TOPIK 4

- Penyeliaan Kerja IBS di Tapak Bina
- Pemasangan
- Kerja sementara
- Storage
- Cast on site / manufacturing at plant
- Keselamatan pembinaan
- Handling, lifting, propping requirement
- Construction tolerance
- Method Statement
- Casting / Installing Timetable
- Inspection & Testing Plan
- Pembukaan dalam komponen IBS
- Limited Working Space
- Access to Site

Penyeliaan Kerja IBS di Tapak Bina

- Keperluan SO
 - Hadir kursus/penerangan ringkas (eg oleh CKAS)
 - Borang SPK / IBS Checklist
- Pemasangan
 - Industry standards CIS
 - Certified installers
- Kerja sementara
 - Speks scafoldings



PRECAST STRUCTURE

 A building being assembled from a number of identical or similar components cast in location other than their final position

PREFABRICATION

 Industrialised construction method whereby mass produced components are assembled into buildings with the aid of cranes and other lifting and handling appliances.



Eurocode Family (57 all together)
BS EN 1990: Basis of design
BS EN 1991: Actions
BS EN 1992: Concrete
BS EN 1993: Structural steelwork
BS EN 1994: Composite steel and concrete
BS EN 1995: Timber
BS EN 1996: Masonry
BS EN 1997: Foundations
BS EN 1998: Seismic
BS EN 1999: Aluminium

Storage, Cast on site / manufacturing at plant, Keselamatan pembinaan,

- PHOTOS at site and factory ditunjukkan masa presentation
- Preparation / safety suits, precautionary measures etc – ditunjukkan masa presentation

Handling, lifting, propping requirement Construction tolerance

Contoh dokumen CIDB: CIS 2009

Method Statement Casting / Installing Timetable Inspection & Testing Plan

- Sequence of works
- Contoh dari dua projek
- Inspection checklist

Pembukaan dalam komponen IBS Limited Working Space Access to Site

- Allowable sizes of openings in slab walls
- Transportation logistics, crane capacity, typical trailers/lorries
- Access to site and from casting yards to buildings
- CONTOH CRANES >>



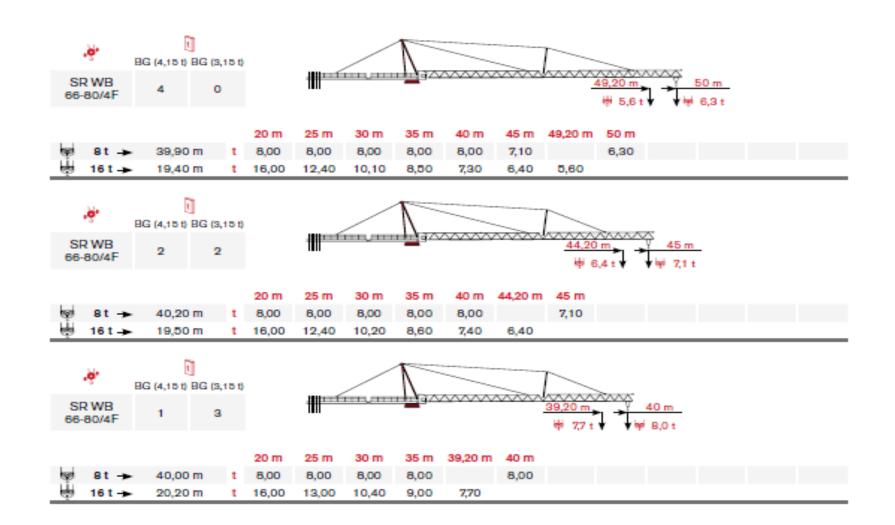
SK 315-16

HAMMERHEAD TOWER CRANE



Crane Load Chart

SK 315-16

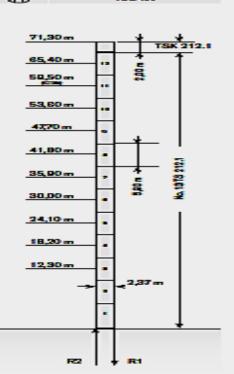


TOWER

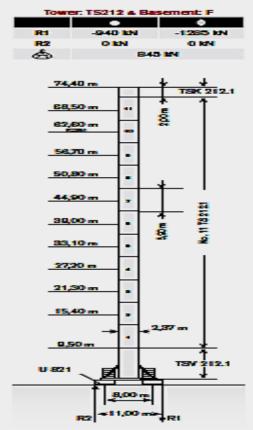
Turm - Tour - Torre - Torre

Standard Configurations · Standardkonfiguration · Standard Implantations · Implantaciones Standard · Installazioni Standard

