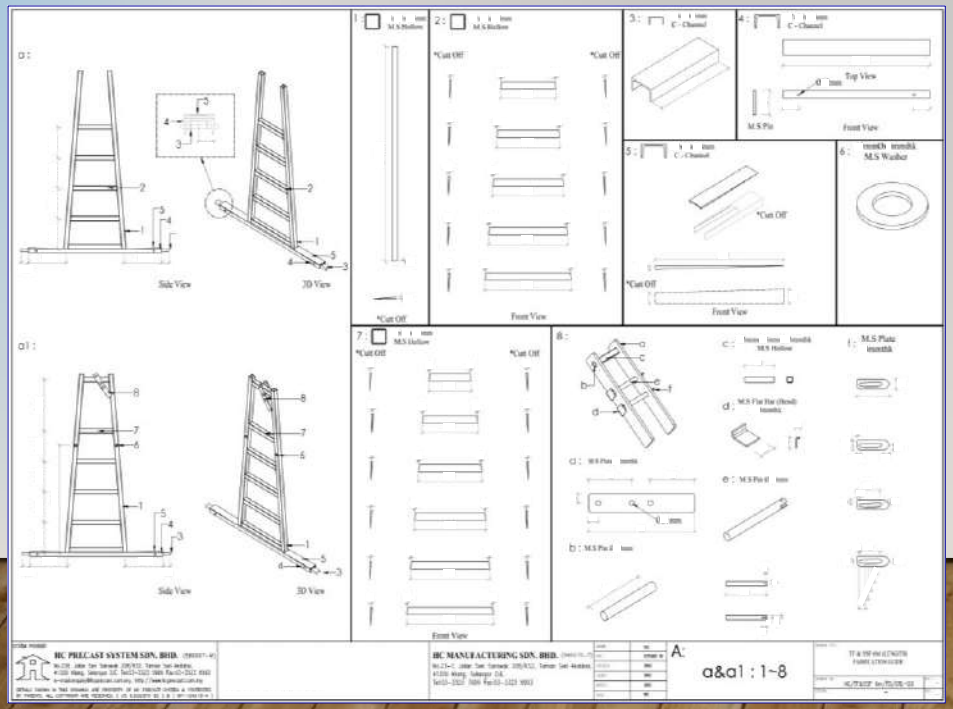


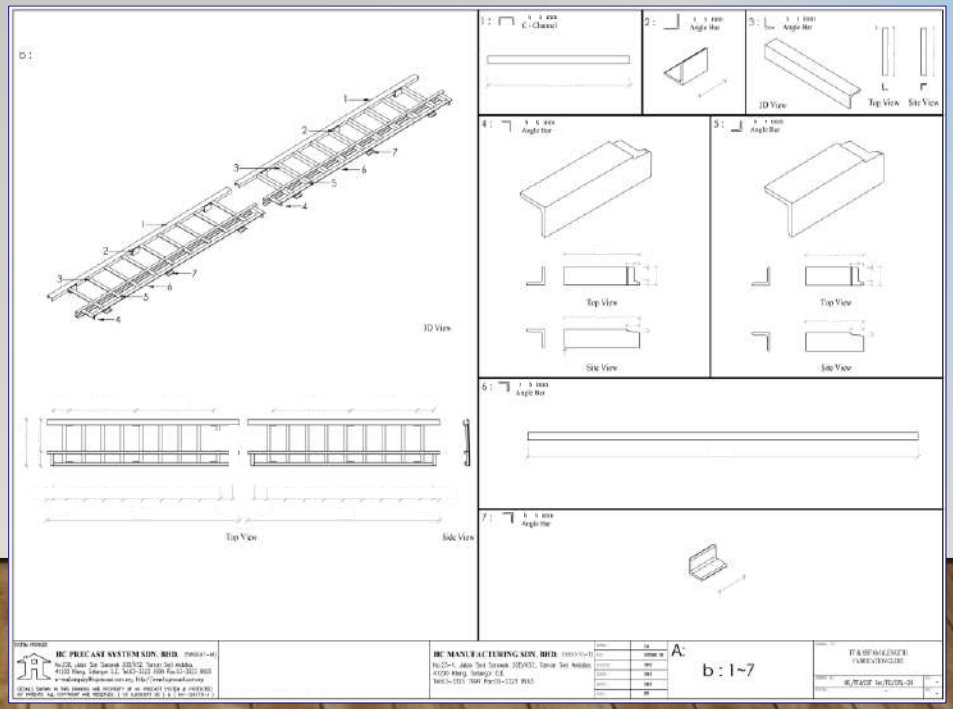


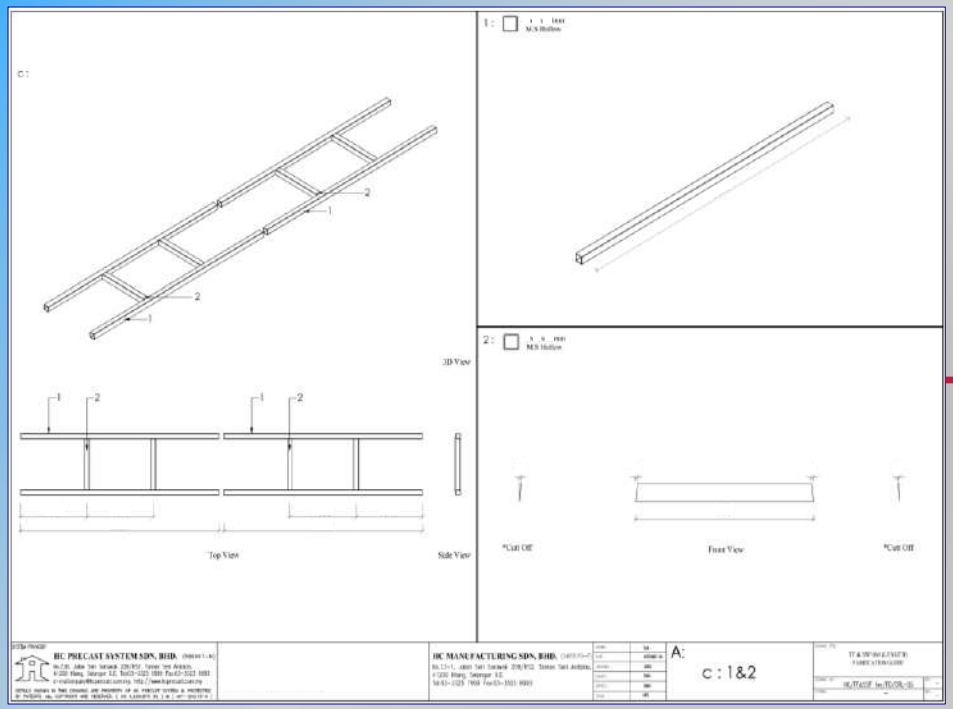


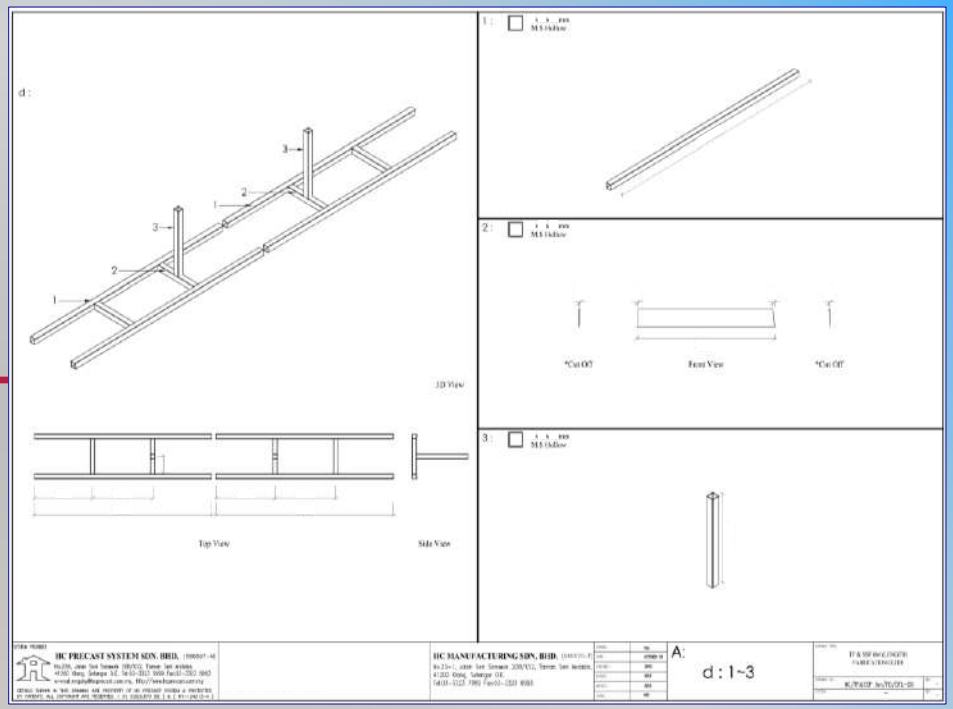

A :
B :
3D View
Top View
Side View
Front View
Transport Frame (tf) : 6m
&
Small Storage Frame (suf) : 6m

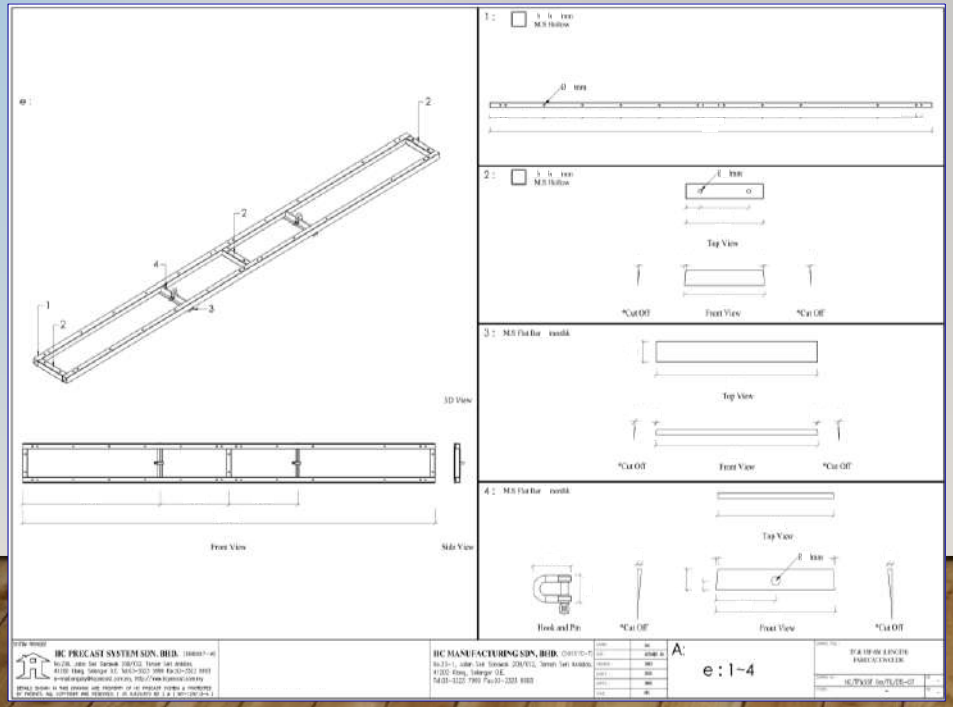

a :
a1 :
b :
c :
d :
e :
3D View
Top View
Side View
Front View
Transport Frame (tf) : 6m
&
Small Storage Frame (suf) : 6m

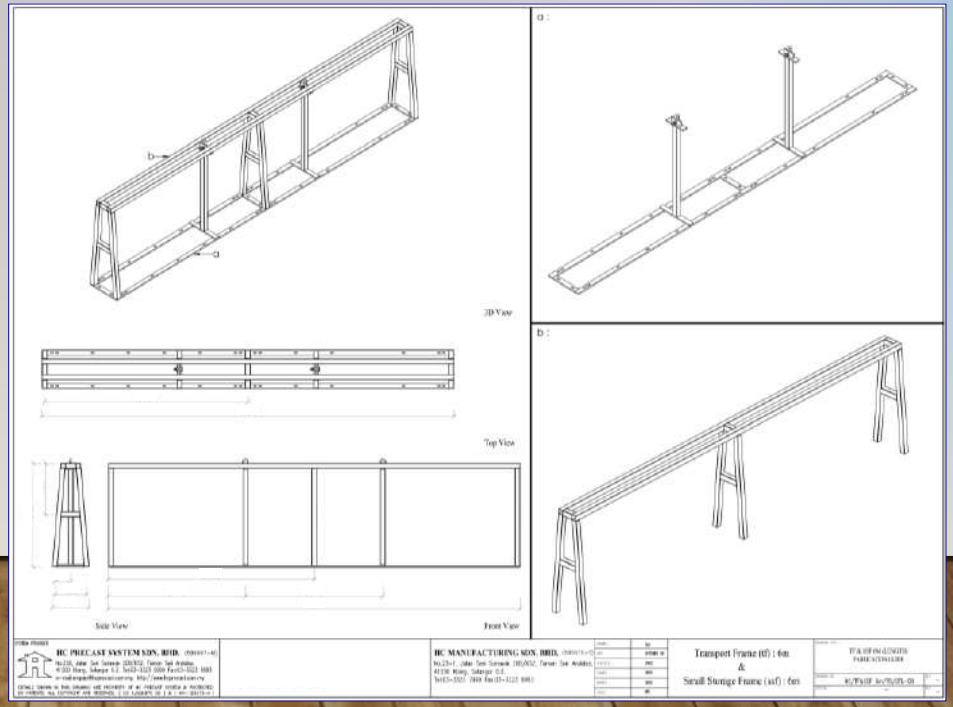

a :
a1 :
Side View
3D View
Front View
A:
a&a1 : 1~8

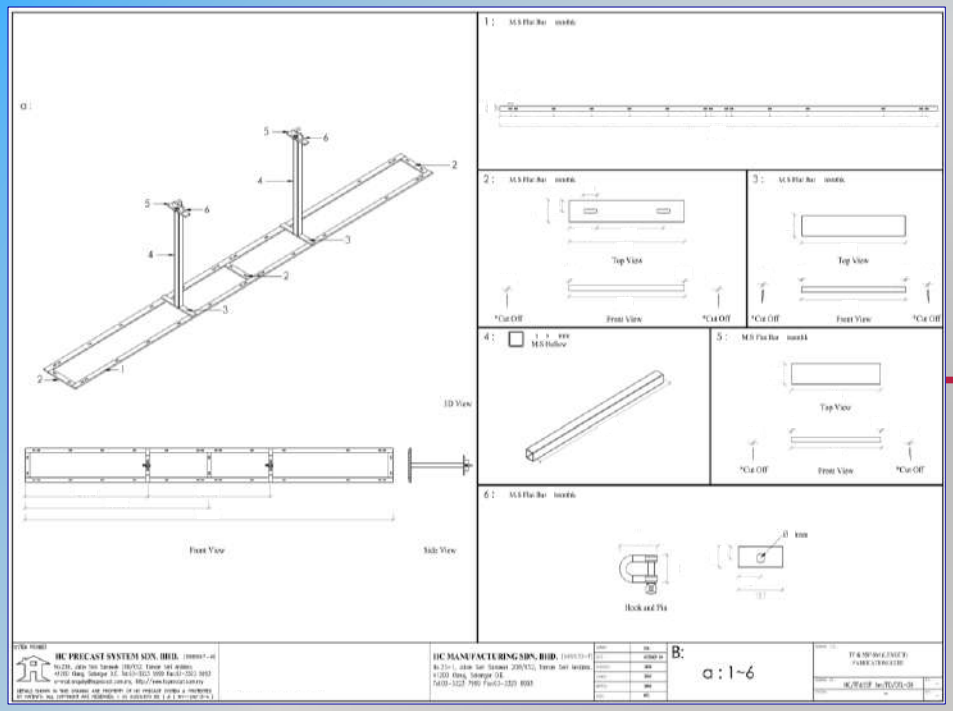

b :
3D View
Top View
Side View
A:
b : 1~7

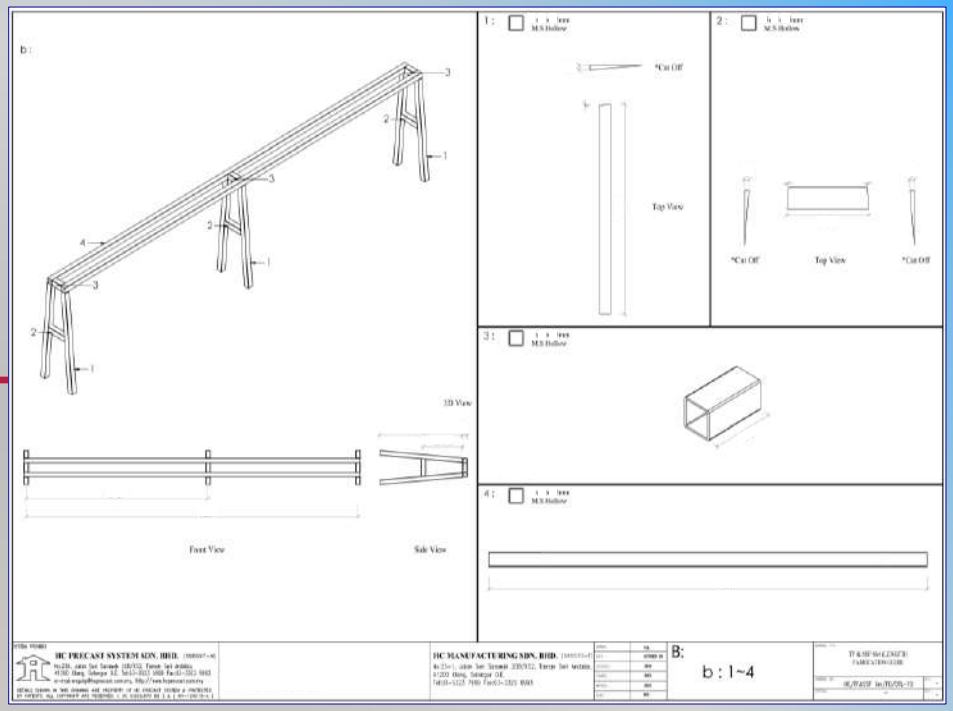

c :
1 :
2 :
3D View
Top View
Side View
*Cut Off
Front View
*Cut Off
A:
c : 1&2

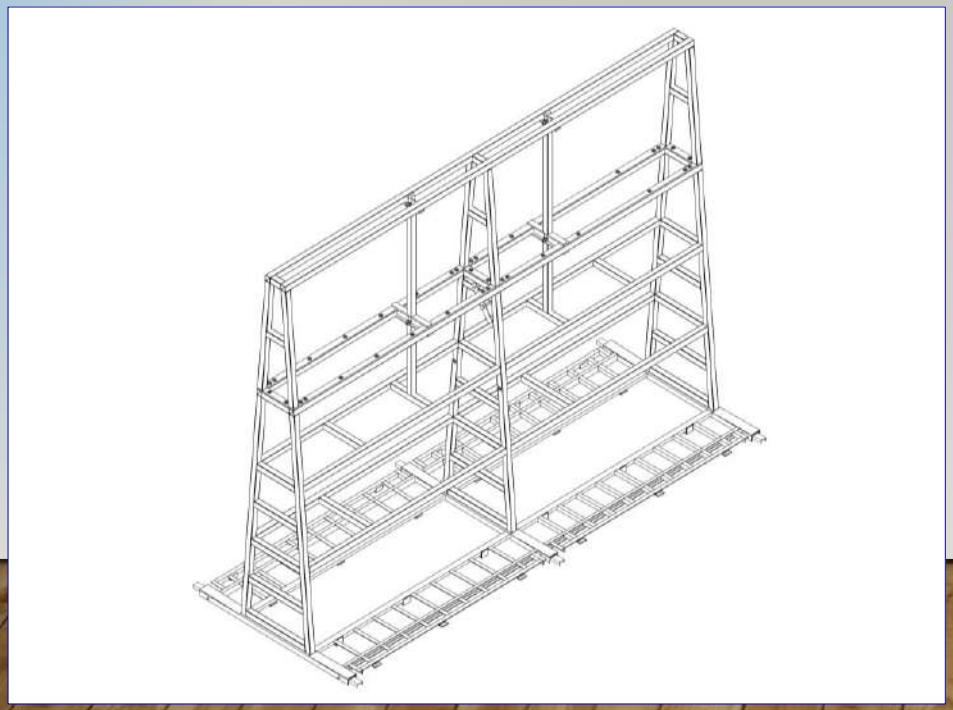

d :
1 :
2 :
3 :
3D View
Top View
Side View
*Cut Off
Front View
*Cut Off
A:
d : 1~3

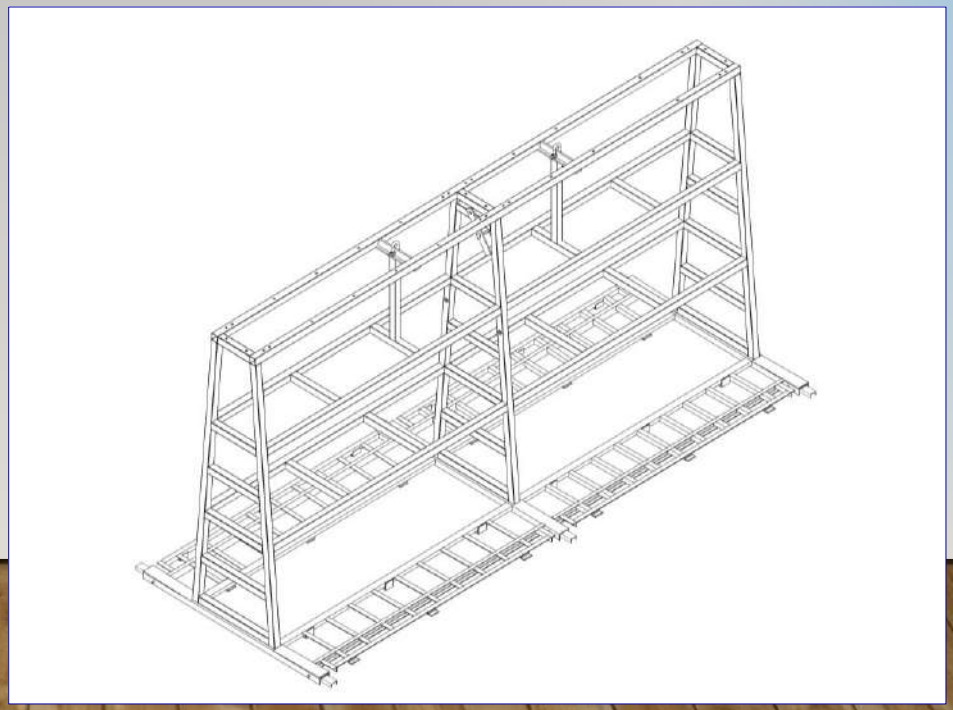

e :
1 :
2 :
3 : M.S Flat Bar
4 : M.S Flat Bar
3D View
Front View
Side View
Top View
*Cut Off
Front View
*Cut Off
Hook and Pin
A:
e : 1~4

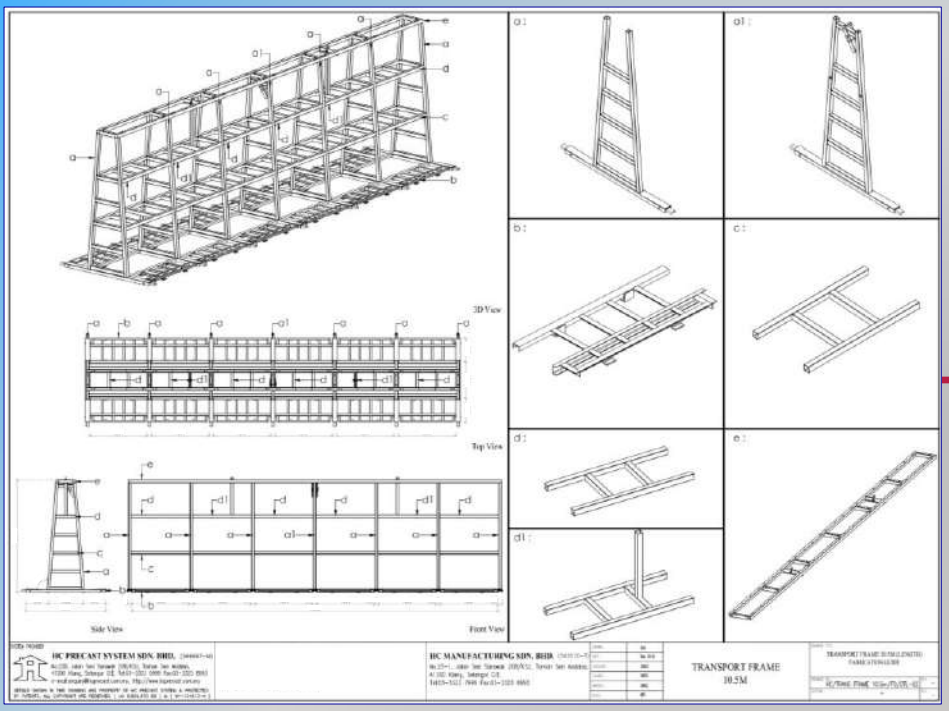

a :
b :
3D View
Top View
Side View
Front View
Transport Frame (tf) : 6m
&
Small Storage Frame (ssf) : 6m

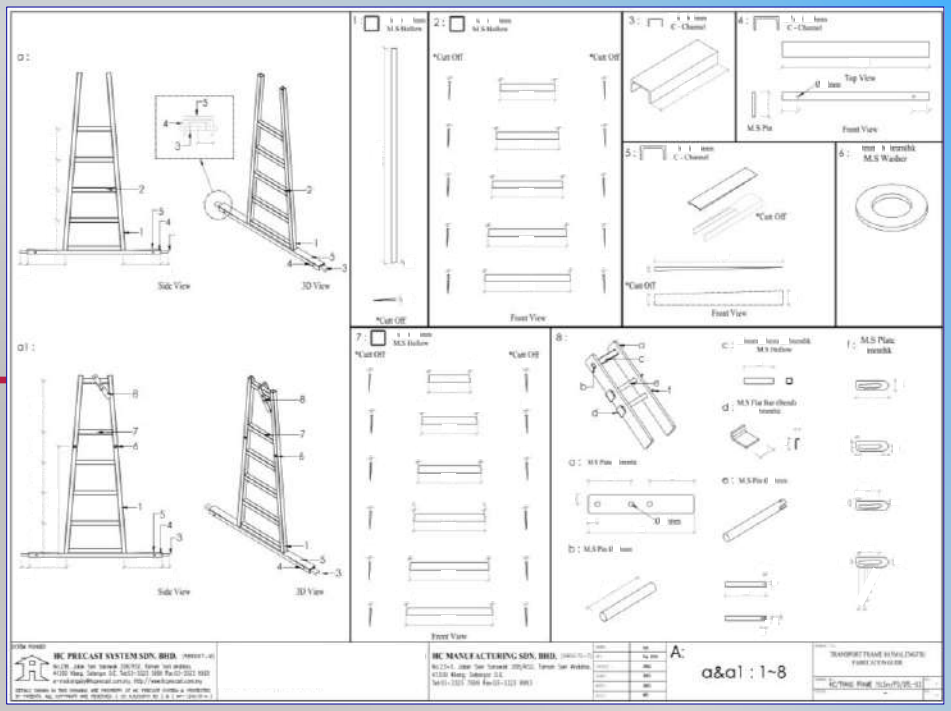

a :
1 :
2 :
3 :
4 :
5 :
6 :
Top View
Front View
*Cut Off
3D View
Side View
Hook and Pin
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
B:
a : 1~6

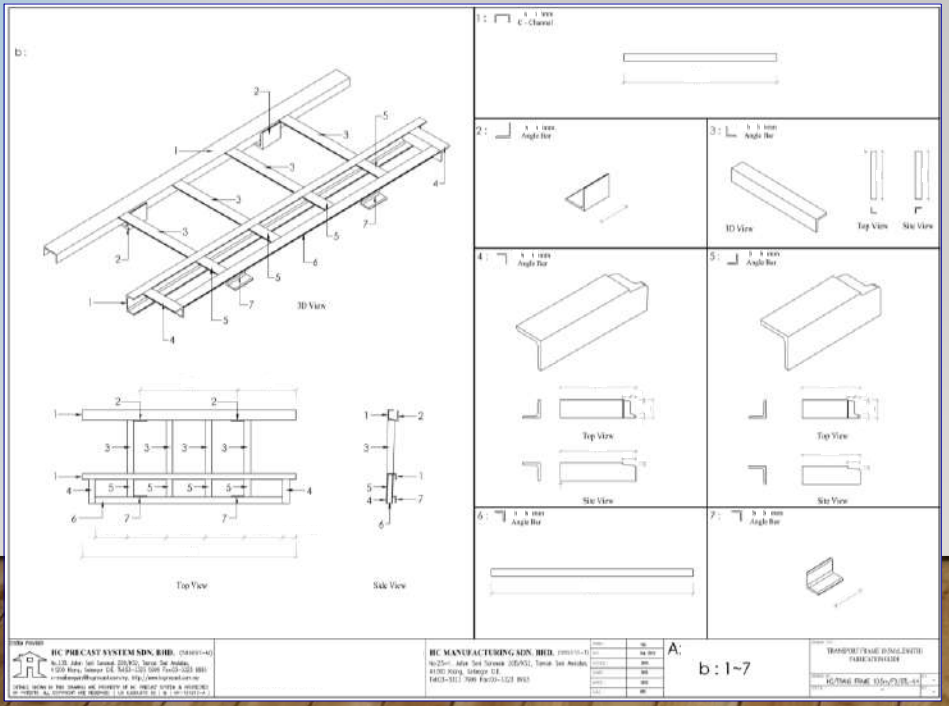

b :
1 :
2 :
3 :
4 :
Top View
*Cut Off
3D View
Front View
Side View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
B:
b : 1~4