R1 -2734 kN -3380 kN
R2 2123 kN 2867 kN
798 kN



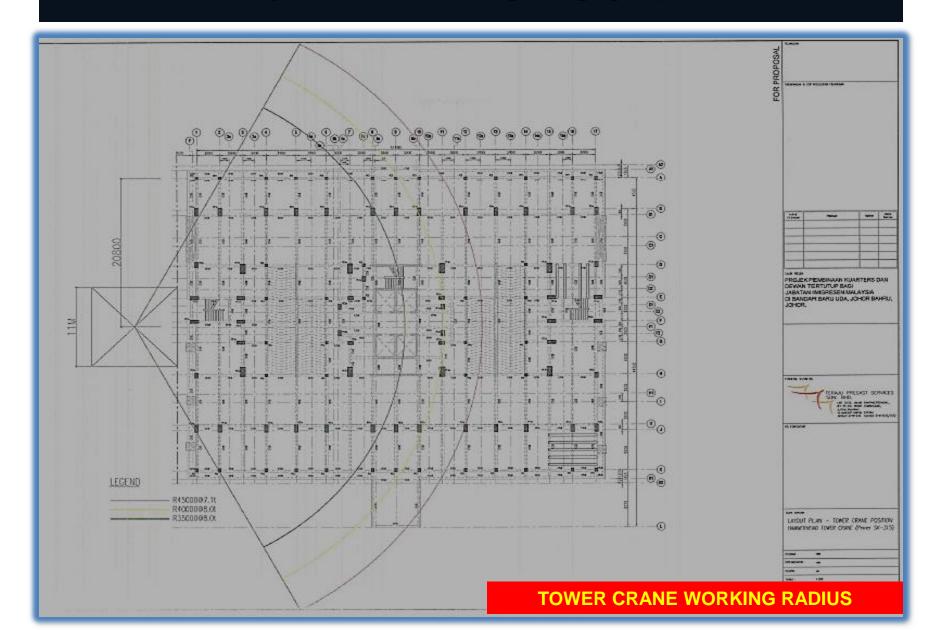
Tower: TS212 & Basement: E					
	•	•			
RI	-916 KN	-1 197 IN			
R2	O KN	O IN			
4	81	D4 KN			
	90 m	TSK 21 2.1			
57,		900			
	10 m	+			
	30 m ,	<u></u>			
33	40 m	2 12 12 12 12 12 12 12 12 12 12 12 12 12			
_27	50 m	Ī			
	60 m .				
_15.	, ,				
_0,1	30 m →	,2,37 m			
UF 82		TSV 212.1			
8,00 m					
	R2	RI			



Max. under hook height * Hochste Hakenhohe * Hauteur maxt, sous crochet * Maxima altura bajo gancho * Alfezza max. sotio gancilo

Different heights and tower combinations are available; please consult us * Andere Hohen und Turmkombinationen auf Anhage * Differentes hautaus et combinationes de tour sont disportibles, nous consulter * Hay diferentes alturas y combinaciones de tour disportibles. Consultence * Alturas diferentes e combinationi di toure sono disportibility consultated.





QUALITY ASSURANCE STAGES





JIAGLS

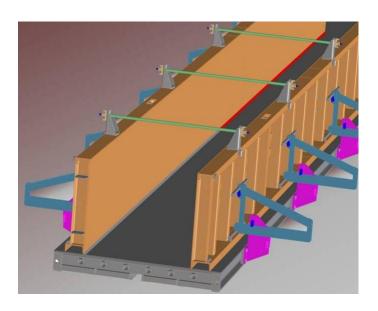
- DESIGN (JKR AND OTHERS INCL. INDEPENDENT CHECKER)
- PRODUCTION/CASTING/STORAGE/ TRANSPORTATION (SYSTEM PROVIDERS/CONTRACTORS)
- CONSTN. STAGE —PREFABRICATING /INSTALLATION (CONTRACTORS)
- SUPERVISION audit/component inspections/General requirements (JKR AND OTHERS)

Extruder factory (Hollowcore)



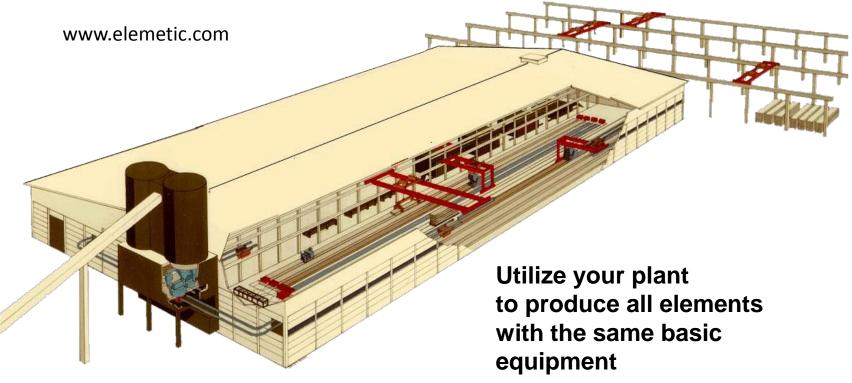
Side forms of long mould system

- Pair of basic side-forms
 - Basic side-form is fixed to the casting bed by means of support triangles and their upper edges are supported by connecting bars
 - Side forms are removed before the precast unit is stripped and the mold refurnished.
 - Standard length of the side form is 12 m. Basic side-form pairs of 0.6,
 1.2, 2.0 and 2.4 m are available for length adjustments.



3.5.2006/Yli D000030448

Section of precast component plant



Factory Capacity

			 CHECKLIST	<u> </u>	
NO.	ITEM	YES NO N/A		-	REMARKS
1	Capability of factory to produce proposed precast component				* Semi automated operation & computerized wet batching plant * Capable to setup temporary factory for big project
2	Number & capability of machines to produce precast components				* At factory: - 2 nos of 10 tonnes capacity Gantry Crane - Wet batching plant 60 m³/hour * At temporary factory (PULAPOL & IAB): - 2 nos of 10 tonnes capacity Gantry Crane - Dry batching plant 45 m³/hour
3	Production capacity	٧			* At factory: - 120 m ³ /day * At temporary factory: - PULAPOL PROJECT, 80 m ³ /day - IAB PROJECT, 60 m ³ /day
4	Number of production personnel involved				*6 person can produce 45 - 50 panel at factory * Installation of 6 unit / day (2 unit / 6 person) ** Component must less than 7 tonnes & minimum erection time is 7 day
5	Checking process during and after the production				* Used checklist (manual) * Every morning check finish product and transport to site construction

FACTORY INSPECTION REPORT ON APPLICATION TO BE LISTED AS IBS SYSTEM PROVIDER FOR JKR PROJECT

Penyeliaan Kerja IBS di Tapak Bina

- Keperluan SO
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 - Borang SPK / IBS Checklist
- Pemasangan
 - Industry standards CIS
 - Certified installers
- Kerja sementara
 - Rujuk spesifikasi berkenaan