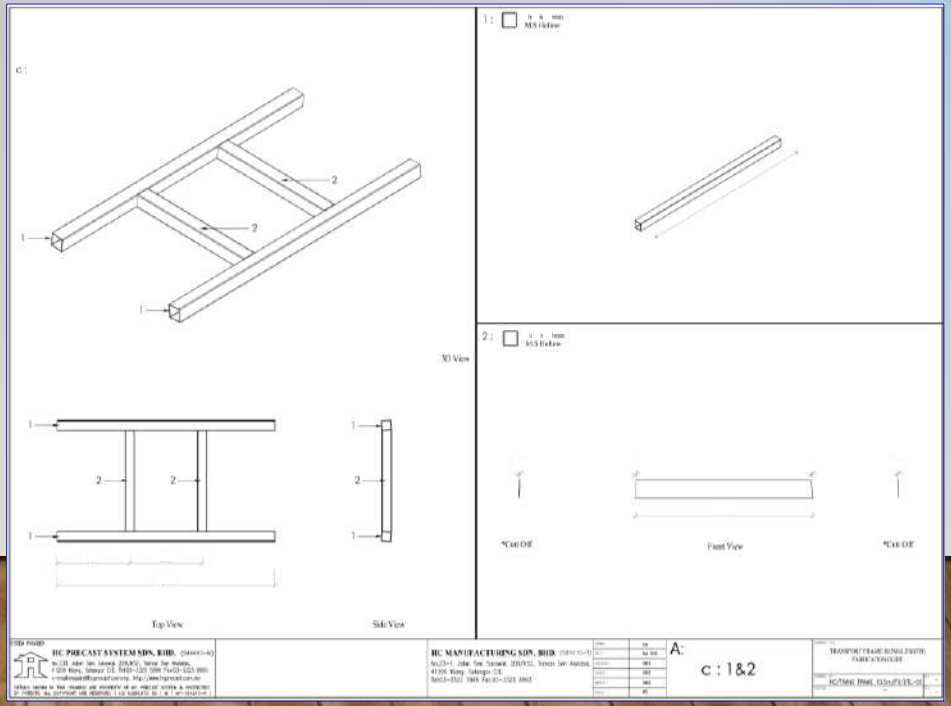


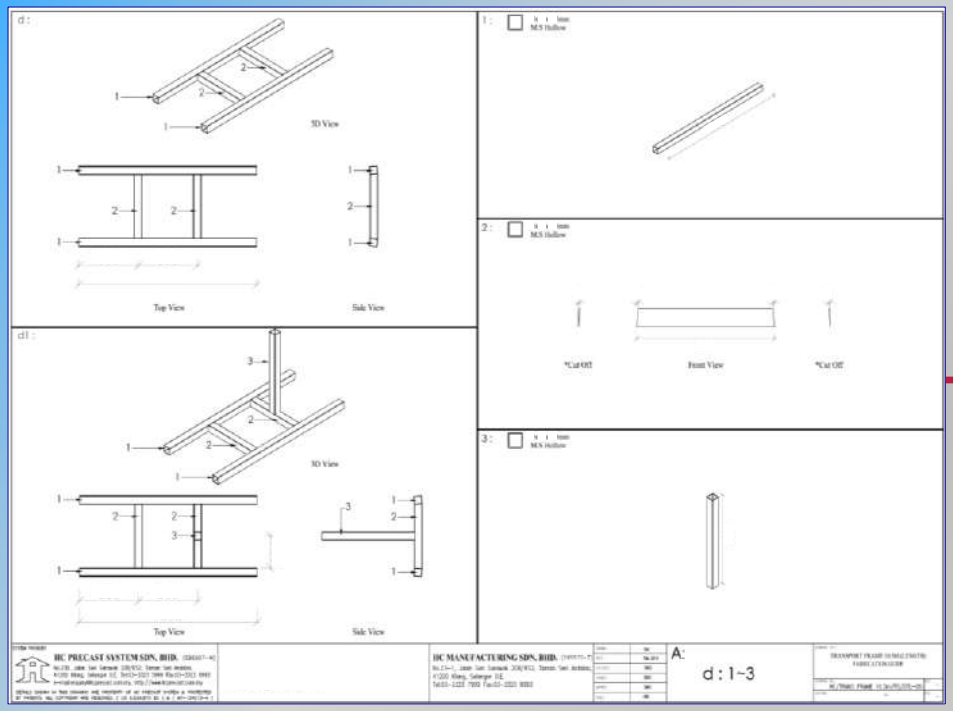


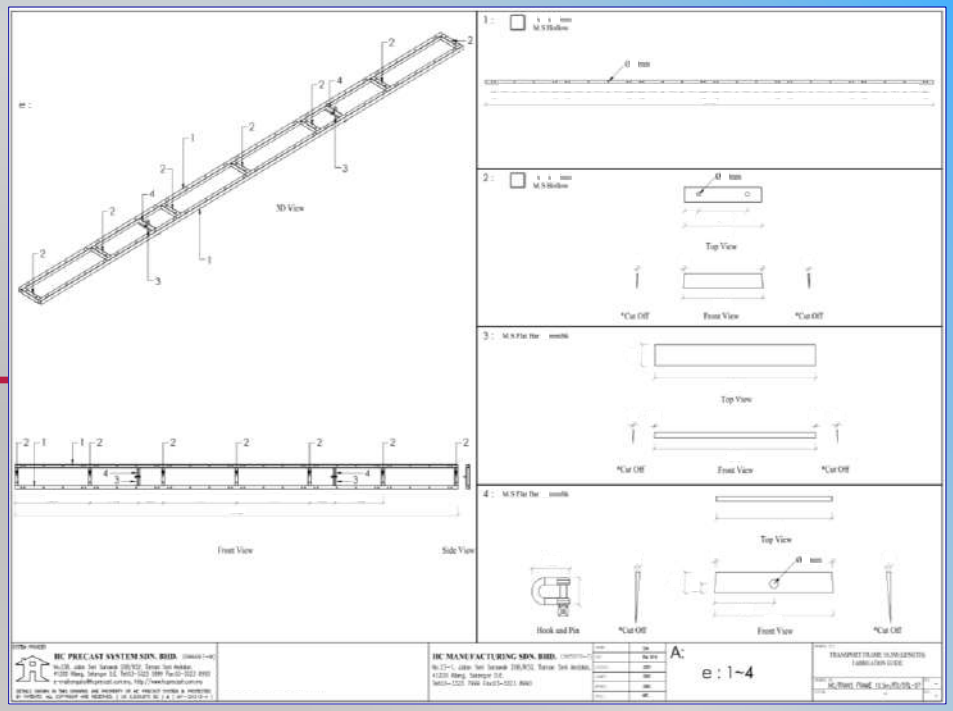

3D View
Top View
Side View
Front View
TRANSPORT FRAME
10.5M
A:
a&a1 : 1~8

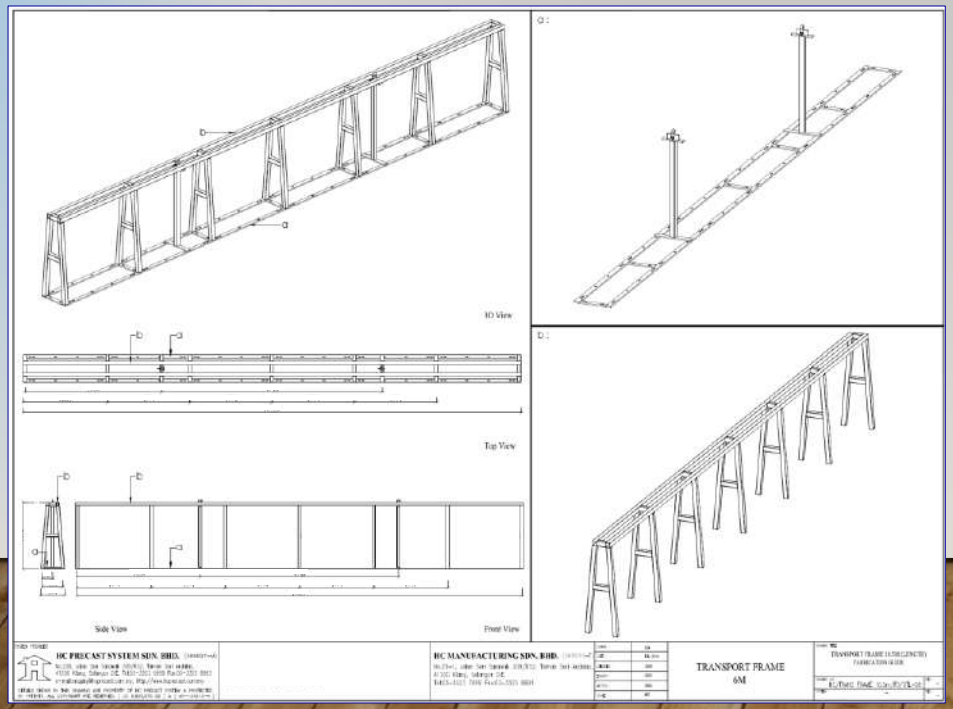

Side View
3D View
Front View
A:
a&a1 : 1~8

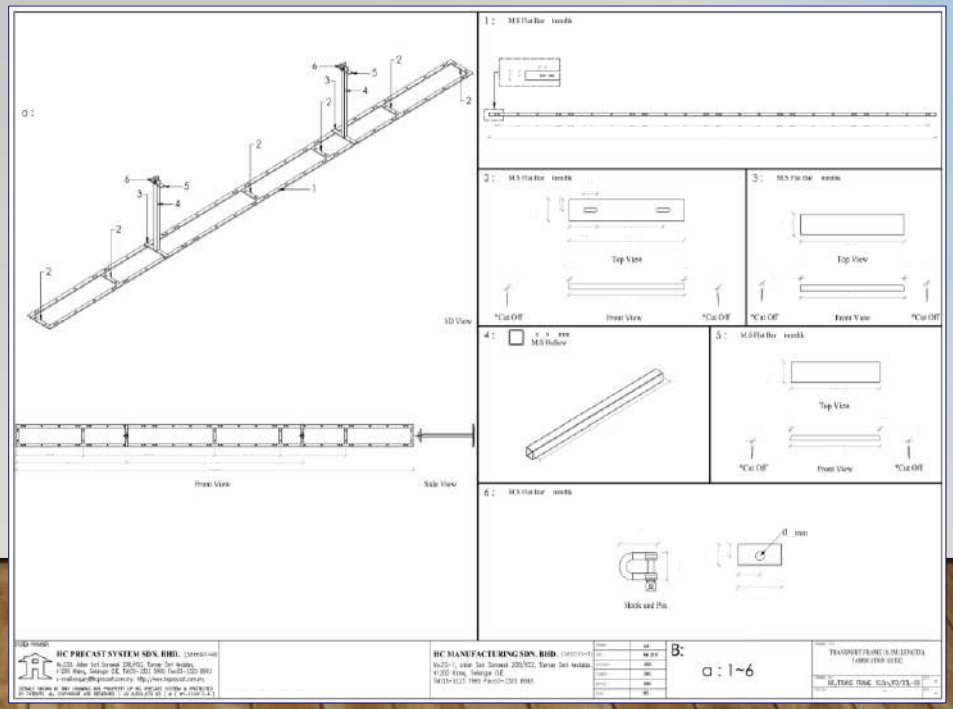

3D View
Top View
Side View
A:
b : 1~7

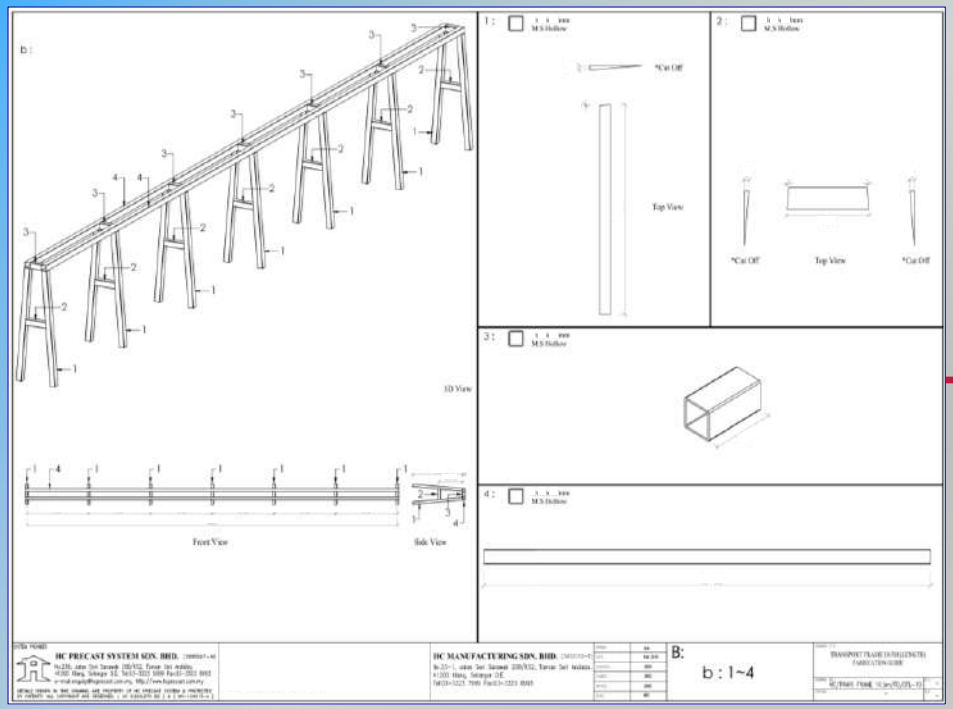

3D View
Top View
Side View
Front View
A:
c : 1&2

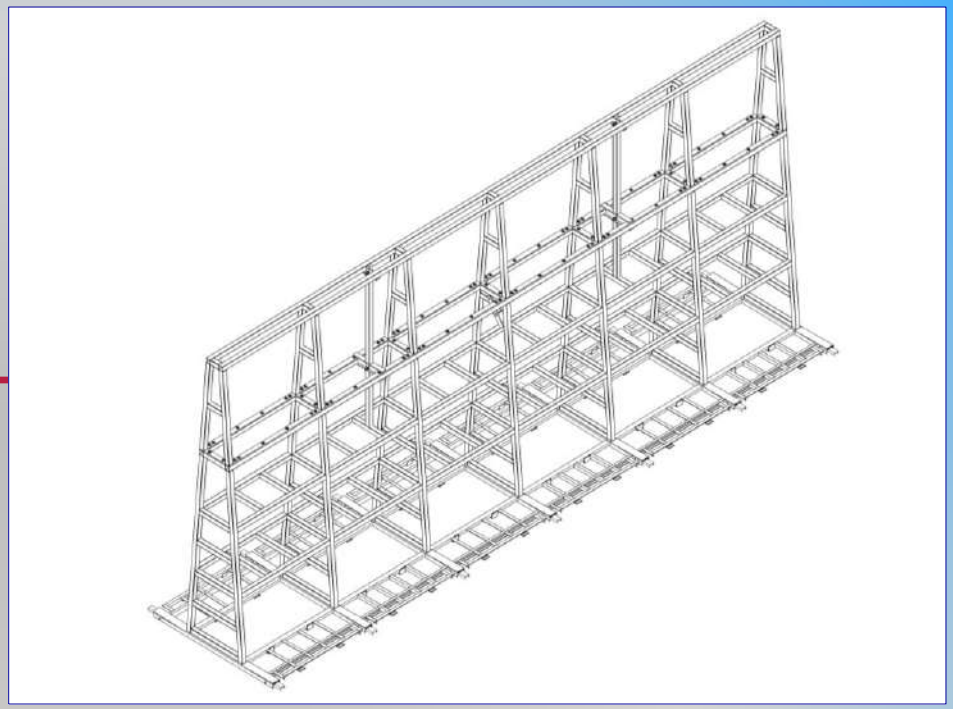

d :
3D View
Top View
Side View
d1 :
3D View
Top View
Side View
1 :
M.S Hollow
2 :
M.S Hollow
*Cut Off
Front View
*Cut Off
3 :
M.S Hollow
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
d : 1~3
TRANSPORT FRAME (ULTRA LENGTH)
FABRICATION GUIDE

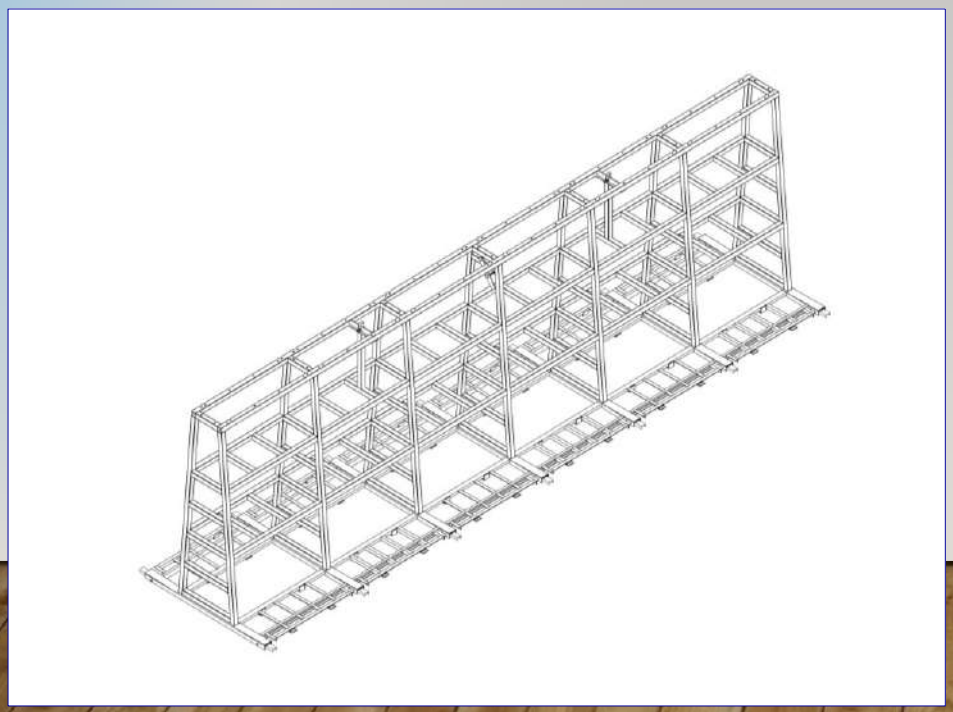

e :
3D View
Front View
Side View
1 :
M.S Hollow
2 :
M.S Hollow
Top View
*Cut Off
Front View
*Cut Off
3 :
M.S Flat Bar
Top View
*Cut Off
Front View
*Cut Off
4 :
M.S Flat Bar
Top View
Hook and Pin
*Cut Off
Front View
*Cut Off
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
e : 1~4
TRANSPORT FRAME (ULTRA LENGTH)
FABRICATION GUIDE

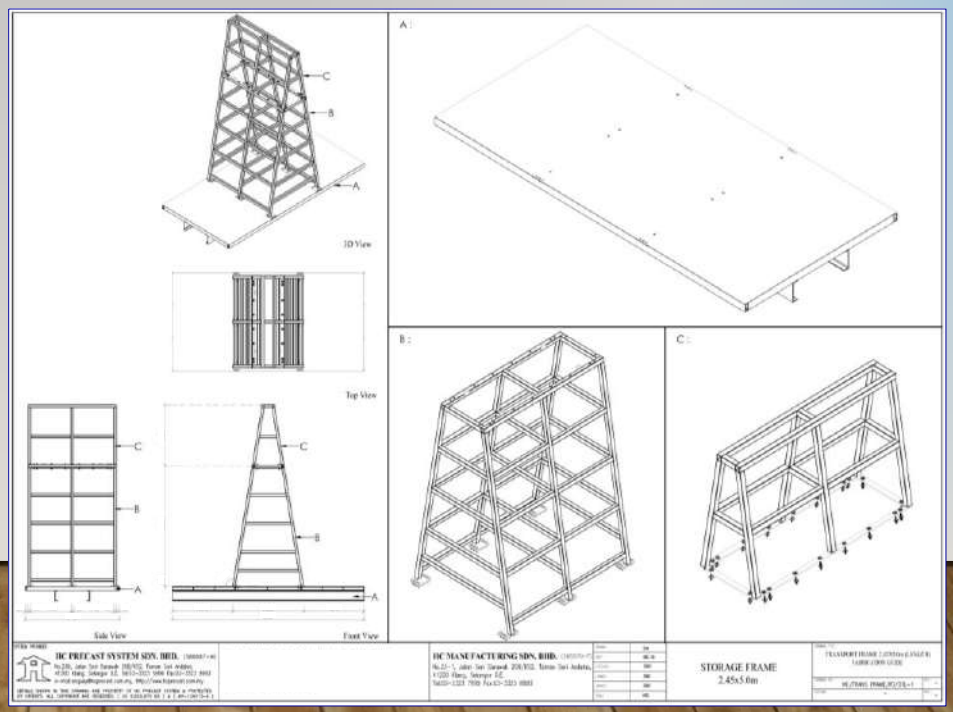

3D View
Top View
Side View
Front View
c :
b :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
TRANSPORT FRAME
6M
TRANSPORT FRAME (ULTRA LENGTH)
FABRICATION GUIDE

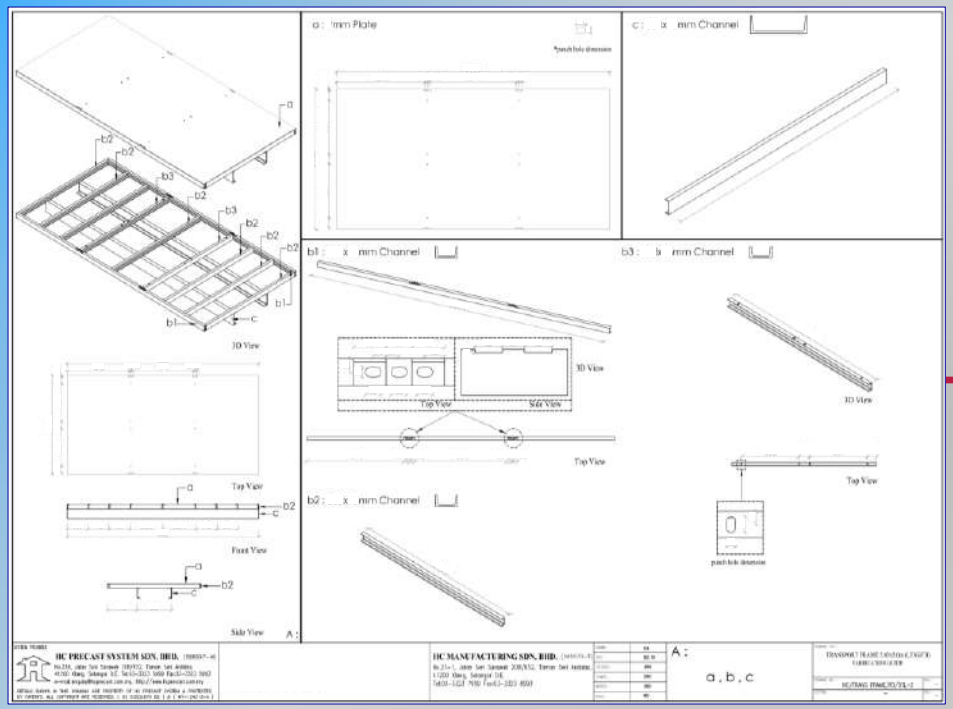

a :
3D View
Front View
Side View
1 :
M.S Flat Bar
2 :
M.S Flat Bar
Top View
*Cut Off
Front View
*Cut Off
3 :
M.S Flat Bar
Top View
*Cut Off
Front View
*Cut Off
4 :
M.S Hollow
5 :
M.S Flat Bar
Top View
*Cut Off
Front View
*Cut Off
6 :
M.S Flat Bar
Hook and Pin
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
B:
a : 1~6
TRANSPORT FRAME (ULTRA LENGTH)
FABRICATION GUIDE

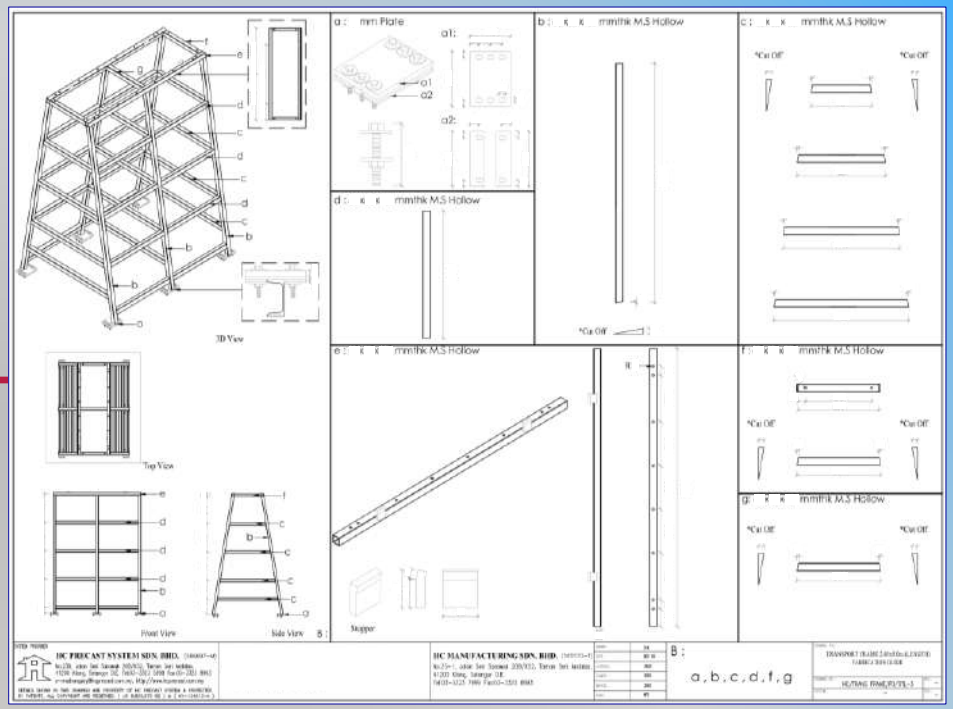

B :
1 :
*Cut Off
Top View
2 :
*Cut Off
Top View
*Cut Off
3 :
4 :
3D View
Front View
Side View
B:
b : 1~4

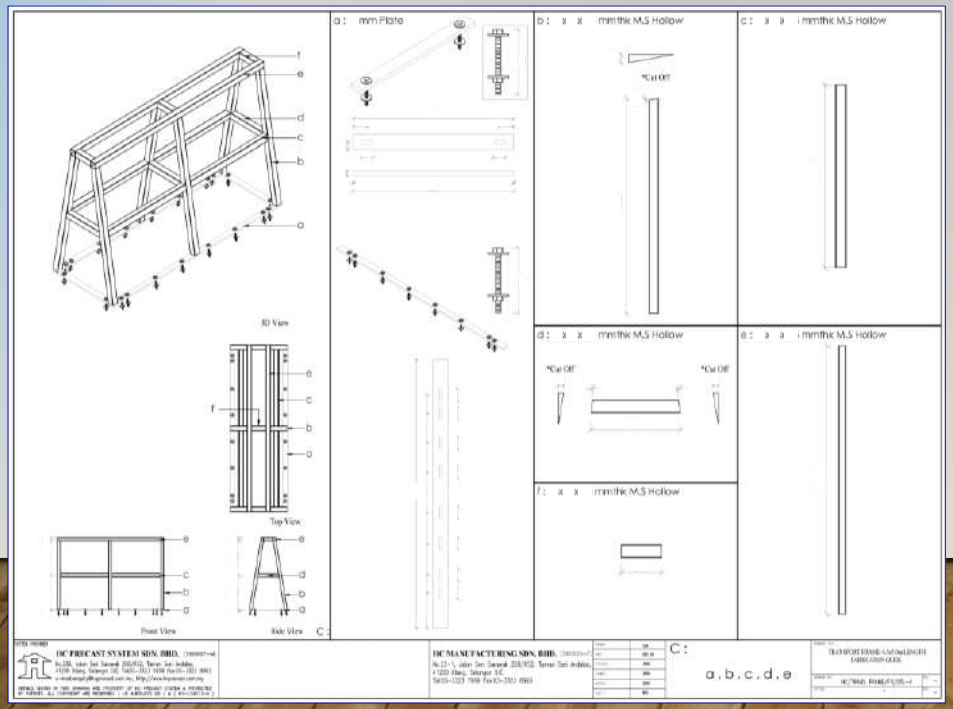


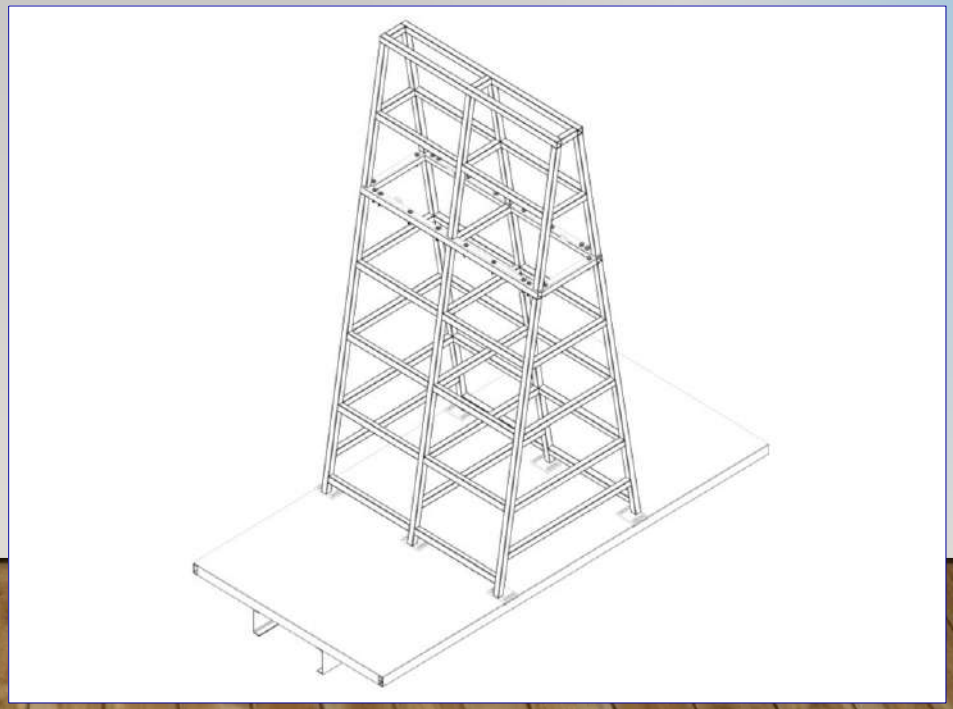


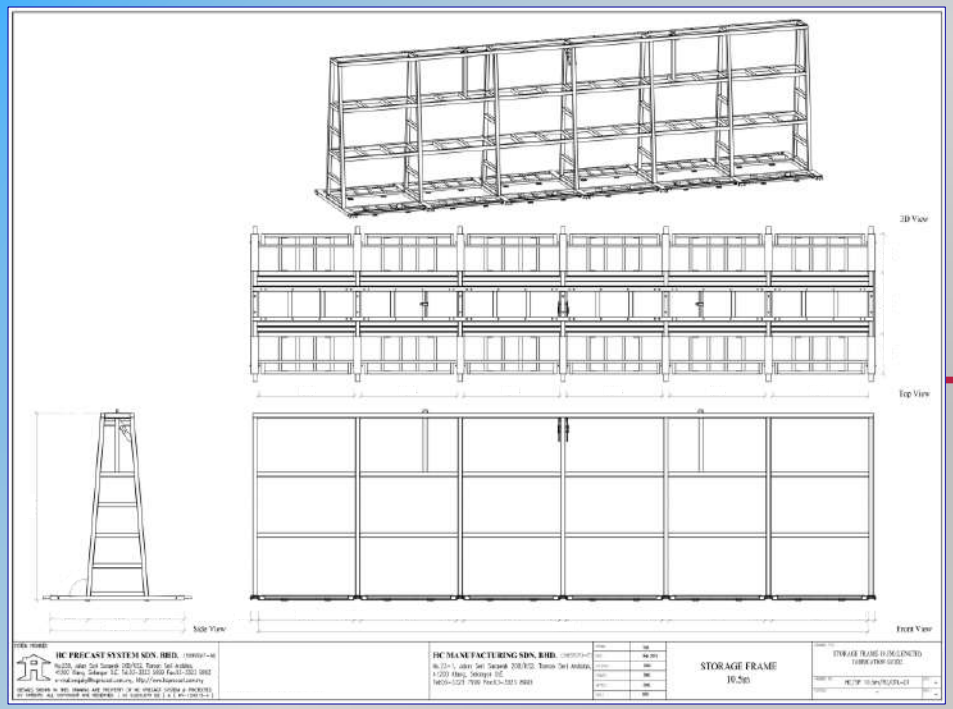

A :
B :
C :
3D View
Top View
Side View
Front View
STORAGE FRAME
2.45x5.0m

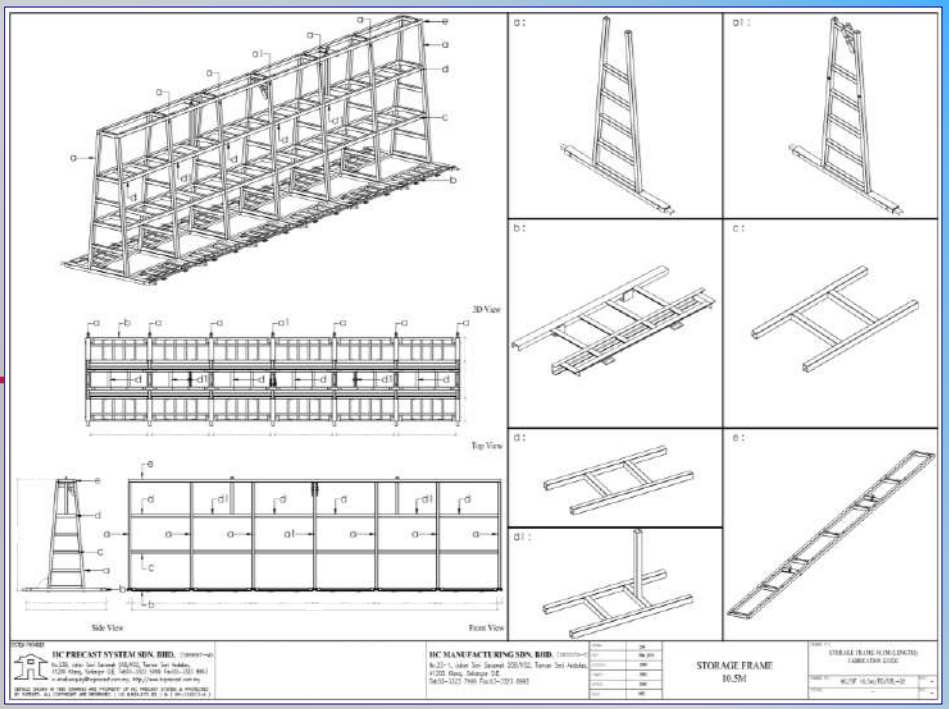

a : mm Plate
c : x x mm Channel
b1 : x x mm Channel
b3 : x x mm Channel
b2 : x x mm Channel
3D View
Top View
Front View
Side View
A :
a, b, c

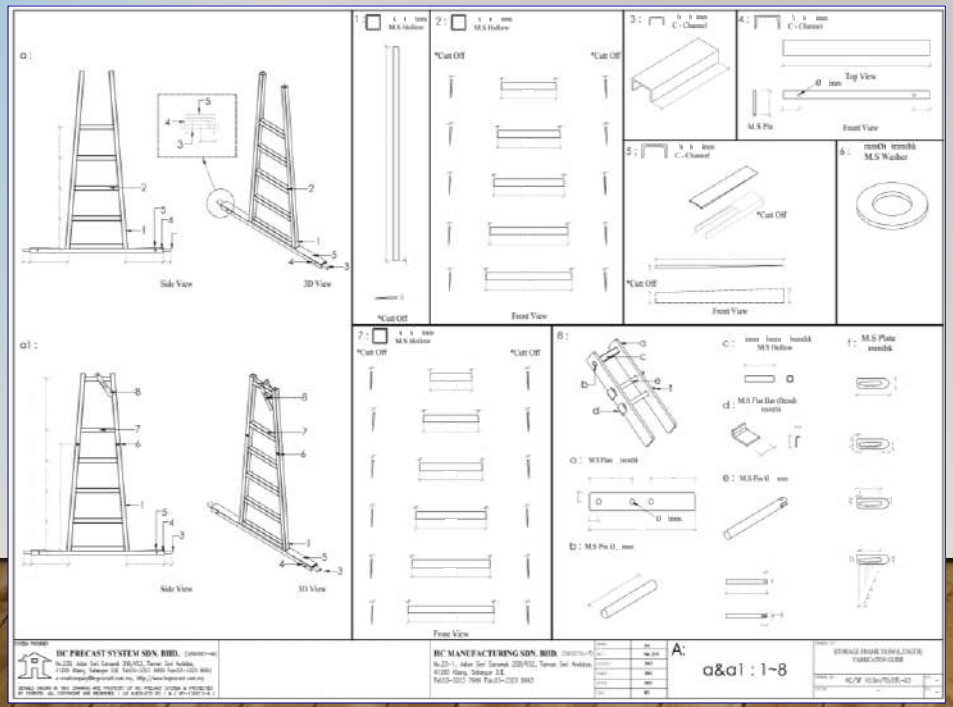

a : mm Plate
b : x x mmthk M.S Hollow
c : x x mmthk M.S Hollow
d : x x mmthk M.S Hollow
e : x x mmthk M.S Hollow
f : x x mmthk M.S Hollow
g : x x mmthk M.S Hollow
*Cut Off
3D View
Top View
Front View
Side View
Stopper
B :
a, b, c, d, f, g

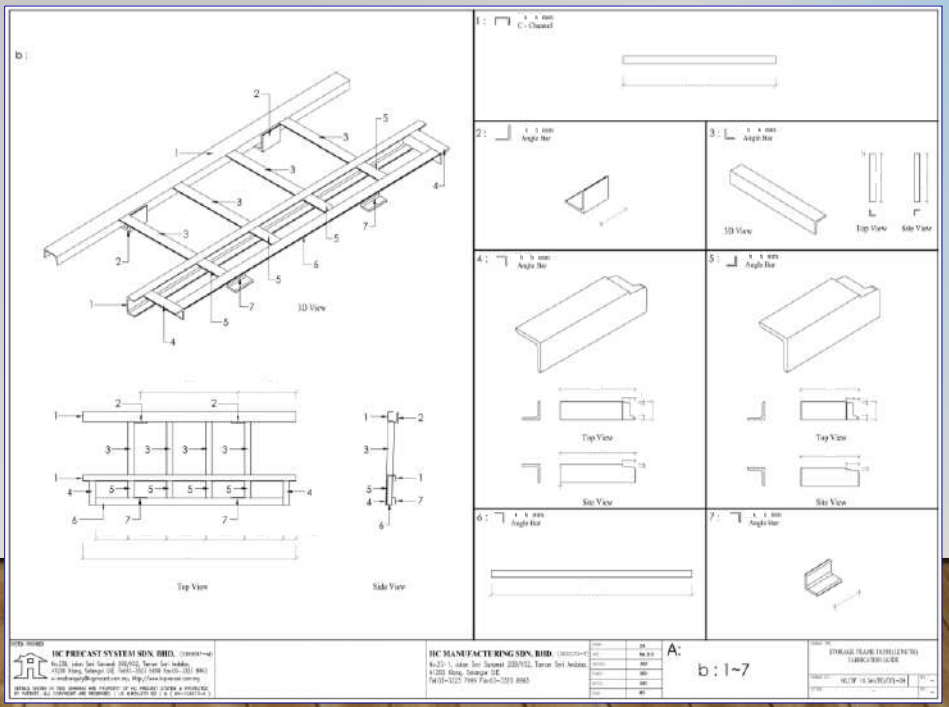

a : mm Plate
b : x x mmthk M.S Hollow
c : x x mmthk M.S Hollow
d : x x mmthk M.S Hollow
e : x x mmthk M.S Hollow
f : x x mmthk M.S Hollow
*Cut Off
3D View
Top View
Front View
Side View
C :
a, b, c, d, e

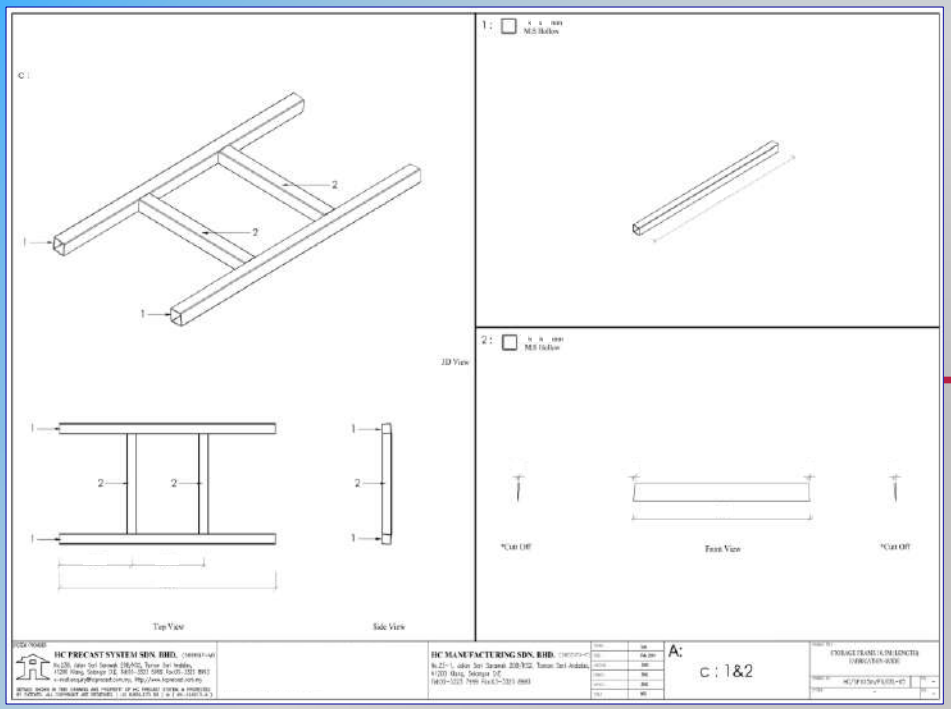


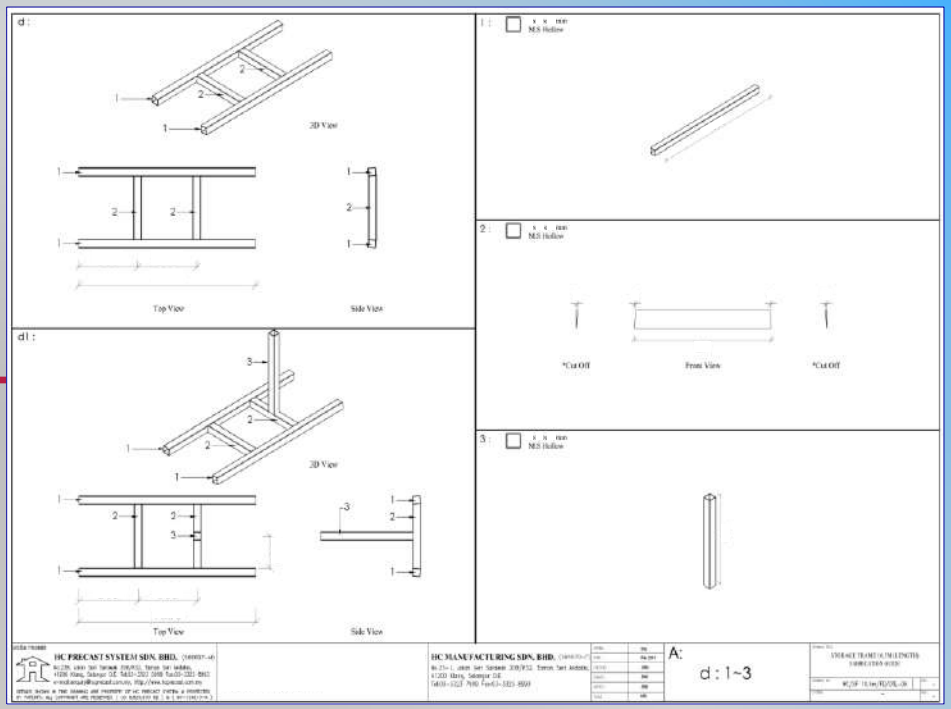

3D View
Top View
Side View
Front View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
STORAGE FRAME
10.5m

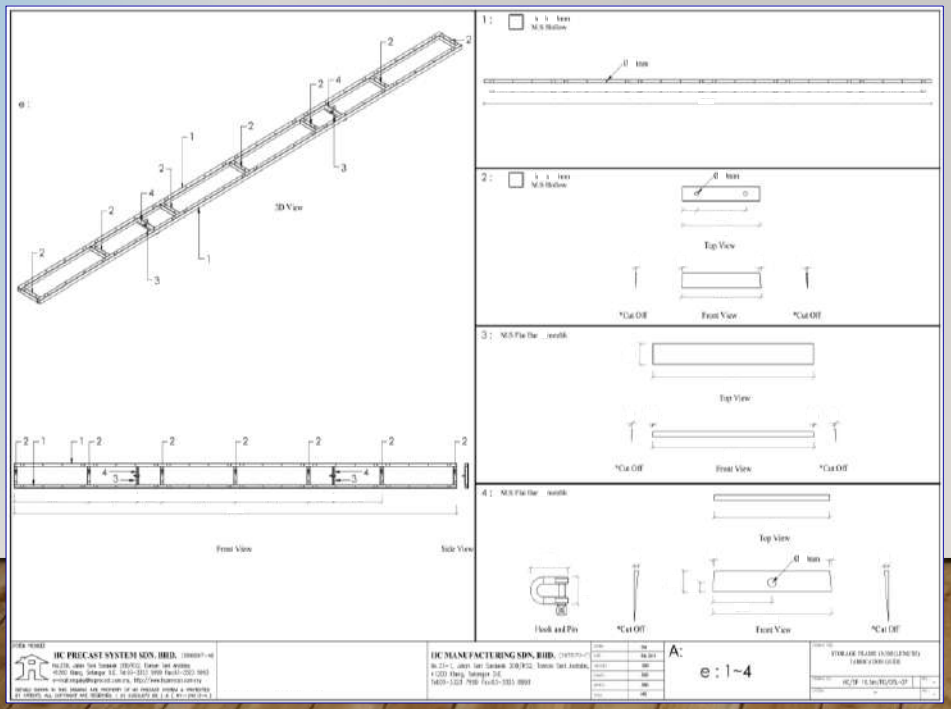

a :
a1 :
b :
c :
d :
d1 :
e :
3D View
Top View
Side View
Front View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
STORAGE FRAME
10.5M

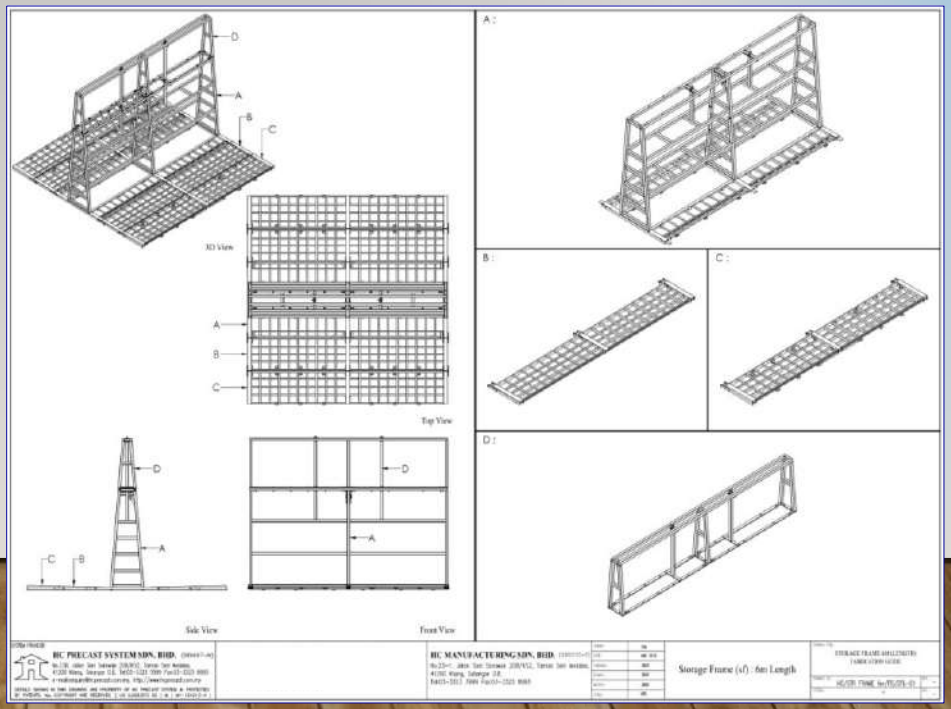

a :
a1 :
Side View
3D View
Front View
M.S Hollow
C - Channel
M.S Pin
M.S Washer
M.S Plate
Angle Bar
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
a&a1 : 1~8

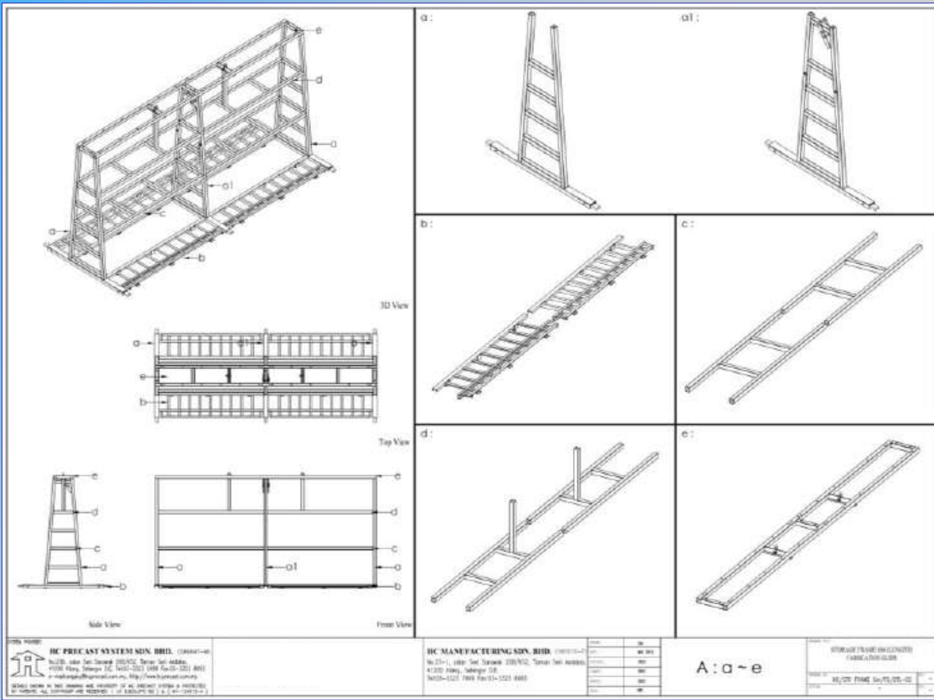

b :
1D View
Top View
Side View
C - Channel
Angle Bar
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
b : 1~7

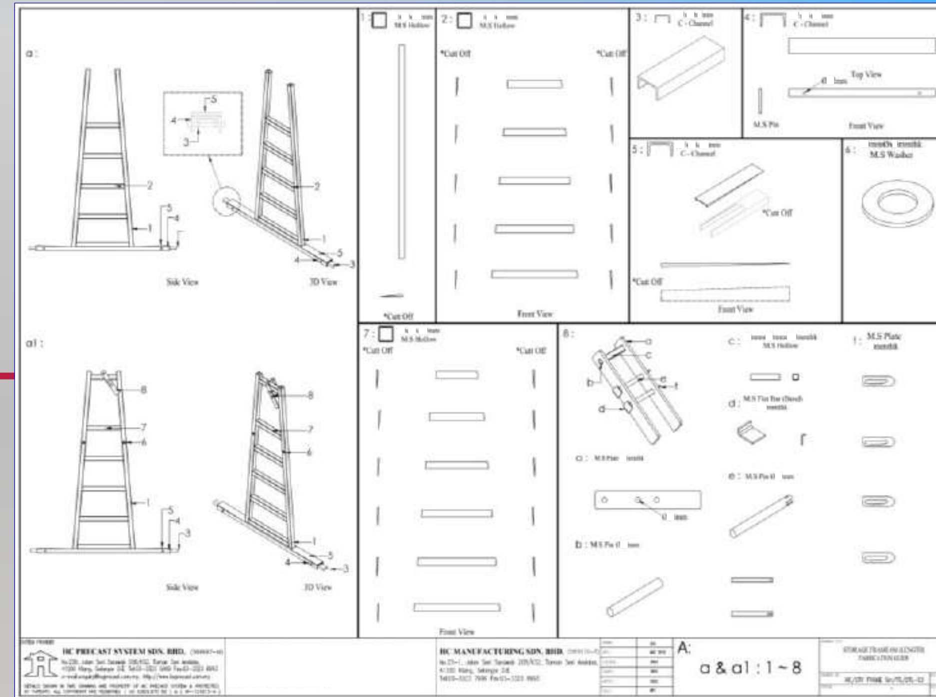

c :
1 :
2 :
3D View
Top View
Side View
*Cut Off
Front View
*Cut Off
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
c : 1&2

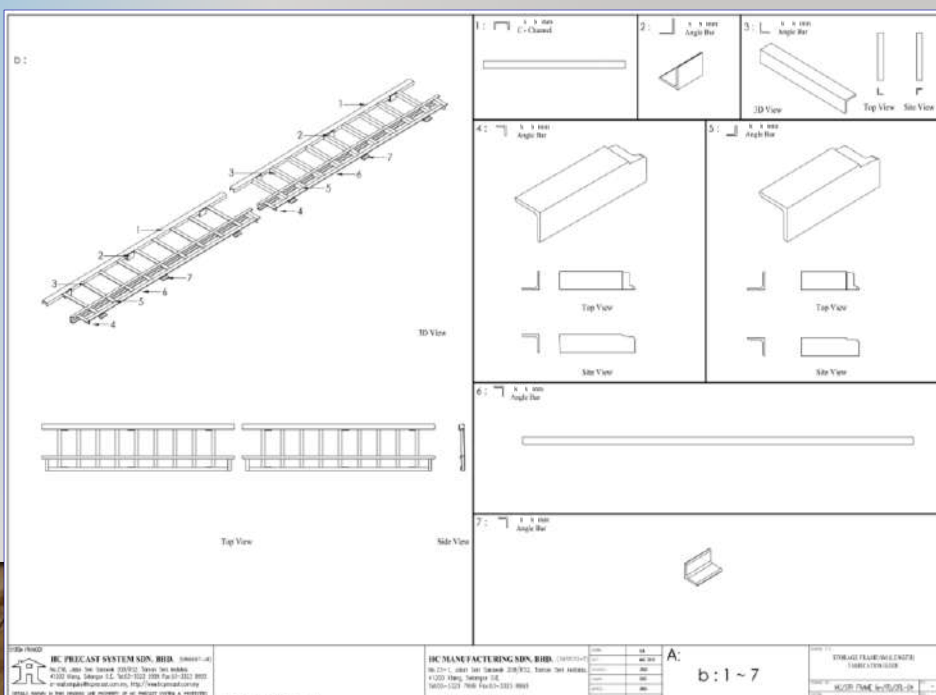

d :
d1 :
1 :
2 :
3 :
3D View
Top View
Side View
*Cut Off
Front View
*Cut Off
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
d : 1~3

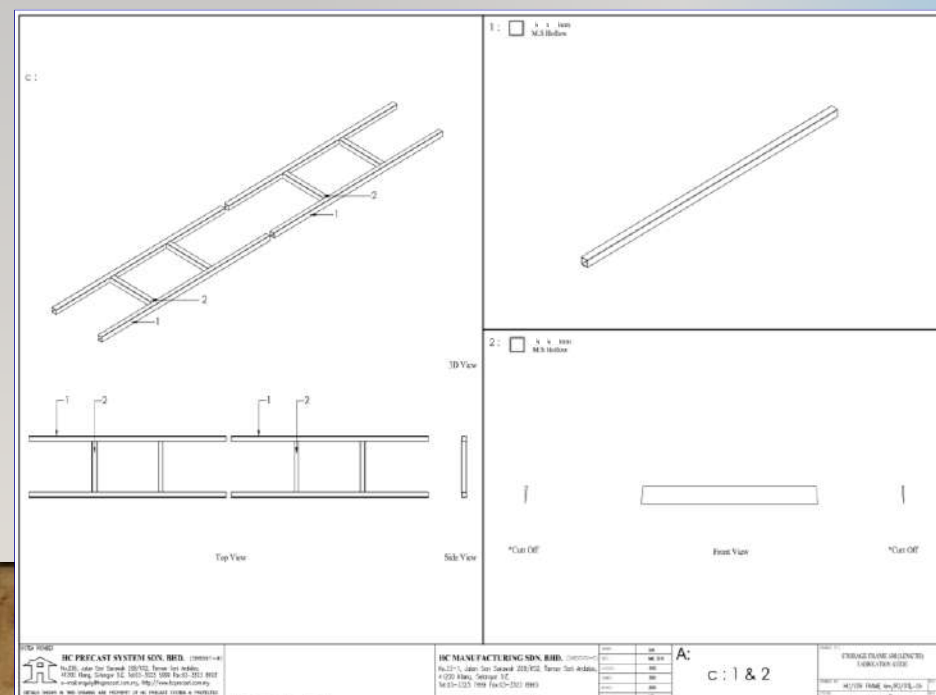

e :
1 :
2 :
3 :
4 :
3D View
Front View
Side View
Top View
*Cut Off
Front View
*Cut Off
Hook and Pin
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
e : 1~4

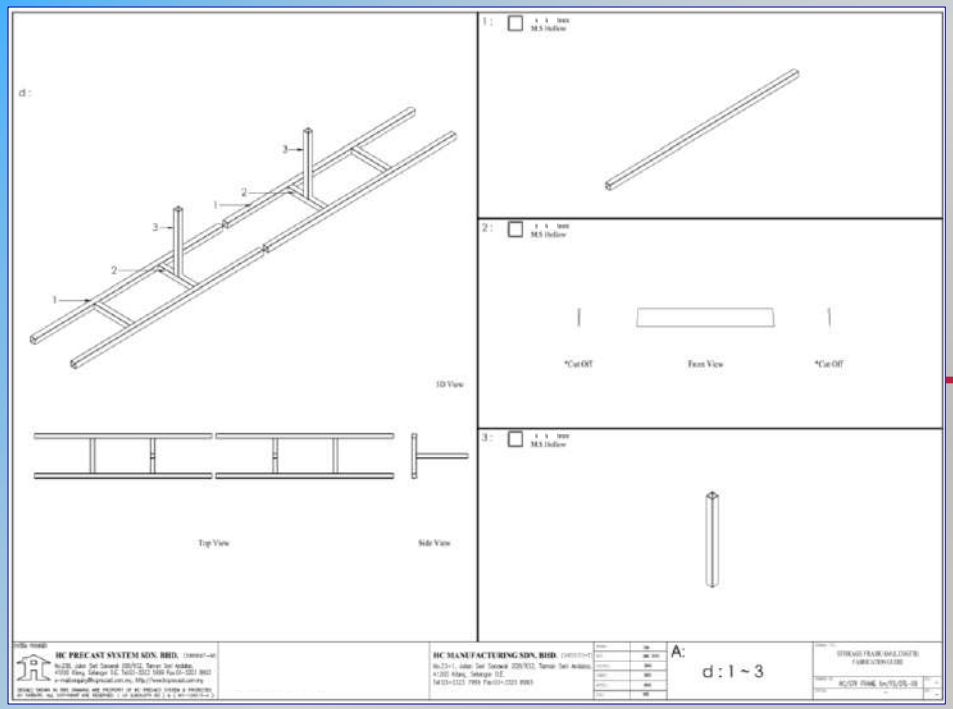

A :
B :
C :
D :
3D View
Top View
Side View
Front View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
Storage Frame (sf) : 6m Length

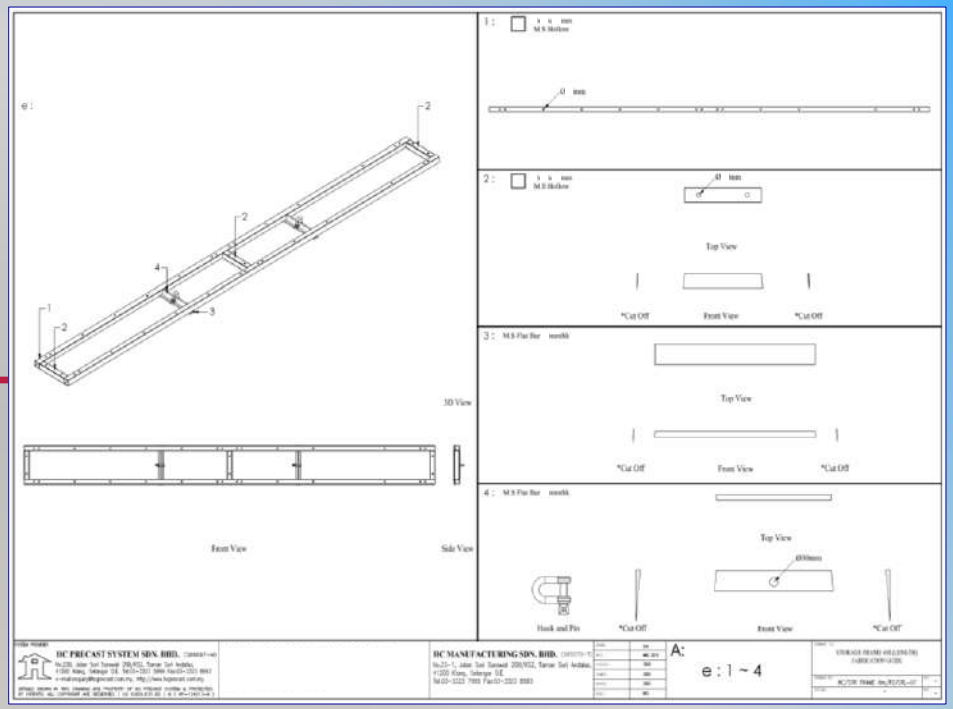

3D View
Top View
Side View
Front View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A : a ~ e

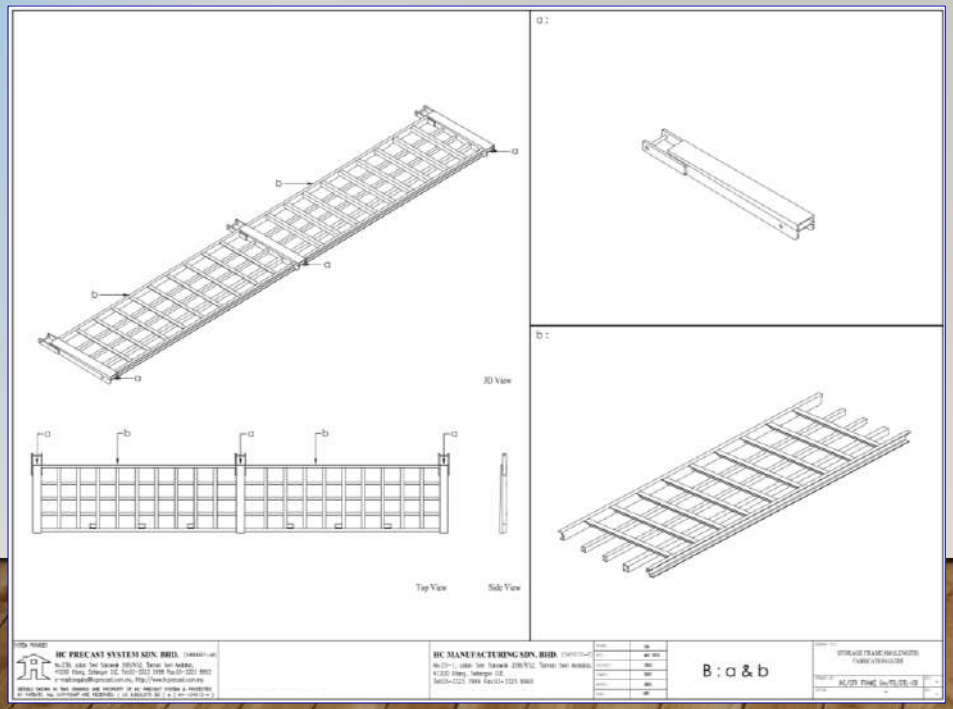

Side View
3D View
M.S Hollow
C - Channel
M.S Washer
Front View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
a & a1 : 1 ~ 8

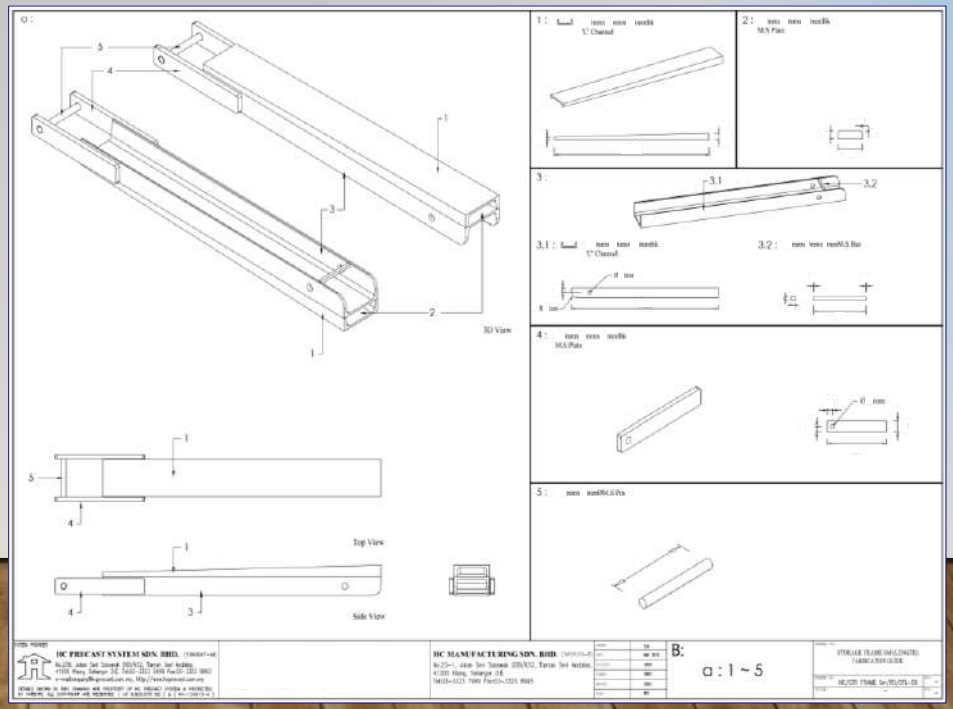

3D View
Top View
Side View
C - Channel
Angle Bar
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
b : 1 ~ 7

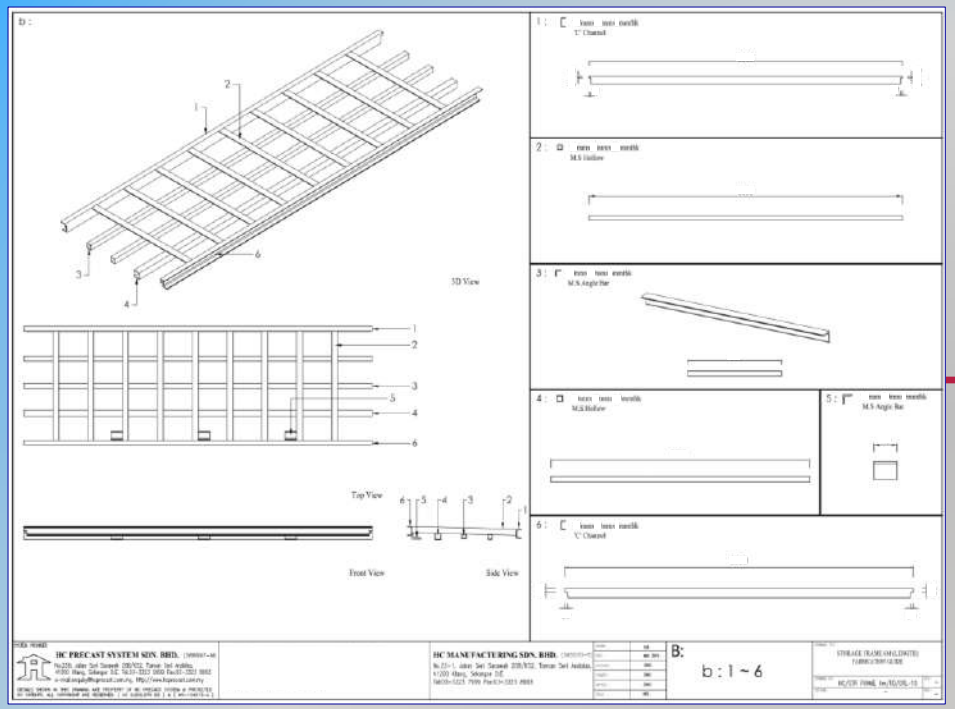

3D View
Top View
Side View
M.S Hollow
Front View
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.
A:
c : 1 & 2

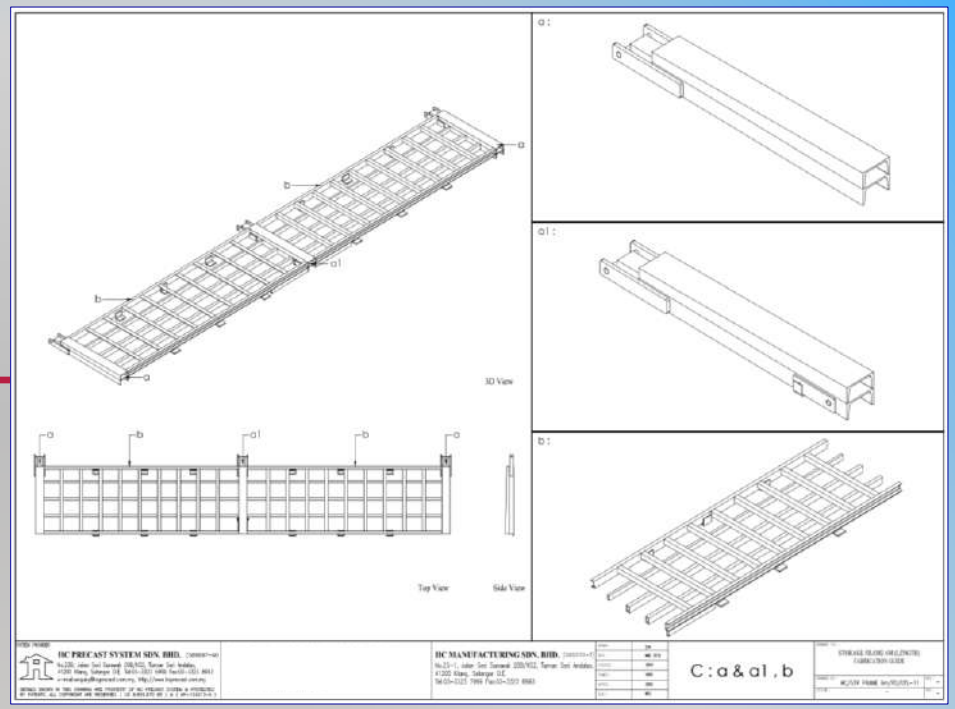

d :
3D View
Top View
Side View
1 :
M.S Hollow
2 :
M.S Hollow
*Cut Off
Front View
*Cut Off
3 :
M.S Hollow
A:
d : 1 ~ 3

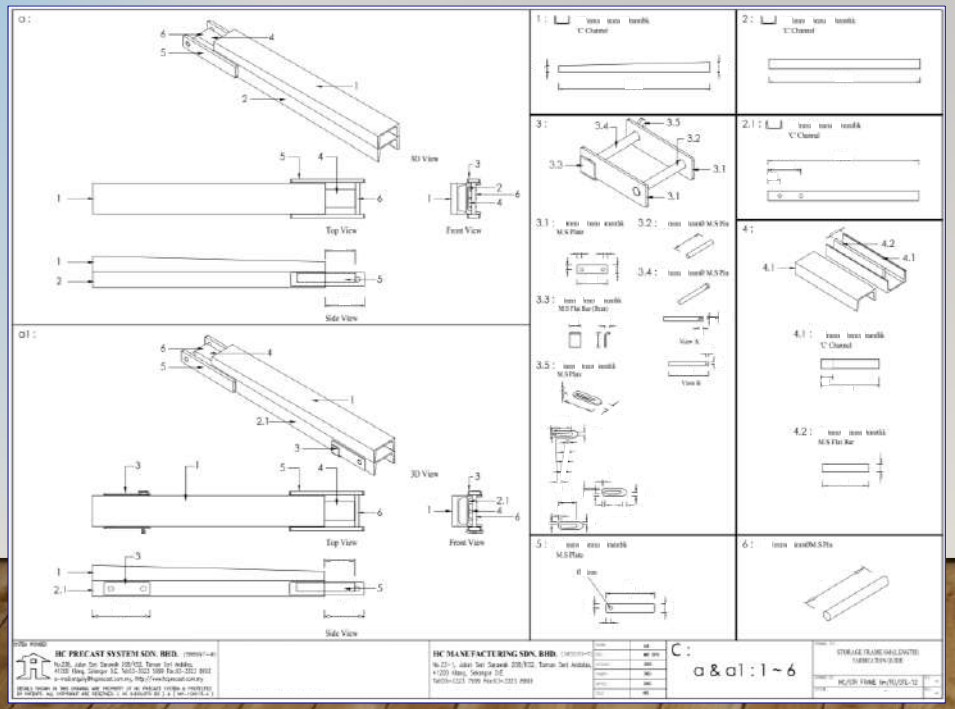

e :
3D View
Front View
Side View
1 :
2 :
Top View
*Cut Off
Front View
*Cut Off
3 :
M.S Flat Bar
Top View
*Cut Off
Front View
*Cut Off
4 :
M.S Flat Bar
Top View
Hook and Pin
*Cut Off
Front View
*Cut Off
A:
e : 1 ~ 4

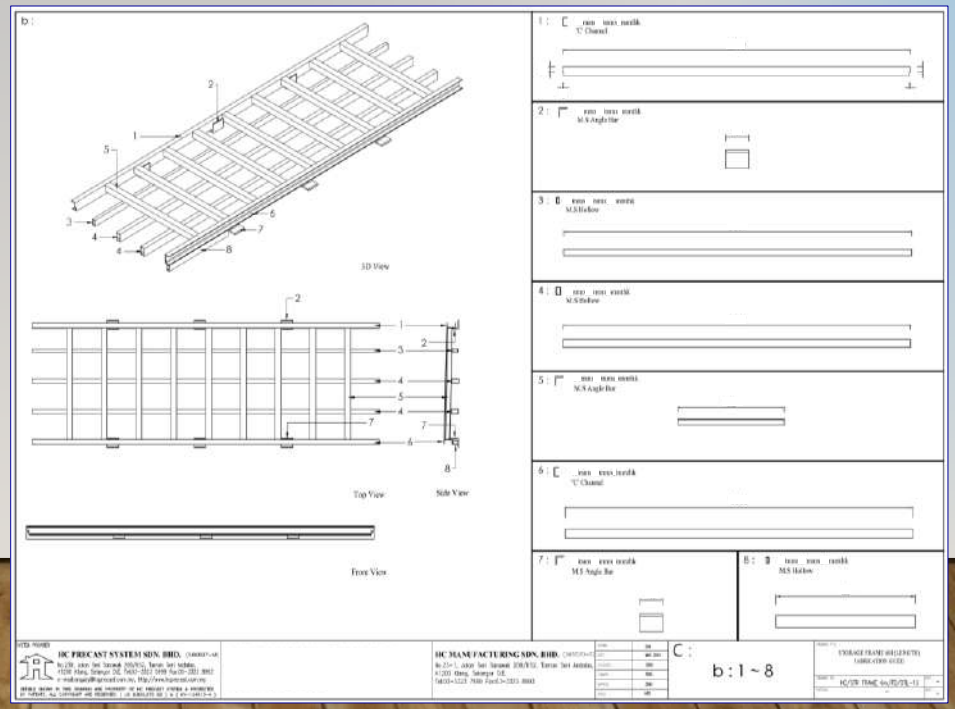

a :
3D View
Top View
Side View
b :
B : a & b

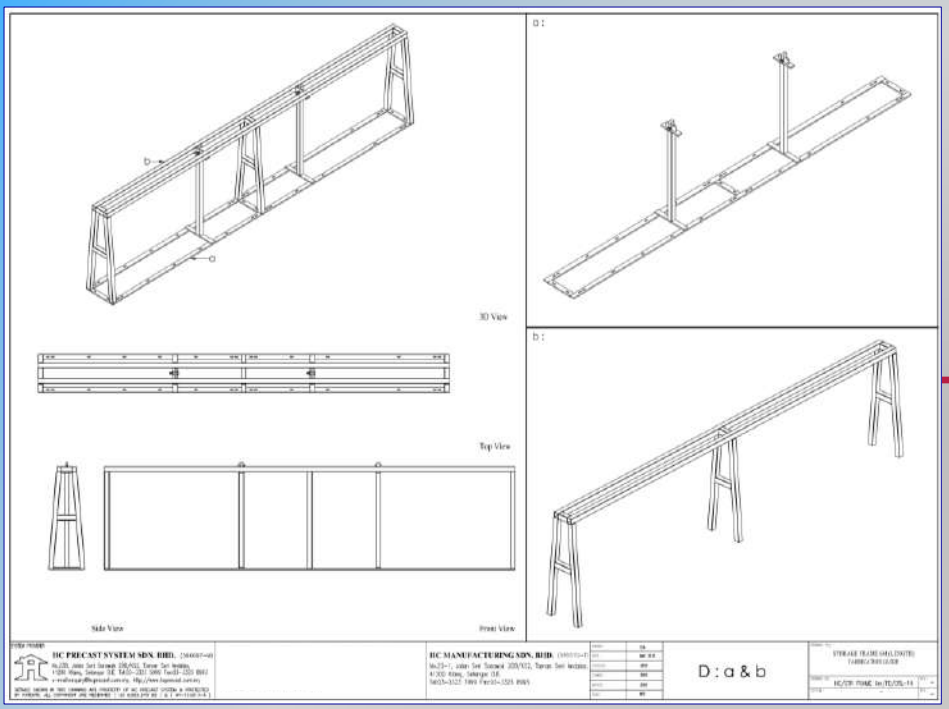

a :
3D View
Top View
Side View
1 :
'C' Channel
2 :
M.S Plate
3 :
3.1 :
'C' Channel
3.2 :
M.S Bar
4 :
M.S Plate
5 :
B:
a : 1 ~ 5

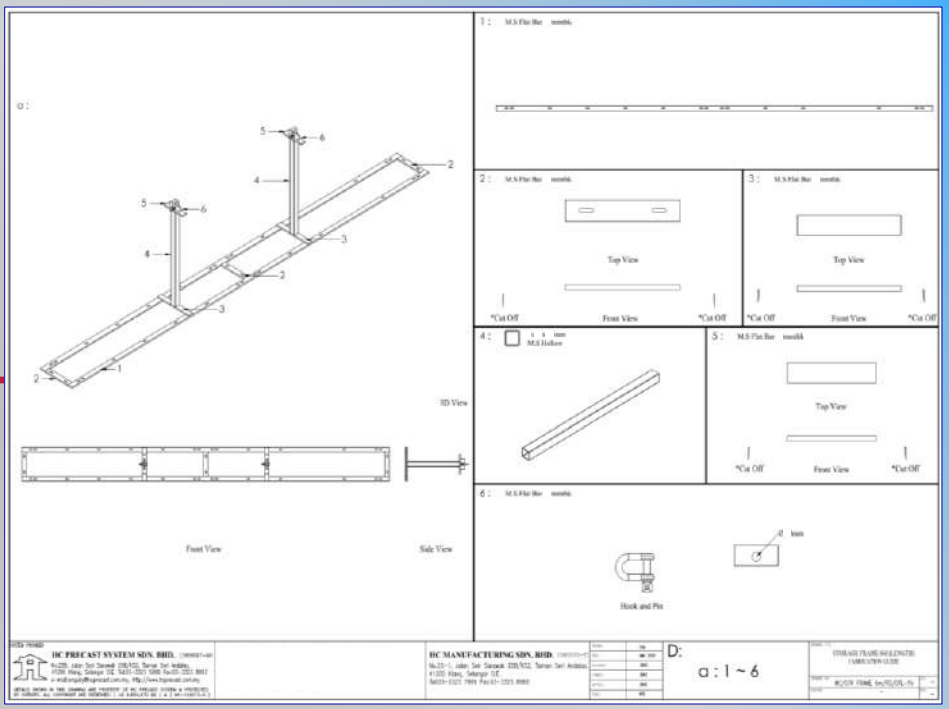

B:
b:1~6

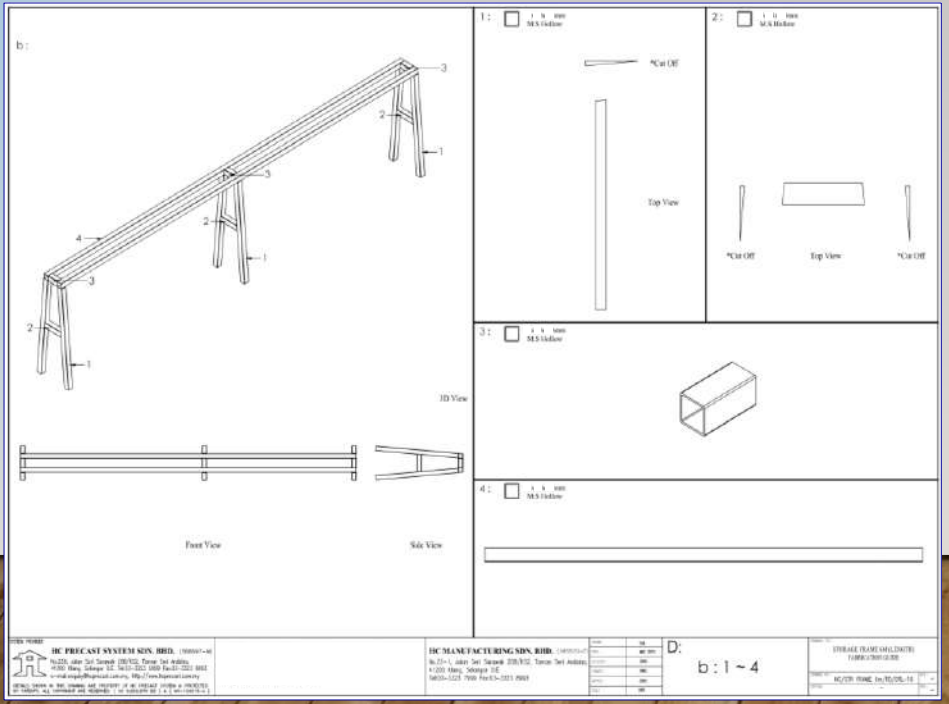

C:a&a1,b


C:
a&a1:1~6


C:
b:1~8







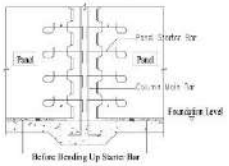
HC PRECAST SYSTEM SDN. BHD.