CHECKLIST AND TOLERANCE

REFER HANDOUTS





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- Contoh dari dua projek
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Pembukaan dalam komponen IBS Limited Working Space Access to Site

- Allowable sizes of openings in slab walls
- Transportation logistics, crane capacity, typical trailers/lorries
- Access to site and from casting yards to buildings
- Access to point of installation in the building



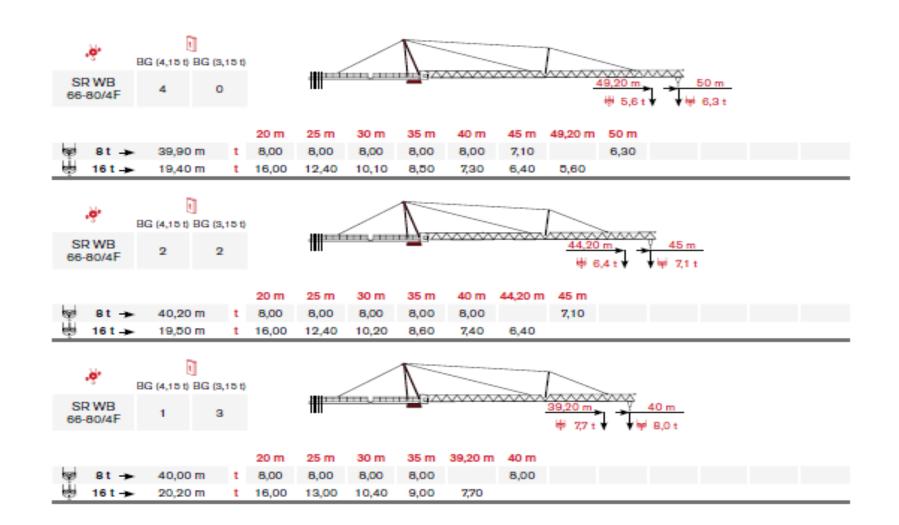
SK 315-16

HAMMERHEAD TOWER CRANE



Crane Load Chart

SK 315-16

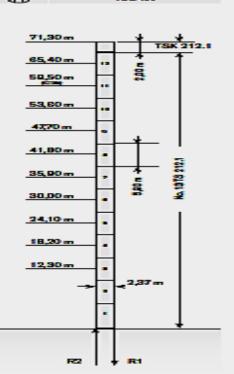


TOWER

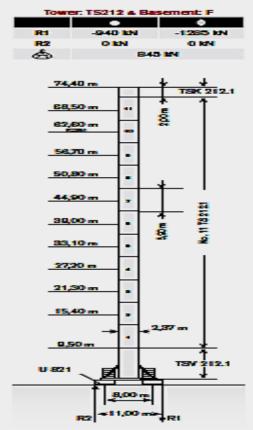
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R1 -2734 kN -3380 kN
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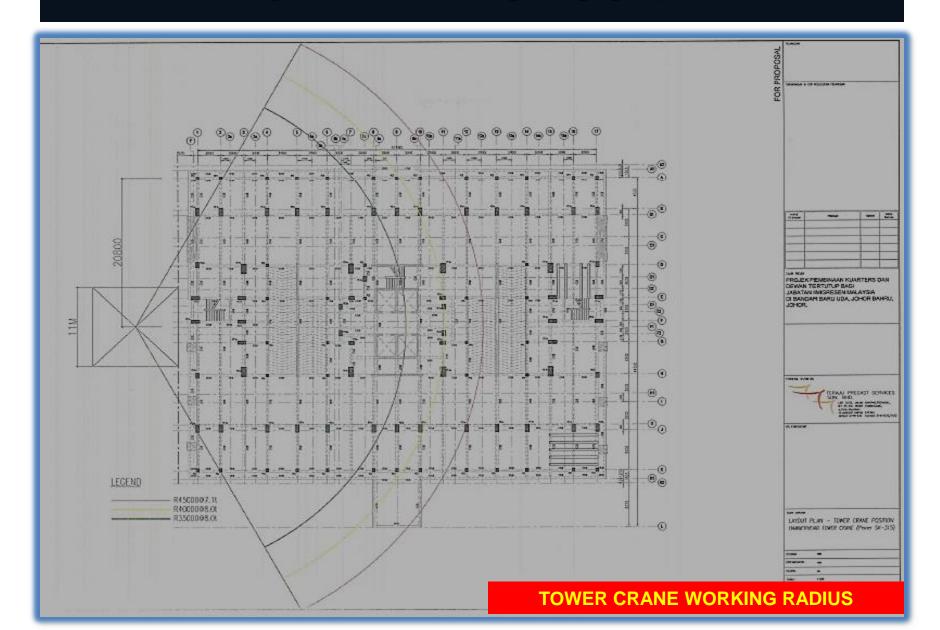
Tower: TS212 & Basement: E					
	•	•			
RI	-916 KN	-1 197 IN			
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	90 m	TSK 21 2.1			
57,		900			
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33	40 m	2 12 12 12 12 12 12 12 12 12 12 12 12 12			
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	60 m .				
_15.	, ,				
_0,1	30 m →	,2,37 m			
UF 82		TSV 212.1			
8,00 m					
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Max. under hook height * Hochste Hakenhohe * Hauteur maxt, sous crochet * Maxima altura bajo gancho * Alfezza max. sotio gancilo

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METHOD STATEMENT FOR HYBRID CAST IN SITU COLUMNS AND PC COMPONENTS

- CAST COLUMNS ON SITE
- DELIVER PC COMPONENTS
- INSTALL PRECAST BEAMS
- INSTALL HALF SLABS

CAST COLUMNS ON SITE

- Check survey records against:
 - Piles caps levels
 - GF levels
 - Starter bars accuracy
- Refer to installation layouts on each and every columns (types, code markings and orientations)
- Mark verticality control lines on the moulds
- Lift mould to vertical position
- Hoist mould over starter bars and lower on to shim plates to position
- Install temporary props against mould and secure them properly to the floor.
- Adjust temporary mould and tightened to ensure the mould is truly vertical in all directions
- Final adjustment shall be done by theodolite and fine adjusted to true positions of mould/column