QUALITY I ECO-FRIENDLY I ECONOMICAL

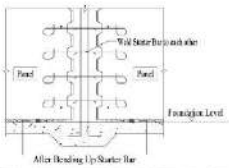
3 - COLUMN STANDARD / INSTALLATION

INSPECTION - (1) (WALL / COLUMN JOINT)

Before Fitting the Modified Joint Mould,
- Paint the Aluminium Mould with mould oil.
- Bend up the Starter Bar to the upright position and weld each other.
- Clean the Column Joint to free from dirt, oil and rubbish



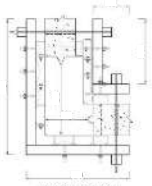
Before Bending Up Starter Bar



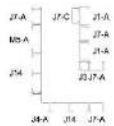
After Bending Up Starter Bar

INSPECTION - (2) (COLUMN MOULD)

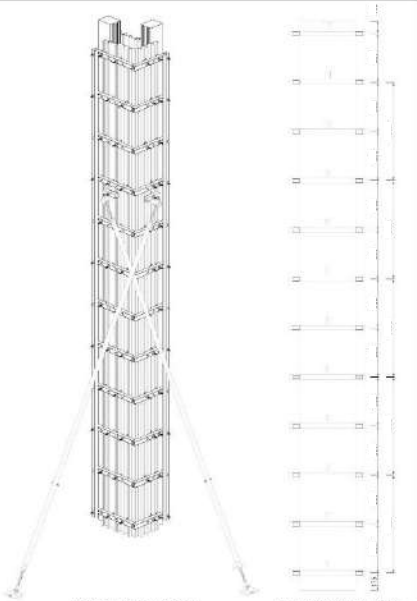
Example of Modified Joint framework.



Modified Joint Plan



Aluminium Mould

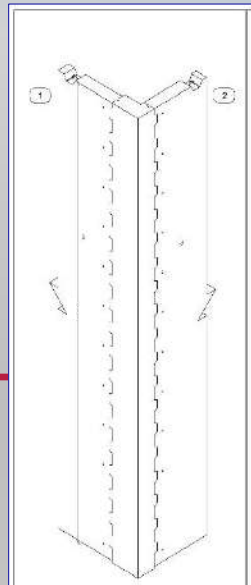


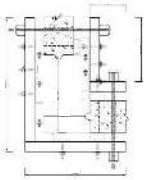
Modified Joint Isometric View

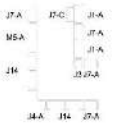
Form-Tie Hole Standard Distance

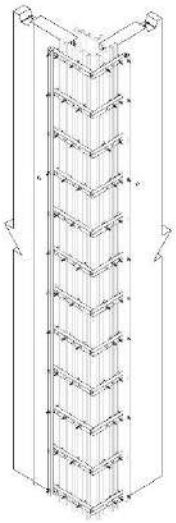
HC PRECAST SYSTEM SDN. BHD.

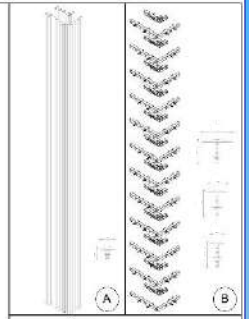
HC MANUFACTURING SDN. BHD.

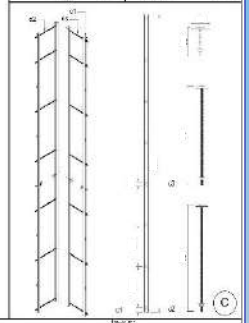






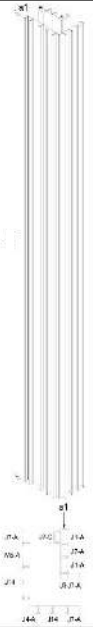


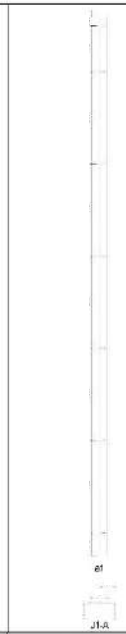


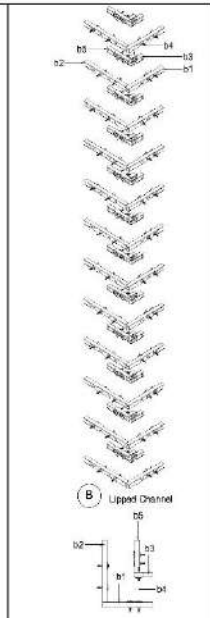


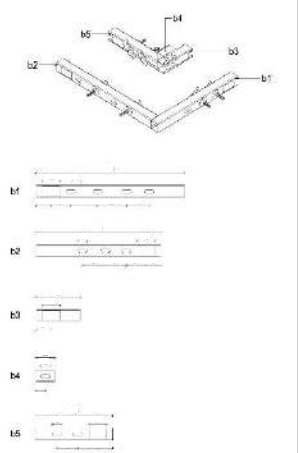
HC PRECAST SYSTEM SDN. BHD.

HC MANUFACTURING SDN. BHD.



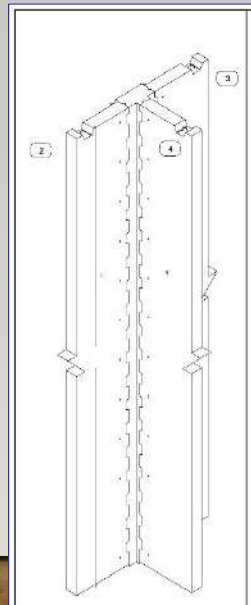


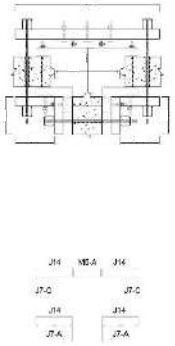


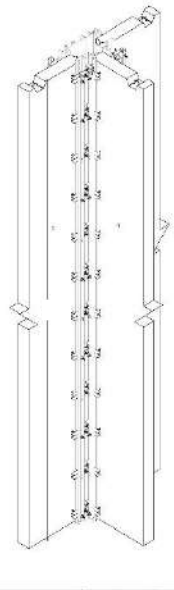


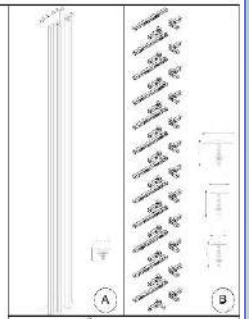
HC PRECAST SYSTEM SDN. BHD.

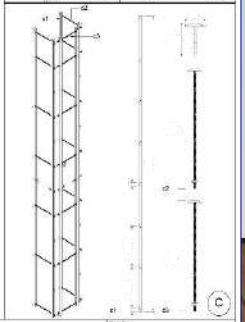
HC MANUFACTURING SDN. BHD.





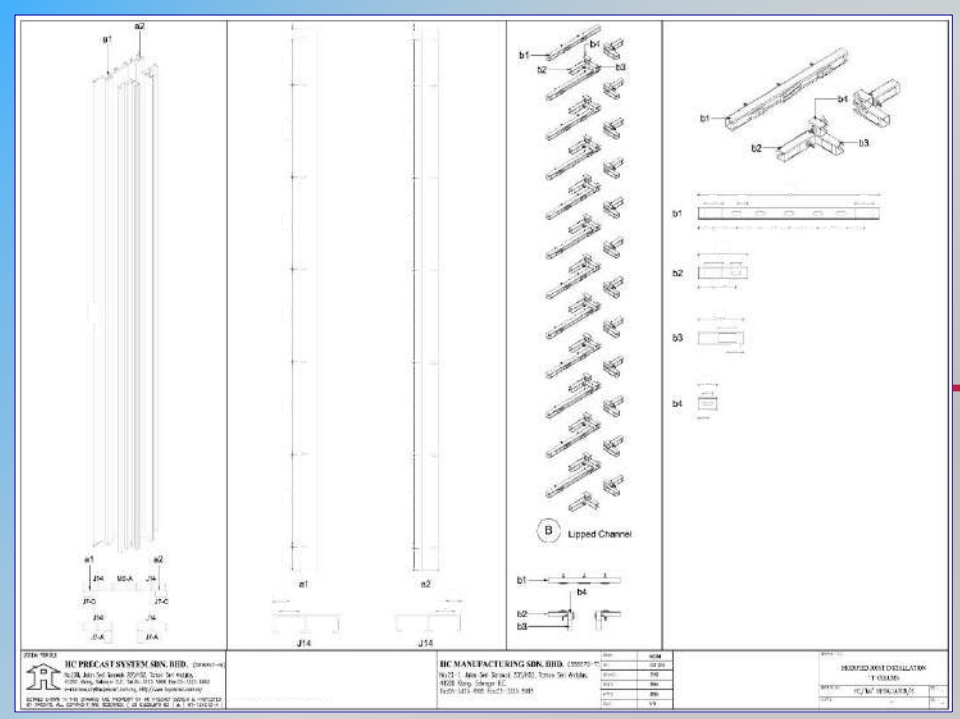


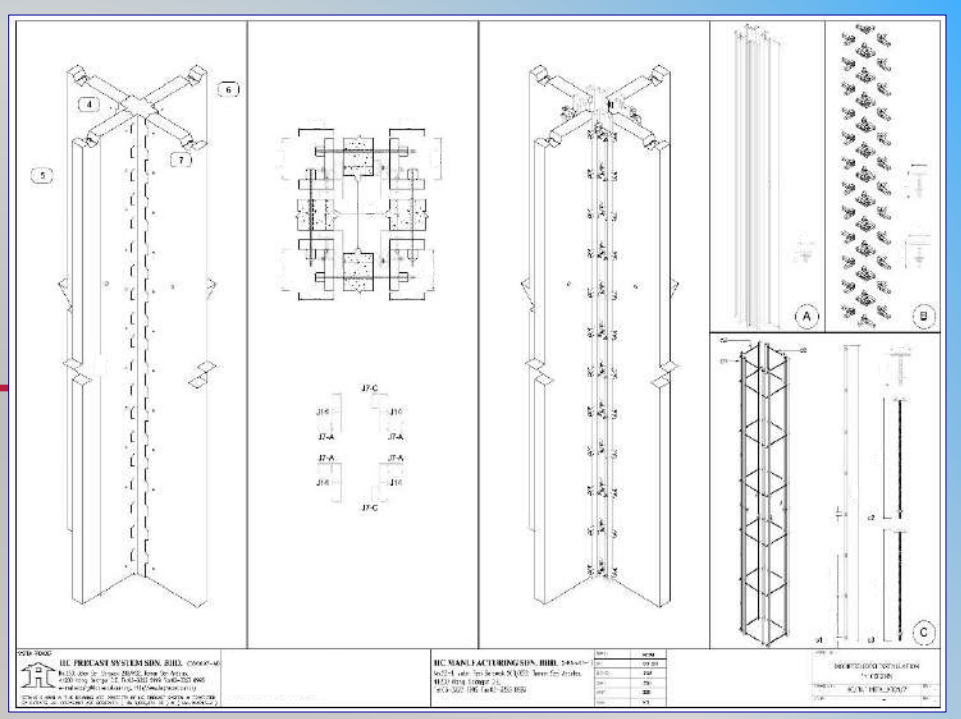


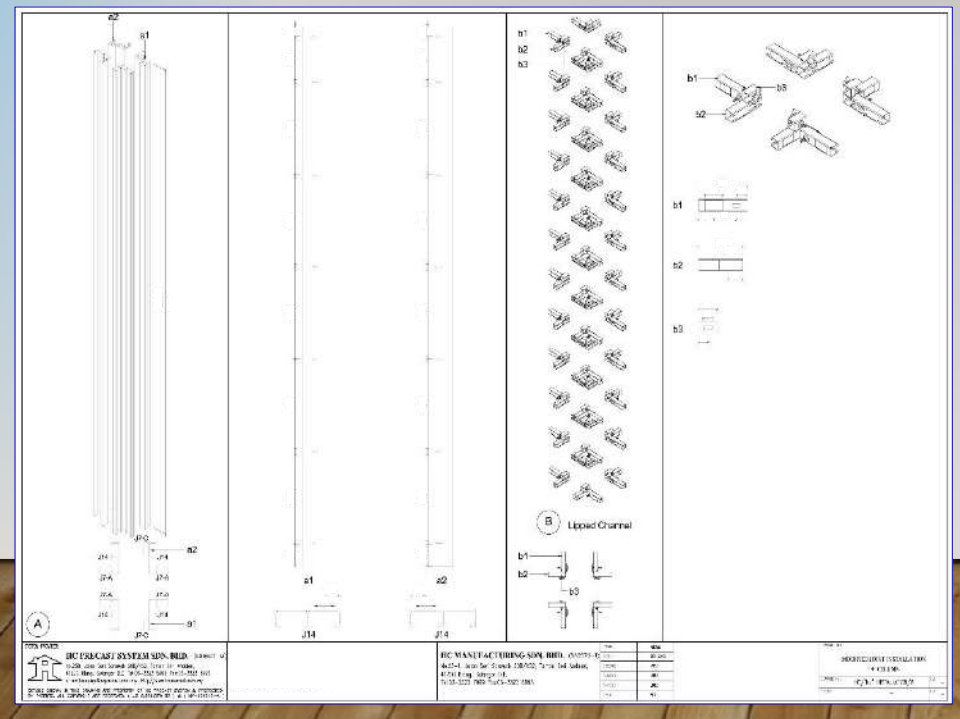


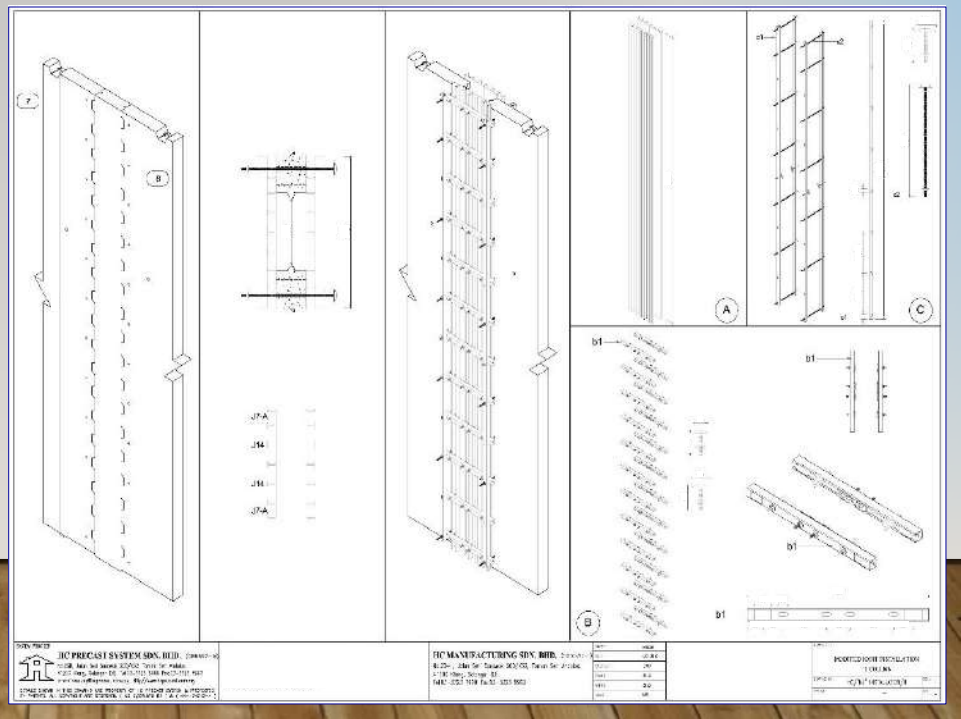
HC PRECAST SYSTEM SDN. BHD.

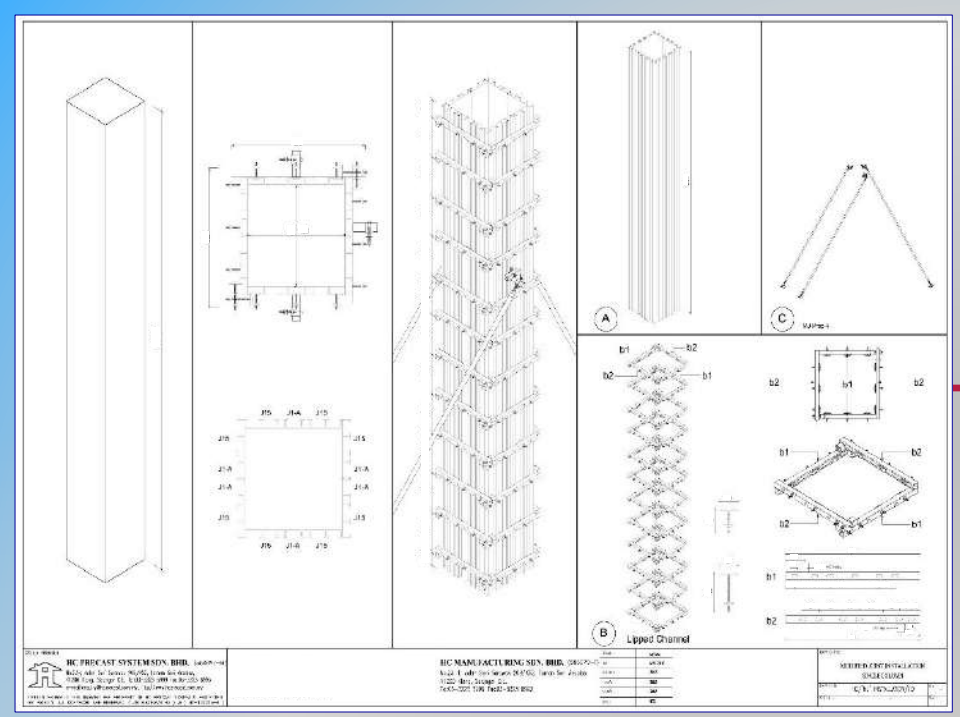
HC MANUFACTURING SDN. BHD.

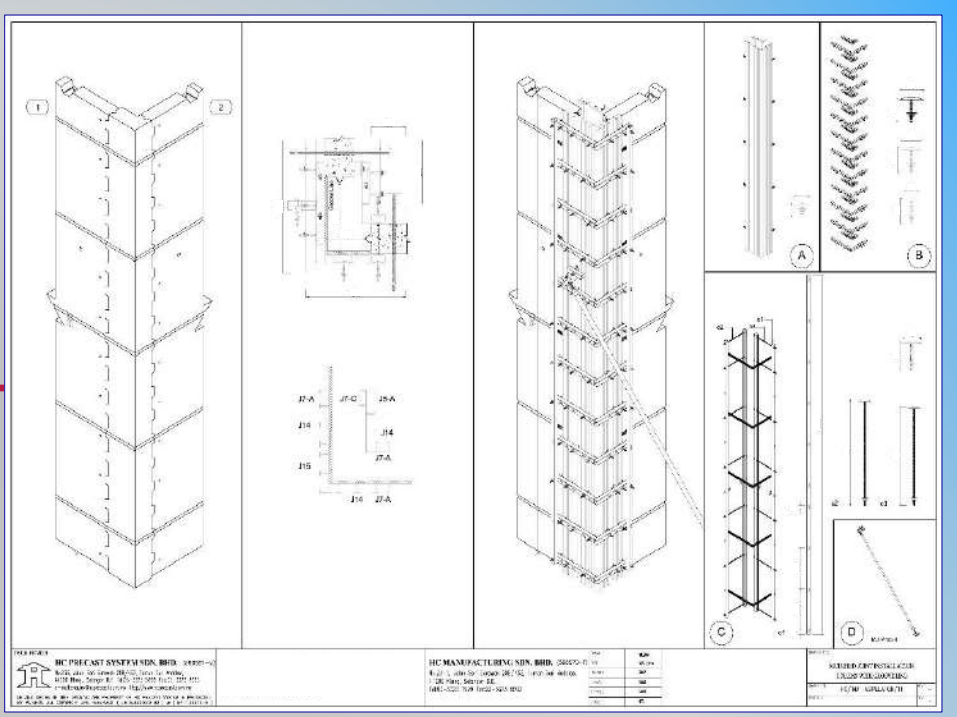

B Lipped Channel

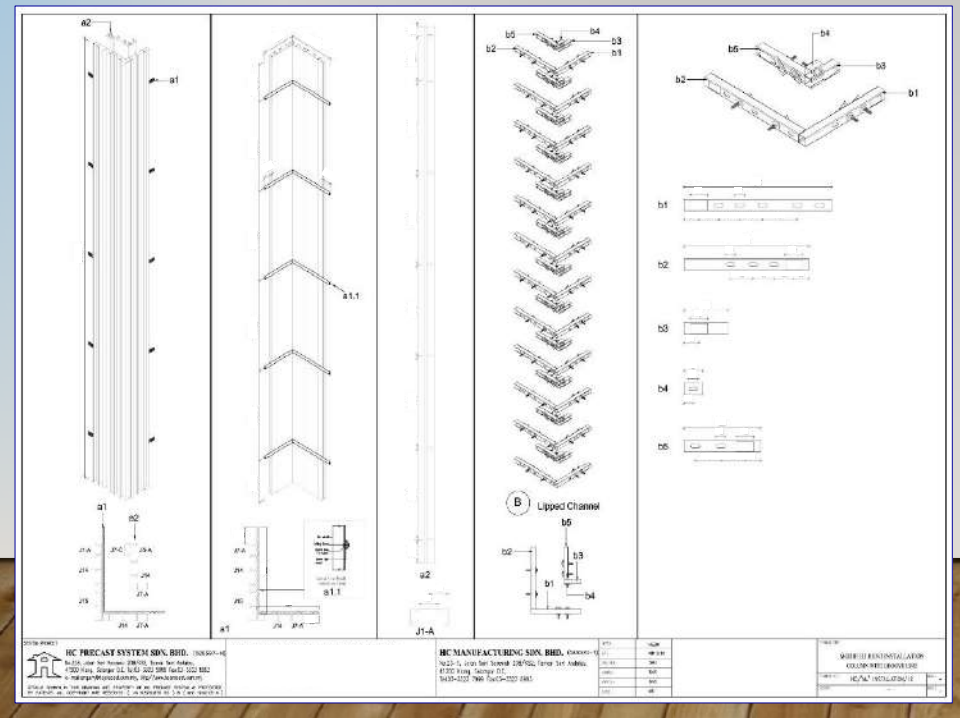


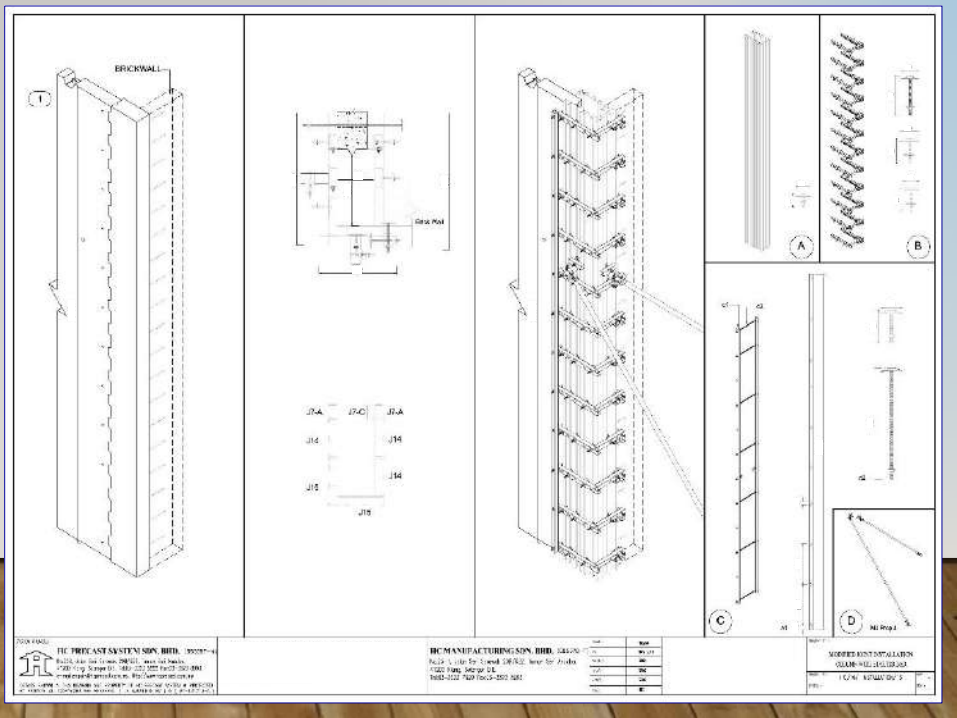

B Lipped Channel

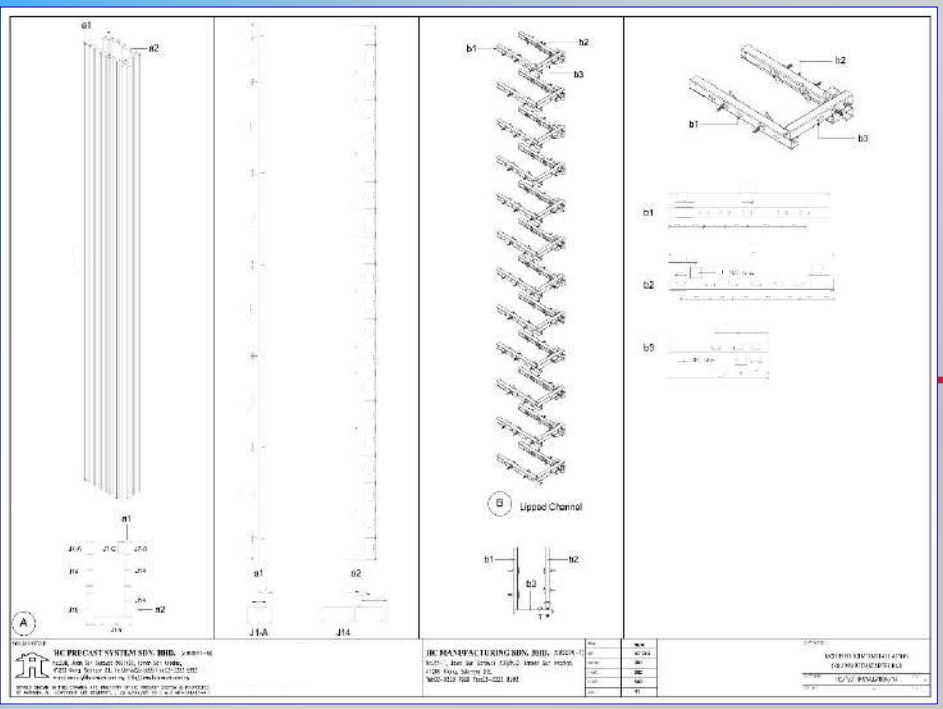


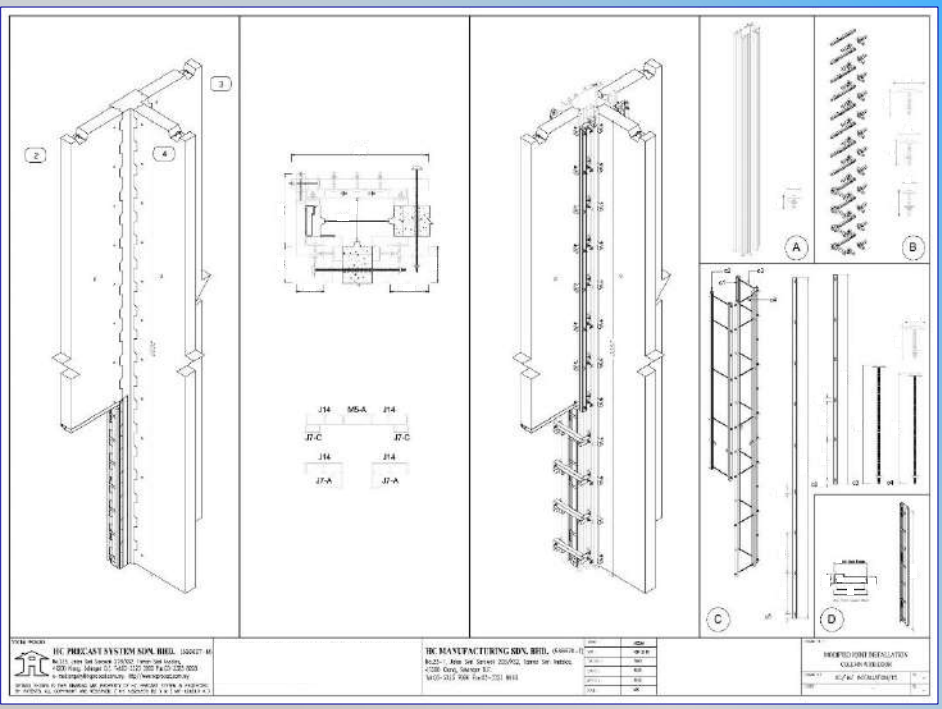

A
C
B
Lipped Channel

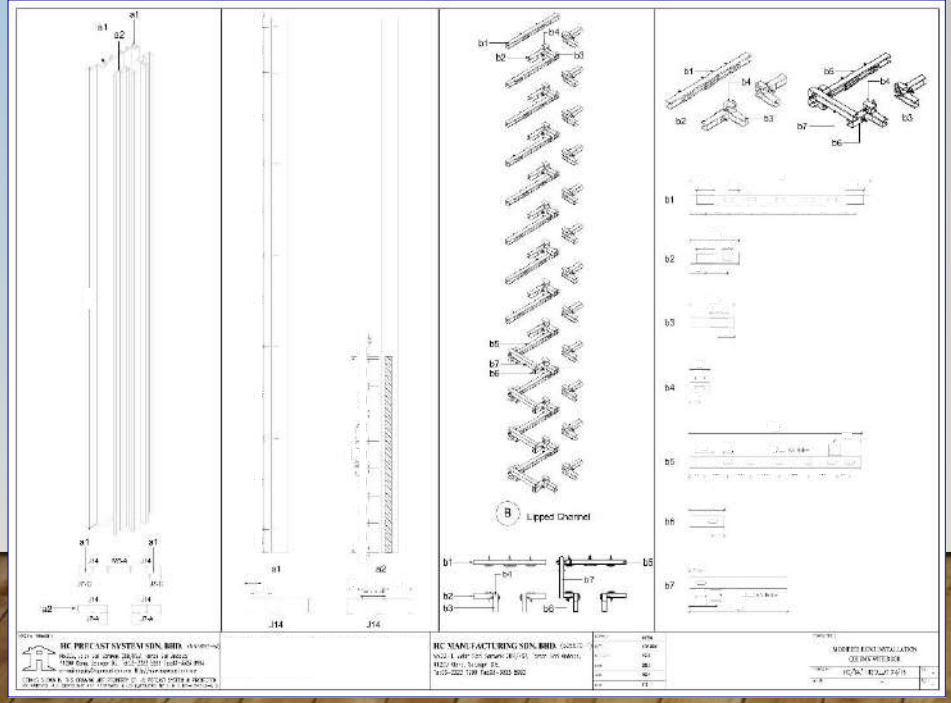

1
2
A
B
C
D

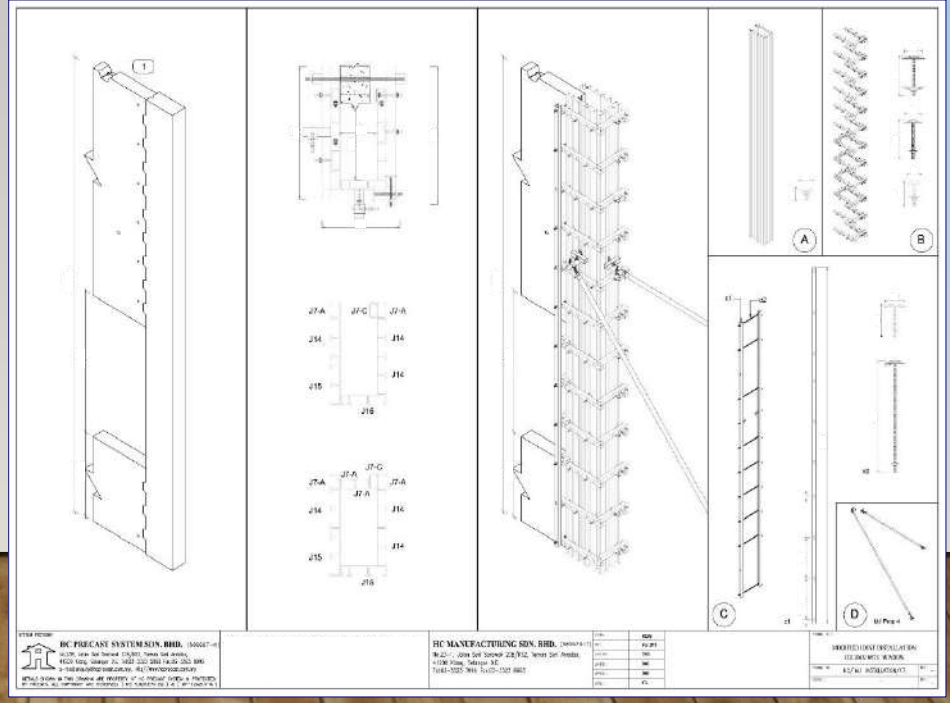

a2
a1
a1.1
B
Lipped Channel
b6
b4
b3
b2
b1
b5
J1-A

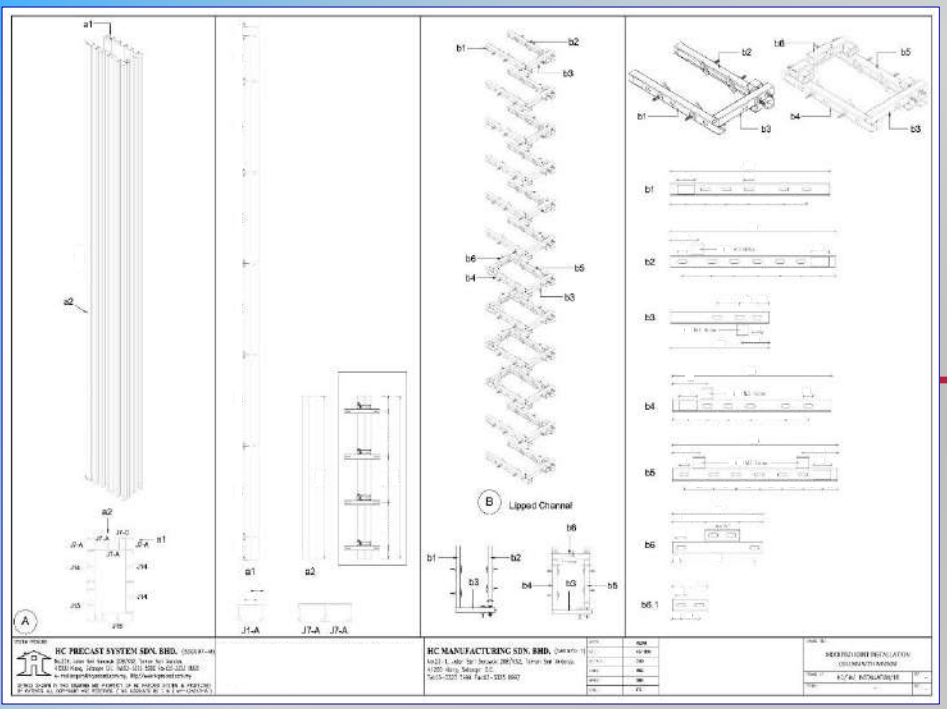

BRICKWALL
1
A
B
C
D

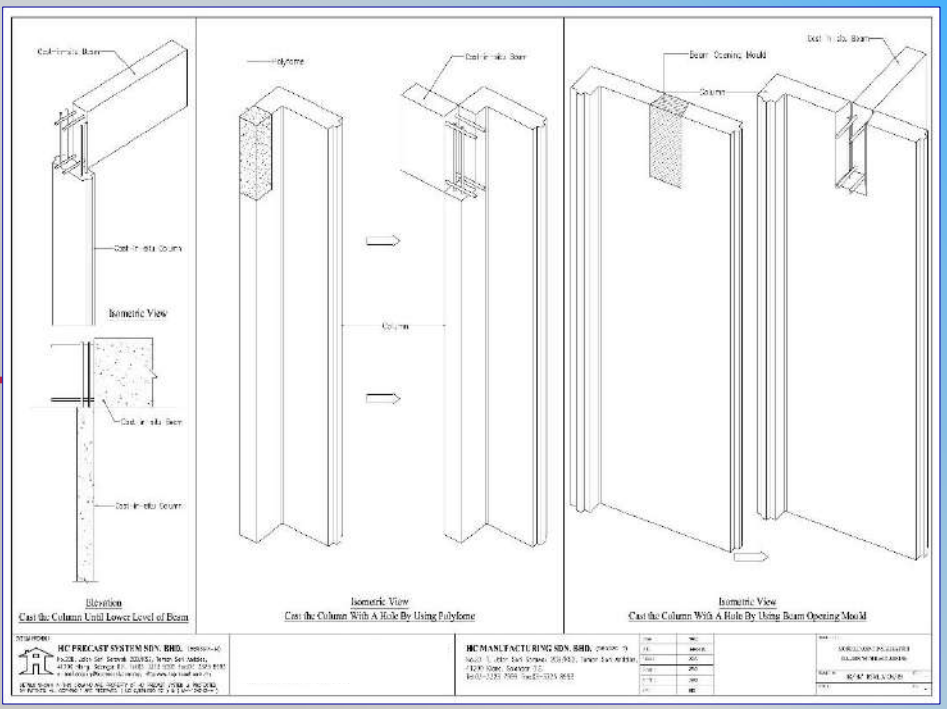

a1
a2
J1-A
J14
b1
b2
b3
B
Lipped Channel
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