DELIVERY OF PC COMPONENTS

- Verify mode of transportations?, from factory to site. Check overall weights of components so that the delivery process can be completed within the expected timeframe..how many trips
- For site with limited working space, and no storage areas, transportation will be according to installation schedules.
- For transportations by sea and land, two or more modes of carrier, proper loading and unloading cranes are to be provided and transit.
 Storage at any point must be agreed by the SO
- For site far away from the casting factory, contractor or system provider may consider (to avoid risk of damages to PC components during transportation) casting on site at any designated areas/temporary yards agreed by all parties. Casting platforms and excess to the yards must be properly constructed. Casting process must be shown to be equally control according to QA/QC in the factory.

INSTALLATION OF PRECAST BEAMS

- Check beam seating areas and levels
- Check corbels if bearing pads are required, ensure the pads are available and laid before installation.
- Check beams against the Installation Layouts dwgs, beams codes, and orientations. Record codes / serial no into form.
- Using proper cranes, hoist beams to bolting place or dowel bars inserted cleanly.
- Adjust for alignments of beams over the columns using the cranes
- Check for gaps below beams where grout may leak and seal them accordingly
- Check again for the beam orientation before commencement of grouting
- Mix grout and pour into the connection points and dowels sleeve
- Record grout consumptions for each pour.

INSTALLATION OF PRECAST HALF SLABS

- Before installation, check slab levels
- All seating area are lined with neoprene strip etc
- Refer slab Installation layouts. Ensure types of PHS, codes marking and orientations are correct. Records serial no/codes marking into forms.
- Check grid offset and if required ensure survey line already provided.
- Hoist PHS into each slab seating area using proper crane.
- Adjust alignment of PHS over beam while still suspended.
- Check gaps between PHS which can leak grout and seal them
- Check again for orientations before commencement of grouting
- Proceed grouting shear key between PHS
- Pump grout mortar into gap
- Level of grout within the shear key should be within 10 to 15mm below top of PHS
- Record grout consumption

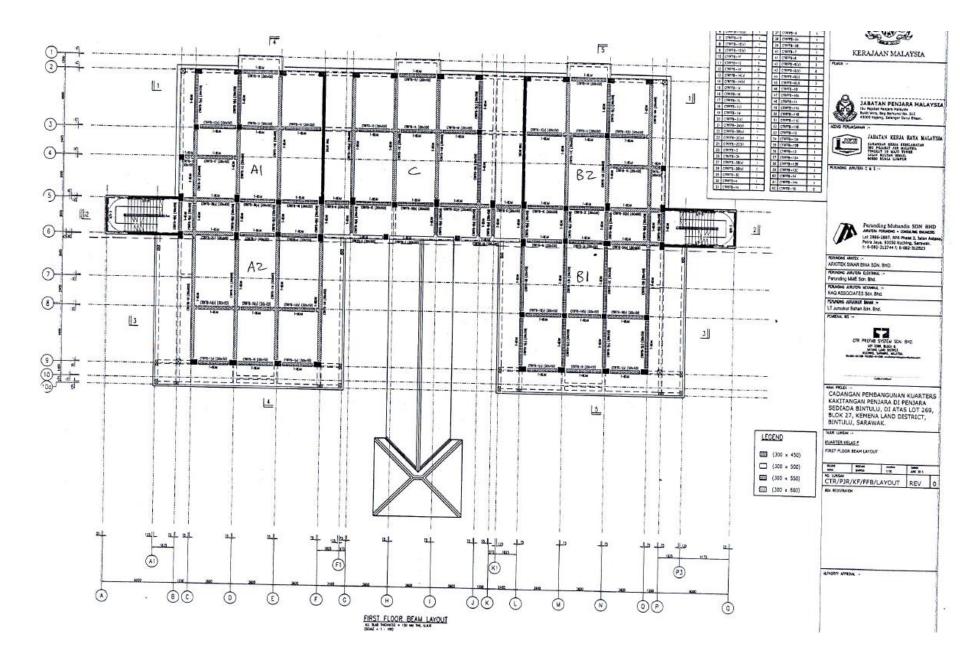
SEQUENCE OF PC COMPONENTS INSTALLATIONS

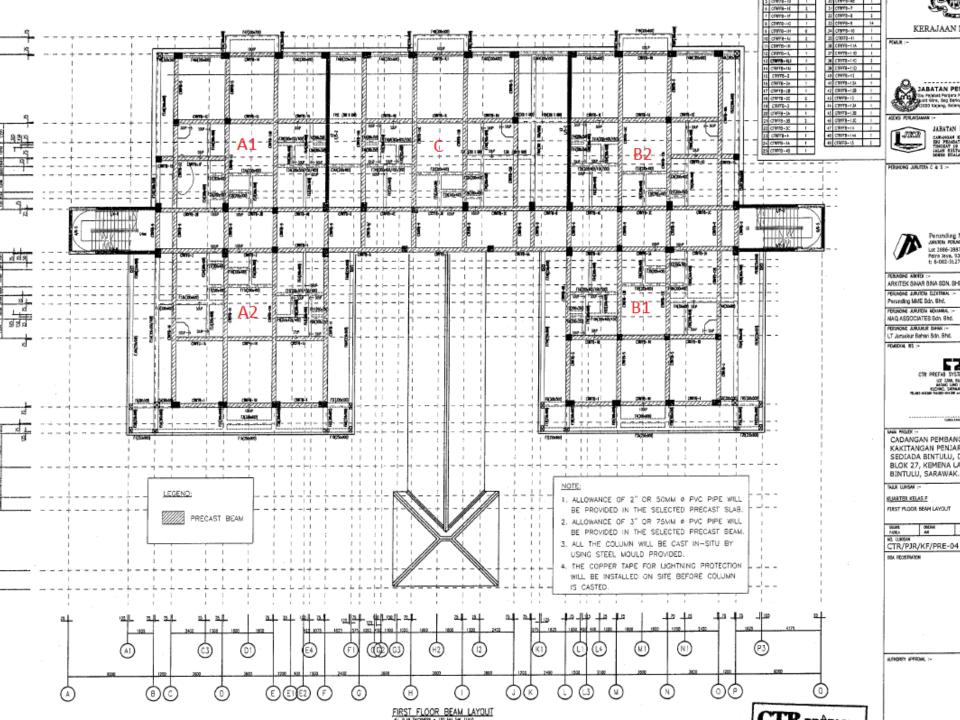
- Mark zones of installation
- Use theodolites/proper survey equipments
- Launch beams and slabs onto seatings according to respective components' Layout Drawings.
 Follow designated sequence.
- Records each and every components and match with code markings
- Apply grouting mortar accordingly
- Lay toppings according to thickness in dwgs

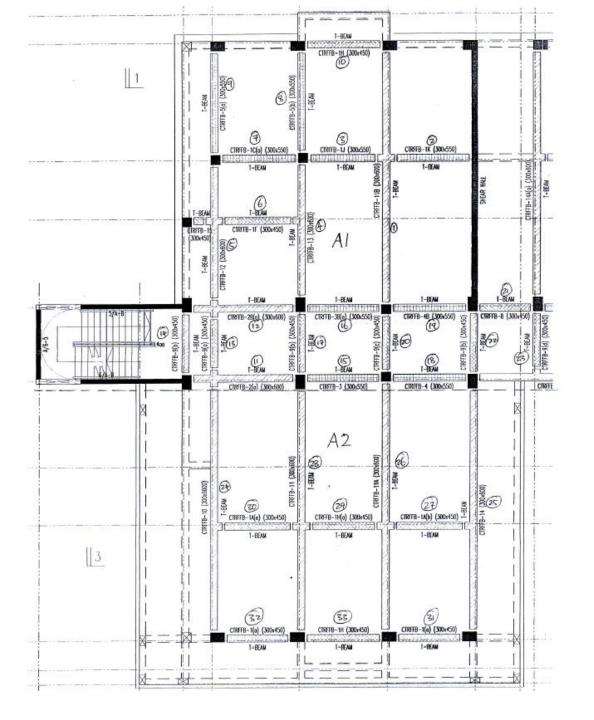
Sequence of IBS Installation

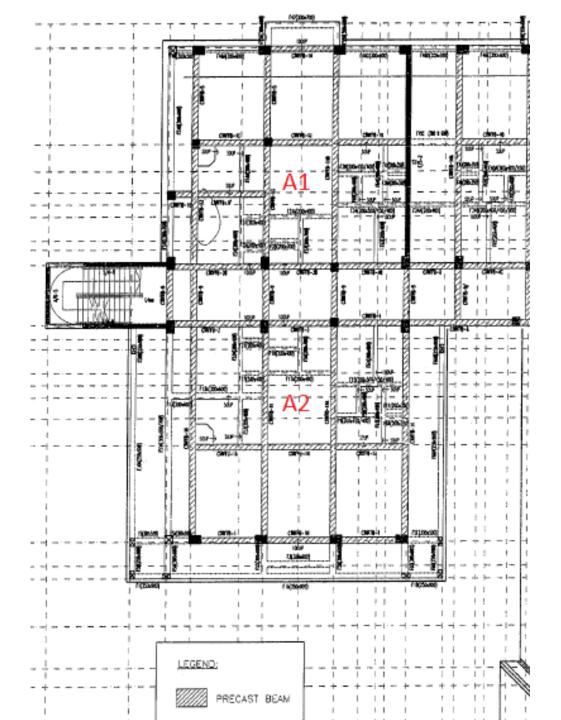
- The entire floor to be marked in separate zone of installation (please see the attached floor plan for details).
- Launching of precast beams that seating on the column corbels to be commenced first following the sequence of Zone A1 to Zone C.
- Then the launching of precast beams that seating on beam concrete nibs can be proceed following the sequence of Zones as well.
- 4. However, the launching of beams must follow the sequential numbers as indicated in the floor plan to form a solid joint, especially between the long beams (>10m) and shorter beams. Please refer to the enlarged floor plan of Zone A1 and A2 for details, and then the same applies to other zones.
- Please be noted that any beam after launched must be supported with sufficient props to maintain the beam in straight position (please refer to the attached drawing of temporary props details).
- Once the launching of beams completed, the construction of cast in situ structures needed to be carried out first.
- After that, the precast half slabs to be installed according to the sequence of Zones as well.
- The precast half slabs must be placed horizontally across the beams, not along the beam body.
- Lastly, the 50 mm thick of topping layer can be constructed zone by zone.

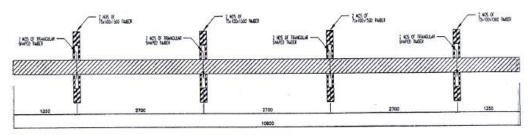
Note: The above installation sequence is only for reference. It might be changed to suit the site condition later and must subject to the SO or SOR's discretion.