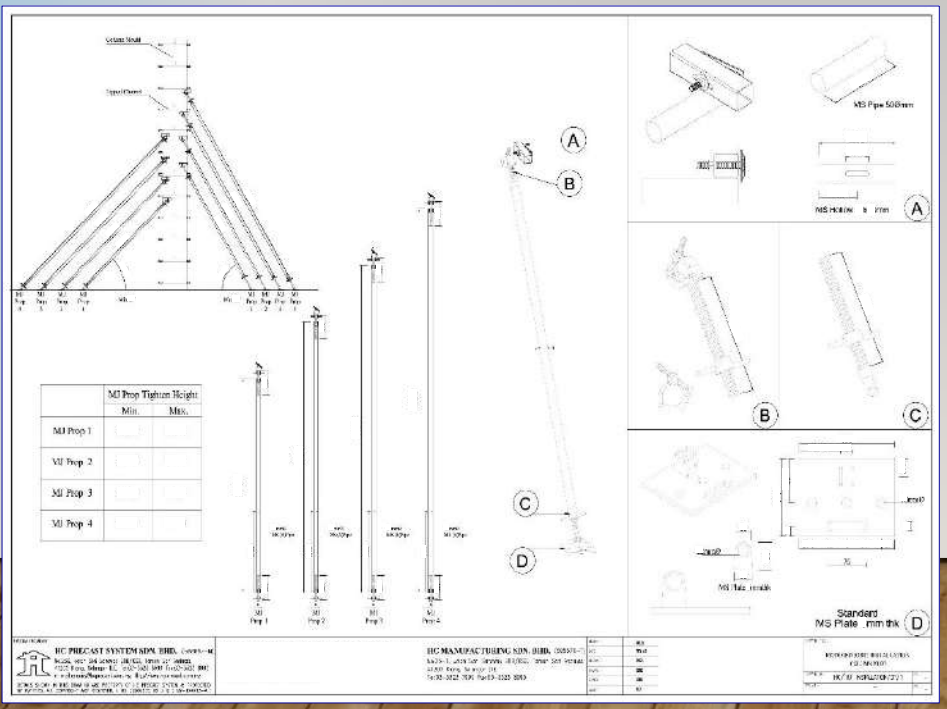

2
3
4
A
B
C
D
J14
MS-A
J7-C
J7-A
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

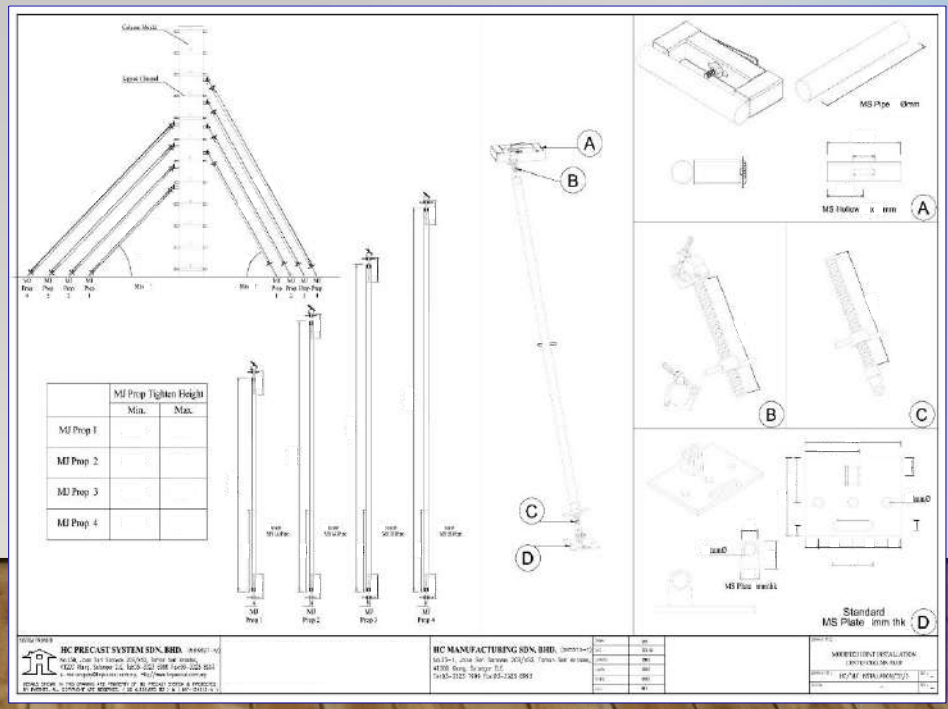

a1
a2
J1-A
J14
b1
b2
b3
b4
b5
b6
b7
B
Lipped Channel
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

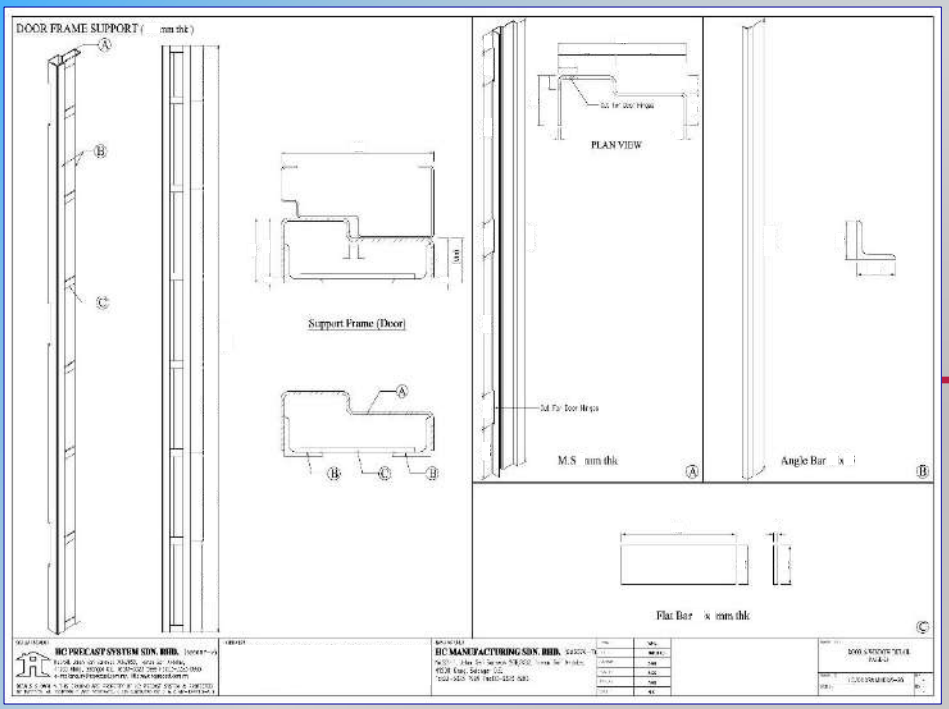

1
A
B
C
D
J7-A
J7-C
J14
J15
J16
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

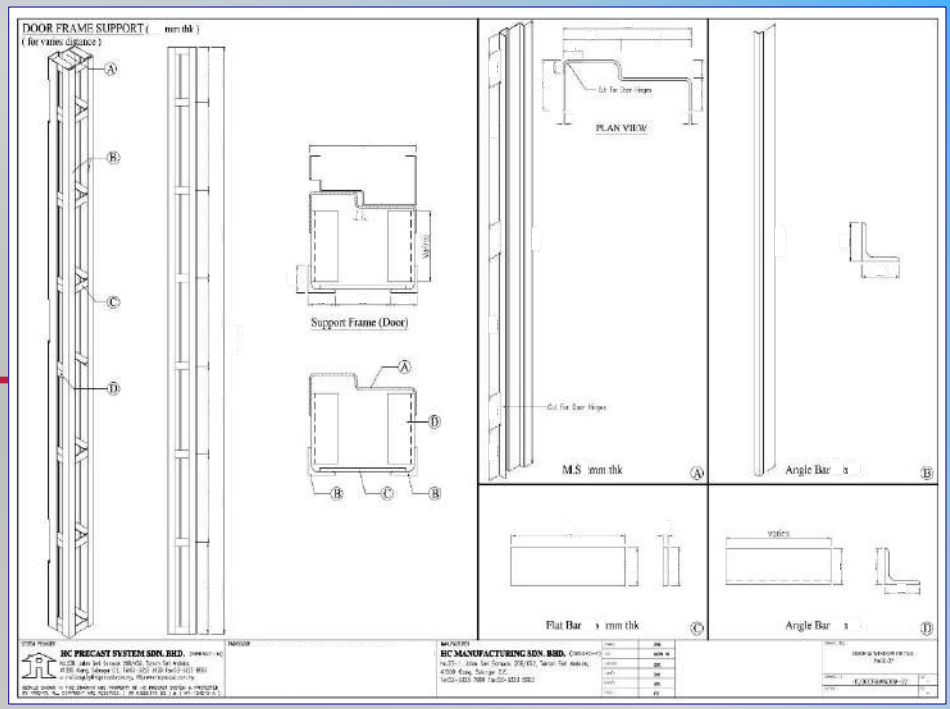

B Lipped Channel
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

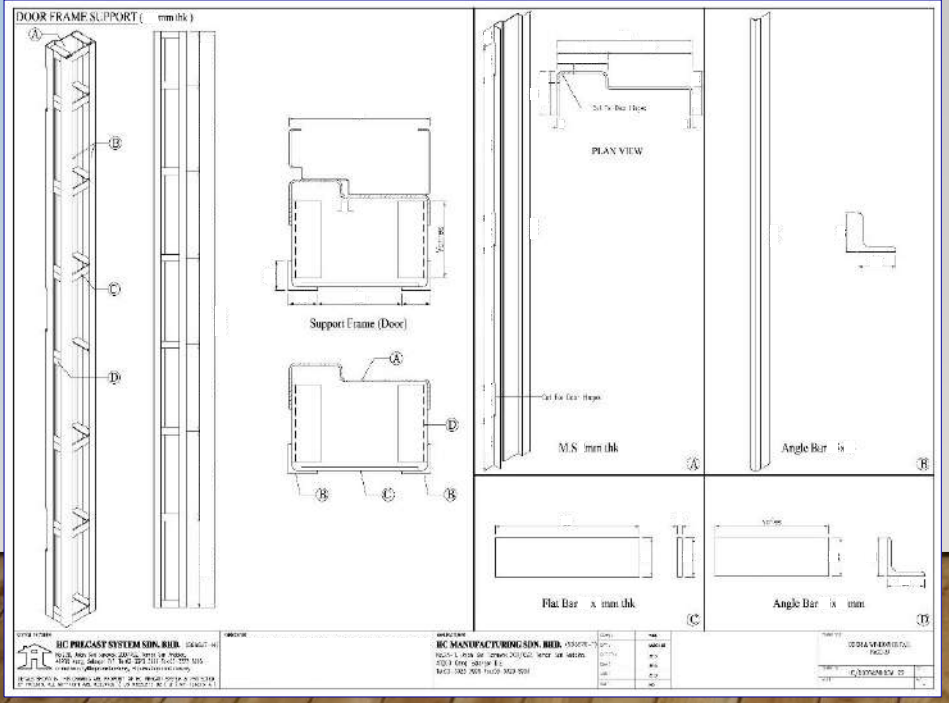

Isometric View
Elevation
Cast the Column Until Lower Level of Beam
Isometric View
Cast the Column With A Hole By Using Pullyforme
Isometric View
Cast the Column With A Hole By Using Beam Opening Mould
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

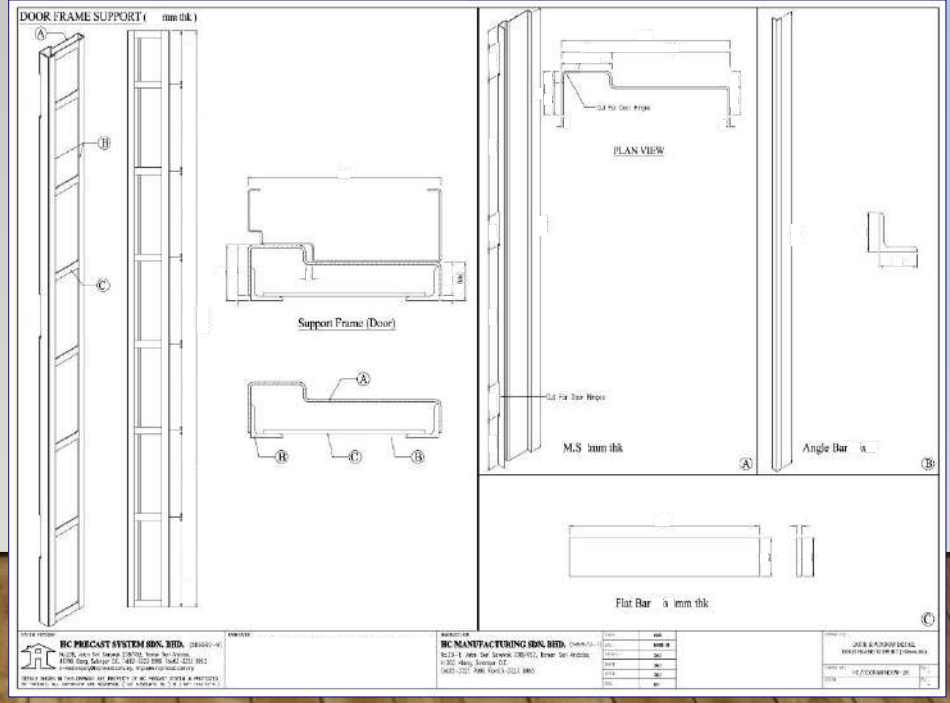

MJ Prop Tighten Height
Min.
Max.
MJ Prop 1
MJ Prop 2
MJ Prop 3
MJ Prop 4
MS Pipe 508mm
MS Hollow x mm
MS Plate mmm thk
Standard
MS Plate mm thk
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

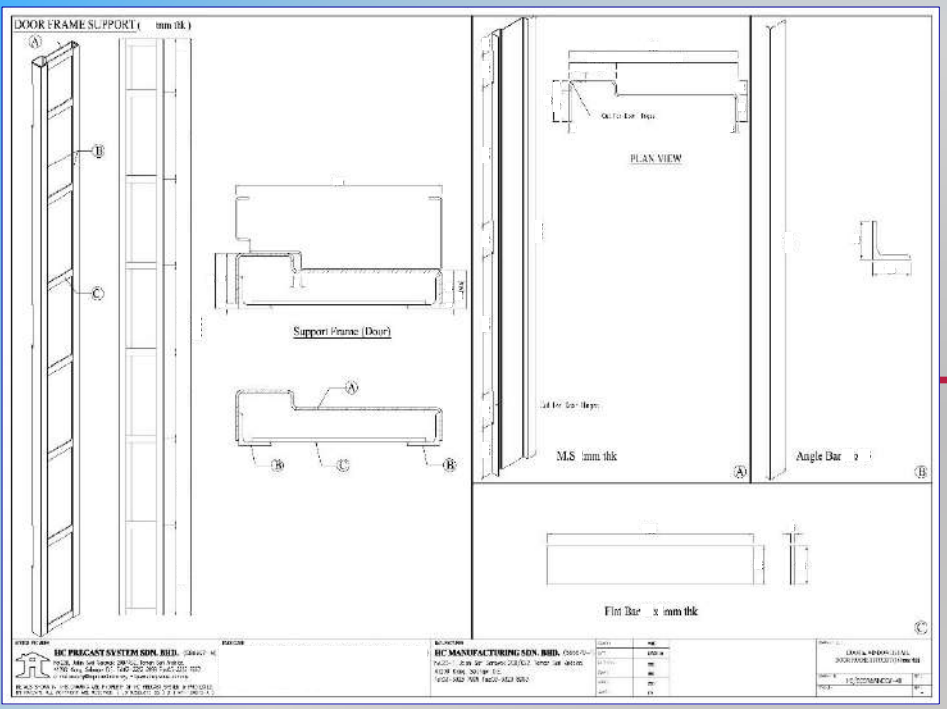

MJ Prop Tighten Height
Min.
Max.
MJ Prop 1
MJ Prop 2
MJ Prop 3
MJ Prop 4
MS Pipe 0mm
MS Hollow x mm
MS Plate mmm thk
Standard
MS Plate mm thk
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

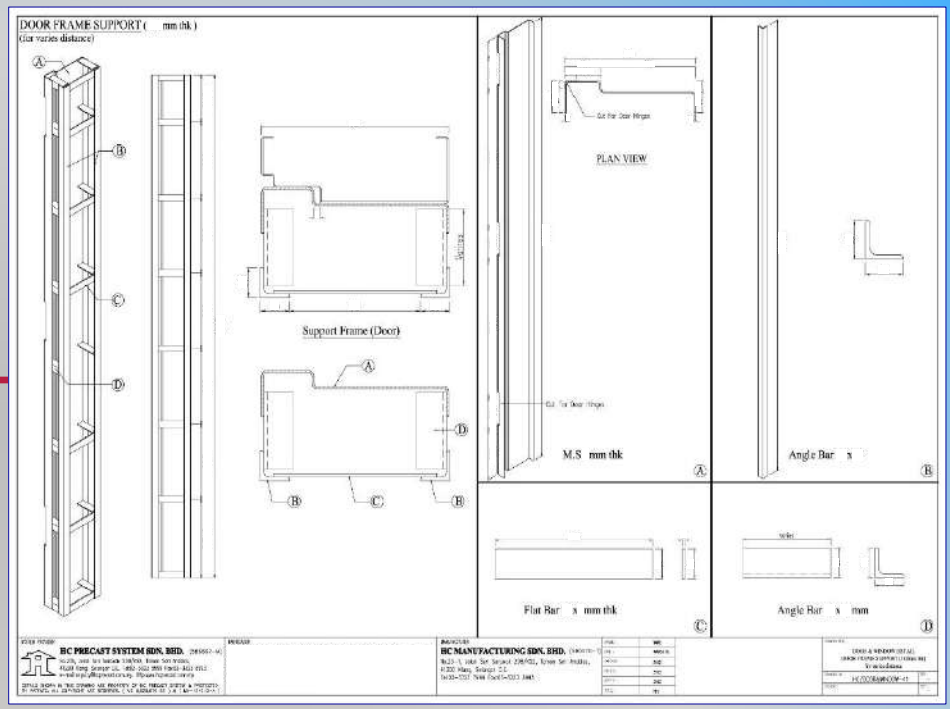

DOOR FRAME SUPPORT (mm thk)
PLAN VIEW
Support Frame (Door)
M.S mm thk
Angle Bar x
Flat Bar x mm thk
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


DOOR FRAME SUPPORT (mm thk)
(for varies distance)
PLAN VIEW
Support Frame (Door)
M.S mm thk
Angle Bar x
Flat Bar x mm thk
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


DOOR FRAME SUPPORT (mm thk)
PLAN VIEW
Support Frame (Door)
M.S mm thk
Angle Bar x
Flat Bar x mm thk
Angle Bar x mm
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


DOOR FRAME SUPPORT (mm thk)
PLAN VIEW
Support Frame (Door)
M.S mm thk
Angle Bar x
Flat Bar x mm thk
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

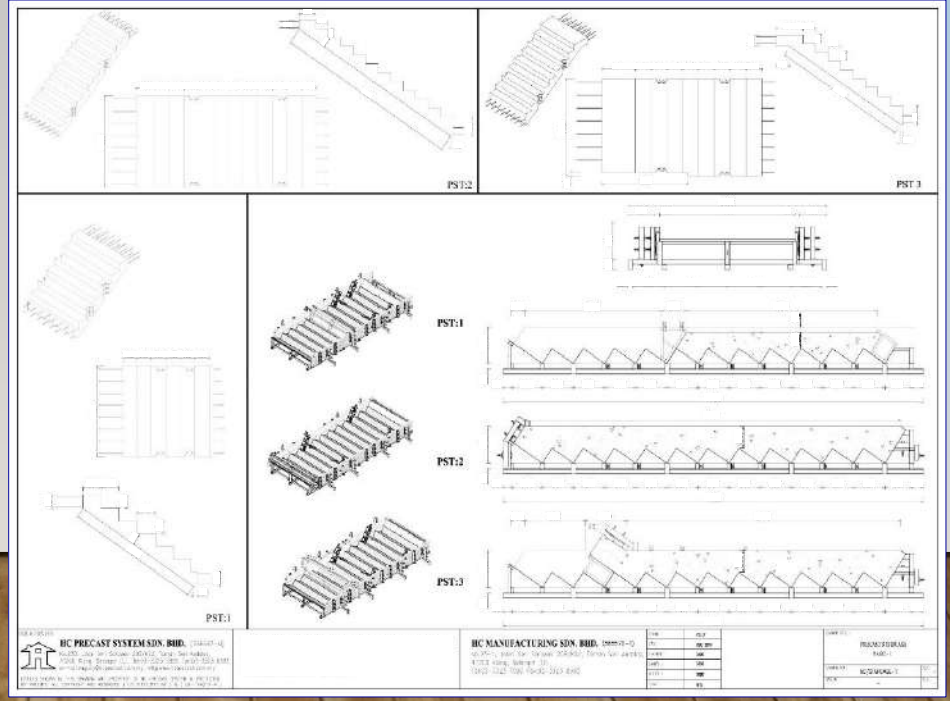


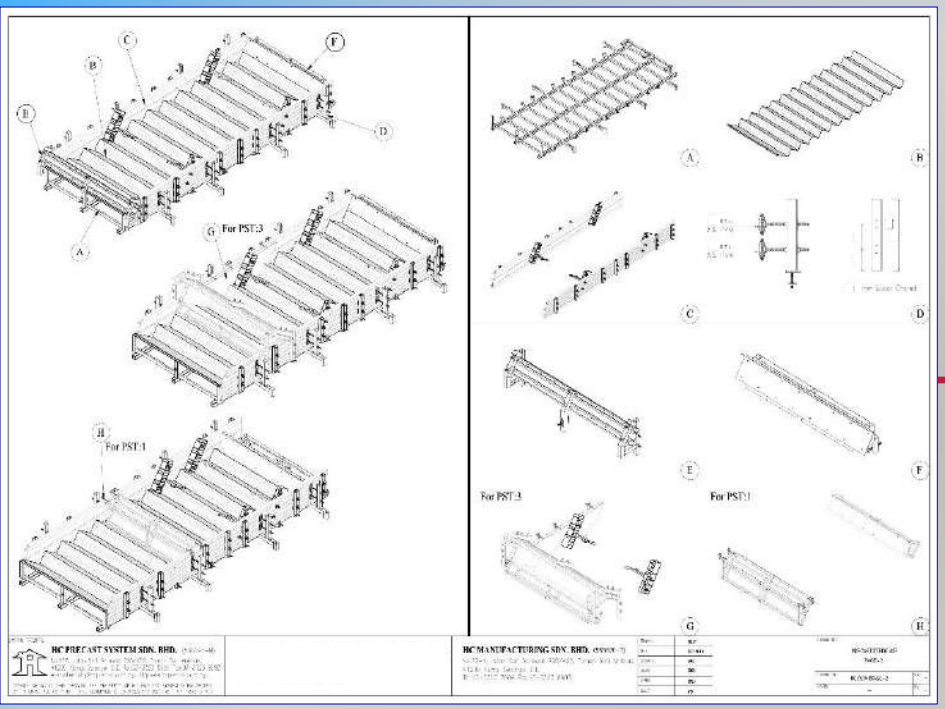


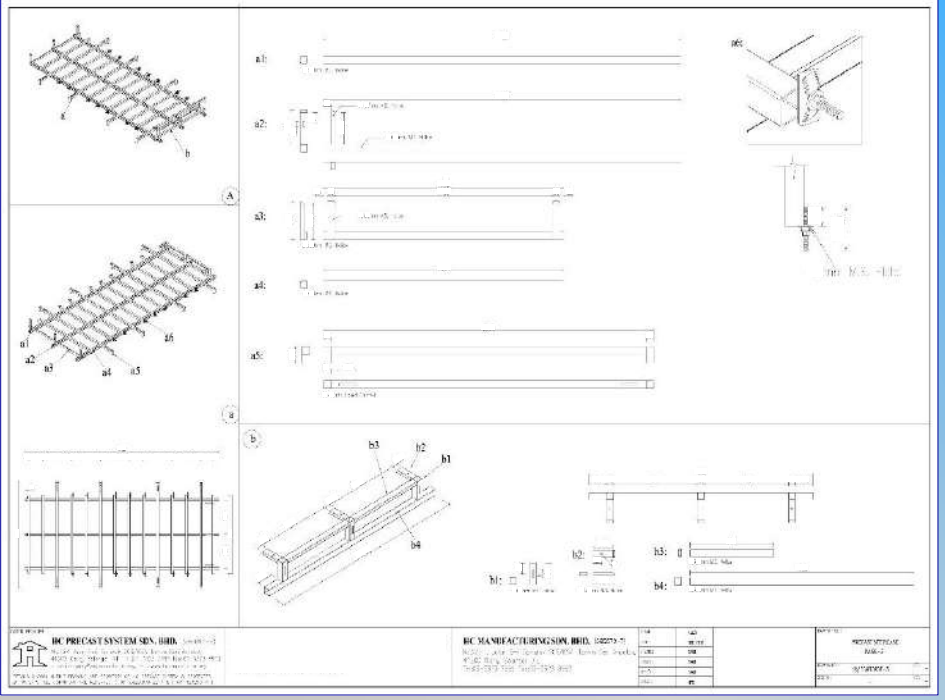
HC PRECAST SYSTEM SDN. BHD.

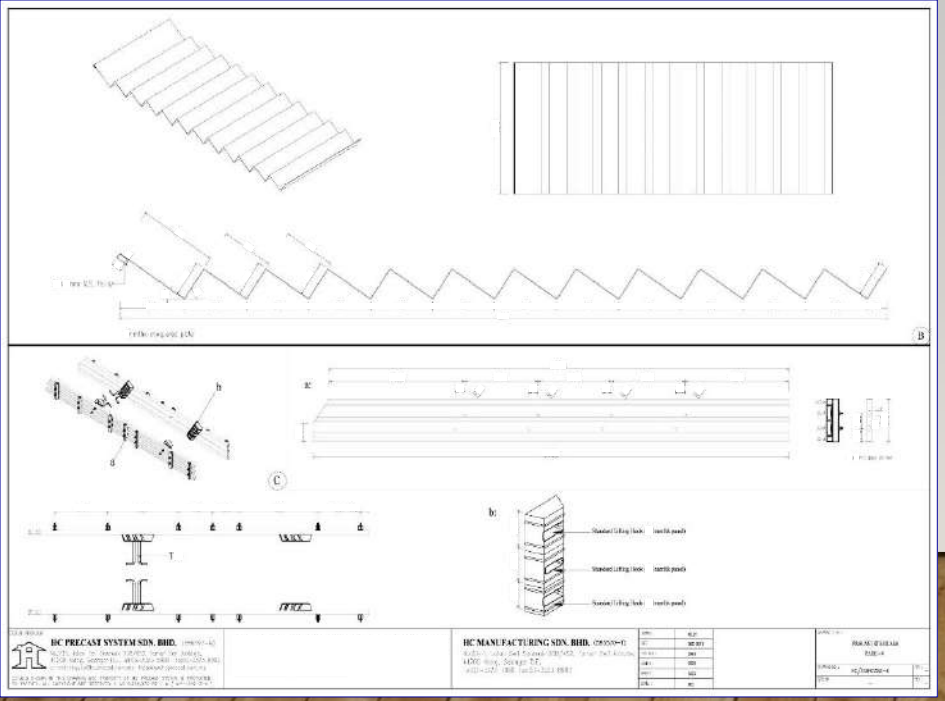
QUALITY I ECO-FRIENDLY I ECONOMICAL

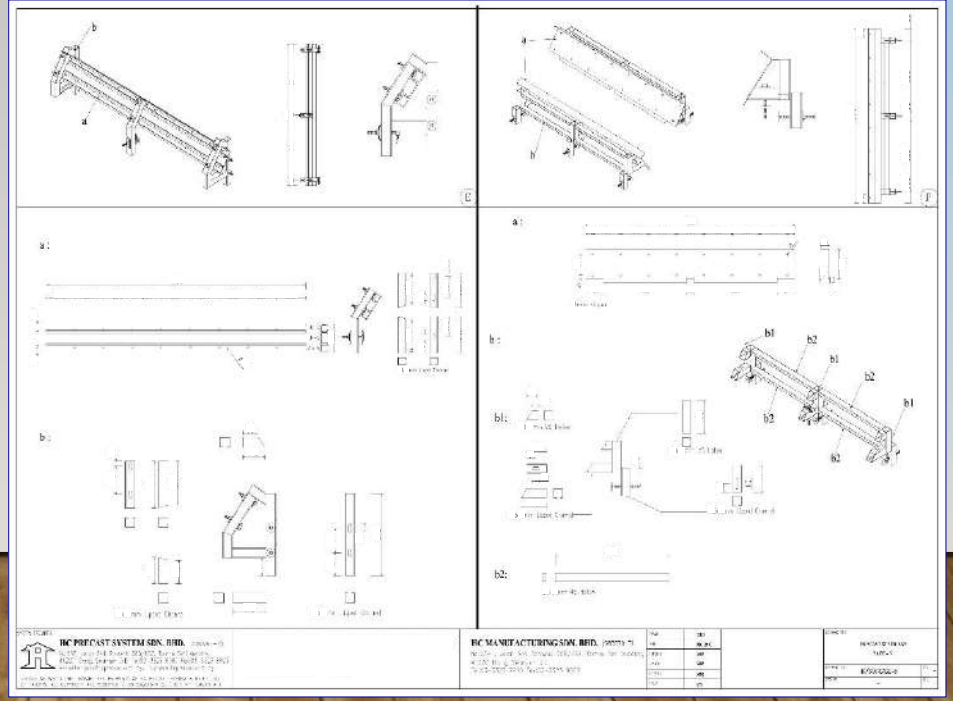
4 - PRECAST STAIRCASE

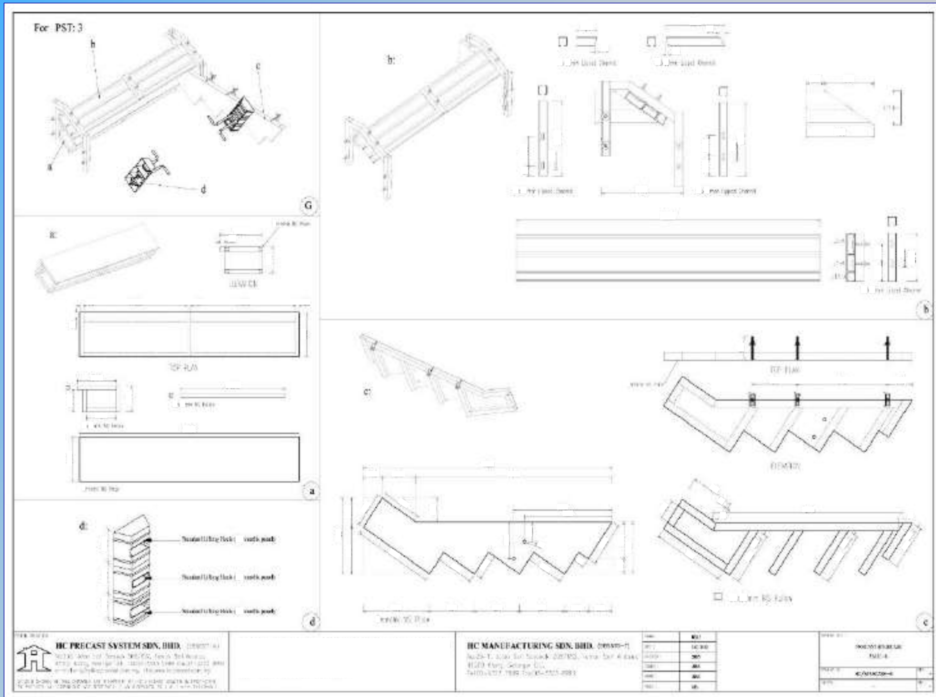



For PST-3
For PST-1
For PST-3
For PST-1





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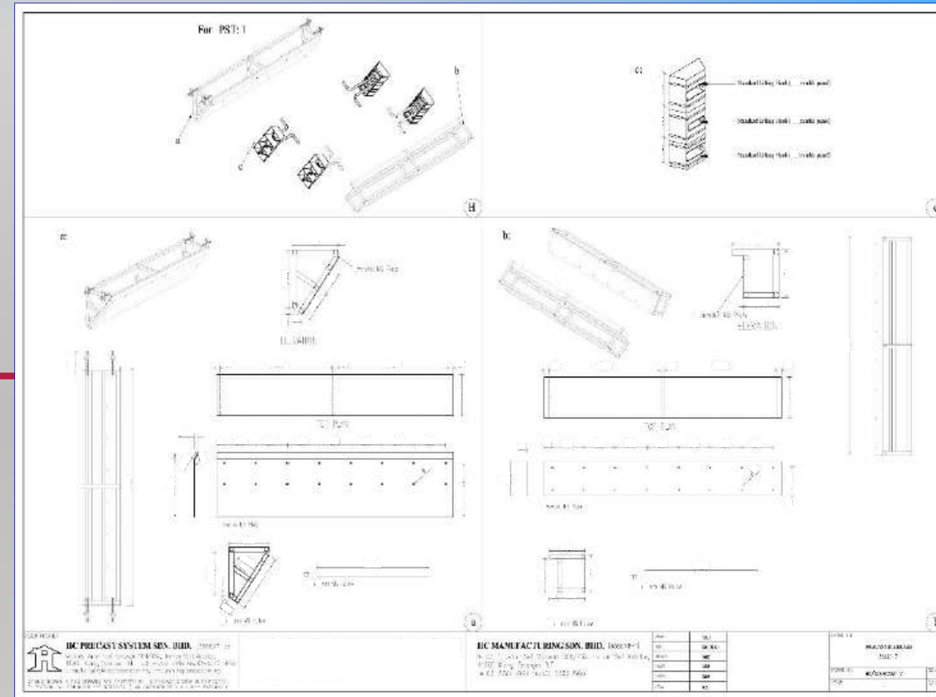
HC MANUFACTURING SDN. BHD.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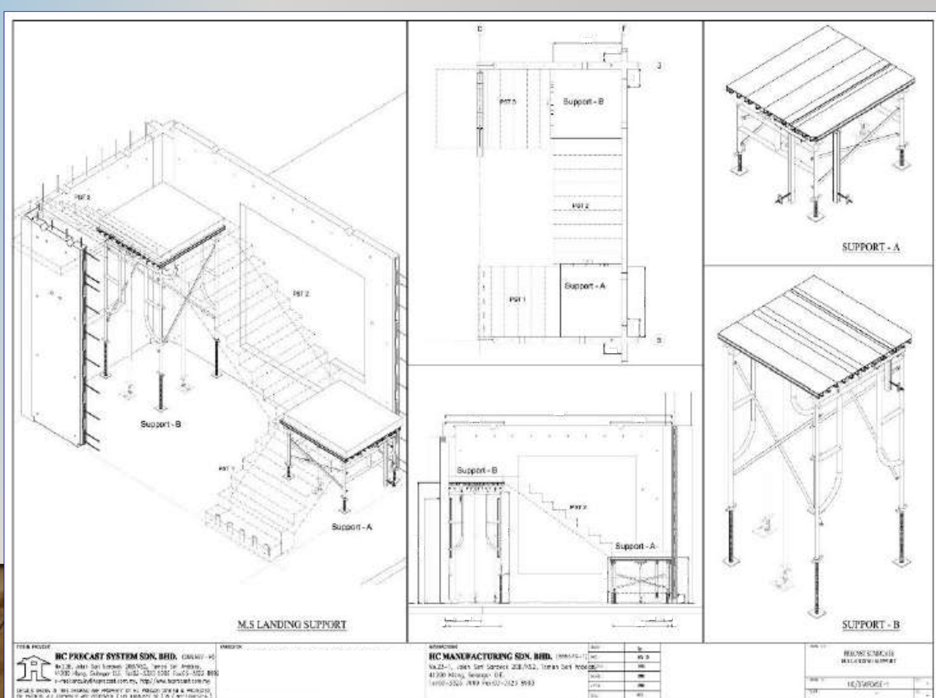
Support - B
Support - A
PST 2
PST 1
M.S LANDING SUPPORT
SUPPORT - A
SUPPORT - B
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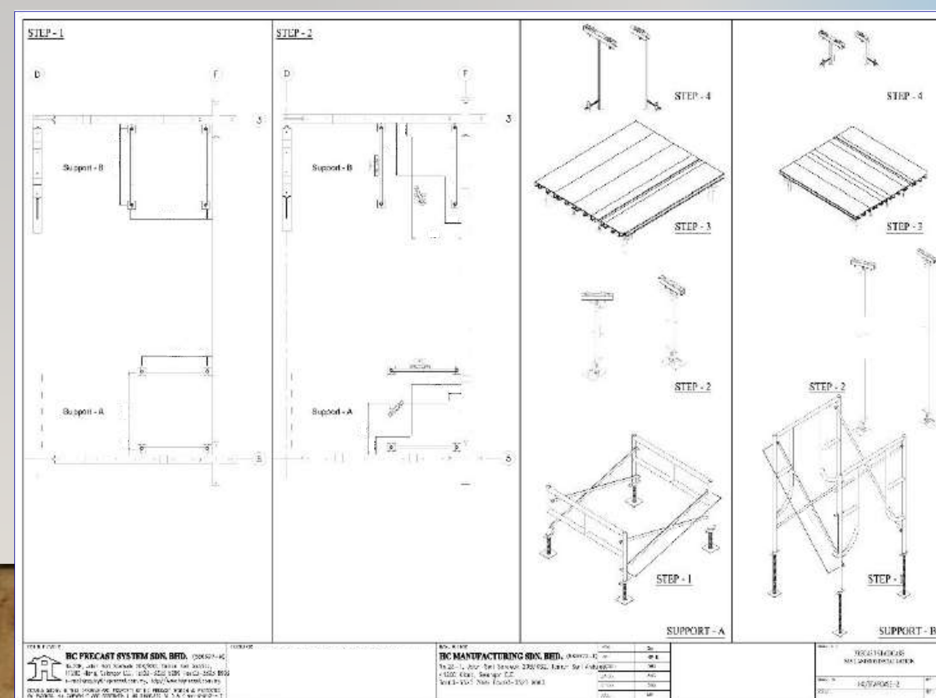
HC MANUFACTURING SDN. BHD.


STEP - 1
STEP - 2
Support - B
Support - A
STEP - 4
STEP - 3
STEP - 2
STEP - 1
SUPPORT - A
SUPPORT - B
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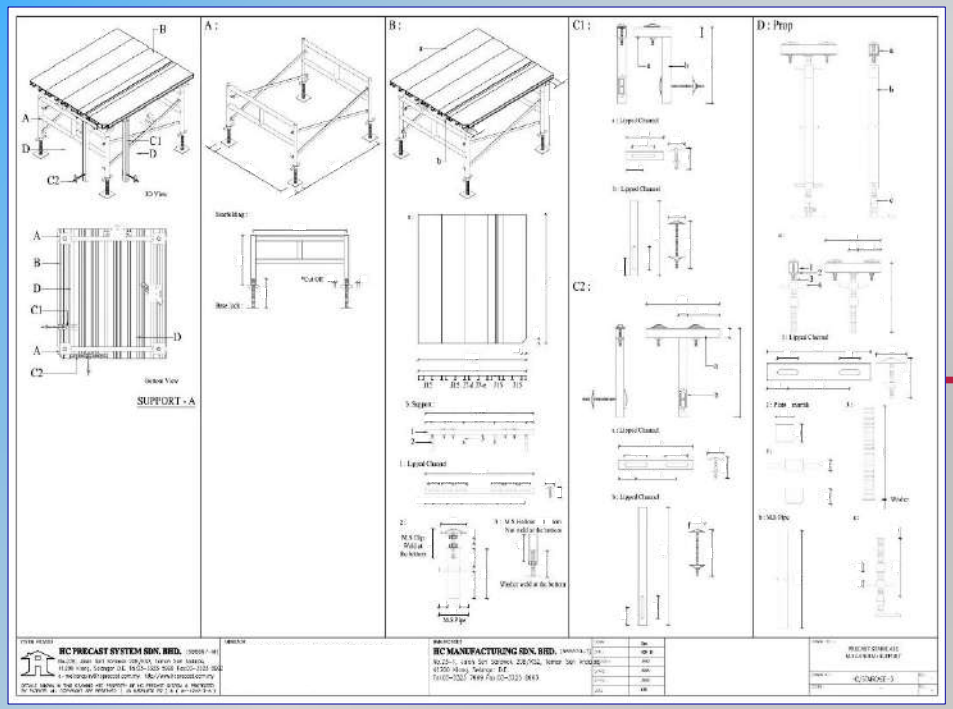
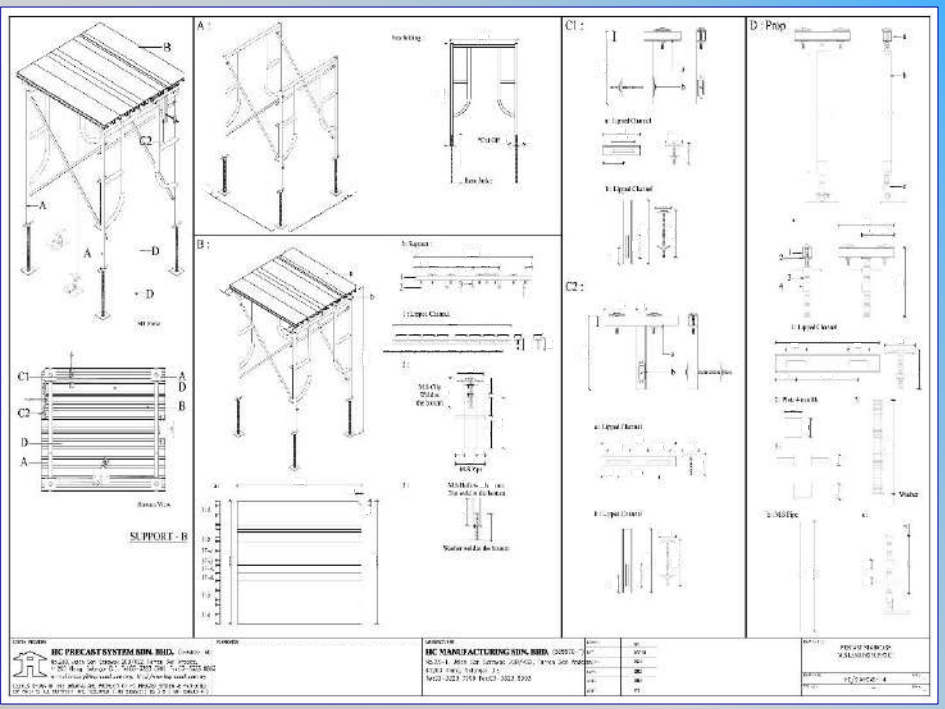
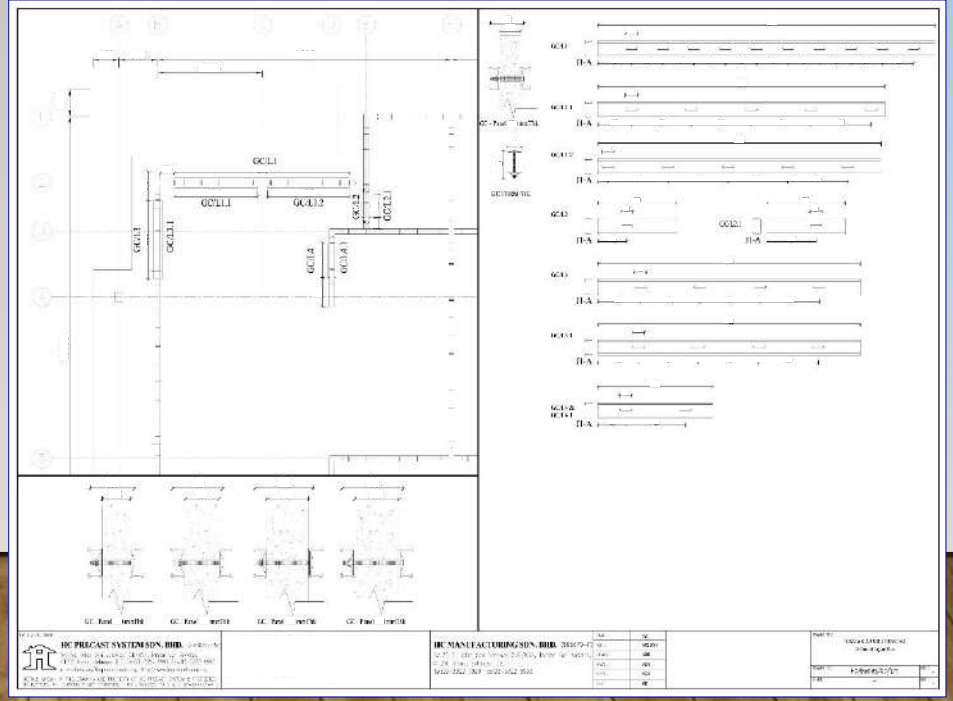
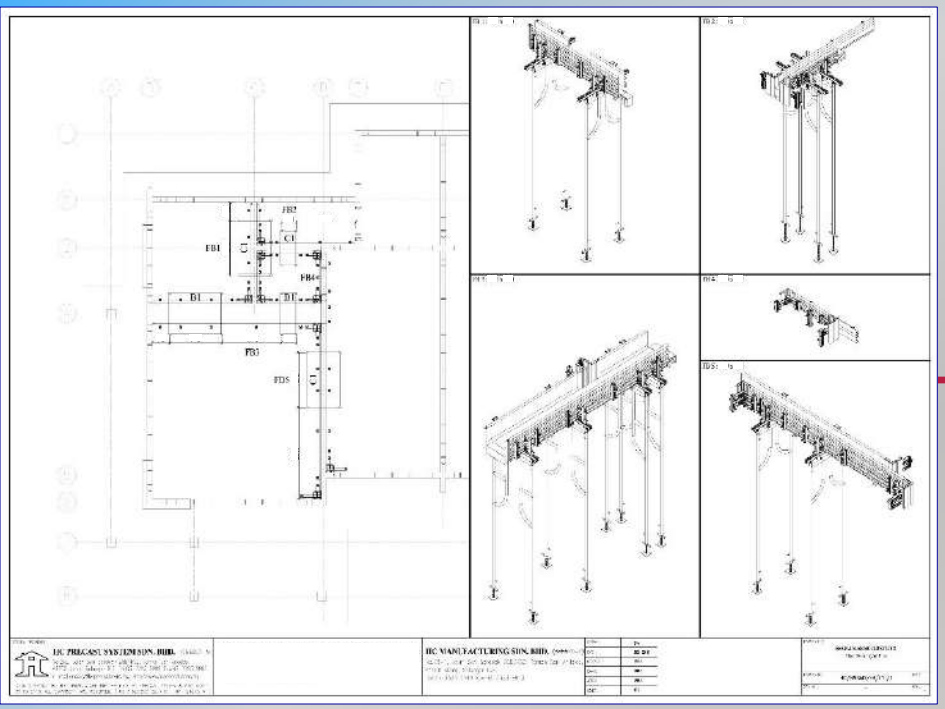
HC MANUFACTURING SDN. BHD.





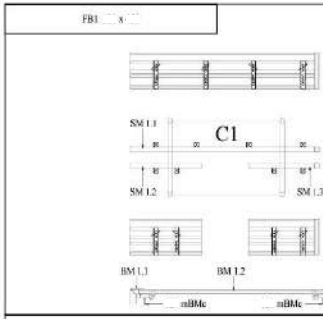
5 - Beam & Slab Mould

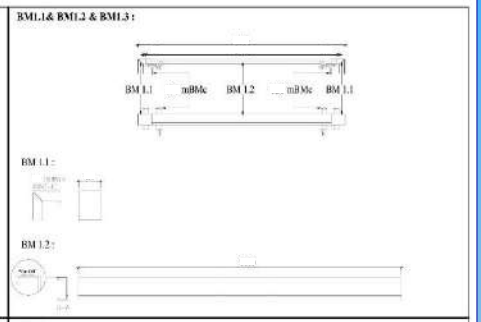


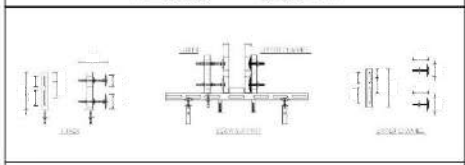


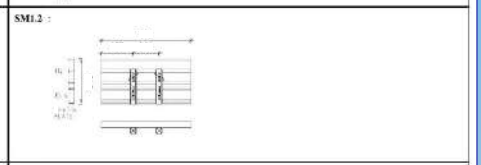
UC PRECAST SYSTEM SDN. BHD.

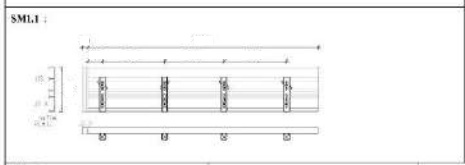
UC MANUFACTURING SDN. BHD.

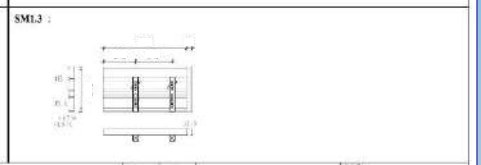






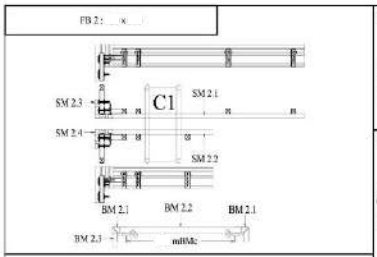


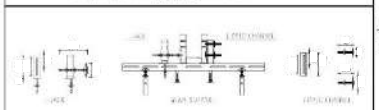


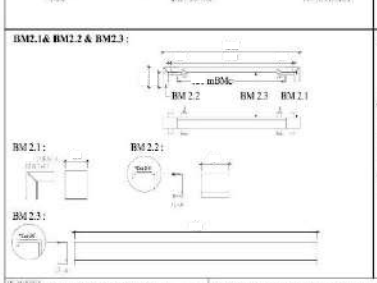


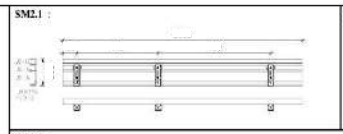
HC PRECAST SYSTEM SDN. BHD.

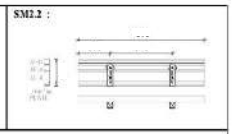
HC MANUFACTURING SDN. BHD.

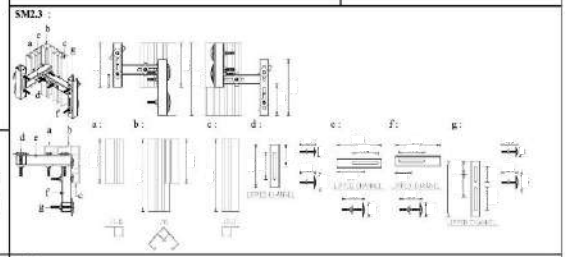


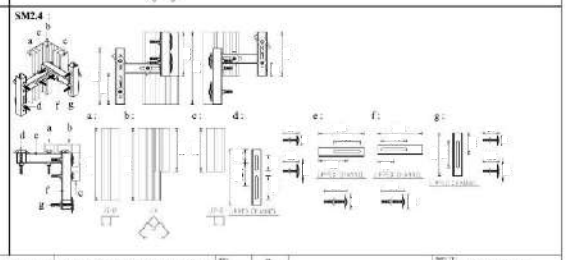






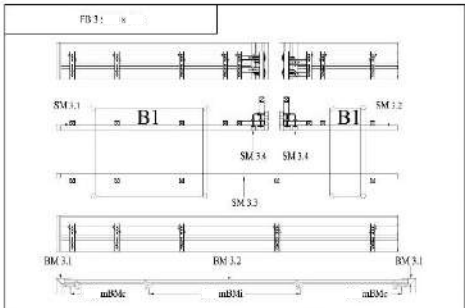


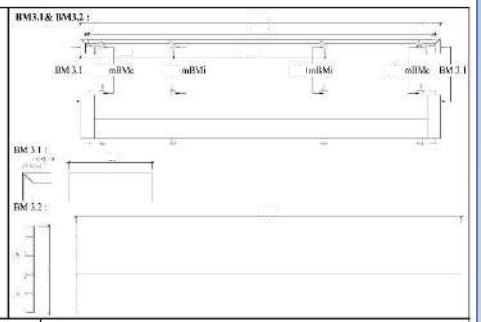


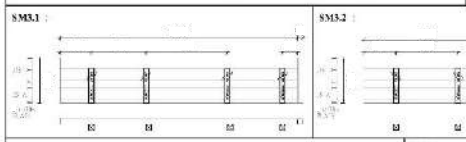


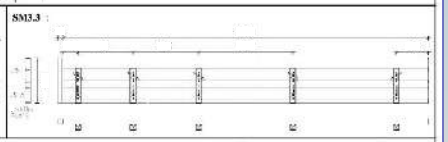
HC PRECAST SYSTEM SDN. BHD.

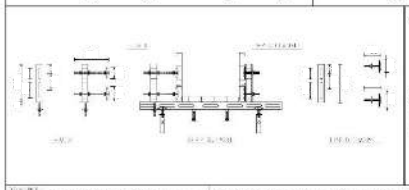
HC MANUFACTURING SDN. BHD.

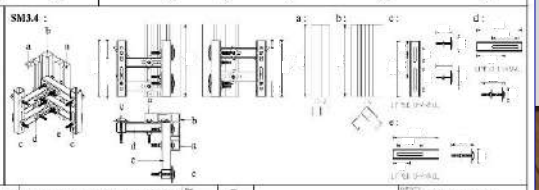






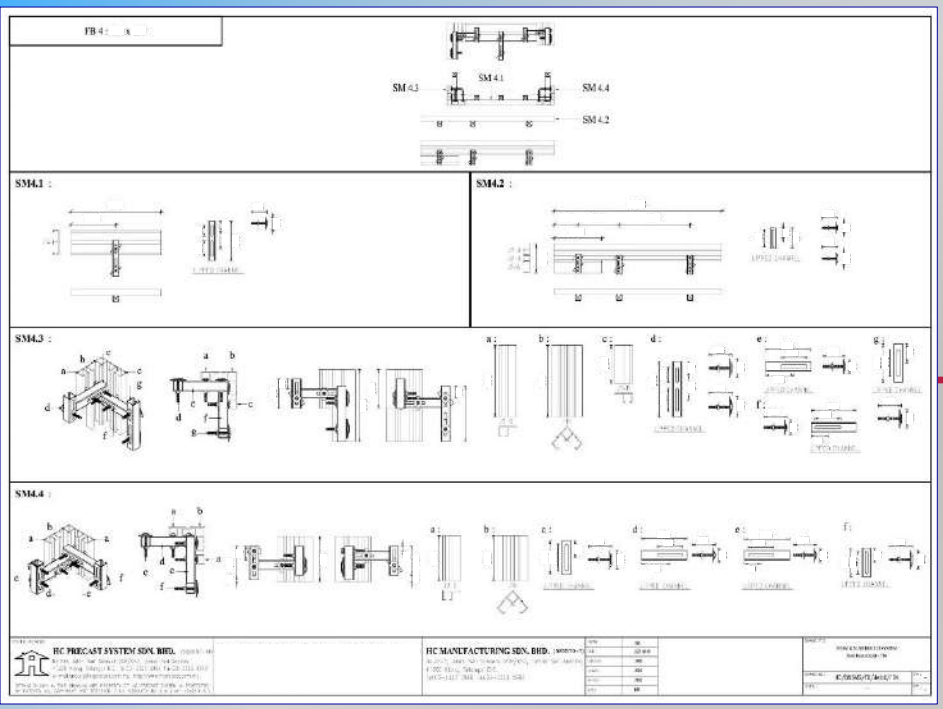


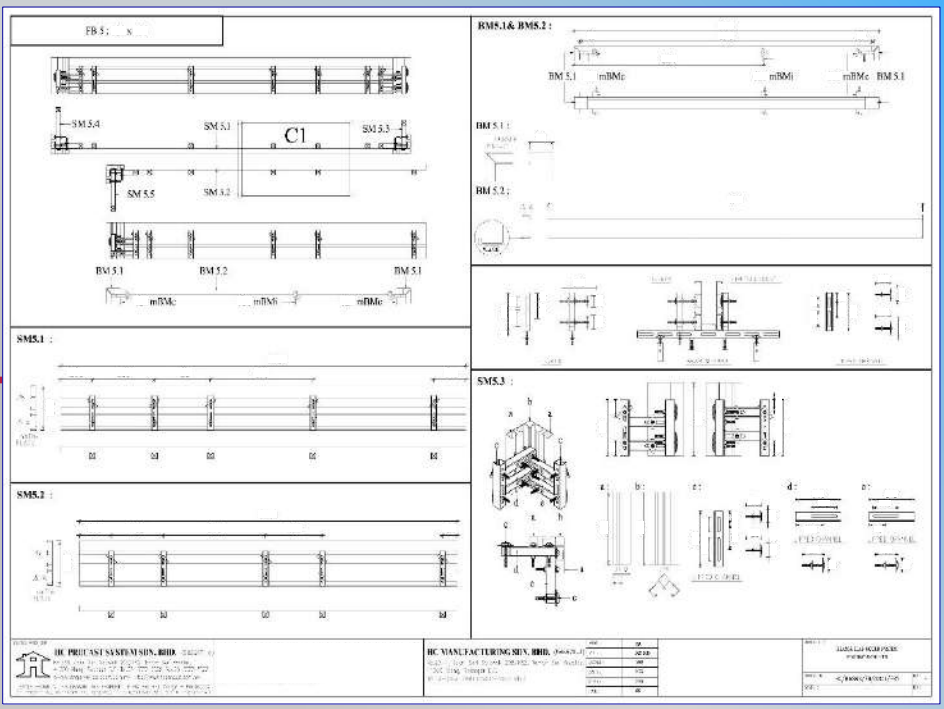


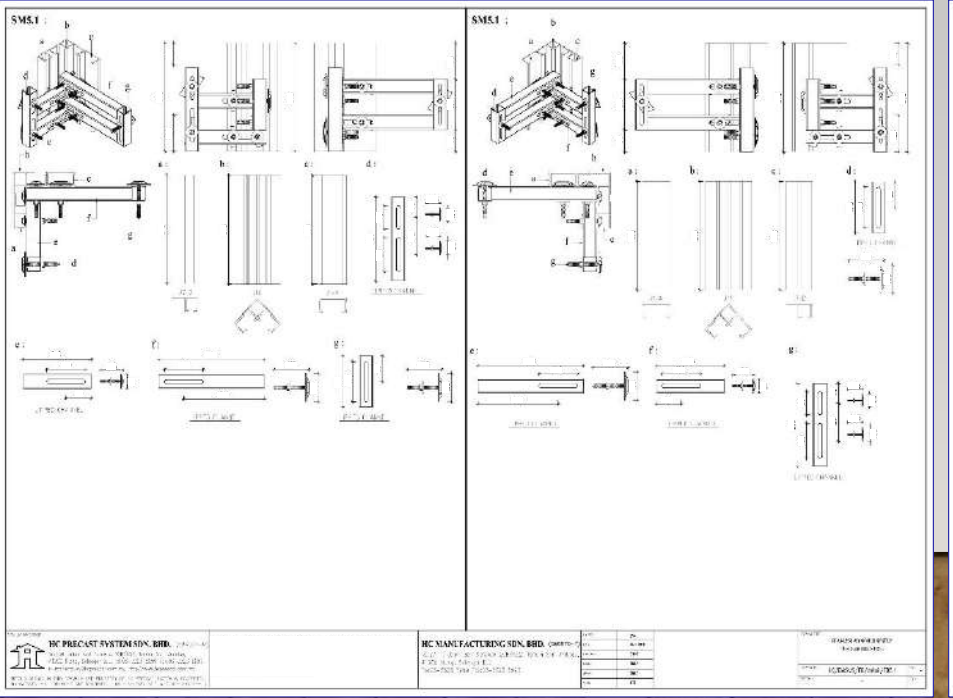


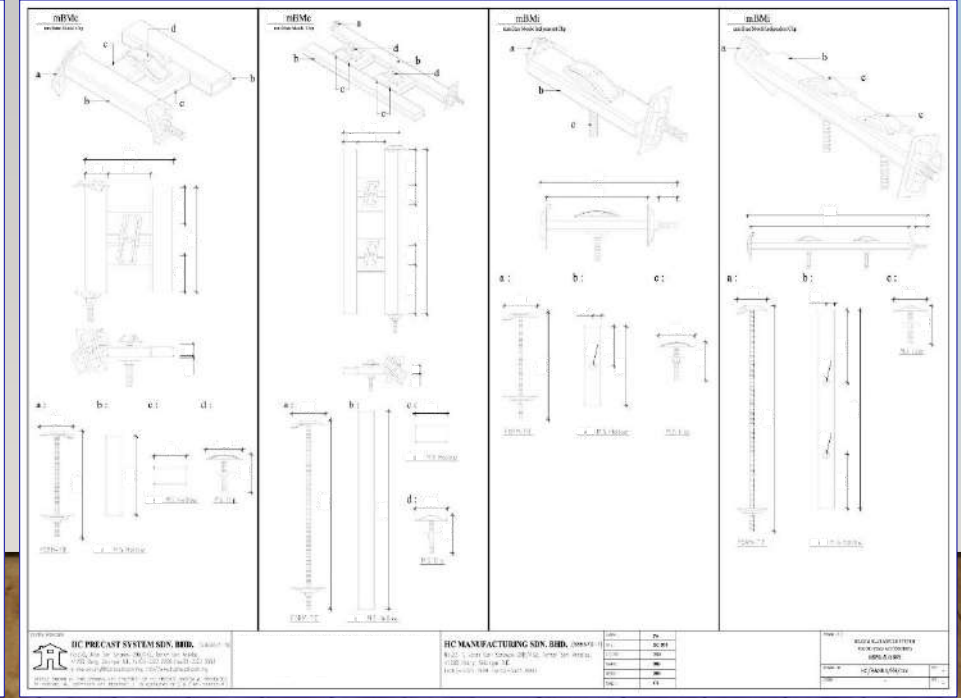
HC PRECAST SYSTEM SDN. BHD.

HC MANUFACTURING SDN. BHD.


FB 4 :
SM 4.3
SM 4.1
SM 4.4
SM 4.2
SM4.1 :
SM4.2 :
SM4.3 :
SM4.4 :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


FB 5 :
SM 5.4
SM 5.1
C1
SM 5.3
SM 5.5
SM 5.2
BM 5.1
BM 5.2
BM5.1& BM5.2 :
mBMc
mBMi
SM5.1 :
SM5.2 :
SM5.3 :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


SM5.1 :
SM5.1 :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


mBMc
mBMc
mBMi
mBMi
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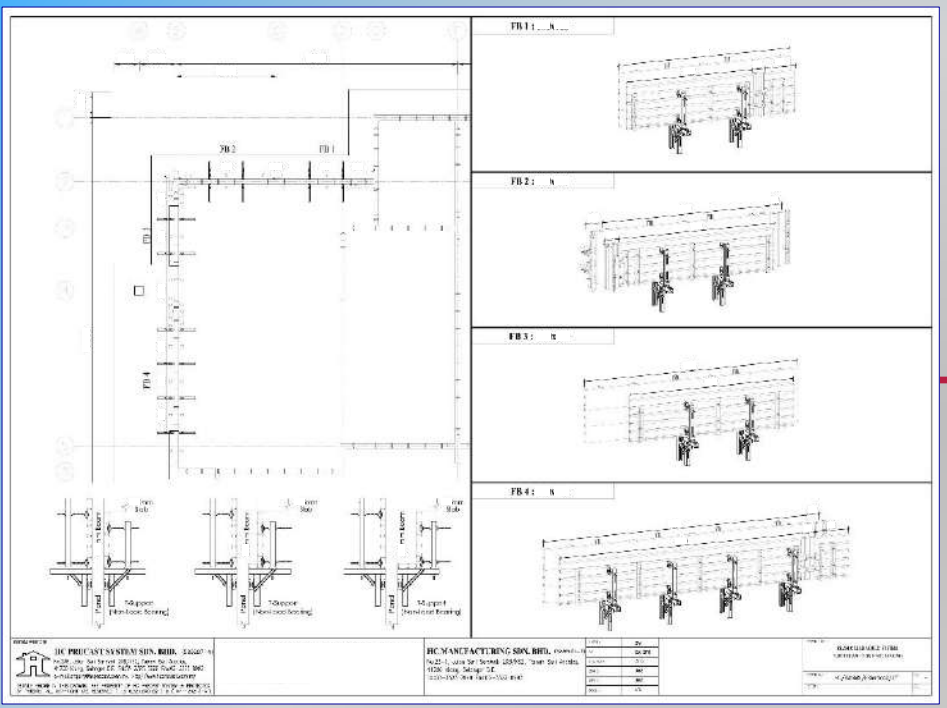
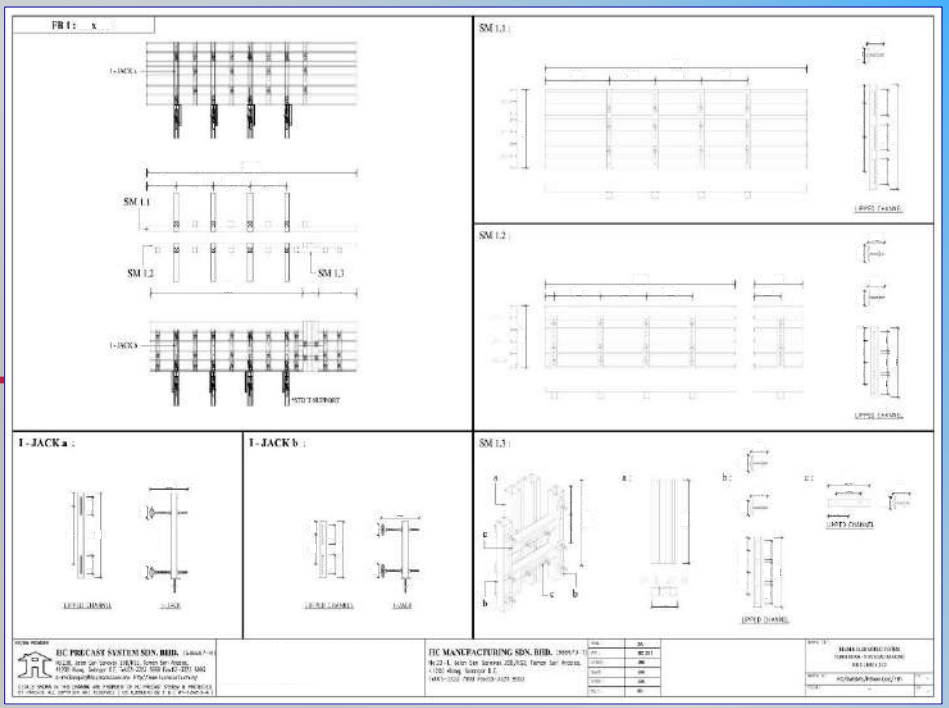
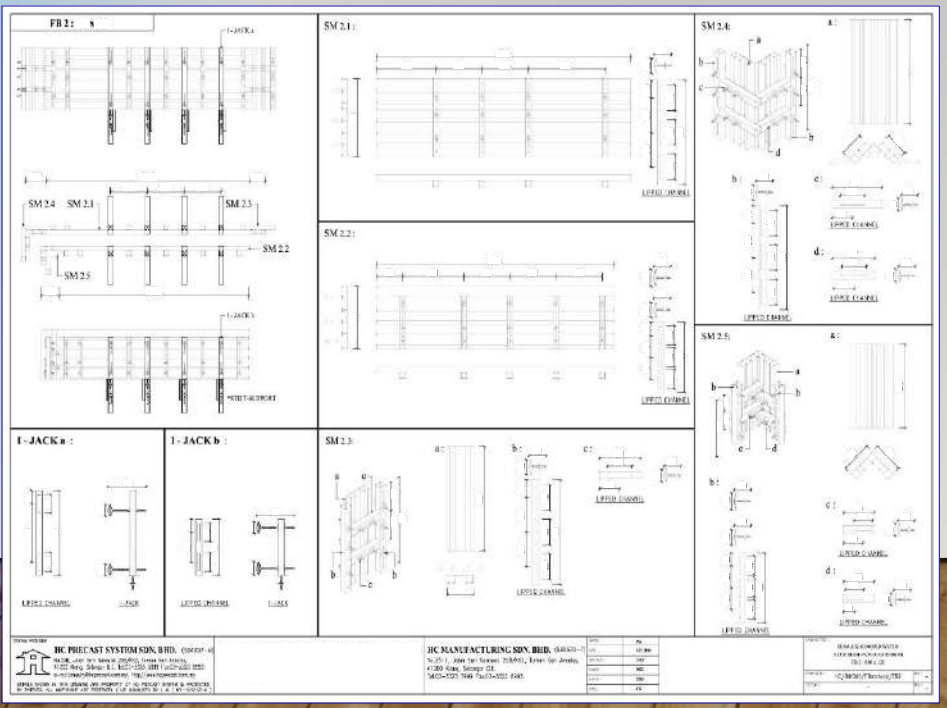
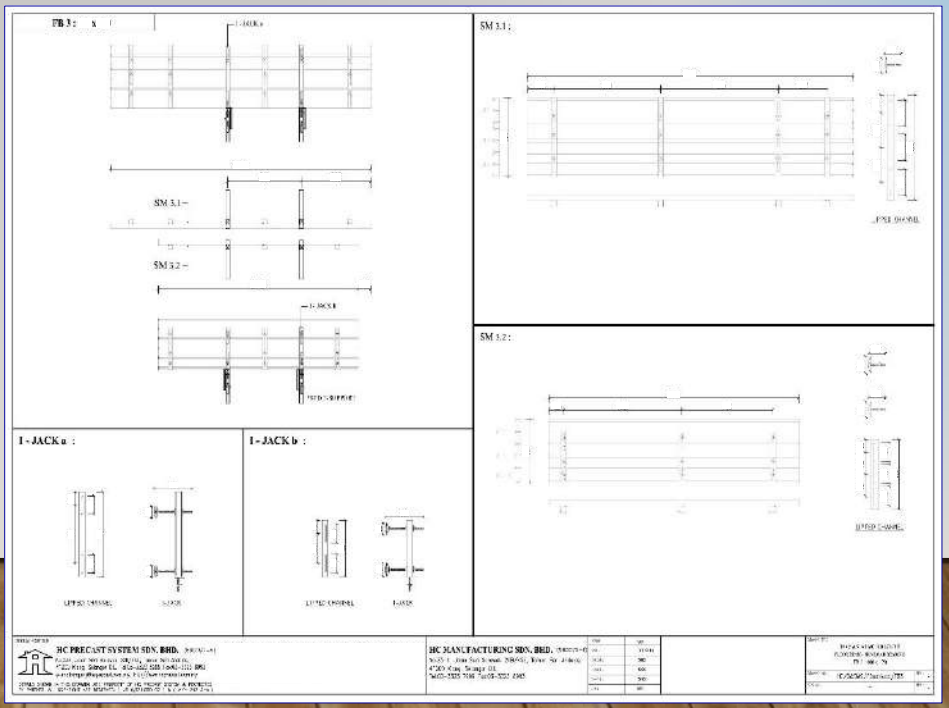
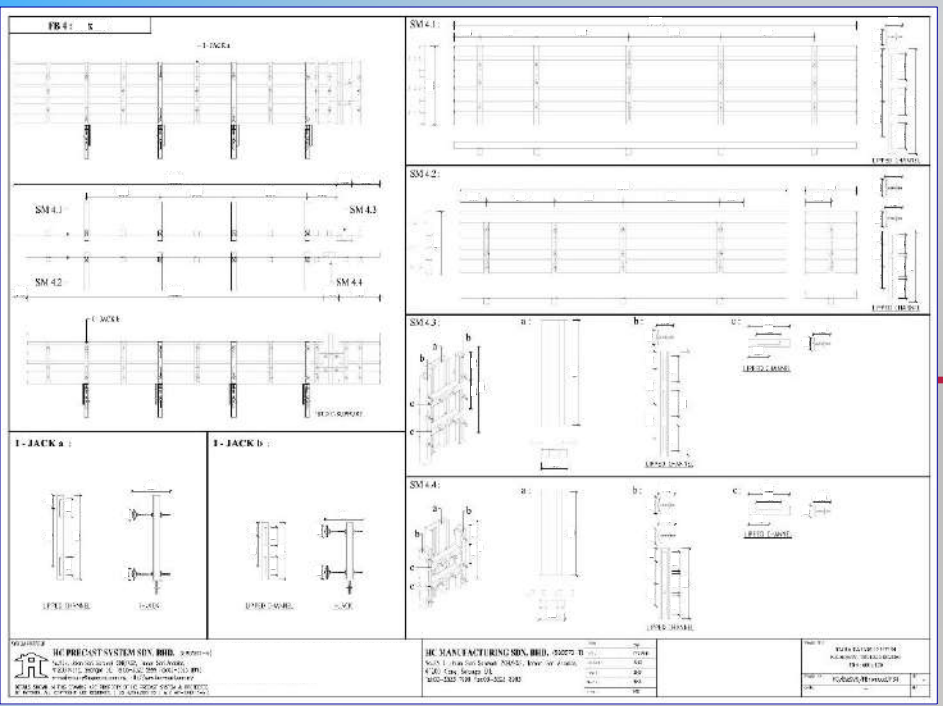
HC MANUFACTURING SDN. BHD.