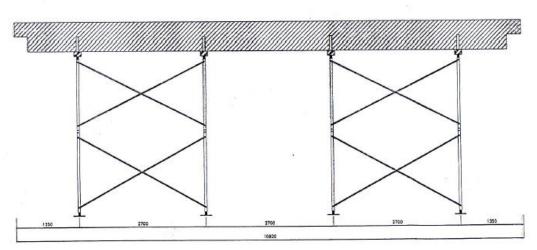




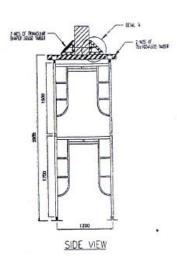


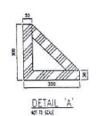


PLAN VIEW



FRONT VIEW







KERAJAAN MALAYSIA

JABATAN PENJARA MALAYSIA Bu Papasi Penjara Matana Burt Win. Sep Serias (Inc.) 312 1300 Capasa Salaran Sant Salar

DIS REASONN :



JABATAN KERJA BAYA MALAYSI BU PELENT JER BALAYER BUDELT IS BALAYER INCHES IS BALAYER INCHES BALAYER INCHES BALAYER

PERSON APRILLICAS IN



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PRINCIPLE MINISTER :-ARKITEK SINAR BINA SON, BHD.

PERSONS ARRESTS LESSING !-Personing MANE Son. Bird. PERSONS ARRESTS MIXABER ?-NAQ ASSOCIATES Son. Bird.

MONORAL AMADEM SOUR -LT JURISBY Bahan Sen, Bhd.

> CIR PROTAC STSTEM SDN. 8-C. LIV 1366. RACK K. INTEGER LIMIT SECTION, SCHOOL NAMES BUSINES.

lettered.

CADANGAN PEMBANGUNAN KUARTERS KAKITANGAN PENJARA DI PENJARA SEDIADA BINTULU, DI ATAS LOT 289, BLOK 27, KEMENA LAND DISTRICT, BINTULU, SARAWAK.