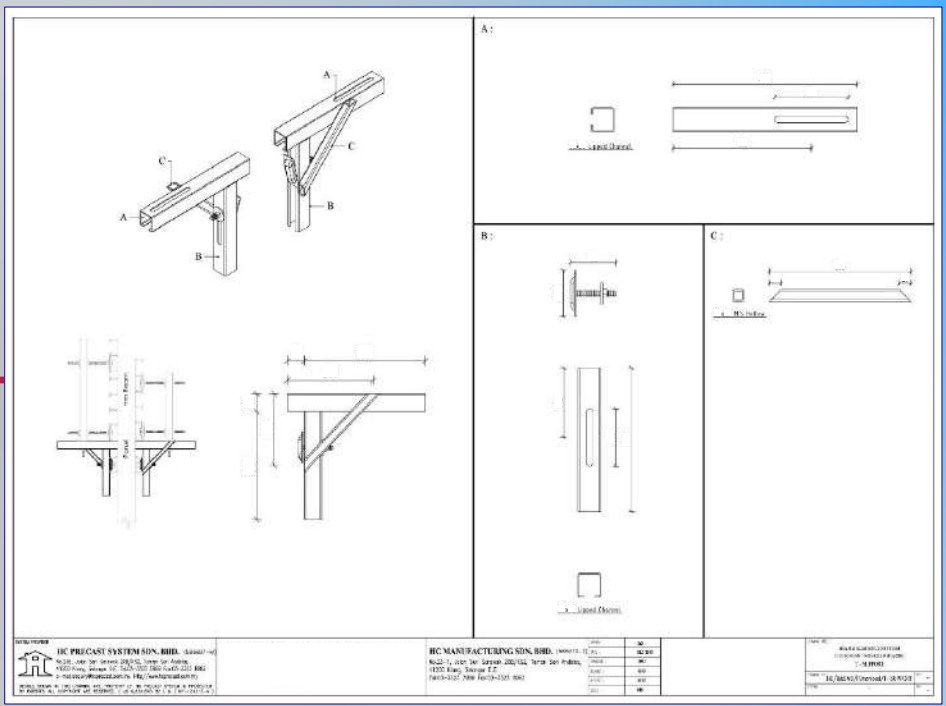

FB 1 :
FB 2 :
FB 3 :
FB 4 :
FB 2
FB 1
FB 3
FB 4
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

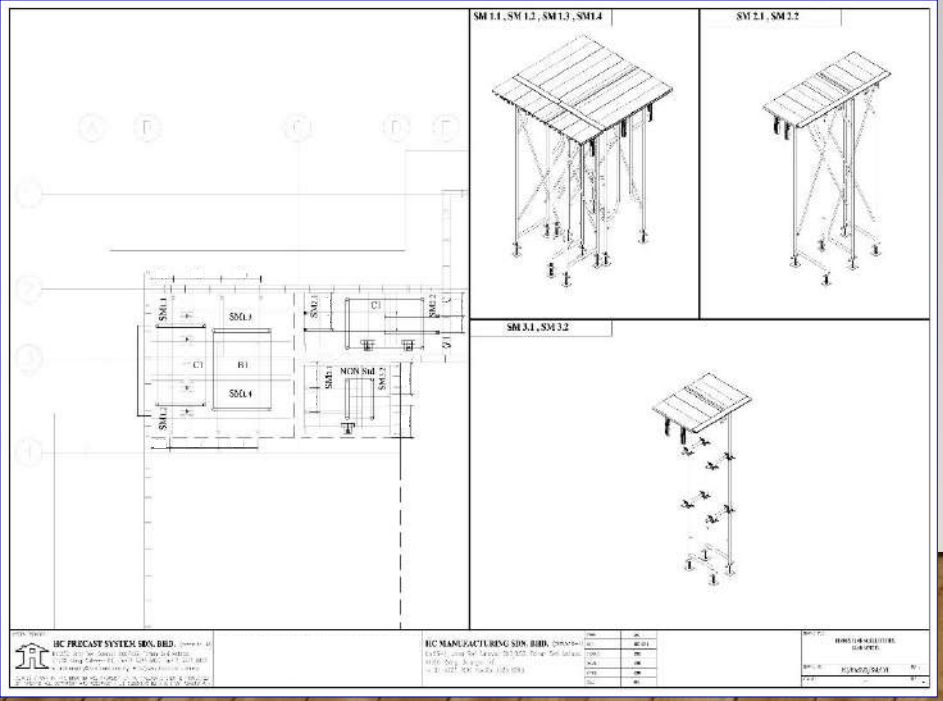

FB 1 :
1 - JACK a
SM 1.1
SM 1.2
SM 1.3
1 - JACK b :
SM 1.1 :
SM 1.2 :
SM 1.3 :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

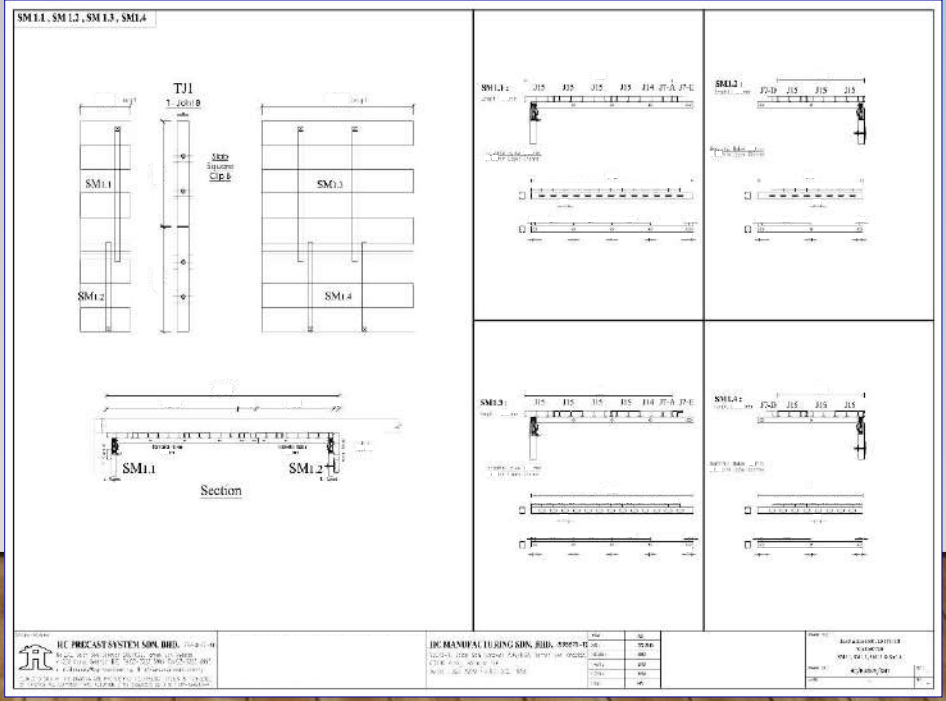

FB 2 :
SM 2.1 :
SM 2.2 :
SM 2.3 :
SM 2.4 :
SM 2.5 :
1 - JACK a :
1 - JACK b :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


FB 3 :
SM 3.1
SM 3.2
1 - JACK a :
1 - JACK b :
SM 3.1 :
SM 3.2 :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

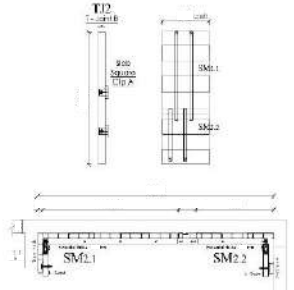

SM 4.1
SM 4.2
SM 4.3
SM 4.4
1 - JACK a :
1 - JACK b :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


A :
B :
C :
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.


SM 1.1 , SM 1.2 , SM 1.3 , SM1.4
SM 2.1 , SM 2.2
SM 3.1 , SM 3.2
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

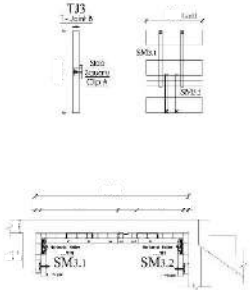

SM 1.1 , SM 1.2 , SM 1.3 , SM1.4
TJ1
SM1.1
SM1.2
SM1.3
SM1.4
Section
HC PRECAST SYSTEM SDN. BHD.
HC MANUFACTURING SDN. BHD.

SM 2.1 & SM 2.2

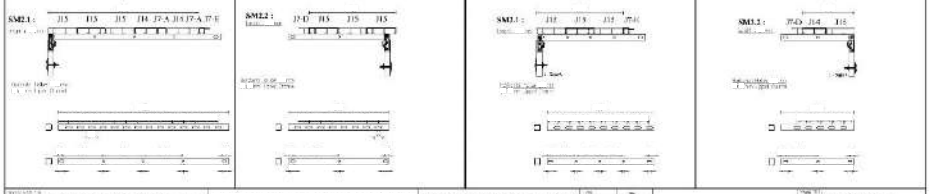


Section

SM 3.1 & SM 3.2



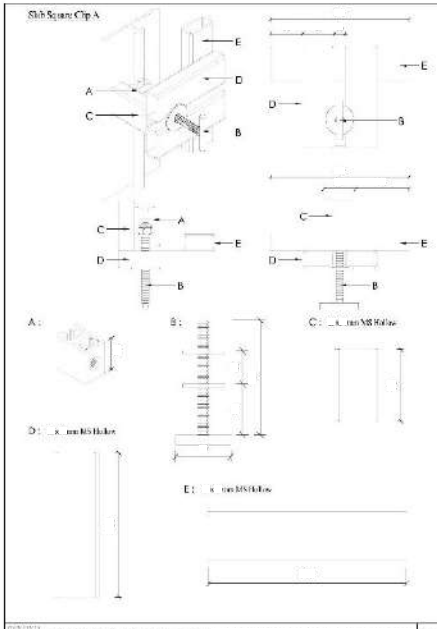
Section



HC PRECAST SYSTEM SDN. BHD.

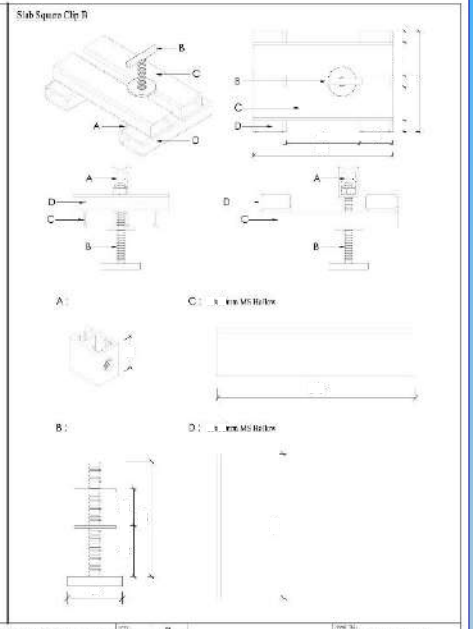
HC MANUFACTURING SDN. BHD.

Slab Square Clip A

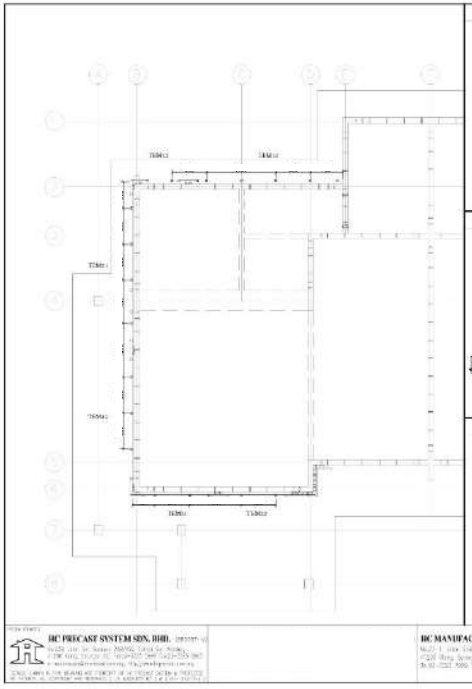


HC PRECAST SYSTEM SDN. BHD.

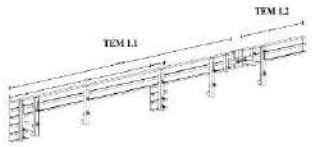
Slab Square Clip B



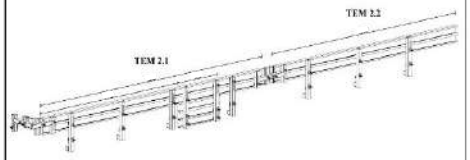
HC MANUFACTURING SDN. BHD.



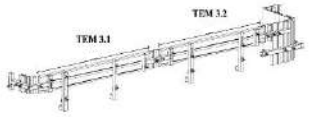
TEM 1.1 , TEM 1.2



TEM 2.1 , TEM 2.2



TEM 3.1 , TEM 3.2



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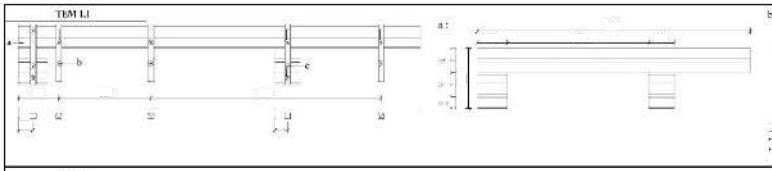
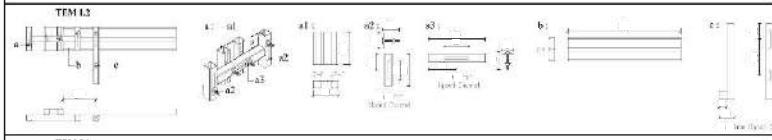
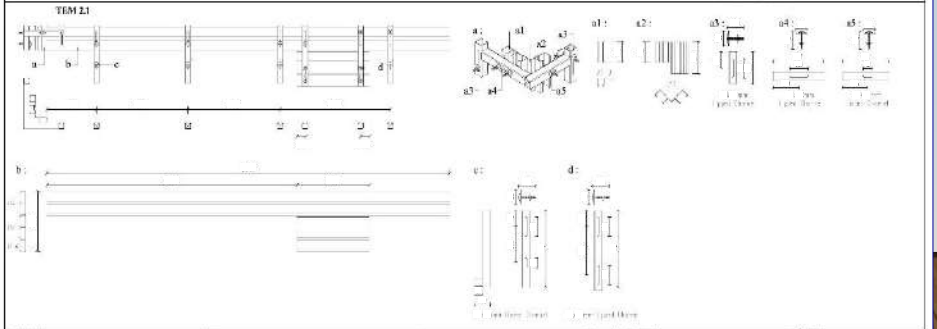
TEM 1.1



TEM 1.2



TEM 2.1



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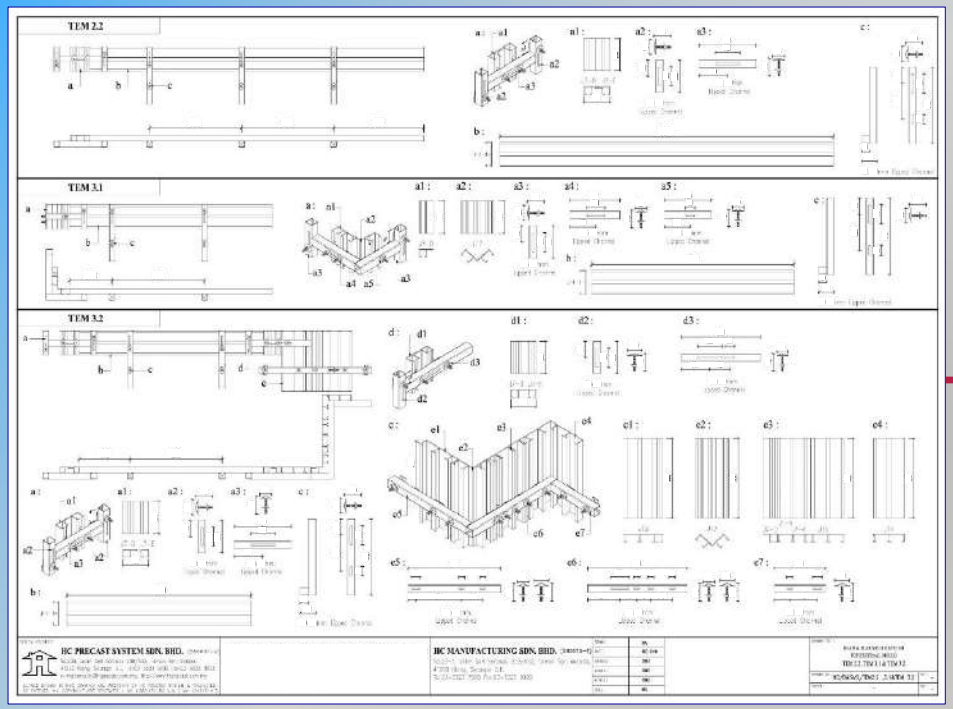
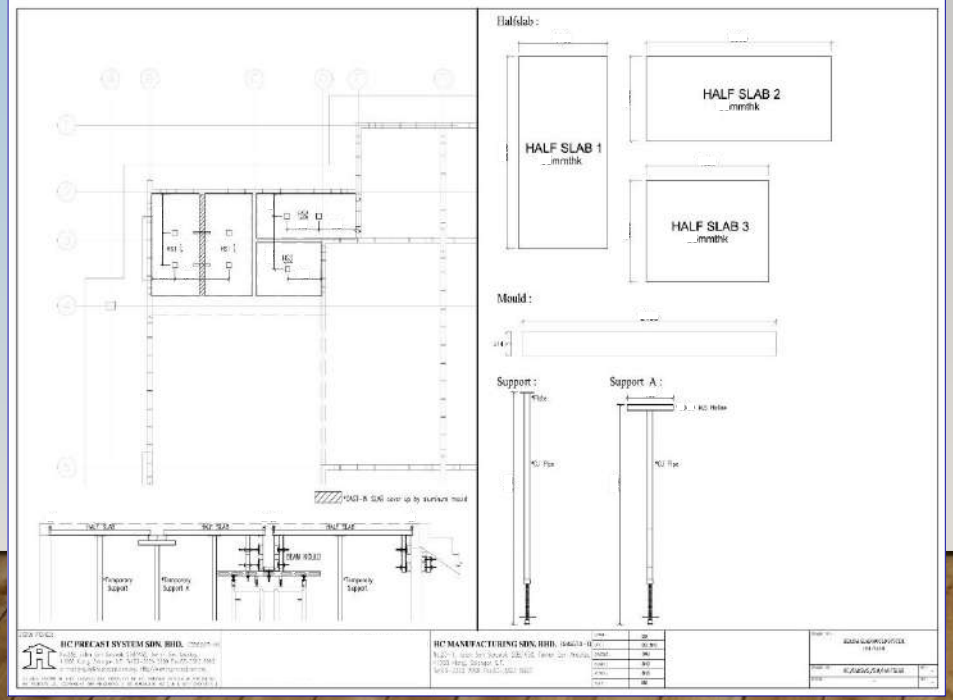
HC MANUFACTURING SDN. BHD.



6 - HALF SLAB



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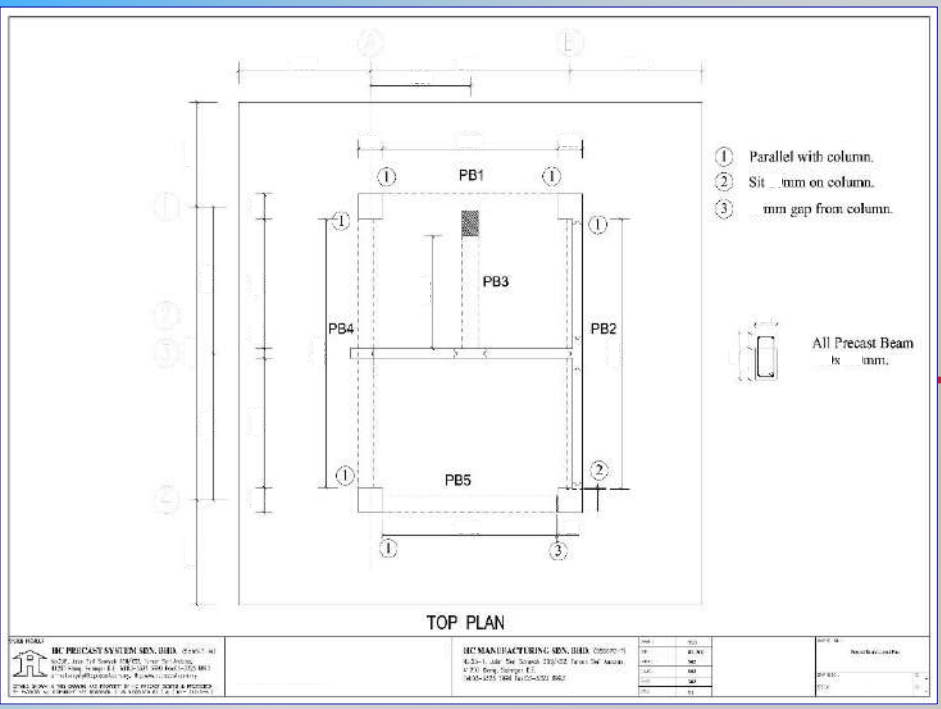
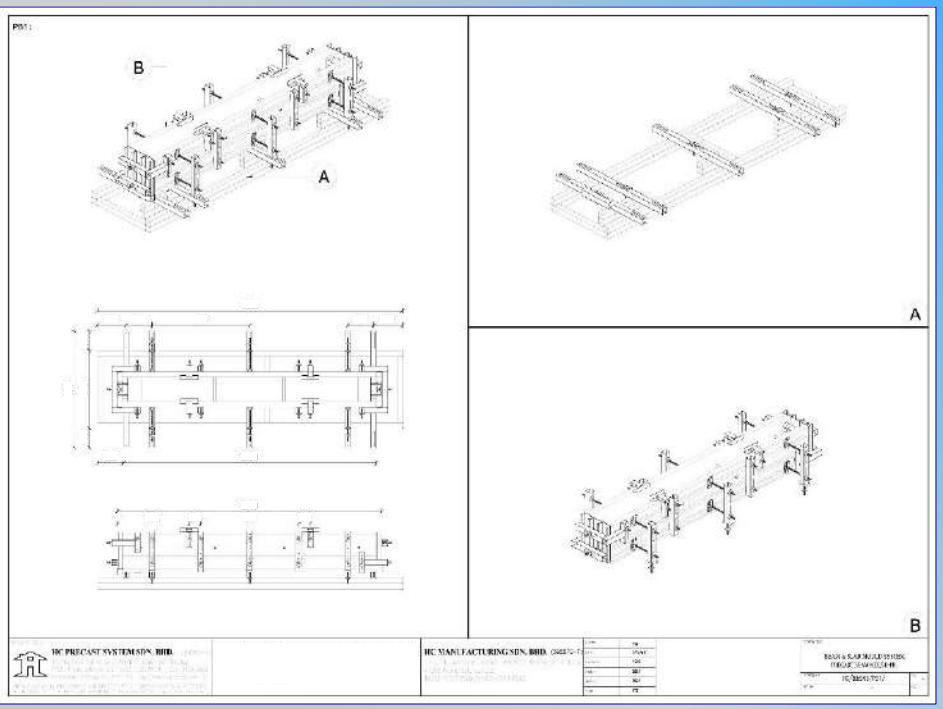
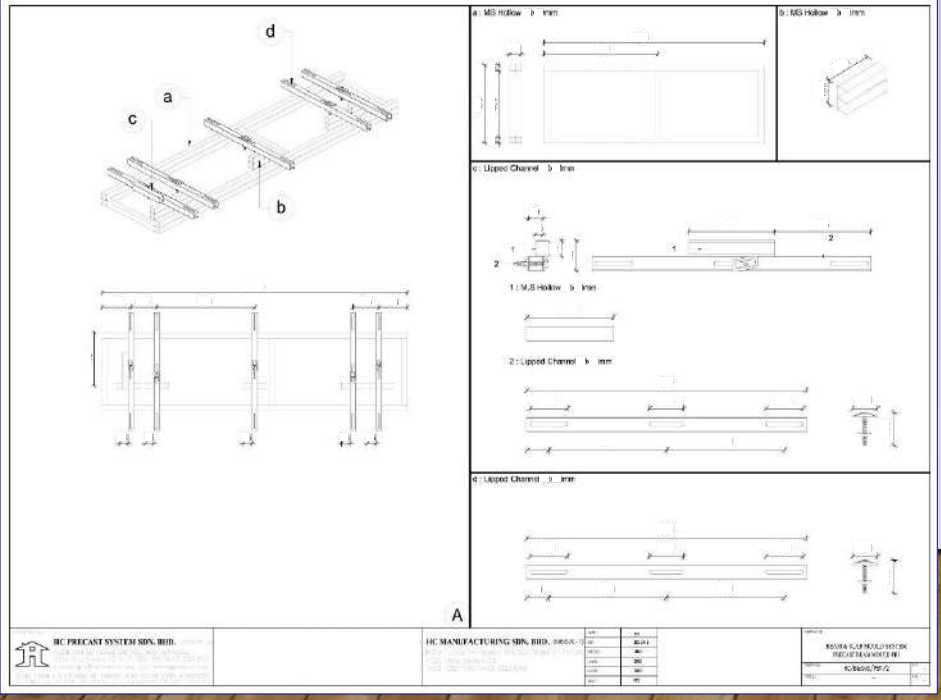
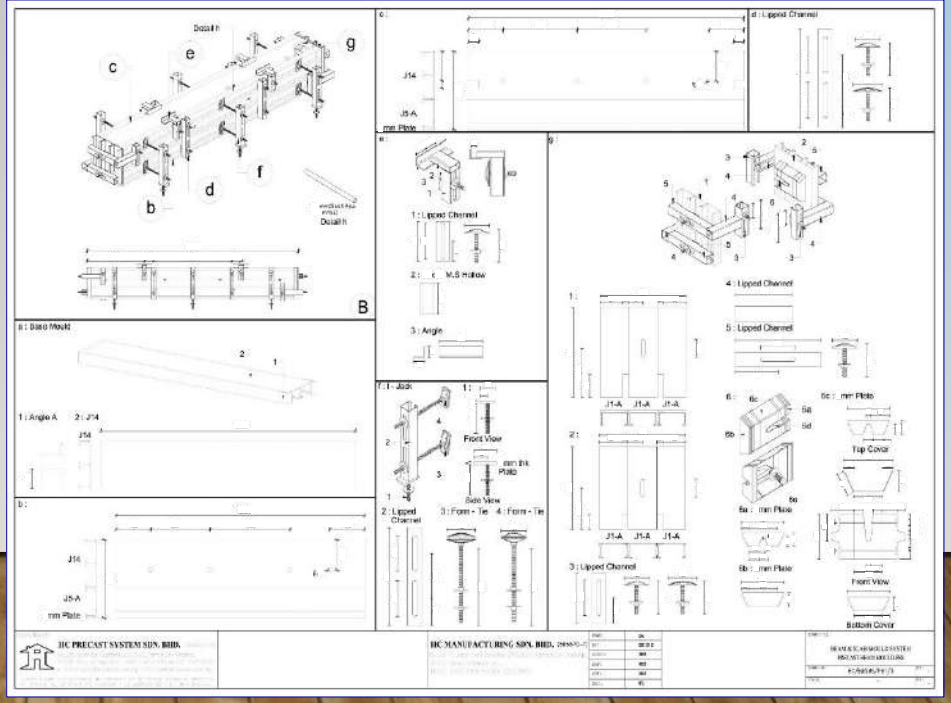
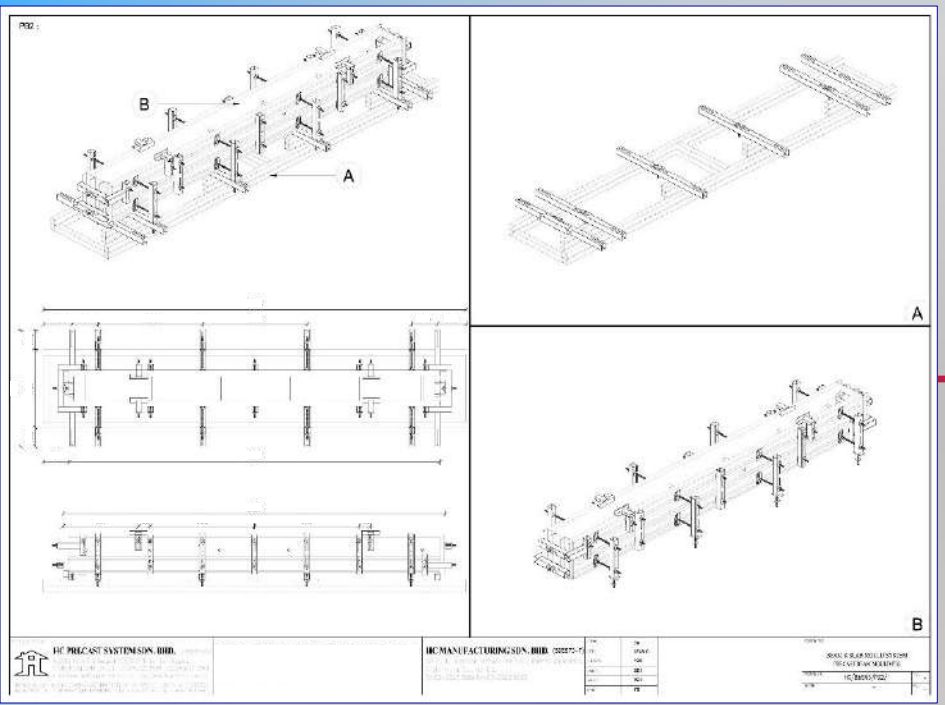
7 - PRECAST BEAM

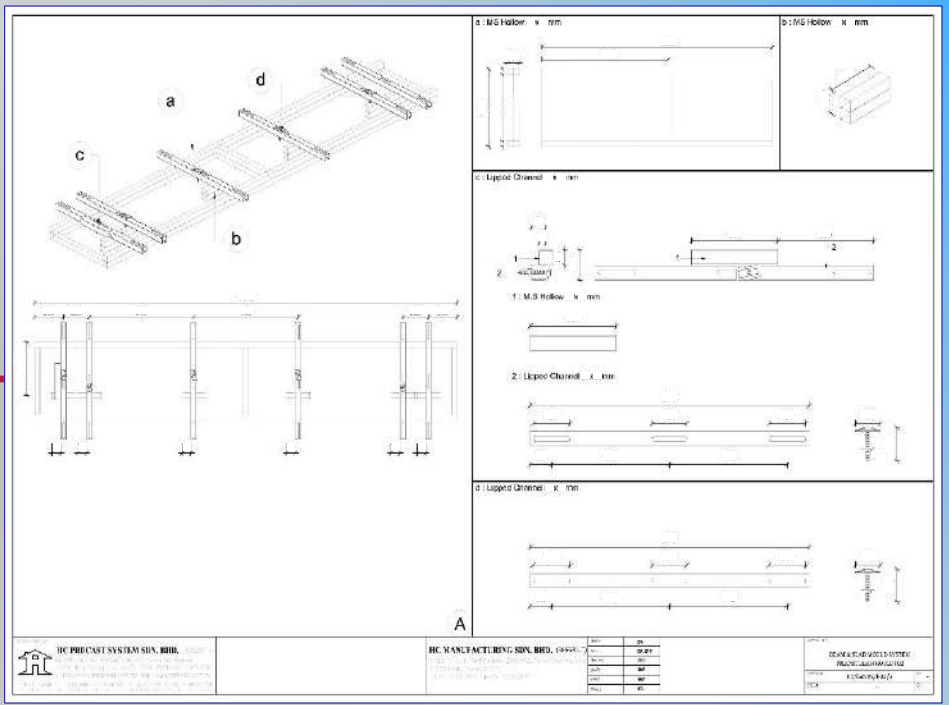

PB1
PB2
PB3
PB4
PB5
1 Parallel with column.
2 Sit _ mm on column.
3 mm gap from column.
All Precast Beam
lx _ mm.
TOP PLAN

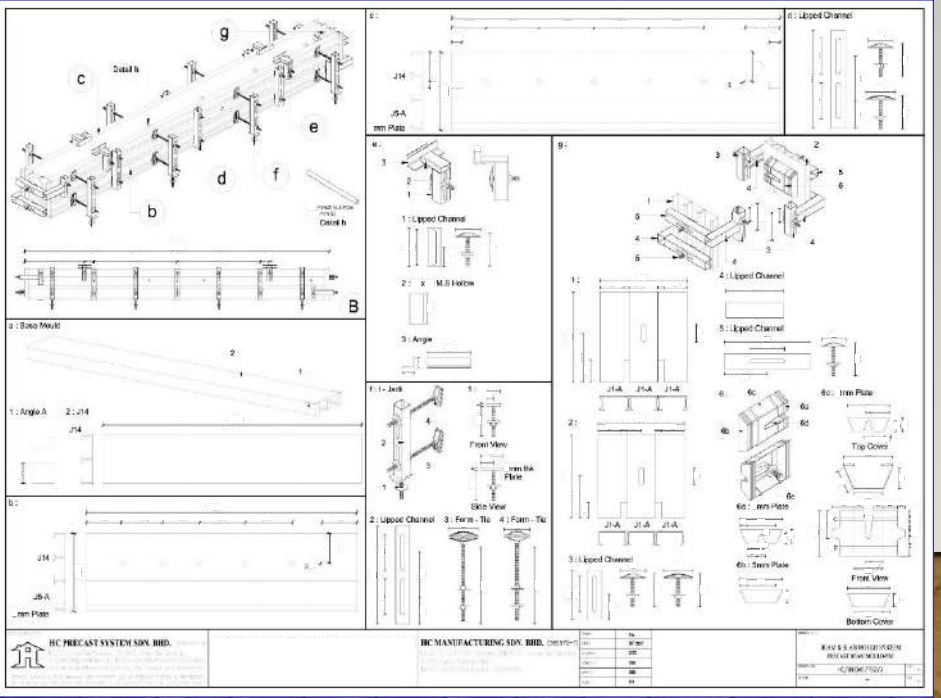

PB1 :
A
B


a : MS Hollow b mm
b : MS Hollow b mm
c : Lipped Channel b mm
1 : MS Hollow b mm
2 : Lipped Channel b mm
d : Lipped Channel _ b _ mm
A