THE WARM :-

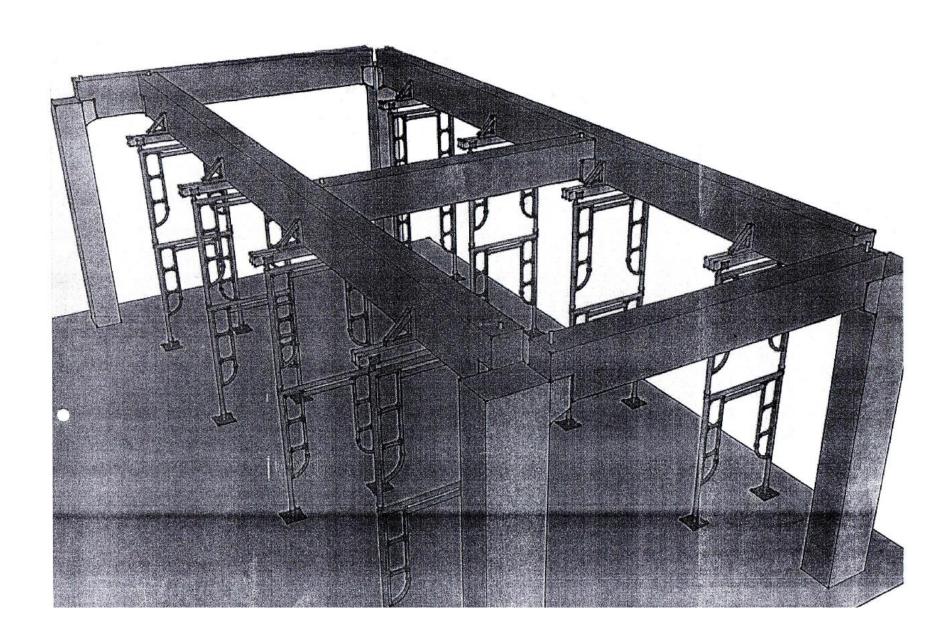
SEAH PROPTING

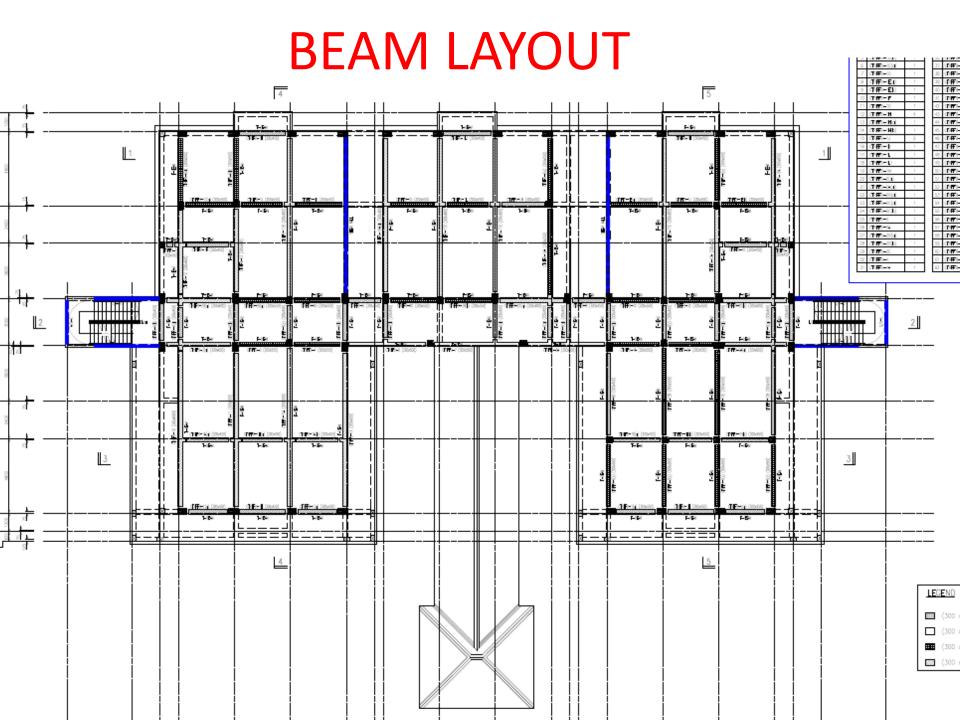
TEMPORARY PROPTING FOR SEAM LENGTH HORE THAN 15P

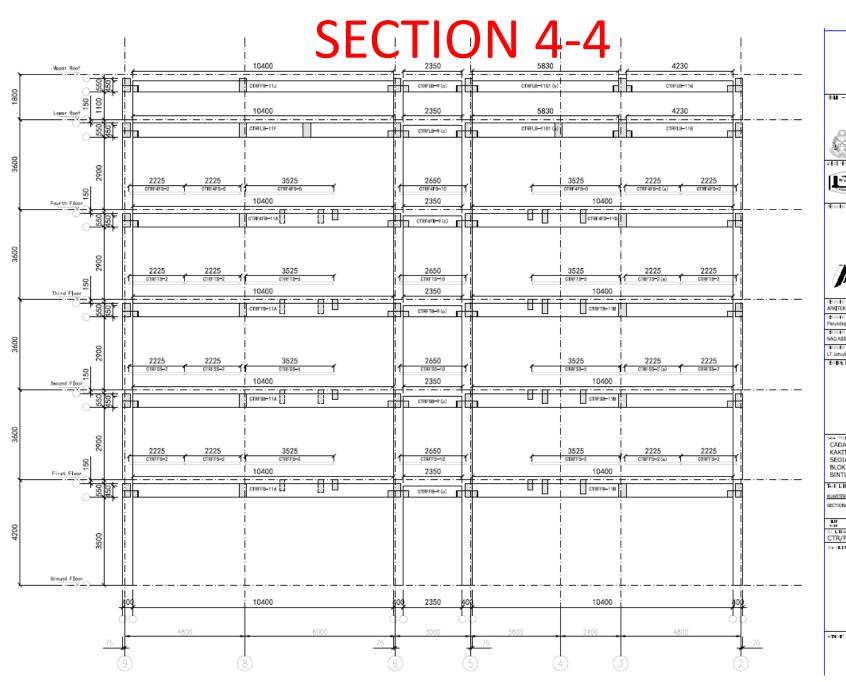
CTR/PJR/KF/BEAM PROP REV D

BOA RECEIVATION

AUTORY IMPOR :-









KERAJAAN MALA!









JUSTEM FELICACI - CONS Lot 2886-2887, RPR Pha Petra Jaya, 93050 Kuchii t: 6-082-312744 f; 6-08

PERIODIC JOHN .-ARKITEK SINAR BINA SON, BHD,

PRINCING ARRIPER BEST PALS Perunding MME Sdn, Bhd,

PERSONAL LIBERT MESSARA >-NAQ ASSOCIATES Sdn, Bhd,

PRINCING ARRADIC RANGES LT Juruukur Bahan Sdn. Bhd.

PROBALIS :-





Popularia.

1999 PROJEC :-CADANGAN PEMBANGUNAN KAKITANGAN PENJARA DI P SEDIADA BINTULU, DI ATAS BLOK 27, KEMENA LAND DI BINTULU, SARAWAK.

TARK DIRECT-

KUARTER KELAS F

SECTIONAL DRAWING AT SECTION 4-4

FLOR NO. LLOSSO

CTR/PJR/KF/SECTION.4

D8 180179000

ATHRIT STITUL :-

Sample installation photos

Sample of Photos Description No. 1 Steel Moulds for Columns: 1.1 Setting out of columns positions must be carried out and checked against the Installation Layouts. 1.2 Verticality Control Lines must be marked on the steel moulds for verticality check before installation started. 1.3 Three sides of steel moulds are lifted and then hoisted over the ground slab starter bars and lowered down to seat properly on the ground. 1.4 The temporary props are then installed and tightened against the moulds and the floor. 1.5 The final check on the verticality must be done by theodolite and the props are fine-adjusted until achieving the right position. 1.6 The rebars fabrication works for columns to be carried out and the final piece of steel mould is to be erected to close the rebars before casting.



Precast Beams:

- 2.1 The seating level, beam type and orientation of the precast beams must be checked against the Installation Layouts before installation. The PVC plate must also be placed onto the nib.
- 2.2 The precast beams are hoisted into place and ensure the dowel bar of the nib is inserted into the GI sleeve of the precast beam.
- 2.3 The precast beams are then adjusted for alignment over the columns by mobile crane.
- 2.4 The gap between the seating beam and the beam with nib must be 20mm and the gap will be sealed when the topping of the precast slab is casted.
- 2.5 The grout is mixed and inserted into the GI sleeve of the precast beam.



Precast Half Slabs:

- 3.1 The seating level, type and orientation of the precast slabs must be checked against the Installation Layouts before installation.
- 3.2 The precast slabs is hoisted into place and ensure the slabs are seating onto the beams for 50mm in allowance.
- 3.3 The precast half slabs are then adjusted for alignment over the beams by mobile crane.

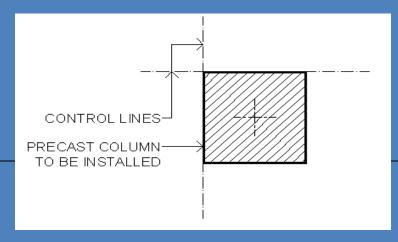


Ground Floor Preparation



STEP 1: GROUND FLOOR PREPARATION

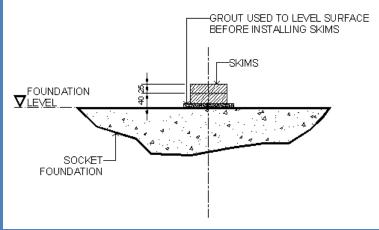
- Preparation of foundation
- Casting of In-situ column stumps / ground beams with protruding starter bars ready to receive Precast Columns
- Before start precast column installation, installer will mark control line for precast column
- Document that related site survey report