Detail
B
e : Base Mould
1 : Angle A
2 : J14
J14
J5-A
mm Plate
c :
d : Lipped Channel
1 : Lipped Channel
2 : _ x _ MS Hollow
3 : Angle
f : 1 - Jack
Front View
Side View
mm thk Plate
2 : Lipped Channel
3 : Form - Tie
4 : Form - Tie
g :
4 : Lipped Channel
5 : Lipped Channel
6a : mm Plate
Top Cover
6b : mm Plate
Front View
Bottom Cover







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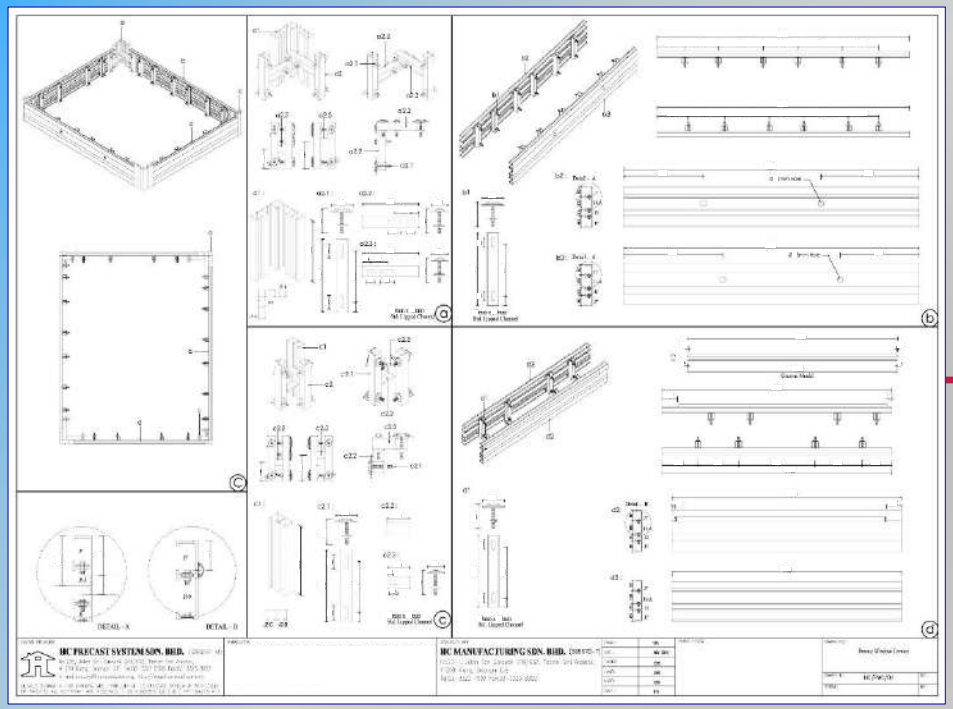
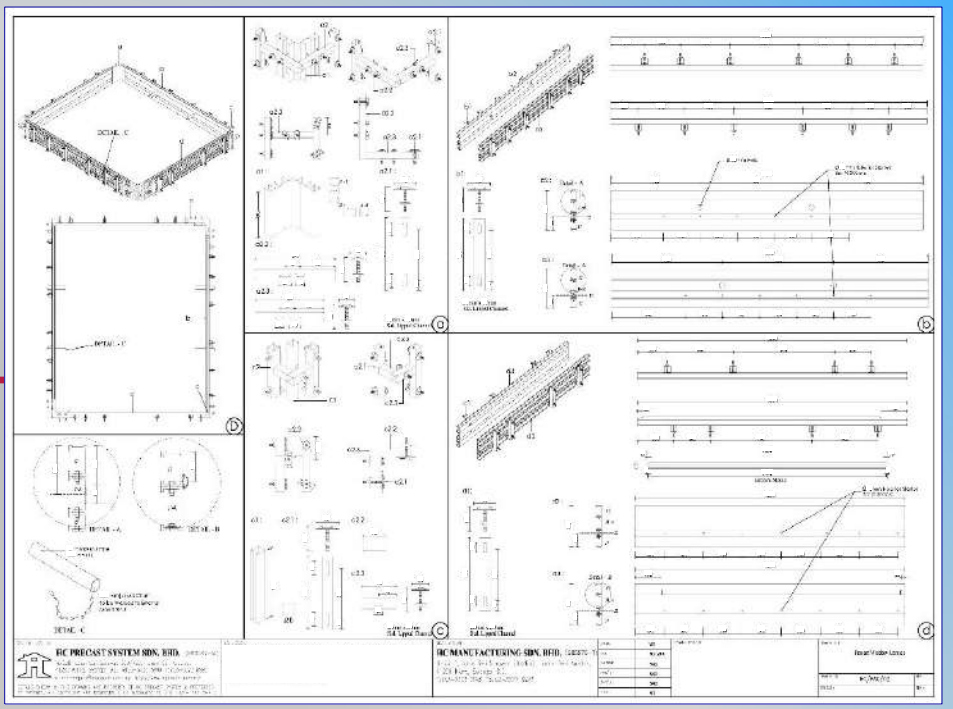
8 - PRECAST CORNICE





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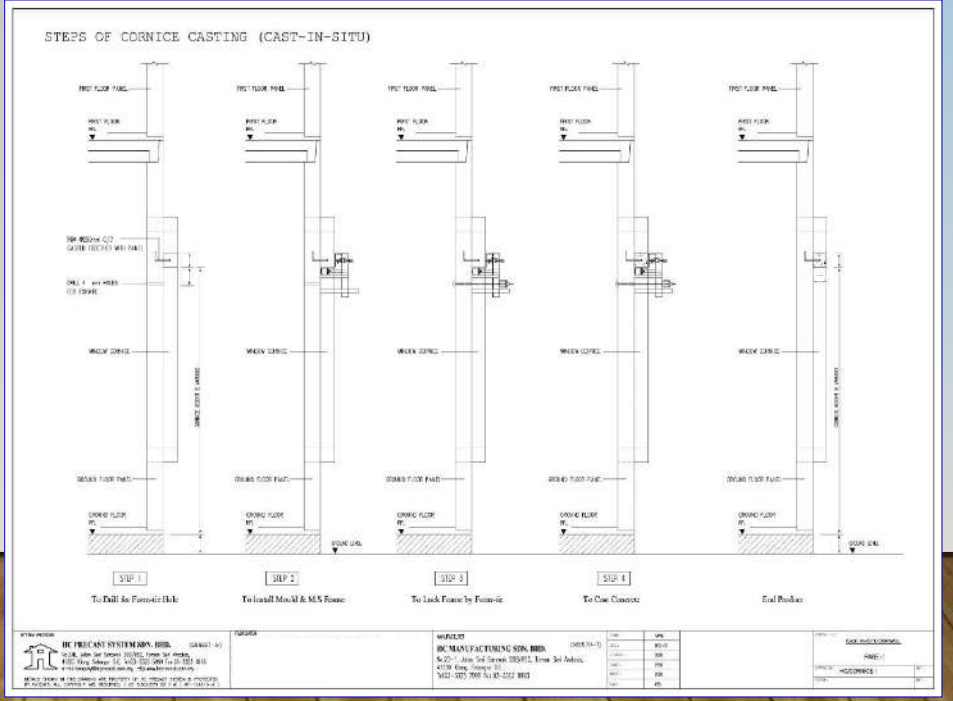
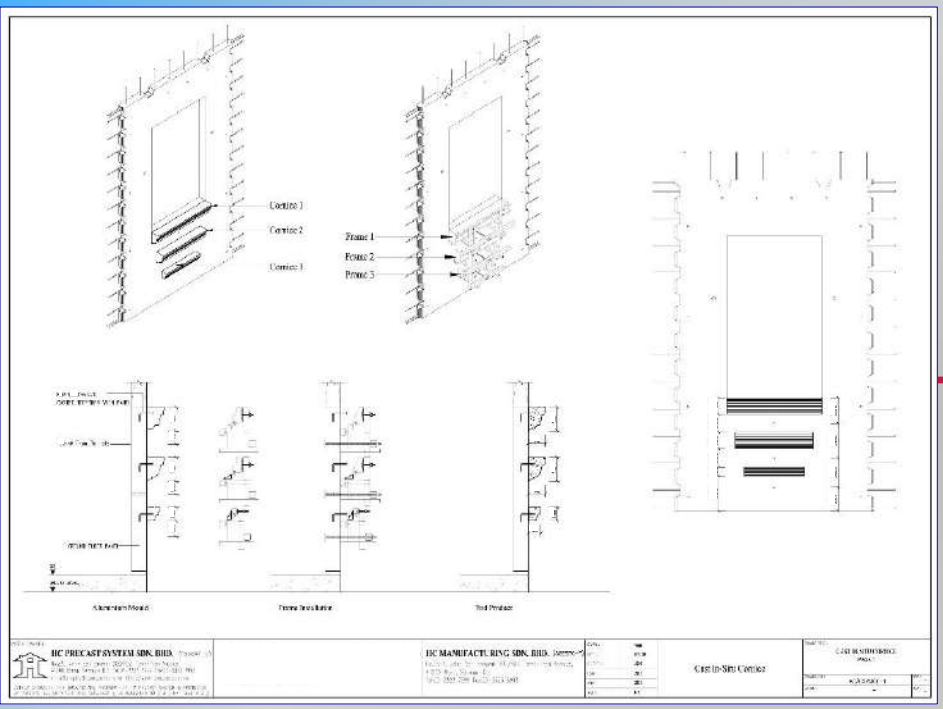
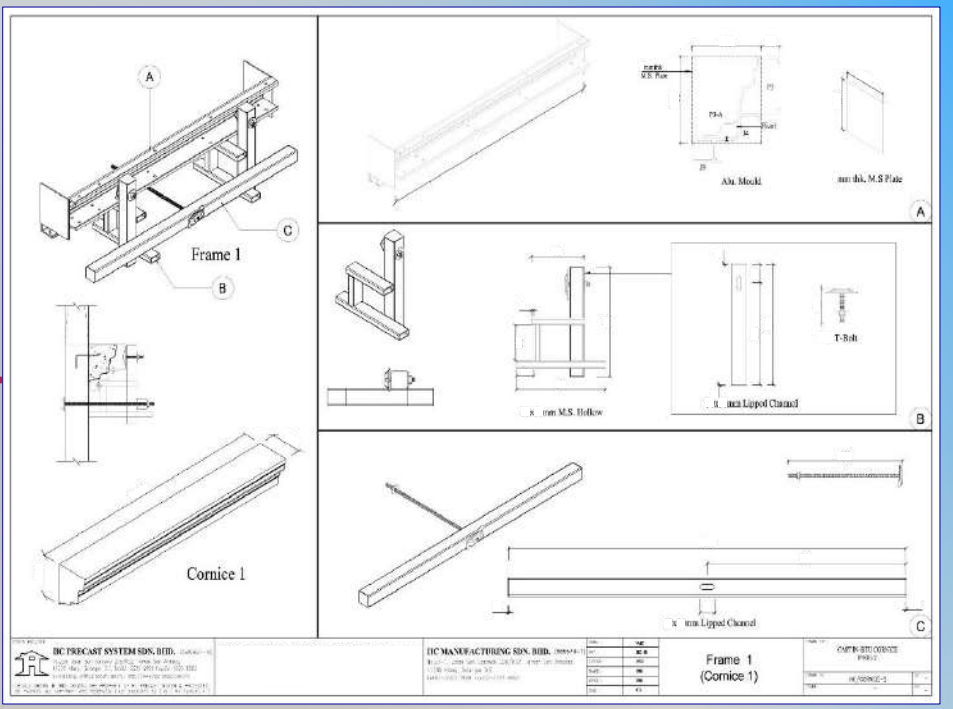
9 - INSITU CORNICE







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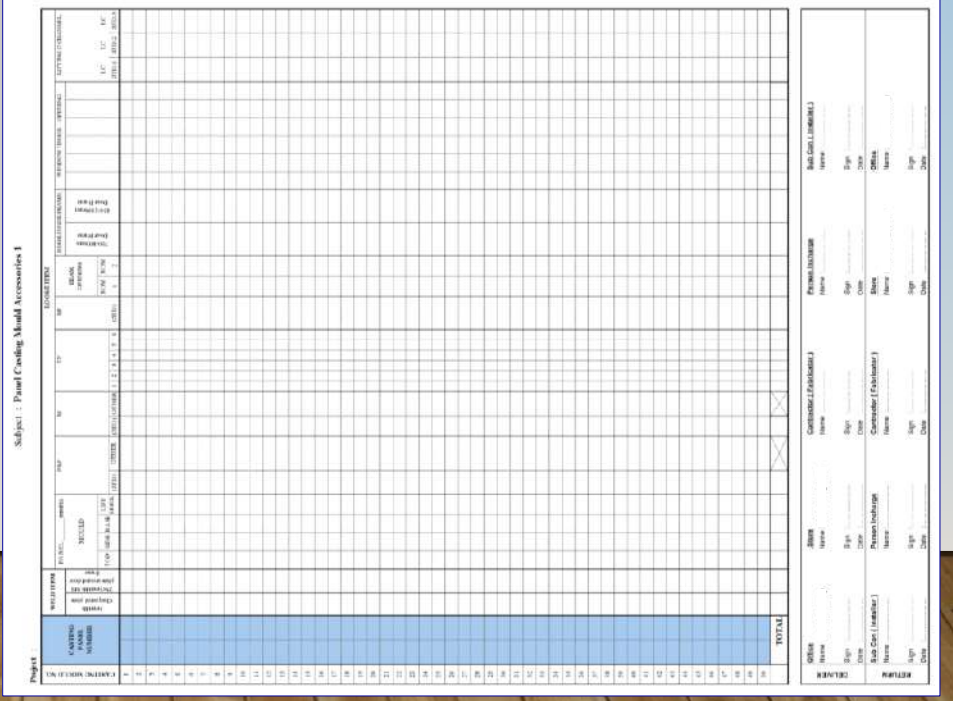
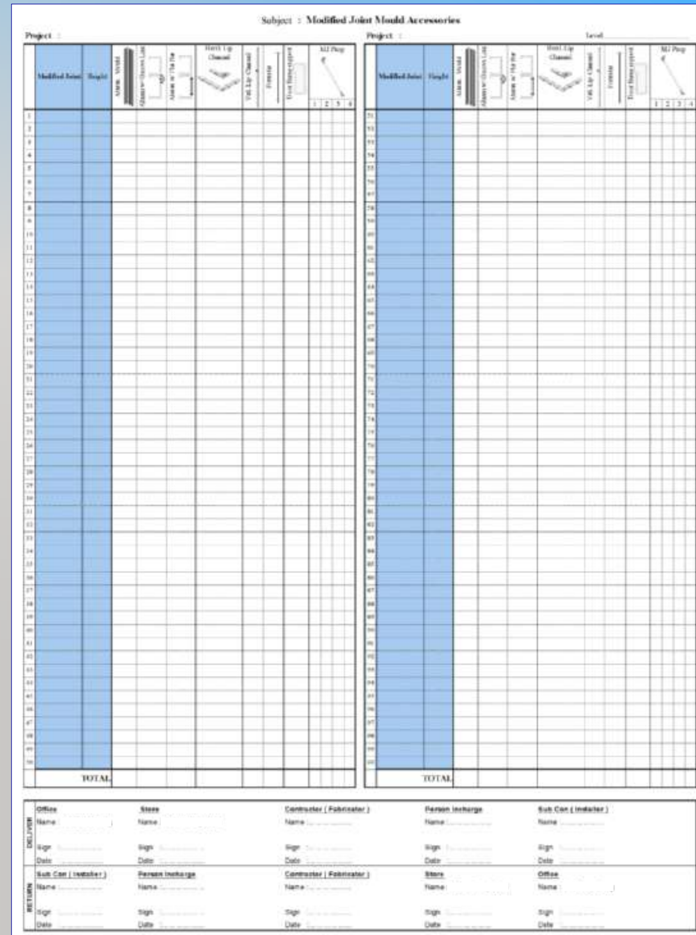
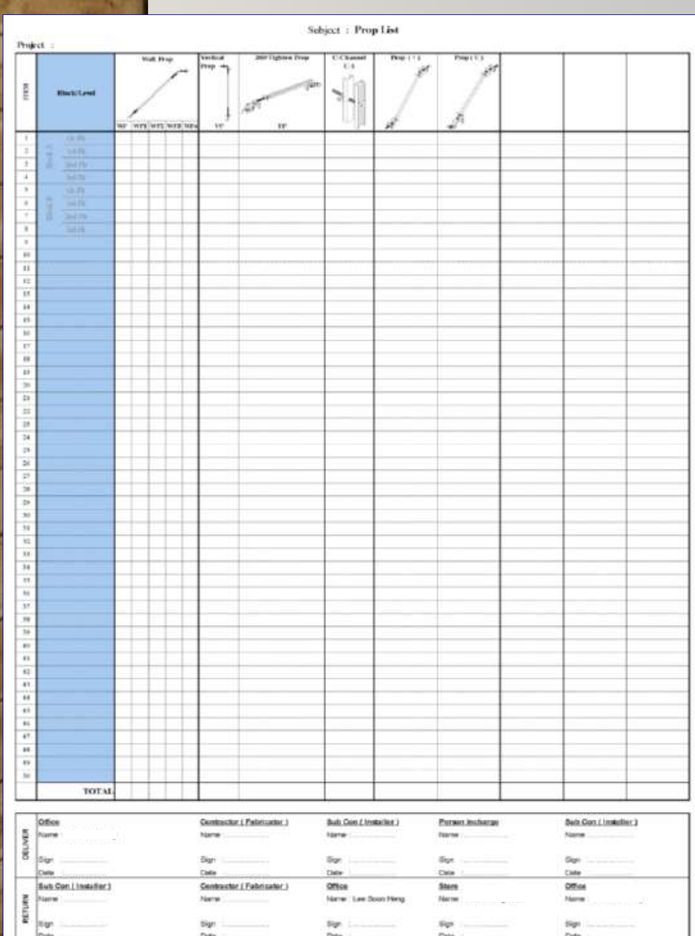
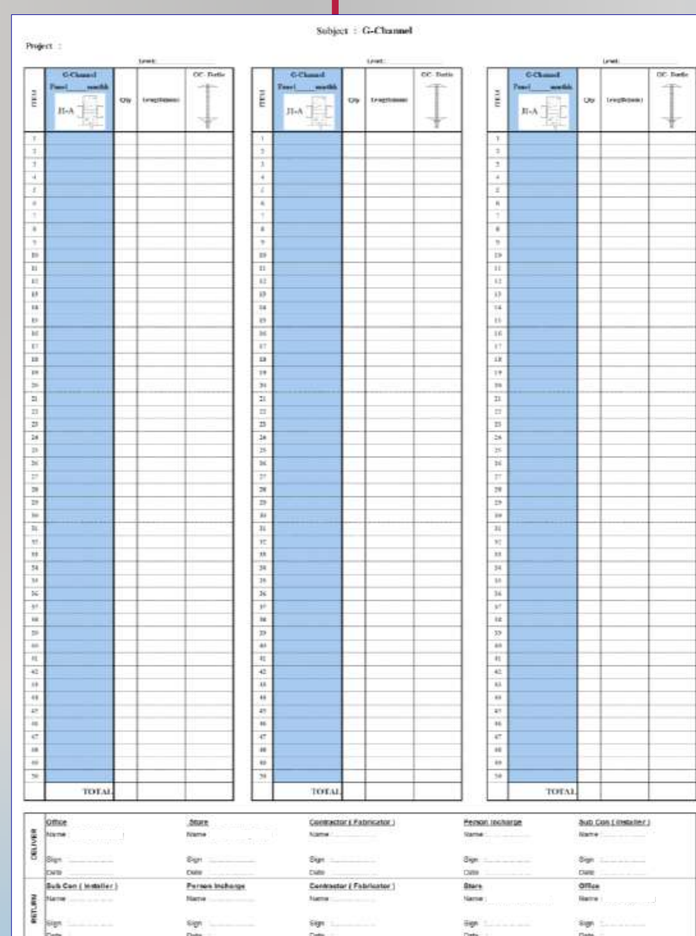
10 - ACCESSORIES LIST




Subject : Top External Mould
Project :
Level:
ITEM
TOP EXTERNAL MOULD
Aluminium
Support
Corner Joint
Corner Joint
TOTAL
DELIVER
Office
Store
Contractor (Fabricator)
Person incharge
Sub Con (Installer)
Name
Sign
Date
RETURN
Sub Con (Installer)
Person incharge
Contractor (Fabricator)
Store
Office


Subject : Modified Joint Mould Accessories
Project :
Level
Modified Joint
Height
MJ Prop
TOTAL
DELIVER
Office
Store
Contractor (Fabricator)
Person incharge
Sub Con (Installer)
Name
Sign
Date
RETURN
Sub Con (Installer)
Person incharge
Contractor (Fabricator)
Store
Office


Subject : Prop List
Project :
ITEM
Block/Level
Wall Prop
Vertical Prop
C-Channel
Prop (+)
Prop (-)
TOTAL
DELIVER
Office
Contractor (Fabricator)
Sub Con (Installer)
Person incharge
Sub Con (Installer)
Name
Sign
Date
RETURN
Sub Con (Installer)
Contractor (Fabricator)
Office
Store
Office


Subject : G-Channel
Project :
Level:
ITEM
G-Channel
Qty
Length(mm)
OC Bottle
TOTAL
DELIVER
Office
Store
Contractor (Fabricator)
Person incharge
Sub Con (Installer)
Name
Sign
Date
RETURN
Sub Con (Installer)
Person incharge
Contractor (Fabricator)
Store
Office

Complete ***IBS*** *solution particularly*
in a design and build precast system *Developed* *by*

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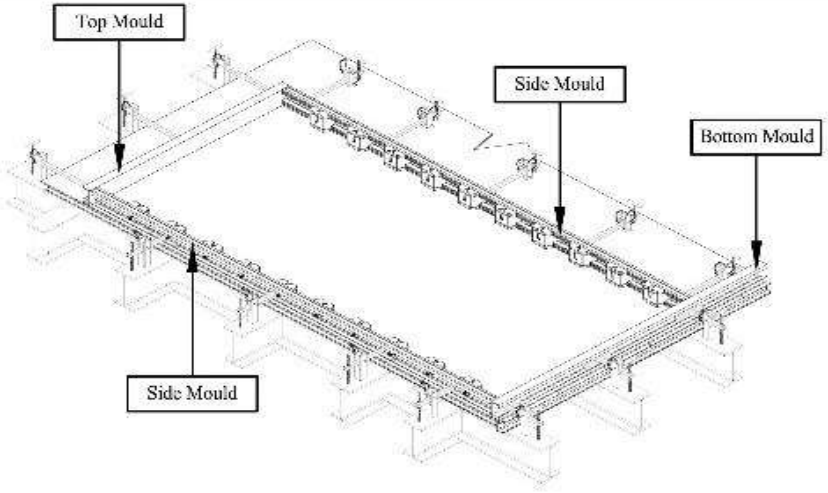

	PRECAST PANEL			
	100mmthk	120mmthk	150mmthk	160mmthk
TOP MOULD				
SIDE MOULD				
BOTTOM MOULD				

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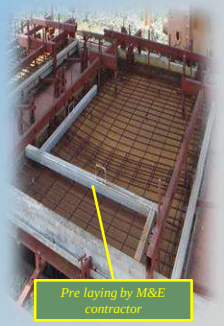
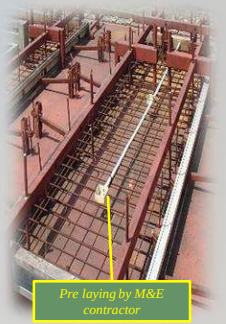
PANEL CASTING MOULD

HC PRECAST SYSTEM SDN. BHD.

Cost Saving

- No hacking for Electrical and Plumbing work
- No primary undercoat for painting due to smooth skimcoat surface
- No rubbish cleaning

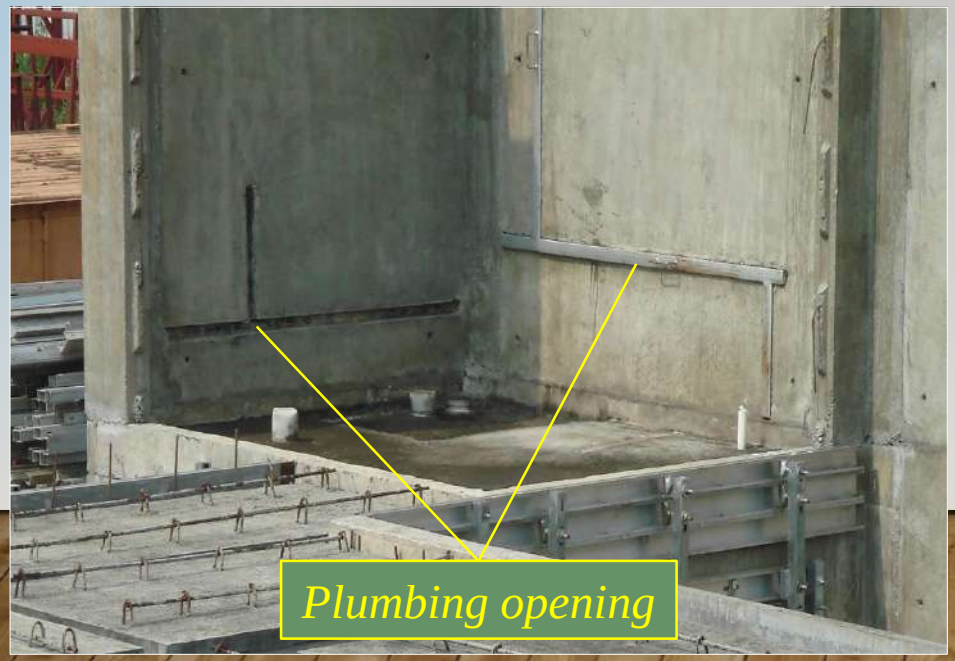




Traditional Method

- Hacking for Electrical and Plumbing work
- Rubbish clearing

Cost saving : *No hacking for Electrical and Plumbing work*

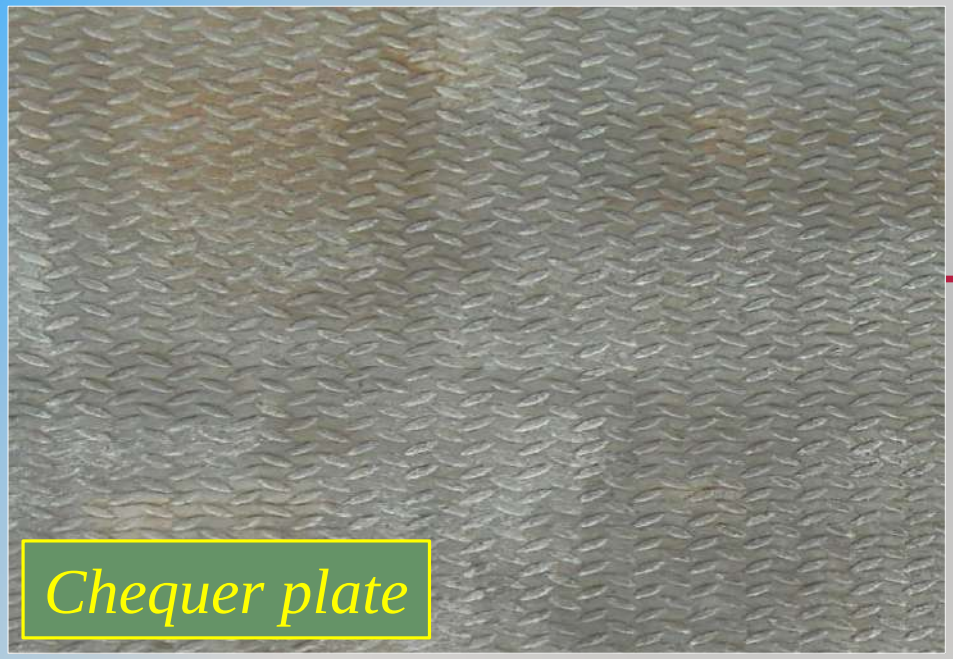


Cost saving : *No hacking for Electrical and Plumbing work*

Cost saving : *No primary undercoat for painting due to smooth skimcoat surface*

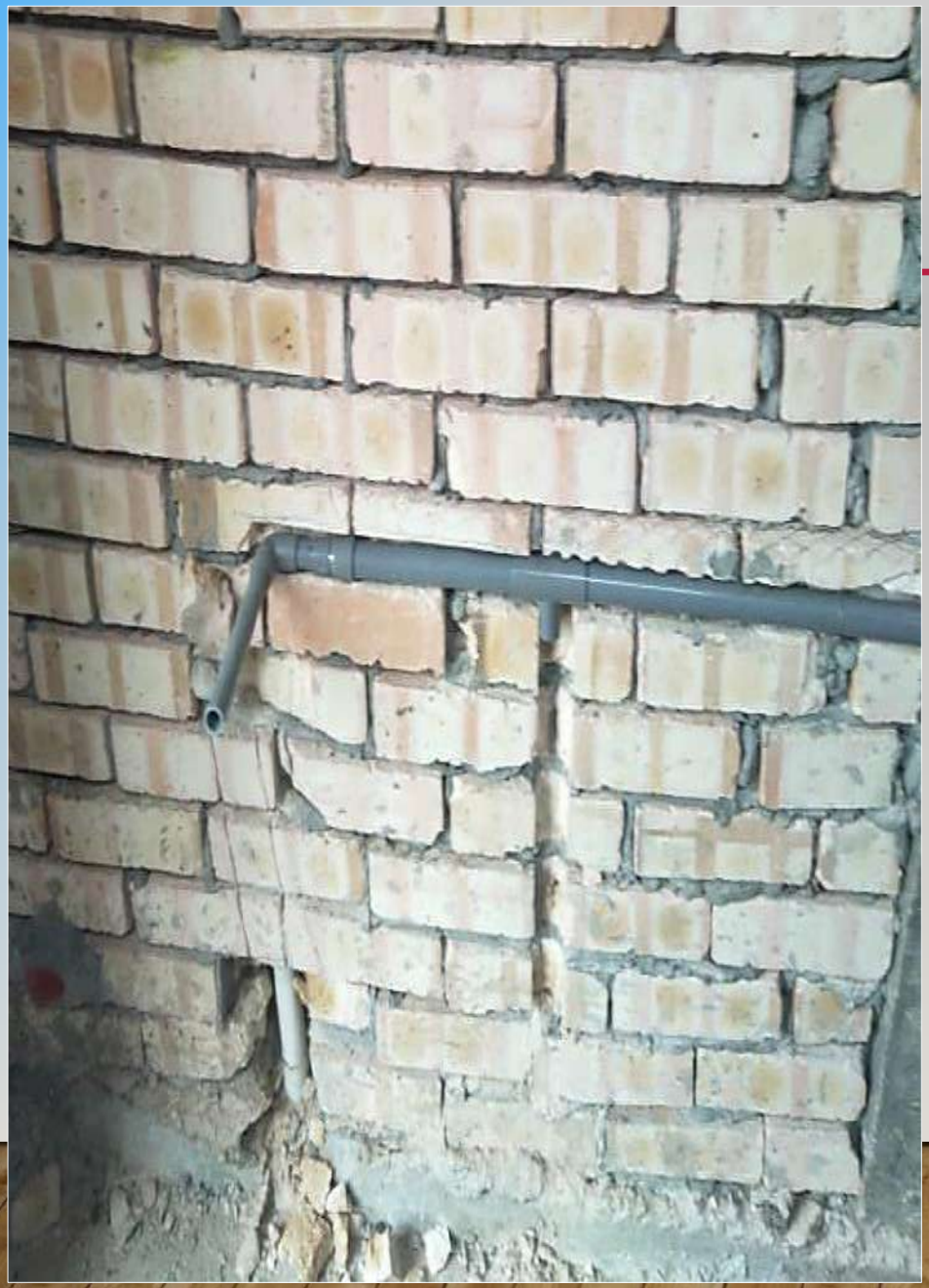
Cost saving : *No primary undercoat for painting due to smooth skimcoat surface*

Cost saving : *Reduce the quantity of cement and screed to receive tiling work*



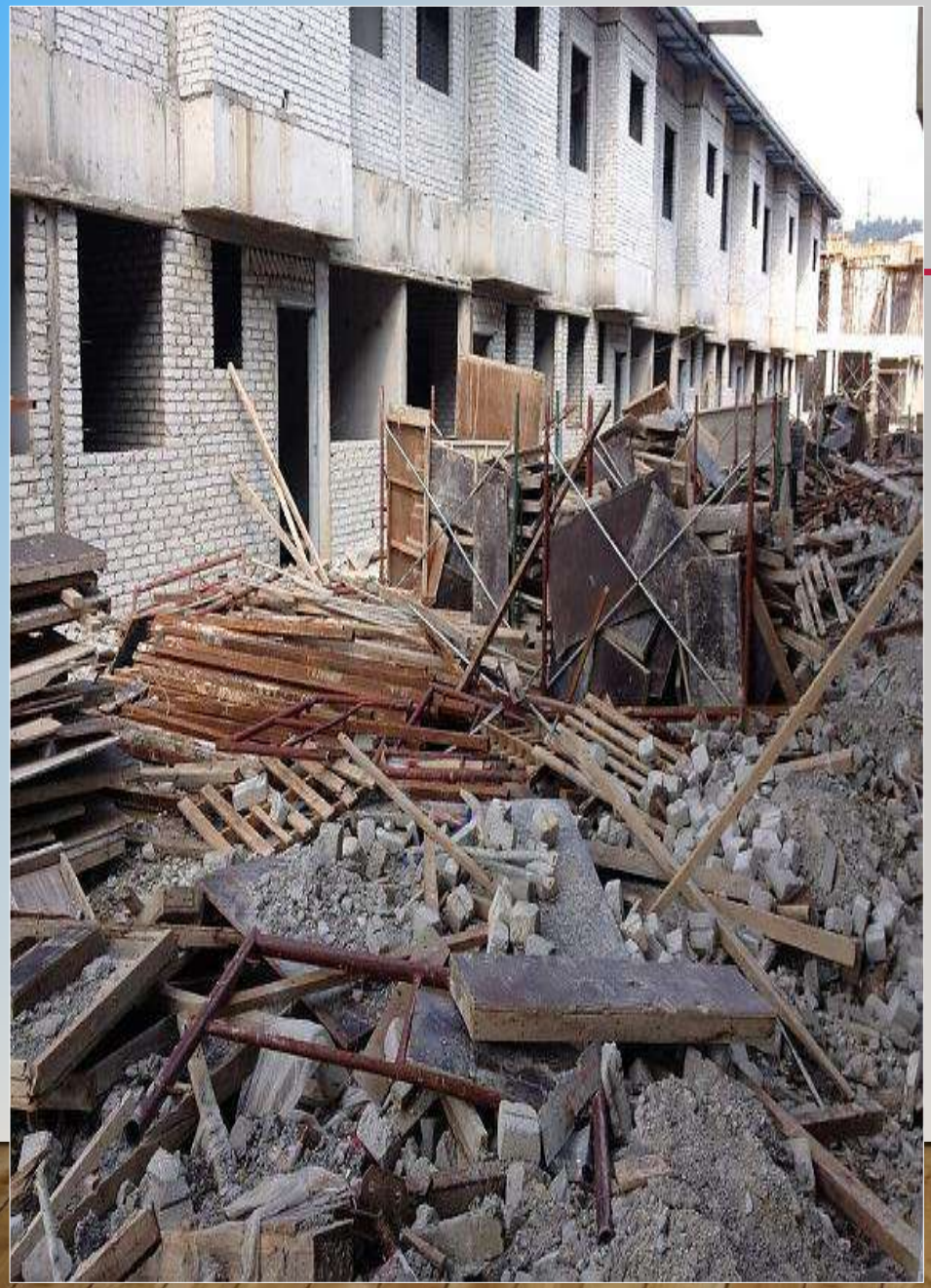
Cost saving : No rubbish cleaning

Traditional Method : *Hacking for Electrical and Plumbing work*



Traditional Method : *Hacking for Electrical and Plumbing work*

Traditional Method : Rubbish clearing



Propose to Government and Private Developer

Invite industrialized building system provider with manufacturing facility (flexibility to suit all architectural demands) to participate to built the show unit with work below and superstructure without finishing for the Government & Private Developer to identify the system in terms of Green, Environment, Quality and Speed for supply in Its Development.

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1. Architect

   - Appointed by the Government & Private Developer .
   - Design of single storey bungalow of 1,000 ft2 (affordable home), up to superstructure without finishing.
   - With M&E requirement.
   - Wall finishing with plaster or skim coat only.
   - Door and window frame opening.
   - Ground floor without tiling.

2. Industrialized building system manufacturer have formed their BQ for superstructure (in terms of wall area) and to submit work program with sequence of work for record purposes.

3. Proper record by the Government & Private representative during construction, in terms of labour and machinery involved per day up to completion (superstructure only).

4. Cost Comparison for each Industrialized Building System Manufacturer by the Government & Private Developer (for superstructure only). Cost will be fixed for the selected manufacturer and supply to its development.


THANK YOU