STEP 2: COLUMN INSTALLATION

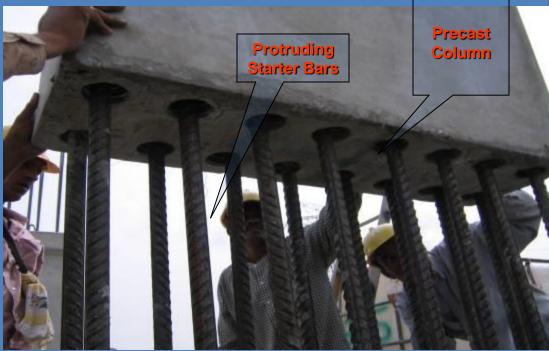
Installer will install require no of shim to make sure bottom of column level is correct





STEP 2: COLUMN INSTALLATION

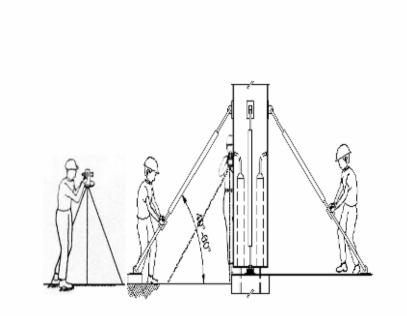
- Installer will install require no of shim to make sure bottom of column level is correct
- Precast column is slotted into protruding starterbar





STEP 2: COLUMN INSTALLATION

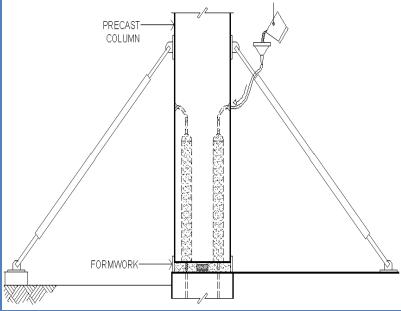
- Installer will install require no of shim to make sure bottom of column level is correct
- Precast column is slotted into protruding starterbar
- Column is propped to the required level and verticality





STEP 2: COLUMN INSTALLATION

- Installer will install require no of shim to make sure bottom of column level is correct
- Precast column is slotted into protruding starterbar
- Column is propped to the required level and verticality
- Column is grouted with high strength non-shrink grout

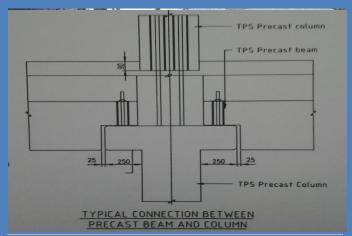


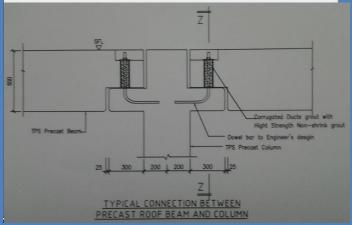
Installation Of Precast Beam



STEP 3: BEAM INSTALLATION

- Precast beam is lifted into position
- Type of connection:
 - 1) Cor connection





Installation Of Precast Beam



STEP 3: BEAM INSTALLATION

- Precast beam is lifted into position
- Type of connection:
 - 1) Corbel connection
 - 2) Hanger connection





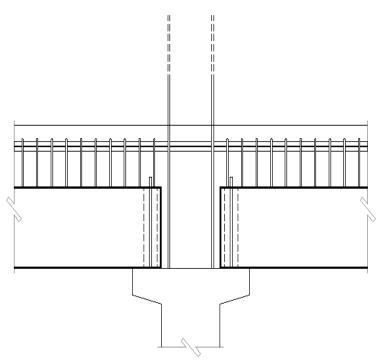
656680-D

Installation Of Precast Beam



STEP 3: BEAM INSTALLATION

- Precast beam is lifted into position
- Corbel connection
 - grouted corrugated sleeve

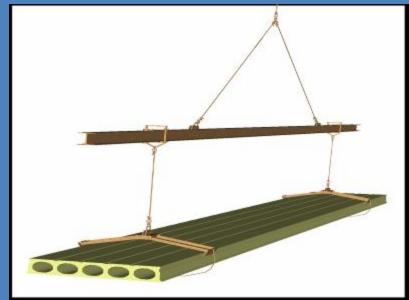


Installation Of Precast HCS Slab



STEP 4: HOLLOW CORE SLAB INSTALLATION

 Precast Hollow Core Slab is lifted onto position by using clamper or lifting belt



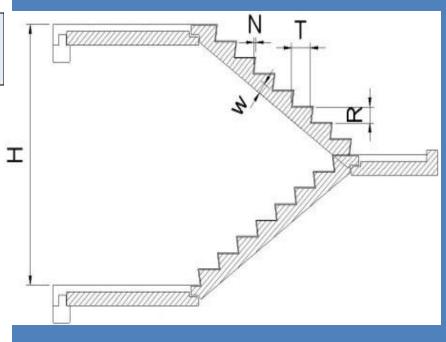
Installation Of Precast Staircase



STEP 5: Staircase Installation

 Precast STR is lifted onto position by using lifting wire rope as per photos shown



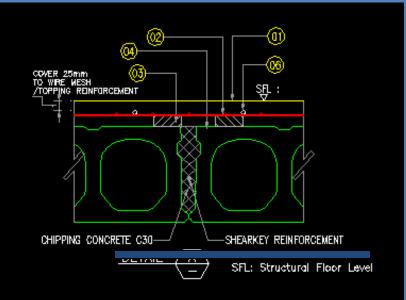


Other Related Works



STEP 5: ASSOCIATED WORKS

Shear key joint is grouted



Other Related Works





STEP 5: ASSOCIATED WORKS

- Shear key joint is grouted
- Installation of beam top rebar
- Beam top concrete casting





Sampel dari projek lain..